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Liquid cooling unit LCU CW

3313.610

Assembly and operating instructions

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FRIEDHELM LOH GROUP

DE Sicherheitshinweise

Allgemein gültige Sicherheitshinweise
- Bitte beachten Sie die nachfolgenden allgemeinen Sicherheitshinweise.
- Tragen Sie bei allen Arbeiten am Gerät die vorgeschriebene persönliche Schutzausrüstung.
- Nehmen Sie an der LCU CW keine Änderungen vor, die nicht in dieser oder in den mitgeltenden Montage- und Bedienungsanleitungen beschrieben sind.
- Die LCU CW darf ausschließlich mit dem von Rittal vorgesehenen Systemzubehör kombiniert und betrieben werden.
- Beachten Sie außer diesen allgemeinen Sicherheitshinweisen unbedingt auch die spezifischen Sicherheitshinweise, im Zusammenhang mit den in den folgenden Kapiteln aufgeführten Tätigkeiten.
- Es besteht eine Verletzungsgefahr durch elektrischen Schlag, wenn das Gerät mit eingestecktem Netzstecker geöffnet wird. Öffnen des Geräts und Reparaturen nur durch Fachleute und eingewiesene Personen.

Sicherheitshinweise zum Transport
- Es besteht eine Verletzungsgefahr durch herabfallende Lasten. Beim Transport des Gerätes mit Hubwagen, Stapler oder Kran nicht unter die schwebende Last treten! Nur geeignete Transportmittel verwenden.
- Es besteht eine Verletzungsgefahr beim Durchschneiden der vorgespannten Umreifungsbänder. Tragen Sie die persönliche Schutzausrüstung!
- Es besteht eine Verletzungsgefahr durch das hohe Gewicht des Geräts. Bitte beachten Sie die maximal zulässigen Hebegewichte für Personen. Ggf. ist eine Hebevorrichtung zu verwenden.

Sicherheitshinweise zur Montage
- Montage der Geräte von qualifizierten Fachleuten durchführen lassen.
- Es besteht eine Verletzungsgefahr durch Umkippen des Geräts. Das Aufrichten des Geräts aus der liegenden Position muss immer durch zwei Personen erfolgen. Dabei sichert eine der beiden Personen das Gerät während des Aufrichtens gegen ein ungewolltes Verrutschen. Tragen Sie die persönliche Schutzausrüstung!
- Es besteht eine Verletzungsgefahr durch Umkippen des Geräts. In der aufrechten Position besteht eine Kippgefahr der LCU CW, solange sie noch nicht im Serverschrank eingebaut und fachgerecht fixiert ist. Gerät in aufrechter Position durch zweite Person sichern lassen.
- Es besteht eine Quetschgefahr beim Einbringen des Geräts in den Serverschrank zwischen den Außenkanten des Geräts und dem umlaufenden Rahmenprofil des Schranks. Tragen Sie die persönliche Schutzausrüstung!

Sicherheitshinweise zur Installation
- Es besteht eine Quetschgefahr beim Einbringen der Schottung in den Serverschrank. Tragen Sie die persönliche Schutzausrüstung!
- Es besteht eine Klemm- und Schneidgefahr beim Anschrauben sowie Abdichten der Kühlmittelleitungen. Tragen Sie die persönliche Schutzausrüstung!
- Stellen Sie sicher, dass die Kühlmittelleitungen nach der Installation nicht den Luftstrom durch das Gerät behindern.
- Arbeiten an elektrischen Anlagen oder Betriebsmitteln dürfen nur von einer Elektrofachkraft oder von unterwiesenem Personal unter Leitung und Aufsicht einer Elektrofachkraft den elektrotechnischen Regeln entsprechend vorgenommen werden.
- Nur spannungsisoliertes Werkzeug benutzen. Tragen Sie die persönliche Schutzausrüstung!
- Die Spannungsangaben im Schaltplan / auf dem Typenschild müssen mit der Netzspannung übereinstimmen.
- Durch eine fehlerhafte Montage und Installation besteht die Gefahr von Kondensatbildung im Gerät, die zu einem elektrischen Kurzschluss oder austretender Flüssigkeit führen kann.

Sicherheitshinweise zum Betrieb
- Es besteht die Gefahr von Fehlfunktionen oder Zerstörung. Keine Veränderungen am Gerät vornehmen! Nur Original-Ersatzteile verwenden.
- Im Betrieb der LCU CW kann es insbesondere bei einer Bedienung des Geräts direkt am Display zu einem erhöhten Geräuschpegel kommen. Tragen Sie die Persönliche Schutzausrüstung!
- Die einwandfreie Funktion des Gerätes kann nur gewährleistet werden, wenn es unter den vorgesehenen Umgebungsbedingungen betrieben wird. Stellen Sie, soweit möglich, sicher, dass die der Auslegung zugrunde liegenden Umgebungsbedingungen, z. B. Temperatur, Luftfeuchtigkeit, Luftreinheit, eingehalten werden.
- Das regelungstechnisch notwendige Medium Kühlwasser muss während der gesamten Betriebszeit des Geräts anliegen.
- Beim Auftreten von Leckagen besteht Verletzungsgefahr durch ausgetretenes Kühlmedium, insbesondere Glykol. Tragen Sie die persönliche Schutzausrüstung, nehmen Sie ausgelaufenes Kühlmedium mit geeignetem Lappen oder Bindemittel auf und beseitigen Sie den Grund für Leckagen umgehend.
- Der im Gerät verbaute Leckagesensor dient nur zur funktionellen Leckagedetektion und darf nicht als Sensor in einer Sicherheitskette auf Anlagenebene verwendet werden.
- Duch die Laufräder der Ventilatoren besteht eine Verletzungsgefahr. Personen und Gegenstände von den Laufrädern der Ventilatoren entfernt halten! Abdeckbleche erst bei unterbrochener Stromzufuhr und stehenden Laufrädern öffnen! Keine Arbeiten ohne mechanischen Schutz durchführen! Bei Wartungsarbeiten jeweiligen Ventilator stillsetzen! Lange Haare zusammenbinden! Keine losen Kleidungsstücke tragen! Nach Spannungsunterbrechung läuft der Ventilator automatisch wieder an!

Sicherheitshinweise zur Wartung
- Vor allen Wartungsarbeiten sowie vor einer Fehlersuche im Gerät muss das Gerät zuvor sicher spannungsfrei geschaltet werden. Hierzu den Netzanschluss entfernen oder die allpolige Abschalteinrichtung in der Zuleitung benutzen und gegen unbeabsichtigtes Wiedereinschalten sichern.
- Bei Arbeiten am Gerät besteht die Gefahr von Schnittverletzungen insbesondere durch scharfe Kanten des Wärmetauschermoduls. Vor Montage- und Reinigungsarbeiten Persönliche Schutzausrüstung anlegen!
- Beim Aus- und Einbau eines Lüftermoduls besteht Verletzungsgefahr durch scharfe Kanten im Innenraum der LCU CW, ein Herunterfallen des Moduls, hohe Luftgeschwindigkeiten und Lärm. Tragen Sie die Persönliche Schutzausrüstung!
- Bei allen Arbeiten mit dem Kühlmedium das zugehörige Sicherheitsdatenblatt beachten.

Sicherheitshinweise zum Stillsetzen
- Laien können den notwendigen Arbeitsablauf zum Stillsetzen nicht gewährleisten. Daher dürfen diese Arbeiten nur von qualifizierten Fachleuten durchgeführt werden.
- Bei Lagerung und Transport unterhalb des Gefrierpunktes ist der Wasserkreislauf mit Druckluft komplett zu entleeren!

Bedien- und Fachpersonal
- Die Installation, Inbetriebnahme, Wartung und Instandsetzung dieses Gerätes dürfen nur von qualifizierten Fachleuten durchgeführt werden.
- Die Gerätebedienung im laufenden Betrieb darf nur eine eingewiesene Person durchführen.
- Das Gerät darf insbesondere nicht von Personen (einschließlich Kindern) mit eingeschränkten physischen, sensorischen oder geistigen Fähigkeiten oder mangelnder Erfahrung und Kenntnis benutzt werden, es sei denn, sie werden beaufsichtigt oder erhalten eine Einweisung.
- Kinder müssen beaufsichtigt werden, damit sie nicht mit dem Gerät spielen.

Persönliche Schutzausrüstung
- Bei allen Arbeiten am Gerät, insbesondere wenn das Personal mit dem Kühlmedium (bei Einsatz eines Wasser-Glykol-Gemischs) in Kontakt kommen kann, muss die persönliche Schutzausrüstung, bestehend wenigstens aus wasserdichten Schutzhandschuhen sowie einer Schutzbrille getragen werden.
- Des Weiteren wird bei allen Arbeiten in der Nähe des Geräts die Verwendung eines geeigneten Gehörschutzes und eines Haarnetzes empfohlen.
- Bei allen Arbeiten an der LCU CW, insbesondere auf der Ausblasseite, wird das Tragen einer Schutzbrille empfohlen, um Augenverletzungen durch die hohen Luftgeschwindigkeiten zu vermeiden.

EN Safety instructions

General safety instructions
- Please observe the following general safety instructions.
- Always wear the required personal protective equipment when working on this device.
- Please do not make any changes to the LCU CW that are not described in these operating instructions or other applicable assembly and operating instructions.
- The LCU CW should only be combined and operated with the prescribed Rittal system accessories.
- Other than these general safety instructions, it is also vital to observe the specific safety instructions when carrying out the tasks described in the following chapters.
- Danger of injury from electric shock if the unit is opened while connected to the mains. The unit must only be opened and repaired by trained specialists or qualified individuals.

Safety instructions for transportation
- There is a risk of injury from falling loads. Do not stand under suspended loads when transporting the unit with a hoist trolley, a forklift, or a crane. Be sure to use an appropriate means of transport.
- There is a risk of injury when cutting through the pretensioned tightening straps. Wear personal protective equipment (PPE)!
- There is a risk of injury due to the heavy weight of the device. Please observe the maximum permissible weight to be lifted by one person. Use suitable lifting devices, if needed.

Safety instructions for assembly
- Have the devices installed by qualified specialists trained by Rittal.
- Beware of injuries if the unit tips over. From a horizontal position, the unit should always be set upright by two people working together, with one person bracing the unit to prevent it from slipping as it is lifted. Wear personal protective equipment (PPE)!
- There is a risk of injury from the device tipping over. While upright, the LCU CW is at risk of toppling over until it is installed and correctly secured inside the server rack. The second person should hold the unit securely in an upright position until this has been done.
- While inserting the unit into the server rack, there is a danger of crushing between the outer edges of the unit and the frame section of the rack. Wear personal protective equipment (PPE)!

Safety instructions for installation
- There is a risk of crushing when the containment system is inserted into the server enclosure. Wear personal protective equipment (PPE)!
- There is a risk of becoming trapped and cut when screwing on and sealing the coolant lines. Wear personal protective equipment (PPE)!
- Following installation, ensure that the coolant lines do not restrict the flow of air through the device.
- Work on electrical systems or equipment may only be carried out by an electrician or by trained personnel guided and supervised by an electrician. All work must be carried out in accordance with electrical engineering regulations.
- Use only insulated tools. Wear personal protective equipment (PPE)!
- The voltage values shown in the wiring plan or on the rating plate must match the mains voltage.
- Incorrect assembly and installation may lead to the risk of condensation forming in the device, which can lead to an electrical short circuit or to leaks of liquid.

Safety instructions for operation
- Risk of malfunction or damage! Do not modify the unit! Use only original spare parts!

- There may be an increased noise level when the LCP is in operation, especially when the device is operated directly on the display. Wear personal protective equipment (PPE)!
- Proper and flawless unit operation can only be ensured when it is operated under the intended ambient conditions. As far as possible, be sure that the ambient conditions for which the unit is designed are complied with, e.g. temperature, humidity, air purity.
- The medium necessary for the control system, i.e. cooling water, must be available throughout the entire operating time.
- If leaks occur, there is the risk of injury caused by escaping refrigerant, in particular glycol. Wear personal protective equipment, collect any escaped refrigerant with suitable cloths or absorbent materials, and rectify the leakage cause without delay.
- The leak sensor built into the unit is for functional leak detection only and should not be used as part of a safety chain system.
- Injury caused by fan impellors! Keep persons and objects away from the fan impellors! Do not remove covers until the power supply is disconnected and impellors are not moving! Always use mechanical protection when working! Shut down the respective fan during maintenance work, if possible! Tie long hair back! Do not wear loose clothing! Fans start up automatically following power disruptions!

Safety instructions for maintenance
- The unit must be safely disconnected from the power supply before carrying out any maintenance work or troubleshooting inside the unit. Either pull the connector from the mains or use the all-pole disconnector in the supply lead and secure against unintentional reactivation.
- In particular, the sharp edges of the heat exchanger module may cut and cause injury while working on the unit. Put on personal protective equipment before beginning assembly or cleaning work!
- When removing and installing a fan module, injuries may potentially be caused by the sharp edges inside the LCU CW, or if the module is dropped, or as a result of high air speeds and noise. Wear personal protective equipment (PPE)!
- Always read the relevant safety data sheet when working with the cooling medium.

Safety instructions on shutting down
- Laypeople are not qualified to ensure the required shutdown procedures. This work must only be carried out by qualified, trained experts.
- During storage and transportation below freezing point, the water circuit should be drained completely using compressed air!

Operating and technical staff
- The installation, commissioning, maintenance and repair of this unit may be performed only by qualified specialists trained by Rittal.
- Only properly instructed personnel may perform service on a unit while in operation.
- Never allow the unit to be used by people (or children) with limited physical, sensory or mental abilities or insufficient knowledge and experience, unless supervised or properly instructed.
- Children must be supervised and never allowed to play with the unit.

Personal protective equipment
- Personal protective equipment, which should as a minimum include waterproof protective gloves and safety goggles, must be worn during any work on the unit when personnel might come into contact with refrigerant (for deployment of a water-glycol mixture).
- We also recommend the wearing of suitable ear muffs and a hair net when working near the unit.
- For all work on the LCU CW, in particular on the outlet side, wearing safety goggles is recommended to prevent eye injuries caused by the high air speeds.

FR Consignes de sécurité

Consignes de sécurité générales en vigueur
- Veuillez respecter les consignes de sécurité générales suivantes.
- Porter l'équipement de protection individuel requis pour tous les travaux sur l'appareil.
- Ne pas effectuer de modifications sur la LCU CW si celles-ci ne sont pas décrites dans le présent document ou dans les notices de montage et d'utilisation contractuelles.
- La LCU CW doit être combinée et utilisée exclusivement avec les accessoires Rittal prévus.
- En complément de ces consignes de sécurité générales, respecter également les consignes de sécurité spécifiques relatives aux tâches qui figurent dans les chapitres qui suivent.
- Il y a un risque de blessure dû à une électrocution lorsque l'appareil est ouvert avec la fiche de raccordement branchée. Ouverture de l'appareil et réparations uniquement par des spécialistes et des personnes formées.

Consignes de sécurité pour le transport
- Il y a un risque de blessures en cas de chute de charges. Ne pas rester sous la charge suspendue lors du transport de l'appareil avec un tire-palette, un chariot élévateur ou une grue ! Utiliser uniquement des moyens de transport appropriés.
- Il y a un risque de blessures en coupant les bandes de cerclage précontraintes. Porter l'équipement de protection individuel !
- Il y a un risque de blessures dû au poids élevée de l'appareil. Veuillez respecter le poids maximal admissible qu'une personne puisse porter. Utiliser si besoin un dispositif de levage.

Consignes de sécurité pour le montage
- Faire réaliser le montage des appareils par des spécialistes qualifiés.
- Il y a un risque de blessures dû au basculement de l'appareil. Le redressement de l'appareil depuis la position couchée doit toujours être effectué par deux personnes. L'une des deux personnes sécurise alors l'appareil contre tout glissement accidentel lors du redressement. Porter l'équipement de protection individuel !
- Il y a un risque de blessures dû au basculement de l'appareil. Dans la position redressée, il y a un risque de basculement de la LCU CW aussi longtemps qu'elle n'est pas intégrée dans la baie serveurs et qu'elle n'est pas fixée selon les règles de l'art. Assurer l'appareil en position redressée par la deuxième personne.
- Il y a un risque d'écrasement lors de l'intégration de l'appareil dans la baie serveurs, entre les arêtes externes de l'appareil et le profilé de l'ossature sur tout le pourtour de l'armoire. Porter l'équipement de protection individuel !

Consignes de sécurité pour l'installation
- Il y a un risque d'écrasement lors de l'intégration de l'étanchéité dans la baie serveurs. Porter l'équipement de protection individuel !
- Il y a un risque de coincement et de coupure lors du vissage et de la réalisation de l'étanchéité de la conduite de fluide frigorigène. Porter l'équipement de protection individuel !
- S'assurer qu'après l'installation, les conduites de fluide frigorigène ne gênent pas le flux d'air à travers l'appareil.
- Seuls les électriciens spécialisés ou les personnes dûment instruites opérant sous la direction et la surveillance d'un électricien spécialisé, sont autorisés à pratiquer des interventions sur les installations ou appareils électriques, conformément aux règles de l'électrotechnique.
- Il faut utiliser uniquement des outils isolés. Porter l'équipement de protection individuel !
- La tension réseau doit correspondre aux données indiquées sur le schéma électrique / la plaquette signalétique.
- Un montage et une installation incorrects présentent un risque de formation d'eau de condensation dans l'appareil, ce qui peut entraîner un court-circuit électrique ou une fuite de liquide.

Consignes de sécurité pour l'exploitation
- Il y a un risque de dysfonctionnements ou de destruction. Ne pas effectuer de modifications sur l'appareil ! Utiliser uniquement des pièces de rechange d'origine.
- Lorsque la LCU CW est en fonctionnement, le niveau sonore peut être augmenté, en particulier lorsque l'appareil est utilisé directement depuis l'écran. Porter l'équipement de protection individuel !
- Le bon fonctionnement de l'appareil ne peut être garanti que s'il est utilisé dans les conditions ambiantes prévues. Veillez au maximum à ce que les conditions ambiantes de référence, par ex. : température, humidité, pureté de l'air, soient respectées.
- Le fluide nécessaire à la régulation, par ex. l'eau de refroidissement, doit être présent pendant toute la durée de fonctionnement de l'appareil.
- En cas de fuite, il existe un risque de blessure dû à l'écoulement du fluide de refroidissement, en particulier du glycol. Portez l'équipement de protection individuelle, absorbez le liquide de refroidissement répandu avec un chiffon ou un liant approprié et éliminez immédiatement la cause des fuites.
- Le détecteur de fuite installé dans l'appareil sert uniquement à la détection de fuites fonctionnelles et ne doit pas être utilisé comme détecteur au sein d'une chaîne de sécurité au niveau de l'installation.
- Il y a un risque de blessure dû aux hélices des ventilateurs. Éloigner les personnes et les objets des rotors des ventilateurs. Ouvrir les protections uniquement lorsque le courant est coupé et que les rotors sont à l'arrêt ! N'effectuer aucune tâche sans protection mécanique ! Pour les travaux d'entretien, arrêter le ventilateur ! Nouer les cheveux longs ! Ne pas porter de vêtements lâches ! Après la coupure de courant, le ventilateur redémarre automatiquement.

Consignes de sécurité pour l'entretien
- Avant de réaliser des travaux d'entretien ou une recherche de défaut sur l'appareil, celui-ci doit tout d'abord être mis hors tension et sécurisé. Débrancher pour cela le raccordement au réseau ou utiliser le dispositif de coupure multipolaire dans l'alimentation et le verrouiller contre toute remise en circuit involontaire.
- Lors des travaux sur l'appareil, il y a un risque de coupures en raison notamment des arêtes vives de l'échangeur thermique. Se munir de l'équipement de protection individuel avant les travaux de montage et de nettoyage !
- Lors du démontage et du montage d'un module de ventilation, il existe un risque de blessure dû aux arêtes vives à l'intérieur de la LCU CW, à une chute du module, aux vitesses élevées de l'air et au bruit. Porter l'équipement de protection individuel !
- Respecter la fiche technique de sécurité correspondante lors de tous les travaux avec l'agent de refroidissement.

Consignes de sécurité pour la mise à l'arrêt
- Les profanes ne peuvent pas assurer le processus de travail requis pour la mise à l'arrêt. Ces travaux doivent donc être réalisés uniquement par des spécialistes qualifiés.
- Lorsque l'appareil doit être stocké ou transporté à des températures inférieures au point de congélation, vider complètement le circuit d'eau en utilisant de l'air comprimé !

Opérateurs et spécialistes
- L'installation, la mise en service, l'entretien et la maintenance du présent appareil doivent être effectués uniquement par des spécialistes qualifiés.
- L'utilisation de l'appareil qui fonctionne doit être effectuée uniquement par une personne qualifiée.
- L'appareil ne doit notamment pas être utilisé par des personnes (y compris des enfants) ayant des capacités physiques, sensorielles ou mentales restreintes ou manquant d'expérience et de connaissances, à moins qu'elles ne soient surveillées ou qu'elles ne reçoivent des instructions.
- Les enfants doivent être surveillés pour qu'ils ne jouent pas avec l'appareil.

Équipement de protection individuelle
- Pour tous les travaux sur l'appareil, en particulier lorsque le personnel peut entrer en contact avec le fluide de refroidissement (en cas d'utilisation d'un mélange eau-glycol), il faut porter l'équipement de protection individuelle, composé au moins de gants de protection étanches et de lunettes de protection.
- En outre, il est recommandé d'utiliser des protections auditives appropriées et une résille pour les cheveux lors de toute intervention à proximité de l'appareil.
- Pour tous les travaux sur la LCU CW, en particulier du côté de la sortie d'air, le port de lunettes de protection est recommandé afin d'éviter les blessures oculaires dues aux vitesses élevées de l'air.

NL Veiligheidsvoorschriften

Algemeen geldende veiligheidsvoorschriften
- Neem de volgende algemene veiligheidsvoorschriften in acht.
- Draag tijdens alle werkzaamheden aan het apparaat de voorgeschreven persoonlijke beschermingsmiddelen.
- Breng geen wijzigingen aan bij de LCU CW, die niet in de geldende montage- of bedieningshandleiding zijn beschreven.
- De LCU CW mag uitsluitend met de door Rittal aangegeven systeemtoebehoren worden gecombineerd en gebruikt.
- Neem naast deze algemene veiligheidsvoorschriften ook altijd de specifieke veiligheidsvoorschriften in acht bij het uitvoeren van de in de volgende hoofdstukken beschreven werkzaamheden.
- Er bestaat letselgevaar als gevolg van elektrische schokken als het apparaat met aangesloten netsteker wordt geopend. Alleen technici en speciaal hiervoor opgeleide personen mogen het apparaat openen en reparaties uitvoeren.

Veiligheidsvoorschriften voor transport
- Er bestaat letselgevaar als gevolg van omlaag vallende lasten. Zorg dat u zich bij het transport van het apparaat met een hefwagen, heftruck of kraan nooit onder de zwevende last bevindt! Gebruik uitsluitend geschikte transportmiddelen.
- Er bestaat letselgevaar bij het doorsnijden van de aangespannen omsnoeringsbanden. Draag altijd de persoonlijke beschermingsmiddelen!
- Er bestaat letselgevaar door het hoge gewicht van het apparaat. Neem het maximaal toegestane tilgewicht voor personen in acht. Gebruik eventueel een hefwerktuig.

Veiligheidsvoorschriften voor montage
- Laat de montage van de apparaten uitvoeren door gekwalificeerde technici.
- Er bestaat letselgevaar door het kantelen van het apparaat. Om het apparaat vanuit liggende positie rechtop te plaatsen zijn altijd twee personen nodig. Een van beide personen zorgt dat het apparaat tijdens het rechtop plaatsen niet per ongeluk weg kan glijden. Draag altijd de persoonlijke beschermingsmiddelen!
- Er bestaat letselgevaar door het kantelen van het apparaat. Zolang de LCU CW nog niet in het serverrack is ingebouwd en deskundig is vastgezet, bestaat er in rechtopstaande positie gevaar dat het apparaat kantelt. Laat een tweede persoon het apparaat in rechtopstaande positie tegenhouden.
- Bij plaatsing van het apparaat in het serverrack bestaat het gevaar bekneld te raken tussen de buitenzijde van het apparaat en het rondom lopende frame van het rack. Draag altijd de persoonlijke beschermingsmiddelen!

Veiligheidsvoorschriften voor installatie
- Er bestaat gevaar voor beknelling bij het aanbrengen van de scheidingswand in het serverrack. Draag altijd de persoonlijke beschermingsmiddelen!
- Er bestaat gevaar voor beknelling en snijwonden bij het vastschroeven en afdichten van de koelmiddelleidingen. Draag altijd de persoonlijke beschermingsmiddelen!
- Zorg dat de koelmiddelleidingen na de installatie de luchtstroming door het apparaat niet hinderen.
- Werkzaamheden aan elektrische installaties of bedrijfsmiddelen mogen uitsluitend volgens de elektrotechnische voorschriften worden uitgevoerd door een elektricien of door geïnstrueerd personeel onder leiding en toezicht van een elektricien.
- Gebruik uitsluitend spanningsgeïsoleerd gereedschap. Draag altijd de persoonlijke beschermingsmiddelen!
- De spanningsgegevens in het schakelschema/op het typeplaatje moeten met de netspanning overeenkomen.
- Door onjuiste montage en installatie bestaat het gevaar voor condensvorming in het apparaat. Dit kan kortsluiting of het naar buiten treden van vloeistof tot gevolg hebben.

Veiligheidsvoorschriften voor bediening
- Er bestaat gevaar voor storingen of onherstelbare beschadiging. Breng geen wijzigingen aan het apparaat aan! Gebruik uitsluitend originele reservedelen.
- Tijdens bedrijf van de LCU CW kan er met name bij bediening van het apparaat direct via het display een verhoogde geluidsemissie optreden. Draag de persoonlijke beschermingsmiddelen!
- De correcte werking van het apparaat kan alleen worden gewaarborgd wanneer het onder de beoogde omgevingsomstandigheden wordt gebruikt. Controleer indien mogelijk of de aan de configuratie ten grondslag liggende omgevingsomstandigheden, bijvoorbeeld: temperatuur, luchtvochtigheid, luchtzuiverheid, in acht worden genomen.
- Het voor de regeling noodzakelijke koelmedium moet tijdens de volledige bedrijfstijd van het apparaat zijn aangesloten.
- Bij het optreden van lekkages bestaat letselgevaar als gevolg van naar buiten getreden koelmedium, met name glycol. Draag de persoonlijke beschermingsmiddelen, dep het uitgetreden koelmedium op met een geschikte doek of bindmiddel en verhelp de oorzaak van de lekkage onmiddellijk.
- De in het apparaat geïntegreerde lekkagesensor dient alleen voor het detecteren van een lekkage en mag niet als sensor in een veiligheidsketen op installatieniveau worden gebruikt.
- Bij de schoepenraderen van de ventilatoren bestaat letselgevaar. Houd personen en voorwerpen uit de buurt van de schoepenraderen van de ventilatoren! Open afdekplaten pas bij onderbroken stroomtoevoer en stilstaande schoepenraderen! Voer geen werkzaamheden uit zonder mechanische bescherming! Schakel de desbetreffende ventilator bij onderhoudswerkzaamheden uit! Bind lange haren bij elkaar! Draag geen loszittende kleding! Na een spanningsonderbreking begint de ventilator automatisch weer te draaien!

Veiligheidsvoorschriften voor onderhoud
- Voordat er onderhoudswerkzaamheden worden uitgevoerd of storingen worden opgespoord moet het apparaat eerst veilig spanningsvrij worden geschakeld. Neem hiervoor de netaansluiting los of gebruik de meerpolige stroomonderbreking in de voedingskabel en beveilig het apparaat tegen per ongeluk opnieuw inschakelen.
- Bij het uitvoeren van werkzaamheden aan het apparaat bestaat het gevaar voor snijwonden, vooral door de scherpe randen van het warmtewisselaarmoduul. Draag bij montage- en reinigingswerkzaamheden de persoonlijke beschermingsmiddelen!
- Bij het uit- en inbouwen van een ventilatormoduul bestaat letselgevaar door scherpe randen in het interieur van de LCU CW. Ook bestaat er risico dat het moduul valt en moet rekening worden gehouden met hoge luchtsnelheden en lawaai. Draag de persoonlijke beschermingsmiddelen!
- Neem tijdens het werken met het koelmedium de informatie op het bijbehorende veiligheidsinformatieblad in acht.

Veiligheidsvoorschriften met betrekking tot uitschakeling van het apparaat
- Ondeskundige personen kunnen de vereiste workflow met betrekking tot het uitschakelen niet waarborgen. Daarom mogen deze werkzaamheden alleen door gekwalificeerde technici worden uitgevoerd.
- Bij opslag en transport onder het vriespunt dient het watercircuit compleet met perslucht te worden geleegd!

Bedienend personeel en technici
- Werkzaamheden op het gebied van installatie, inbedrijfstelling, onderhoud en reparatie van dit apparaat mogen uitsluitend door gekwalificeerde technici worden uitgevoerd.
- Het apparaat mag tijdens het bedrijf uitsluitend worden bediend door een persoon die hiertoe is geïnstrueerd.
- Het apparaat mag in het bijzonder niet door personen (inclusief kinderen) met fysieke, sensorische of geestelijke beperkingen of gebrek aan ervaring en kennis worden gebruikt, tenzij dit onder toezicht gebeurt of zij instructie krijgen.
- Kinderen moeten onder toezicht staan, zodat ze niet met het apparaat spelen.

Persoonlijke beschermingsmiddelen
- Tijdens alle werkzaamheden aan het apparaat, vooral wanneer het personeel in contact kan komen met het koelmedium (bij gebruik van een water-glycolmengsel), moeten de persoonlijke beschermingsmiddelen worden gedragen. Deze bestaan ten minste uit waterdichte veiligheidshandschoenen en een veiligheidsbril.
- Verder wordt bij alle werkzaamheden in de buurt van het apparaat het gebruik van geschikte gehoorbescherming en een haarnet aanbevolen.
- Bij alle werkzaamheden aan de LCU CW, vooral aan de uitblaaszijde, wordt het dragen van een veiligheidsbril aangeraden om oogletsel als gevolg van de hoge luchtsnelheden te voorkomen.

SE Säkerhetsinstruktioner

Allmänt gällande säkerhetsinformation
- Vänligen observera följande allmänna säkerhetsinstruktioner.
- Använd föreskriven personlig skyddsutrustning under allt arbete på enheten.
- Gör inga ändringar i LCU CW som inte beskrivs i denna eller tillämpliga monterings- och bruksanvisningar.
- LCU CW får endast kombineras och användas med de systemtillbehör som tillhandahålls av Rittal.
- Utöver dessa allmänna säkerhetsinstruktioner, var noga med att även följa de specifika säkerhetsinstruktionerna i samband med de aktiviteter som anges i följande kapitel.
- Det finns risk för skador på grund av elektriska stötar om enheten öppnas med nätkontakten isatt. Att öppna enheten och reparationer får endast utföras av proffs och utbildade personer.

Säkerhetsinstruktioner för transport
- Det finns risk för skador på grund av fallande laster. Kliv inte under den upphängda lasten när du transporterar enheten med en gaffeltruck eller kran! Använd endast lämpliga transportmedel.
- Det finns risk för personskador vid skärning genom det förspända bandet. Använd personlig skyddsutrustning!
- Det finns risk för skador på grund av enhetens höga vikt. Observera de maximalt tillåtna vikterna som personer får lyfta för hand. Vid behov ska en lyftanordning användas.

Säkerhetsinstruktioner för montage
- Installation av utrustningen måste utföras av kvalificerad personal.
- Det finns risk för skador på grund av att enheten välter. Enheten måste alltid upprättas från liggande läge av två personer. En av de två personerna säkrar enheten mot oavsiktlig glidning under upprättande. Använd personlig skyddsutrustning!
- Det finns risk för skador på grund av att enheten välter. I upprätt läge finns det risk för att LCU CW välter så länge den ännu inte har installerats i serverskåpet och har fästs ordentligt. Ha enheten säkrad i upprätt läge av en andra person.
- Det finns risk för krossning när man sätter in enheten i serverskåpet mellan enhetens ytterkanter och skåpets omgivande ramprofil. Använd personlig skyddsutrustning!

Säkerhetsinstruktioner för installation
- Det finns risk för klämskador vid införande av skiljeväggen i serverskåpet. Använd personlig skyddsutrustning!
- Det finns risk för fastspänning och skärning när man skruvar på och tätar kylvätskeledningarna. Använd personlig skyddsutrustning!
- Säkerställ att kylvätskeledningarna inte hindrar luftflödet genom enheten efter installationen.
- Arbeten på elektriska anordningar eller utrustning får endast utföras av en behörig elektriker eller utbildad personal under ledning och uppsikt av en elektriker, och ska ske i enlighet med eltekniska regler.
- Endast spänningsisolerade verktyg får användas. Använd personlig skyddsutrustning!
- Spänningsinformationen i kretsschemat / på märkskylten ska motsvara nätspänningen.
- Det finns risk för kondens i enheten på grund av felaktig montering och installation, vilket kan leda till elektrisk kortslutning eller läckage av vätska.

Säkerhetsinstruktioner för drift
- Det finns risk för funktionsfel eller förstörelse. Gör inga ändringar på enheten! Använd endast originalreservdelar.
- Under drift av LCU CW kan en ökad ljudnivå uppstå, särskilt när enheten används direkt på displayen. Använd personlig skyddsutrustning!
- Enhetens korrekta funktion kan endast garanteras om den används under de avsedda omgivningsförhållandena. Säkerställ så långt som möjligt att de miljöförhållanden som ligger till grund för konstruktionen, såsom temperatur, luftfuktighet, luftrenhet, följs.
- Kylvattenmediet som krävs för kontrolländamål måste vara närvarande under hela driftstiden för enheten.
- Om läckage uppstår finns det risk för skador från läckt kylmedium, särskilt glykol. Applicera personlig skyddsutrustning, absorbera läckt kylvätska med lämplig trasa eller bindemedel och eliminera omedelbart orsaken till läckage.
- Läckagesensorn som är installerad i enheten används endast för funktionell läckagedetektering och får inte användas som en sensor i en säkerhetskedja på systemnivå.
- På grund av fläktarnas pumphjul finns det risk för personskador. Håll människor och föremål borta från fläktarnas pumphjul! Öppna inte täckplattorna förrän strömförsörjningen bryts och hjulen står stilla! Utför inte något arbete utan mekaniskt skydd! Stäng av respektive fläkt under underhållsarbete! Bind ihop långt hår! Bär inte löst sittande kläder! Efter spänningsavbrott startar fläkten automatiskt om!

Säkerhetsinstruktioner för underhåll
- Före allt underhållsarbete och felsökning i enheten måste enheten vara säkert avstängd i förväg. För detta ändamål, ta bort nätanslutningen eller använd den allpoliga frånkopplingsenheten i matningsledningen och säkra den mot oavsiktlig omstart.
- Vid arbete på enheten finns det risk för skärskador, särskilt på grund av skarpa kanter på värmeväxlarmodulen. Före installations- och rengöringsarbete, sätt på personlig skyddsutrustning!
- Vid borttagning och installation av en fläktmodul finns det risk för skador på grund av skarpa kanter i LCU CW:s inre, en droppe i modulen, höga lufthastigheter och buller. Använd personlig skyddsutrustning!
- Vänligen observera motsvarande säkerhetsdatablad när du arbetar med kylmediet.

Säkerhetsanvisningar för avstängning
- Lekmän ska inte garantera att det nödvändiga arbetsflödet stoppas. Därför får dessa arbeten endast utföras av kvalificerad personal.
- Vid lagring och transport under fryspunkten måste vattenkretsen tömmas fullständigt med tryckluft!

Drift och fackpersonal
- Installation, driftsättning, underhåll och reparation av denna enhet får endast utföras av kvalificerad personal.
- Enhetens drift får endast utföras av en utbildad person.
- I synnerhet får enheten inte användas av personer (inklusive barn) med begränsad fysisk, sensorisk eller mental förmåga eller brist på erfarenhet och kunskap, såvida de inte övervakas eller får instruktioner.
- Barn måste övervakas så att de inte leker med enheten.

Personlig skyddsutrustning
- Under allt arbete på enheten, särskilt om personalen kan komma i kontakt med kylmediet (vid användning av en vatten-glykolblandning), måste den personliga skyddsutrustningen, bestående av åtminstone vattentäta skyddshandskar och skyddsglasögon, bäras.
- Dessutom rekommenderas användning av lämpligt hörselskydd och ett hårnät för allt arbete i närheten av enheten.
- Vid arbete på LCU CW, särskilt på avgassidan, rekommenderas att använda skyddsglasögon för att undvika ögonskador på grund av de höga lufthastigheterna.

IT Istruzioni di sicurezza

Istruzioni di sicurezza generali
- Rispettare le seguenti istruzioni di sicurezza generali.
- Indossare sempre i dispositivi di protezione individuale specificati quando si lavora sull'unità.
- Non apportare all'unità LCU CW alcuna modifica che non sia descritta nel presente manuale o nelle relative istruzioni di montaggio e d'uso.
- La LCU CW può essere combinata e utilizzata unicamente con gli accessori di gamma previsti da Rittal.
- Oltre alle presenti istruzioni di sicurezza generali, è obbligatorio rispettare anche le avvertenze di sicurezza inerenti le operazioni indicate nei capitoli a seguire.
- Se l'unità viene aperta mentre la spina di rete è inserita, vi è il pericolo di lesioni dovute a scosse elettriche. L'unità può essere aperta e riparata solo da personale specializzato e formato.

Istruzioni di sicurezza per il trasporto
- Vi è il rischio di lesioni dovute alla caduta del carico. Non passare sotto il carico sospeso durante la movimentazione dell'unità tramite carrello elevatore, muletto o gru di sollevamento! Utilizzare esclusivamente mezzi di trasporto idonei.
- Il taglio della reggetta pretensionata comporta il rischio di lesioni. Indossare i dispositivi di protezione individuale!
- Il peso elevato dell'unità comporta il rischio di lesioni. Non superare il limite massimo di peso sollevabile dal personale. Utilizzare all'occorrenza un dispositivo di sollevamento.

Istruzioni di sicurezza per il montaggio
- Il montaggio degli apparecchi deve essere svolto solo da personale qualificato.
- Vi è il rischio di lesioni dovute al ribaltamento dell'unità. Il sollevamento dell'unità dalla posizione orizzontale deve sempre essere effettuato da due persone. Una delle due persone deve fissare l'unità per evitare slittamenti involontari durante il sollevamento. Indossare i dispositivi di protezione individuale!
- Vi è il rischio di lesioni dovute al ribaltamento dell'unità. In posizione verticale, c'è il rischio che l'unità LCU CW si ribalti se non è ancora stata installata e fissata correttamente nell'armadio server. Richiedere a una seconda persona di fissare l'unità in posizione verticale.
- Quando si inserisce l'unità nell'armadio server, vi è il rischio di schiacciamento tra i bordi esterni dell'unità e su tutto il profilo del telaio dell'armadio. Indossare i dispositivi di protezione individuale!

Istruzioni di sicurezza per l'installazione
- Rischio di schiacciamento durante l'inserimento della compartimentazione nell'armadio server. Indossare i dispositivi di protezione individuale!
- Rischio di taglio e schiacciamento durante l'avvitamento e la sigillatura delle linee frigorifere. Indossare i dispositivi di protezione individuale!
- Assicurarsi che le linee frigorifere non ostruiscano il flusso d'aria attraverso l'unità dopo la sua installazione.
- Eventuali lavori all'impianto elettrico o su componenti elettrici devono essere eseguiti esclusivamente da un tecnico elettricista oppure da personale qualificato sotto la guida e supervisione di un tecnico elettricista, in conformità alle normative previste in ambito elettrotecnico.
- Utilizzare esclusivamente utensili muniti di isolamento. Indossare i dispositivi di protezione individuale!
- Le specifiche di tensione riportate nello schema elettrico / sulla targhetta dell'unità devono corrispondere alla tensione di rete.
- Un montaggio e un'installazione non corretti possono causare la formazione di condensa all'interno dell'unità, con il rischio di cortocircuiti elettrici o perdite di refrigerante.

Istruzioni di sicurezza per il funzionamento
- Esiste il rischio di malfunzionamento o grave danneggiamento. Non apportare modifiche all'unità! Utilizzare solo pezzi di ricambio originali.
- Quando si utilizza l'LCU CW, è possibile che si verifichi un aumento del rumore, in particolare quando si controlla l'unità direttamente dal display. Indossare i dispositivi di protezione individuale!
- Il corretto funzionamento dell'unità può essere garantito solo se essa viene utilizzata nelle condizioni ambientali previste. Assicurarsi, per quanto possibile, che vengano mantenute le condizioni ambientali di riferimento per la progettazione dell'unità, ad esempio temperatura, umidità, purezza dell'aria.
- L'acqua di raffreddamento necessaria al sistema di controllo e regolazione deve essere presente per tutto il tempo di funzionamento dell'unità.
- In caso di perdite, vi è il rischio di lesioni dovute alla fuoriuscita del mezzo frigorigeno, in particolare del glicole. Indossare i dispositivi di protezione individuale, asportare il mezzo frigorigeno fuoriuscito con un panno o un legante assorbente idoneo e rimuovere immediatamente la causa della perdita.
- Il sensore di perdita installato nell'unità serve solo per rilevare le perdite funzionali e non deve essere utilizzato come sensore in una catena di sicurezza dell'impianto.
- Esiste il rischio di lesioni a causa delle giranti dei ventilatori. Tenere persone e oggetti lontani dalle giranti dei ventilatori! Aprire le coperture solo quando l'alimentazione è scollegata e le giranti sono ferme! Non eseguire alcun lavoro senza la protezione meccanica! Durante i lavori di manutenzione arrestare il rispettivo ventilatore! Raccogliere i capelli lunghi! Non indossare indumenti larghi! Dopo un'interruzione di corrente, il ventilatore si riavvia automaticamente!

Istruzioni di sicurezza per la manutenzione
- Prima di eseguire qualsiasi intervento di manutenzione o di ricerca guasti, l'unità deve essere scollegata in modo sicuro dalla rete elettrica. A tal fine, rimuovere il connettore di rete o utilizzare il dispositivo di disconnessione unipolare nella linea di alimentazione e assicurarsi che la corrente non possa essere riattivata.
- Quando si lavora sull'unità, vi è il rischio di tagli, soprattutto a causa degli spigoli vivi del modulo dello scambiatore di calore. Indossare i dispositivi di protezione individuale prima di qualsiasi lavoro di installazione e pulizia!
- Durante l'allestimento e il montaggio di un modulo di ventilazione, vi è il rischio di lesioni causate dagli spigoli vivi all'interno della LCU CW, dalla caduta del modulo, dall'elevata velocità dell'aria e dal rumore. Indossare i dispositivi di protezione individuale!
- Attenersi alla scheda dei dati di sicurezza del refrigerante quando si opera con il refrigerante.

Istruzioni di sicurezza per la messa fuori servizio
- Il personale non esperto non può garantire la procedura di lavoro corretta per la messa fuori servizio. Pertanto, questo lavoro deve essere eseguito solo da specialisti qualificati.
- In caso di conservazione a magazzino e di trasporto a temperature inferiori al punto di rugiada, il circuito idrico deve essere svuotato completamente con l'impiego di aria compressa!

Operatori e tecnici specializzati
- Installazione, messa in funzione, manutenzione e riparazione di questa unità devono essere eseguite esclusivamente da personale tecnico specializzato.
- Quando in funzione, l'unità deve essere utilizzata solo da personale qualificato.
- In particolare, l'unità non deve essere utilizzata da persone (compresi i bambini) con limitate capacità fisiche, sensoriali o cognitive, o con mancanza di esperienza e/o conoscenza, a meno che esser non siano supervisionate o istruite sull'uso dell'unità.
- I bambini devono essere sorvegliati per evitare che giochino con l'unità.

Dispositivi di protezione individuale
- I dispositivi di protezione individuale, costituiti almeno da guanti protettivi impermeabili e occhiali di sicurezza, devono essere sempre indossati quando si esegue qualsiasi operazione sull'unità, in particolare quando il personale può entrare in contatto con il mezzo frigorigeno (in caso di utilizzo della miscela di acqua e glicole).
- Inoltre, si raccomanda l'uso di un'adeguata protezione per le orecchie e di una retina per capelli durante qualsiasi intervento in prossimità dell'unità.
- Quando si lavora sulla LCU CW, soprattutto sul lato di scarico, si raccomanda di indossare occhiali protettivi per evitare lesioni agli occhi causate dalle elevate velocità dell'aria.

ES Instrucciones de seguridad

Instrucciones de seguridad generales
- Rogamos tenga en cuenta las siguientes instrucciones de seguridad generales.
- Utilice al realizar cualquier trabajo en la unidad el equipo de protección personal preceptivo.
- No realice modificaciones en la LCU CW que no se encuentren descritas en estas instrucciones de montaje y uso o en las instrucciones suministradas.
- La LCU CW debe combinarse y utilizarse exclusivamente con los accesorios previstos para ello por parte de Rittal.
- Tenga en cuenta junto a las indicaciones de seguridad generales, también las indicaciones de seguridad específicas en relación con las tareas descritas en los siguientes capítulos.
- La apertura del equipo con el conector de red conectado puede provocar lesiones por descarga eléctrica. La apertura del equipo y las reparaciones deben ser realizadas exclusivamente por personal técnico o autorizado.

Indicaciones de seguridad para el transporte
- Existe riesgo de lesiones a causa de la caída de cargas. ¡No situarse bajo la carga durante el transporte del equipo con traspalé, montacargas o grúa! Utilice exclusivamente medios de transporte adecuados.
- Existe riesgo de lesiones al cortar los flejes. ¡Utilice siempre el equipo de protección personal!
- Existe riesgo de lesiones a causa del elevado peso del equipo. Rogamos tenga en cuenta el peso máximo permitido que puede levantar una persona. En caso necesario deberá utilizarse un dispositivo elevador.

Indicaciones de seguridad para el montaje
- El montaje de los equipos debe ser realizado por personal técnico cualificado.
- Existe riesgo de lesiones a causa de la posibilidad de vuelco del equipo. La acción de levantar la máquina debe ser realizada siempre por dos personas. De esta forma, una de las dos personas puede proteger el equipo contra el desplazamiento involuntario durante el levantamiento. ¡Utilice siempre el equipo de protección personal!
- Existe riesgo de lesiones a causa de la posibilidad de vuelco del equipo. En posición vertical, hasta que la LCU CW no se haya instalado en el rack para servidores y se haya fijado correctamente, existe el riesgo que vuelque. Una segunda persona debe asegurar el equipo en posición vertical.
- Durante el montaje del equipo en el rack para servidores existe el riesgo de aplastamiento entre el canto exterior del equipo y el perfil continuo del rack. ¡Utilice siempre el equipo de protección personal!

Indicaciones de seguridad para la instalación
- Existe riesgo de aplastamiento al colocar los elementos de estanqueidad en el rack para servidores. ¡Utilice siempre el equipo de protección personal!
- Existe riesgo de aplastamiento y corte al atornillar y aislar los conductos del medio refrigerante. ¡Utilice siempre el equipo de protección personal!
- Asegúrese de que los conductos del medio refrigerante no obstaculicen el flujo de aire a través del equipo tras la instalación.
- Los trabajos en una instalación o en componentes eléctricos deben ser realizados sólo por personal técnico o por personal autorizado bajo la supervisión de un técnico.
- Utilizar siempre herramientas aisladas. ¡Utilice siempre el equipo de protección personal!
- Los datos de tensión del esquema de conexiones / de la placa de características deben corresponderse con la tensión de red.
- Un montaje e instalación incorrectos pueden provocar la formación de condensación en el equipo, que a su vez puede provocar un cortocircuito eléctrico o fugas de líquido.

