

MS Frequency Inverter 3.0



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Dear customer,

This manual contains all the necessary information to install the MS Fancontrol FRQ correctly. Please read this manual carefully before using the MS Fancontrol FRQ.

Keep this manual in a safe place so that you can use it as a reference at all times. With a view to its programme of continuous development and improvement, MS Schippers reserves the right to revise or change its product range without prior notice. No rights can be derived from this manual.

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1 Safety instructions and general warnings

Read, understand and carefully follow all warnings and instructions of MS Schippers to use our products safely. These warnings and instructions can be found on the equipment, in manuals, in brochures, on our website or by contacting us. The selection and application of MS Schippers products remains the responsibility of the installer or end user of the equipment. MS Schippers accepts no responsibility for the way its products are applied. All MS Schippers products must be delivered to the end user with appropriate warnings and instructions regarding safe use and operation. MS Schippers does not accept any liability for personal injury, material damage, losses or claims as a result of incorrect application of its products.

1.1 General Warnings

WARNING

- **Read and understand all warnings and instructions provided by MS Schippers before installing, using or maintaining any of our products.**
- **All work may only be carried out by qualified personnel.**
- **The product may only be placed, used or stored in places that are inaccessible to children.**
- **Handle the product with care; impacts, shocks or falls, even from a low height, can damage the product.**
- **Do not expose the product to direct sunlight, high heat or cold.**
- **Always check all settings after installation to make sure they are working correctly.**
- **Do not use running water to clean your computer. The computer is splashproof, not waterproof!**

1.2 Safety warnings

WARNING

- **Do not wear metal or conductive materials, such as jewellery (necklaces, bracelets, rings, etc.) when installing or servicing electrical parts or components.**
- **Always switch off the power before opening the enclosure.**
- **Never remove components or wires from electronic boards when the device is turned on.**
- **Use the correct mains voltage.**
- **Make sure that all clamp screws are correctly tightened.**
- **Always use cable glands when installing cables in the controller.**
- **After installation, unused cable glands or blind holes must be sealed to prevent water, dust and other substances from entering the regulator.**
- **If you have reason to believe that the device can no longer be used safely, disconnect it immediately and ensure that it is not operated inadvertently.**

1.3 Wiring precautions

WARNING

- Always use a shielded cable for all low-voltage connections.
- Always use a shielded cable for all high voltage connections.
- For communication connections, always use a twisted-pair shielded cable.
- Do not connect the shielding of low-voltage connections to the earthing block (PE).
- Do not connect the shielding of communication links to the earthing block (PE).
- The maximum length of the communication link shall not exceed 1200 metres.
- Disconnect high-voltage connections from low-voltage connections and/or communication connections to prevent interference.
- If inductive loads such as magnetic switches etc. are connected to the equipment, Schippers advises to disconnect these loads by placing an RC filter (100ohm + 100nF) in parallel.

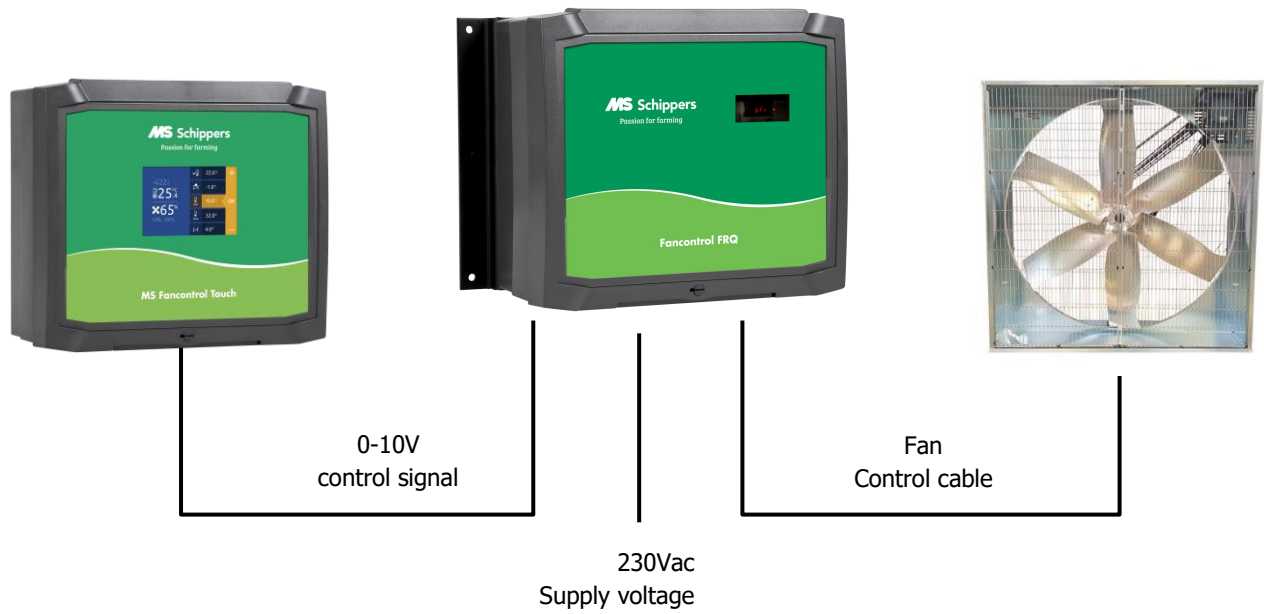
1.4 Disposal



Electronic devices are recyclable and should not be disposed of as household waste. At the end of its service life, dispose of the product in accordance with the applicable legal regulations.

2 Description of the MS Fancontrol FRQ

The MS Fancontrol Frq is an end station with a 0.75kW built-in frequency controller to control fans. The input voltage is 230Vac 50/60Hz and the output voltage is 3-phase 3x230Vac. The device can easily be mounted on the wall with the mounting plate.



3 Alarms

If the AC drive detects an alarm, the alarm relay will be activated (contact opens). An alarm can occur for a variety of reasons. Read the display on the AC drive for the detected error message. Below is a list of possible errors.

Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
tHt-	Motor thermal protection menu		
ItH 	• Motor thermal current Current used for the motor thermal detection. Set ItH to the nominal current on the motor rating plate.	0.2 to 1.5 In (1)	According to drive rating
tHt ACL FCL	• Motor protection type • Self-ventilated • Motor-ventilated		ACL
OLL nO YES	• Overload fault management Type of stop in the event of a motor thermal fault. • Fault ignored • Freewheel stop Setting Overload fault management OLL to nO inhibits the Motor overload OLF page 89. CAUTION RISK OF DAMAGE TO THE MOTOR If OLL is set to nO, motor thermal protection is no longer provided by the drive. Provide an alternative means of thermal protection. Failure to follow these instructions can result in equipment damage.		YES
MtM nO YES	• Motor thermal state memo • Motor thermal state not stored at power off. • Motor thermal state is stored at power off.		nO
FLt-	Fault detection management menu (continued)		
OPL nO YES	• Output Phase loss • Function inactive • Tripping on OPF1 (1 phase loss) or OPF2 (3 phase loss) fault with freewheel stop.		YES
IPL nO YES	• Input Phase loss Invisible if drive rating is F1 and factory setting is nO Invisible if drive rating is ER12-...KU/BU and ER12-...K/B. In this case no factory settings appears. • Fault ignored. To be used when the drive is supplied via a single phase supply. • Fault with freewheel stop. If one phase disappears, the drive switches to fault mode Input Phase loss IPL but if 2 or 3 phases disappear, the drive continues to operate until it trips on an undervoltage fault.		According to drive rating

(1) In = nominal drive current

Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
USb-	Undervoltage menu		
USb O 1	• Undervoltage fault management Behavior of the drive in the event of an undervoltage • Detected fault and R1 relay open. • Detected fault and R1 relay closed.		0
StP nO rMP	• Undervoltage prevention Behavior in the event of the undervoltage fault prevention level being reached • No action (freewheel) • Stop following an adjustable ramp Undervoltage ramp deceleration time StM.		nO
StM 	• Undervoltage ramp deceleration time Ramp time if Undervoltage prevention StP = rMP.	0.0 to 10.0 s	1.0 s
FLt-	Fault detection management menu (continued)		
Strt nO YES	• IGBT test • No test • The IGBTs are tested on power up and every time a run command is sent. These tests cause a slight delay (a few ms). In the event of a fault, the drive will lock. The following faults can be detected: - Drive output short-circuit (terminals U-V-W): SCF display - IGBT faulty: xxF, where x indicates the number of the IGBT concerned IGBT short-circuited: x2F, where x indicates the number of the IGBT concerned		nO
LFL1 nO YES	• 4-20 mA loss behaviour • Fault ignored. This configuration is the only one possible if A11 current scaling parameter of 0% CrL1 page 51 is not greater than 3 mA or if A11 type A11t = 10U. • Freewheel stop.		nO
InH nO L1H L2H L3H L4H  2 s	• Detected fault inhibition assignment To assign fault inhibit, press and hold down the "ENT" key for 2 s. • Function inactive • L1h: LI1 active high • L2h: LI2 active high • L3h: LI3 active high • L4h: LI4 active high		nO
CAUTION RISK OF EQUIPMENT DAMAGE Inhibiting faults results in the drive not being protected. This invalidates the warranty. Check that the possible consequences do not present any risk. Failure to follow these instructions can result in equipment damage.			