Indicaciones de seguridad durante el funcionamiento
- Existe riesgo de funcionamiento anómalo o deterioro. ¡No realizar modificaciones en el equipo! ¡Utilice únicamente recambios originales!
- Durante el funcionamiento de la LCU CW puede producirse un aumento del nivel de ruido, especialmente cuando se utiliza el equipo directamente en el display. ¡Utilice siempre el equipo de protección personal!
- El funcionamiento correcto del equipo sólo puede garantizarse si se realiza una manipulación en las condiciones ambientales previstas. Garantice, en la medida en que sea posible, que las condiciones ambientales, por ej. temperatura, humedad del aire, pureza del aire, sean las adecuadas.
- El agua de refrigeración, necesaria para el funcionamiento, debe estar disponible durante todo el tiempo de servicio.
- Las fugas de medio refrigerante pueden provocar lesiones, especialmente causadas por el glicol. Utilice el equipo de protección personal, retire el medio refrigerante derramado con un paño adecuado o un aglutinante y repare de inmediato la causa de la fuga.
- El sensor de fugas instalado en el equipo solo sirve para la detección de fugas y no debe utilizarse como sensor en la cadena de seguridad de la instalación.
- Las aspas de los ventiladores pueden provocar lesiones. ¡Mantener alejadas a personas y objetos de las aspas de los ventiladores! ¡Abrir las chapas cubierta únicamente tras la desconexión de la corriente y con las aspas sin movimiento! ¡No realizar trabajos sin protección mecánica! ¡Para realizar tareas de mantenimiento parar el ventilador correspondiente! ¡Llevar el pelo largo recogido! ¡No llevar prendas de vestir holgadas! ¡Tras una desconexión de la corriente el ventilador se pone en marcha de forma automática!

Indicaciones de seguridad para el mantenimiento
- Antes de realizar cualquier tarea de mantenimiento o de localización de fallo, deberá desconectarse el equipo de la red eléctrica. Para ello, retire el conector de la red o utilice el dispositivo de desconexión omnipolar del cable de alimentación y asegure el equipo contra una puesta en marcha involuntaria.
- Durante los trabajos en el equipo existe el riesgo de lesiones por cortes, especialmente a causa de los bordes afilados del módulo del intercambiador de calor. ¡Utilice el equipo de protección personal al realizar las tareas de montaje y limpieza!
- Durante el desmontaje y montaje de un módulo de ventiladores existe riesgo de lesiones por cantos afilados en el interior de la LCU CW, riesgo de caída del módulo, altas velocidades de aire y ruido. ¡Utilice siempre el equipo de protección personal!
- Observe la hoja de seguridad correspondiente al realizar cualquier tarea con el medio refrigerante.

Indicaciones de seguridad para la desconexión
- El personal no técnico no puede garantizar el proceso necesario para la desconexión. Por lo cual, deberá ser personal técnico cualificado quien realice esta tarea.
- ¡Antes de almacenar y transportar el equipo por debajo del punto de congelación debe vaciarse el circuito de agua con aire comprimido!

Operarios y personal cualificado
- El montaje, la puesta en marcha, el mantenimiento y las reparaciones de este equipo deben ser realizadas únicamente por personal técnico cualificado.
- Solo una persona con los conocimientos adecuados puede hacer uso del equipo en funcionamiento.
- El equipo no debe ser utilizado por personas (incluyendo a niños) con capacidades físicas, sensoriales o intelectuales reducidas o con falta de experiencia y/o conocimientos, a no ser que sean supervisadas por una persona responsable de su seguridad o hayan sido instruidas por ella sobre el uso del equipo.
- Debe evitarse el acceso de los niños al equipo.

Equipo de protección personal
- Durante los trabajos en el equipo, especialmente cuando el personal pueda entrar en contacto con el medio refrigerante (si se utiliza una mezcla de agua y glicol), debe utilizarse un equipo de protección personal, compuesto como mínimo por guantes de protección impermeables, así como gafas de protección.
- Además, se recomienda el uso de una protección auditiva y una red para el pelo durante los trabajos en las proximidades del equipo.
- Siempre que se trabaje en la LCU CW, especialmente en el lado de salida del aire, se recomienda el uso de gafas de protección para evitar lesiones oculares debidas a las altas velocidades del aire.

FI Turvallisuusohjeet

Yleisesti voimassa olevat turvallisuusohjeet
- Noudata seuraavia yleisiä turvallisuusohjeita.
- Käytä määräyksien mukaisia henkilönsuojaimia kaikissa laitteelle tehtävissä töissä.
- Älä tee LCU CW -jäähdyttimeen muutoksia, joita ei ole kuvattu tässä tai muissa voimassa olevissa asennus- ja käyttöohjeissa.
- LCU CW -jäähdyttimen saa yhdistää ja sitä saa käyttää vain Rittalin hyväksymien järjestelmälisävarusteiden kanssa.
- Noudata näiden yleisten turvallisuusohjeiden lisäksi ehdottomasti myös erityisiä turvallisuusohjeita, kun suoritat seuraavissa luvuissa kuvattuja toimenpiteitä.
- On olemassa sähköiskun aiheuttama loukkaantumisvaara, jos laite avataan verkkopistokkeen ollessa pistorasiassa. Vain alan ammattilaiset ja opastuksen saaneet henkilöt saavat avata laitteen ja korjata sitä.

Turvallisuusohjeet kuljetusta varten
- Putoavista kuormista aiheutuu loukkaantumisvaara. Älä astu riippuvan kuorman alle, kun laitetta kuljetetaan nostovaunulla, haarukkatrukilla tai nosturilla! Käytä vain soveltuvia kuljetusvälineitä.
- Esijännitettyjen vanteiden leikkaamisesta aiheutuu loukkaantumisvaara. Käytä henkilönsuojaimia!
- Laitteen suuresta painosta aiheutuu loukkaantumisvaara. Huomioi sallittu enimmäisnostopaino. Käytä tarvittaessa nostolaitetta.

Turvallisuusohjeet asennusta varten
- Anna vain pätevien ammattilaisten asentaa laitteet.
- Laitteen kallistumisesta aiheutuu loukkaantumisvaara. Laitteen pystyyn nostamiseen kyljellään olevasta asennosta tarvitaan aina kaksi ihmistä. Tällöin toinen henkilöistä varmistaa laitetta pystyttämisen aikana, että se ei pääse tahattomasti luiskahtamaan. Käytä henkilönsuojaimia!
- Laitteen kallistumisesta aiheutuu loukkaantumisvaara. LCU CW -jäähdyttimen ollessa pystyasennossa siihen kohdistuu kallistumisvaara, kun jäähdytintä ei vielä ole asennettu palvelinkaappiin ja asianmukaisesti kiinnitetty. Kahden henkilön on varmistettava laite pystyasennossa.
- Kun laite asetetaan palvelinkaappiin, syntyy puristumisvaara laitteen ulkoreunojen ja kaappia ympäröivän runkoprofiilin väliin. Käytä henkilönsuojaimia!

Turvallisuusohjeet asennusta varten
- Syntyy puristumisvaara, kun osio viedään palvelinkaappiin. Käytä henkilönsuojaimia!
- Syntyy puristumis- ja leikkautumisvaara, kun jäähdytysainejohtoja ruuvataan kiinni ja tiivistetään. Käytä henkilönsuojaimia!
- Varmista, että jäähdytysnestejohdot eivät estä laitteen läpi kulkevaa ilmavirtaa asennuksen jälkeen.
- Sähkötöitä saavat suorittaa vain koulutetut sähköalan ammattilaiset tai perehdytetyt työntekijät sähköalan ammattilaisen johdolla ja valvonnassa sääntöjen mukaisesti.
- Käytä vain jännite-eristettyjä työkaluja. Käytä henkilönsuojaimia!
- Kytkentäkaaviossa/tyyppikilvessä ilmoitettujen jännitetietojen on vastattava verkkojännitettä.
- Virheellinen asennus voi aiheuttaa kondensaatin muodostumista laitteeseen, mikä voi johtaa oikosulkuun tai nesteen ulosvuotamiseen.

Turvallisuusohjeet käyttöä varten
- On olemassa virhetoimintojen ja rikkoutumisen vaara. Älä tee laitteeseen muutoksia! Käytä vain alkuperäisiä varaosia.

- Käytettäessä LCU CW -jäähdytintä erityisesti suoraan näytöltä melutaso voi nousta korkeaksi. Käytä henkilönsuojaimia!
- Laitteen moitteeton toiminta voidaan taata ainoastaan, kun sitä käytetään määritellyissä ympäristöolosuhteissa. Varmista mahdollisuuksien mukaan, että suunniteltuja ympäristöolosuhteita, kuten lämpötilaa, ilmankosteutta ja ilman puhtautta, noudatetaan.
- Ohjaukseen käytettävää jäähdytysvettä tulee olla laitteessa koko sen käyttöiän ajan.
- Vuotojen syntyessä ulosvuotava jäähdytysaine, erityisesti glykoli, aiheuttaa loukkaantumisvaaran. Käytä henkilönsuojaimia, kerää vuotanut jäähdytysaine soveltuvalla liinalla tai sideaineella ja poista vuodon syy välittömästi.
- Laitteeseen asennettu vuotoanturi on tarkoitettu vain toiminnalliseen vuodon havaitsemiseen, eikä sitä saa käyttää turvallisuusketjun anturina laitteistotasolla.
- Tuulettimien juoksupyörät aiheuttavat loukkaantumisvaaran. Pidä henkilöt ja esineet poissa tuulettimien juoksupyöristä! Avaa peitinlevyt vain silloin, jos virransyöttö on keskeytynyt ja juoksupyörät ovat pysähtyneet! Älä tee töitä ilman mekaanista suojaa! Pysäytä kulloinenkin tuuletin huoltotöitä tehtäessä! Sido pitkät hiukset! Älä käytä löysiä vaatteita! Tuuletin käynnistyy automaattisesti jännitekatkoksen jälkeen!

Turvallisuusohjeet huoltoa varten
- Ennen kaikkia huoltotöitä ja ennen vianetsintää laite on kytkettävä varmasti jänniteettömäksi. Poista tällöin verkkoliitäntä tai käytä johdossa kaikkinapaista katkaisulaitetta ja varmista tahatonta uudelleen päällekytkemistä vastaan.
- Laitteille tehtävissä töissä on leikkuuvammojen vaara, jonka aiheuttaa erityisesti lämmönvaihtomoduulin terävät reunat. Aseta henkilönsuojaimet ennen asennus- ja puhdistustöitä!
- Tuuletinmoduulia irrotettaessa ja asennettaessa on LCU CW -jäähdyttimen sisätilan terävien reunojen, moduulin putoamisen, suurien ilmanopeuksien ja melun aiheuttama loukkaantumisvaara. Käytä henkilönsuojaimia!
- Huomioi asiaankuuluva käyttöturvallisuustiedote aina jäähdytysainetta käsitellessäsi.

Turvallisuusohjeet pysäyttämistä varten
- Maallikot eivät voi taata tarvittavaa työnkulkua pysäyttämistä varten. Siksi nämä työt saavat suorittaa vain pätevät ammattilaiset.
- Jos laitetta kuljetetaan tai varastoidaan pakkasessa, vesikierto on tyhjennettävä kokonaan paineilman avulla!

Käyttöhenkilökunta ja ammattilaiset
- Laitteen asennuksen, käyttöönoton, huollon ja kunnostuksen saavat suorittaa vain pätevät ammattilaiset.
- Laitetta saa käyttää sen ollessa käynnissä vain opastuksen saanut henkilö.
- Laitetta ei saa käyttää erityisesti henkilöt (mukaan lukien lapset), joilla on rajoitetut fyysiset, sensoriset tai henkiset kyvyt taikka puuttuva kokemus ja tiedot, paitsi jos heitä valvotaan tai he saavat opastuksen.
- Lapsia on valvottava, että he eivät leiki laitteella.

Henkilönsuojaimet
- Kaikissa laitteelle tehtävissä töissä, erityisesti jos henkilökunta voi joutua kosketuksiin jäähdytysaineen kanssa (käytettäessä vesi-glykoliseosta), on käytettävä henkilönsuojaimia, johon kuuluvat vähintään vedenkestävät suojakäsineet ja suojalasit.
- Sen lisäksi suositellaan käyttämään soveltuvaa kuulosuojainta ja hiusverkkoa kaikissa laitteen lähellä tehtävissä töissä.
- Kaikissa LCU CW -jäähdyttimelle tehtävissä töissä, erityisesti puhalluspuolelle tehtävissä töissä, suositellaan suojalasien käyttöä. Ne estävät suurten ilmannopeuksien aiheuttaman silmien loukkaantumisen.

DK Sikkerhedsanvisninger

Generelt gældende sikkerhedsanvisninger
- Vær opmærksom på følgende generelle sikkerhedsanvisninger.
- Bær de foreskrevne personlige værnemidler ved alt arbejde med enheden.
- Undlad at foretage ændringer på LCU CW, som ikke er beskrevet i denne eller i den gældende monterings- og betjeningsvejledning.
- LCU CW må kun kombineres og betjenes med systemtilbehør fra Rittal.
- Ud over disse generelle sikkerhedsanvisninger skal de specifikke sikkerhedsanvisninger i forbindelse med de aktiviteter, der er nævnt i de efterfølgende kapitler, også overholdes.
- Der er risiko for personskade på grund af elektrisk stød, hvis enheden åbnes med netstikket tilsluttet. Enheden må kun åbnes og reparationer kun udføres af fagfolk og uddannede personer.

Sikkerhedsanvisninger til transport
- Der er risiko for personskade ved nedfaldende last. Når enheden transporteres med palleløfter, gaffeltruck eller kran, må man ikke træde ind under den hængende last! Brug kun egnede transportmidler.
- Der er risiko for personskade ved gennemskæring af de forspændte stropper. Bær personlige værnemidler!
- Der er risiko for personskade på grund af enhedens høje vægt. Overhold den maksimalt tilladte løftevægt for personer. Brug en løfteanordning, hvis vægten overskrider den tilladte løftevægt.

Sikkerhedsanvisninger til montering
- Få udstyret installeret af kvalificerede fagfolk.
- Der er risiko for personskade, hvis enheden vælter. Opstilling af enheden fra liggende stilling skal altid udføres af to personer. En af de to personer sikrer enheden mod utilsigtet udskridning, mens den opstilles. Bær personlige værnemidler!
- Der er risiko for personskade, hvis enheden vælter. I opretstående stilling er der risiko for, at LCU CW vælter, så længe den endnu ikke er installeret i serverskabet og er fikseret korrekt. Sørg for, at den anden person sikrer enheden i opretstående stilling.
- Der er risiko for klemning, når enheden sættes ind i serverskabet mellem enhedens yderkanter og skabets omgivende rammeprofil. Bær personlige værnemidler!

Sikkerhedsanvisninger til installation
- Der er risiko for klemning ved indføring af skillevæggen i serverskabet. Bær personlige værnemidler!
- Der er risiko for klemning og snitsår ved påskruning og tætning af kølemiddelslangerne. Bær personlige værnemidler!
- Efter installationen skal du sikre dig, at kølemiddelslangerne ikke begrænser luftstrømmen gennem enheden.
- Arbejde på elektriske anlæg eller driftsmidler må kun udføres af en autoriseret el-installatør eller personale, der har modtaget undervisning heri, og som er under opsyn af en autoriseret el-installatør, der sikrer overholdelse af de gældende installations-foreskrifter.
- Der må kun bruges spændingsfrit værktøj. Bær personlige værnemidler!
- Spændingsoplysningerne i kredsløbsdiagrammet/på typeskiltet skal stemme overens med netspændingen.
- Forkert montering og installation medfører risiko for kondensdannelse i enheden, hvilket kan føre til en elektrisk kortslutning eller udstrømmende væske.

Sikkerhedsanvisning for betjening
- Der er risiko for funktionsfejl eller ødelæggelse af komponenter. Undlad at foretage ændringer på enheden! Anvend kun originale reservedele.
- Når LCU CW er i drift, kan der, især når enheden betjenes direkte på displayet, opstå et forhøjet støjniveau. Bær personlige værnemidler!
- Fejlfri funktion af enheden kan kun garanteres, hvis den betjenes under de tilsigtede miljøforhold. Så vidt muligt sikres, at de miljøforhold, der ligger til grund for dimensioneringen, f.eks. temperatur, luftfugtighed, luftrenhed, opretholdes.
- Det reguleringsteknisk nødvendige medium kølevand skal være til stede under hele enhedens driftstid.
- Hvis der opstår utætheder, er der risiko for personskade ved udslip af kølemedie, især glykol. Bær personlige værnemidler, tør eventuelt spildt kølemiddel op med en egnet klud eller et egnet bindemiddel, og afhjælp årsagen til lækagen med det samme.
- Lækagesensoren, som er installeret i enheden, anvendes kun til funktionel lækagedetektion og må ikke anvendes som sensor i en sikkerhedskæde på systemniveau.
- Der er risiko for personskade som følge af ventilatorernes rotorblade. Sørg for, at personer og genstande ikke kommer i nærheden af ventilatorernes rotorblade! Åbn ikke afdækningspladerne, før strømforsyningen er blevet afbrudt, og rotorbladene står helt stille! Udfør ikke arbejde uden mekanisk beskyttelse! Sluk for den pågældende ventilator under vedligeholdelsesarbejde! Bind langt hår sammen! Bær ikke løst tøj! Efter spændingsafbrydelse starter ventilatoren automatisk igen!

Sikkerhedsanvisninger for vedligeholdelse
- Før alt vedligeholdelsesarbejde og før fejlfinding i enheden, skal strømforsyningen til enheden først afbrydes helt. For at gøre dette fjernes nettilslutningen, eller også anvendes den flerpolede afbrydelsesanordning i forsyningsledningen, og derudover sikres enheden mod utilsigtet genstart.
- Ved arbejde på enheden er der risiko for snitskader, især som følge af skarpe kanter på varmevekslermodulet. Tag personlige værnemidler på inden montering og rengøring!
- Ved afmontering og påmontering af et ventilatormodul er der risiko for personskade som følge af skarpe kanter inde i LCU CW, hvis modulet falder ned, høje lufthastigheder og støj. Bær personlige værnemidler!
- Ved alt arbejde med kølemediet skal det tilhørende sikkerhedsdatablad overholdes.

Sikkerhedsanvisninger for nedlukning
- Lægfolk kan ikke med garanti udføre den nødvendige arbejdsproces for nedlukning. Derfor må dette arbejde kun udføres af kvalificerede specialister.
- Ved opbevaring og transport under frysepunktet skal vandkredsløbet tømmes helt med trykluft!

Betjenings- og fagpersonale
- Installation, idriftsættelse, vedligeholdelse og reparation af denne enhed må kun udføres af kvalificerede fagfolk.
- Under drift må enheden kun betjenes af en uddannet person.
- Især må enheden ikke bruges af personer (herunder børn) med begrænsede fysiske, sensoriske eller mentale evner eller manglende erfaring og viden, medmindre de er under opsyn eller har modtaget instruktion.
- Børn skal være under opsyn for at sikre, at de ikke leger med enheden.

Personlige værnemidler
- Ved alt arbejde på enheden, især hvis personalet kan komme i kontakt med kølemediet (ved brug af en vand-glykol-blanding), skal der bæres personlige værnemidler, der som minimum består af vandtætte beskyttelseshandsker og beskyttelsesbriller.
- Endvidere anbefales brug af passende høreværn og et hårnet til alt arbejde i nærheden af enheden.
- Til alt arbejde på LCU CW, især på udblæsningssiden, anbefaler vi at bære beskyttelsesbriller for at undgå øjenskader som følge af de høje lufthastigheder.

PL Wskazówki dotyczące bezpieczeństwa

Ogólnie obowiązujące wskazówki dotyczące bezpieczeństwa
- Prosimy przestrzegać poniższych ogólnych wskazówek bezpieczeństwa.
- Podczas wszystkich prac przy urządzeniu należy stosować wymagane środki ochrony indywidualnej.
- Nie dokonywać w LCU CW żadnych zmian, który nie są opisane w tej lub współobowiązujących instrukcjach montażu i obsługi.
- LCU CW można łączyć i użytkować wyłącznie z przewidzianymi akcesoriami systemowymi Rittal.
- Poza niniejszymi wskazówkami bezpieczeństwa należy bezwzględnie przestrzegać specjalnych wskazówek odnoszących się do poszczególnych czynności wymienionych w poniższych rozdziałach.

– Istnieje niebezpieczeństwo porażenia prądem elektrycznym, gdy urządzenie jest otwierane przy podłączonej wtyczce zasilania sieciowego. Otwieranie i naprawy są dozwolone tylko dla specjalistów i osób przeszkolonych.

Wskazówki bezpieczeństwa dotyczące transportu
– Występuje niebezpieczeństwo zranienia spowodowane spadającymi ciężarami. Podczas transportu urządzenia przy pomocy wózka podnośnikowego, widłowego lub dźwigu nie wchodzić pod zawieszone ciężary! Stosować tylko właściwe środki transportu.
– Występuje niebezpieczeństwo zranienia spowodowane przecięciem napiętych taśm opasających. Stosować środki ochrony indywidualnej!
– Występuje niebezpieczeństwo zranienia spowodowane dużą masą urządzenia. Prosimy o nieprzekraczanie maksymalnych dopuszczalnych ciężarów podnoszonych przez ludzi. W razie potrzeby należy zastosować urządzenie podnośnikowe.

Wskazówki bezpieczeństwa dotyczące montażu
– Montaż urządzeń należy zlecić wykwalifikowanym specjalistom.
– Istnieje ryzyko obrażeń w wyniku przewrócenia się urządzenia. Podnoszenie urządzenia z pozycji leżącej musi być zawsze wykonywane przez dwie osoby. Jedna z dwóch osób zabezpiecza urządzenie przed przypadkowym zsunięciem się podczas podnoszenia. Stosować środki ochrony indywidualnej!
– Istnieje ryzyko obrażeń w wyniku przewrócenia się urządzenia. W pozycji pionowej istnieje ryzyko przewrócenia się modułu LCU CW, o ile nie został on jeszcze zainstalowany w szafie serwerowej i prawidłowo zamocowany. Druga osoba powinna zabezpieczyć urządzenie w pozycji pionowej.
– Istnieje niebezpieczeństwo zgniecenia podczas wkładania urządzenia do szafy serwerowej między zewnętrznymi krawędziami urządzenia a otaczającym profilem ramy szafy. Stosować środki ochrony indywidualnej!

Wskazówki bezpieczeństwa dotyczące instalacji
– Istnieje niebezpieczeństwo zgniecenia podczas wkładania separatora do szafy serwerowej. Stosować środki ochrony indywidualnej!
– Istnieje niebezpieczeństwo ściśnięcia i przecięcia podczas dokręcania oraz uszczelniania przewodów czynnika chłodniczego. Stosować środki ochrony indywidualnej!
– Należy upewnić się, że przewody czynnika chłodniczego po zainstalowaniu nie ograniczają przepływu powietrza przez urządzenie.
– Prace przy urządzeniach elektrycznych lub środkach eksploatacyjnych mogą być wykonywane wyłącznie przez elektryków lub przez przeszkolony personel pod kierownictwem elektryków zgodnie z zasadami elektrotechniki.
– Stosować wyłącznie narzędzia posiadające stosowną izolację. Stosować środki ochrony indywidualnej!
– Dane dotyczące napięcia na schemacie połączeń / tabliczce znamionowej musza odpowiadać napięciu sieciowemu.
– Nieprawidłowy montaż i instalacja mogą spowodować kondensację w urządzeniu, co może doprowadzić do zwarcia elektrycznego lub wycieku cieczy.

Wskazówki bezpieczeństwa dotyczące eksploatacji
– Istnieje niebezpieczeństwo błędnego działania lub zniszczenia. Nie dokonywać żadnych zmian w urządzeniu! Używać wyłącznie oryginalnych części zamiennych.
– Podczas pracy LCU CW może wystąpić zwiększony poziom hałasu, zwłaszcza podczas obsługi urządzenia bezpośrednio na wyświetlaczu. Stosować środki ochrony indywidualnej!
– Niezawodne działanie urządzenia może być zagwarantowane tylko wtedy, gdy eksploatacja odbywa się w przewidywanych warunkach otoczenia. Należy upewnić się, że przestrzegane są zalecane wartości warunków otoczenia, np. temperatura, wilgotność powietrza, czystość powietrza.
– Konieczne do regulacji medium, czyli woda chłodząca, musi być obecne w trakcie całej eksploatacji urządzenia.
– W przypadku wystąpienia wycieków istnieje niebezpieczeństwo zranienia przez wypływające medium chłodnicze, w szczególności glikol. Stosować środki ochrony indywidualnej. Rozlane medium chłodnicze zebrać za pomocą odpowiedniej szmaty lub środka wiążącego, a następnie niezwłocznie usunąć przyczynę wycieków.
– Czujnik wycieku zainstalowany w urządzeniu służy wyłącznie do funkcjonalnego wykrywania wycieków i nie może być używany jako czujnik w łańcuchu bezpieczeństwa na poziomie systemu.
– Istnieje niebezpieczeństwo obrażeń spowodowanych przez wirniki wentylatorów. Osoby i przedmioty muszą być utrzymywane z dala od kół wentylatorów! Blachy pokryw otwierać dopiero po przerwaniu zasilania elektrycznego i po zatrzymaniu kół! Nie wykonywać żadnych prac bez zabezpieczeń mechanicznych! Podczas prac konserwacyjnych zatrzymać odpowiedni wentylator! Spiąć długie włosy! Nie nosić luźnych ubrań! Po przerwaniu zasilania wentylator uruchamia się automatycznie!

Wskazówki bezpieczeństwa dotyczące konserwacji
– Przed przystąpieniem do jakichkolwiek prac konserwacyjnych lub usuwania błędów należy bezpiecznie odłączyć urządzenie od zasilania. W tym celu usunąć przyłącze sieciowe lub zastosować urządzenie odłączające wszystkie bieguny w przewodze zasilającym oraz zabezpieczyć przed przypadkowym ponownym włączeniem.
– Podczas prac przy urządzeniu istnieje niebezpieczeństwo skaleczenia, zwłaszcza o ostre krawędzie modułu wymiennika ciepła. Przed montażem i czyszczeniem założyć środki ochrony indywidualnej!
– Przy demontażu i montażu modułu wentylatora istnieje niebezpieczeństwo zranienia przez ostre krawędzie wewnątrz LCU CW, wypadnięcie modułu, przez poruszające się z dużymi prędkościami powietrze i hałas. Stosować środki ochrony indywidualnej!
– Podczas wszystkich prac przy medium chłodniczym należy przestrzegać odpowiedniej karty charakterystyki substancji niebezpiecznej.

Wskazówki bezpieczeństwa dotyczące wyłączenia
– Osoby niewykwalifikowane nie mogą zapewnić niezbędnego przebiegu prac związanych z wyłączeniem. Dlatego prace te mogą być wykonywane tylko przez wykwalifikowany personel.
– Przed składowaniem i transportem w temperaturach poniżej punktu zamarzania kompletnie opróżnić obwód wodny przy pomocy sprężonego powietrza!

Personel obsługowy i specjalistyczny
– Instalację, uruchomienie i konserwację oraz obsługę techniczną niniejszego urządzenia może wykonywać wyłącznie wykwalifikowany personel specjalistyczny.
– Obsługę urządzenia w trakcie eksploatacji może wykonywać wyłącznie przeszkolona osoba.
– Urządzenie nie powinno być obsługiwane przez osoby (w tym dzieci) cierpiące na zaburzenia psychiczne, sensoryczne czy umysłowe lub przez osoby niemające odpowiedniego doświadczenia i wiedzy, chyba że będzie ono używane pod nadzorem lub po uzyskaniu instrukcji.
– Dzieci muszą być nadzorowane, aby nie bawiły się urządzeniem.

Środki ochrony indywidualnej
– Podczas wszystkich prac przy urządzeniu, szczególnie gdy personel może mieć kontakt z medium chłodniczym (przy stosowaniu mieszanki wody i glikolu), wymagane są środki ochrony indywidualnej w postaci co najmniej rękawic termoizolujących i okularów ochronnych.
– Ponadto podczas wszystkich prac w pobliżu urządzenia zalecane jest stosowanie odpowiednich ochraniaczy uszu i siatki na włosy.
– Podczas wszystkich prac przy urządzeniu LCU CW, szczególnie po stronie wydmuchu, zaleca się noszenie okularów ochronnych w celu uniknięcia zranienia oczu przez duże prędkości powietrza.

CZ Bezpečnostní pokyny

Všeobecně platné bezpečnostní pokyny
– Dodržujte prosím následující obecné bezpečnostní pokyny.
– Při všech pracích na zařízení používejte předepsané osobní ochranné prostředky.
– Neprovádějte na LCU CW žádné změny, které nejsou popsány v této příručce nebo v příslušných montážních a provozních pokynech.
– LCU CW lze kombinovat a provozovat výhradně se systémovým příslušenstvím dodaným společností Rittal.
– Kromě těchto všeobecných bezpečnostních pokynů dodržujte v souvislosti s činnostmi uvedenými v následujících kapitolách bezpodmínečně také specifické bezpečnostní pokyny.
– Při otevření zařízení s připojenou síťovou zástrčkou hrozí nebezpečí úrazu elektrickým proudem. Zařízení smějí otevírat a opravovat pouze odborníci a vyškolené osoby.

Bezpečností pokyny pro přepravu
– Hrozí nebezpečí poranění padajícími břemeny. Při přepravě přístroje zdvihacím vozíkem, vysokozdvižným vozíkem nebo jeřábem nevstupujte pod pohybující se břemeno! Používejte pouze vhodné přepravní prostředky.
– Při přestřižení předepnutých stahovacích pásků hrozí nebezpečí poranění. Používejte osobní ochranné prostředky!
– Kvůli vysoké hmotnosti zařízení hrozí nebezpečí zranění. Dodržuje maximální přípustné osobní limity pro zvedání břemen. V případě potřeby použijte zdvihací zařízení.

Bezpečnostní pokyny pro montáž
– Nechte zařízení nainstalovat kvalifikovanými odborníky.
– Hrozí nebezpečí zranění převrácením zařízení. Zvedání zařízení z ležící pozice musí vždy provádět dvě osoby. Jedna ze dvou osob zajišťuje zařízení proti nechtěnému sklouznutí při jeho nastavování. Používejte osobní ochranné prostředky!
– Hrozí nebezpečí zranění převrácením zařízení. Ve vzpřímené poloze hrozí překlopení LCU CW, pokud ještě není instalováno do serverové skříně a odborně upevněno. Nechte zařízení zajistit ve vzpřímené poloze druhou osobou.
– Při vkládání zařízení do serverové skříně mezi vnější hrany zařízení a okolní rámový profil skříně hrozí nebezpečí přimáčknutí. Používejte osobní ochranné prostředky!

Bezpečnostní pokyny pro instalaci
– Při umisťování přepážky do serverové skříně hrozí nebezpečí přimáčknutí. Používejte osobní ochranné prostředky!
– Při přišroubování a utěsňování vedení chladicí kapaliny hrozí skřípnutí a pořezání. Používejte osobní ochranné prostředky!
– Ujistěte se, že vedení chladicí kapaliny po instalaci neomezuje proudění vzduchu skrz zařízení.
– Činnosti na elektrických zařízení nebo na provozních prostředcích smí být prováděny pouze odborným elektrikářem nebo zaškoleným personálem pod vedením a dohledem odborného elektrikáře a při dodržování příslušných elektrotechnických pravidel.
– Používejte pouze odizolované nářadí. Používejte osobní ochranné prostředky!
– Údaje o napětí v schématu elektrického zapojení / na typovém štítku musejí být shodné se síťovým napětím.
– Nesprávná montáž a instalace představuje riziko tvorby kondenzátu v zařízení, což může vést k elektrickému zkratu nebo úniku kapaliny.

Bezpečnostní pokyny pro provoz
– Nebezpečí poruchy nebo zničení. Na zařízení neprovádějte žádné změny. Používejte pouze originální náhradní díly.
– Při provozu zařízení LCU CW může dojít ke zvýšení hladiny hluku, zvláště když je zařízení ovládáno přímo na displeji. Používejte osobní ochranné prostředky!
– Bezchybná funkce přístroje lze zaručit pouze tehdy, pokud je přístroj provozován za předem stanovených podmínek prostředí. Pokud to je možné, ujistěte se, aby byly dodrženy podmínky prostředí, jež jsou základem projektu, např. teplota, vlhkost vzduchu, čistota vzduchu.
– Během celé doby provozu musí být zařízení naplněno veškerými nezbytnými, regulačně-technickými médii, např. chladicí vodou.

- V případě netěsností hrozí nebezpečí poranění unikajícím chladicím médiem, zejména glykolem. Používejte osobní ochranné prostředky, rozlité chladicí médium otřete vhodným hadříkem nebo pojivem a okamžitě odstraňte příčinu úniku.
- Snímač netěsností nainstalovaný v zařízení se používá pouze pro funkční detekci úniku a nesmí být použit jako snímač v bezpečnostním řetězci na úrovni systému.
- Hrozí nebezpečí zranění lopatkami ventilátorů. Osoby a předměty se nesmí dotýkat lopatek ventilátorů! Plechové kryty otevírejte teprve po přerušení přívodu proudu a zastavení lopatek ventilátorů! Žádné činnosti neprovádějte bez mechanické ochrany! Při údržbě jednotlivé ventilátory odpojte! Dlouhé vlasy si svažte! Nenoste volné součásti oděvu! Po obnovení elektrického napětí se ventilátor opět automaticky spustí!

Bezpečnostní pokyny pro údržbu
- Před prováděním veškerých údržbářských prací a před odstraňováním závad v zařízení je třeba zařízení nejprve bezpečně odpojit od napájení. Za tímto účelem odpojte síťovou přípojku nebo použijte vypínací zařízení všech pólů v přívodním vedení a zajistěte ho proti neúmyslnému opětovnému zapnutí.
- Při práci na zařízení hrozí pořezání, zejména o ostré hrany modulu tepelného výměníku. Před montáží a čištěním si nasaďte osobní ochranné prostředky!
- Při demontáži a instalaci modulu ventilátoru hrozí nebezpečí poranění ostrými hranami ve vnitřním prostoru LCU CW, pádem modulu, vysokou rychlostí vzduchu a hlukem. Používejte osobní ochranné prostředky!
- Při všech pracích s chladicím médiem dodržujte příslušný bezpečnostní list.

Bezpečnostní pokyny pro zastavení
- Nevyškolení pracovníci nemohou zaručit potřebný pracovní proces pro zastavení. Proto mohou tyto práce provádět pouze kvalifikovaní odborníci.
- Při skladování a přepravě v teplotách pod bodem mrazu je nutné vyprázdnit celý vodní okruh stlačeným vzduchem!

Obsluha a kvalifikovaní pracovníci
- Instalaci, zprovoznění, údržbu a opravu této jednotky smějí provádět pouze kvalifikovaní odborníci.
- Obsluhu přístroje v provozu smí provádět pouze zaškolená osoba.
- Zařízení nesmí používat zejména osoby (včetně dětí) s omezenými fyzickými, smyslovými nebo duševními schopnostmi nebo bez zkušeností a znalostí, pokud nejsou pod dozorem nebo nejsou poučeny.
- Děti musí být pod dozorem, aby bylo zajištěno, že si se zařízením nebudou hrát.

Osobní ochranné prostředky
- Při všech pracích na zařízení, zejména pokud může dojít ke kontaktu personálu s chladicím médiem (při použití směsi vody a glykolu), je nutné používat osobní ochranné prostředky, sestávající minimálně z nepromokavých ochranných rukavic a ochranných brýlí.
- Dále se při všech pracích v blízkosti zařízení doporučuje použití vhodné ochrany sluchu a síťky na vlasy.
- Při všech pracích na LCU CW, zejména na výstupní straně, doporučujeme nosit ochranné brýle, aby nedošlo k poranění očí v důsledku vysoké rychlosti vzduchu.

BG Инструкции за безопасност

Общоприложими указания за безопасност
- Спазвайте следните общи указания за безопасност.
- Носете предвидените лични предпазни средства при всички дейности по уреда.
- Не извършвайте промени по LCU CW, които не са описани в настоящото ръководство или в други приложими ръководства за монтаж и експлоатация.
- LCU CW може да се комбинира и използва само с предвидените от Rittal системни принадлежности.
- В допълнение към настоящите общи указания за безопасност трябва да спазвате и специфичните указания за безопасност във връзка с дейностите, изброени в следващите глави.
- Съществува опасност от нараняване от токов удар, ако уредът бъде отворен при включен щепсел в електрическата мрежа. Отварянето на уреда и ремонтите трябва да се извършват само от специалисти и инструктирани лица.

Указания за безопасност при транспортиране
- Съществува опасност от нараняване от падащи товари. При транспортиране на уреда с палетна количка, мотокар или кран не заставайте под висящия товар! Използвайте само подходящи средства за транспортиране.
- Съществува опасност от нараняване при срязване на предварително опънатите обтягащи ленти. Носете лични предпазни средства!
- Съществува опасност от нараняване поради голямото тегло на уреда. Обърнете внимание на максимално допустимото тегло, което може да се вдигне от един човек. Ако е необходимо, използвайте подемно приспособление.

Указания за безопасност при монтаж
- Монтажът на уредите трябва да се извършва от квалифицирани специалисти.
- Съществува опасност от нараняване вследствие на преобръщане на уреда. Вдигането на уреда от легнало положение винаги трябва да се извършва от двама души. Единият от двамата трябва да обезопаси уреда срещу неволно изплъзване по време на вдигането. Носете лични предпазни средства!
- Съществува опасност от нараняване вследствие на преобръщане на уреда. В изправено положение съществува опасност LCU CW да се преобърне, ако все още не е инсталиран в сървърния шкаф и не е правилно фиксиран. Втори човек трябва да закрепи уреда в изправено положение.
- Съществува опасност от смачкване при поставяне на уреда в сървърния шкаф между външните ръбове на уреда и заобикалящия профил на рамката на шкафа. Носете лични предпазни средства!

Указания за безопасност при инсталиране
- Съществува опасност от смачкване при поставяне на преградата в сървърния шкаф. Носете лични предпазни средства!
- При завинтването и уплътняването на тръбопроводите за охлаждаща течност съществува риск от прищипване и порязване. Носете лични предпазни средства!
- Уверете се, че тръбопроводите за охлаждаща течност не пречат на въздушния поток през уреда след инсталирането.
- Дейностите по електрическите системи или оборудването могат да се извършват само от електротехник или от инструктиран персонал под ръководството и надзора на електротехник в съответствие с електротехническите правила.
- Използвайте само електроизолирани инструменти. Носете лични предпазни средства!
- Спецификациите на напрежението в електрическата схема/на типовата табелка трябва да съответстват на мрежовото напрежение.
- Вследствие на неправилен монтаж и инсталиране може да се стигне до образуване на конденз в уреда, което може да доведе до късо съединение или изтичане на течност.

Указания за безопасност при експлоатация
- Съществува опасност от повреда или разрушаване. Не извършвайте никакви промени по уреда! Използвайте само оригинални резервни части.
- По време на експлоатация на LCU CW нивото на шума може да се повиши, особено при работа с уреда директно на дисплея. Носете лични предпазни средства!
- Изправното функциониране на уреда може да се гарантира само ако той се експлоатира при определените условия на околната среда. Уверете се, доколкото е възможно, че са спазени условията на околната среда, на които се основава проектът, например температура, влажност на въздуха, чистота на въздуха.
- През цялото време на работа на уреда трябва да бъде налична охлаждаща вода, необходима за целите на управлението.
- Ако се появят течове, съществува опасност от нараняване вследствие на изтичане на охлаждаща течност, особено на гликол. Носете лични предпазни средства, съберете изтеклата охлаждаща течност с подходящ парцал или свързващо вещество и незабавно отстранете причината за теча.
- Сензорът за течове, инсталиран в уреда, е предназначен само за функционално откриване на течове и не трябва да се използва като сензор във верига за безопасност на системно ниво.
- Съществува опасност от нараняване от работните колела на вентилаторите. Хора и предмети не трябва да се намират в близост до работните колела на вентилаторите! Отваряйте капаците само когато захранването е прекъснато и работните колела са неподвижни! Не извършвайте никакви дейности без механична защита! Спрете съответния вентилатор по време на дейности по поддръжката! Вържете дългата коса! Не носете широки дрехи! След прекъсване на захранването вентилаторът се рестартира автоматично!

Указания за безопасност при поддръжка
- Преди извършването на каквито и да са дейности по поддръжката или преди отстраняването на неизправности уредът трябва да бъде безопасно изключен от електрическата мрежа. За целта изключете щепсела от електрическата мрежа или използвайте автоматичния предпазител в захранващата линия и го обезопасете срещу неволно повторно включване.
- При извършване на дейности по уреда съществува опасност от порязвания, особено от острите ръбове на топлообменника. Поставяйте лични предпазни средства преди дейности по монтаж и почистване!
- При демонтиране и монтиране на вентилаторен модул съществува опасност от нараняване от остри ръбове вътре в LCU CW, падане на модула, висока скорост на въздуха и шум. Носете лични предпазни средства!
- При всички дейности с охлаждащата течност спазвайте съответния информационен лист за безопасност.

Указания за безопасност при извеждане от експлоатация
- Неспециалистите не могат да обезпечат необходимия работен процес за извеждане от експлоатация. Затова тези дейности могат да се извършват само от квалифицирани специалисти.
- При съхранение и транспортиране под точката на замръзване водният кръг трябва да се източи напълно със сгъстен въздух!

Оперативен и технически персонал
- Инсталирането, пускането в експлоатация, поддръжката и привеждането в изправност на този уред могат да се извършват само от квалифицирани специалисти.
- Само инструктирано лице може да управлява уреда по време на работа.
- По-специално уредът не трябва да се използва от лица (включително деца) с намалени физически, сетивни или умствени способности или с липса на опит и познания, освен ако не са под надзор или не са получили инструкции.
- Децата трябва да бъдат наблюдавани, за да се гарантира, че не си играят с уреда.

Лични предпазни средства
- По време на всички дейности по уреда особено когато персоналът може да влезе в контакт с охлаждащата течност (при използване на смес от вода и гликол), трябва да се носят лични предпазни средства, състоящи се най-малко от непромокаеми защитни ръкавици, както и защитни очила.
- Освен това при всички дейности в близост до уреда се препоръчва използването на подходящи средства за защита на слуха и мрежа за коса.
- При всички дейности по LCU CW, особено от страната на отвеждане на въздуха, се препоръчва носенето на защитни очила, за да се избегнат наранявания на очите вследствие на високата скорост на въздуха.

GR Υποδείξεις ασφαλείας

Γενικά ισχύουσες υποδείξεις ασφαλείας
- Παρακαλούμε ακολουθήστε τις παρακάτω γενικές υποδείξεις ασφαλείας.
- Σε όλες τις εργασίες στη συσκευή πρέπει να φοράτε τον προβλεπόμενο ατομικό εξοπλισμό προστασίας.
- Μην πραγματοποιείτε μετατροπές στο LCU CW, οι οποίες δεν περιγράφονται στις παρούσες ή τις συνοδευτικές οδηγίες λειτουργίας και συναρμολόγησης.
- Το LCU CW επιτρέπεται να συνδυαστεί και να χρησιμοποιηθεί αποκλειστικά με τον πρόσθετο εξοπλισμό συστήματος που προβλέπεται από την Rittal.
- Εκτός από αυτές τις γενικές υποδείξεις ασφαλείας θα πρέπει οπωσδήποτε να ακολουθήσετε και τις ειδικές υποδείξεις ασφαλείας σχετικά με τις εργασίες που αναφέρονται στα παρακάτω κεφάλαια.
- Υπάρχει κίνδυνος τραυματισμού από ηλεκτροπληξία εάν η συσκευή ανοιχθεί με συνδεδεμένο φις. Το άνοιγμα της συσκευής και η εκτέλεση εργασιών επισκευής επιτρέπεται μόνον σε εξειδικευμένο και καταρτισμένο προσωπικό.

Υποδείξεις ασφαλείας για τη μεταφορά
- Υπάρχει κίνδυνος τραυματισμού από πτώσεις φορτίων. Μην παραμένετε κάτω από το αιωρούμενο φορτίο κατά τη μεταφορά της συσκευής με παλετοφόρο, περονοφόρο όχημα ή γερανό! Χρησιμοποιείτε μόνον κατάλληλα μέσα μεταφοράς.
- Υπάρχει κίνδυνος τραυματισμού σε περίπτωση κοπής των προεντεταμένων ιμάντων περίδεσης. Φοράτε μέσα ατομικής προστασίας!
- Υπάρχει κίνδυνος τραυματισμού από το μεγάλο βάρος της συσκευής. Παρακαλούμε τηρείτε το μέγιστο επιτρεπόμενο βάρος που μπορεί να αρθεί από ένα άτομο. Χρησιμοποιήστε κατάλληλες συσκευές ανύψωσης, εάν είναι απαραίτητο.

Υποδείξεις ασφαλείας για τη συναρμολόγηση
- Αναθέστε τη συναρμολόγηση των συσκευών σε κατάλληλα καταρτισμένα άτομα.
- Υπάρχει κίνδυνος τραυματισμού από την ανατροπή της συσκευής. Η ανόρθωση της συσκευής από την ξαπλωτή θέση πρέπει να γίνεται πάντοτε από δύο άτομα. Το ένα από τα δύο άτομα ασφαλίζει τη συσκευή από ακούσια ολίσθηση κατά την ανόρθωση. Φοράτε μέσα ατομικής προστασίας!
- Υπάρχει κίνδυνος τραυματισμού από την ανατροπή της συσκευής. Υπάρχει κίνδυνος ανατροπής του LCU CW όταν αυτό βρίσκεται σε όρθια θέση και δεν έχει τοποθετηθεί και σταθεροποιηθεί σωστά στο ερμάριο διακομιστών. Ασφαλίστε τη συσκευή σε όρθια θέση με τη βοήθεια ενός δεύτερου ατόμου.
- Υπάρχει κίνδυνος σύνθλιψης κατά την εισαγωγή της συσκευής στο ερμάριο διακομιστών, ανάμεσα στις εξωτερικές ακμές της συσκευής και το περιμετρικό προφίλ του ερμαρίου. Φοράτε μέσα ατομικής προστασίας!

Υποδείξεις ασφαλείας για την εγκατάσταση
- Υπάρχει κίνδυνος σύνθλιψης κατά την τοποθέτηση της διάταξης αποκλεισμού στο ερμάριο διακομιστών. Φοράτε μέσα ατομικής προστασίας!
- Υπάρχει κίνδυνος παγίδευσης και κοψίματος κατά το βίδωμα και τη στεγανοποίηση των αγωγών ψυκτικού μέσου. Φοράτε μέσα ατομικής προστασίας!
- Μετά την εγκατάσταση βεβαιωθείτε ότι οι αγωγοί ψυκτικού μέσου δεν εμποδίζουν τη ροή αέρα μέσα από τη συσκευή.
- Οι εργασίες σε ηλεκτρολογικές εγκαταστάσεις ή εξοπλισμό επιτρέπεται να εκτελούνται μόνο από ηλεκτρολόγο ή από ειδικά εκπαιδευμένο προσωπικό καθοδηγούμενο και εποπτευόμενο από έναν ηλεκτρολόγο και σύμφωνα με τους ισχύοντες κανονισμούς.
- Χρησιμοποιείτε μόνο ηλεκτρικά μονωμένα εργαλεία. Φοράτε μέσα ατομικής προστασίας!
- Τα στοιχεία τάσης που αναφέρονται στο διάγραμμα συνδεσμολογίας/πινακίδα τύπου πρέπει να συμφωνούν με την τάση δικτύου.
- Από τη λανθασμένη συναρμολόγηση και εγκατάσταση προκύπτει κίνδυνος σχηματισμού συμπυκνωμάτων στη συσκευή, τα οποία μπορεί να οδηγήσουν σε βραχυκύκλωμα ή διαρροή υγρού.