4 Status Menu

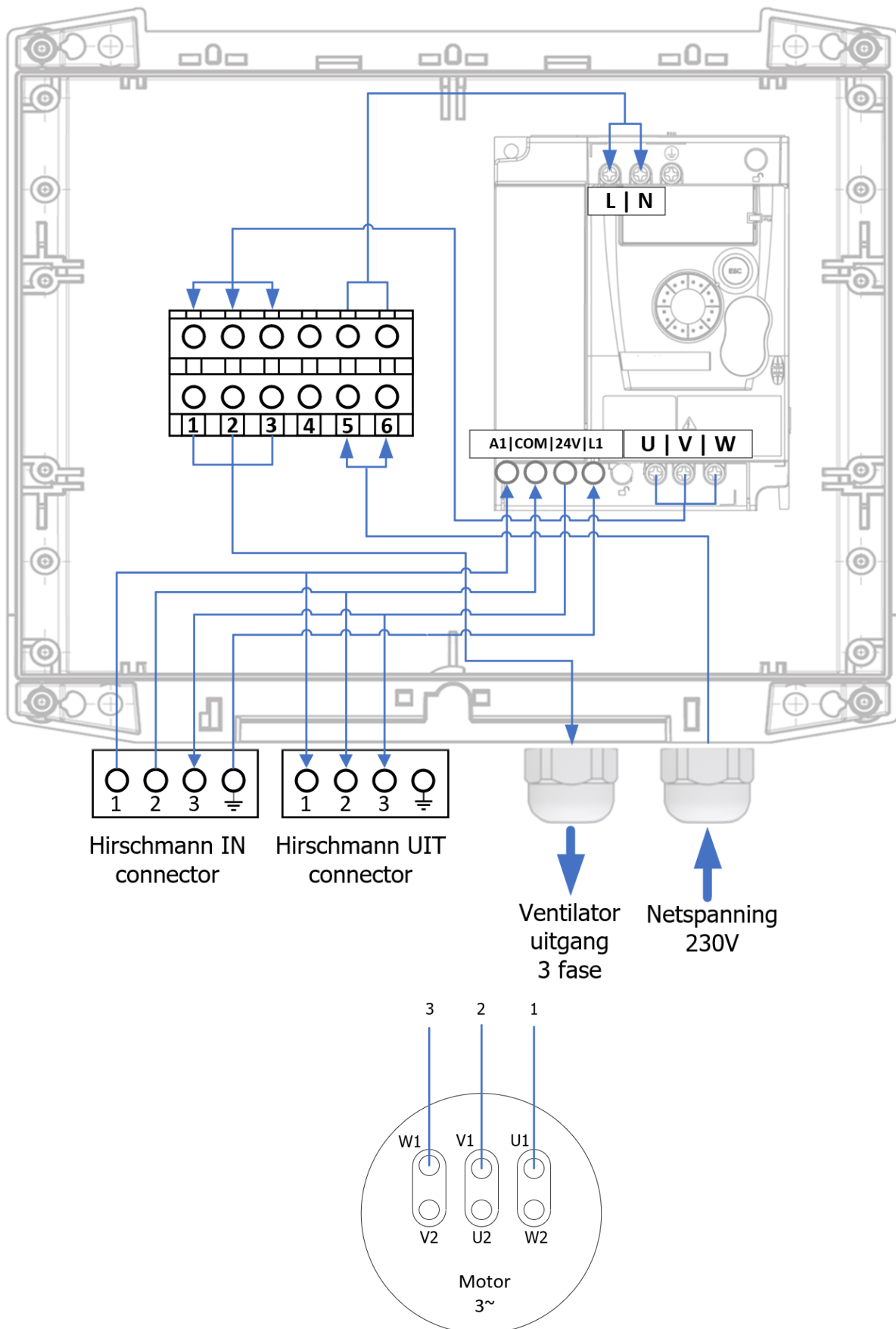
Functions of the display and keys

- Four 7-segment displays
- REF LED, illuminated when **rEF-** menu is active
- Charge LED
- MON LED, illuminated when **SUP-** menu is active
- CONF LED, illuminated when **SEt**, **drC**, **I-O**, **CtL**, **FUn**, **FLt** or **COM** menu is active
- MODE button: When **rEF-** displayed, switches to **SEt**-menu. Otherwise, switches to **rEF-** menu. See page 28
- RUN button: Controls motor switch-on in forward mode if parameter **tCC** in the **I-O** menu is set to **LOC** page 27
- 2 CANopen status LEDs
- Exits a menu or parameter, or clears the displayed value to return to the previous stored value
- Jog dial - Acts as a potentiometer in local mode. For navigation when turned clockwise + or counterclockwise - and selection / validation when pushed.  = ENT
- It acts as reference potentiometer, if parameter **Fr1** in the **CtL-** menu is set to **AIU1**
- STOP/RESET button
 - Used to reset faults to zero
 - It can be used to control motor stopping
 - If **tCC** (**I-O** menu) is not set to **LOC**, it is a freewheel stop.
 - If **tCC** (**I-O** menu) is set to **LOC**, stopping is on a ramp, but if injection braking is in progress, a freewheel stop takes place.

Normal display, with no detected faults, and the motor not running:

- **4 3.0**: Display of the parameter selected in the [MONITORING] (**SUP-**) menu (default selection: motor frequency).
- In current limiting mode or saturation of speed or current loop, the display flashes.
- **InIt**: Initialization sequence
- **rdY**: Drive ready
- **dCb**: DC injection braking in progress
- **nSt**: Freewheel stop
- **FSt**: Fast stop
- **tUn**: Auto-tuning in progress

5 Wiring diagram



Specifications

Dimensions (outer dimensions)	: 170x290x230mm (depth x width x height)
Enclosure	: Plastic IP IP54
Connections	: Through Hirschmann Connectors and fixed cabling
Supply voltage	: 230Vac -15% / +10%
Mains frequency	: 50/60Hz $\pm$ 5%
Input signal (voltage control)	: 0-10V
Max. alarm relay load	: 24Vac/dc, 100mA
Output voltage	: 3 phase, 0 - 230Vac
Max. frequency inverter load	: 0.75kW

Geachte klant,

Deze handleiding bevat alle nodige informatie om de MS Fancontrol FRQ op de juiste wijze te installeren. Lees deze handleiding zorgvuldig door alvorens u met de MS Fancontrol FRQ aan de slag gaat.

Bewaar deze handleiding zorgvuldig, zodat u deze ten alle tijden als naslagwerk kunt gebruiken. Met het oog op het programma van voortdurende ontwikkeling en verbetering, behoudt MS Schippers zich het recht voor haar assortiment zonder voorafgaande kennisgeving te herzien of te wijzigen. Aan deze handleiding kunnen geen rechten worden ontleend.

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1 Veiligheid instructies en algemene waarschuwingen

Lees, begrijp en volg zorgvuldig alle waarschuwingen en instructies van MS Schippers om onze producten veilig te gebruiken. Deze waarschuwingen en instructies zijn te vinden op de apparatuur, in handleidingen, in brochures, op onze website of door contact met ons op te nemen. De selectie en toepassing van MS Schippers producten blijft de verantwoordelijkheid van de installateur of eindgebruiker van de apparatuur. MS Schippers aanvaardt geen verantwoordelijkheid voor de manier waarop haar producten worden toegepast. Alle producten van MS Schippers moeten aan de eindgebruiker worden geleverd met passende waarschuwingen en instructies met betrekking tot veilig gebruik en bediening. MS Schippers aanvaardt geen aansprakelijkheid voor persoonlijk letsel, materiële schade, verliezen of claims als gevolg van verkeerde toepassing van haar producten.

1.1 Algemene waarschuwingen

WAARSCHUWING

- Lees en begrijp alle waarschuwingen en instructies aangeleverd door MS Schippers voordat u een van onze producten installeert, gebruikt of onderhoudt.
- Alle werkzaamheden mogen alleen worden uitgevoerd door gekwalificeerd personeel.
- Het product mag alleen worden geplaatst, gebruikt of opgeslagen op plaatsen die niet toegankelijk zijn voor kinderen.
- Ga voorzichtig om met het product; stoten, schokken of vallen, zelfs van lage hoogte, kan het product beschadigen.
- Stel het product niet bloot aan direct zonlicht, sterke hitte of kou.
- Controleer na installatie altijd alle instellingen om er zeker van te zijn dat ze correct werken.
- Gebruik geen stromend water om uw computer schoon te maken. De computer is spatwaterdicht, niet waterdicht!