Υποδείξεις ασφαλείας για τη λειτουργία
- Υπάρχει κίνδυνος λανθασμένων λειτουργιών ή καταστροφής. Μην πραγματοποιείτε τροποποιήσεις στη συσκευή! Χρησιμοποιείτε μόνο γνήσια ανταλλακτικά.
- Κατά τη διάρκεια λειτουργίας του LCU CW μπορεί να παρατηρηθεί αυξημένη στάθμη θορύβου, ειδικά κατά τον χειρισμό της συσκευής απευθείας από την οθόνη. Φοράτε μέσα ατομικής προστασίας!
- Η απρόσκοπτη λειτουργία της συσκευής μπορεί να εξασφαλιστεί μόνον εάν χρησιμοποιείται υπό τις προβλεπόμενες συνθήκες περιβάλλοντος. Βεβαιωθείτε, στο μέτρο του εφικτού, ότι τηρούνται οι βασικές για τη διαμόρφωση συνθήκες περιβάλλοντος όπως π.χ. θερμοκρασία, ατμοσφαιρική υγρασία, καθαρότητα αέρα.
- Το τεχνικώς απαιτούμενο ψυκτικό μέσο πρέπει να παρέχεται καθ' όλη τη διάρκεια λειτουργίας της συσκευής.
- Εάν παρουσιαστούν διαρροές υπάρχει κίνδυνος τραυματισμού από το ψυκτικό μέσο, ειδικά από τη γλυκόλη. Φοράτε μέσα ατομικής προστασίας, συλλέξτε με ένα κατάλληλο πανί ή δεσμευτικό υλικό το ψυκτικό μέσο που έχει διαρρεύσει και αντιμετωπίστε την αιτία της διαρροής.
- Ο αισθητήρας διαρροής που είναι τοποθετημένος στη συσκευή χρησιμεύει μόνο για τον λειτουργικό εντοπισμό της διαρροής και δεν επιτρέπεται να χρησιμοποιηθεί ως αισθητήρας αλυσίδας ασφαλείας σε επίπεδο εγκατάστασης.
- Υπάρχει κίνδυνος τραυματισμού από τις φτερωτές των ανεμιστήρων. Κρατάτε άτομα και αντικείμενα μακριά από τις φτερωτές των ανεμιστήρων! Ανοίγετε τα καλύμματα μόνον εάν έχει διακοπεί η παροχή τάσης και έχουν ακινητοποιηθεί οι φτερωτές! Μην εκτελείτε καμία εργασία χωρίς μηχανική προστασία! Θέστε εκτός λειτουργίας τον αντίστοιχο ανεμιστήρα όταν εκτελείτε εργασίες συντήρησης! Δέστε τα μακριά μαλλιά! Μη φοράτε φαρδιά ρούχα! Μετά τη διακοπή της παροχής τάσης ο ανεμιστήρας θα τεθεί αυτόματα και πάλι σε λειτουργία!

Υποδείξεις ασφαλείας για τη συντήρηση
- Πριν από όλες τις εργασίες συντήρησης καθώς και πριν από την αναζήτηση σφαλμάτων, πρέπει η συσκευή να αποσυνδεθεί με ασφάλεια από την παροχή ηλεκτρικής τάσης. Αποσυνδέστε την ηλεκτρική σύνδεση ή χρησιμοποιήστε διάταξη διακοπής όλων των πόλων στο αγωγό παροχής και ασφαλίστε από ακούσια επανενεργοποίηση.
- Κατά την εκτέλεση εργασιών στη συσκευή υπάρχει κίνδυνος τραυματισμού από κοψίματα, ειδικά από τις κοφτερές ακμές της μονάδας εναλλάκτη θερμότητας. Φορέστε μέσα ατομικής προστασίας πριν από τις συναρμολόγησης και καθαρισμού!
- Κατά την αφαίρεση και τοποθέτηση μίας μονάδας ανεμιστήρα υπάρχει κίνδυνος τραυματισμού από αιχμηρές ακμές στον εσωτερικό χώρο του LCU CW, πιθανότητα πτώσης μίας μονάδας, υψηλές ταχύτητες ροής αέρα και θόρυβος. Φοράτε μέσα ατομικής προστασίας!
- Σε όλες τις εργασίες με το ψυκτικό μέσο προσέξτε το αντίστοιχο δελτίο στοιχείων ασφαλείας.

Υποδείξεις ασφαλείας για τον παροπλισμό
- Τα άτομα χωρίς εμπειρία δεν μπορούν να διασφαλίσουν την απαιτούμενη διαδικασία παροπλισμού. Επομένως, αυτές οι εργασίες πρέπει να εκτελούνται μόνον από κατάλληλα καταρτισμένο προσωπικό.
- Κατά την αποθήκευση και μεταφορά σε θερμοκρασίες υπό το μηδέν θα πρέπει να εκκενωθεί με πεπιεσμένο αέρα ολόκληρο το κύκλωμα νερού!

Χειριστές και εξειδικευμένο προσωπικό
- Η εκτέλεση των εργασιών εγκατάστασης, θέσης σε λειτουργία, συντήρησης και η επισκευής επιτρέπεται μόνον σε εξειδικευμένο προσωπικό.
- Ο χειρισμός της συσκευής κατά τη διάρκεια λειτουργίας επιτρέπεται μόνον σε καταρτισμένα άτομα.
- Η συσκευή δεν επιτρέπεται να χρησιμοποιείται από άτομα (συμπεριλαμβανομένων παιδιών) με περιορισμένες φυσικές, αισθητηριακές ή πνευματικές ικανότητες ή ελλιπείς γνώσεις και εμπειρία, εκτός εάν έχουν λάβει σχετική κατάρτιση και επιβλέπονται.
- Απαιτείται επίβλεψη των παιδιών προκειμένου να μην παίζουν με τη συσκευή.

Ατομικός εξοπλισμός προστασίας
- Κατά τις εργασίες στη συσκευή, ειδικά εάν το προσωπικό ενδέχεται να έρθει σε επαφή με το ψυκτικό μέσο (σε περίπτωση χρήσης μίγματος νερού-γλυκόλης), θα πρέπει να χρησιμοποιούνται μέσα ατομικής προστασίας που θα περιλαμβάνουν τουλάχιστον γάντια και γυαλιά προστασίας.
- Επιπλέον, σε όλες τις εργασίες που εκτελούνται κοντά στη συσκευή συστήνεται η χρήση κατάλληλων ωτασπίδων και καλύμματος κεφαλιού.
- Σε όλες τις εργασίες στο LCU CW, ειδικότερα στην πλευρά εξόδου, συστήνεται η χρήση γυαλιών προστασίας, προκειμένου να αποφευχθούν οι τραυματισμοί ματιών λόγω των υψηλών ταχυτήτων ροής αέρα.

RO Instrucțiuni de siguranță

Instrucțiuni de siguranță general valabile
- Vă rugăm respectați următoarele instrucțiuni de siguranță generale.
- Purtați echipamentul individual de protecție prescris în timpul tuturor lucrărilor la nivelul aparatului.
- Nu efectuați nicio modificare la LCU CW care nu este descrisă în aceste instrucțiuni de montare și de utilizare aplicabile.
- LCU CW poate fi echipat și exploatat exclusiv cu accesoriile prevăzute pentru sistemele Rittal.
- Pe lângă aceste instrucțiuni de siguranță generale, este esențial să respectați, de asemenea, instrucțiunile de siguranță specifice în legătură cu activitățile enumerate în capitolele următoare.
- Există pericol de vătămare prin electrocutare dacă aparatul este deschis cu ștecherul de la rețea conectat. Deschiderea aparatului și efectuarea de reparații trebuie efectuată numai de către specialiști și persoane instruite.

Instrucțiuni de siguranță privind transportul
- Există pericol de vătămare din cauza căderii încărcăturilor. Când transportați aparatul cu un cărucior de ridicat, stivuitor sau macara, nu treceți pe sub încărcătura suspendată! Utilizați numai mijloace de transport adecvate.
- Există pericol de vătămare din cauza intersectării chingilor pretensionate. Purtați echipament individual de protecție!
- Există pericol de vătămare din cauza întregii greutăți a aparatului. Respectați greutățile de ridicare maxim admise pentru o persoană. Dacă este necesar, utilizați dispozitive de ridicare.

Instrucțiuni de siguranță privind montarea
- Montarea aparatului trebuie efectuată de către specialiști calificați.
- Există pericol de vătămare din cauza răsturnării aparatului. Ridicarea aparatului din poziția orizontală trebuie să fie efectuată întotdeauna de către două persoane. Una dintre cele două persoane asigură aparatul împotriva alunecării neintenționate în timpul ridicării. Purtați echipament individual de protecție!
- Există pericol de vătămare din cauza răsturnării aparatului. În poziție verticală, există pericol de răsturnare a LCU CW, atâta timp cât nu a fost încă montat dulapul serverului și fixat corespunzător. Cereți unei a doua persoane să fixeze aparatul în poziție verticală.
- Există pericol de strivire la introducerea aparatului în dulapul serverului între marginile exterioare ale aparatului și profilul cadrului din jurul dulapului. Purtați echipament individual de protecție!

Instrucțiuni de siguranță privind instalarea
- Există pericol de strivire la introducerea compartimentului în dulapul serverului. Purtați echipament individual de protecție!
- Există pericol de prindere și de tăiere la înșurubarea și etanșarea conductelor de lichid de răcire. Purtați echipament individual de protecție!
- Asigurați-vă că conductele de lichid de răcire nu obstrucționează fluxul de aer prin aparat după instalare.
- Lucrările la instalațiile sau echipamentele electrice trebuie să fie făcute în mod corespunzător, numai de către un electrician calificat sau de personal instruit, sub comanda și supravegherea unui electrician calificat, în concordanță cu reglementările electrotehnice.

- Pot fi utilizate numai scule izolate electric. Purtați echipament individual de protecție!
- Specificațiile de tensiune din schema de conexiuni/de pe plăcuța de identificare trebuie să corespundă tensiunii de rețea.
- Montarea și instalarea necorespunzătoare pot cauza formarea de condens în aparat, ceea ce poate duce la un scurtcircuit electric sau la scurgeri de lichid.

Instrucțiuni de siguranță privind operarea
- Există pericol de funcționare defectuoasă sau distrugere. Nu efectuați modificări la nivelul echipamentului! Folosiți doar piese de schimb originale.
- În timpul operării LCU CW, este posibil să apară un nivel crescut de zgomot, în special când se utilizează aparatul direct de la nivelul afișajului. Purtați echipament individual de protecție!
- Funcționarea ireproșabilă a aparatului poate fi garantată numai dacă acesta este utilizat în condițiile de mediu prevăzute. Asigurați-vă, pe cât posibil, să sunt respectate condițiile de mediu pe care se bazează proiectarea, de exemplu, temperatura, umiditatea, puritatea aerului.
- Fluidul de răcire necesar în scopuri de control trebuie să fie prezent pe întreaga durată de funcționare a aparatului.
- În cazul în care apar scurgeri, există pericol de vătămare din cauza evacuării agentului frigorific, în special a glicolului. Purtați echipament individual de protecție, colectați agentul frigorific scurs cu o lavetă sau cu un liant adecvat și remediați imediat cauza scurgerii.
- Senzorul de scurgere montat în aparat servește doar la detectarea funcțională a scurgerilor și nu trebuie utilizat ca un senzor într-un lanț de siguranță la nivel de instalație.
- Există un pericol de vătămare din cauza rotoarelor ventilatoarelor. Țineți persoanele și obiectele departe de rotoarele ventilatoarelor! Deschideți mastile de acoperire numai atunci când alimentarea cu curent este întreruptă și rotoarele sunt oprite! Nu efectuați nicio lucrare fără protecție mecanică! În cadrul lucrărilor de întreținere opriți fiecare ventilator! Prindeți părul lung! Nu purtați îmbrăcăminte largă! După o întrerupere a alimentării, ventilatorul repornește automat!

Instrucțiuni de siguranță privind întreținerea
- Înainte de efectuarea oricărei lucrări de întreținere sau de detectare a erorilor, aparatul trebuie deconectat în siguranță de la sursa de alimentare. Pentru a face acest lucru, deconectați conectorul general de la retea, și asigurați-l împotriva repornirii neintenționate.
- Atunci când efectuați lucrări la nivelul aparatului, există pericol de tăiere, în special din cauza marginilor ascuțite a modulului schimbătorului de căldură. Puneți-vă echipamentul individual de protecție înainte de lucrările de montare și de curățare!
- La demontarea și montarea unui modul de ventilator, există pericolul de vătămare din cauza marginilor ascuțite din interiorul LCU CW, a căderii modulului, a vitezelor mari ale aerului și a zgomotului. Purtați echipament individual de protecție!
- Pentru toate lucrările cu agentul frigorific, respectați fișa cu datele relevante privind siguranța.

Instrucțiuni de siguranță privind oprirea
- Persoanele nespecializate nu pot asigura desfășurarea procesului de muncă necesar pentru oprire. Prin urmare, aceste lucrări pot fi efectuate numai de către specialiști calificați.
- Pentru depozitarea și transportarea sub punctul de îngheț, circuitul de apă trebuie golit complet cu aer comprimat!

Personal de operare și personal specializat
- Instalarea, punerea în funcțiune, întreținerea și repararea acestui aparat pot fi efectuate numai de către specialiști calificați.
- Numai o persoană instruită poate opera aparatul în timpul funcționării.
- În special, aparatul nu trebuie să fie utilizat de persoane (inclusiv copii) cu capacități fizice, senzoriale sau mentale reduse sau cu lipsă de experiență sau cunoștințe, cu excepția cazului în care sunt supravegheate sau instruite cu privire la utilizarea aparatului.
- Copiii trebuie să fie supravegheați, pentru a nu se juca cu aparatul.

Echipament individual de protecție
- În timpul tuturor lucrărilor la nivelul aparatului, în special atunci când personalul poate intra în contact cu agentul frigorific, (atunci când se utilizează un amestec apă-glicol), trebuie purtat echipamentul individual de protecție, care este format, cel puțin, din mănuși de protecție impermeabile, precum și ochelari de protecție.
- În plus, se recomandă utilizarea unei protecții auditive adecvate și a unei plase de păr pentru toate lucrările în apropierea aparatului.
- În cadrul tuturor lucrărilor la nivelul LCU CW, în special pe partea de evacuare, se recomandă purtarea ochelarilor de protecție pentru a evita rănirea ochilor din cauza vitezelor mari ale aerului.

HR Sigurnosne upute

Opće važeće sigurnosne napomene
- Pridržavajte se sljedećih općih sigurnosnih napomena.
- Tijekom svih radova na uređaju nosite propisanu osobnu zaštitnu opremu.
- Ne provodite nikakve izmjene na rashladnoj jedinici LCU CW koje nisu opisane u ovim uputama ili drugim primjenjivim uputama za rad i montažu.
- Rashladna jedinica LCU CW smije se kombinirati i puštati u rad isključivo s priborom sustava koji preporučuje tvrtka Rittal.
- Uz ove opće sigurnosne napomene svakako se pridržavajte i posebnih sigurnosnih napomena koje se odnose na aktivnosti navedene u sljedećim poglavljima.
- Postoji opasnost od ozljeda uslijed strujnog udara ako se uređaj otvori dok je mrežni utikač priključen. Uređaj smiju otvarati i popravljati samo stručnjaci i osobe koje su završile obuku za te radove.

Sigurnosne napomene za transport
- Postoji opasnost od ozljeda uslijed pada tereta. Tijekom transporta uređaja viličarom ili dizalicom nemojte stajati ispod tereta u zraku! Upotrebljavajte samo odgovarajuća transportna sredstva.
- Postoji opasnost od ozljeda tijekom rezanja prednapetog remena. Nosite osobnu zaštitnu opremu!
- Postoji opasnost od ozljeda zbog velike težine uređaja. Imajte na umu najveće dopuštene težine dizanja za ljude. Po potrebi treba upotrijebiti podiznu napravu.

Sigurnosne napomene za montažu
- Montažu uređaja prepustite kvalificiranim stručnjacima.
- Postoji opasnost od ozljeda zbog prevrtanja uređaja. Uređaj uvijek moraju podizati dvije osobe iz ležećeg položaja. Pritom jedna osoba osigurava uređaj od slučajnog proklizavanja tijekom podizanja. Nosite osobnu zaštitnu opremu!
- Postoji opasnost od ozljeda zbog prevrtanja uređaja. U uspravnom položaju postoji opasnost od prevrtanja rashladne jedinice LCU CW sve dok još nije ugrađena i fiksirana u serverskom ormaru. Druga osoba mora osiguravati uređaj u uspravnom položaju.
- Postoji opasnost od prignječenja tijekom umetanja uređaja u serverski ormar između vanjskih rubova uređaja i okolnog profila okvira ormara. Nosite osobnu zaštitnu opremu!

Sigurnosne napomene za instalaciju
- Postoji opasnost od prignječenja tijekom umetanja pregradne hode u serverski ormar. Nosite osobnu zaštitnu opremu!
- Postoji opasnost od priklještenja i posjekotina tijekom spajanja vijkom i brtvljenja vodova rashladnog sredstva. Nosite osobnu zaštitnu opremu!
- Uvjerite se da vodovi rashladnog sredstva nakon instalacije ne ograničavaju zračnu struju kroz uređaj.
- Radove na električnim sustavima ili radnim sredstvima smiju provoditi samo stručnjaci za električne instalacije ili obučene osobe uz vodstvo i nadzor stručnjaka za električne instalacije u skladu s elektrotehničkim pravilima.
- Upotrebljavajte samo izolirani alat. Nosite osobnu zaštitnu opremu!
- Podaci o naponu na shemi / natpisnoj pločici moraju odgovarati mrežnom naponu.
- Neispravna montaža ili instalacija može uzrokovati opasnost od stvaranja kondenzata u uređaju što može prouzročiti električni kratki spoj ili istjecanje tekućine.

Sigurnosne napomene o radu
- Postoji opasnost od neispravnih funkcija ili uništavanja. Nemojte vršiti preinake na uređaju! Upotrebljavajte samo originalne rezervne dijelove.
- Tijekom rada rashladne jedinice LCU CW, razina buke može biti povećana, posebno kada se uređajem upravlja izravno na zaslonu. Nosite osobnu zaštitnu opremu!
- Besprijekorna funkcija uređaja može se jamčiti samo ako uređaj radi u predviđenim uvjetima okoline. Koliko god je moguće, osigurajte pridržavanje uvjeta okoline na kojima se temelji konfiguriranje, npr. temperatura, vlažnost zraka, čistoća zraka.
- Medij rashladne tekućine koji je potreban za upravljanje mora postojati tijekom cijelog vremena rada uređaja.
- Ako se pojave propusna mjesta, postoji opasnost od ozljeda zbog istjecanja rashladnog medija, osobito glikola. Nosite osobnu zaštitnu opremu, proliveni rashladni medij obrišite odgovarajućom krpom ili vezivnim sredstvom i odmah uklonite uzrok propuštanja.
- Senzor propuštanja ugrađen u uređaju služi samo funkcijskom otkrivanju propuštanja i ne smije se upotrebljavati kao senzor u sigurnosnom lancu na razini postrojenja.
- Rotori ventilatora uzrokuju opasnost od ozljeda. Držite ljude i predmete podalje od rotora ventilatora! Ne otvarajte pokrovne ploče dok se ne prekine napajanje strujom i dok kotači ne miruju! Nemojte provoditi radove bez mehaničke zaštite! Tijekom radova održavanja zaustavite dotični ventilator! Svežite dugu kosu! Nemojte nositi široku odjeću! Nakon prekida napona, ventilator se automatski ponovno pokreće!

Sigurnosne napomene o održavanju
- Prije svih radova održavanja i traženja pogrešaka u uređaju uređaj mora biti sigurno isključen iz napajanja. U tu svrhu uklonite mrežni priključak ili upotrijebite uređaj za isključivanje na svim polovima u dovodnom vodu i osigurajte ga od ponovnog nenamjernog uključivanja.
- Tijekom radova na uređaju postoji opasnost od posjekotina, posebno na oštre rubove modula izmjenjivača topline. Prije montažnih radova i radova čišćenja stavite osobnu zaštitnu opremu!
- Tijekom demontaže i montaže modula ventilatora postoji opasnost od ozljeda zbog oštrih rubova u unutrašnjosti rashladne jedinice LCU CW, pada modula, velikih brzina zraka i buke. Nosite osobnu zaštitnu opremu!
- Tijekom svih radova s rashladnim medijem uvažite pripadajući sigurnosno-tehnički list.

Sigurnosne napomene o isključivanju
- Nestručne osobe ne mogu jamčiti potreban radni proces za isključivanje. Stoga ove radove smiju provoditi samo kvalificirani stručnjaci.
- Tijekom skladištenja i transporta ispod točke ledišta potrebno je potpuno isprazniti optok vode komprimiranim zrakom!

Rukovatelji i stručno osoblje
- Instalaciju, puštanje u rad, održavanje i popravak ovog uređaja smiju provoditi samo kvalificirani stručnjaci.
- Samo obučena osoba smije rukovati uređajem tijekom rada.
- Uređajem se ne smiju koristiti osobe (uključujući djecu) s ograničenim fizičkim, osjetilnim ili mentalnim sposobnostima ili bez iskustva i znanja, osim ako su pod nadzorom ili dobiju upute.
- Potrebno je nadzirati djecu kako se ne bi igrala uređajem.

Osobna zaštitna oprema
- Tijekom svih radova na uređaju, posebno ako osoblje može doći u kontakt s rashladnim medijem (pri uporabi mješavine vode i glikola), mora se nositi osobna zaštitna oprema koja se sastoji barem od vodonepropusnih zaštitnih rukavica i zaštitnih naočala.
- Osim toga, preporučuje se uporaba odgovarajuće zaštite za sluh i mrežice za kosu tijekom svih radova u blizini uređaja.
- Tijekom svih radova na rashladnoj jedinici LCU CW, posebno na izlaznoj strani, preporučuje se nošenje zaštitnih naočala kako bi se spriječile ozljede očiju zbog visokih brzina zraka.

HU Biztonsági utasítások

Általános érvényű biztonsági tudnivalók
- Kérjük, vegye figyelembe a következő általános biztonsági tudnivalókat.
- Minden, a berendezésen végzett munka során viselje az előírt személyi védőfelszerelést.
- Az LCU CW berendezésen ne végezzen olyan módosítást, amely ebben, vagy az együtt érvényes szerelési és üzemeltetési útmutatókban nincs leírva.
- Az LCU CW kizárólag a Rittal által előírt rendszertartozékkal kombinálható és üzemeltethető.
- Az általános biztonsági tudnivalók mellett feltétlenül tartsa be a különleges biztonsági tudnivalókat is, amelyeket a következő fejezetekben a felsorolt tevékenységeknél írunk le.
- Áramütés miatti sérülésveszély áll fenn, ha a berendezést a hálózati csatlakozó bedugott állapotában nyitják ki. A berendezést csak szakember és képzett személy nyithatja ki és javíthatja.

Biztonsági utasítások a szállításhoz
- Sérülésveszély áll fenn leeső terhek miatt. A berendezés emelőkocsival, villás targoncával vagy daruval történő szállítása esetén ne lépjen a függő teher alá! Csak megfelelő szállítóeszközöket használjon.
- Sérülésveszély áll fenn az előfeszített csomagolószalag átvágásakor. Viselje a személyi védőfelszerelést!
- Sérülésveszély áll fenn a berendezés nagy tömege miatt. Vegye figyelembe az egy személy számára maximálisan megengedett emelhető tömegeket. Szükség esetén emelőberendezést kell használni.

A beszereléssel kapcsolatos biztonsági tudnivalók
- A berendezés összeszerelését képzett szakemberrel végeztesse el.
- Sérülésveszély áll fenn a berendezés lehetséges lebillenése miatt. A berendezés fekvő pozícióból történő felállítását mindig két személynek kell végeznie. Ennek során az egyik személy a felállítás során biztosítja a berendezést véletlen elcsúszás ellen. Viselje a személyi védőfelszerelést!
- Sérülésveszély áll fenn a berendezés lehetséges lebillenése miatt. Függőleges helyzetben az LCU CW felbillenése fenyeget, amíg nincs beépítve a szerverszekrénybe és nincs szakszerűen rögzítve. Felállított helyzetben a második személlyel biztosíttassa a berendezést.
- A szerverszekrénybe történő behelyezés során zúzódás veszélye áll fenn a berendezés külső éle és a szekrény körbefutó vázprofilja között. Viselje a személyi védőfelszerelést!

Biztonsági utasítások a telepítéshez
- Zúzódás veszélye áll fenn a válaszfal szerverszekrénybe helyezésekor. Viselje a személyi védőfelszerelést!
- Becsípődés és vágás veszélye áll fenn a hűtőközeg-vezetékek rácsavarozásakor és tömítésekor. Viselje a személyi védőfelszerelést!
- Biztosítsa, hogy a hűtőközeg-vezetékek a felszerelés után ne akadályozzák a légáramot.
- Az elektromos berendezéseken és eszközökön történő munkavégzést csak elektromos szakember, vagy elektromos szakember vezetésével és felügyelete mellett dolgozó beosztott végezheti, az elektrotechnikai szabályok betartásával.
- Csak szigetelt szerszámot használjon. Viselje a személyi védőfelszerelést!
- A kapcsolási rajzon / típustáblán feltüntetett feszültség-adatoknak egyezniük kell a hálózati feszültséggel.
- A hibás összeszerelés és telepítés miatt kondenzátumképződés veszélye áll fenn a berendezésen belül, ami elektromos rövidzárlatot, illetve folyadék-kilépést okozhat.

Biztonsági utasítások az üzemeltetéshez
- Hibás működés vagy rongálás veszélye áll fenn. A berendezésen tilos változtatásokat végezni! Csak eredeti pótalkatrészeket használjon.
- Az LCU CW üzemeltetése során, különösen ha a berendezést közvetlenül a kijelzőn kezelik, megnövekedhet a zajszint. Viselje a személyi védőfelszerelést!
- A berendezés kifogástalan működése csak akkor biztosítható, ha az előírt környezeti feltételek mellett üzemeltetik. Ha lehetséges, bizonyosodjon meg arról, hogy a környezeti feltételek, pl. hőmérséklet, levegő páratartalma, levegőtisztaság, megfelelnek az előírtaknak.
- A szabályozástechnikai szempontból szükséges közegnek, a hűtővíznek a berendezés teljes üzemideje alatt rendelkezésre kell állni.
- Szivárgás esetén sérülésveszély áll fenn a kilépő közeg, különösen a glikol miatt. Viselje a személyi védőfelszerelést, törölje fel a kifolyt hűtőközeget megfelelő ronggyal vagy megkötőanyaggal, és haladéktalanul szüntesse meg a szivárgás okát.
- A berendezésbe beépített szivárgásérzékelő csak a funkcionális szivárgásfelismerésre szolgál, és nem használható érzékelőként berendezés szintű biztonsági láncban.
- A ventilátor járókerekei miatt sérülésveszély áll fenn. A személyeket és tárgyakat tartsa távol a ventilátorok járókerekeitől! A burkolat lemezeit csak megszakított áramellátás és álló járókerekek mellett nyissa meg! Mechanikai védelem nélkül ne végezzen munkálatokat! Karbantartási munkálatok során az adott ventilátorokat állítsa le! A hosszú hajat fogja össze! Ne viseljen laza ruhadarabokat! A feszültség kiesése után a ventilátor automatikusan újraindul!

Biztonsági tudnivalók a karbantartáshoz
- Minden karbantartási munka előtt, valamint a berendezésben hibakeresés előtt biztonságosan feszültségmentesre kell kapcsolni a berendezést. Ehhez húzz aki a hálózati csatlakozót, vagy a tápvezetéken az összpólusú lekapcsolószerkezetet használja, és biztosítsa újbóli bekapcsolás ellen.
- A berendezésen végzett munkáknál fennáll a vágási sérülés veszélye, különösen a hőcserélő modul éles széleinél. Szerelési és tisztítási munkák előtt vegyen fel személyi védőfelszerelést!
- Ventilátormodul ki- és beszerelése során sérülésveszély áll fenn az LCU CW belső terében található éles élek, a modul leesése, a nagy sebességű légáram és a zaj miatt. Viselje a személyi védőfelszerelést!
- A hűtőközeggel végzett minden munkánál vegye figyelembe a hozzá tartozó biztonsági adatlapot.

Biztonsági utasítások a leállításhoz
- Laikusok nem tudják biztosítani a leállításhoz szükséges munkafolyamatot. Ezért ezeket a munkákat csak képzett szakember végezheti el.
- Fagypont alatti tárolás és szállítás alatt a vízkört sűrített levegővel teljesen le kell üríteni!

Kezelő- és szakszemélyzet
- A berendezés telepítését, üzembe helyezését, karbantartását és helyreállítását csak képzett szakember végezheti.
- A berendezés kezelését működés közben csak beavatott személy végezheti.
- A berendezést különösen nem használhatják csökkent fizikai, érzékszervi vagy szellemi képességű, illetve tapasztalat és ismeretek nélküli személyek (beleértve a gyermekeket is), kivéve, ha felügyeletet biztosítanak számukra, illetve oktatást kaptak.
- A gyerekeket felügyelni kell, hogy a berendezéssel ne játsszanak.

Személyi védőfelszerelés
- A készüléken végzett minden munkánál, különösen, ha a személyzet hűtőközeggel érintkezhet (víz-glikol keverék használata esetén), legalább vízálló védőkesztyűből, valamint védőszemüvegből álló személyi védőfelszerelést kell viselni.
- Emellett a készülék közelében végzett munkákhoz megfelelő fülvédő és hajháló használata ajánlott.
- Az LCU CW berendezésen végzett minden munkához, különösen a kifúvási oldalon, védőszemüveg viselése ajánlott a nagy sebességű légáram miatti szemsérülések megelőzése érdekében.

LT Saugos nurodymai

Bendrieji saugos nurodymai
- Atkreipkite dėmesį į toliau pateiktas bendruosius saugos nurodymus.
- Dirbdami su prietaisu dėvėkite nustatytas asmenines apsaugos priemones.
- Nedarykite jokių LCU CW pakeitimų, kurie nėra aprašyti šioje arba atitinkamose montavimo ir naudojimo instrukcijose.
- LCU CW galima kombinuoti ir eksploatuoti su „Rittal“ patvirtintais sistemos priedais.
- Be šių bendrųjų saugos nurodymų, taip pat turite laikytis specialių saugos nurodymų, susijusių su tolesniuose skyriuose išvardytomis veiklomis.
- Jei prietaisas atidaromas prijungus maitinimo kištuką, kyla pavojus susižeisti dėl elektros smūgio. Prietaisą atidaryti ir remontuoti gali tik specialistai ir apmokyti asmenys.

Saugos nurodymai transportuojant
- Kyla pavojus susižeisti dėl krintančių krovinių. Transportuodami įrenginį padėklų vežimėliu, šakiniu krautuvu ar kranu, neikite po pakabintu kroviniu! Naudokite tik tinkamas transportavimo priemones.
- Pjaunant iš anksto įtemptą diržą kyla pavojus susižeisti. Dėvėkite asmenines apsaugos priemones!
- Dėl didelio prietaiso svorio kyla pavojus susižeisti. Žmonės neturėtų kelti per sunkių svorių. Prireikus reikia naudoti kėlimo įrangą.

Saugos nurodymai montuojant
- Montuoti prietaisus įpareigokite tik kvalifikuotus specialistus.
- Kyla pavojus susižeisti nuvirtus prietaisui. Prietaisą kelti iš gulimos padėties visada turi du žmonės. Vienas iš dviejų žmonių apsaugo prietaisą nuo netyčinio paslydimo jo nustatymo metu. Dėvėkite asmenines apsaugos priemones!
- Kyla pavojus susižeisti nuvirtus prietaisui. Vertikalioje padėtyje yra rizika, kad LCU CW apvirs, kol jis dar nebuvo sumontuotas serverio spintoje ir tinkamai pritvirtintas. Leiskite kitam asmeniui pritvirtinti prietaisą vertikalioje padėtyje.
- Įstatant prietaisą į serverio spintą tarp išorinių prietaiso kraštų ir aplinkinio spintos rėmo profilio kyla suspaudimo pavojus. Dėvėkite asmenines apsaugos priemones!

Saugos nurodymai instaliuojant
- Įvedant skaidinį į serverio spintą, kyla prispaudimo pavojus. Dėvėkite asmenines apsaugos priemones!
- Įvedant prisukant ir sandarinant šaltnešio linijas, kyla pavojus prispausti ir įpjauti. Dėvėkite asmenines apsaugos priemones!
- Sumontavę įsitikinkite, kad šaltnešio linijos nevaržo oro srauto per prietaisą.
- Darbus su elektros įranga ar prietaisais gali atlikti tik profesionalus elektrikas arba apmokyti darbuotojai, kuriems vadovauja ir juos prižiūri elektrikas. Būtina laikytis elektrotechnikos taisyklių.
- Galima naudoti tik izoliuotus nuo elektros įtampos įrankius. Dėvėkite asmenines apsaugos priemones!
- Informacija apie įtampą elektros schemoje / tipo lentelėje turi atitikti tinklo įtampą.
- Neteisingas montavimas ir instaliacija kelia pavojų, kad prietaise gali susidaryti kondensatas, dėl kurio gali įvykti trumpasis jungimas arba ištekėti skystis.

Saugos nurodymai eksploatuojant
- Kyla gedimo arba sunaikinimo pavojus. Nedarykite jokių prietaiso pakeitimų! Naudokite tik originalias atsargines dalis.
- Kai veikia LCU CW, triukšmo lygis gali būti padidintas, ypač kai prietaisas valdomas tiesiogiai ekrane. Dėvėkite asmenines apsaugos priemones!
- Tinkamas prietaiso veikimas gali būti garantuotas tik tada, kai jis naudojamas numatytomis aplinkos sąlygomis. Kiek įmanoma, reikia užtikrinti, kad būtų palaikomos aplinkos sąlygos, kuriomis grindžiamas projektavimas, pvz., palaikoma temperatūra, drėgmė, oro švarumas.
- Reguliavimo tikslais reikalingas aušinimo vanduo turi būti per visą prietaiso veikimo laiką.
- Jei atsiranda nuotėkis, kyla pavojus susižeisti dėl išbėgančios aušinimo medžiagos, ypač glikolio. Dėvėkite asmenines apsaugos priemones, nuvalykite išsiliejusią aušinimo medžiagą tinkamu audiniu arba riškliu ir nedelsdami pašalinkite nuotėkio priežastį.
- Prietaise sumontuotas nuotėkio jutiklis naudojamas tik funkciniam nuotėkio aptikimui ir negali būti naudojamas kaip jutiklis saugos grandinėje sistemos lygiu.
- Kyla pavojus susižeisti dėl ventiliatorių sparnuotės. Laikykite žmones ir daiktus toliau nuo ventiliatoriaus sparnuočių! Neatidarykite dengiamųjų plokščių, kol nenutrūko elektros tiekimas ir sparnuotės nesustojo! Neatlikite jokių darbų be mechaninės apsaugos! Atlikdami

techninės priežiūros darbus, išjunkite atitinkamą ventiliatorių! Suriškite ilgus plaukus! Nedėvėkite laisvų drabužių! Nutrūkus elektros tiekimui, ventiliatorius vėl įsijungia automatiškai!

Saugos nurodymai atliekant techninę priežiūrą
- Prieš atliekant visus techninės priežiūros darbus ir prieš šalinant prietaiso gedimus, prietaisas turi būti saugiai atjungtas nuo maitinimo šaltinio. Norėdami tai padaryti, ištraukite tinklo jungtį arba naudokite visų polių išjungimo įtaisą maitinimo linijoje ir apsaugokite jį nuo netyčinio įjungimo.
- Dirbant su prietaisu, kyla įpjovimų pavojus, ypač dėl aštrių šilumokaičio modulio kraštų. Prieš montuodami ir valydami užsidėkite asmenines apsaugos priemones!
- Nuimant ir montuojant ventiliatoriaus modulį kyla pavojus susižaloti dėl aštrių kraštų LCU CW viduje, modulio nukritimo, didelio oro greičio ir triukšmo. Dėvėkite asmenines apsaugos priemones!
- Visuose darbuose su aušinimo medžiaga laikykitės atitinkamo saugos duomenų lapo.

Saugos nurodymai išjungiant
- Paprasti asmenys negali garantuoti būtino išjungimo proceso. Todėl šį darbą gali atlikti tik kvalifikuoti specialistai.
- Laikant ir transportuojant žemiau užšalimo taško, vandens kontūras turi būti visiškai ištuštintas suslėgtu oru!

Operatoriai ir kvalifikuoti specialistai
- Šio prietaiso montavimą, paleidimą, techninę priežiūrą ir remontą gali atlikti tik kvalifikuoti specialistai.
- Prietaisą veikimo metu gali valdyti tik apmokytas asmuo.
- Visų pirma, prietaiso negali naudoti asmenys (įskaitant vaikus), kurių fiziniai, jutimo ar protiniai gebėjimai yra riboti arba neturintys patirties ir žinių, nebent jie būtų prižiūrimi arba mokomi.
- Vaikai turi būti prižiūrimi, kad jie nežaistų su prietaisu.

Asmeninės apsaugos priemonės
- Atliekant visus darbus su prietaisu, ypač jei darbuotojai gali liestis su aušinimo medžiaga (naudojant vandens ir glikolio mišinį), būtina dėvėti asmenines apsaugos priemones, kurias sudaro bent vandeniui atsparios pirštinės ir apsauginiai akiniai.
- Be to, atliekant visus darbus šalia prietaiso rekomenduojama naudoti tinkamas klausos apsaugos priemones ir plaukų tinklelį.
- Atliekant visus darbus su LCU CW, ypač išleidimo pusėje, rekomenduojame dėvėti apsauginius akinius, kad išvengtumėte akių sužalojimų dėl didelio oro greičio.

EE Ohutusjuhised

Üldiselt kehtivad ohutusjuhised
- Palun järgige järgmisi üldisi ohutusjuhiseid.
- Kandke kõigi seadmel teostatavate tööde puhul alati ettenähtud isikukaitsevarustust.
- Ärge teostage seadmel LCU CW muudatusi, mida pole kirjeldatud käesolevas või sellega koos kehtivates paigaldus- ja kasutusjuhendites.
- Seadet LCU CW tohib kombineerida ja kasutada vaid Rittali ettenähtud lisatarvikutega.
- Järgige lisaks nendele üldistele ohutusjuhistele tingimata ka spetsiifilisi ohutusjuhiseid seoses järgnevates peatükkides toodud tegevustega.
- Ühendatud toitepistikuga seadme avamisel esineb vigastusoht elektrilöögi tõttu. Seadme avamine ja remontimine on lubatud ainult spetsialistide ja juhendatud isikute poolt.

Ohutusjuhised transpordil
- Esineb vigastusoht kukkuvate koormate tõttu. Seadme transpordil laaduri, tõstuki või kraanaga ei tohi astuda tõstetud koorma alla! Kasutage ainult sobivaid transpordivahendeid.
- Esineb vigastusoht eelpingutatud sidumislintide läbilõikamisel. Kandke isikukaitsevarustust!
- Esineb vigastusoht seadme suure kaalu tõttu. Arvestage inimestele maksimaalselt lubatud tõstekaaludega. Vajaduse korral kasutage tõsteseadeldist.

Ohutusjuhised monteerimisel
- Laske seadmete monteerimine teostada kvalifitseeritud spetsialistidel.
- Esineb vigastusoht seadme ümbermineku tõttu. Seadme lamavast asendist püsti seadmine peab alati toimuma kahe inimese poolt. Seejuures kindlustab üks neist kahest inimesest seadet püsti asetamise ajal soovimatu libisemise vastu. Kandke isikukaitsevarustust!
- Esineb vigastusoht seadme ümbermineku tõttu. Püstasendis esineb LCU CW ümbermineku oht seni, kuni see ei ole veel serverikappi paigaldatud ja asjakohaselt kinnitatud. Laske seadet püstasendis teise inimese poolt kindlustada.
- Esineb muljumisoht seadme serverikappi viimisel seadme väliste äärte ja kapi ümbritseva raamiprofiili vahel. Kandke isikukaitsevarustust!

Ohutusjuhised paigaldamisel
- Esineb muljumisoht sektsiooni serverikappi viimisel. Kandke isikukaitsevarustust!
- Jahutusaineliinide külgekruvimisel ja tihendamisel esineb pitsitus- ja lõikeoht. Kandke isikukaitsevarustust!
- Veenduge, et jahutusaineliinid ei takistaks pärast paigaldamist õhuvoolu läbi seadme.
- Elektripaigaldustöid tohivad teha ainult elektritööde litsentsi omavad ettevõtted või vastavat pädevust omavad isikud jälgides ohutuse nõudeid.
- Kasutada tohib ainult voolupinget isoleerivaid tööriistu. Kandke isikukaitsevarustust!
- Lülitusskeemil/tüübisildil toodud pingeandmed peavad vastama toitepingele.
- Vigase monteerimise ja paigaldamise korral esineb seadmes kondensaadi tekke oht, mis võib põhjustada elektrilöhise või vedeliku lekke.

Ohutusjuhised kasutamisel
- Esineb tööhäirete või hävinemise oht. Ärge teostage seadmel muudatusi! Kasutage ainult originaalvaruosi.
- LCU CW kasutamisel võib eriti seadme otse ekraanilt juhtimisel esineda kõrgenenud mürataset. Kandke isikukaitsevarustust!
- Seadme laitmatu töö saab tagada ainult juhul, kui seda kasutatakse ettenähtud keskkonnatingimustel. Tagage nii palju kui võimalik, et järgitakse paigaldamise aluseks olevaid keskkonnatingimusi, nt temperatuuri, õhuniiskust, õhu puhtust.
- Reguleerimistehniliselt hädavajalik meedium jahutusvesi peab olema olemas kogu seadme tööaja jooksul.
- Lekete korral esineb vigastusoht väljunud jahutusaine, eriti glükooli tõttu. Kandke isikukaitsevarustust, koguge lekkinud jahutusaine sobiva lapi või sideainega ja kõrvaldage koheselt lekete põhjus.
- Seadmesse paigaldatud lekkeandur on mõeldud ainult funktsionaalseks lekketuvastuseks ning seda ei tohi kasutada andurina seadmestiku taseme ohutusahelas.
- Esineb vigastusoht ventilaatorite tööratastе tõttu. Hoidke inimesed ja esemed ventilaatorite tööratastest eemal! Avage katteplekk alles katkestatud vooluvarustuse ja seisvate tööratastе korral! Ärge teostage töid ilma mehaanilise kaitseta! Hooldustööde korral seisake vastav ventilaator! Siduge pikad juuksed kokku! Ärge kandke lahtisi rõivaesemeid! Pärast pingekatkestuse lõppu hakkab ventilaator automaatselt uuesti tööle!

Ohutusjuhised hooldamisel
- Enne kõiki hooldustöid ning enne seadme tõrkeotsingut tuleb seade eelnevalt turvaliselt pingevabaks lülitada. Selleks eemaldage toitekaabel või kasutage kaablis asuvat kõigi pooluste väljalülitusseadet ja kindlustage see soovimatu uuesti sisse lülitamise vastu.
- Seadmel tööde teostamisel esineb lõikevigastuste oht, eriti soojusvaheti mooduli teravate äärte tõttu. Enne monteerimis- ja puhastustöid pange selga isikukaitsevarustus!
- Ventilaatorimooduli eemaldamisel ja paigaldamisel esineb vigastusoht teravate äärte tõttu LCU CW sisemuses ning mooduli mahakukkumise, suurte õhukiiruste ja müra tõttu. Kandke isikukaitsevarustust!
- Kõigi tööde korral jahutusainega järgige selle juurde kuuluvat ohutuskaarti.

Ohutusjuhised seiskamisel
- Võhikud ei suuda seiskamisel tagada tööde õiget teostamist. Seetõttu tohivad neid töid teostada ainult kvalifitseeritud spetsialistid.
- Säilitamisel ja transpordil allpool külmumispunkti tuleb veeringlus suruõhu abil täielikult tühjendada!

Kasutajad ja spetsialistid
- Seadme paigaldamist, kasutuselevõttu, hooldust ja remonti tohivad teostada ainult kvalifitseeritud spetsialistid.
- Seadet jooksva töö ajal tohivad kasutada ainult juhendatud isikud.
- Seadet ei tohi eriti kasutada piiratud füüsiliste, tunnetuslike või vaimsete võimete või puudulike kogemuste ja teadmistega isikud (sealhulgas lapsed), välja arvatud juhul, kui nad on järelevalve all või neid juhendatakse.
- Lapsed peavad olema järelevalve all, et nad ei saaks seadmega mängida.

Isikukaitsevarustus
- Kõigi tööde korral seadmel, eriti kui personal võib puutuda kokku jahutusainega (vee ja glükooli segu kasutamisel), tuleb kanda isikukaitsevarustust, mis koosneb vähemalt veekindlatest kaitsekinnastest ja kaitseprillidest.
- Lisaks soovitatakse kõigil töödel seadme läheduses sobivate kõrvaklappide ja juuksevõrgu kasutamist.
- Kõigi tööde korral seadmel LCU CW, eriti õhuväljundi küljel, soovitakse kanda kaitseprille, et vältida silmade vigastusi kõrgete õhukiiruste tõttu.

LV Drošības norādījumi

Vispārīgi drošības norādījumi
- Lūdzu, ievērojiet tālāk sniegtos vispārīgos drošības norādījumus.
- Veicot jebkuru darbu ar ierīci, lietojiet individuālos aizsardzības līdzekļus.
- Neveiciet nekādas LCU CW (šķidrās dzesēšanas elementa) izmaiņas, kas nav aprakstītas šajā rokasgrāmatā vai attiecīgajās montāžas un lietošanas instrukcijās.
- LCU CW drīkst kombinēt un lietot tikai ar tādiem sistēmas piederumiem, kurus paredzējis “Rittal”.
- Papildus šiem vispārīgajiem drošības norādījumiem ir jāievēro arī īpašie drošības norādījumi saistībā ar turpmākajās nodaļās minētajām darbībām.
- Ja ierīce tiek atvērta ar pievienotu strāvas kontaktdakšu, pastāv elektriskās strāvas trieciena izraisītas traumas risks. Ierīci drīkst atvērt un remontdarbus drīkst veikt tikai speciālisti un apmācītas personas.

Drošības norādījumi par pārvietošanu
- Pastāv traumas risks, krītot kravai. Pārvietojot ierīci ar pacēlāju, autoiekrāvēju vai celtni, neuzturieties zem iekārtās kravas! Izmantojiet tikai piemērotus pārvietošanas līdzekļus.
- Pārgriežot nospriegotās apsiešanas lentes, pastāv savainojumu risks. Lietojiet individuālos aizsardzības līdzekļus!
- Ierīces lielā svara dēļ pastāv traumas risks. Lūdzu, ievērojiet ierobežojumus attiecībā uz maksimālo svaru, ko ļauts celt vienai personai. Izmantojiet atbilstošas celšanas ierīces, kad tas ir nepieciešams.

Drošības norādījumi par montāžu
- Ierīces uzstādīšanu uzticiet kvalificētiem speciālistiem.
- Pastāv traumas risks, ierīcei apgāžoties. Ierīces pacelšana no guļus stāvokļa vienmēr jāveic divām personām. Viena no divām personām nodrošina, lai ierīce tās uzstādīšanas laikā neapgāztos. Lietojiet individuālos aizsardzības līdzekļus!
- Pastāv traumas risks, ierīcei apgāžoties. Vertikālā stāvoklī pastāv LCU CW apgāšanās risks, kamēr tas vēl nav uzstādīts servera skapī un pareizi nofiksēts. Lūdziet otrai personai nostiprināt ierīci vertikālā stāvoklī.
- Ievietojot ierīci servera skapī starp ierīces ārējām malām un skapja rāmja profilu, pastāv saspiešanas risks. Lietojiet individuālos aizsardzības līdzekļus!

Drošības norādījumi par uzstādīšanu
- Ievietojot apvalku servera skapī, pastāv saspiešanas risks. Lietojiet individuālos aizsardzības līdzekļus!