1.2 Veiligheids waarschuwingen

WAARSCHUWING

- Draag geen metalen of geleidende materialen, zoals sieraden (halskettingen, armbanden, ringen, enz.) tijdens installatie of onderhoud aan elektrische onderdelen of componenten.
- Schakel altijd de spanning uit voordat u de behuizing opent.
- Verwijder nooit componenten of draden van elektronische printen wanneer het apparaat is ingeschakeld.
- Gebruik de juiste netspanning.
- Zorg ervoor dat alle klemschroeven correct zijn vastgedraaid.
- Gebruik altijd kabelwartels bij het installeren van kabels in de regelaar.
- Na installatie moeten ongebruikte kabelwartels of blindgaten worden afgedicht om te voorkomen dat water, stof en andere stoffen de regelaar binnendringen.
- Als u reden heeft om aan te nemen dat het apparaat niet meer veilig kan worden gebruikt, koppel het dan onmiddellijk los en zorg ervoor dat het niet onbedoeld wordt bediend.

1.3 Voorzorgsmaatregelen voor bedrading

WARNING

- Gebruik voor alle zwakstroomverbindingen altijd afgeschermd kabel.
- Gebruik voor alle hoogspanningsaansluitingen altijd afgeschermd kabel.
- Gebruik voor communicatieverbindingen altijd afgeschermd kabel met getwist paar.
- Sluit de afscherming van zwakstroomverbindingen niet aan op het aardingsblok (PE).
- Sluit de afscherming van communicatieverbindingen niet aan op het aardingsblok (PE).
- De maximale lengte van de communicatieverbinding mag niet meer zijn dan 1200 meter.
- Scheid hoogspanningsaansluitingen van zwakstroomaansluitingen en / of communicatieverbindingen om storingen te voorkomen.
- Indien er op de apparatuur inductieve belastingen worden aangesloten, zoals magneetschakelaars e.d., adviseert Schippers deze belastingen te ontstoren door er een RC-filter (100ohm + 100nF) parallel over te plaatsen.

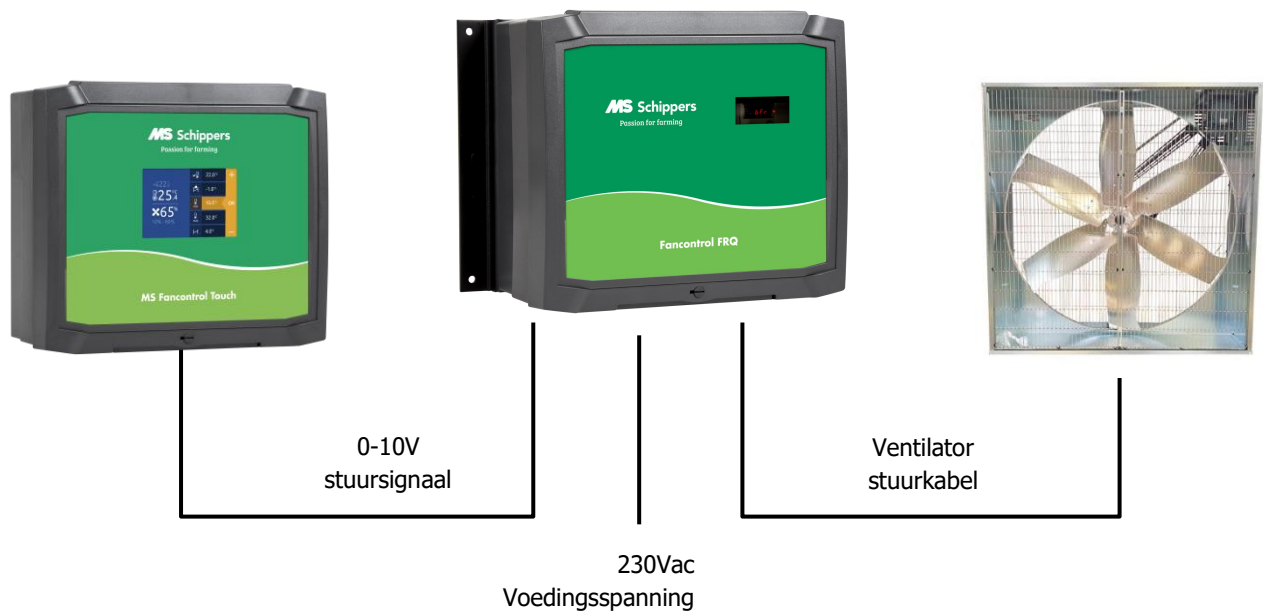
1.4 Verwijdering



Elektronische apparaten zijn recyclebaar en horen niet bij het huisvuil. Voer het product aan het einde van zijn levensduur af volgens de geldende wettelijke bepalingen.

2 Beschrijving van de MS Fancontrol FRQ

De MS Fancontrol Frq is een eindstation met een ingebouwde frequentieregelaar van 0.75kW voor de aansturing van ventilatoren. De ingangsspanning is 230Vac 50/60Hz en de uitgangsspanning is 3-fase 3x230Vac. Door middel van de montageplaat kan het apparaat eenvoudig aan de muur worden gemonteerd.



3 Alarmeringen

Als de frequentieregelaar een alarm constateert, zal het alarmrelais afgaan (contact wordt geopend). Een alarm kan door verschillende oorzaken optreden. Lees het display op de frequentieregelaar af voor de geconstateerde foutmelding. Hieronder volgt een lijst met mogelijke fouten.

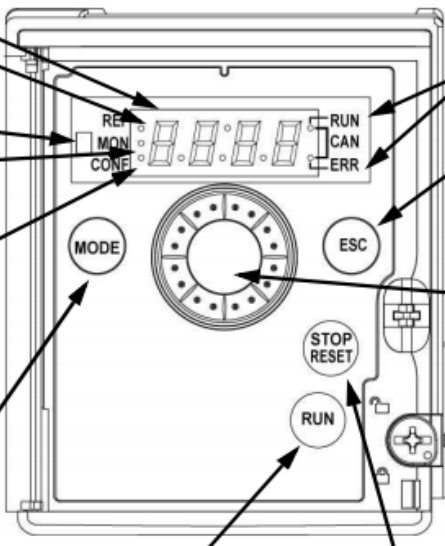
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OLL nO YES	• Overload fault management Type of stop in the event of a motor thermal fault. • Fault ignored • Freewheel stop Setting Overload fault management OLL to nO inhibits the Motor overload OLF page 89. CAUTION RISK OF DAMAGE TO THE MOTOR If OLL is set to nO, motor thermal protection is no longer provided by the drive. Provide an alternative means of thermal protection. Failure to follow these instructions can result in equipment damage.		YES
MtM nO YES	• Motor thermal state memo • Motor thermal state not stored at power off. • Motor thermal state is stored at power off.		nO
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(1) In = nominal drive current