- Pieskrūvējot un noblīvējot dzesēšanas šķidruma cauruļvadus, pastāv saspiešanas un sagriešanās risks. Lietojiet individuālos aizsardzības līdzekļus!
- Pēc uzstādīšanas pārliecinieties, ka dzesēšanas šķidruma caurules neierobežo gaisa plūsmu caur iekārtu.
- Darbu ar elektriskajām sistēmām un ierīcēm ļauts veikt vienīgi elektriķiem vai kvalificētiem darbiniekiem, kas atrodas elektriķa vadībā un uzraudzībā. Visus darbus jāveic saskaņā ar elektriskās inženierijas noteikumiem.
- Izmantojiet vienīgi ar elektroizolāciju nodrošinātus darbarīkus. Lietojiet individuālos aizsardzības līdzekļus!
- Informācijai par spriegumu shēmā/uz tipa plāksnītes ir jāatbilst tīkla spriegumam.
- Nepareiza montāža un uzstādīšana rada kondensāta veidošanās risku ierīcē, kas var izraisīt elektrisko īssavienojumu vai šķidruma noplūdi.

Drošības norādījumi ekspluatācijai
- Pastāv darbības traucējumu vai bojājumu risks. Neveiciet nekādas izmaiņas ierīcē! Izmantojiet tikai oriģinālās rezerves daļas.
- Darbojoties LCU CW, var paaugstināties trokšņa līmenis, īpaši tad, ja ierīce tiek darbināta tieši no displeja. Lietojiet individuālos aizsardzības līdzekļus!
- Pareizu ierīces darbību var garantēt tikai tad, ja tā tiek lietota piemērotos vides apstākļos. Cik iespējams, nodrošiniet konstrukcijai atbilstošus vides apstākļus, piem., temperatūru, mitrumu, gaisa tīrību.
- Tehnoloģiskiem nolūkiem nepieciešamajam dzesēšanas ūdenim ir jābūt pieejamam visā ierīces ekspluatācijas laikā.
- Ja rodas noplūde, pastāv traumas risks, ko var radīt izplūdusī viela, it īpaši glikols. Lietojiet individuālos aizsardzības līdzekļus, savāciet izlijušo dzesēšanas līdzekli ar piemērotu drānu vai saistvielu un nekavējoties novērsiet noplūdes iemeslu.
- Ierīcē uzstādītais noplūdes sensors tiek izmantots tikai funkcionālai noplūdes noteikšanai, un to nedrīkst izmantot kā sensoru drošības ķēdē sistēmas līmenī.
- Pastāv traumas risks, ko rada ventilatora lāpstiņriteņi. Nepieļaujiet cilvēku un priekšmetu atrašanos tuvu ventilatora lāpstiņriteņiem! Atveriet pārsega plāksnes tikai tad, kad ir pārtraukta strāvas padeve un lāpstiņriteņi nekustas! Neveiciet nekādus darbus bez mehāniskas aizsardzības! Apkopes darbu laikā izslēdziet attiecīgo ventilatoru! Sasieniet garus matus! Nevelciet brīvi plandošu apģērbu! Pēc strāvas padeves pārtraukuma ventilators atkal automātiski ieslēdzas!

Drošības norādījumi par apkopi
- Pirms visiem apkopes darbiem un pirms ierīces traucējumu identificēšanas ierīce vispirms ir jāatvieno no strāvas avota. Lai to izdarītu, atvienojiet tīkla pieslēgumu vai izmantojiet visu polu izslēgšanas ierīci barošanas līnijā un nodrošiniet to pret nejaušu atkārtotu ieslēgšanos.
- Strādājot ar ierīci, pastāv traumas risks, it īpaši, sagriežoties ar siltummaiņa moduļa asajām malām. Pirms montāžas un tīrīšanas darbiem uzvelciet individuālos aizsardzības līdzekļus!
- Noņemot un uzstādot ventilatora moduli, pastāv traumas risks, ko rada asas malas LCU CW iekšpusē, moduļa nokrišana, liels gaisa ātrums un troksnis. Lietojiet individuālos aizsardzības līdzekļus!
- Veicot jebkuru darbu ar dzesēšanas līdzekli, ievērojiet atbilstošās drošības datu lapas informāciju.

Drošības norādījumi par ekspluatācijas pārtraukšanu
- Personas, kuras nav speciālisti, nevar nodrošināt nepieciešamos ekspluatācijas pārtraukšanas darbus. Tādēļ šos darbus drīkst veikt tikai kvalificēti speciālisti.
- Uzglabājot un pārvietojot ierīci apstākļos zem sasalšanas punkta, ūdens kontūrs pilnībā jāiztukšo ar saspiestu gaisu!

Apkalpes personāls un speciālisti
- Šīs ierīces uzstādīšanu, nodošanu ekspluatācijā, apkopi un remontu drīkst veikt tikai kvalificēti speciālisti.
- Ierīci darbības laikā drīkst apkalpot tikai apmācīta persona.
- Nekādā gadījumā ierīci nedrīkst lietot personas (tostarp bērni) ar ierobežotām fiziskām, maņu vai garīgajām spējām vai bez pieredzes un zināšanām, ja vien šīs personas netiek uzraudzītas vai nav saņēmušas norādījumus.
- Bērni ir jāuzrauga, lai nodrošinātu, ka viņi nerotaļājas ar ierīci.

Individuālie aizsardzības līdzekļi
- Veicot jebkādus darbus ar ierīci, it īpaši, ja personāls var nokļūt saskarē ar dzesēšanas līdzekli (izmantojot ūdens–glikola maisījumu), ir jālieto individuālie aizsardzības līdzekļi – vismaz ūdensnecaurlaidīgi aizsargcimdi un aizsargbrilles.
- Turklāt, veicot jebkādus darbus ierīces tuvumā, ieteicams izmantot piemērotus dzirdes aizsarglīdzekļus un matu aizsargtīklu.
- Veicot jebkādus darbus ar LCU CW, it īpaši izplūdes pusē, ieteicams lietot aizsargbrilles, lai izvairītos no acu traumām liela gaisa ātruma dēļ.

SI Varnostni napotki

Splošni varnostni napotki
- Upoštevajte naslednje splošne varnostne napotke.
- Pri vsakem delu z napravo nosite predpisano osebno zaščitno opremo.
- Enote LCU CW ne spreminjajte na noben način, ki ni opisan v teh ali drugih veljavnih navodilih za namestitev in uporabo.
- Enoto LCU CW lahko združujete in uporabljate izključno z dodatno opremo, ki jo za to predvideva podjetje Rittal.
- Poleg teh splošnih varnostnih napotkov morate upoštevati tudi posebne varnostne napotke, ki se navezujejo na izvajanje opravil, opisanih v naslednjih poglavjih.
- Če napravo odprete, ko je omrežni vtič priključen, obstaja nevarnost poškodb zaradi električnega udara. Napravo lahko odpirajo in popravljajo samo pooblaščene in usposobljene osebe.

Varnostni napotki glede prevažanja
- Obstaja nevarnost poškodb zaradi tovora, ki lahko pade dol. Pri prevažanju naprave z dvižnim vozičkom, viličarjem ali žerjavom ne stopajte pod viseč tovor! Uporabljajte samo ustrezna prevozna sredstva.
- Obstaja nevarnost poškodb, če se napeti povezovalni trakovi pretrgajo. Nosite osebno zaščitno opremo!
- Obstaja nevarnost poškodb zaradi velike teže naprave. Upoštevajte največjo dovoljeno težo, ki jo oseba lahko varno dvigne. Po potrebi uporabite dvižno napravo.

Varnostni napotki glede vgradnje
- Vgradnjo naprav lahko izvaja le za to usposobljeno osebje.
- Obstaja nevarnost poškodb, če se naprava prevrne. Postavljanje naprave iz ležečega v pokončen položaj morata vedno izvesti dve osebi. Pri tem ena oseba med postavljanjem zavaruje napravo, da ne bi nenamerno zdrsnila. Nosite osebno zaščitno opremo!
- Obstaja nevarnost poškodb, če se naprava prevrne. V pokončnem položaju obstaja nevarnost prevračanja enote LCU CW, dokler še ni vgrajena v strežniško omaro in ustrezno strokovno pritrjena. Napravo v pokončnem položaju mora zavarovati druga oseba.
- Pri prenašanju naprave v strežniško omaro obstaja nevarnost stiska med zunanjimi robovi naprave in obrobnim okvirjem omare. Nosite osebno zaščitno opremo!

Varnostni napotki glede namestitve
- Obstaja nevarnost stiska pri nameščanju izolirnih elementov v strežniško omaro. Nosite osebno zaščitno opremo!
- Pri privijanju in tesnjenju napeljave za hlajenje obstaja nevarnost, da se ukleščite ali urežete. Nosite osebno zaščitno opremo!
- Poskrbite, da cevi za hlajenje po namestitvi ne omejujejo zračnega toka skozi napravo.
- Dela na električnem sistemu ali napravah lahko izvaja samo usposobljeni električar ali usposobljeno osebje pod vodstvom in nadzorom usposobljenega električarja, ki poskrbi, da so dela opravljena v skladu z elektrotehničnimi in varnostnimi predpisi.
- Uporabljajte samo izolirano električno orodje. Nosite osebno zaščitno opremo!
- Navedene vrednosti za napetost na shemi vezja/tipski ploščici se morajo ujemati z omrežno napetostjo.
- Zaradi napačne vgradnje in namestitve obstaja nevarnost, da v napravi nastane kondenzacija, kar lahko privede do kratkega stika ali iztekanja tekočine.

Varnostni napotki glede uporabe
- Obstaja nevarnost okvar ali uničenja. Ne spreminjajte ničesar na napravi! Uporabljajte samo originalne nadomestne dele.
- Ko je enota LCU CW v delovanju, lahko neposredno na zaslonu pride do povečanega hrupa, še posebej med upravljanjem naprave. Nosite osebno zaščitno opremo!
- Pravilno delovanje naprave je zagotovljeno samo, če jo uporabljate v predvidenih pogojih okolice. V največji možni meri zagotovite, da so pri postavitvi izpolnjeni osnovni pogoji okolice, kot so temperatura, vlažnost in čistost zraka.
- Hladilna voda, potrebna za regulacijo, mora biti prisotna ves čas delovanja naprave.
- Pri puščanju tekočine obstaja nevarnost poškodb zaradi iztekajočega hladilnega sredstva, predvsem glikola. Nosite osebno zaščitno opremo, odstranite iztečeno hladilno sredstvo z ustrezno krpo ali vezivom in takoj odpravite vzrok iztekanja.
- Senzor za iztekanje tekočin, ki je vgrajen v napravo, je namenjen samo za funkcionalno zaznavanje iztekanja in ga ne smete uporabljati kot senzor v varnostni verigi na ravni celotnega sistema.
- Obstaja nevarnost poškodb zaradi rotorjev v ventilatorjih. Osebe in predmete držite stran od rotorjev v ventilatorjih! Pločevinaste pokrove odpirajte samo, ko je električni tok prekinjen in rotorji mirujejo! Ne opravljajte nobenih del brez mehanske zaščite! Med vzdrževalnimi deli izključite ustrezni rotor! Spnite dolge lase! Ne nosite ohlapnih oblačil! Po prekinitvi napetosti ventilator začne samodejno delovati naprej!

Varnostni napotki glede vzdrževanja
- Preden izvajate kakršna koli vzdrževalna dela ali iščete napake v napravi, morate napravo predhodno izključiti tako, da v njej zagotovo ni napetosti. To storite tako, da odstranite omrežni priključek ali uporabite napravo v napeljavi za izključitev vseh polov in zavarujete, da ne more priti do nenamerne ponovne vključitve.
- Pri delu na napravi obstaja nevarnost, da se porežete, predvsem zaradi ostrih robov modula za toplotno izmenjavo. Pred namestitvenimi in čistilnimi deli si nadenite osebno zaščitno opremo!
- Pri vgradnji in razširitvi prezračevalnega modula obstajajo nevarnost poškodb zaradi ostrih robov v notranjosti enote LCU CW, nevarnost padca modula ter nevarnost visoke hitrosti zraka in hrupa. Nosite osebno zaščitno opremo!
- Pri vsakem delu s hladilnim sredstvom upoštevajte priloženi varnostni list.

Varnostni napotki glede izključitve
- Neusposobljeno osebje ne more zagotoviti ustreznega postopka izključitve. Zato lahko ta dela izvaja samo za to usposobljeno strokovno osebje.
- Pri skladiščenju in prevažanju pod zmrziščem morate vodni tok popolnoma izprazniti s stisnjenim zrakom!

Upravljavci naprave in usposobljeno osebje
- Namestitev, zagon, vzdrževanje in popravilo naprave lahko izvaja samo za to usposobljeno strokovno osebje.
- Ko je naprava v delovanju, jo lahko uporablja samo za to namenjena oseba.
- Naprave še posebej ne smejo uporabljati osebe (vključno z otroki) z omejenimi fizičnimi, senzoričnimi ali duševnimi sposobnostmi ali s pomanjkljivimi izkušnjami in znanjem, razen če so pod nadzorom ali so prejeli navodila.
- Otroke je treba nadzorovati, da se ne igrajo z napravo.

Osebna zaščitna oprema
- Pri vsakem delu z napravo, še posebej ko osebje lahko pride v stik s hladilnim sredstvom (pri uporabi mešanice vode in glikola), morate nositi osebno zaščitno opremo, ki sestoji vsaj iz vodotesnih zaščitnih rokavic in zaščitnih očal.
- Prav tako je pri vsakem delu v bližini naprave priporočljivo uporabljati primerno zaščito za ušesa in mrežico za lase.

– Pri vsakem delu z enoto LCU CW, še posebej na izpušni strani, je priporočljivo nositi zaščitna očala, da se izognete poškodbam oči zaradi visoke hitrosti zraka.

SK Bezpečnostné pokyny

Všeobecne platné bezpečnostné pokyny
– Riaďte sa nasledujúcimi všeobecne platnými bezpečnostnými pokynmi.
– Pri všetkých prácach na zariadení používajte predpísané osobné ochranné prostriedky.
– Nevykonávajte na zariadení LCU CW žiadne zmeny, ktoré nie sú opísané v tomto alebo v súvisiacich návodoch na montáž a obsluhu.
– Zariadenie LCU CW sa môže kombinovať a prevádzkovať výlučne so systémovým príslušenstvom predpísaním spoločnosťou Rittal.
– Okrem týchto všeobecných bezpečnostných pokynov sa musíte bezpodmienečne riadiť aj špecifickými bezpečnostnými pokynmi v súvislosti s činnosťami opísanými v nasledujúcich kapitolách.
– Existuje nebezpečenstvo poranenia zásahom elektrickým prúdom, ak sa zariadenie otvára so zapojenou sieťovou zástrčkou. Otvárať zariadenie a opravovať ho smú len odborníci a vyškolené osoby.

Bezpečnostné pokyny k preprave
– Existuje nebezpečenstvo poranenia padajúcimi bremenami. Pre preprave zariadenia pomocou zdvíhacieho vozíka, stohovača alebo žeriava nevstupujte pod kolísajúce sa bremeno! Používajte len vhodné prepravné prostriedky.
– Existuje nebezpečenstvo poranenia pri prerezávaní predpätých páskovacích pások. Používajte osobné ochranné prostriedky!
– Existuje nebezpečenstvo poranenia bremenom s vysokou hmotnosťou. Dodržiavajte maximálne limity pre osoby na zdvíhanie bremien. V prípade prekročenia tohto limitu použite zdvíhacie zariadenie.

Bezpečnostné pokyny k montáži
– Montáž zariadení nechajte vykonať kvalifikovaných odborníkov.
– Existuje nebezpečenstvo poranenia prevrhnutím zariadenia. Narovnanie zariadenia z ležiacej polohy musia vždy vykonávať dve osoby. Pri tom jedna z týchto dvoch osôb počas narovnávania zaisťuje zariadenie proti náhodnému skĺznutiu. Používajte osobné ochranné prostriedky!
– Existuje nebezpečenstvo poranenia prevrhnutím zariadenia. Vo vzpriamenej polohe existuje nebezpečenstvo prevrhnutia zariadenia LCU CW, pokiaľ ešte nie je zabudované v serverovej skrini a odborne upevnené. Zariadenie vo vzpriamenej polohe zaisťujú dve osoby.
– Existuje nebezpečenstvo pomliaždenia pri vkladaní zariadenia do serverovej skrine medzi vonkajšími hranami skrine a obvodovým profilom rámu skrine. Používajte osobné ochranné prostriedky!

Bezpečnostné pokyny k inštalácii
– Existuje nebezpečenstvo pomliaždenia pri vkladaní priečky do serverovej skrine. Používajte osobné ochranné prostriedky!
– Existuje nebezpečenstvo prištipnutia a porezania pri priskrutkovávaní, ako aj utesňovaní vedení chladiva. Používajte osobné ochranné prostriedky!
– Zabezpečte, aby vedenia chladiva po nainštalovaní nebránili prúdeniu vzduchu cez zariadenie.
– Práce na elektrických alebo výrobných zariadeniach môžu vykonávať len osoby, ktoré sú na to odborne a technicky spôsobilé v zmysle platných predpisov a legislatívy SR alebo zaškolený personál pod vedením a dohľadom takto spôsobilej osoby.
– Pri práci používajte len izolované náradie. Používajte osobné ochranné prostriedky!
– Napäťové požiadavky v schéme zapojenia/na typovom štítku musia súhlasiť so sieťovým napätím.
– Chybnou montážou a inštaláciou vzniká nebezpečenstvo tvorby kondenzátu v zariadení, čo môže viesť k elektrickému skratu alebo výtoku kvapaliny.

Bezpečnostné pokyny k prevádzke
– Existuje nebezpečenstvo poruchy alebo zničenia. Na zariadení nevykonávajte žiadne zmeny! Používajte len originálne náhradné diely.
– Pri prevádzke zariadenia LCU CW môže zvlášť pri ovládaní zariadenia priamo na displeji dôjsť k zvýšeniu hladiny hluku. Používajte osobné ochranné prostriedky!
– Bezchybné fungovanie zariadenia možno zaručiť iba vtedy, ak sa prevádzkuje v predpísaných podmienkach prostredia. Pokiaľ je to možné, zabezpečte, aby boli držané podmienky prostredia, na ktorých je založené dimenzovanie, napr. teplota, vlhkosť vzduchu, čistota vzduchu.
– Regulačne a technicky je nevyhnutné, aby počas celého času prevádzky zariadenia, bolo prítomné chladiace médium/kvapalina.
– V prípade vzniku netesností existuje nebezpečenstvo poranenia vytekajúcim chladiacim médiom, najmä glykolom. Používajte osobné ochranné prostriedky, vytečené chladiace médium absorbujte vhodnou handrou alebo sorbentom a okamžite odstráňte dôvod netesnosti.
– Snímač netesnosti zabudovaný v zariadení slúži len na funkčnú detekciu netesnosti a nesmie sa používať ako snímač v rámci bezpečnostného reťazca na úrovni zariadenia.
– Existuje nebezpečenstvo poranenia obežnými kolesami ventilátora. Osoby a predmety sa musia nachádzať v bezpečnej vzdialenosti od obežných kolies ventilátora! Krycie plechy otvárajte až po prerušení prívodu elektrického prúdu a zastavení obežných kolies! Nevykonávajte žiadne práce bez mechanickej ochrany! Pri údržbových prácach zastavte všetky ventilátory! Zviažte si dlhé vlasy! Nenoste žiadne voľné kusy oblečenia! Po prerušení napájania sa ventilátor automaticky znova rozbehne!

Bezpečnostné pokyny k údržbe
– Pred všetkými údržbovými prácami, ako aj pred hľadaním chyby v zariadení je najprv potrebné zariadenie bezpečne odpojiť od napájania. Na tento účel odstráňte pripojenie k sieti alebo použite zariadenie na vypínanie na všetkých póloch v prívode a zabezpečte proti náhodnému opätovnému zapnutiu.
– Pri práci na zariadení existuje nebezpečenstvo poranenia porezaním, zvlášť na ostrých hranách modulu výmenníka tepla. Pred montážnymi a čistiacimi prácami si nasaďte osobné ochranné prostriedky!
– Pri montáži demontáži modulu ventilátora existuje nebezpečenstvo poranenia ostrými hranami vo vnútri zariadenia LCU CW, spadnutím modulu, vysokou rýchlosťou vzduchu a hlukom. Používajte osobné ochranné prostriedky!
– Pri všetkých prácach s chladiacim médiom sa riaďte príslušnou kartou bezpečnostných údajov.

Bezpečnostné pokyny k odstaveniu
– Neodborný personál nemôže zaručiť pracovný cyklus potrebný na odstavenie. Preto smie tieto práce vykonávať len kvalifikovaný odborný personál.
– Pri skladovaní a preprave pod bodom mrazu sa musí vodný okruh pomocou stlačeného vzduchu úplne vyprázdniť!

Obslužný a odborný personál
– Inštaláciu, uvedenie do prevádzky, údržbu a opravy tohto zariadenia smie vykonávať len kvalifikovaný odborný personál.
– Obsluhu zariadenia počas prebiehajúcej prevádzky smie vykonávať len vyškolená osoba.
– Zariadenie nesmú používať najmä osoby (vrátane detí) s obmedzenými fyzickými, zmyslovými alebo psychickými schopnosťami alebo chýbajúcimi skúsenosťami a znalosťami, iba ak pracujú pod dozorom alebo získajú vyškolenie.
– Na deti treba dohliadať, aby sa so zariadením nehrali.

Osobné ochranné prostriedky
– Pri všetkých prácach na zariadení, zvlášť vtedy, keď môže prísť obslužný personál do styku s chladiacim médiom (pri použití zmesi vody a glykolu), sa musia používať osobné ochranné prostriedky pozostávajúce prinajmenšom z vodotesných ochranných rukavíc, ako aj ochranných okuliarov.
– Okrem toho sa pri všetkých prácach v blízkosti zariadenia odporúča používanie vhodných chráničov sluchu a sieťky na vlasy.
– Pri všetkých prácach na zariadení LCU CW, zvlášť na vyfukovacej strane, sa odporúča používanie ochranných okuliarov, aby sa predišlo poraneniam očí vysokými rýchlosťami vzduchu.

PT Instruções de segurança

Instruções gerais de segurança
– Observe as seguintes instruções gerais de segurança.
– Use o equipamento de proteção individual recomendado durante todo o trabalho no aparelho.
– Não faça quaisquer alterações no LCU CW que não estejam descritas neste manual de instruções ou nos manuais de montagem e uso aplicáveis.
– O LCU CW somente deve ser combinado e utilizado com os acessórios do sistema Rittal.
– Além destas instruções gerais de segurança, também siga obrigatoriamente as instruções específicas de segurança ao realizar as tarefas descritas nos próximos capítulos.
– Há risco de lesão por choque elétrico se o aparelho for aberto com o conector de rede elétrica ligado. A abertura do aparelho e quaisquer reparações apenas devem ser realizadas por profissionais.

Instruções de segurança para o transporte
– Há risco de lesão devido a queda de cargas. Ao transportar o aparelho com um porta-paletes, empilhador ou guindaste, não pise sob a carga suspensa! Use somente meios de transporte adequados.
– Há risco de lesão devido a corte das cintas pré-tensionadas. Use o equipamento de proteção individual!
– Há risco de lesão devido a elevado peso do aparelho. Considere o peso máximo permitido a ser levantado por uma pessoa. Caso necessário, utilize equipamento adequado.

Instruções de segurança para a montagem
– A montagem do aparelho somente deve ser realizada por profissionais devidamente capacitados.
– Há risco de lesão devido à queda do aparelho. A elevação do aparelho da posição deitada deve ser feita sempre por duas pessoas. Uma das duas pessoas protege o aparelho contra deslizamento involuntário enquanto ele estiver sendo elevado. Use o equipamento de proteção individual!
– Há risco de lesão devido à queda do aparelho. Na posição vertical, existe o risco de o LCU CW tombar, desde que ainda não tenha sido instalado no rack do servidor e fixado adequadamente. Peça a uma segunda pessoa que prenda o aparelho em uma posição vertical.
– Há risco de lesão ao inserir o aparelho no compartimento do servidor entre as bordas externas da unidade e o perfil da estrutura circundante do compartimento. Use o equipamento de proteção individual!

Instruções de segurança para a instalação
– Há risco de lesão ao inserir o sistema de contenção no rack do servidor. Use o equipamento de proteção individual!
– Há risco de ficar preso ou cortar-se ao aparafusar e vedar as linhas de refrigerante. Use o equipamento de proteção individual!
– Certifique-se de que os tubos de refrigerante não obstruam o fluxo de ar através do aparelho após a instalação.
– O trabalho efetuado em sistemas e equipamentos elétricos deve ser feito por eletricistas autorizados e especializados ou técnicos sob supervisão. O trabalho deve ser desenvolvido de acordo com as normas e regulamentações eletrotécnicas.
– Utilize apenas ferramentas isoladas. Use o equipamento de proteção individual!
– As especificações de tensão no diagrama de circuito/na placa de características devem corresponder à tensão da rede elétrica.
– A montagem e a instalação incorretas podem causar a formação de condensação no aparelho, o que pode levar a um curto-circuito elétrico ou vazamento de líquido.

Instruções de segurança para o funcionamento
- Há sempre um risco de avaria por mau funcionamento ou destruição. Não efetue nenhuma alteração no aparelho! Utilize sempre peças de reposição originais.
- Durante o funcionamento do LCU CW, pode ocorrer um aumento do nível de ruído, especialmente ao operar o aparelho diretamente no visor. Use o equipamento de proteção individual!
- O funcionamento adequado do aparelho só pode ser garantido se ele for operado sob as condições ambientais previstas. Certifique-se, na medida do possível, de que as condições ambientais nas quais o projeto se baseia, por exemplo, temperatura, humidade, pureza do ar, sejam respeitadas.
- A água de refrigeração necessária para fins de controle deve estar presente durante todo o tempo de operação do aparelho.
- Se ocorrerem vazamentos, há risco de ferimentos devido ao vazamento do meio de refrigeração , especialmente do glicol. Use o equipamento de proteção individual, pegue no líquido de refrigeração que vazou com um pano ou aglutinante adequado e remova imediatamente o motivo do vazamento.
- O sensor de vazamento instalado na unidade serve apenas para a deteção de vazamento funcional e não deve ser usado como sensor em uma cadeia de segurança no nível do sistema.
- Há risco de lesão devido aos impulsores dos ventiladores. Mantenha pessoas e objetos longe dos impulsores dos ventiladores! Abra as placas de cobertura apenas quando a fonte de alimentação for interrompida e os impulsores estiverem parados! Não realize nenhum trabalho sem proteção mecânica! Pare o respetivo ventilador durante o trabalho de manutenção! Prenda o cabelo comprido! Não use roupas largas! Após uma interrupção de energia, o ventilador é reiniciado automaticamente!

Instruções de segurança para a manutenção
- Antes de realizar qualquer trabalho de manutenção ou solução de problemas, o aparelho deve ser desconectado com segurança da fonte de alimentação. Para isso, remova a conexão da rede elétrica ou use o dispositivo de desconexão de todos os polos na linha de alimentação e proteja-a contra reconexão não intencional.
- Ao trabalhar na unidade, há o risco de cortes, especialmente nas beiras afiadas do módulo do trocador de calor. Coloque o equipamento de proteção individual antes do trabalho de montagem e limpeza!
- Ao remover e instalar um módulo de ventilador, há risco de lesões devido a beiras afiadas dentro da LCU CW, queda do módulo, altas velocidades de ar e ruído. Use o equipamento de proteção individual!
- Para todos os trabalhos com o líquido de refrigeração, observe a folha de dados de segurança relevante.

Instruções de segurança para o desligamento
- Apenas profissionais qualificados podem garantir o fluxo de trabalho necessário para o desligamento.
- Para armazenamento e transporte abaixo do ponto de congelamento, o circuito de água deve ser completamente drenado com ar comprimido!

Operadores e técnicos
- A instalação, colocação em funcionamento, manutenção e reparação do aparelho apenas devem ser realizados por profissionais técnicos qualificados e treinados.
- Somente técnicos devidamente treinados devem manusear o aparelho durante seu funcionamento.
- Em particular, o aparelho não deve ser usado por pessoas (incluindo crianças) com capacidades físicas, sensoriais ou mentais reduzidas, ou com falta de experiência e conhecimento, a menos que tenham recebido supervisão ou instruções sobre o uso do aparelho.
- As crianças devem ser supervisionadas para que não brinquem com o aparelho.

Equipamento de proteção individual
- Durante todo o trabalho na unidade, especialmente quando o pessoal pode entrar em contato com o meio de refrigeração (uma mistura de água e glicol), deve-se usar o equipamento de proteção individual, que consiste, no mínimo, em luvas de proteção à prova de água e óculos de proteção.
- Além disso, recomenda-se o uso de proteção adequada para os ouvidos e de uma rede de proteção para os cabelos em todos os trabalhos nas proximidades do aparelho.
- Sempre que estiver a trabalhar no LCU CW, especialmente no lado da descarga, recomenda-se o uso de óculos de proteção para evitar lesões oculares devido às altas velocidades do ar.

Bestimmungsgemäße Verwendung
Intended use
Utilisation correcte
Voorgeschreven gebruik
Ändamålsenlig användning
Impiego conforme alle norme
Uso correcto
Määräystenmukainen käyttö
Forskriftsmæssig anvendelse
Używaj zgodnie z przeznaczeniem
Použití v souladu s určením
За правилна употреба
Προβλεπόμενη χρήση
Domeniul de utilizare
Predviđena uporaba

(DE) Bestimmungsgemäße Verwendung

Die LCU CW ist ein Luft-/Wasser-Wärmetauscher und dient zur Kühlung von abgeschlossenen Räumen oder Gehäusen, in die IT-Komponenten wie Server, Switches oder Ähnliches eingebaut sind und die als Technikraum oder Rechenzentrum genutzt werden.
LCUs sind immer in Verbindung mit einer Kaltwasserversorgung, typischerweise Chiller oder Freikühler, zu verwenden. Die Wasserversorgung muss in jedem Fall ein geschlossener Kreislauf sein. Die Wasserqualität muss während der gesamten Betriebsdauer gemäß der Angaben in dieser Anleitung ausgeführt sein.
Das Gerät darf nur innerhalb der technischen Betriebsgrenzen, die in dieser Anleitung beschrieben sind, eingesetzt werden.

(EN) Intended use

The LCU CW is an air/water heat exchanger that cools closed spaces or housings in which IT components, such as servers, switches or similar, are installed and are used in a technology room or data centre.
LCUs must always be used in conjunction with a coldwater supply, typically chiller or free-cooler. The water supply must always be a closed circuit. The water quality during the complete service life must conform with the details in these instructions.
The unit may be deployed only within the technical operational limits as described in these instructions.

(FR) Utilisation correcte

La LCU CW est un échangeur thermique air/eau qui sert à refroidir des locaux ou enveloppes fermés dans lesquels sont installés des composants IT tels que des serveurs, des commutateurs ou autres et qui sont utilisés comme local technique ou salle informatique.
Les LCU doivent toujours être utilisées en combinaison avec une alimentation en eau froide, typiquement un refroidisseur d'eau ou un climatiseur extérieur. L'alimentation en eau doit dans tous les cas être un circuit fermé. La qualité de l'eau doit être conforme aux indications de cette notice pendant toute la durée de fonctionnement.
L'appareil ne doit être utilisé que dans les limites techniques de fonctionnement décrites dans cette notice.

(NL) Voorgeschreven gebruik

De LCU CW is een lucht/water-warmtewisselaar en dient voor het koelen van afgesloten ruimten of behuizingen waarin IT-componenten zoals servers, switches en dergelijke zijn geïnstalleerd, en die worden gebruikt als technische ruimte of computerruimte.
LCU's moeten altijd in combinatie met een koudwatervoorziening, zoals een chiller of Free Cooling-moduul, worden gebruikt. De watervoorziening moet in ieder geval een gesloten circuit zijn. De waterkwaliteit moet gedurende de gehele bedrijfsduur voldoen aan de specificaties in deze handleiding.
Het apparaat mag alleen worden toegepast binnen de technische bedrijfsgrenzen die in deze handleiding zijn beschreven.

(SE) Ändamålsenlig användning

LCU CW är en luft/vatten värmeväxlare och används för att kyla slutna rum eller utrymme där IT komponenter som servrar, omkopplare eller liknande är installerade och som används som ett tekniskt rum eller datacenter.
LCU:s bör alltid användas tillsammans med en kallvattenförsörjning, vanligtvis en kylare eller frikylare. Vattenförsörjningen måste i alla fall vara en sluten krets. Vattenkvaliteten måste utföras under hela livslängden enligt instruktionerna i denna bruksanvisning.
Enheten får endast användas inom de tekniska driftsgränser som beskrivs i denna bruksanvisning.

(IT) Impiego conforme alle norme

L'unità LCU CW è costituita da uno scambiatore di calore aria/acqua. Viene utilizzata per raffreddare locali o armadi chiusi in cui sono installati componenti IT come server, switch o simili utilizzati come locale tecnico o data center.
Le LCU devono sempre essere utilizzate in combinazione con un circuito di approvvigionamento di acqua fredda, in genere chiller o free cooler. L'alimentazione dell'acqua deve essere sempre a circuito chiuso. La qualità dell'acqua deve essere quella specificata nel presente manuale per tutto il periodo di funzionamento.
L'unità può essere utilizzata solo entro i limiti tecnici di funzionamento descritti nelle presenti istruzioni.

(ES) Uso correcto

La LCU CW es un intercambiador de calor aire/agua utilizado para la refrigeración de salas cerradas o racks, en los cuales se instalan componentes TI como servidores, switchs o similares y que se utilizan como sala técnica o centro de datos.
Los equipos LCU deben utilizarse siempre en combinación con una alimentación de agua fría, normalmente chillers o unidades free cooling. En cualquier caso, la alimentación de agua debe ser un circuito cerrado. La calidad del agua debe ser la especificada en este manual durante todo el tiempo de servicio.
El equipo debe utilizarse exclusivamente en las condiciones técnicas de servicio descritas en este manual.

(FI) Määräystenmukainen käyttö

LCU CW on ilma-/vesilämmönvaihdin, ja se jäähdyttää suljettuja tiloja, joita käytetään laitetiloina tai datakeskuksina, tai koteloita, joihin on asennettu IT-komponentteja, kuten palvelinta, kytkimiä tai vastaavaa.
LCU-jäähdyttimiä on aina käytettävä yhdessä kylmänvedensyötön kanssa, yleensä chilleriä tai vapaajäähdytintä. Vedensyötön on oltava joka tapauksessa suljetussa piirissä. Vedenlaadun on vastattava koko käyttöiän ajan tässä ohjeessa annettuja tietoja.
Laitetta saa käyttää vain tässä ohjeessa määritellyissä teknisissä käyttörajoissa.

(DK) Forskriftsmæssig anvendelse

LCU CW er en luft/vand-varmeveksler, som anvendes til at køle lukkede rum eller huse, hvori IT-komponenter som servere, switche eller lignende er installeret, og som bruges som teknikrum eller datacenter.
LCU'er skal altid bruges sammen med en koldvandsforsyning, typisk kølere eller frikølere. Under alle omstændigheder skal vandforsyningen være et lukket kredsløb. Vandkvaliteten skal være i overensstemmelse med oplysningerne i denne vejledning i hele driftsperioden.
Enheden må kun bruges inden for de tekniske driftsgrænser, der er beskrevet i denne vejledning.

(PL) Używaj zgodnie z przeznaczeniem

LCU CW jest wymiennikiem ciepła powietrze/woda i służy do chłodzenia zamkniętych przestrzeni lub obudów, w których są zainstalowane komponenty IT, jak serwery, switche itp. i które są użytkowane jako pomieszczenia techniczne lub centra danych.
LCU muszą być stosowane zawsze w połączeniu z dopływem wody lodowej wytwarzanej zwykle przez chiller lub agregat free cooling. Zasilanie w wodę musi zawsze stanowić obieg zamknięty. W całym okresie eksploatacji musi być zapewniona jakość wody określona parametrami w niniejszej instrukcji.
Urządzenie może być użytkowane tylko w technicznych granicach eksploatacji opisanych w tej instrukcji.

(CZ) Použití v souladu s určením

LCU CW je výměník tepla vzduch/voda a používá se k chlazení uzavřených skříní nebo prostorů, ve kterých jsou instalovány IT komponenty, jako jsou servery, přepínače a podobně, a které se používají jako technická místnost nebo datové centrum.
Jednotky LCU se vždy používají ve spojení se zdrojem chlazené vody, typicky chillery nebo chladiče pro volné chlazení. Zásobování vodou musí být každopádně uzavřený okruh. Kvalita vody musí být prováděna podle údajů v tomto návodu po celou dobu provozu.
Zařízení lze používat pouze v rámci technických provozních limitů, které jsou popsány v tomto návodu.

(BG) За правилна употреба

LCU CW е топлообменник въздух/вода и се използва за охлаждане на затворени помещения или корпуси, в които са инсталирани ИТ компоненти като сървъри, комутатори и други подобни и които се използват като техническо помещение или център за данни.
LCU винаги трябва да се използват в комбинация със захранване с охладена вода – обикновено чилъри или отворени охладители. Захранването с вода във всички случаи трябва да е със затворен кръг. Качеството на водата трябва да отговаря на посоченото в настоящото ръководство за целия период на експлоатация.
Уредът трябва да се използва само в рамките на техническите експлоатационни ограничения, посочени в настоящото ръководство.

(GR) Προβλεπόμενη χρήση

Το LCU CW είναι ένας εναλλάκτης θερμότητας αέρος/νερού και χρησιμεύει στην ψύξη κλειστών χώρων ή περιβλημάτων που χρησιμοποιούνται ως υπολογιστικά κέντρα ή χώροι τεχνικού εξοπλισμού και στους οποίους τοποθετούνται εξαρτήματα IT όπως διακομιστές, μεταγωγείς ή άλλα παρόμοια στοιχεία.
Τα LCU θα πρέπει να χρησιμοποιούνται πάντα σε συνδυασμό με παροχή κρύου νερού, συνήθως με chiller ή εξωτερικούς ψύκτες. Η παροχή νερού πρέπει σε κάθε περίπτωση να είναι κλειστού κυκλώματος. Η ποιότητα νερού πρέπει, καθ' όλη τη διάρκεια λειτουργίας, να ανταποκρίνεται στα στοιχεία που αναφέρονται σ' αυτές τις οδηγίες.
Η συσκευή επιτρέπεται να λειτουργεί μόνο εντός των τεχνικών ορίων λειτουργίας που περιγράφονται σ' αυτές τις οδηγίες.

(RO) Domeniul de utilizare

LCU CW este un schimbător de căldură aer/apă şi este utilizat pentru răcirea încăperilor închise sau a carcaselor în care sunt instalate componente IT, cum ar fi servere, comutatoare sau altele similare, şi care sunt utilizate ca spaţiu tehnic sau centru de calcul.
LCU trebuie utilizate întotdeauna împreună cu o alimentare cu apă rece, de obicei chillere sau răcitoare libere. Alimentarea cu apă trebuie să fie, în orice caz, un circuit închis. Calitatea apei trebuie să fie conformă cu specificaţiile din instrucţiunile prezente pe întreaga durată de funcţionare.
Aparatul poate fi utilizat numai în limitele tehnice de funcţionare descrise în aceste instrucţiuni.

(HR) Predviđena uporaba

Rashladna jedinica LCU CW je izmjenjivač topline zrak/voda i služi hlađenju zatvorenih prostorija ili kućišta u koja su ugrađene IT komponente poput servera, preklopnika ili slične opreme i koje se upotrebljavaju kao tehnička prostorija ili računski centar.
Rashladne jedinice LCU uvijek treba upotrijebiti u kombinaciji s opskrbom hladnom vodom, tipičnim rashlađivačem ili slobodnim rashlađivačem. Opskrba vodom svakako mora biti u zatvorenom optoku. Kvaliteta vode mora se osigurati u skladu s podacima u ovim uputama tijekom cijelog razdoblja rada.
Uređaj se smije primjenjivati samo unutar tehničkih radnih ograničenja opisanih u ovim uputama.

Rendeltetésszerű használat
Naudojimas pagal paskirtį
Sihtotstarbeline kasutus
Paredzētais lietošanas veids
Predvidena uporaba
Používanie v súlade s účelom
Utilização

HU Rendeltetésszerű használat

Az LCU CW egy levegő/víz hőcserélő, lezárt helyiségek vagy házak hűtésére szolgál, amelybe informatikai komponensek, pl. szerverek, switchek és hasonlók vannak beépítve, és amelyeket technikai helységként vagy adatközpontként használnak.
Az LCU-kat mindig hidegvízellátással, általában folyadékhűtővel vagy szabad hűtéssel együtt kell használni. A vízellátásnak minden esetben zárt körforgásnak kell lennie. A vízminőségnek a teljes üzemidő alatt az ebben az útmutatóban megadott adatoknak kell megfelelnie.
A berendezést csak az ebben az útmutatóban leírt üzemi határértékeken belül szabad alkalmazni.

LT Naudojimas pagal paskirtį

LCU CW yra oro / vandens šilumokaitis ir naudojamas uždaroms patalpoms ar korpusams, kuriuose sumontuoti IT komponentai, tokie kaip serveriai, jungikliai ar pan., vėsinti ir kurie naudojami kaip techninė patalpa ar duomenų centras.
LCU visada turi būti naudojami kartu su šalto vandens tiekimu, paprastai aušintuvais arba nemokamais aušintuvais. Bet kokiu atveju vandens tiekimas turi būti uždara grandinė. Vandens kokybė turi būti tikrinama pagal šioje instrukcijoje pateiktą informaciją per visą eksploatavimo laikotarpį.
Prietaisą galima naudoti tik laikantis techninių eksploatavimo ribų, aprašytų šioje instrukcijoje.

EE Sihtotstarbeline kasutus

LCU CW on õhk-vesi soojusvaheti ning see on mõeldud suletud ruumide või korpuste, millesse on paigaldatud IT-komponendid, nagu serverid, kommutaatorid või sarnased, ja mida kasutatakse tehnikaruumi või arvutuskeskusena, jahutamiseks.
LCU-sid tuleb alati kasutada koos külmaveevarustusega, tüüpiliselt jahuti või välisjahutiga.
Veevarustus peab igal juhul olema suletud ringlus. Veekvaliteet peab kogu tööaja jooksul vastama käesoleva kasutusjuhendi andmetele.
Seadet tohib kasutada vaid käesolvas kasutusjuhendis kirjeldatud tehnilistes töötingimuste piirides.

LV Paredzētais lietošanas veids

LCU CW ir gaisa/ūdens siltummainis, un to izmanto slēgtu telpu vai korpusu dzesēšanai, kuros ir uzstādīti IT komponenti, piemēram, serveri, slēdži vai līdzīgi un kurus izmanto kā tehnisko telpu vai datu centru.
LCU vienmēr ir jālieto savienojumā ar auksta ūdens padevi, parasti ar šķidruma vai gaisa dzesētāju. Jebkurā gadījumā ūdens padevei jābūt slēgtam kontūram. Ūdens kvalitāte ir jānodrošina saskaņā ar šajā instrukcijā sniegto informāciju visā ekspluatācijas laikā.
Ierīci drīkst izmantot tikai saskaņā ar šajā instrukcijā aprakstītajiem tehniskajiem ekspluatācijas ierobežojumiem.

SI Predvidena uporaba

LCU CW je toplotni izmenjevalnik zrak/voda in je namenjen hlajenju zaprtih prostorov ali ohišij, v katerih so vgrajene komponente IT, kot so strežnik, stikalo ali podobno, in se uporabljajo kot tehnični prostor ali računalniško središče.
Enote LCU morajo vedno biti oskrbljene s hladno vodo, običajno s hladilnikom ali hladilnimi enotami. Oskrba z vodo mora vedno potekati v sklenjenem krogotoku. Kakovost vode mora ves čas delovanja ustrezati navedbam v teh navodilih.
Napravo lahko uporabljate samo v tehničnih mejah delovanja, ki so opisane v teh navodilih za uporabo.

SK Používanie v súlade s účelom

Zariadenie LCU CW je výmenník tepla vzduch/voda a slúži na chladenie uzatvorených priestorov alebo krytov, do ktorých sú zabudované IT komponenty ako servery, spínače a podobné zariadenia a ktoré sa používajú ako technická miestnosť alebo výpočtové stredisko.
Zariadenia LCU sa vždy musia používať v spojení so zásobovaním studenou vodou, spravidla s chladiacim zariadením alebo voľným chladičom. Zásobovanie vodou musí byť v každom prípade uzatvorený okruh. Kvalita vody musí počas celého trvania prevádzky zodpovedať údajom v tomto návode.
Zariadenie sa môže používať len v rámci technických prevádzkových obmedzení opísaných v tomto návode.

PT Utilização

O LCU CW é um trocador de calor ar/água e é utilizado para refrigerar salas ou armários fechados nos quais estão instalados componentes de TI, como servidores, switches ou similares, e que são usados como sala técnica ou data center.
Os LCUs devem sempre ser usados em conjunto com um abastecimento de água refrigerada, normalmente chillers ou free coolers. O abastecimento de água deve, em qualquer caso, ser um circuito fechado. A qualidade da água deve estar de acordo com as especificações deste manual durante toda a duração da operação.
O aparelho apenas deve ser aplicado sob as condições de funcionamento especificadas no manual de instruções (capítulo «Dados técnicos»).

EN

Foreword

Dear Customer,

Thank you for choosing a Rittal Liquid Cooling Unit (also referred to hereafter as "LCU CW").

Please take the time to read this documentation carefully and pay particular attention to the safety instructions in the text and to section 2 "Safety instructions".

This is the prerequisite for:
– secure assembly of the LCU CW
– safe handling and
– the most trouble-free operation possible.

Please keep the complete documentation readily available so that it is always on hand when needed.

We wish you every success!

Your,
Rittal GmbH & Co. KG

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We are always happy to answer any technical questions regarding our entire range of products.

EN

Contents

1 Notes on documentation

1.1 LCU CW

The Liquid Cooling Unit, hereafter referred to as the LCU CW, boasts a range of different approvals, details of which can be found on the Rittal website.

Installation and maintenance must only be carried out by qualified personnel.

1.2 Storing the documents

The assembly and operating instructions as well as all applicable documents are integral components of the product. They must be handed out to those persons who are engaged with the unit and must always be available and on hand for operating and maintenance personnel.

1.3 Symbols in these operating instructions

The following symbols are found in this documentation:

Danger!
Hazardous situation which will result in death or serious injury if the instructions are not followed.

Warning!
Hazardous situation which may lead to death or serious injury if the instructions are not followed.

Caution!
Hazardous situation which may lead to (minor) injuries if the instructions are not followed.

Note:
Information concerning individual procedures, explanations, or tips for simplified approaches. Also indicates situations which may result in material damage.

■ This symbol indicates an "action point" and shows that you should perform an operation or work step.

1.4 Other applicable documents

In conjunction with these assembly and operating instructions, the superordinate system documentation (if available) also applies.

Rittal GmbH & Co. KG is not responsible for any damage which may result from failure to comply with these assembly and operating instructions. The same applies to failure to comply with the valid documentation for accessories used.

1.5 Normative instructions

1.5.1 Legal information concerning the operating instructions

We reserve the right to make changes in content. Rittal GmbH & Co. KG will not be held liable for any mistakes in this documentation. Liability for indirect damages which occur through the delivery or use of this documentation is excluded to the extent allowable by law.

1.5.2 Copyright

1.6 Validity

These Operating Instructions only apply to the LCU CW.

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2 Safety instructions

The LCU CW produced by Rittal GmbH & Co. KG are developed and produced by Rittal with due regard to all safety precautions. Nevertheless, the unit still causes a number of unavoidable dangers and risks. The safety instructions provide you with an overview of these dangers and the necessary safety precautions.
In the interest of your safety and the safety of others, please read these safety instructions carefully before assembly and commissioning of the LCU CW.
Follow the user information found in these instructions and on the unit carefully.