Code	Name/Description	Adjustment range	Factory setting
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InH nO L1H L2H L3H L4H  2 s	• Detected fault inhibition assignment To assign fault inhibit, press and hold down the "ENT" key for 2 s. • Function inactive • L1h: LI1 active high • L2h: LI2 active high • L3h: LI3 active high • L4h: LI4 active high		nO
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4 Status Menu

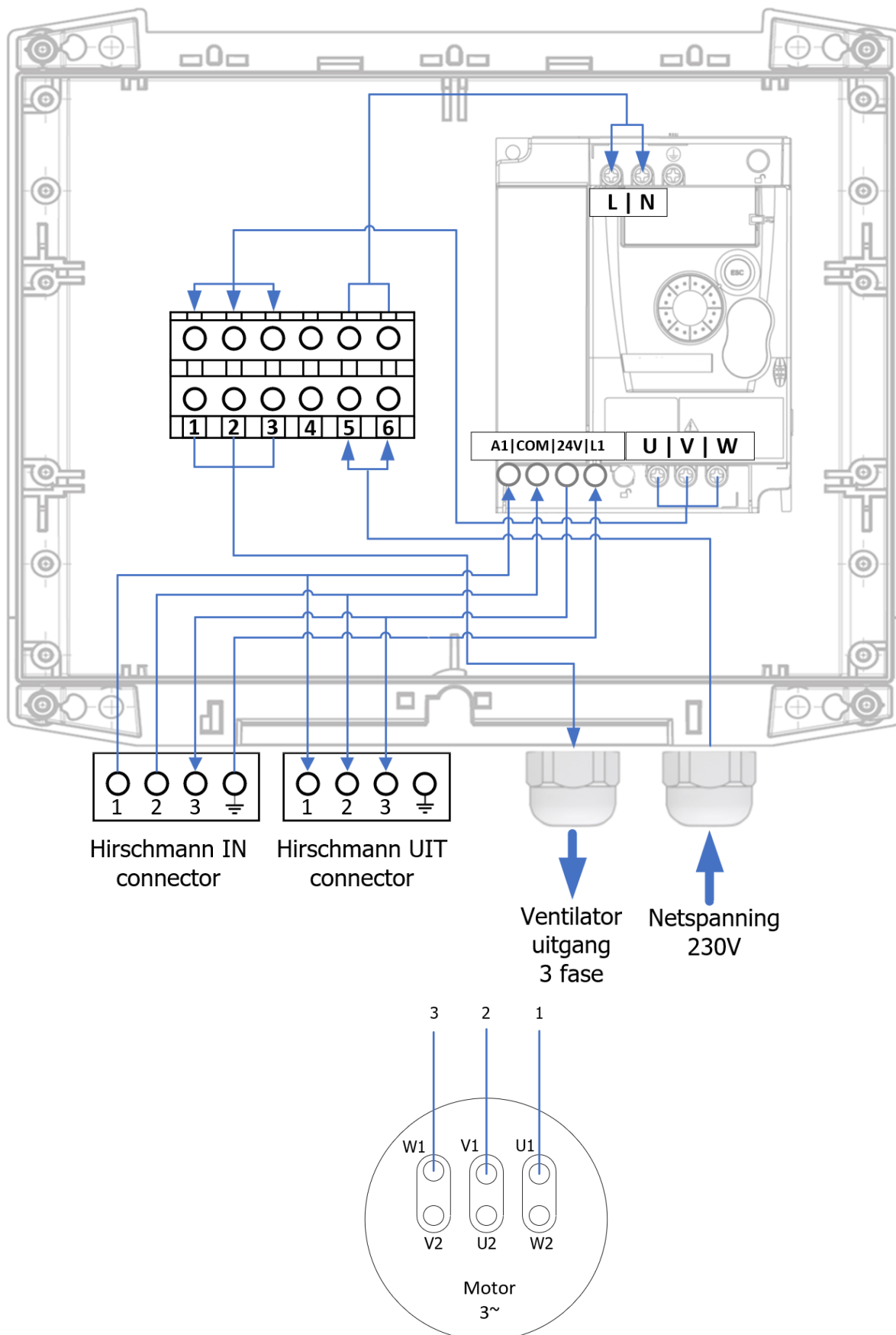
Functions of the display and keys

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 - MODE button: When **rEF-** displayed, switches to **SEt**-menu. Otherwise, switches to **rEF-** menu. See page 28
 - RUN button: Controls motor switch-on in forward mode if parameter **tCC** in the **I-O** menu is set to **LOC** page 27
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- **rdY**: Drive ready
- **dCb**: DC injection braking in progress
- **nSt**: Freewheel stop
- **FSt**: Fast stop
- **tUn**: Auto-tuning in progress

5 Bedradingsschema



Specificaties

Afmetingen (buitenmaat)	: 170x290x230mm (diepte x breedte x hoogte)
Behuizing	: Kunststof IP54
Aansluitingen	: Via Hirschmann Connector en vaste bekabeling
Voedingsspanning	: 230Vac -15% / +10%
Netfrequentie	: 50/60Hz $\pm$ 5%
Ingangssignaal (spanningsturing)	: 0-10V
Max. belasting alarmrelais	: 24Vac/dc, 100mA
Uitgangsspanning	: 3 fase, 0 - 230Vac
Max. belasting frequentieregelaar	: 0.75kW

Sehr geehrter Kunde,

Dieses Handbuch enthält alle Informationen, die zur ordnungsgemäßen Installation des MS Fancontrol FRQ erforderlich sind. Bitte lesen Sie dieses Handbuch sorgfältig, bevor Sie mit dem MS Fancontrol FRQ arbeiten.