2.1 General safety instructions

Please observe the following general safety instructions.

- Always wear the required personal protective equipment when working on this device (see section 2.9 "Personal protective equipment").
- Please do not make any changes to the LCU CW that are not described in these operating instructions or other applicable assembly and operating instructions.
- The LCU CW should only be combined and operated with the prescribed Rittal system accessories.
- Other than these general safety instructions, it is also vital to observe the specific safety instructions when carrying out the tasks described in the following chapters.

– Danger of injury from electric shock if the unit is opened while connected to the mains. The unit must only be opened and repaired by trained specialists or qualified individuals.

2.2 Safety instructions for transportation

– There is a risk of injury from falling loads. Do not stand under suspended loads when transporting the unit with a hoist trolley, a forklift, or a crane. Be sure to use an appropriate means of transport.
– There is a risk of injury when cutting through the pretensioned tightening straps. Wear personal protective equipment (PPE)!
– There is a risk of injury due to the heavy weight of the device. Please observe the maximum permissible weight to be lifted by one person. Use suitable lifting devices, if needed.

2.3 Safety instructions for assembly

– Have the devices installed by qualified specialists trained by Rittal.
– Beware of injuries if the unit tips over. From a horizontal position, the unit should always be set upright by two people working together, with one person bracing the unit to prevent it from slipping as it is lifted. Wear personal protective equipment (PPE)!
– There is a risk of injury from the device tipping over. While upright, the LCU CW is at risk of toppling over until it is installed and correctly secured inside the server rack. The second person should hold the unit securely in an upright position until this has been done.
– While inserting the unit into the server rack, there is a danger of crushing between the outer edges of the unit and the frame section of the rack. Wear personal protective equipment (PPE)!

2.4 Safety instructions for installation

– There is a risk of crushing when the containment system is inserted into the server enclosure. Wear personal protective equipment (PPE)!
– There is a risk of becoming trapped and cut when screwing on and sealing the coolant lines. Wear personal protective equipment (PPE)!
– Following installation, ensure that the coolant lines do not restrict the flow of air through the device.
– Work on electrical systems or equipment may only be carried out by an electrician or by trained personnel guided and supervised by an electrician. All work must be carried out in accordance with electrical engineering regulations.
– Use only insulated tools. Wear personal protective equipment (PPE)!
– The voltage values shown in the wiring plan or on the rating plate must match the mains voltage.
– Incorrect assembly and installation may lead to the risk of condensation forming in the device, which can lead to an electrical short circuit or to leaks of liquid.

2.5 Safety instructions for operation

– Risk of malfunction or damage! Do not modify the unit! Use only original spare parts!
– There may be an increased noise level when the LCP is in operation, especially when the device is operated directly on the display. Wear personal protective equipment (PPE)!
– Proper and flawless unit operation can only be ensured when it is operated under the intended ambient conditions. As far as possible, be sure that the ambient conditions for which the unit is designed are complied with, e.g. temperature, humidity, air purity.
– The medium necessary for the control system, i.e. cooling water, must be available throughout the entire operating time.
– If leaks occur, there is the risk of injury caused by escaping refrigerant, in particular glycol. Wear personal protective equipment, collect any escaped refrigerant with suitable cloths or absorbent materials, and rectify the leakage cause without delay.
– The leak sensor built into the unit is for functional leak detection only and should not be used as part of a safety chain system.
– Injury caused by fan impellors! Keep persons and objects away from the fan impellors! Do not remove covers until the power supply is disconnected and impellors are not moving! Always use mechanical protection when working! Shut down the respective fan during

maintenance work, if possible! Tie long hair back! Do not wear loose clothing! Fans start up automatically following power disruptions!

2.6 Safety instructions for maintenance

– The unit must be safely disconnected from the power supply before carrying out any maintenance work or troubleshooting inside the unit. Either pull the connector from the mains or use the all-pole disconnector in the supply lead and secure against unintentional reactivation.
– In particular, the sharp edges of the heat exchanger module may cut and cause injury while working on the unit. Put on personal protective equipment before beginning assembly or cleaning work!
– When removing and installing a fan module, injuries may potentially be caused by the sharp edges inside the LCU CW, or if the module is dropped, or as a result of high air speeds and noise. Wear personal protective equipment (PPE)!
– Always read the relevant safety data sheet when working with the cooling medium.

2.7 Safety instructions on shutting down

– Laypeople are not qualified to ensure the required shutdown procedures. This work must only be carried out by qualified, trained experts.
– During storage and transportation below freezing point, the water circuit should be drained completely using compressed air!

2.8 Operating and technical staff

The installation, commissioning, maintenance and repair of this unit may be performed only by qualified specialists trained by Rittal.

Only properly instructed personnel may perform service on a unit while in operation.

– Never allow the unit to be used by people (or children) with limited physical, sensory or mental abilities or insufficient knowledge and experience, unless supervised or properly instructed.
– Children must be supervised and never allowed to play with the unit.

2.9 Personal protective equipment

Personal protective equipment, which should as a minimum include waterproof protective gloves and safety goggles, must be worn during any work on the unit when personnel might come into contact with refrigerant (for deployment of a water-glycol mixture).

We also recommend the wearing of suitable ear muffs and a hair net when working near the unit.

For all work on the LCU CW, in particular on the outlet side, wearing safety goggles is recommended to prevent eye injuries caused by the high air speeds.

2.10 RoHS compliance

The LCU CW fulfils the requirements of EU directive 2011/65/EC on the Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS 2) of 08 June, 2011.

Note:
Corresponding information concerning the RoHS directive is provided by our firm on the Internet at www.rittal.com/RoHS.

Safety notice according to Regulation (EC) No. 1907/2006

The product contains the following SVHC substances:

SVHC substance	CAS No.
4,4'-isopropylidenediphenol	80-05-7
Lead	7439-92-1
Cadmium	7440-43-9
Mercury	7439-97-6
Lead titanium trioxide	12060-00-3
Lead monoxide (lead oxide)	1317-36-8
Diboron trioxide	1303-86-2

Tab. 1: SVHC substances

According to the manufacturer, there are no health risks if the product is used properly.

After use, the product must be properly disposed of in accordance with the applicable legal regulations.

EN

3 Product description

3.1 General functional description

The LCU CW is essentially an air/water heat exchanger that is used to dissipate high heat losses from server enclosures or for the effective cooling of devices built into a server enclosure.

The air routing in the LCU CW supports the "front to back" cooling principle of the devices built into the server enclosure. The hot air expelled by the devices in the server enclosure is drawn in by the fans and thus routed through the heat exchanger module.

In the heat exchanger module, the heated air is directed through an air/water heat exchanger, and its thermal energy (heat losses from the server) is transferred to a cold water system. As a result, the air is cooled to a freely selectable temperature within the authorised parameters and then routed directly in front of the 482.6 mm (19") level in the server enclosure.

Note:
The water inlet temperature must always be chosen (controlled) so that it always lies above the dew point for the prevailing ambient temperature and humidity in the data centre. The dew point can be found in the Mollier h-x diagram (fig. 3).
Furthermore, we advise compliance with the ASHRAE standard "ASHRAE TC 9.9, 2011 Thermal Guidelines for Data Processing Environments".

3.2 Control modes

3.2.1 General information

The LCU CW can be operated in various control modes depending on the deployment condition:

– Automatic mode: The server inlet temperature (cold air) serves as a reference variable. The water flow and the fan speed are controlled to provide the required cooling capacity.
– Manual control: The water flow and the fan speed are specified manually. The set parameters serve as reference variables.

Note:
Rittal cannot accept any liability for damage and consequential damage caused by improper parameter settings.

3.2.2 Automatic mode

The temperature of the cold air intake is controlled via constant comparison of the actual temperature with the setpoint temperature set on the LCU CW (default is +24 °C).

If the server-in temperature exceeds the setpoint temperature, the control valve in the cooling water system opens (linear opening from 0 – 100%), and the heat exchanger is supplied with cold water.

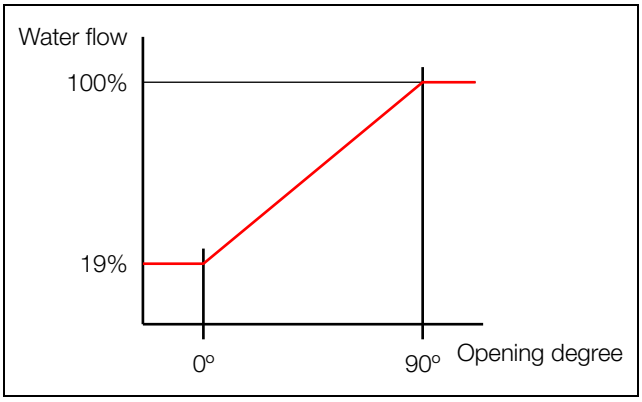

Fig. 1: Opening degree of the control valve

If the difference "server inlet temperature – setpoint value"

– is less than 0: the control valve is further closed.
– is greater than 0: the control valve is further opened.
– is equal to 0: the control valve retains its opening degree.

The temperature differential between the setpoint and the warm air that is drawn is used to determine and set the fan speed. The control unit attempts to keep the air temperature constant in front of the 482.6 mm (19") level (LCP Rack) by activating the control valve.

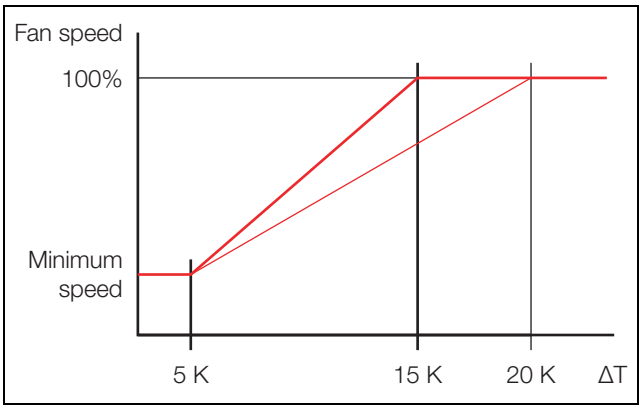

Fig. 2: Fan control

– The lower limit of the Delta-T value can be set in the range between 0 K…20 K.
– The upper limit of the Delta-T value can be set in the range between 3 K…40 K.
– The lower speed value can be set in the range between the minimum speed and 80% of the maximum speed.

Optional: Fan speed control according to the pressure difference

If the fan speed is controlled according to the pressure difference, the pressure in front of and behind the server rack's built-in devices is ascertained and compared with the set pressure difference to calculate the fan speed.

Note:
By default, the fan is controlled according to the temperature difference.

3.3 Ambient conditions

The LCU CW is used to dissipate the thermal load generated by IT equipment and prevent the installation site of the IT equipment from overheating. If IT systems are operated at excessive ambient temperatures, this may lead to malfunctions and restricted operation of the system. The correct system temperature is based on manufacturer-specific information.

Note:
ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) recommends server intake air temperatures of between 18 °C and 27 °C. The selected server intake air temperature should be agreed with the manufacturer of the IT equipment and the operator at the project planning stage.

Based on the prescribed conditions, please use the Mollier h-x diagram to check whether cooling at the prescribed cold water temperature will fall below the dew point (fig. 3 "Mollier h-x diagram for humid air").

Note:
To obtain support, contact Rittal.

The blue markings in the Mollier h-x diagram give an example of how to calculate the dew point for the following conditions:
– Room temperature: 22 °C
– Relative humidity: 50%
This produces a dew point of 11 °C.

Sensitive and latent cooling output

If the surface temperature of the heat exchanger in the LCU CW is below the dew point, condensation will form on the heat exchanger. This leads to cooling capacity losses, because the energy is sometimes used for condensation (latent cooling capacity).
If, however, when working with cold water temperatures where the surface temperature of the heat exchanger is above the dew point, the energy is used only to cool the server supply air (sensitive cooling capacity).
Section 6.2 "Cooling water connection" describes a tried-and-tested hydraulic circuit which quickly and easily supplies the required volume of water at the correct temperature.

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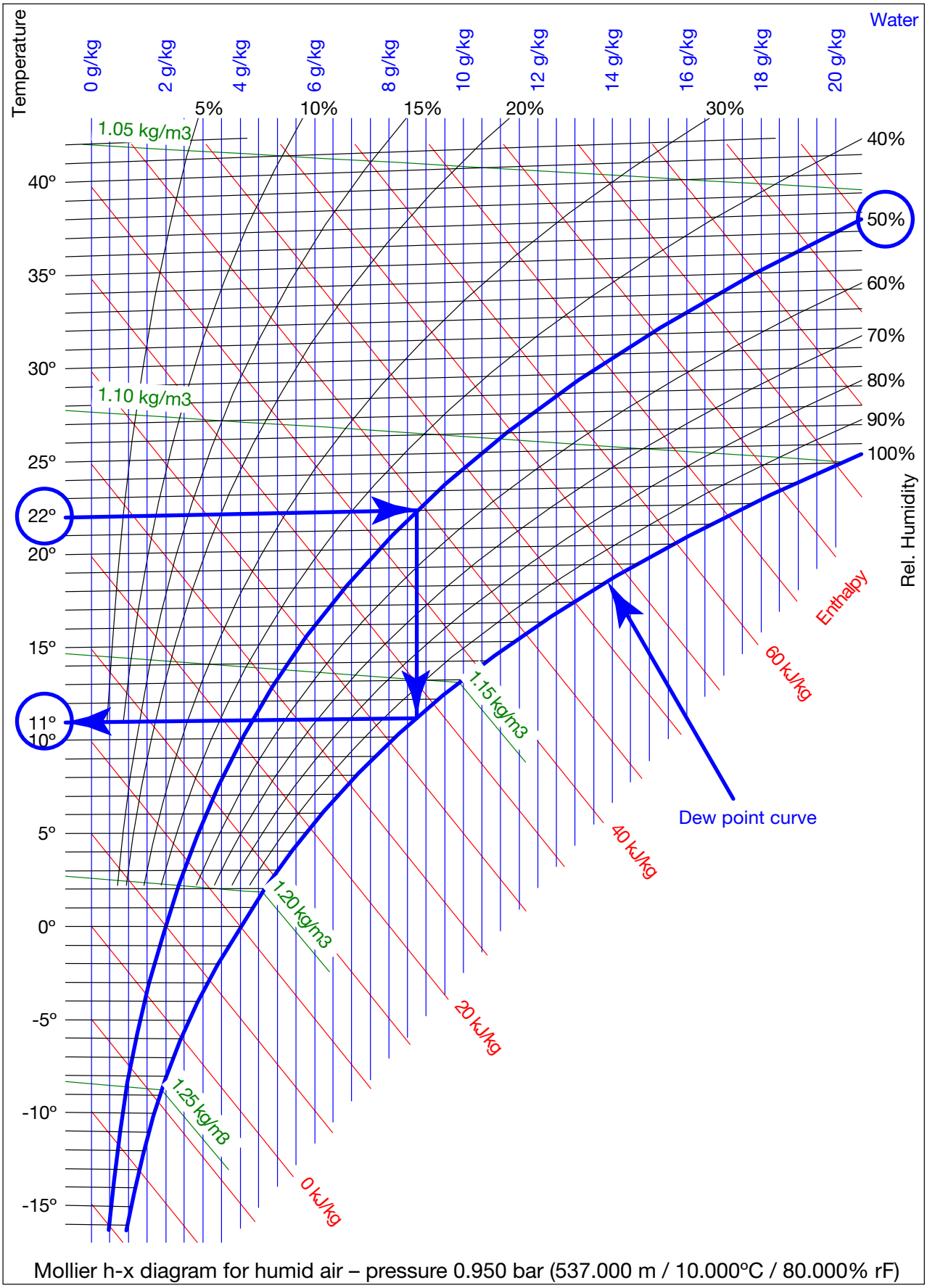

Fig. 3: Mollier h-x diagram for humid air

3.4 Air routing

3.4.1 General

In order to achieve sufficient cooling in the server enclosure, it is important to ensure that the cooling air passes through the interior of the built-in units and is unable to flow past at the sides.

Targeted air routing in the server enclosure has a major effect on the heat loss to be dissipated.

In order to ensure targeted air routing in the system, the server enclosure should be divided vertically into warm air and cold air sections. The division is accomplished in the front section of the server assembly to the left and right of the 482.6 mm (19") level using foam strips or air baffle plates which, depending on the enclosure width and the number of server enclosures to be cooled, can be ordered as an accessory.

Note:
The 482.6 mm (19") level must likewise be completely sealed. This is already the case in a fully equipped server enclosure. If the server enclosure is partially equipped, the open height units (U) of the 482.6 mm (19") level must be sealed with blanking plates, which are available as Rittal accessories.
As more devices are installed in the server enclosure, it becomes even more important to follow this specification.

3.5 Proper and improper usage

The LCU CW is an air/water heat exchanger that cools closed spaces or housings in which IT components, such as servers, switches or similar, are installed and are used in a technology room or data centre.
LCUs must always be used in conjunction with a cold-water supply, typically chiller or free-cooler. The water supply must always be a closed circuit. The water quality during the complete service life must conform with the details in these instructions.
The unit may be deployed only within the technical operational limits as described in these instructions.

The unit is state of the art and built according to recognised safety regulations. Nevertheless, improper use can present a hazard to life and limb of the user or third parties, or result in possible damage to the system and other property.

Consequently, the unit must only be used properly and in a technically sound condition.
Any malfunctions which impair safety should be rectified immediately. Follow the operating instructions!

Proper use also includes following the operating instructions and fulfilling the inspection and maintenance conditions.

Inappropriate use may result in danger. Inappropriate use may include:
– Use of impermissible tools.
– Improper use.
– Improper rectification of malfunctions.
– Use of replacement parts which are not authorised by Rittal GmbH & Co. KG.
– Failure to observe the required water quality.
– Use of a coolant other than water.
– Expelling the cold air into an air duct system.
– Use in an industrial environment.
– Non-stationary use, e.g. on moving or vibrating machines.
– Continuous operation below the dew point.
– Operation as air conditioning for humans.
– Operation as food cooling.
– Provision of the units in publicly accessible areas.
– Violation of the permitted electrical voltage ranges.

3.6 Supply scope

The LCU CW supply includes:

Qty.	Parts
1	Liquid Cooling Unit CW
1	Dispatch bag:
1	Support for LCU CW
1	Condensate discharge hose (3 m)
2	Angular hose connector 90°
12	Screw M5 x 12, self-tapping NZ/TX30
1	7-pole female connector
1	Assembly and operating instructions

Tab. 2: Supply scope

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4 Transportation and handling

Caution!
Risk of injury during transport and when handling the unit.
Wear your personal protective equipment for the work described below.

4.1 Transportation

The LCU CW is delivered shrink-wrapped on a pallet.

Caution!
Transport of the LCU CW:
Use only suitable and technically sound lifting gear and load-bearing devices with sufficient load capacity.

- Because of its heavy weight, never lift the LCU CW by yourself (or even together with several people). Always use appropriate lifting gear.

4.2 Unpacking

Caution!
There is a risk of crushing when removing the LCU CW from its wooden packaging.

- Remove the separate lid from the wooden box.

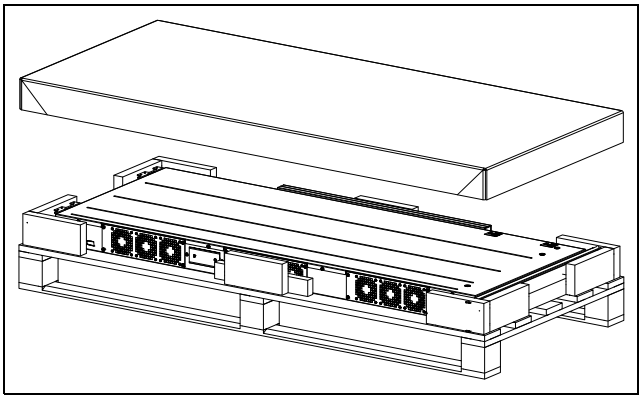

Fig. 4: Removing the separate lid

- Remove the packaging materials and lift out the accessories.

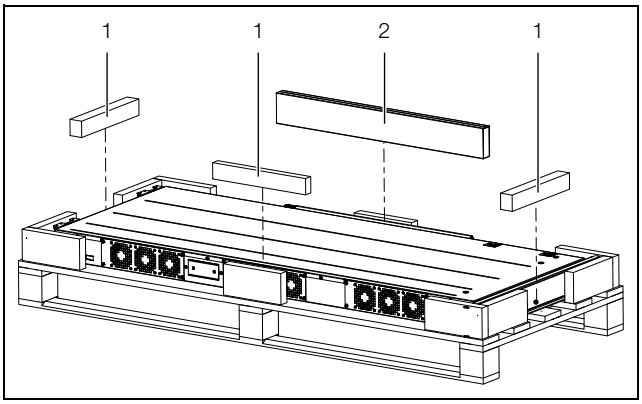

Fig. 5: Removing the packaging materials and accessories

Key
1 Packaging materials
2 Accessories

- With two people holding the device by the handles, lift it up.

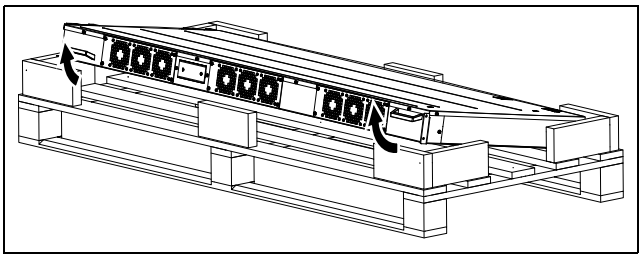

Fig. 6: Lifting the device

- Take care **not** to rest or set the device down on the water connections at the rear.

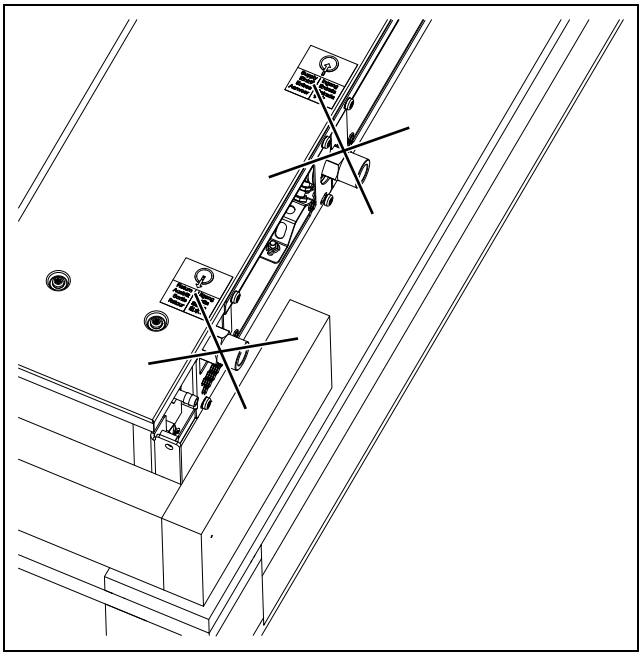

Fig. 7: Water connections on the rear of the device

- Pull the device forwards slightly and set down on the edge of the wooden packaging.

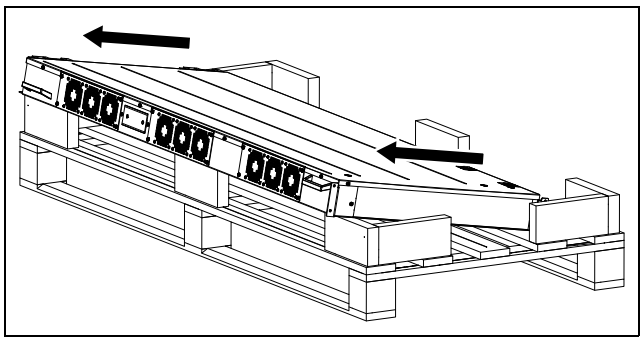

Fig. 8: Setting down the device

- With two people at the end faces, grasp hold of the device from beneath and remove it from the packaging.
- Set the LCU CW down vertically on its underside and protect it from tipping over.
- Check the unit for any damage that may have occurred during transport.

Note:
After unpacking, the packaging materials must be disposed of in an environmentally friendly way. They are comprised of the following materials:
Wood, polyethylene film (PE film), strap, edge protectors, cardboard.

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5 Assembly and siting

5.1 Installation site requirements

The LCU CW is an air/water heat exchanger for IT equipment.

Please observe the following general remarks on the installation site:

– The installation site of the LCU CWs must be adequately protected from external weather conditions.
– Please follow the standard code of practice when positioning.
– If the intake air to the installation room is cooled by an air-conditioning system, be sure to tailor the relative air humidity to the water inlet temperature of the LCU CWs. This avoids condensation and ensures maximum energy efficiency (see section 3.3 "Ambient conditions").
– The unit must not be located or operated at sites accessible to the general public. Only appropriately authorised personnel should have access to the installation site.
– The cabinet housing the LCU CW must be easily accessible from the front and rear, with at least 0.8 m x 1 m (width x depth) of free space in front of the cabinet.
– The maximum altitude at which the LCU CW may be operated is 2000 m above sea level.

In order to ensure problem-free operation of the LCU CW, the following conditions for the installation location should be observed:

Supply connections required at the installation site per LCU CW

Type of connection	Connection description
Power connection:	230 V, 1~, 50/60 Hz
Coolant connection:	Max. permitted operating pressure PS = 10 bar

Tab. 3: Supply connections required at the installation site

Note:
Please see the notes and data regarding the cold water connection in section 6.2 "Cooling water connection".

5.2 Installing the LCU CW in a VX IT server rack

The internal unit may be mounted both on the right and on the left of the VX IT server rack.

Note:
The illustration below shows installation on the left-hand side of the VX IT server rack.

Before the internal unit of the LCU CW can be installed in a VX IT server rack, the following work should be carried out:

■ Slide the 482.6 mm (19") mounting angles away from you by 50 mm.

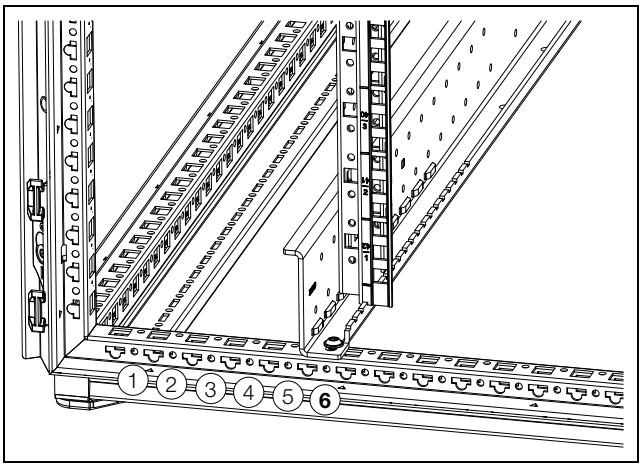

Fig. 9: 482.6 mm (19") mounting angle pushed away

■ Position the front 482.6 mm (19") level in position 7to carry out air blocking with the recommended accessories.

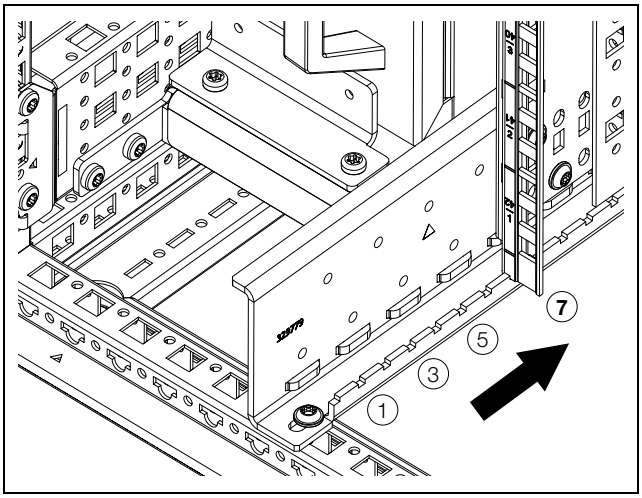

Fig. 10: Positioning the 482.6 mm (19") level

■ Position one punched section with mounting flange at the very bottom and one at the very top of the rack.
■ Secure it to the inner level of the VX frame (mounting side).
– VX punched section with mounting flange 23 x 64 mm for enclosure depth 1000 mm: 8617.150, 1 pack = 4 pcs.
– VX punched section with mounting flange 23 x 64 mm for enclosure depth 1200 mm: 8617.160, 1 pack = 4 pcs.

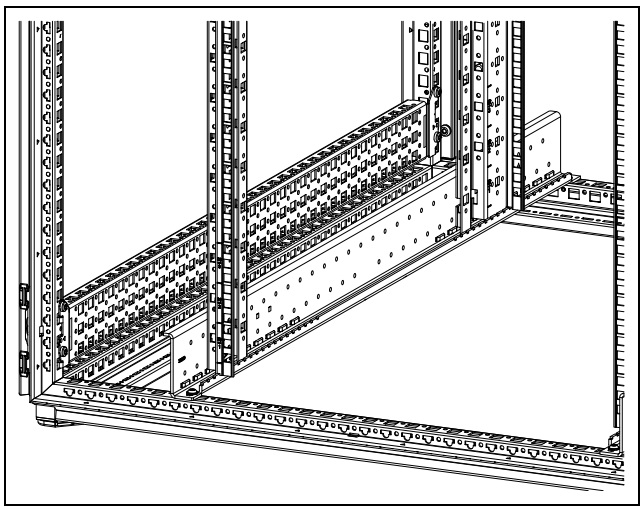

Fig. 11: Bottom punched section with mounting flange

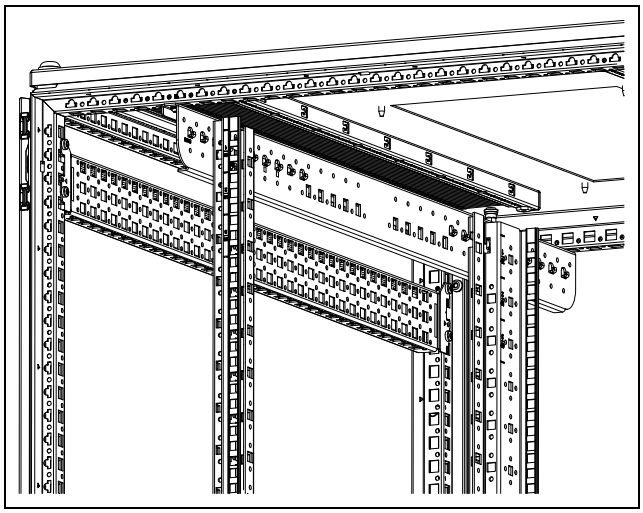

Fig. 12: Top punched section with mounting flange

- Secure the rail for mounting the LCU CW right at the front of the bottom punched section with mounting flange (see fig. 13).
  Using the two brackets at the front and rear, secure the mounting rail to the bottom punched section with mounting flange with 2 screws.
- Please observe the following distances between the front edge of the VX frame and the front edge of the mounting rail:
  Minimum 130 mm.
  For the 1000 mm deep VX IT rack max. 150 mm
  For the 1200 mm deep VX IT rack max. 160 mm

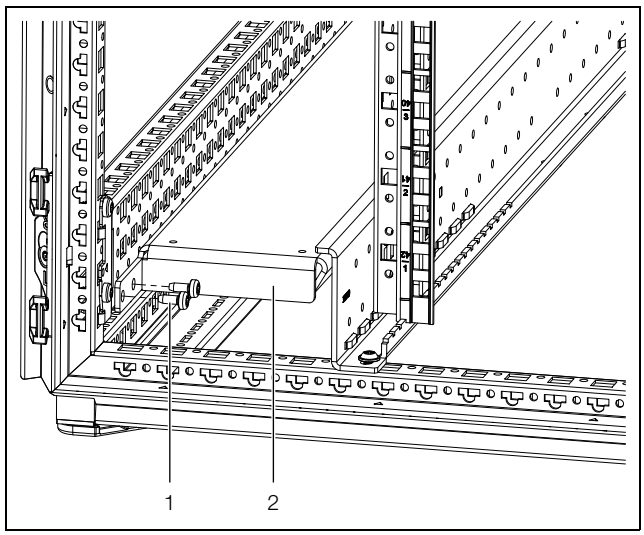

Fig. 13: Front fastening of the rail

Key

1 Fastening screws
2 Mounting rail

Note:
If the LCU CW is installed in a different network/server rack, the distance between the front edge of the rack frame and the air outlet of the LCU CW should be at least 130 mm.

The above spacings ensure sufficient space at the front of the device for the expelled air, and sufficient space at the rear of the device for the various connections.

- Position the LCU CW on the mounting rail.

Caution!
There is a risk that the LCU CW might tip over.
Protect the LCU CW from tipping over until it is securely attached to the top punched section with mounting flange.

- Screw the LCU CW onto the top punched section with mounting flange using the brackets provided.

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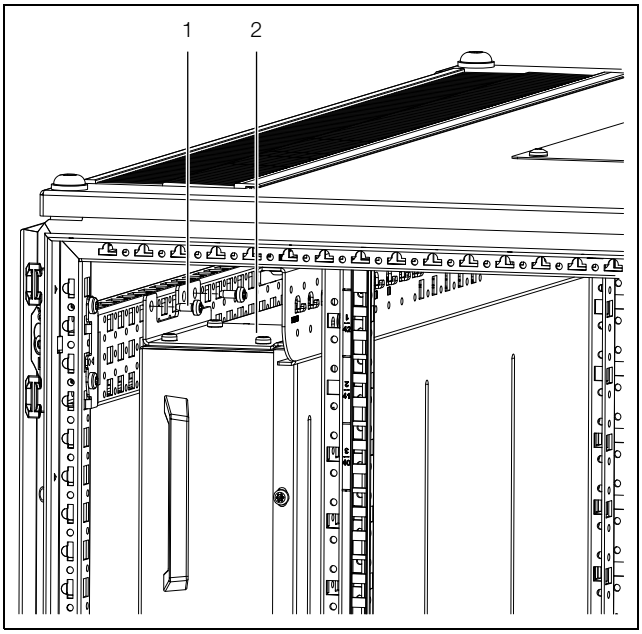

Fig. 14: Securing the LCU CW to the front at the top

Key

1 Fastening screws
2 LCU

Note:
Take care to ensure that air routing in the air intake and outlet zone of the LCU CW is not obstructed by other installed components.

5.3 Positioning the pressure sensors

For fan speed control according to the pressure difference, you will additionally need at least one or a maximum of two differential pressure sensors (7030.150). These are available as Rittal accessories.

- Fit the differential pressure sensor in the rack as described in the instructions enclosed with the sensor.
- When fitting the air hoses, be careful not to position the two measurement points for reference pressure and comparison measurement in a direct airflow.
- Connect the pressure sensor to the CAN bus connection of the climate controller (see fig. 29).

The sensor is then managed under "Real Devices" in the selection tree on the LCU CW website.

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6 Installation

During the installation of the unit, the personal protective equipment, consisting of at least waterproof protective gloves and safety goggles, must be worn.

6.1 Electrical connection

Note:
Please keep this electrical documentation readily available so that it is always on hand when needed. This is the only documentation which is authoritative for the unit.

Caution!
Work on electrical systems or equipment may only be carried out by an electrician or by trained personnel guided and supervised by an electrician. All work must be carried out in accordance with electrical engineering regulations.

The unit may only be connected after the above-named personnel have read this information.

Use only insulated tools.

Wear personal safety equipment.

The connection regulations of the appropriate electrical power company are to be followed.

The voltage values shown in the wiring plan or on the rating plate must match the mains voltage.

The pre-fuse specified in the wiring plan/ rating plate should be provided to protect the cable and equipment from short-circuits. The unit must be individually fused.

No additional control equipment may be connected upstream of the device at the supply end.

The LCU CW is electrically connected using the type C14 connector.

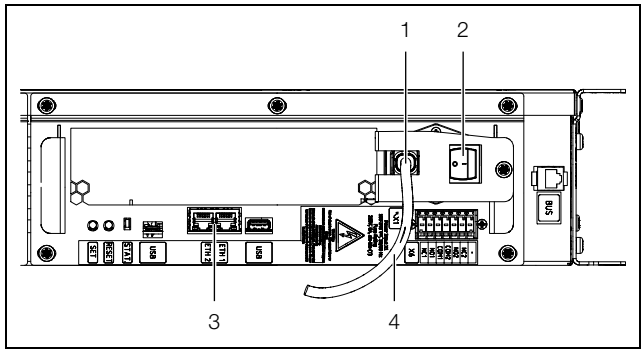

Fig. 15: Connections in the rear top area

Key
1 IEC 60320 type C14 connector with lock plate
2 ON/OFF button
3 2 network connections
4 Connection cable: Earthing pin / C13 socket

■ Remove the screw from the connector lock plate.

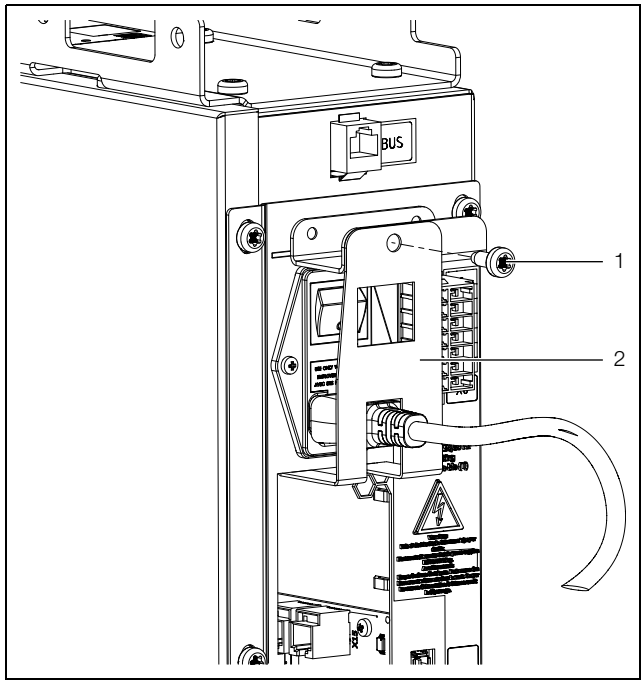

Fig. 16: Securing the lock plate

Key
1 Screw
2 Connector lock plate

■ Gently push the lock plate downwards and then pull it off backwards.

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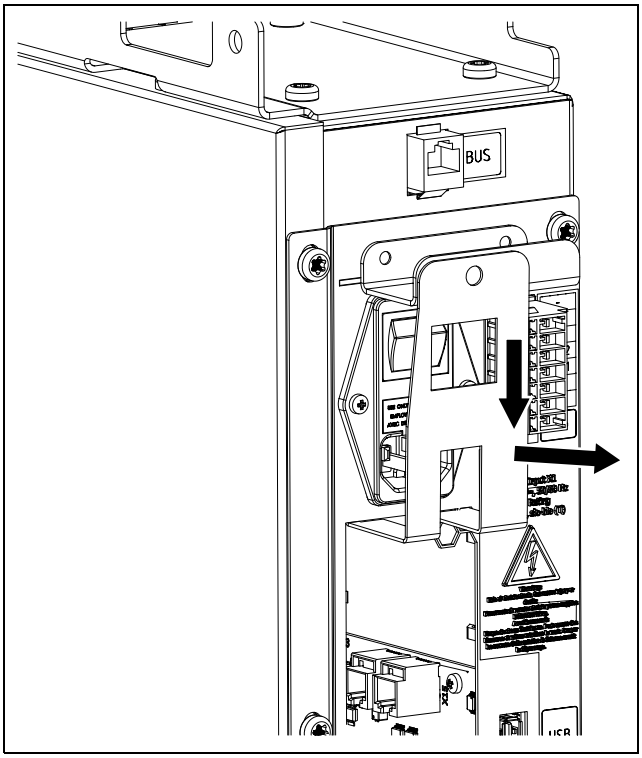

Fig. 17: Removing the lock plate

- Connect the cable, which is included in the scope of delivery with the C13 jack to the device connector.
- Re-attach the lock plate over the C13 jack and the connection cable and secure with the screw.

6.2 Cooling water connection

The LCU CW is connected to the cold water network via two G¾" threaded pipe connections (external thread) on the inlet and return.

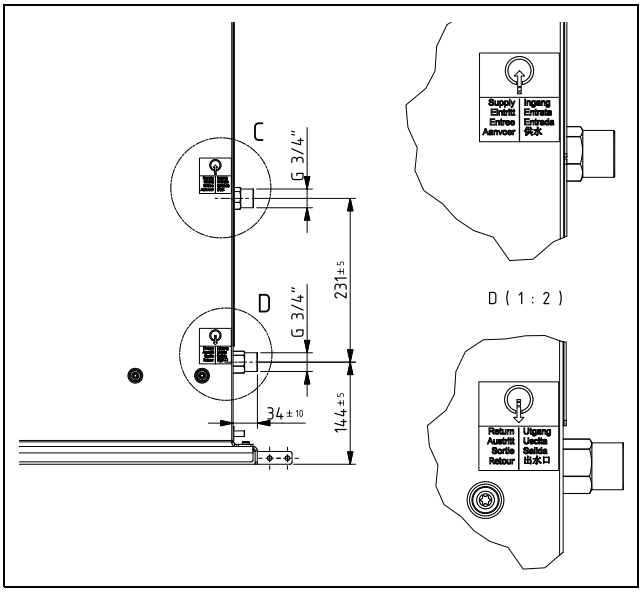

Fig. 18: Cooling water connection

Note:
The cooling water connection must **always** be made with union nuts

Caution!
When installing, observe the applicable specifications concerning water quality and water pressure.

In case of a low water inlet temperature, the inlet and return lines should be appropriately insulated. If this is not done, condensate may form on the supply lines.

Note:
Any on-site pipework with multiple LCUs on one water circuit should include a flow regulator to adjust the flow rate of each LCU CW.

Ideally, the LCU CWs are connected to the cooling water circuit via a water/water heat exchanger when using a water/glycol mixture.

Pros:
- Reduction of water volumes in the secondary circuit,
- Setting of a defined water quality,
- Setting of a defined input temperature and
- Setting of a defined volumetric flow.

General remarks on the cold water system

IT climate control poses a major challenge for the cold water system, because the IT equipment whose heat loss is to be dissipated by the cold water system can undergo multiple load changes per minute. This hysteresis is transferred directly to the cold water system, leading to a fluctuating ΔT. If this causes a major load step, leading to a rapid increase in heat loss, cold water must be made available immediately by the cold water system. Depending on the distance of the cooling unit from the IT cold water circuit, this can create a significant dead time during which no water is available to cool the IT heat loss.

Because of hysteresis induced by the IT equipment, ΔT fluctuations in the cold water circuit are unavoidable. Fluctuations of between 1 K and 10 K are not uncommon in IT climate control. For this reason, the usual ΔT of 6 K for a cold water circuit cannot be used to calculate the pipework. In the case of LCU CW, the volumetric flow required for the rated cooling output is always specified. With this volumetric flow, the correct pipe dimensions can be selected when calculating the pipework.

Example of an injection circuit

Fluctuations in the ΔT in the cold water circuit can be compensated using an hydraulic circuit. For example, by assembling an injection circuit, the cold water system is able to counteract the hysteresis generated by the IT equipment.

With the injection circuit, the primary circuit is installed as close as possible to the secondary circuit. The second-

ary circuit is assembled in the immediate vicinity of the equipment. The cold water is able to circulate permanently in the primary circuit, and is therefore always available when needed by the secondary circuit. Without this circuit, the cold water would first need to cover the entire distance from the producer to the equipment whenever the flow rate is altered by the equipment. Here too, there may be a significantly lower temperature in the primary circuit than in the secondary circuit, e.g. 6 °C in the primary circuit and 15 °C in the secondary circuit as a result of mixing.
In this way, the primary circuit pump 1 permanently provides the secondary circuit with water. The mixer valve in the return limits the volume of water flowing out of the secondary circuit and back into the primary circuit. This therefore limits the incoming water volume as well. The secondary circuit pump allows the entire volume of water required for cooling in the secondary circuit to circulate, and is responsible for mixing the temperatures.
Pump 2 allows water from the secondary return to be "injected" into the secondary inlet via the bypass. In this way, cold water from the primary circuit is raised directly to the correct temperature level. The injection circuit is just one example of many possibilities for adapting the cold water system to the requirements of IT climate control.

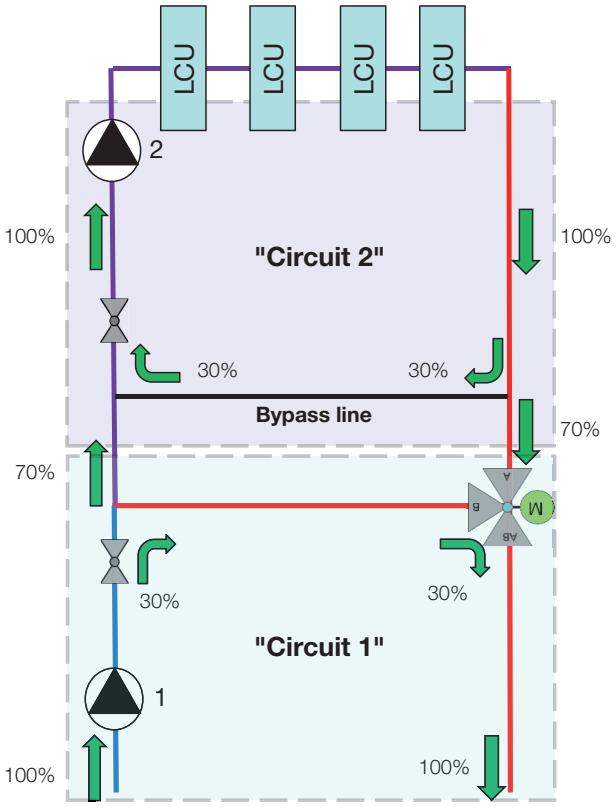

Fig. 19: Injection circuit (layout diagram)

In the LCU CW, a sensor built into the upstream end measures the water flow rate without any moving components. The measurement range of this flow meter is between 2 l/min and 40 l/min.

If the server racks are initially only equipped with minimal IT equipment, or if operating at low water inlet temperatures (e.g. 10 °C), the flow rate will be low. If this flow rate falls below the aforementioned limits, this may lead to system warnings from the flow meter. These warnings may be deactivated by configuring the parameters "System Warning min. Flow" and "System Warning min. Valve" (see section 7.2.4 "LCU CW configuration")

Alternatively, the occurrence of such error messages can also be avoided by using the injection circuit. To this end, the supplied cooling water from the primary and secondary circuit must be mixed differently to create a higher inlet temperature.

Hydraulic balancing

For an efficient cold water supply to the LCU CW, the cold water system must be hydraulically balanced. If the hydraulics are not balanced, the LCU systems will not be supplied homogeneously with the required volume of cold water. This will adversely affect efficient operation.

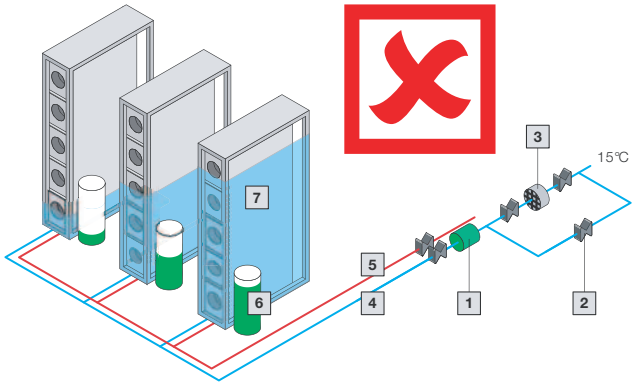

Fig. 20: Cooling distribution without hydraulic balancing

Key

1 Circulating pump
2 Shut-off valve
3 Fine filter
4 Return
5 Inlet
6 Pump pressure
7 Cooling supply
8 Opening degree of control valve
9 Control valve

Here, hydraulic balancing can be achieved via circuit control valves.