Bewahren Sie dieses Handbuch zum späteren Nachschlagen auf. Im Hinblick auf das Programm der kontinuierlichen Entwicklung und Verbesserung behält sich MS Skippers das Recht vor, seine Produktpalette ohne vorherige Ankündigung zu überarbeiten oder zu ändern. Aus diesem Handbuch können keine Rechte abgeleitet werden.

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1 Sicherheitsanweisungen und allgemeine Warnungen

Lesen, verstehen und befolgen Sie sorgfältig alle Warnungen und Anweisungen von MS Schippers, um unsere Produkte sicher zu verwenden. Diese Warnungen und Anweisungen finden Sie auf den Geräten, in Bedienungsanleitungen, in Broschüren, auf unserer Website oder auf Anfrage bei uns. Die Auswahl und Anwendung der Produkte von MS Schippers bleibt in der Verantwortung des Installateurs oder Endbenutzers der Anlage. MS Schippers übernimmt keine Verantwortung für die Art und Weise, wie ihre Produkte angewendet werden. Alle Produkte von MS Schippers dem Endbenutzer mit entsprechenden Warnhinweisen und Anweisungen für den sicheren Gebrauch und Betrieb geliefert werden. MS Schippers übernimmt keine Haftung für Personen- und Sachschäden, Verluste oder Ansprüche als Folge einer fehlerhaften Anwendung ihrer Produkte.

1.1 Allgemeine Warnungen

WARNUNG

- **Lesen und verstehen Sie alle Warnungen und Anweisungen von MS Schippers, bevor Sie eines unserer Produkte installieren, verwenden oder warten.**
- **Alle Arbeiten dürfen nur von qualifizierten Personen durchgeführt werden.**
- **Das Produkt darf nur an Orten platziert, verwendet oder gelagert werden, die für Kinder unzugänglich sind.**
- **Behandeln Sie das Produkt mit Vorsicht; Stöße, Erschütterungen oder Stürze, auch aus geringer Höhe, können das Produkt beschädigen.**
- **Setzen Sie das Produkt nicht direkter Sonneneinstrahlung, starker Hitze oder Kälte aus.**
- **Überprüfen Sie nach der Installation immer alle Einstellungen, um ihre korrekte Funktion zu gewährleisten.**
- **Verwenden Sie zur Reinigung Ihres Computers kein fließendes Wasser. Der Computer ist spritzwassergeschützt, nicht wasserdicht!**

1.2 Sicherheitswarnungen

WARNUNG

- **Tragen Sie bei der Installation oder Wartung elektrischer Teile oder Komponenten kein Metall oder leitende Materialien wie Schmuck (Halsketten, Armbänder, Ringe usw.).**
- **Schalten Sie vor dem Öffnen des Gehäuses immer den Strom ab.**
- **Entfernen Sie niemals Komponenten oder Drähte von elektronischen Platinen, wenn das Gerät eingeschaltet ist.**
- **Verwenden Sie die richtige Netzspannung.**
- **Stellen Sie sicher, dass alle Klemmschrauben korrekt angezogen sind.**
- **Verwenden Sie bei der Installation von Kabeln im Laufwerk immer Kabelverschraubungen.**
- **Nach der Installation müssen unbenutzte Kabelverschraubungen oder Blindlöcher abgedichtet werden, um das Eindringen von Wasser, Staub und anderen Stoffen in den Regler zu verhindern.**
- **Wenn Sie Grund zu der Annahme haben, dass das Gerät nicht mehr sicher verwendet werden kann, trennen Sie es sofort ab und stellen Sie sicher, dass es nicht versehentlich bedient wird.**

1.3 Sicherheitsvorkehrungen bei der Verkabelung

WARNUNG

- Verwenden Sie für alle Niederspannungsverbindungen immer abgeschirmtes Kabel.
- Verwenden Sie für alle Hochspannungsanschlüsse immer abgeschirmtes Kabel.
- Verwenden Sie für Kommunikationsverbindungen immer abgeschirmtes Kabel mit verdrehtem Paar.
- Schließen Sie die Abschirmung von Niederspannungsverbindungen nicht an den Erdungsblock (PE) an.
- Schließen Sie die Abschirmung von Kommunikationsverbindungen nicht an den Erdungsblock (PE) an.
- Die maximale Länge der Kommunikationsverbindung darf 1200 Meter nicht überschreiten.
- Trennen Sie Hochspannungsverbindungen von Niederspannungsverbindungen und/oder Kommunikationsverbindungen, um Störungen zu vermeiden.
- Wenn induktive Lasten wie Magnetschalter usw. an das Gerät angeschlossen sind, rät Schippers, diese Lasten durch Parallelschalten eines RC-Filters (100ohm + 100nF) abzuschalten.

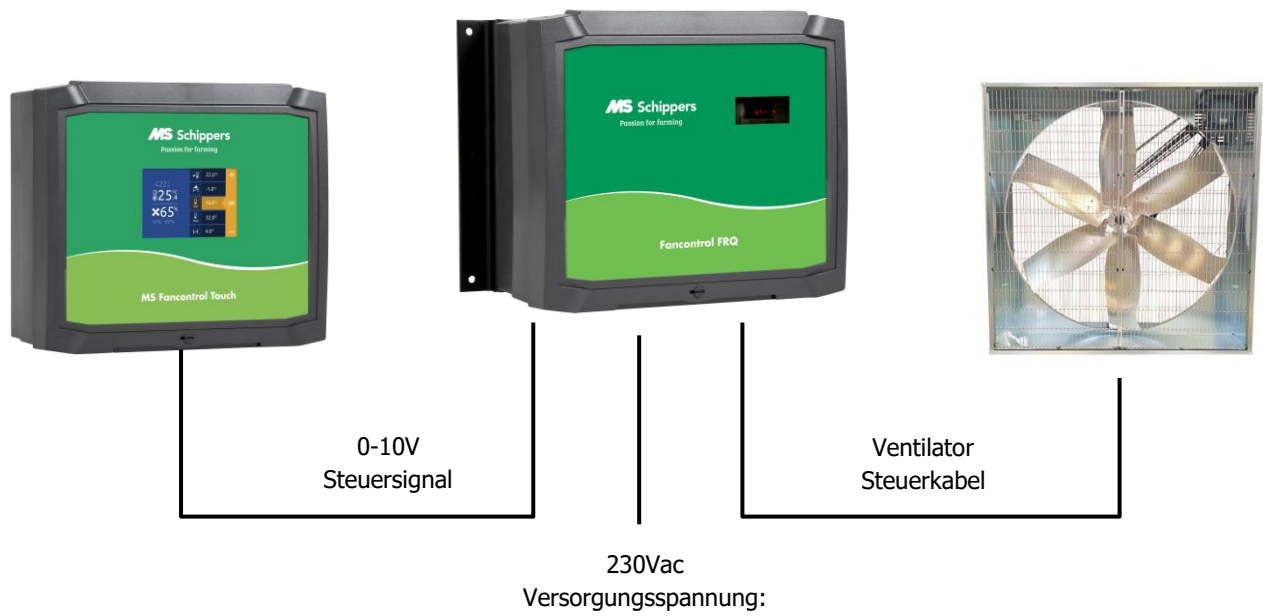
1.4 Entsorgung



Elektronische Geräte sind wiederverwertbar und gehören nicht in den Hausmüll. Entsorgen Sie das Produkt am Ende seiner Lebensdauer gemäß den geltenden gesetzlichen Bestimmungen.

2 Beschreibung des MS Fancontrol FRQ

Der MS Fancontrol FRQ ist eine Endstation mit einem eingebauten Frequenzregler von 0,75kW für die Steuerung von Ventilatoren. Die Eingangsspannung beträgt 230Vac 50/60Hz und die Ausgangsspannung ist 3-phasig 3x230Vac. Mit Hilfe der Montageplatte lässt sich das Gerät einfach an der Wand montieren.



3 Alarme

Wenn der Frequenzregler einen Alarm aktiviert, löst das Alarmrelais aus (Kontakt öffnet). Ein Alarm kann aus verschiedenen Gründen auftreten. Lesen Sie die Displayanzeige des Frequenzreglers für die festgestellte Fehlermeldung. Nachstehend finden Sie eine Liste möglicher Fehler.

Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
tHt-	Motor thermal protection menu		
ItH 	• Motor thermal current Current used for the motor thermal detection. Set ItH to the nominal current on the motor rating plate.	0.2 to 1.5 In (1)	According to drive rating
tHt ACL FCL	• Motor protection type • Self-ventilated • Motor-ventilated		ACL
OLL nO YES	• Overload fault management Type of stop in the event of a motor thermal fault. • Fault ignored • Freewheel stop Setting Overload fault management OLL to nO inhibits the Motor overload OLF page 89. CAUTION RISK OF DAMAGE TO THE MOTOR If OLL is set to nO, motor thermal protection is no longer provided by the drive. Provide an alternative means of thermal protection. Failure to follow these instructions can result in equipment damage.		YES
MtM nO YES	• Motor thermal state memo • Motor thermal state not stored at power off. • Motor thermal state is stored at power off.		nO
FLt-	Fault detection management menu (continued)		
OPL nO YES	• Output Phase loss • Function inactive • Tripping on OPF1 (1 phase loss) or OPF2 (3 phase loss) fault with freewheel stop.		YES
IPL nO YES	• Input Phase loss Invisible if drive rating is F1 and factory setting is nO Invisible if drive rating is ER12-...KU/BU and ER12-...K/B. In this case no factory settings appears. • Fault ignored. To be used when the drive is supplied via a single phase supply. • Fault with freewheel stop. If one phase disappears, the drive switches to fault mode Input Phase loss IPL but if 2 or 3 phases disappear, the drive continues to operate until it trips on an undervoltage fault.		According to drive rating

(1) In = nominal drive current

Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
USb-	Undervoltage menu		
USb O 1	• Undervoltage fault management Behavior of the drive in the event of an undervoltage • Detected fault and R1 relay open. • Detected fault and R1 relay closed.		0
StP nO rMP	• Undervoltage prevention Behavior in the event of the undervoltage fault prevention level being reached • No action (freewheel) • Stop following an adjustable ramp Undervoltage ramp deceleration time StM.		nO
StM 	• Undervoltage ramp deceleration time Ramp time if Undervoltage prevention StP = rMP.	0.0 to 10.0 s	1.0 s
FLt-	Fault detection management menu (continued)		
Strt nO YES	• IGBT test • No test • The IGBTs are tested on power up and every time a run command is sent. These tests cause a slight delay (a few ms). In the event of a fault, the drive will lock. The following faults can be detected: - Drive output short-circuit (terminals U-V-W): SCF display - IGBT faulty: xxF, where x indicates the number of the IGBT concerned IGBT short-circuited: x2F, where x indicates the number of the IGBT concerned		nO
LFL1 nO YES	• 4-20 mA loss behaviour • Fault ignored. This configuration is the only one possible if A11 current scaling parameter of 0% CrL1 page 51 is not greater than 3 mA or if A11 type A11t = 10U. • Freewheel stop.		nO
InH nO L1H L2H L3H L4H  2 s	• Detected fault inhibition assignment To assign fault inhibit, press and hold down the "ENT" key for 2 s. • Function inactive • L1h: LI1 active high • L2h: LI2 active high • L3h: LI3 active high • L4h: LI4 active high		nO
CAUTION RISK OF EQUIPMENT DAMAGE Inhibiting faults results in the drive not being protected. This invalidates the warranty. Check that the possible consequences do not present any risk. Failure to follow these instructions can result in equipment damage.			