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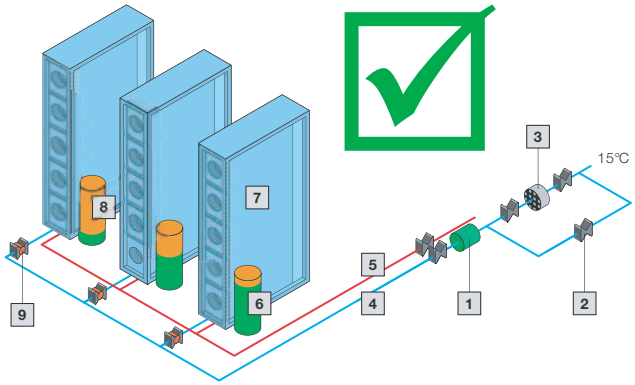

Fig. 21: Cooling distribution with hydraulic balancing

Note:
Before commencing operation with water, all supply lines must be adequately flushed.

Note:
To avoid the loss of fluids due to diffusion for closed systems, it is recommended to deploy automatic filling with conditioned additive water.

Note:
The 2-way control valve used in the device is opened at zero current.

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7 Configuration

7.1 General

Basic configuration of the LCU CW, particularly the (one-off) adjustment of the network settings, may be carried out in various ways:

1. HTTP connection via the Ethernet interface
2. Telnet/SSH connection via the Ethernet interface
3. Serial connection via a USB cable

The settings are generally made via an HTTP connection. If this is not possible, for example because access via HTTP or HTTPS has been deactivated, we recommend access via a Telnet/SSH connection. To this end, as with access via an HTTP connection, the IP address of the climate controller integrated into the LCU CW must be known. If this address is not known, the device may be accessed directly via the USB-C/serial interface.

The following descriptions assume that the LCU CW, and in particular the climate controller, are in their delivered state, i.e. that no changes have been made to the basic configuration. In particular, the connection types "HTTP" and "Telnet/SSH" must not be blocked.

7.2 HTTP connection

7.2.1 Making the connection

- Using a network cable, connect the device to your computer via the Ethernet interface (fig. 15, item 3).

Note:
Depending on your computer, you may need to use a crossover cable.

- Change your computer's IP address to any address within the range 192.168.0.xxx, e.g. **192.168.0.191**. The device's preset address **192.168.0.190** must not be used.
- Set the subnet mask to the value **255.255.255.0**.
- If applicable, switch off the proxy server in the browser to facilitate a direct connection to the device.
- In the browser, enter the address **http://192.168.0.190**. The log-on dialogue for registering the device will appear.

Fig. 22: Log-on screen with an HTTP connection

- Log in with the username **admin** and the password **admin** (fig. 22, item 1).

The overview window for the device will appear (fig. 23).

7.2.2 Changing the network settings

As a general rule, during the course of commissioning, the network settings of the climate controller will only need to be changed once, so that it is linked into your network structure.

- In the left-hand section of the overview window (navigation area), click on the **Processing Unit** entry (fig. 23, item 3) and in the right-hand section (configuration area), click on the **Configuration** tab (fig. 23, item 4).

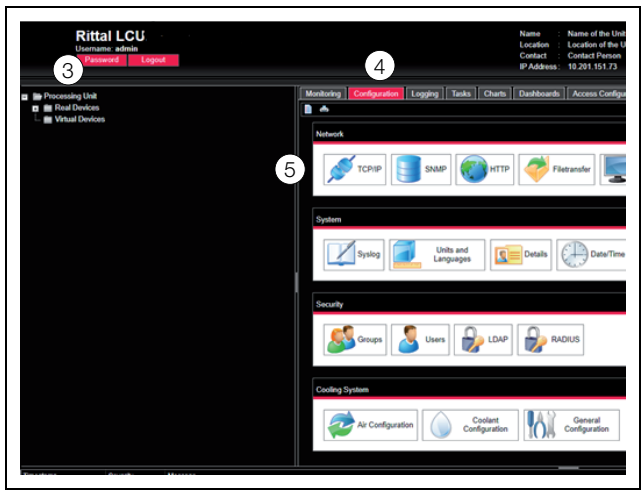

Fig. 23: Adjusting the TCP/IP settings

- In the group box **Network**, click on the **TCP/IP** button (fig. 23, item 5).

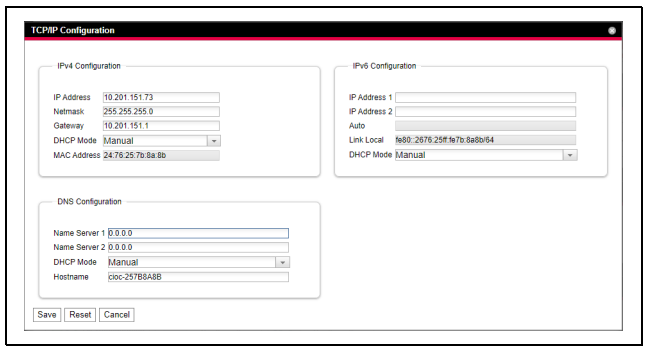

Fig. 24: Adjusting the TCP/IP settings

Note:
The following sections describe in detail how to make the setting for the IPv4 protocol. Further notes regarding the TCP/IP configuration are contained in the assembly and operating instructions for the IoT Interface 3124.300.

- In the **TCP/IP Configuration** window, change the device's IP address in the **IPv4 Configuration** group box to an address permitted in the network (fig. 24).
- If necessary, correct the settings for the subnet mask and the gateway.

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- Alternatively, select the "DHCPv4" setting instead of "Manual" for automatic IP allocation.
- Click on the **Save** button to change your settings.

Note:
If the **Save** button cannot be clicked, an incorrect entry has been made. In such cases, check your entries and correct them.

- Change the network settings of your computer to the original IP address and subnet mask values.
- Disconnect the network cable from your computer.
- Using a network cable, connect the LCU CW to your Ethernet LAN (fig. 15, item 3).

Note:
If you have activated automatic IP allocation ("Use DHCP" setting is activated), the IP address of the CMC III PU may be viewed via the USB interface (see the assembly and operating instructions for the IoT Interface 3124.300).

7.2.3 Changing the measurement units

Note:
After any adaptation of the units, all temperature values and flowrates of the LCU CW are set to the default values. Consequently, you should set the units (once) as desired and the limit values specified only on completion. If the units should be changed subsequently, note all setting values of the LCP so you can restore them manually.

The measurement units used may be converted from "°C" to "°F" and from "litres" to "gallons".
After registering on the LCU CW (see section 7.2.1 "Making the connection"), the Web interface for device operation is displayed.

- In the left-hand section of the overview window, click on the **Processing Unit** entry and in the right-hand section, click on the **Configuration** tab.
- In the group box **System,** click on the **Units and Languages** button.
- In the **Units and Languages Configuration** window in the group box **Units**, under the "Temperature Format" dropdown list, select the entry "Fahrenheit" if preset to "Celsius", and vice versa.
- In the dropdown list "Volume Format", select the entry "Gallon" if preset to "Litre", and vice versa.
- Click on the **Save** button to change your settings.

Note:
While the units are being converted, the LCU CW switches to failsafe mode.

7.2.4 LCU CW configuration

The basic settings for the LCU CW are defined in the **Cooling System** group frame. To do this, call the appropriate dialogue by clicking each of the **Air Parameter Configuration**, **Coolant Parameter Configuration** and **General Parameter Configuration** buttons.

Air Parameter Configuration dialogue

- Using the "Control Mode" parameter, determine whether the fan is controlled via the temperature difference or the pressure difference in front of and behind the server rack's built-in devices.

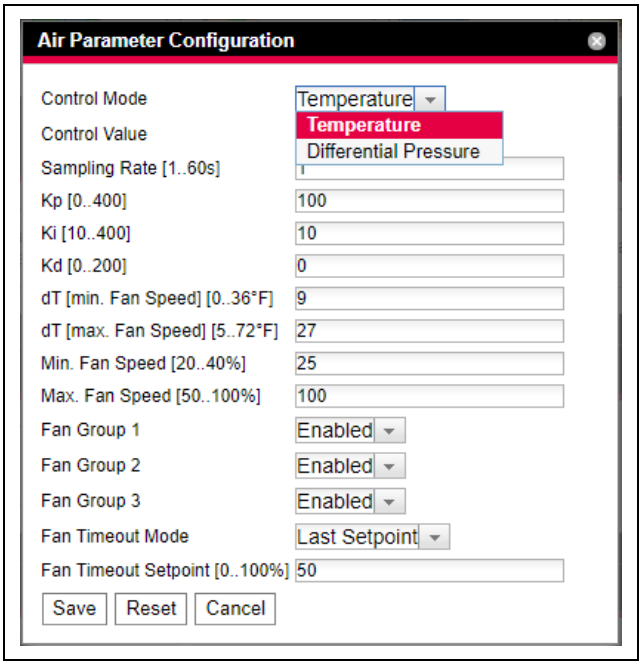

Fig. 25: Selecting the control mode

Fan control according to temperature difference

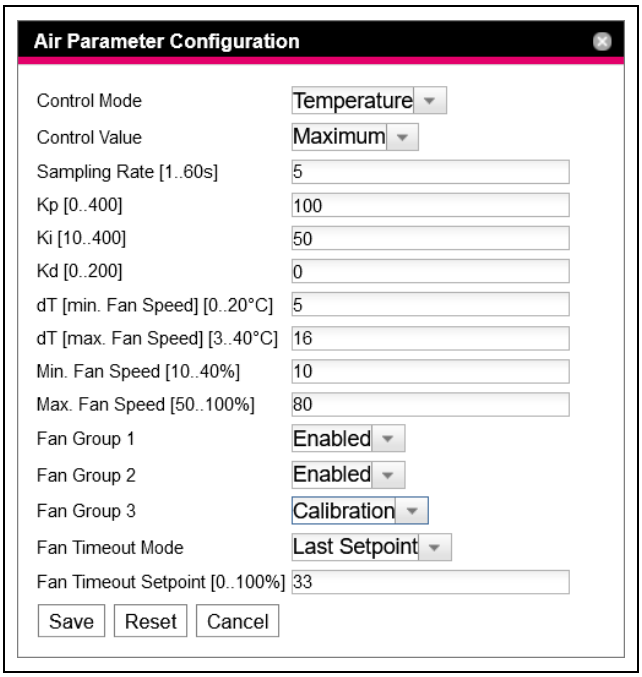

Fig. 26: **Air Parameter Configuration** dialogue

Parameter	Explanation
Control Value	This setting allows you to determine whether the fans in "Automatic" mode are controlled by the average of the server outlet temperature ("Average Temperature" setting) or the maximum value ("Maximum Temperature" setting).
dT min. Fan Speed	The fans operate at the lowest fan speed below this temperature difference (see parameter "Min. Fan Speed"). Preset value: 5. Linear fan control occurs in the range between the "dT min. Fan Speed" and "dT max. Fan Speed" values.
dT max. Fan Speed	The fans operate at the highest fan speed above this temperature difference (100%). Preset value: 15. Linear fan control occurs in the range between the "dT min. Fan Speed" and "dT max. Fan Speed" values.
Min. Fan Speed	In the "Automatic", "Manual" and "Minimum" operating modes, the fans will at least run at this set speed. **"Automatic" operating mode** In automatic operation, the fans are controlled to the temperature difference between the server outlet temperature and the server inlet temperature. If this difference is less than or equal to the "dT min. Fan Speed" value, the fans will run at the minimum speed set here. **"Minimum" operating mode** All fans will always run at the minimum speed set here. **"Manual" operating mode** If a speed is entered which is less than the minimum speed set here, the value is automatically corrected to the minimum speed. Exception: If a speed of "0%" is entered, the fans will be switched off. Preset value: 10%

Tab. 4: Settings in the **Air Parameter Configuration** dialogue

Parameter	Explanation
Max. Fan Speed	Maximum fan speed. In the "Automatic", "Manual" and "Minimum" operating modes, the fans will at maximum run at this set speed. **"Automatic" operating mode** In automatic operation, the fans are controlled to the temperature difference between the server outlet temperature and the server inlet temperature. If this difference is higher than or equal to the "dT min. Fan Speed" value, the fans will run at the minimum speed set here. **"Maximum" operating mode** All fans will always run at the maximum speed set here. **"Manual" operating mode** If a speed is entered which is higher than the maximum speed set here, the value is automatically corrected to the maximum speed.
Fan group 1-3	If fan monitoring is deactivated, only the monitoring of the fans is deactivated. The fans themselves will continue to run even after monitoring has been deactivated. In the tree structure, the speed values will be set to "0", and the status of the corresponding fan changes to "Inactive". Each individual fan assembly is calibrated by selecting "Calibration". The group of fans is accelerated to the maximum speed for a few seconds and the measured speed is saved as the 100% value for use as a reference. Once the calibration process is complete, the status will automatically revert to "Activated". When switching from "Inactive" to "Calibration", the operating hours meter is reset.
Fan Timeout Mode	This setting is used to determine how the fans operate when the climate controller is in emergency mode. "Last Setpoint" setting: The fans operate in their most recent normal mode setting. "Manual Setpoint" setting: Operation of the fans is set manually.
Fan Timeout Setpoint	Here, the fan setpoint can be manually set at 0-100% with the climate controller in emergency mode.

Tab. 4: Settings in the **Air Parameter Configuration** dialogue

Fan control according to pressure difference

The air pressure difference in front of and behind the LCU CW in the server rack is measured by one (or a maximum of two) differential pressure sensor(s) (delta P control) and used as the reference. The differential pressure sensors are not included with the supply and must be ordered separately and fitted (see section 5.3 "Positioning the pressure sensors").

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They are controlled via a PID controller. The control parameters (P, I, D) are set using the **Air Parameter Configuration** dialogue, where this control mode is usually available as a presetting.

With fan speed control according to the pressure difference, the required pressure in front of and behind the server rack's built-in devices is prescribed as the setpoint.

When using two differential pressure sensors, the mean of the two sensors is used.

– If **one** sensor fails, the value from the other sensor is used.
– If **both** sensors fail, the system switches to delta T control.

The connected differential pressure sensors are managed in the variables tree under "Real Devices". The current actual value is displayed here, and the relevant limits for alarms and warnings are configured. The evaluation of the limits is displayed in the status variables.

If delta P control is activated, as a maximum the first two differential pressure sensors detected are automatically used to determine the actual value. If there is no differential pressure sensor available, this information will appear in the status variables. The control method will then switch to delta T control.

Parameter	Explanation
Control Value	This setting determines whether the fans are controlled via the mean pressure difference ("Average" setting), the maximum value ("Maximum" setting) or the minimum value ("Minimum" setting) in "Automatic" mode.
Sampling Rate	Controller scan time.
P	The parameter for setting the proportional amount of the PID control algorithm. The setting is made as percentage.
I	The parameter for setting the integral proportion of the PID control algorithm. The setting is made in seconds.
D	The parameter for setting the differential proportion. The setting is made in proportion per second.

Tab. 5: Settings in the **Air Parameter Configuration** dialogue

Parameter	Explanation
Min. Fan Speed	In the "Automatic", "Manual" and "Minimum" operating modes, the fans will at least run at this set speed. **"Automatic" operating mode** In automatic mode, control is based on the pressure difference. If this difference is greater than the setpoint, the fan speed will be reduced. The speed set here is the minimum fan speed. **"Minimum" operating mode** All fans will always run at the minimum speed set here. **"Manual" operating mode** If a speed is entered which is less than the minimum speed set here, the value is automatically corrected to the minimum speed. Exception: If a speed of "0%" is entered, the fans will be switched off. Preset value: 10%
Max. Fan Speed	Maximum fan speed. In the "Automatic", "Manual" and "Minimum" operating modes, the fans will at maximum run at this set speed. **"Automatic" operating mode** In automatic mode, control is based on the pressure difference. If this difference is less than the setpoint, the fan speed will be increased. The speed set here is the maximum fan speed. **"Maximum" operating mode** All fans will always run at the maximum speed set here. **"Manual" operating mode** If a speed is entered which is higher than the maximum speed set here, the value is automatically corrected to the maximum speed.
Fan group 1-3	If fan monitoring is deactivated, only the monitoring of the fans is deactivated. The fans themselves will continue to run even after monitoring has been deactivated. In the tree structure, the speed values will be set to "0", and the status of the corresponding fan changes to "Inactive". Each individual fan assembly may be calibrated by selecting "Calibration". For a few seconds, the group of fans is accelerated to the maximum speed. and the measured speed is saved as the 100% value for use as a reference. Once the calibration process is complete, the status will automatically revert to "Activated". When switching from "Inactive" to "Calibration" the operating hours meter is reset.

Tab. 5: Settings in the **Air Parameter Configuration** dialogue

Parameter	Explanation
Fan Timeout Mode	This setting determines how the fans operate with the climate controller in emergency mode. "Last Setpoint" setting: The fans operate in their most recent normal mode setting. "Manual Setpoint" setting: Operation of the fans is set manually.
Fan Timeout Setpoint	Here, the fan setpoint can be manually set to between 0-100% with the climate controller in emergency mode.

Tab. 5: Settings in the **Air Parameter Configuration** dialogue

Coolant Parameter Configuration dialogue

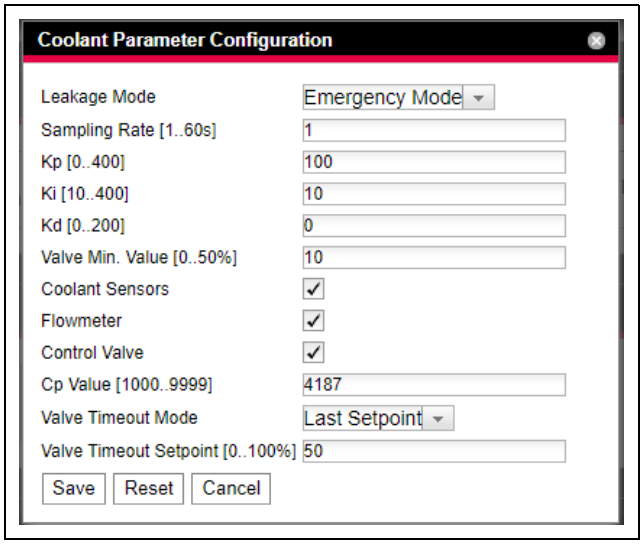

Fig. 27: **Coolant Parameter Configuration** dialogue

Parameter	Explanation
Leakage Mode	This sets the required response of the control valve in the event of a leak: **Emergency:** The valve closes completely in the event of a leak. **Only Alarm message:** Only an alarm message is sent in the event of a leak. The settings for the "Command" variables for the fans (Full, Minimum or Off) are accepted in both modes.
Sampling Rate	Controller scan time.
P	The parameter for setting the proportional amount of the PID control algorithm. The setting is made as percentage.
I	The parameter for setting the integral proportion of the PID control algorithm. The setting is made in seconds.
D	The parameter for setting the differential proportion. The setting is made in proportion per second.
Valve Min. Value	Analogous to the minimum fan speed (parameter "Min. Fan Speed"), a permanent opening of the control valve for all operating modes may be set here. This setting guarantees a minimum flow at all times, whereby the control system is able to react more spontaneously to sudden capacity increases. **"Automatic" operating mode** The control valve is always opened at least to the value set here. Exception: In case of leaks, if the "0" setting is selected (= Emergency), the valve is closed completely (see parameter "Leakage Mode"). **"Minimum" operating mode** The control valve is always opened at least to the value set here. **"Manual" operating mode** If the operator enters an opening value for the control valve which is less than the minimum opening set here, the value is automatically corrected to the minimum opening.
Coolant Sensors	If the temperature sensors for the water inlet and water return are deactivated, in the tree structure, the temperature values will be set to "0"; the status of the variables is set "n.a.".
Flowmeter	In the tree structure, the value of the cooling capacity is set to "0" and the flowrate status is "n.a.".
Control Valve	In the tree structure, the value is set to "0". Similarly, the control valve status changes to "n.a.".
Cp Value	The specific thermal capacity of the cooling medium. This value needs to be adjusted only if the cooling medium used is changed.
Valve Timeout Mode	This setting determines how the control valve behaves with the climate controller in emergency mode. "Last Setpoint" setting: The control valve opens to its most recent setting in normal mode. "Manual Setpoint" setting: The control valve opens to the manual setting.
Valve Timeout Setpoint	With the climate controller in emergency mode, the control valve can be manually set here.

Tab. 6: Settings in the **Coolant Parameter Configuration** dialogue

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Note:
– Because the percentages affect both the speed and the accuracy of control, the default values for the PID control algorithm should be changed only in exceptional cases.
– Rittal cannot accept any liability for damage caused by the incorrect parameterisation of the PID controller.

General Parameter Configuration dialogue

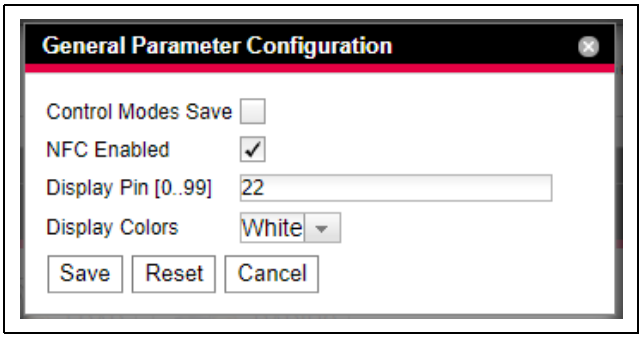

Fig. 28: **General Parameter Configuration** dialogue

Parameter	Explanation
Control Modes Save	If this option is activated, the control modes set for the fan and water control are transferred again automatically after a system restart. If this option is deactivated, the control modes are set to the "Automatic" setting after a system restart.
NFC enabled	If this option is activated, the NFC interface is also activated.
Display Pin [0…99]	The display PIN may be set between 0 and 99. "22" is the factory default PIN setting.
Display Colors	Different colours for the LED display can be selected here: White, pink, blue, green, or off.

Tab. 7: Settings in the **General Parameter Configuration** dialogue

7.2.5 Settings

All other setting options for the LCU CW are described in section 8 "Operation".

8 Operation

8.1 Control unit for the LCU CW

The LCU CW control unit is the climate controller. It supplies and processes actual values for server-in and server-out temperatures, actual pressure values in front of and behind the heat exchanger and actual values for flowrate, valve control and temperatures of the upstream inlet and return. The valve and fan are regulated based on the measured actual values.

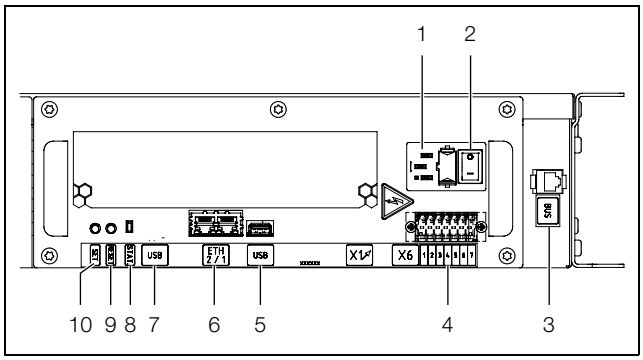

Fig. 29: Climate controller

Key

1 Type C14 device connector to IEC 60320 for the power supply
2 On/off switch
3 Connecting CMC sensors
4 Terminal strip alarm relay 1 and 2 (for details of the load capacity of the alarm relay, please refer to section 13.1 "General technical specifications")
5 USB interface as an external memory
6 Network connections (2 pcs)
7 USB-C interface for service
8 Status LED
9 RESET button for hardware reset (factory setting)
10 SET button to acknowledge

The following control and display components are set into the front of the climate controller:

Control and display component	Explanation
SET button	Use this button to confirm warnings and alarms.
Multi-LED for status display (steady light)	**Green:** Group signal status "OK".
	Orange: Group signal status "Warning".
	Red: Group signal status "Alarm".
Multi-LED for status display (cyclical)	**Green-orange-red:** At least one new device has been detected on the CAN bus (status "Detected").
Multi-LED for status display (alternating)	**Red-blue:** At least one device on the CAN bus has been removed or can no longer be accessed via the CAN bus (status "Lost").
Multi-LED for status display	**Blue:** The position of at least one device on the CAN bus has been altered (status "Changed").
	Red: Update in progress (so-called heartbeat, alternating long and short).
	White: Update task running for one or more sensors.

Tab. 8: Climate controller operating and display component

The terminal strip X6 has two alarm relays.

■ Please note the pin assignment of the terminal strip.

– 7: not connected
– 6: NC 2
– 5: NO 2
– 4: COM 2
– 3: COM 1
– 2: NO 1
– 1: NC 1

The alarm relay is configured on the website.

As well as the built-in sensors, a wide range of sensors, actuators and access monitoring systems may be connected via the CAN bus interface.

Warning! Risk of injury!
Before installing additional components, such as sensors, the LCU CW must be switched-off completely and secured against unintentional re-activation.

8.2 Display

The display on the front of the LCU CW offers the following functions:

– Display of the average server intake air temperature
– Display of error codes
– Setpoint setting for the server intake air temperature
– Unit setting for the temperature display (°C or °F)
– NFC interface

Note:
Settings are usually made via an HTTP connection (see section 8.4 "Extended options by connecting the LCU CW to a network").

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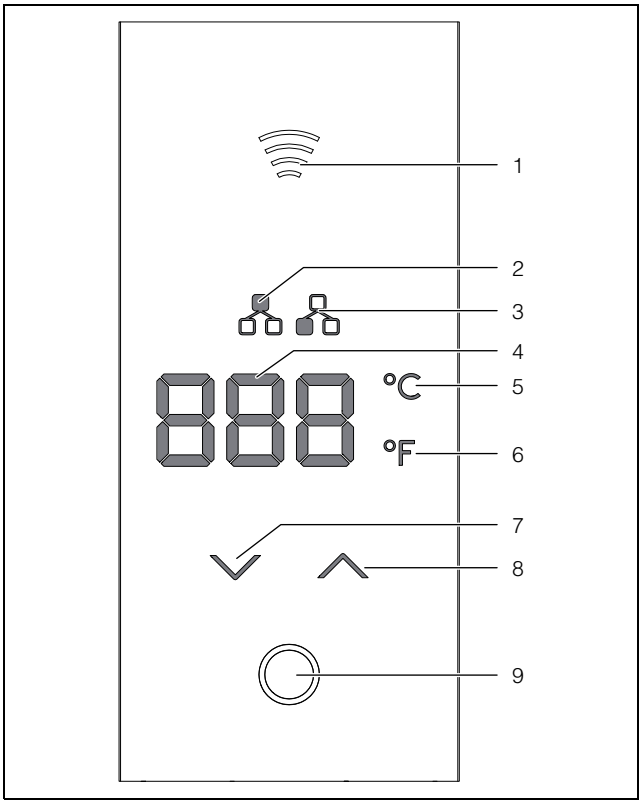

Fig. 30: Display

Key

1 "NFC" icon
2 "Master" icon
3 "Slave" icon
4 7-segment display (3x)
5 "Celsius" unit
6 "Fahrenheit" unit
7 "Down" arrow key
8 "Up" arrow key
9 Home key

Note:
Item 2 ("Master") and item 3 ("Slave") are not active for the LCU CW.

The display has a three-digit, 7-segment display (fig. 30, item 4). After switching on the power supply, the average server intake air temperature will soon appear here (after approx. 10 seconds) and will then be permanently displayed as long as there are no error or system messages. If such messages do occur, they will alternate with the temperature display.

The above parameters can be set using the control components on the display (Home, OK and arrow keys).

8.2.1 General information about programming

Use the arrow keys and the Home key to set the required server intake air temperature (setpoint) and the preferred temperature display unit (°C or °F).

- To operate the touch elements, place one finger fully over the marked or illuminated key.

To enter programming mode:

- Briefly press the Home key.
  In addition to the displayed internal temperature, the Home key and both arrow keys on the display will be back-lit.
- Press the Home key again for approx. 3 seconds.
  "Cod" will appear in the display.
- Briefly press the Home key again.
- Set the device PIN using the arrow keys.
  The number "22" is preset by default.
- Press the Home key again to confirm the set code.

If the code has been correctly entered, the "tSE" menu for setting the required server intake air temperature (setpoint) will appear. If no entry is made for 15 seconds, you will exit the menu and the start screen displaying the mean server intake air temperature will appear automatically.

- Alternatively, keep the Home button pressed down for approximately 6 seconds.
  This will take you straight back to the start screen.

After activating programming mode, you can navigate through the menus and change the settings as follows:

- Press on the arrow keys to page through all menus and settings at the current level or to increase or reduce a number.
- Briefly press the Home key to switch to a sub-menu.
- Press the Home key for around 3 seconds to switch to the menu above or to confirm a setting (within the prescribed limits).
  If a number or setting is changed, the message "ACC" will appear in the display for approximately 1 second. After that, the next menu up will appear.

More extensive settings can be made with the Rittal Scan & Service app via the NFC interface (see section 8.2.4 "Rittal Scan & Service app").

8.2.2 Setting the unit

All temperature values for the unit may be displayed either in degrees Celsius "°C" or degrees Fahrenheit "°F". When changing the unit, all temperature settings are converted automatically.

- Briefly press the Home key in the "tSE" menu.
  The sub-menu "Con" (control mode) will appear for you to select the control mode.
- Use the arrow keys to select the "CF" (Celsius/Fahrenheit) menu and briefly press the Home key again.
  The currently set unit will be displayed.
- Use the arrow keys to switch between the two setting options until your preferred unit is displayed.
- Keep the Home key pressed down for around 3 seconds to switch to the next menu up.
  If you have changed the set unit, the message "ACC" will appear in the display for approximately 1 second. After that, the next menu up ("CF") will appear.

8.2.3 Manually acknowledge a system message

For system messages requiring a manual reset, the message "rSt" will appear in the display alternating with the system code(s) and the temperature display.

- First, rectify the cause of the system message.
- Then, to acknowledge the system message, press the Home key followed by the two arrow keys simultaneously for three seconds.
  "ACC" appears in the display to confirm acknowledgement.

8.2.4 Rittal Scan & Service app

The Rittal Scan & Service app allows you to make changes quickly and easily to the cooling unit settings via the NFC interface.

- Install the Rittal Scan & Service app on any suitable mobile phone (see section 16 "Accessories").
- Connect to a cooling unit via an NFC scan.
  The default setting of the device PIN is 22.

Note:
The Rittal Scan & Service app is largely intuitive to use, so we will only briefly consider different app zones and the required settings below.

8.3 Description of operation

8.3.1 General

The climate controller of the LCU CW carries out the following functions:

– Scan all measurements (temperatures, pressures, speeds, flowrate, current rating etc.).
– Evaluate all measurements and generate alarm and warning signals.
– Calculate the thermal output of the inlet and return temperature as well as determine the water flow volume.
– Control air temperature in the server enclosure by regulating the fan speed and the water volume through the heat exchanger.
– Set the setpoint temperature for the incoming cold air (factory setting 24 °C).
– Display the measurements and settings of parameters and setpoints via the Web interface.
– Scan the sensor and setting values via various protocols.

The measurements supplied are evaluated by the climate controller, and warning and alarm signals are generated where applicable. If a new warning or alarm occurs, the internal beeper communicates this. At the same time, the alarm relay is switched. This acoustic alarm may be cleared by pressing down the button "SET" briefly.

Note:
The cooling response in emergency mode can be configured on the website.

Design of the temperature control circuit

The actual temperature values of the cold air on the air input side (IT Supply) supplied by the three temperature sensors on the heat exchanger are used to control the air which is blown into the server enclosure. The mean is calculated from the actual temperature values. The control unit constantly compares this (average) actual temperature with the setpoint temperature. As an alternative to the mean, control may also be based on the minimum or maximum temperature. This can be set on the website.

By comparison of the actual temperature with the setpoint temperature, the control unit attempts to maintain a constant temperature by opening and closing the control valve. Additionally, the temperature difference between the actual temperature (IT Supply) and the air expelled on the server outlet side (IT Return) is used to determine and control the fan speed. Optionally, the fan speed may also be controlled according to the pressure difference. The temperature values of the sensors on the server outlet side may either be averaged, or the maximum temperature is used (see section 7.2.4 "LCU CW configuration"). The setpoint speed for the fans and the control valve setting are sent to the connected control units via the climate controller.

8.3.2 Acknowledging messages

Generally speaking, there are three different ways of acknowledging messages:

1. By briefly pressing the "SET" button on the climate controller (fig. 29, item 10). This confirms all alarm messages simultaneously.
2. By selecting a message with the right mouse button in the message display and clicking on the "Acknowledge Alarm" or "Acknowledge Devices" entry with the left mouse button in the context menu.
   If an alarm message has been selected, "Acknowledge Alarm" confirms only the currently selected message.
   If a message concerning a configuration change has been selected, "Acknowledge Devices" confirms all related messages jointly.
3. By clicking with the right mouse button on a component entry and clicking with the left mouse button on the "Acknowledge Alarm" or "Acknowledge Devices" entry in the context menu.
   This can be used to confirm pending alarm messages for that particular component or all configuration changes.

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8.4 Extended options by connecting the LCU CW to a network

By connecting the climate controller to a network, you are able to call up various measurements and warning or alarm messages. These may then be further processed (e.g. via a Web browser, SNMP, etc.). Furthermore, various values can be set via the network and then sent to the climate controller.

- To connect to the network, connect the climate controller jack (fig. 29, item 6) to a free jack on the network access using a suitable network cable.

The LCU CW is preset in the factory to the IP address 192.168.0.190 (see section 7.2 "HTTP connection").

8.5 General operation

8.5.1 Layout of screen pages

After logging on to the LCU CW (see section 7.2.1 "Making the connection"), the Web interface for operating the device is displayed. In principle, the screen is divided into four different sections:

1. Top section: Display general information about the device, change the password and log off the current user (see section 8.5.7 "Logging off and changing the password").
2. Left-hand section (navigation area): Select the overall system or respective component for which information is displayed in the right-hand section of the screen (see section 8.5.2 "Navigation area in left-hand section").
3. Right-hand section (configuration area): Display six index tabs (see section 8.5.3 "Index tabs in the configuration area") with input options for all settings.
4. Bottom section: Display messages (see section 8.5.4 "Message display").

Note:
This documentation shows the English screenshots. The descriptions of individual parameters on the LCU CW website likewise use English terminology. Depending on the set language, the displays on the website may be different (see assembly and operating instructions for the IoT Interface 3124.300).

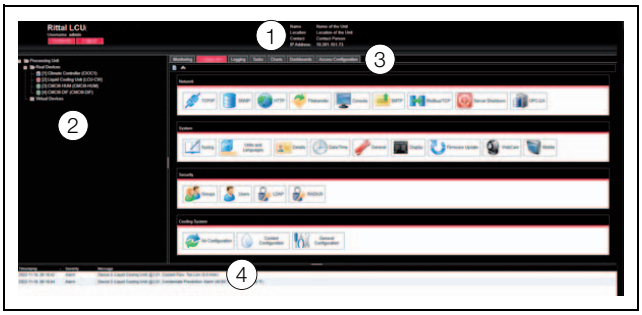

Fig. 31: Layout of screen pages

Key

1 General information
2 Navigation area
3 Configuration area with tabs
4 Message display

8.5.2 Navigation area in left-hand section

The overall system including all installed components is displayed in the form of a tree structure in the navigation area of the screen.

At the top of the navigation area is the Processing Unit, i.e. the overall system. The sub-groups "Real Devices" and "Virtual Devices" are displayed below the overall system. The climate controller, the LCU CW itself and the installed hardware devices and sensors are listed under "Real Devices".

Each device can assume different statuses. To allow rapid identification of the current status, the symbol before the respective device is colour-coded:

Symbol	Explanation
	Status "OK". There are no warnings or alarm messages.
	Status "Warning". There is at least one warning message.
	Status "Alarm". There is at least one alarm message.
	Status "OK". The additional information symbol indicates that further status information may be displayed. This symbol is only displayed if the registered user has at least read-only access to the data for that particular device.
	Status "Detected". The sensor has recently been added and not yet confirmed. This sensor must be confirmed by pressing the "C" button on the CMC III PU or via the Web interface.
	Status "Lost". Communication with a sensor is no longer possible. The connection must be checked. Alternatively, the sensor can also be logged off by confirming.

Tab. 9: Status display symbols

Symbol	Explanation
	Status "Changed". The sequence of sensors has been altered and not yet confirmed. This configuration change must be confirmed by pressing the "C" button on the CMC III PU or via the Web interface.

Tab. 9: Status display symbols

8.5.3 Index tabs in the configuration area

Seven index tabs are displayed in the right-hand section of the screen:

1. Monitoring: Current data of the LCU CW or connected devices (see section 8.6 "Monitoring index tab").
2. Configuration: Configuration of basic settings (see section 8.7 "Configuration index tab").
3. Logging: Message archive about the LCU CW and connected devices (see assembly and operating instructions for the IoT Interface 3124.300).
4. Tasks: Creating links between different values and related actions (see section 8.8 "Tasks")
5. Charts: Charts for the chronological trend of the variable values (see assembly and operating instructions for the IoT Interface 3124.300).
6. Dashboards: Create different views as dashboards (see the assembly and operating instructions of the IoT Interface 3124.300).
7. Access Configuration: Configure access authorisations for connected access control systems to the server rack doors (optional).

The content of the index tabs **Monitoring** and **Configuration** depends on whether the entire system ("Processing Unit" entry) or an individual component, e.g. "Liquid Cooling Unit" entry has been selected in the left-hand section of the screen.

8.5.4 Message display

Current pending messages are displayed in the bottom section of the screen. The message display is structured as follows:

1. Timestamp: The date and time when the error occurred (fig. 32, item 1).
2. Severity: Severity of the error. A distinction is made between Warnings and Alarms (fig. 32, item 2).
3. Message: Error message in plain language (fig. 32, item 3).

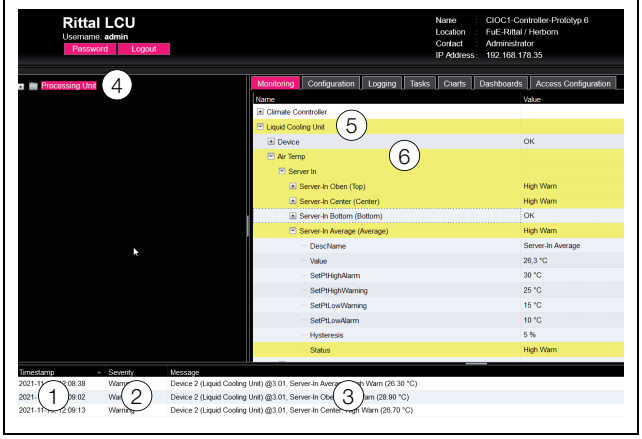

Fig. 32: Layout of message display

Key

1 Date and time
2 Error category
3 Error message in plain language
4 Component with error message
5 Component
6 Parameter

Additionally, errors occurring are displayed as follows:

– Left-hand screen section (navigation area): The symbol in front of the component on which the error occurred is shown in red in the tree view in the event of an alarm message, and yellow in the event of a warning message (fig. 32, item 4).
– Right-hand screen section (configuration area): On the **Monitoring** index tab, the entire component and the specific parameter to which the warning or alarm applies is shown in red or yellow (fig. 32, item 5 and 6).
– The multi-LED on the front of the climate controller is permanently red or orange.
– Depending on the settings, the alarm relay will switch.

If the cause of an error message has been rectified, the corresponding message may be automatically deleted from the message display. The status of the respective component may also be reset, and all other displays triggered by the error may disappear. However, this depends on the chosen alarm configuration (see assembly and operating instructions of the IoT Interface 3124.300). In some cases, error messages and the status may remain in the overview until acknowledged with the "SET" button on the climate controller (see section 8.3.2 "Acknowledging messages").

If the device configuration is permanently altered, e.g. a new sensor is connected to the climate controller, this is likewise output in the message display as an error message, type "Alarm". Additionally, in such cases, the multi-LED in the front of the climate controller will cyclically flash green – orange – red. Such configuration changes are not deleted from the message display until confirmed by the operator (see section 8.3.2 "Acknowledging messages").

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Example: Increased temperature
If the temperature sensor integrated into the climate controller measures a temperature above the value stored as "SetPtHighWarning", a warning message will be emitted.

In such cases, the display will change as follows:
– The symbol in front of the component in the navigation area will be coloured yellow.
– On the **Monitoring** index tab, the entire component and the lines "Temperature" and "Status" will be coloured yellow. The "High Warn" warning message will also be emitted.
– A corresponding warning message will appear in the message display.

If the temperature drops back below the "SetPtHigh-Warning" value plus the hysteresis value (see section 17 "Glossary"), the message may be automatically deleted from the message display and the relevant status displays reset, depending on the alarm configuration (refer to the assembly and operating instructions of the IoT Interface 3124.300).

8.5.5 Other displays

The operator's entries in the Web interface are automatically checked against preset rules, depending on the parameter entered. This means that changes can only be saved if all values have previously been correctly entered in a dialogue.

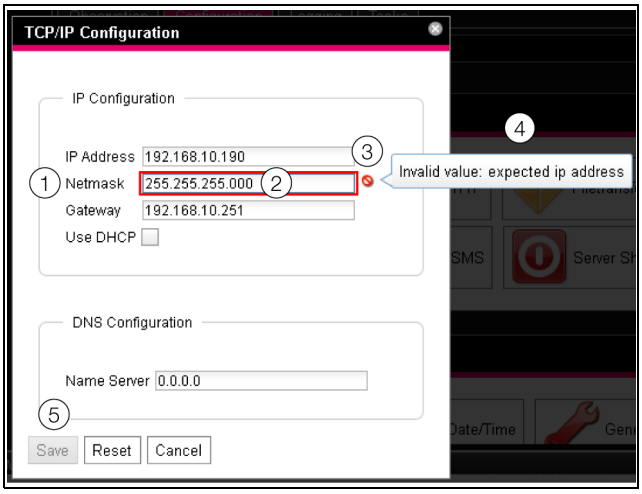

Fig. 33: Display of an incorrect entry

Key
1 **Netmask** field
2 Incorrect entry
3 Prohibited symbol
4 Note
5 Inactive button

The following changes occur in case of an incorrect entry in the dialogue (illustrated here by the example of an incorrectly entered IP address):
– A red "prohibited symbol" (fig. 33, item 3) appears after the incorrect entry (fig. 33, item 2) the **Netmask** field (fig. 33, item 1).
– By holding the mouse pointer over the prohibited symbol, additional information about the error will appear (fig. 33, item 4).
– The **Save** button is deactivated (fig. 33, item 5), so that the current values cannot be saved.

Proceed as follows to rectify the error:
■ Using the information provided, identify the precise nature of the incorrect entry.
In this particular example, the value entered does not comply with the format of an IP address.
■ Correct the defective value, e.g. by entering the value "255.255.255.0".
The "prohibited symbol" is masked out and the **Save** button is activated.
■ Save the settings by pressing the **Save** button.

8.5.6 Changing parameter values

Different parameters for the currently selected component are displayed in the list view of the **Monitoring** index tab. Some of these parameters can be adjusted by the operator, while others have fixed values assigned to them.
For all parameters that can be changed, an "Edit" symbol in the form of a stylised notepad and pen will appear after the respective parameter if the mouse pointer is placed in the relevant line (fig. 34, item 1).

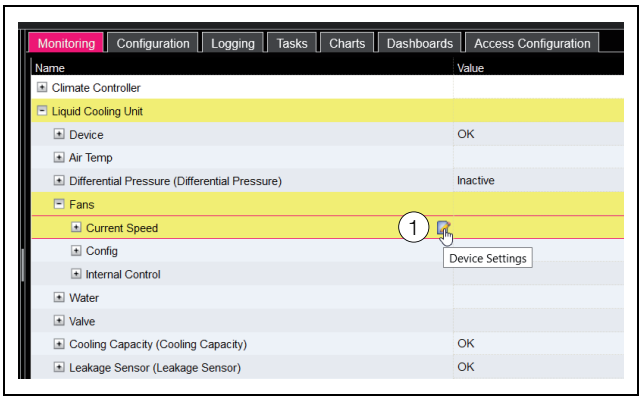

Fig. 34: Editable parameter with "Edit" symbol

Key
1 "Edit" symbol

If this symbol does not appear, the corresponding value cannot be altered.

Example:
■ In the navigation area, select the entry "Liquid Cooling Unit".
■ In the right-hand part of the screen, select the **Monitoring** index tab.
■ One after the other, open the "Liquid Cooling Unit" and "Device" entries by clicking on the "plus" symbol in front of the entry (fig. 35, item 1).

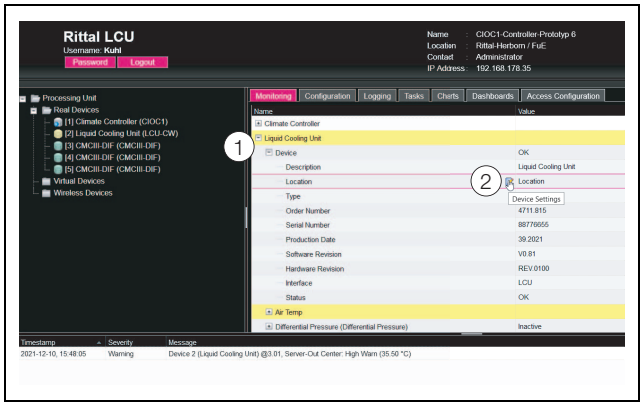

Fig. 35: Selecting an individual parameter

Key

1 Liquid Cooling Unit and Device entries
2 "Location" parameter

- Position the mouse pointer at the end of the first column in the "Location" line (fig. 35, item 2).
  An "Edit" symbol will appear, and the mouse pointer will change to a "Hand" symbol.
- Click on the "Edit" symbol.
  A "Write Values" dialogue will appear with the parameter "Device.Location".

Fig. 36: "Write Values" dialogue

- Here, enter the location of the LCU CW.
- Confirm your entry by clicking on the **Write** button.
  The dialogue box will close and the new value will appear in the "Location" line.
- Next, position the mouse pointer at the end of the first column in the "Type" line.
  In this case, **no** "Edit" symbol will appear, i.e. the value stored here (e.g. "LCU CW") cannot be altered.

You may wish to amend several values simultaneously, or may not know the entry under which the required parameter is stored. In such cases, all editable parameter values of subordinate entries can also be displayed in one window.

- Simply open the "Liquid Cooling Unit" entry by clicking on the "plus" symbol in front of that entry (fig. 37, item 1).
- Position the mouse pointer at the end of the first column in the "Liquid Cooling Unit" line (fig. 37, item 2).
  An "Edit" symbol will appear, and the mouse pointer will change to a "Hand" symbol.

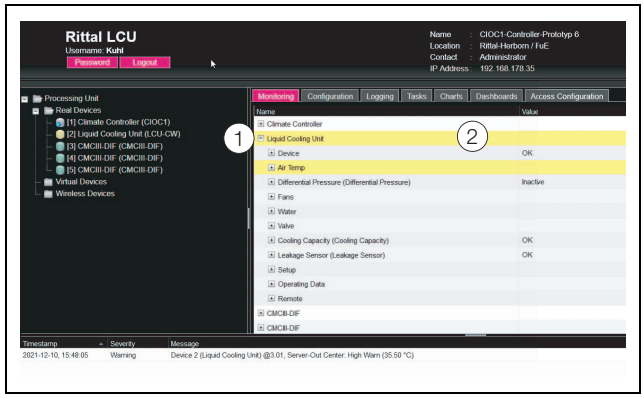

Fig. 37: Selecting multiple parameters

Key

1 Liquid Cooling Unit entry
2 "Edit" symbol

- Click on the "Edit" symbol.
  The "Device settings" dialogue will appear with a list of all parameters that can be edited.
- Store the amended values for all required parameters.
- Confirm your entries by clicking on the **Write** button.
  The dialogue is closed.

Reopen the dialogue to view the edited values.

Note:
If the number of variables to be amended is too high, an error message will appear. In such case, you will need to move down a level.

8.5.7 Logging off and changing the password

For every user group (and hence for every user), it is possible to set a time after which the user is automatically logged off in case of inactivity (refer to the assembly and operating instructions of the IoT Interface 3124.300). However, a user can also log off via the Web interface.

- Press the **Logout** button in the top left of the screen.

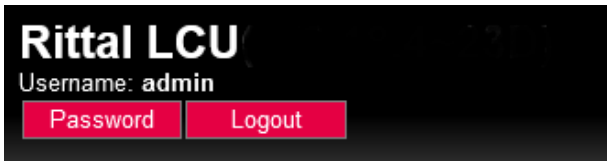

Fig. 38: **Logout** button

Logout occurs immediately and the login window will appear.

Additionally, every user may change their own password in the Web interface.

- Press the **Password** button in the top left of the screen.
  The dialogue "Set new Password for User 'XXX'" will appear.

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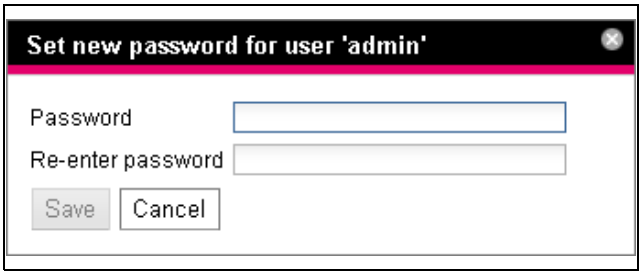

Fig. 39: Changing the password

- Enter the new password in the "Password" line (at least 3 characters) and repeat it in the "Re-enter Password" line.

Provided both entries match, you will need to use the new password the next time you log into the system.

Note:
Irrespective of this amendment, a user with appropriate rights can also alter the passwords of all users via the user administration feature (refer to the assembly and operating instructions of the IoT Interface 3124.300).

8.5.8 Reorganising the connected components

When new components are installed on the climate controller, these are inserted into the next free space in the tree structure and allocated a corresponding ID number. Particularly with multiple upgrades and changes in the sequence of connected components, this may result in a lack of allocation between the position of the components in the CAN bus and the corresponding ID number.

The "Reorganize" function renumbers all connected components as follows.

1. Climate controller
2. Liquid Cooling Unit
3. Sensor 1 (Bus 1)
4. Sensor 2 (Bus 1)
5. Sensor 3 (Bus 1)
6. Sensor n (Bus 1)

- In the navigation area, click on the "Climate Controller" entry or any other connected component with the right mouse button.

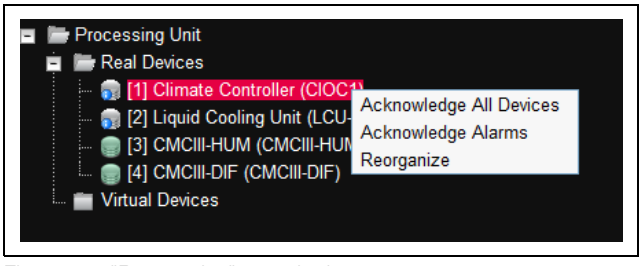

Fig. 40: "Reorganize" entry in the context menu

- With the left mouse button, click on the "Reorganize" entry in the context menu.

A message will appear stating that the components have been renumbered as a result of reorganisation. This may lead to problems when accessing these components, e.g. via SNMP, and access will need to be reconfigured. However, the "Alarm Configuration" of the individual sensors is retained.

The sensors are then registered automatically again on the climate controller.

Note:
When reorganising the components, all components with the status "Lost" are removed from the navigation area.

8.6 Monitoring index tab

All settings for the individual system components are made in the **Monitoring** index tab, such as limits for warning and alarm messages. The display in the right-hand section of the screen depends on which component was selected in the navigation area.

- If you select the "Real Devices" entry in the navigation area, all "Real Devices" will be available for selection in the **Monitoring** index tab.
- If you select a specific component, such as the "Liquid Cooling Unit" entry, in the left-hand tree structure, only that component will be available for selection in the **Monitoring** index tab.

The following sections 8.6.1 "Device" to 8.6.8 "Setup" only contain detailed descriptions of those parameters which may be altered. There are also display values for information purposes.

8.6.1 Device

General settings for the LCU CW are carried out at "Device" level.

Parameter	Explanation
Description	Individual description of the LCU CW
Location	Installation site of the LCU CW

Tab. 10: Settings at "Device" level

Parameters containing detailed information, such as the software and hardware versions used, are also displayed. You should have this information to hand when contacting Rittal with a query, so as to facilitate rapid error diagnosis.

8.6.2 Air Temp

Sensor settings for the server inlet and outlet temperatures are performed at this level. For this purpose, the appropriate sublevels are created. The values for each individual "Top", "Mid" and "Bottom" sensor are displayed or set below the "IT Supply" and "IT Return" levels. Furthermore, settings for the averaged values of the three temperature sensors are performed at the "Average" level.

"IT Supply" level > "Air Temperature (Top)"

You can set the following parameters for the top temperature sensor of the server inlet temperature at this level:

Parameter	Explanation
DescName	(Detailed) description of the temperature sensor.
SetPtHigh-Alarm	Upper limit of the server inlet temperature at the top temperature sensor for which an alarm message is output when overshot.
SetPtHigh-Warning	Upper limit of the server inlet temperature at the top temperature sensor for which a warning message is output when overshot.
SetPtLow-Warning	Lower limit of the server inlet temperature at the top temperature sensor for which a warning message is output when undershot.
SetPtLow-Alarm	Lower limit of the server inlet temperature at the top temperature sensor for which an alarm message is output when undershot.
Hysteresis	Required percentage deviation for undershooting or overshooting the limit temperature at the top temperature sensor for a status change (see section 17 "Glossary").

Tab. 11: Settings at the "Air Temperature (Top)" level

The following parameters are also displayed for the temperature sensor:

Parameter	Explanation
Value	Server inlet temperature, measured at the top temperature sensor.
Status	Current status of the top temperature sensor. "OK": The temperature sensor is connected and operational. "Alarm": The temperature sensor has failed or is not detected.

Tab. 12: Displays at the "Air Temperature (Top)" level

"IT Supply" level > "Air Temperature (Center)" and "Air Temperature (Bottom)"

At these levels, you can set all parameters similar to the top temperature sensor.

"IT Supply" level > "Air Temperature (Average)"

At this level, you can set all parameters similar to the top temperature sensor. Whereby, the specified limit values apply to the averaged values of the three temperature sensors.

"IT Return" level

The settings for the server outlet temperature are performed at this level. The settings, as well as the displayed parameters, correspond to those in the " "IT Supply" level.

8.6.3 Fans

Settings for the installed fans are performed at this level.

"Current Speed" sub-level > "Fan1" to "Fan9"

Settings for the associated fan are performed at this level.

Parameter	Explanation
DescName	(Detailed) description of the respective fan.

Tab. 13: Settings at sub-levels "Fan1" to "Fan9"

The following parameters are also displayed for the fans:

Parameter	Explanation
Value	Current speed of the respective fan as a % of maximum speed
Status	Current status of the respective fan. "OK": Fan is connected and operational. "Low Warn": Fan speed is below the "SetLowWarning" limit. "Off": Fan is deactivated. "Inactive": Although fan monitoring is disabled, the fan runs.

Tab. 14: Displays at sub-levels "Fan1" to "Fan9"

"Config" sub-level

Settings for the operating modes and fan speeds are performed at this level:

Parameter	Explanation
SetPtLow-Warning	Bottom limit of the fan speed; a warning message is emitted if this is undercut.
Command	Select the operating mode. The following operating modes can be selected for the fans: "Automatic": Fan speeds are determined and automatically regulated according to the server outlet temperature. "Manual": Fan speeds are set manually. "Off": Fans are deactivated. "Minimum": Fans rotate at the preset minimum speed. "Full": Fans rotate at 100%.
Group 1–3	Specification of the fan group speed as a % for the operating mode "Manual".

Tab. 15: Settings in "Config" sub-level

"Internal Control" sub-level

The parameters as specified by the fan control unit for the individual fans are displayed at this level.

Parameter	Explanation
Control Mode	Currently selected operating mode.

Tab. 16: Settings at the "Internal Control" sub-level

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Parameter	Explanation
Override	Reason for affecting the fan speed. If the temperature sensors fail, a message appears here, for example, "Invalid Air Temperatures"; if control is made in remote operation, "Remote" appears here. "None": If no effect is present, the fans operate at the calculated speed.
Group	The setpoint for the fan speed as percentage of the maximum speed, as specified by the control unit.

Tab. 16: Settings at the "Internal Control" sub-level

8.6.4 Coolant

The settings for the water circuit are performed at this level.

"Temperature" level > "Coolant Supply"

The settings for the water inlet temperature are performed at this level.

Parameter	Explanation
DescName	(Detailed) description of the water inlet temperature.
SetPtHigh-Alarm	Top limit of the water inlet temperature; an alarm message is emitted if this is exceeded.
SetPtHigh-Warning	Top limit of the water inlet temperature; a warning message is emitted if this is exceeded.
SetPtLow-Warning	Bottom limit of the water inlet temperature; a warning message is emitted if this is undercut.
SetPtLow-Alarm	Bottom limit of the water inlet temperature; an alarm message is emitted if this is undercut.
Hysteresis	Required percentage deviation for a status change if the temperature limit of the water is undercut or exceeded (see section 17 "Glossary").

Tab. 17: Settings in the "Coolant Supply" level

The following parameters are also displayed for the water inlet temperature:

Parameter	Explanation
Value	Current water inlet temperature.

Tab. 18: Display at the "Coolant Supply" level

Parameter	Explanation
Status	Current status regarding the water inlet temperature. "OK": No limit has been exceeded or undercut. "Alarm": The temperature sensor has failed. Too Low: "SetPtLowAlarm" limit undercut. Low Warn: "SetPtLowWarning" limit undercut. High Warn: "SetPtHighWarning" limit exceeded. Too High: "SetPtHighAlarm" limit exceeded. "n.a.": The sensors for the water inlet and water return temperature are deactivated in the configuration (see section 7.2.4 "LCU CW configuration").

Tab. 18: Display at the "Coolant Supply" level

"Temperature" level > "Coolant Return"

The settings for the water return temperature are performed at this level.

The representations fully match those for the "Coolant Supply" level.

"Coolant Flow" level

The settings for the water flow are performed at this level:

Parameter	Explanation
DescName	(Detailed) description of the water flow rate.
SetPtHigh-Alarm	Top limit of the water flow rate; an alarm message is emitted if this is exceeded.
SetPtLow-Alarm	Bottom limit of the water flow rate; an alarm message is emitted if this is undercut.

Tab. 19: Settings at the "Coolant Flow" level

The following parameters are also displayed for the water flow rate:

Parameter	Explanation
Value	Current flow rate of water.

Tab. 20: Displays at the "Coolant Flow" level

Parameter	Explanation
Status	Current status regarding the water flow rate. "Error": The control valve is open, but only a minimum flow rate is measured. "OK": The flowmeter is correctly connected and operational. "Alarm": The flowmeter is not connected or not detected. Too Low: "SetLowAlarm" limit undercut. Too High: "SetHighAlarm" limit exceeded. "n.a.": The flowmeter is deactivated in the configuration (see section 7.2.4 "LCU CW configuration").

Tab. 20: Displays at the "Coolant Flow" level

8.6.5 Valve

The settings for the control valve are performed at this level:

"Current Position" sub-level > "Control Valve"

The settings for the control valve are performed at this sublevel.

Parameter	Explanation
DescName	(Detailed) description of the control valve.

Tab. 21: Settings at the "Control Valve" sub-level

The following parameters are also displayed for the control valve:

Parameter	Explanation
Value	Position of the control valve in %: 0% = valve closed, 100% = valve completely open.
Status	Current status of control valve. "Error": The control valve is completely closed, but a water flow is still being measured. "OK": The control valve is correctly connected and operational. "n.a.": The control valve is deactivated in the configuration (see section 7.2.4 "LCU CW configuration").

Tab. 22: Displays at the "Control Valve" sub-level

"Config" sub-level

Settings for the operating modes and positioning of the control valve are performed at this level:

Parameter	Explanation
Command	Select the operating mode: "Automatic": The positioning of the control valve is determined and automatically regulated according to the server inlet temperature. "Manual": The positioning of the control valve is set manually. "Off": The control valve is completely closed. "Minimum": The control valve is opened to the preset minimum value. "Full": The control valve is completely opened.
Value	Positioning of the control valve as a % for the operating mode "Manual".

Tab. 23: Settings at the "Config" sub-level

"Internal Control" sub-level

The parameters as specified by the water circuit control unit for the control valve are displayed at this level.

Parameter	Explanation
Control Mode	Currently selected operating mode.
Override	Reason for affecting the position of the control valve. If control is performed in remote operation, "Remote" appears here. "None": If no effect is present, the control valve has the calculated position.
Value	The setpoint for the control valve position as percentage, as specified by the control unit.

Tab. 24: Settings at the "Internal Control" sub-level

8.6.6 Cooling Capacity

The settings for the cooling capacity are performed at this level:

Parameter	Explanation
DescName	(Detailed) description of cooling capacity.

Tab. 25: Settings at the "Cooling Capacity" level

The following parameters are also displayed for the cooling capacity:

Parameter	Explanation
Value	The calculated cooling capacity of the LCU. The capacity is calculated from the inlet and return temperatures as well as from the flow values of the cooling water circuit (the value is determined over the duration of 1 to 2 minutes).

Tab. 26: Displays at the "Cooling Capacity" level

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Parameter	Explanation
Status	Current cooling output status. "OK" is always displayed here, except when there is no flow meter connected. In such cases, "inactive" is shown. Settings are made under "Water configuration".

Tab. 26: Displays at the "Cooling Capacity" level

8.6.7 Leakage Sensor

The settings for the leakage monitoring are performed at this level:

Parameter	Explanation
DescName	(Detailed) description of leak monitoring.

Tab. 27: Settings at the "Leakage Sensor" level

The following parameters are also displayed for the leak monitoring:

Parameter	Explanation
Status	Current status of leak monitoring. "OK": No leaks present. "Alarm": Leak present.

Tab. 28: Displays at the "Leakage Sensor" level

8.6.8 Setup

"Settings" sub-level

The following settings are performed at this level:

Parameter	Explanation
Temperature IT Supply	Set the setpoint (server inlet temperature).
Differential pressure	Set the pressure difference setpoint. This is only required if the fan speed is controlled according to the pressure difference between the pressures in front of and behind the built-in components.

Tab. 29: Settings at the "Settings" sub-level

"Operating Data" sub-level

The following settings are performed at this level:

Parameter	Explanation
Product Number	LCU production number
Runtimes	Accumulated operating hours for each individual fan.
Valve	"Cycles": Accumulated switching cycles for the valve. "Reset": Reset the number of switching cycles.
Flow meter	Accumulated cooling water flow in litres.

Tab. 30: Displays at the "Operating Data" sub-level

Parameter	Explanation
Thermal Energy	Accumulated thermal energy in kWh.
Electrical Energy	Accumulated electrical energy in kWh.
EER	Display the current Energy Efficiency Ratio (ratio between generated cooling energy and electrical energy).

Tab. 30: Displays at the "Operating Data" sub-level

"Remote" sub-level

Remote control allows the system to be controlled by external SW systems using the available protocols (SNMP, Modbus TCP, OPC-UA).

The remote function is only active when the corresponding "Internal Control.Mode" of the fans and valve is set to "Automatic".

"Remote" sub-level > "Remote Temperature"

Remote control of the temperature overwrites the "IT Supply Air Average.Value" value, allowing it to be regulated to an externally set temperature.

Parameter	Explanation
DescName	(Detailed) description of remote mode with respect to temperature control.
Timeout	Duration between 1 and 60 seconds while the external control is (still) active, provided the timeout is activated. In such cases, the time must be repeatedly extended by the external software. Once the value "0" is reached, temperature control by the LCU CW's internal controller will resume.
Mode	Remote control mode in relation to temperature. "Off": Remote control is deactivated. "With timeout": With an active timeout, the timeout value must be cyclically re-written by the external system. If the time expires (value = 0), remote control is deactivated and control reverts to the internally preselected control mode (delta T or delta P). "Without timeout": If timeout monitoring is not active, the most recent "Value" setting will remain active.

Tab. 31: Settings at the "Remote" sub-level > "Remote Temperature"

The following parameters are also displayed for remote operation:

Parameter	Explanation
Value	Externally prescribed setpoint for the server inlet temperature.

Tab. 32: Displays at the "Remote" sub-level > "Remote Temperature"

Parameter	Explanation
Status	Current status of remote mode. "Off": Remote mode not activated (timeout has the value "0"). "On": Remote mode activated (timeout has a value of greater than 1).

Tab. 32: Displays at the "Remote" sub-level > "Remote Temperature"

"Remote" sub-level > "Remote Fans"

Parameter	Explanation
DescName	(Detailed) description of remote mode in relation to the fans.
Timeout	Duration between 1 and 60 seconds while the external control is (still) active, provided the timeout is activated. In such cases, the time must be repeatedly extended by the external software. Once the value "0" is reached, control of the fan speed by the LCU CW's internal controller will resume.
Mode	Remote control mode in relation to fans. "Off": Remote control is deactivated. "With timeout": With an active timeout, the timeout value must be cyclically re-written by the external system. If the time expires (value = 0), remote control is deactivated and control reverts to the internally preselected control mode (delta T or delta P). "Without timeout": If timeout monitoring is not active, the most recent "Value" setting will remain active.

Tab. 33: Settings at the "Remote" sub-level > "Remote Fans"

The following parameters are also displayed for remote operation:

Parameter	Explanation
Value	Externally prescribed setpoint for the fan speed.
Status	Current status of remote mode. "Off": Remote mode not activated (timeout has the value "0"). "On": Remote mode activated (timeout has a value of greater than 1).

Tab. 34: Displays at the "Remote" sub-level > "Remote Fans"

"Remote" sub-level > "Remote Valve"

Parameter	Explanation
DescName	Remote control mode in relation to the control valve.

Tab. 35: Settings at the "Remote" sub-level > "Remote Valve"

Parameter	Explanation
Timeout	Duration between 1 and 60 seconds while the external control is (still) active, provided the timeout is activated. In such cases, the time must be repeatedly extended by the external software. Once the value "0" is reached, valve control by the LCU CW's internal controller will resume.
Mode	Remote control mode in relation to the control valve. "Off": Remote control is deactivated. "With timeout": With an active timeout, the timeout value must be cyclically re-written by the external system. If the time expires (value = 0), remote control is deactivated and control reverts to the internally preselected control mode (delta T or delta P). "Without timeout": If timeout monitoring is not active, the most recent "Value" setting will remain active.

Tab. 35: Settings at the "Remote" sub-level > "Remote Valve"

The following parameters are also displayed for remote operation:

Parameter	Explanation
Value	Externally prescribed setpoint for the opening angle of the control valve.
Status	Current status of remote mode. "Off": Remote mode not activated (timeout has the value "0"). "On": Remote mode activated (timeout has a value of greater than 1).

Tab. 36: Displays at the "Remote" sub-level > "Remote Valve"

"Features" sub-level > "Condensate Prevention"

With remote mode deactivated, the quantity of condensate produced if the temperature drops below the dew point can be minimised or eliminated altogether using the condensate prevention function. This function must be activated via the "Command" (default setting) and is only possible with server inlet temperature control, but not with delta T control of the cooling medium.

If the temperature is approaching the dew point, the server air inlet temperature increases until it is sufficiently far above the dew point.

A CMC III temperature/humidity sensor (7030.111) is built into the LCU CW and connected to determine the current dew point.

The sensor is managed under "Real Devices" in the selection tree on the LCU CW website.

The ascertained dew point value is compared with the prescribed minimum server inlet temperature measured by the three temperature sensors (see section 8.6.2 "Air Temp"). Calculation of the dew point value includes the adjustable offset, i.e. the ascertained dew point is added

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to the adjustable offset to produce the "Calculated Dewpoint".
If the measured minimum server inlet temperature is below the "Calculated Dewpoint", the condensate prevention function will be activated. The server inlet temperature is then gradually increased to a maximum value ("IT Supply Air Alarm") above the manually set "IT Supply Temp." setpoint. During this period, the setpoint is increased by 0.5 K per minute.
If the temperature reaches the adjustable alarm limit "IT Supply Alarm", an alarm message is immediately issued.
Once the minimum server inlet temperature has climbed back above the calculated dew point (including a hysteresis of 1 K), the server inlet temperature is gradually reduced again.

Parameter	Explanation
DescName	(Detailed) description of condensate prevention.
Dewpoint	Dew point determined with the help of the CMC III temperature/humidity sensor.
Offset	Safety margin for the measured dew point at which condensate prevention is activated.
Calculated Dewpoint	Calculated dew point value including offset.
IT Supply Air Min	Minimum server inlet temperature.
Temperature IT Supply	Setpoint for the server inlet temperature.
IT Supply Alarm	Maximum server inlet temperature.
Command	Activate or deactivate the condensate prevention function. "On": The condensate prevention function is activated (default setting). "Off": The condensate prevention function is deactivated.

Tab. 37: Settings at the "Features" sub-level > "Condensate Prevention"

The following parameter is also displayed for the condensate prevention function:

Parameter	Explanation
Status	Current status of condensate prevention function. "Off": The function is **not** pre-selected (Command is set to "Off"). "On": The function is pre-selected (Command is set to "On"). "Active": The Function has been pre-selected and is active (the setpoint is adjusted). "Error": The function has been pre-selected but the humidity sensor is not available. "Alarm": The limit for the alarm message has been reached.

Tab. 38: Displays at the "Features" sub-level > "Condensate Prevention"

"Features" sub-level > "Coolant Delta T-mode"

In this mode, the LCU is controlled according to the return temperature of the cooling medium. The control valve regulates according to a constant set value based on the return temperature in the cooling medium circuit (cooling medium outlet temperature).
The air inlet temperature is within the dynamic specified range. It is possible to set a permissible temperature range (IT Supply Low Temperature and IT Supply High Temperature) for the server inlet temperature (IT Supply Temperature).
If the temperature leaves this range, the LCU will **immediately** regulate it based on the static air inlet temperature (IT Supply Fallback). This produces a constant server inlet temperature at the prescribed setpoint.
Following a set period (Retry Time Set), the LCU will revert to control based on the dynamic temperature of the cooling medium. If the temperature is exceeded again, the LCU will once again regulate it based on the static temperature. The LCU will make three further attempts to get within the dynamic range. If the 3rd attempt also fails, the LCU will remain in static control mode and issue an alarm.

Parameter	Explanation
DescName	(Detailed) description of control based on the return temperature of the cooling medium.
Coolant Return Target	Setpoint for the return temperature in the cooling medium circuit.
IT Supply Low Temperature	Minimum server inlet temperature.
IT Supply High Temperature	Maximum server inlet temperature.

Tab. 39: Settings at the "Features" sub-level > "Coolant Delta T-mode"

Parameter	Explanation
Command	Activate / deactivate delta T control of the cooling medium. "On": Control based on the return temperature of the cooling medium is activated (default setting). "Off": Control based on the return temperature of the cooling medium is deactivated.
Retry Time Set	Time after which the LCU attempts to switch to control based on the return temperature of the cooling medium (after exceeding / undercutting the setpoints).

Tab. 39: Settings at the "Features" sub-level > "Coolant Delta T-mode"

The following parameters are also displayed for control based on the return temperature of the cooling medium:

Parameter	Explanation
Coolant Supply	Current inlet temperature in the cooling medium circuit.
Coolant Return	Current return temperature in the cooling medium circuit.
Flowrate	Current cooling medium flowrate.
IT Supply Temperature	Current server inlet temperature.
IT Supply Fallback	Server inlet temperature if control based on the return temperature of the cooling medium is not possible. This equates to the "IT Supply Temp." value.
Retry	Number of attempts to switch to control based on the return temperature of the cooling medium.
Retry Time	Time that has elapsed since the last changeover attempt.
Status	Current status of control based on the return temperature of the cooling medium. "Off": Control is not activated. "On": Control is activated.

Tab. 40: Displays at the "Features" sub-level > "Coolant Delta T-mode"

8.7 Configuration index tab

The content of the **Configuration** index tab depends on which component was selected in the left-hand section of the tree view.

If the overall system "Processing Unit" (top node) is selected, the following configuration options are available:

– Group frame **Network**
  - TCP/IP
  - SNMP
  - HTTP
  - File Transfer
  - Console
  - SMTP
  - SMS
  - Modbus/TCP
  - Server Shutdown
  - OPC-UA

– Group frame **System**
  - Syslog
  - Units and Languages
  - Details
  - Date/Time
  - General
  - Firmware Update
  - WebCam
  - Mobile

– Group frame **Security**
  - Groups
  - Users
  - LDAP
  - RADIUS

– Group frame **Cooling System**
  - Air Configuration
  - Coolant Configuration
  - General Configuration

The configuration options for the LCU CW in the group frame **Cooling System** are described in detail in sections 7.2.3 "Changing the measurement units" and 7.2.4 "LCU CW configuration". All other configuration options are described in the assembly and operating instructions of the IoT Interface 3124.300.

If a subordinate component such as the "Liquid Cooling Unit" is selected, the following configuration options are available by clicking on the relevant symbols:

– Configure All Alarms
– Configure Device Rights

These configuration options are described in detail in the assembly and operating instructions of the IoT Interface 3124.300.

8.8 Tasks

The status of all connected components may be polled and logically interlinked using Tasks. The meanings of all statuses are described under the setting options for the individual components (see section 8.6 "Monitoring index tab"). Additionally, date values may also be incorporated into the links. In the event of a status change to the so-called trigger expression, various actions may then be activated. For example, in the event of an alarm message from the integrated access sensor on a certain day of the week, a corresponding e-mail may be sent. The current status of a task cannot be polled via SNMP.

Tasks have general validity. For this reason, the information displayed on the **Tasks** index tab is independent from the components selected in the left-hand section of the screen.

Example: The fans should be switched off when the upper limit temperature of the server inlet temperature for which an alarm message will be output is exceeded.

- Activate the "Enable" checkbox in the **Details** group frame and specify a meaningful name for the task in the **Name** field.
- Select the "=" operator in the **Trigger Expression** group frame.
- Click the "No Variable Selected" entry below the "=" operator.
- Select the "Variable" entry (preselected by default) in the "Nature" dropdown list.
- Select the "[2] Liquid Cooling Unit" entry in the "Device" dropdown list.
- Select the "Air temperature" entry in the "Variable" dropdown list.
- Set in the trigger expression below the selected "Air.IT Supply.Status" variable the associated value for which the fans should be switched off, e.g. "Too High".
- Now select the "Set Variable Value" entry as action in the dropdown list in the **Details** group frame.
- Click the **Setup** button.
  The "Configure Set Variable Value" dialogue is displayed.
- Select the "[2] Liquid Cooling Unit" entry for the device.
- Select the "Fans.Config.Command" entry in the "Variable" dropdown list.
- Select the "Off" entry in the "Value on True" dropdown list.
- For safety reasons, select the "Automatic" entry in the "Value on False" dropdown list.
  This causes the fans to be switched on again when the status of the server inlet temperature no longer has the status "Too High".

If, in addition to shutting down the fans, the control valve in the water circuit should also be closed, a further task for the same condition must be created.

Manual settings e.g. regarding the operating mode of the fans may be overwritten by actions triggered in the event of status changes.

Example: You have defined a task whereby the fans are switched off if the upper server inlet limit temperature is exceeded. To this end, the variable **Fans.Config.Command** is assigned the value **Off** if the **Temperature.Status** has a value of **Too High** ("Value on True"). Furthermore, the variable **Fans.Config.Command** is assigned the value **Automatic** if the **Temperature.Status** does not have a value of **Too High** ("Value on False"). If the server inlet temperature then drops back to within the preset limits after exceeding the upper limit, the fans are **always** switched to automatic mode by the task, regardless of the previously selected fan operating mode (e.g. "Manual", "Off" or "Full").

Note:
Further information on the creation of tasks may be found in the assembly and operating instructions of the IoT Interface 3124.300.

9 Updates and data backup

Because FTP/SFTP access to the climate controller of the LCU CW is required only to perform software updates and for data backup, the access should be generally blocked and briefly activated only for the above-mentioned tasks.

Rittal recommends that a data backup of the climate controller configuration is made in regular intervals.

The settings and configurations of all connected components as displayed currently for the individual sensors on the **Monitoring** and **Configuration** tabs are stored in the "cmcIIIsave.cfg" file.

For a second LCU CW of the same type, this configuration file can be placed for transfer similarly in the upload directory. This LCU CW is then configured automatically similarly as the LCU CW for which this file was saved.

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10 Troubleshooting

10.1 General faults

Malfunction location	Malfunction	Cause of malfunction	Effect	Remedy
Control valve	The climate controller displays flow even though the control valve is displayed as closed	The control valve is dirty	The flow meter displays a value. There is a ΔT.	Use the climate controller to open and close the control valve several times; contaminants may be loosened. It is highly recommended that a filter be installed in the system to ensure the required water quality. If needed, disconnect power to the complete LCU CW and restart after approx. 1 minute.
Flow meter	The climate controller displays no flow even though the control valve is displayed as open	Flow meter is dirty	The flow meter displays no value, even though the control valve is open and there is a ΔT.	The flow meter must be removed and cleaned or replaced by authorised personnel. It is highly recommended that a filter be installed in the system to ensure the required water quality.
LCU CW	The LCU CW is not regulating temperature and is operating in emergency mode	The climate controller is defective and is operating in emergency mode.	The response of the fans and control valve in emergency mode can be configured on the website (see section 7.2.4).	Contact the service department.
		The climate controller is not working.	All fans are operating at 100%. The control valve is completely opened.	
	The unit is not providing the required cooling output	Air in the water circuit	If air is present in the water circuit, the water cannot circulate properly in the heat exchanger and so cannot remove heat.	Bleeding the air from the heat exchanger
		Increased pressure loss on the piping network side, e.g. through a clogged filter or incorrectly set flow limiter	The external pumps are not able to pump enough cold water through the LCU CW.	Clean the filter, set the flow limiter correctly.
		Air routing not correct	The cooled air passes through unsealed openings past the equipment to the back of the enclosure.	Unused height units in the 482.6 mm (19") level as well as side slots and openings must be sealed using blanking plates or foam strips. Both are available as accessories.
		Pump incorrectly dimensioned.	Flow rate too low.	Dimension the pump larger.
		Hydraulic balancing not established.	Water flow rate in LCU too low.	Establish hydraulic balancing with balancing valves or similar.

In order to prevent malfunctions caused by the cold water system, the following remedies should be implemented.

Malfunction location	Malfunction	Cause of malfunction	Effect	Remedy
Cold water system	Corrosion and contaminants in the cold water system	Insufficient cleaning after a new installation	Unclean and aggressive water leads to a weakening of the material and to improper function. The function of components such as the 2-way control valve and the flow meter is strongly impaired through contaminants.	During initial installation, the pipe network and the system parts should be flushed out before the installation of the LCU CW.
		Improper treatment of the water with corrosion protection additives		Rittal GmbH & Co. KG recommends the installation of filters and the treatment of the water with appropriate corrosion and, if needed, antifreeze additives.
		Older systems with existing contaminants		Upon integration in existing cold water networks, the use of a water/water heat exchanger is recommended. This forms a second water circuit.

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10.2 System messages

Malfunction location	Malfunction	Cause of malfunction
A02	Air inlet temperature	One of the cold air temperature sensors in your cooling unit is reporting a fault because the set threshold values have been exceeded or undercut.
A03	Waste air temperature	One of the hot air temperature sensors in your cooling unit is reporting a fault because the set threshold values have been exceeded or undercut.
A07	Water inlet temperature	The temperature sensor in the water inlet is reporting a fault because the set threshold values have been exceeded or undercut.
A08	Water return temperature	The temperature sensor in the water return is reporting a fault because the set threshold values have been exceeded or undercut.
A09	Fan 1-3	Your cooling unit fans are running more slowly than the set threshold value. Your cooling unit fan has a cable breakage or is not installed. You can order the required spare part from Rittal or, alternatively, contact the Rittal service team.
A10	Fan 4-6	Your cooling unit fans are running more slowly than the set threshold value. Your cooling unit fan has a cable breakage or is not installed. You can order the required spare part from Rittal or, alternatively, contact the Rittal service team.
A11	Fan 7-9	Your cooling unit fans are running more slowly than the set threshold value. Your cooling unit fan has a cable breakage or is not installed. You can order the required spare part from Rittal or, alternatively, contact the Rittal service team.
A12	Sensor temp., air outlet top	The "air outlet top" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A13	Sensor temp., air outlet centre	The "air outlet centre" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A14	Sensor temp., air outlet bottom	The "air outlet bottom" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A15	Sensor temp., air inlet top	The "air inlet top" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A16	Sensor temp., air inlet centre	The "air inlet centre" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A17	Sensor temp., air inlet bottom	The "air inlet bottom" temperature sensor in your cooling unit is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A18	Sensor temp., water inlet	The temperature sensor in your cooling unit's water inlet is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A19	Sensor temp., water return	The temperature sensor in your cooling unit's water return is reporting a sensor failure or short-circuit. Please contact the Rittal Service team.
A21	Humidity sensor	Humidity sensor defective or not available.
A22	Leakage sensor	Leakage (level) sensor is reporting an alarm.
A23	Flow sensor	The flow sensor in your cooling unit is reporting an error. This error occurs when the set threshold values are exceeded or undercut.

Malfunction location	Malfunction	Cause of malfunction
A24	Control valve	Control valve defective or cable breakage.
A25	Differential pressure sensor	Differential pressure sensor defective or not available.
A30	Emergency condensate mode active	Your LCU CW is operating in condensate emergency mode due to condensate warning. Please correct the error and / or contact the Rittal Service team.

EN

11 Inspection and maintenance

During inspection and maintenance of the unit, the personal protective equipment, consisting of at least waterproof protective gloves and safety goggles, must be worn.

The LCU CW is largely maintenance-free. An additional external strainer with fine-mesh sieve is required if the cooling water is contaminated. This should be cleaned regularly.

– The condensate discharge device should be checked regularly for proper function.
– Visually inspect for leaks regularly (annual cycle).

Note:
At an ambient temperature of 25 °C, the nominal service life of the built-in fan is 100,000 operating hours.
Fan module malfunctions are displayed on the status screen of the Cimate Controller (if the LCU CW is connected to a network).

Caution!
If leaks occur, there is the risk of injury caused by escaping refrigerant, in particular glycol.
Wear your personal protection equipment, collect any escaped refrigerant with suitable cloths or absorbent materials, and rectify the leakage cause without delay.

Caution!
Danger caused by coolant, in particular anti-freeze!
Wear personal protection equipment.

Caution!
Danger caused by high air speeds and high sound pressure level!
Wear safety goggles, ear muffs and possibly a hair net or head covering.

Caution!
Danger caused by high air temperatures!
Do not perform any work on the unit when your cardiovascular system is not 100% or illness symptoms occur.

12 Storage and disposal

Caution! Risk of damage!
The air/water heat exchanger must not be subjected to temperatures above +70 °C during storage.

Disposal can be performed at the Rittal plant.
Please contact us for advice.

Emptying:
During storage and transportation below freezing point, the air/water heat exchanger should be drained completely.

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13 Technical specifications

13.1 General technical specifications

Technical specifications	
Description/Model No.	LCU CW / 3313.610
Rated voltage (50 Hz)	100 - 240 V~
Rated frequency	50/60 Hz
Rated power input (50 Hz)	0.5 kW
Fuse rating	250 V, 10 A, tripping characteristics slo-blo (T)
Pre-fuse (50 Hz)	16 A (Tripping characteristic B)
Full Load Amps	4.85 A/115 V; 2.6 A/230 V
Minimum Circuit Ampacity	15 A
Max. load capacity of alarm relay (2 pcs)	250 V AC/2 A or 48 V DC/1 A
Cooling output, total L24W15 (H_2O)	7.9 kW (26956 BTU/h)
Cooling output, total L24W18 (H_2O)	6.8 kW (23202 BTU/h)
Ambient operating temperature range	10 °C - 50 °C
Cooling medium	Water / Water-Glycol
Coolant temperature range	10…30 °C, non-condensing
Permitted water circuit pressure	1 MPa (145 psig)
Flow rate	0…20 l/min
Fill volume	approx. 3 l
Noise level	approx. 73 dB(A); detached, distance 1 m
IP protection category	IP 10
Weight	52 kg

Tab. 41: Technical specifications

13.2 Cooling capacity

Cooling Output (Sensible)	[kW]	8	8	8	8
Inlet water temperature	[°C]	12	13	14	15
Outlet water temperature	[°C]	24	24	23	22
Water flow	[l/min]	9	11	13	16
Coil pressure drop	kPa	10	13	17	26
Total water pressure drop	kPa	37	48	66	100
Volumetric airflow	[m^3/h]	1600	1600	1600	1600
LCU supply air temperature	[°C]	22	22	22	22
LCU return air temperature	[°C]	36	36	36	36
Airside ΔT	[K]	14	14	14	14

Cooling Output (Sensible)	**[kW]**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Inlet water temperature	[°C]	12	13	14	15	16	17	18
Outlet water temperature	[°C]	27	27	26	26	25	24	23
Water flow	[l/min]	8	8	9	11	13	16	22
Coil pressure drop	kPa	7	8	10	12	20	26	46
Total water pressure drop	kPa	27	31	37	48	66	95	198
Volumetric airflow	[m^3/h]	1600	1600	1600	1600	1600	1600	1600
LCU supply air temperature	[°C]	24	24	24	24	24	24	24
LCU return air temperature	[°C]	38	38	38	38	38	38	38
Airside ΔT	[K]	14	14	14	14	14	14	14

Cooling Output (Sensible)	**[kW]**	**6**	**6**	**6**	**6**	**6**	**6**
Inlet water temperature	[°C]	12	13	14	15	16	17
Outlet water temperature	[°C]	25	25	24	24	23	21
Water flow	[l/min]	7	7	8	10	14	19
Coil pressure drop	kPa	5	7	8	12	18	37
Total water pressure drop	kPa	21	25	32	46	79	146
Volumetric airflow	[m^3/h]	1260	1260	1260	1260	1260	1260
LCU supply air temperature	[°C]	22	22	22	22	22	22
LCU return air temperature	[°C]	35	35	35	35	35	35
Airside ΔT	[K]	13	13	13	13	13	13

Cooling Output (Sensible)	**[kW]**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**
Inlet water temperature	[°C]	12	13	14	15	16	17	18	19
Outlet water temperature	[°C]	28	28	27	27	26	25	25	23
Water flow	[l/min]	5	6	6	7	8	10	13	20
Coil pressure drop	kPa	4	5	5	7	8	12	18	39
Total water pressure drop	kPa	17	18	21	25	32	46	74	153
Volumetric airflow	[m^3/h]	1260	1260	1260	1260	1260	1260	1260	1260
LCU supply air temperature	[°C]	24	24	24	24	24	24	24	24
LCU return air temperature	[°C]	37	37	37	37	37	37	37	37
Airside ΔT	[K]	13	13	13	13	13	13	13	13

Cooling Output (Sensible)	**[kW]**	**4**	**4**	**4**	**4**	**4**	**4**	**4**
Inlet water temperature	[°C]	12	13	14	15	16	17	18
Outlet water temperature	[°C]	26	26	26	25	25	24	22
Water flow	[l/min]	4	4	5	6	7	9	13

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Cooling Output (Sensible)	[kW]	4	4	4	4	4	4	4
Coil pressure drop	kPa	2	3	3	4	6	9	18
Total water pressure drop	kPa	15	16	16	17	22	32	74
Volumetric airflow	[m^3/h]	840	840	840	840	840	840	840
LCU supply air temperature	[°C]	22	22	22	22	22	22	22
LCU return air temperature	[°C]	35	35	35	35	35	35	35
Airside ΔT	[K]	13	13	13	13	13	13	13

Cooling Output (Sensible)	[kW]	4	4	4	4	4	4	4	4	4
Inlet water temperature	[°C]	12	13	14	15	16	17	18	19	20
Outlet water temperature	[°C]	28	28	28	28	28	27	27	26	24
Water flow	[l/min]	4	4	4	4	5	6	7	9	13
Coil pressure drop	kPa	2	2	2	3	3	4	5	8	19
Total water pressure drop	kPa	14	14	15	15	16	17	22	33	77
Volumetric airflow	[m^3/h]	840	840	840	840	840	840	840	840	840
LCU supply air temperature	[°C]	24	24	24	24	24	24	24	24	24
LCU return air temperature	[°C]	37	37	37	37	37	37	37	37	37
Airside ΔT	[K]	13	13	13	13	13	13	13	13	13

13.3 Water side pressure loss

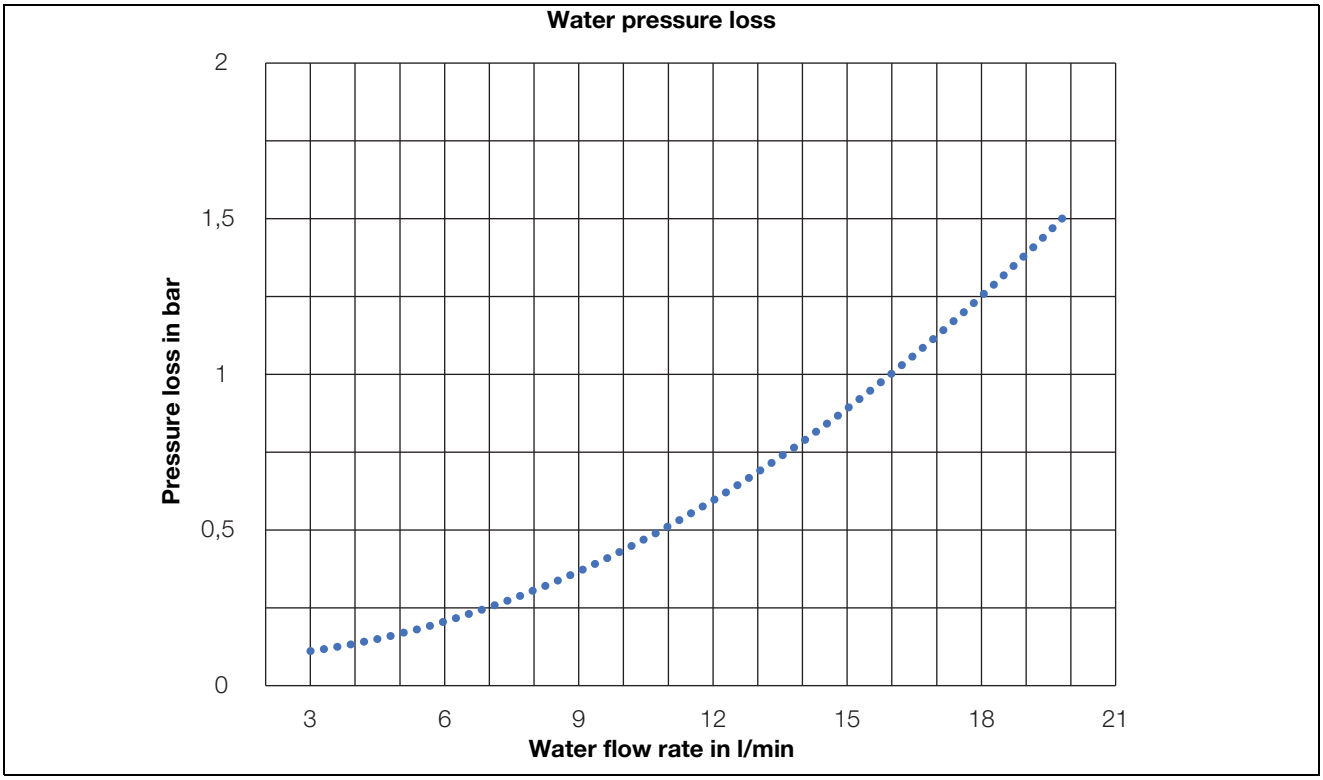

Fig. 41: Characteristic curve water pressure loss

13.4 P&ID scheme

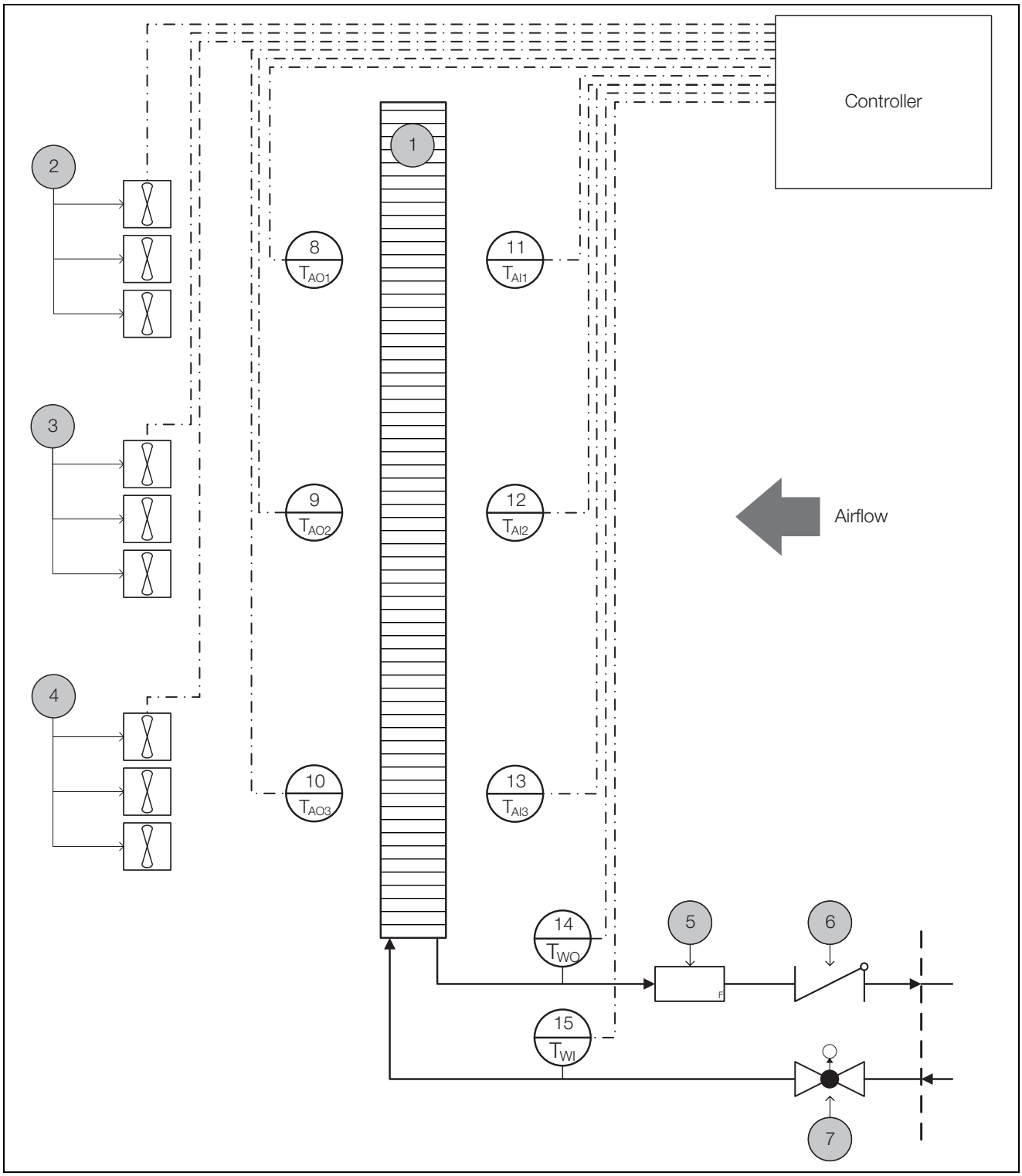

Fig. 42: P&ID scheme

Key

1 Heat exchanger
2 Fan 1-3
3 Fan 4-6
4 Fan 7-9
5 Flow sensor
6 Check valve
7 Ball valve
8 Temperature sensor air top
9 Temperature sensor air middle
10 Temperature sensor air bottom
11 Temperature sensor air top
12 Temperature sensor air middle
13 Temperature sensor air bottom
14 Temperature sensor water out
15 Temperature sensor water in

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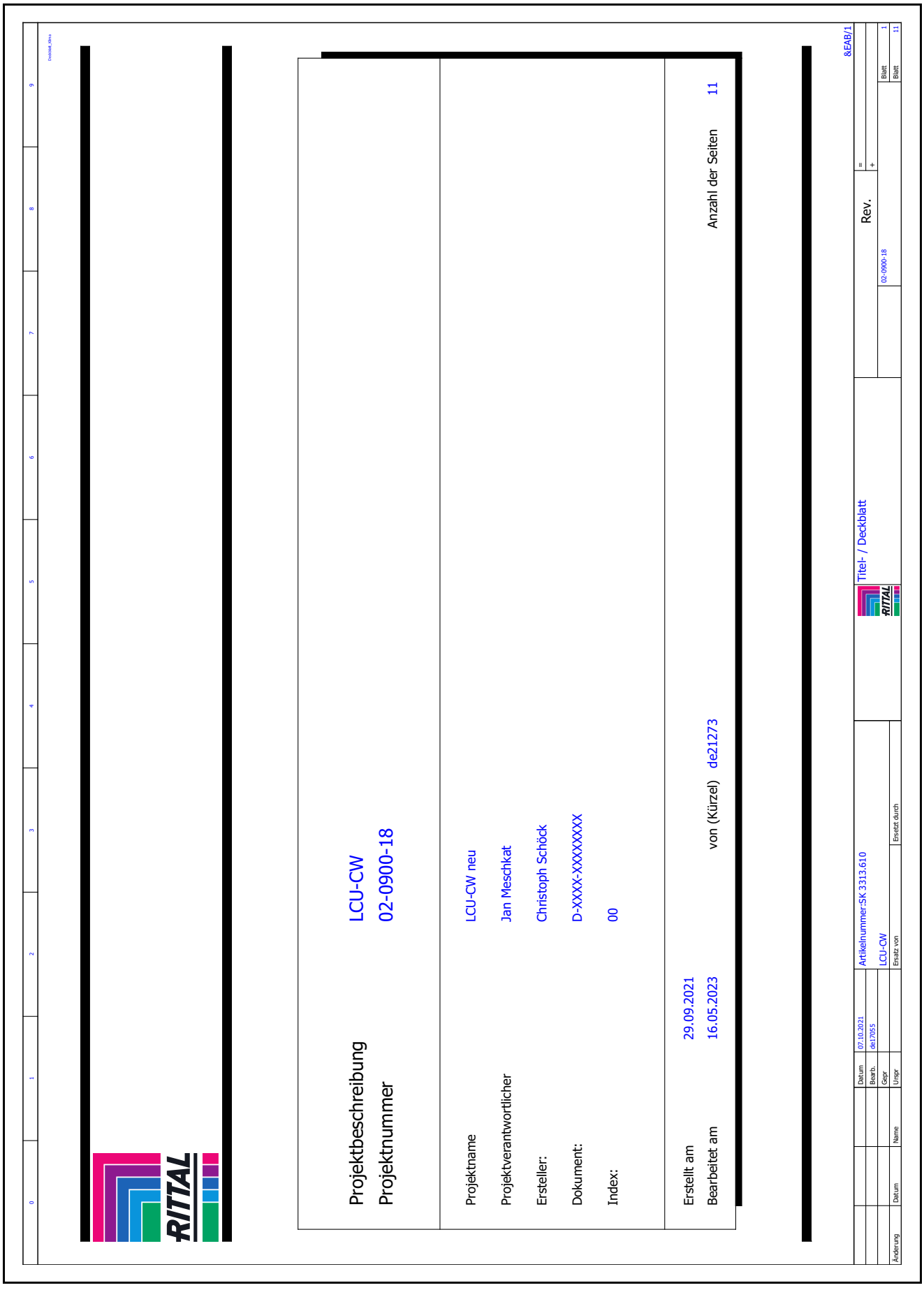
13.5 Circuit diagram



Inhaltsverzeichnis

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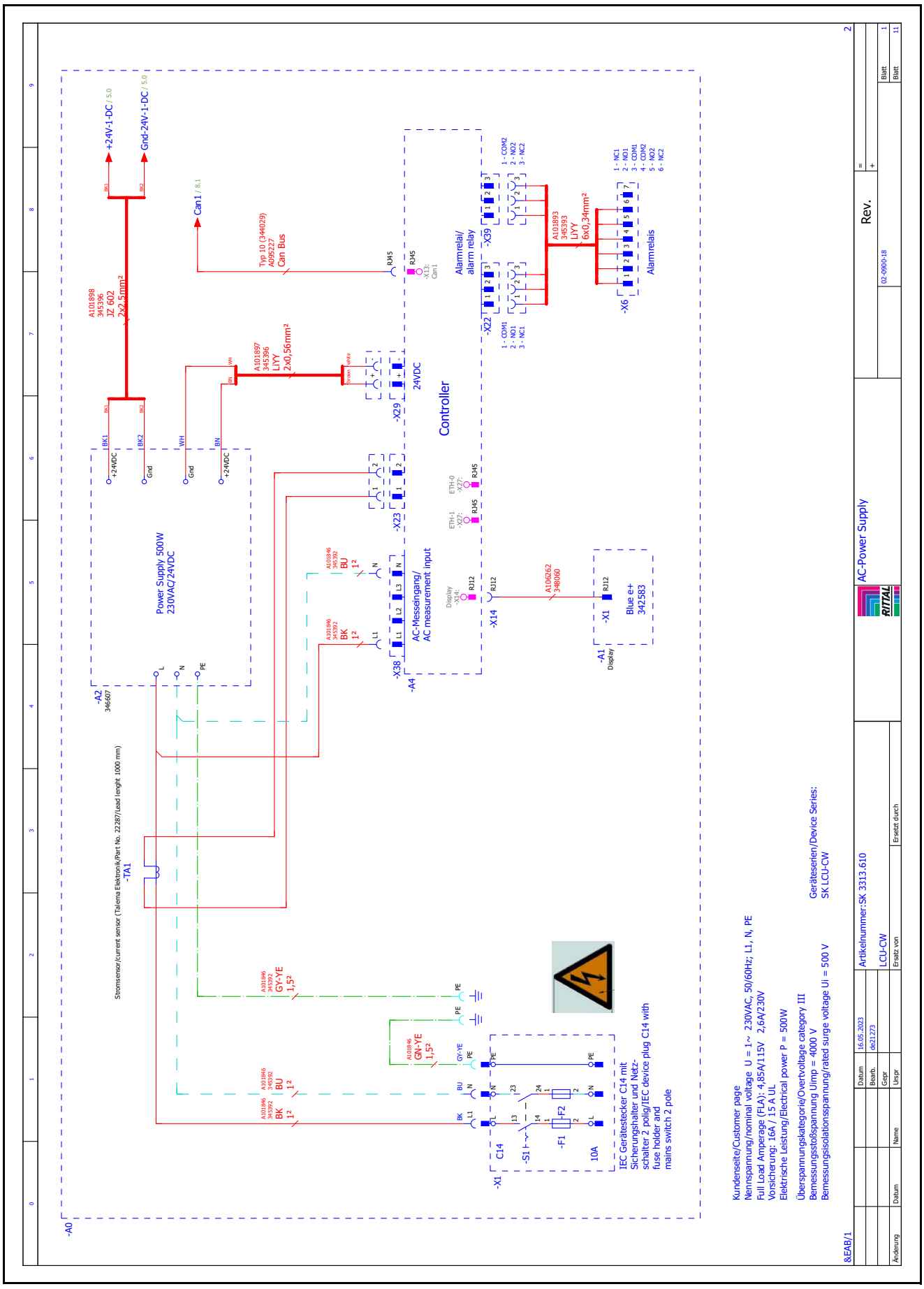
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-A2
346607
Power Supply 500W
230VAC/24VDC
-TA1
Stromsensor/current sensor (Talema Elektronik/Part No. 22287/Lead lenght 1000 mm)
+24V-1-DC / 5.0
Gnd-24V-1-DC / 5.0
A101898
345396
JZ 602
2x2,5mm²
Can1 / 8.1
Typ 10 (344029)
A095227
Can Bus
A101897
345396
LiYY
2x0,56mm²
Controller
24VDC
-X29
-X23
-X38
-A4
AC-Messeingang/
AC measurement input
-X14
-A1
Display
Blue e+
342583
A106262
348060
-X22
-X39
Alarmrelai/
alarm relay
1 - COM1
2 - NO1
3 - NC1
1 - COM2
2 - NO2
3 - NC2
A101893
345393
LiYY
6x0,34mm²
-X6
Alarmrelais
1 - NC1
2 - NO1
3 - COM1
4 - COM2
5 - NO2
6 - NC2
A101896
345392
GY-YE
1,5²
A101896
345392
BU
1²
A101896
345392
BK
1²
A101896
345392
GN-YE
1,5²
-X1
C14
-S1
-F1
-F2
10A
IEC Gerätestecker C14 mit
Sicherungshalter und Netz-
schalter 2 polig/IEC device plug C14 with
fuse holder and
mains switch 2 pole
Kundenseite/Customer page
Nennspannung/nominal voltage U = 1~ 230VAC, 50/60Hz; L1, N, PE
Full Load Amperage (FLA): 4,85A/115V 2,6A/230V
Vorsicherung: 16A / 15 A UL
Elektrische Leistung/Electrical power P = 500W
Überspannungskategorie/Overvoltage category III
Bemessungsstoßspannung Uimp = 4000 V
Bemessungsisolationsspannung/rated surge voltage Ui = 500 V
Geräteserien/Device Series:
SK LCU-CW
&EAB/1
AC-Power Supply
Rev.
Artikelnummer:SK 3313.610
LCU-CW
16.05.2023
dk21273
02-0910-18
Blatt 1
Blatt 11
Datum
Name
Änderung
Ersatz von
Ersetzt durch

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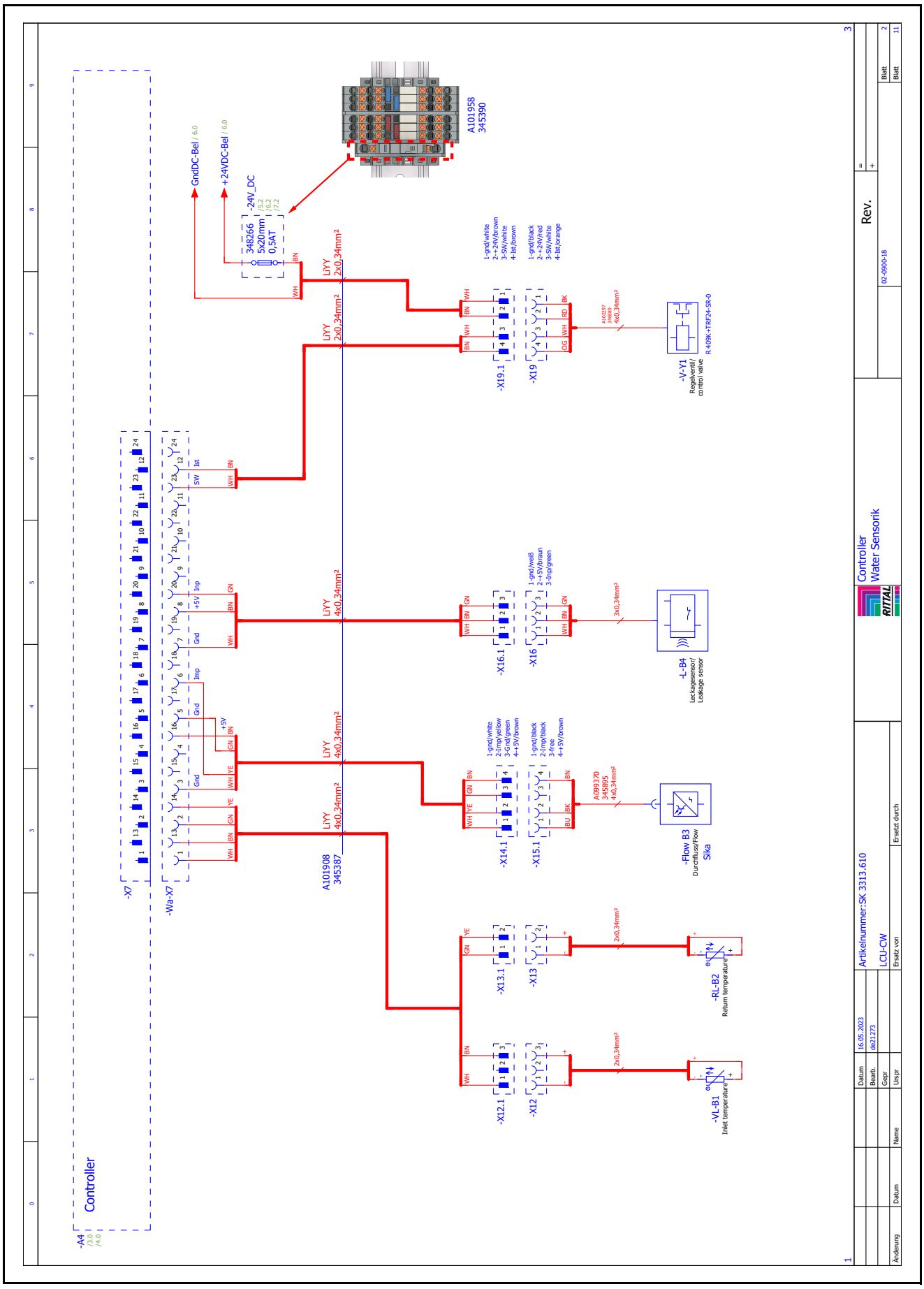
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Water Sensorik
RITTAL
LCU-CW
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Rev.
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-X7
-Wa-X7
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A101958
345390
-24V_DC
348266
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0,5AT
GndDC-Bel
+24VDC-Bel
LiYY
2x0,34mm²
4x0,34mm²
-X19.1
-X19
-V-Y1
Regelventil/
control valve
-X16.1
-X16
-L-B4
Leckagesensor/
Leakage sensor
-X14.1
-X15.1
-Flow B3
Durchfluss/Flow
Sika
-X13.1
-X13
-RL-B2
Return temperature
-X12.1
-X12
-VL-B1
Inlet temperature

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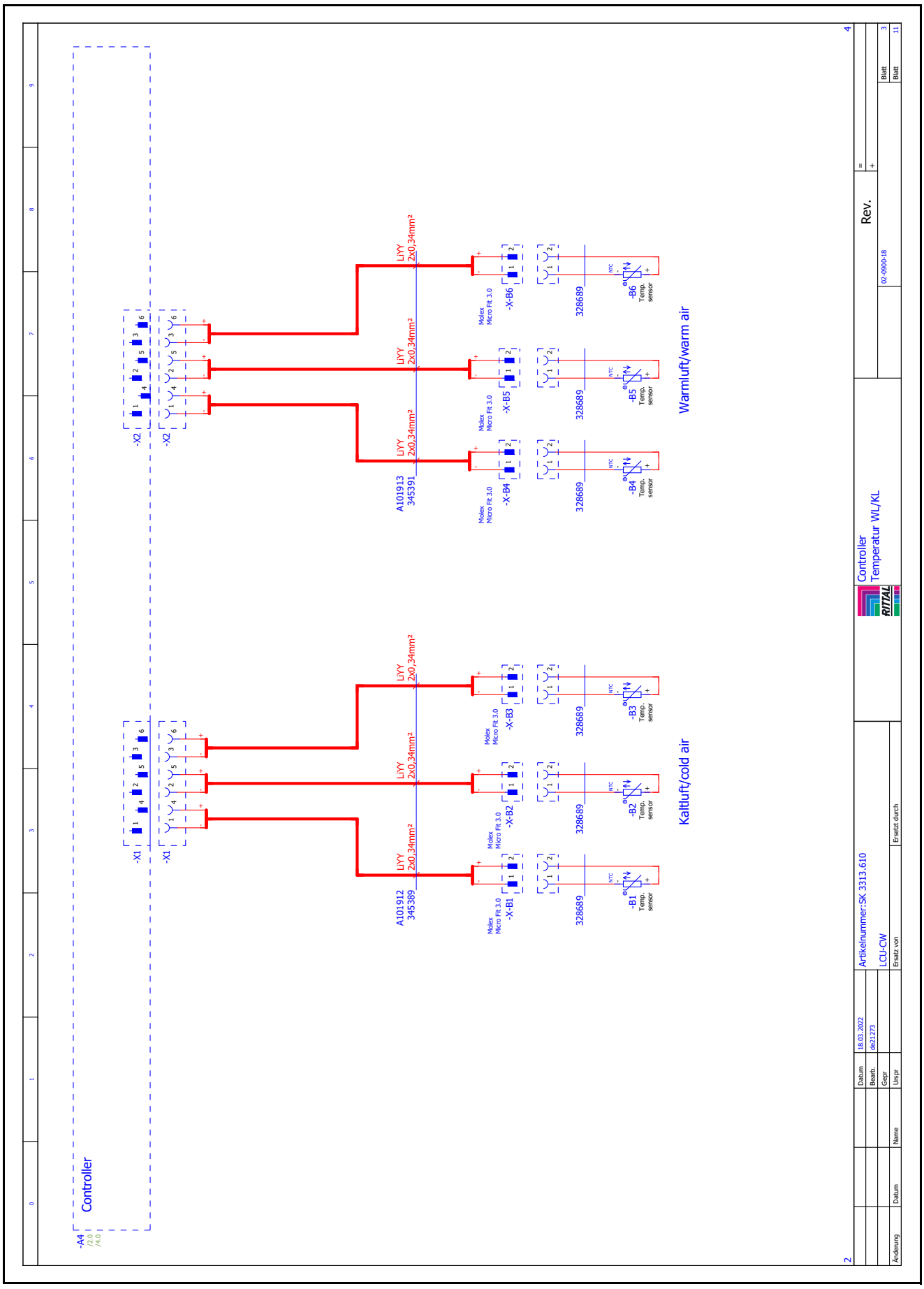
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-X1
-X2
LiYY 2x0,34mm²
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Molex Micro Fit 3.0
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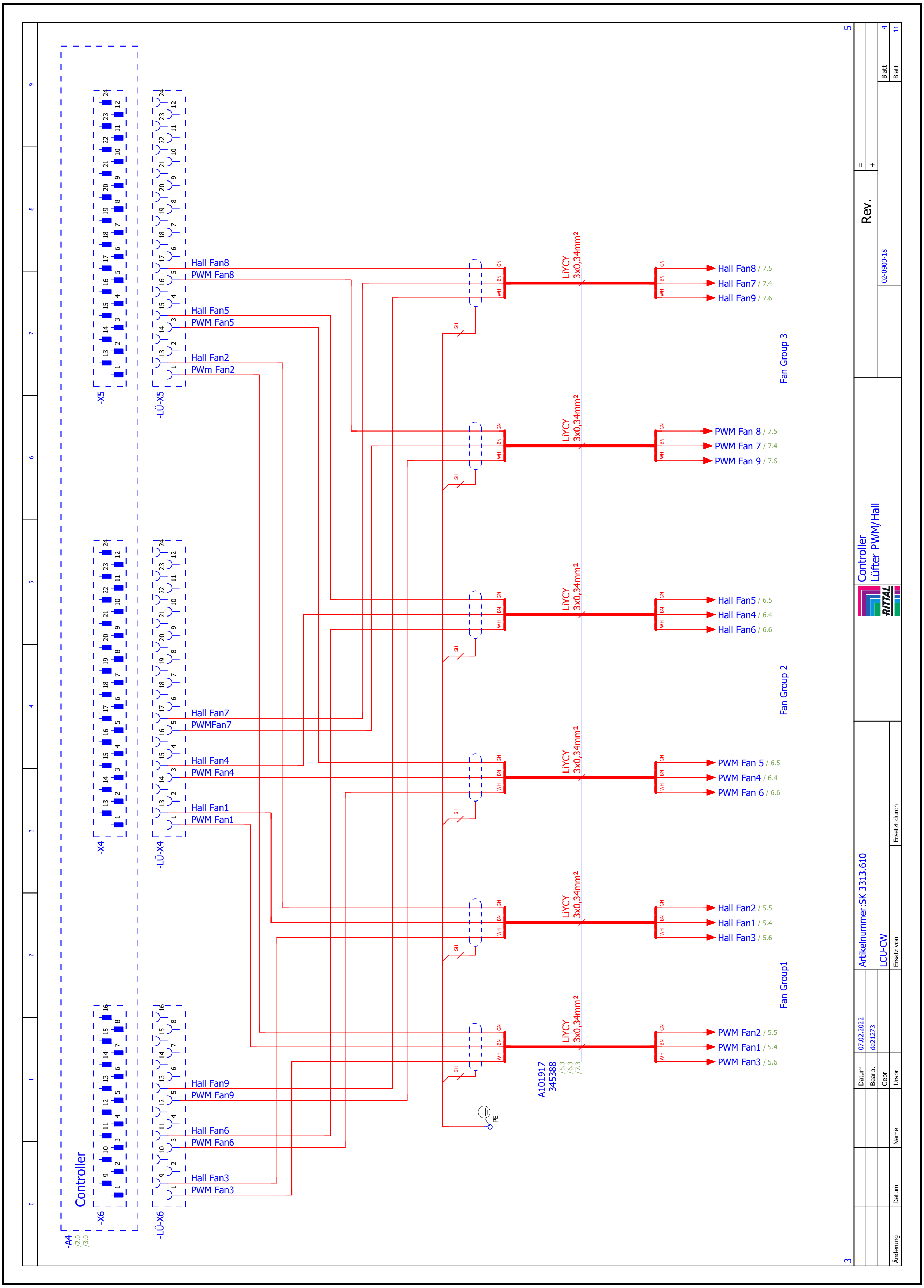
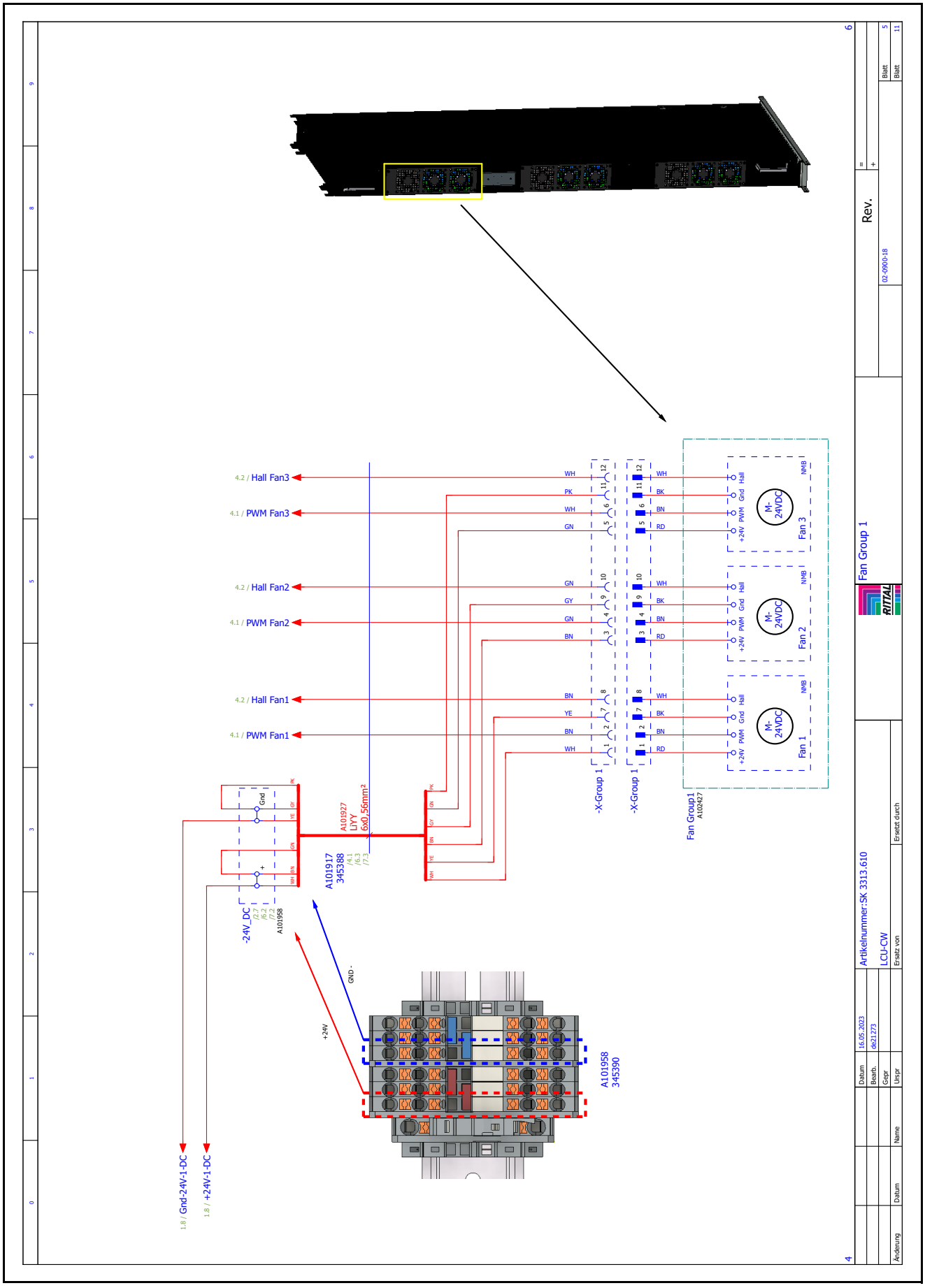
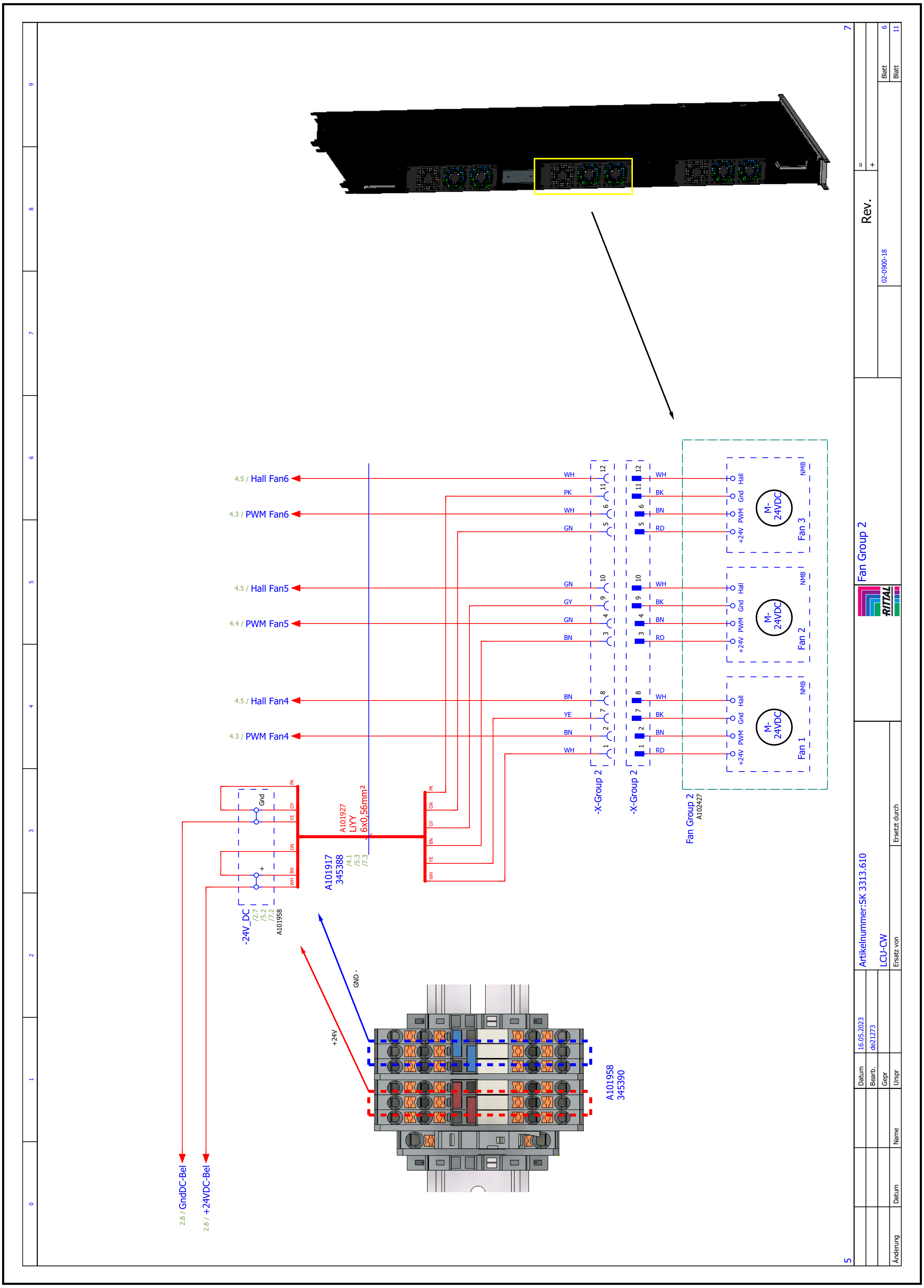
-X-B3
-X-B4
-X-B5
-X-B6
328689
NTC
-B1
-B2
-B3
-B4
-B5
-B6
Temp. sensor
Kaltluft/cold air
Warmluft/warm air
Controller
Temperatur WL/KL
RITTAL
Rev.
02-0910-18
Artikelnummer:SK 3313.610
LCU-CW
Datum
Bearb.
Gepr
Urspr
Name
Änderung
Ersatz von
Ersatz durch
18.03.2022
de21273
Blatt 3
Blatt 11


Controller
-A4
-X4
-X5
-X6
-LÜ-X4
-LÜ-X5
-LÜ-X6
Hall Fan1
PWM Fan1
Hall Fan2
PWm Fan2
Hall Fan3
PWM Fan3
Hall Fan4
PWM Fan4
Hall Fan5
PWM Fan5
Hall Fan6
PWM Fan6
Hall Fan7
PWMFan7
Hall Fan8
PWM Fan8
Hall Fan9
PWM Fan9
LiYCY
3x0,34mm²
A101917
345388
PE
Fan Group1
Fan Group 2
Fan Group 3
Controller
Lüfter PWM/Hall
Artikelnummer:SK 3313.610
LCU-CW
07.02.2022
Rev.
RITTAL

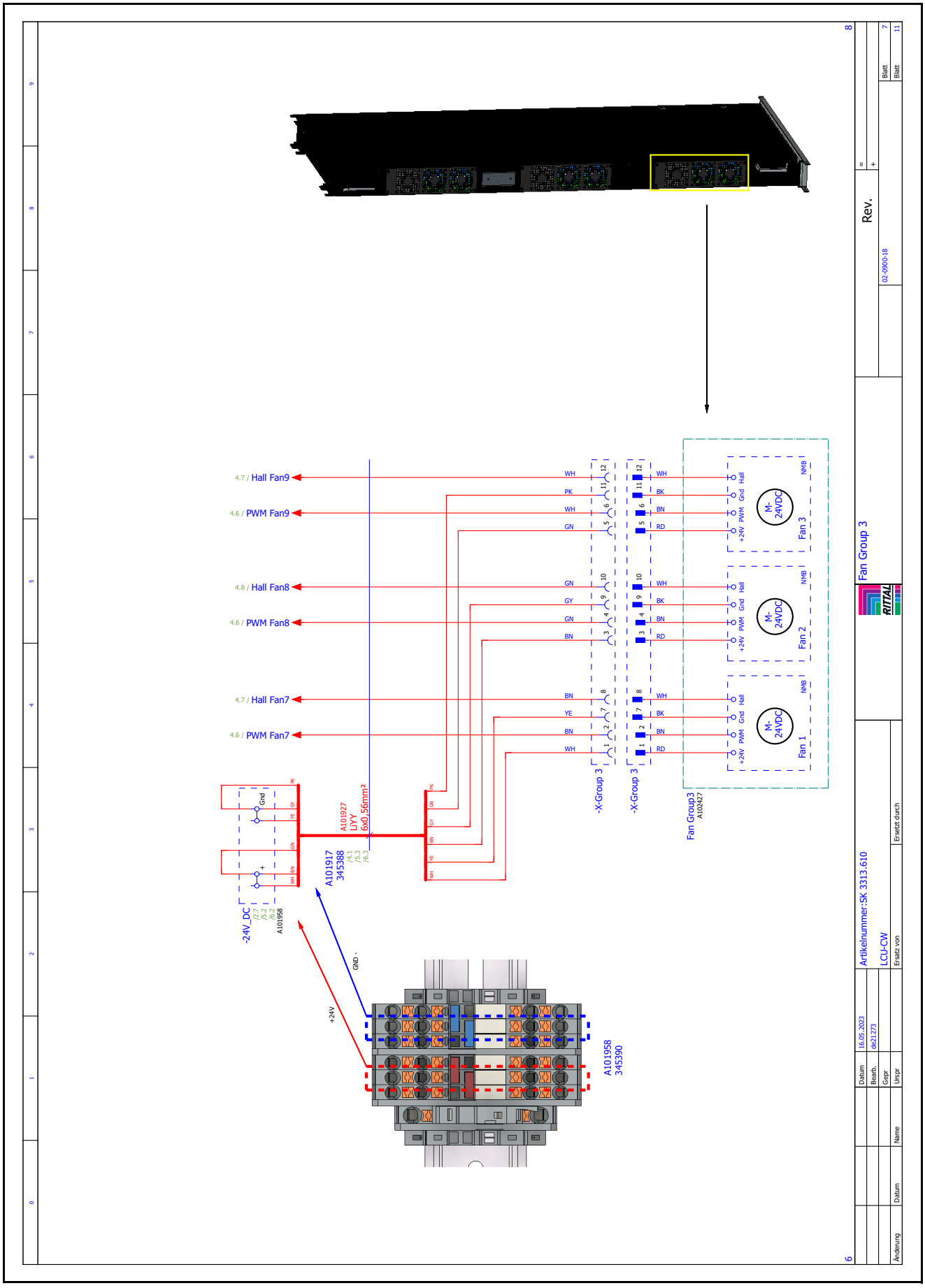
EN


4.2 / Hall Fan3
4.1 / PWM Fan3
4.2 / Hall Fan2
4.1 / PWM Fan2
4.2 / Hall Fan1
4.1 / PWM Fan1
-X-Group 1
-X-Group 1
Fan Group1
A102427
Fan 3
Fan 2
Fan 1
Fan Group 1
M-
24VDC
A101927
LYY
6x0,56mm²
A101917
345388
-24V_DC
A101998
GND -
+24V
A101958
345390
1.8 / Gnd-24V-1-DC
1.8 / +24V-1-DC
Rev.
Artikelnummer:SK 3313.610
LCU-CW
Ersatz von
Ersetzt durch
Datum
Bearb.
Gepr
Urspr
Name
Datum
Änderung

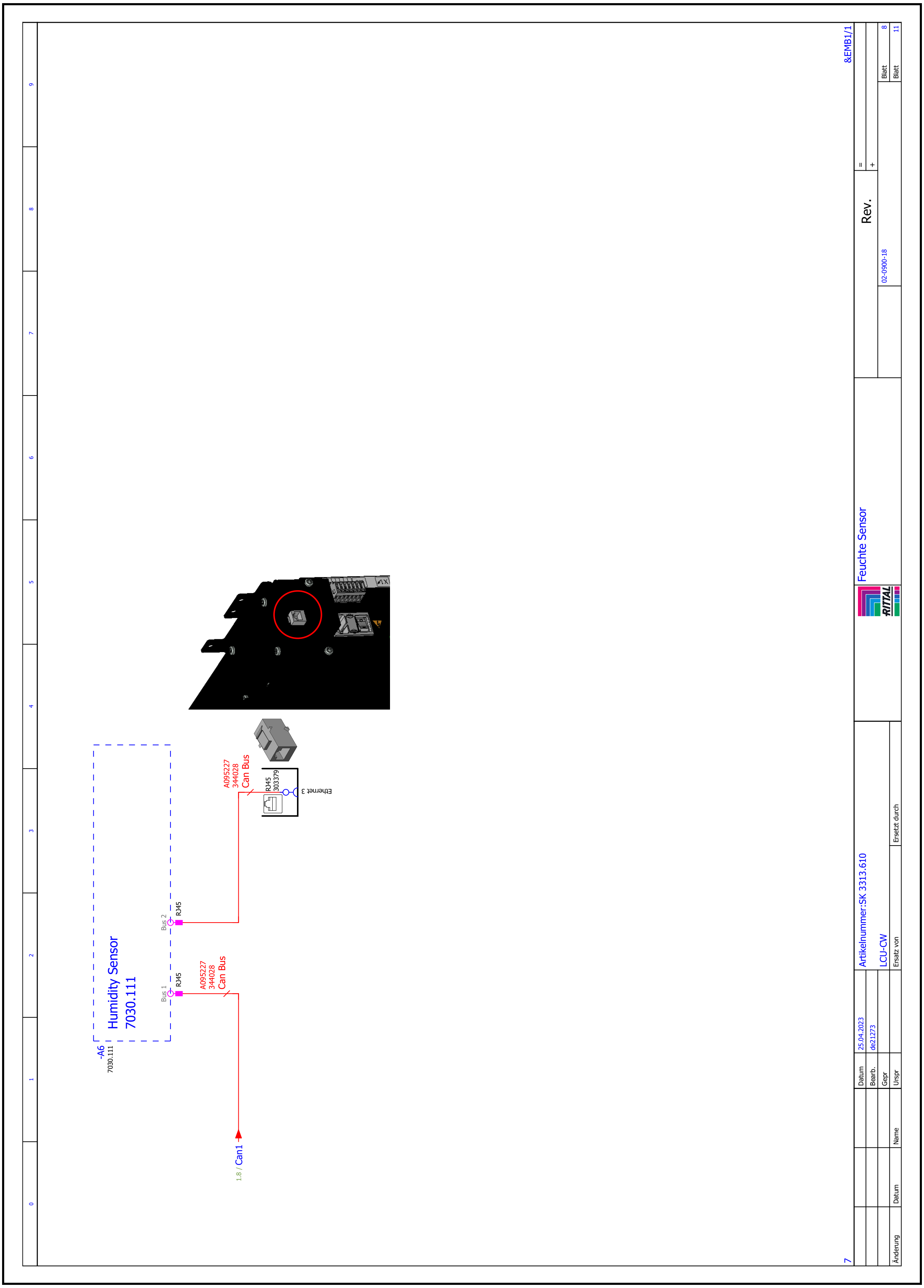


Fan Group 2
Artikelnummer:SK 3313.610
LCU-CW
Rev.
02-0900-18
16.05.2023
Datum
Bearb.
Gepr
Urspr
Änderung
Name
Ersatz von
Ersetzt durch
Blatt
4.5 / Hall Fan6
4.3 / PWM Fan6
4.5 / Hall Fan5
4.4 / PWM Fan5
4.5 / Hall Fan4
4.3 / PWM Fan4
-X-Group 2
-X-Group 2
Fan Group 2
A102427
Fan 1
Fan 2
Fan 3
M-
24VDC
NMB
Hall
Gnd
PWM
+24V
A101917
345388
A101927
LiYY
6x0,56mm²
-24V_DC
A101958
Gnd
+24V
GND -
A101958
345390
2.8 / GndDC-Bel
2.8 / +24VDC-Bel

EN


Fan Group 3
Rev.
Artikelnummer:SK 3313.610
LCU-CW
Fan 1
Fan 2
Fan 3
Fan Group3
A102427
-X-Group 3
-X-Group 3
-24V_DC
A101958
A101927
LYY
6x0,56mm²
A101917
345388
A101958
345390
4.7 / Hall Fan9
4.6 / PWM Fan9
4.8 / Hall Fan8
4.6 / PWM Fan8
4.7 / Hall Fan7
4.6 / PWM Fan7
+24V
GND -

EN


Humidity Sensor
7030.111
-A6
Bus 1
Bus 2
RJ45
A095227
344028
Can Bus
RJ45
303379
Ethernet 3
Can1
Feuchte Sensor
Artikelnummer:SK 3313.610
LCU-CW
Rev.
&EMB1/1
Datum
25.04.2023
Bearb.
Gepr
Urspr
Änderung
Name
Ersatz von
Ersatz durch
Blatt
02-0900-18

EN

14 Information concerning the filling and additive water

To avoid damages to the system and ensure reliable operation, the provisions of VDI 2035 should be observed for filling and top-up water.

Admissible cooling media

– Saline and low-salinity water based on VDI 2035 plus max. 50 volume percent Antifrogen-N (see table 42).

Recommended cooling medium

– Low-salinity water (demineralised water) based on VDI 2035. Up to a maximum of 50 volume percent Antifrogen-N may be added (see table 42). Other additives may be used only in agreement with Rittal.

	Low-salinity	Saline
Electrical conductivity at 25 °C [µS/cm]	< 100	100…1,500
Appearance	Free from sedimenting substances	
pH value at 25 °C	8.2…10.0	
Oxygen [mg/l]	< 0.1	< 0.02

Tab. 42: Water specifications

Note:
We recommend installing a suitable filter in the water circuit where appropriate.

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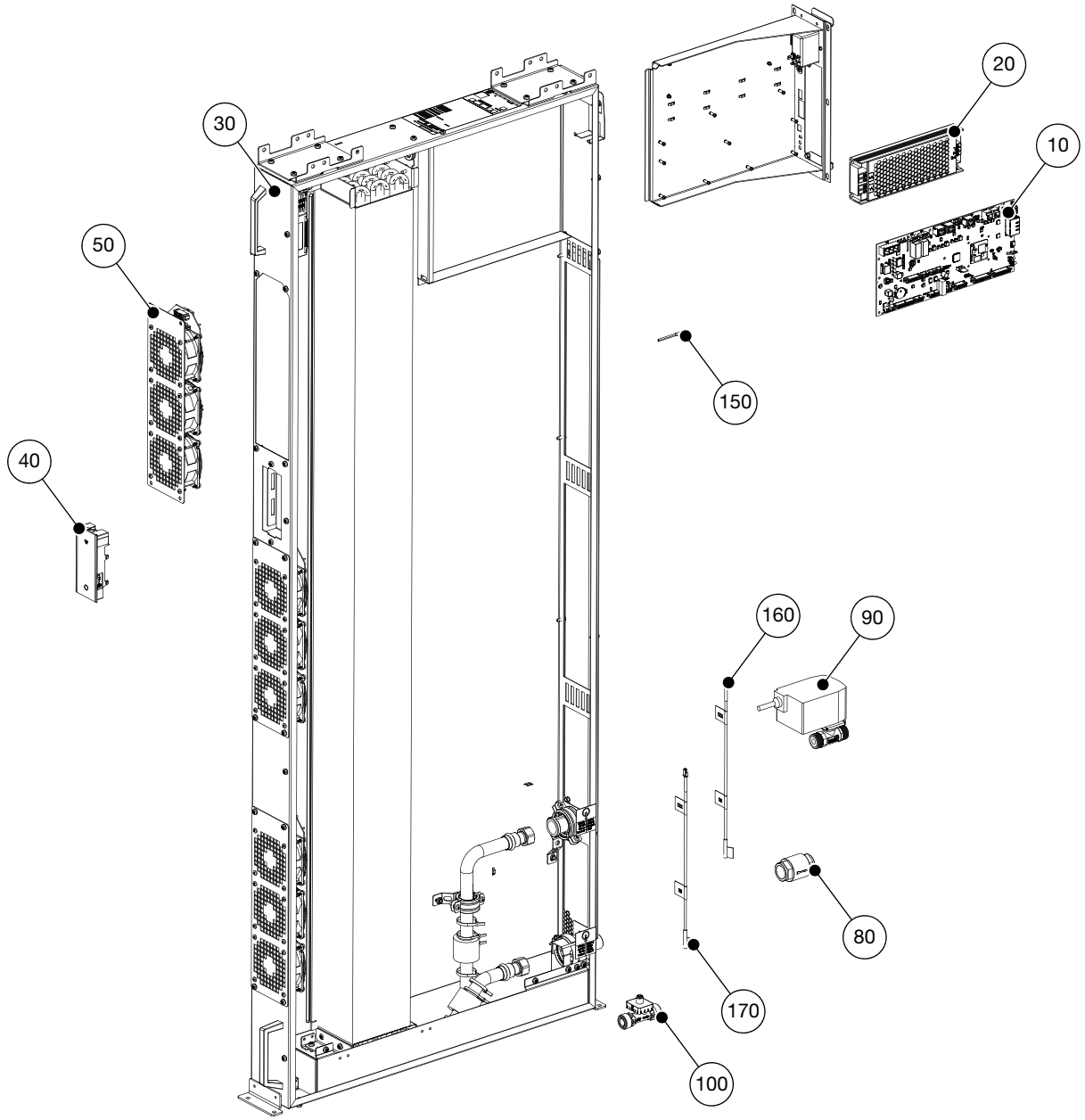
15 Spare parts

Spare parts may be ordered directly from the Rittal website:
– http://rittal.com/spare_parts



Key

10 Climate Controller
20 Power pack
30 CMC III temperature/humidity sensor
40 Display
50 Fan module
80 Check valve
90 Ball valve
100 Flow sensor
150 Temperature sensor
160 Temperature sensor water in
170 Temperature sensor water out

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16 Accessories

As well as the accessories listed below, details of our full range of accessories can be found on the Rittal website.

Item	Model No.	Qty. / Packs of	Remarks
Connection hose kit	3313614	1	2.5 m long, may be shortened, with 90° bend on one side and clamping tray screw connection on the other side
Brush strip kit	3313612	1	For partitioning the LCU CW in a VX IT network/server rack
Connection cable	7200210	1	Earthing-pin / C 13 socket
Connection cable	7200215	1	C14 IEC connector / C 13 socket
"Rittal Scan & Service" app			Download on the App Store / GET IT ON Google Play

Tab. 43: List of accessories

17 Glossary

482.6 mm (19") level:

The front sides of the devices built into the server enclosure form the 482.6 mm (19") level.

Blade server:

By orienting dual CPU systems vertically and placing up to 14 units on a common backplane to provide for signal routing and power supply, one has a blade server.

Blade servers can "generate" up to 4.5 kW heat loss per 7 U and 700 mm depth.

"Front to back" cooling principle:

The devices built into the server enclosure are normally cooled according to the "front to back" cooling principle.

Under this cooling principle, cold air supplied by external air conditioning is blown to the front of the server enclosure. The fans in the devices built into the server enclosure direct this air horizontally through the server enclosure. The air is warmed through this process and is exhausted out the rear of the enclosure.

Hotspot:

A hotspot is the concentration of thermal energy in a small area.

Hotspots normally lead to local overheating and can cause system malfunctions.

Air/water heat exchanger:

Air/water heat exchangers operate according to the same principle as automobile radiators. A liquid (water) flows through the heat exchanger, while, at the same time, air is blown over its surface area (which is as large as possible), facilitating energy exchange.

Depending on the temperature of the circulating liquid (water), an air/water heat exchanger may either heat or cool the circulated air.

Recooling system:

As an initial comparison, a recooling system is like a refrigerator – through an active cooling circuit, unlike a household refrigerator, a recooling system produces cold water. The thermal energy which is removed from the water is dissipated to the outside by fans. Because of this, it is normally advisable to locate recooling systems outside of buildings.

Recooling systems and air/water heat exchangers form a complete cooling solution.

Switch:

Multiple servers normally communicate with one another and in the network using switches.

Because as many inputs as possible are located on the front of switches, they frequently have an airflow from the side, not "front to back" cooling.

Hysteresis:

If an upper limit value is overshot (SetPtHigh) or a lower limit value is undershot (SetPtLow) a warning or an alarm will be output immediately. For a hysteresis of x%, the warning or alarm for undershooting an upper limit value or overshooting a lower limit value clears only for a difference of x/100*limit value to the limit value.

Rittal – The System.

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- Enclosures
- Power Distribution
- Climate Control
- IT Infrastructure
- Software & Services

You can find the contact details of all
Rittal companies throughout the world here.

www.rittal.com/contact

09.2023 / D-0000-00003006-04

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