4 Status Menü

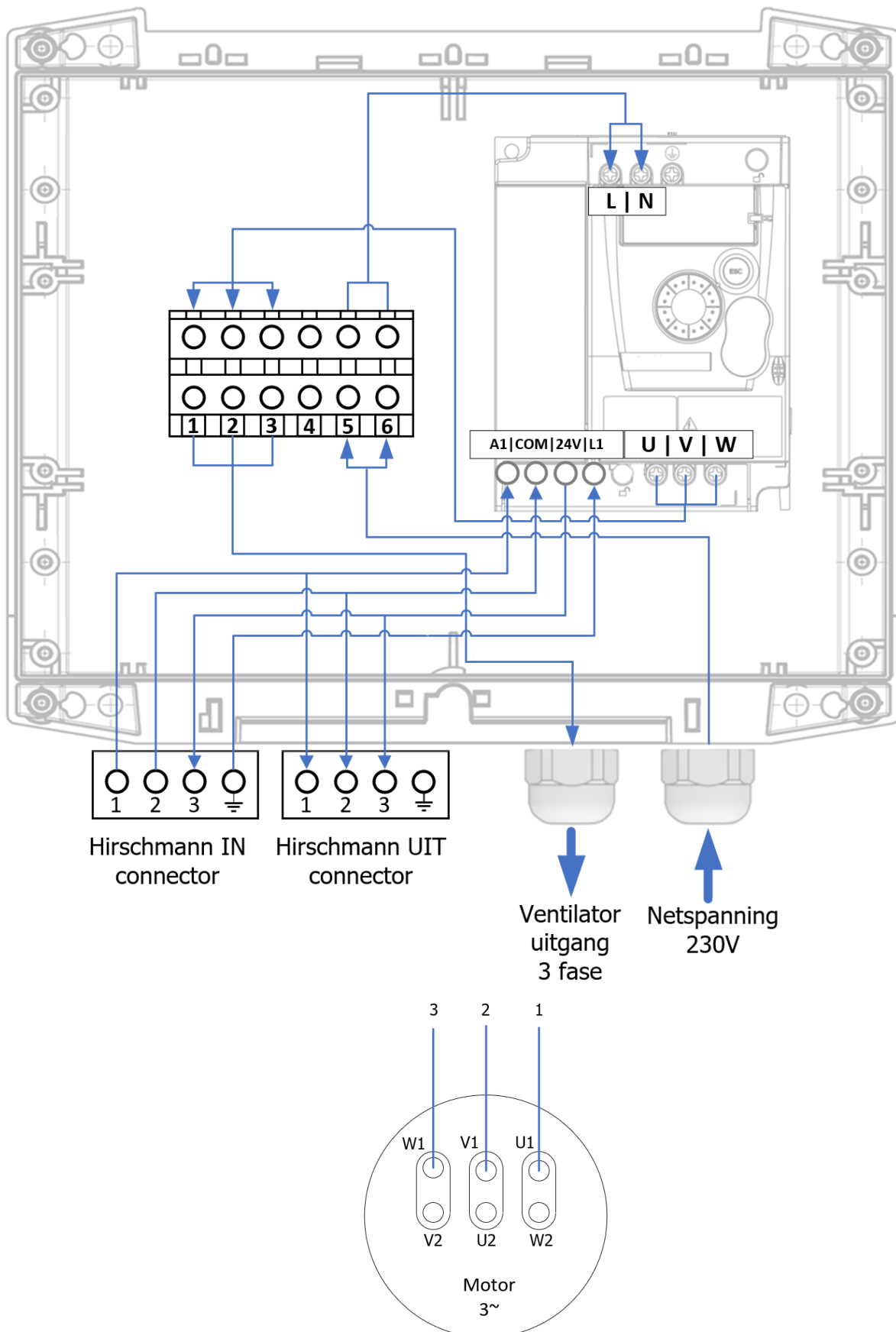
Functions of the display and keys

- Four 7-segment displays
- REF LED, illuminated when **rEF-** menu is active
- Charge LED
- MON LED, illuminated when **SUP-** menu is active
- CONF LED, illuminated when **SEt**, **drC**, **I-O**, **CtL**, **FUn**, **FLt** or **COM** menu is active
- MODE button: When **rEF-** displayed, switches to **SEt**-menu. Otherwise, switches to **rEF-** menu. See page 28
- RUN button: Controls motor switch-on in forward mode if parameter **tCC** in the **I-O** menu is set to **LOC** page 27
- 2 CANopen status LEDs
- Exits a menu or parameter, or clears the displayed value to return to the previous stored value
- Jog dial - Acts as a potentiometer in local mode. For navigation when turned clockwise + or counterclockwise - and selection / validation when pushed.  = ENT
It acts as reference potentiometer, if parameter **Fr1** in the **CtL-** menu is set to **AIU1**
- STOP/RESET button
 - Used to reset faults to zero
 - It can be used to control motor stopping
 - If **tCC** (**I-O** menu) is not set to **LOC**, it is a freewheel stop.
 - If **tCC** (**I-O** menu) is set to **LOC**, stopping is on a ramp, but if injection braking is in progress, a freewheel stop takes place.

Normal display, with no detected faults, and the motor not running:

- **4 3.0**: Display of the parameter selected in the [MONITORING] (**SUP-**) menu (default selection: motor frequency).
- In current limiting mode or saturation of speed or current loop, the display flashes.
- **InIt**: Initialization sequence
- **rdY**: Drive ready
- **dCb**: DC injection braking in progress
- **nSt**: Freewheel stop
- **FSt**: Fast stop
- **tUn**: Auto-tuning in progress

5 Schaltplan



Spezifikationen

Abmessungen (Außenmaß)	: 170X290x230 mm (Tiefe x Breite x Höhe)
Gehäuse	: Kunststoff IP54
Anschlüsse	: Über Hirschmann Connector und feste Verkabelung
Versorgungsspannung	: 230Vac -15%/ +10%
Netzfrequenz 50/60Hz ±5%	
Eingangssignal (Spannungssteuerung)	: 0-10V
Max. Belastung Alarmrelais	: 24Vac/dc, 100mA
Ausgangsspannung	: 3-phasig, 0 - 230Vac
Max. Belastung Frequenzregler	: 0.75kW

Chère cliente, cher client,

Ce manuel d'utilisation comprend toutes les informations nécessaires à l'installation du MS Fancontrol FRQ. Lisez-le avec attention avant de commencer d'utiliser le MS Fancontrol FRQ.

Conservez ce manuel soigneusement pour pouvoir vous y référer à tout moment. MS Schippers se réserve le droit de mettre à jour ou de modifier sa gamme sans avis préalable dans un souci de constants développement et amélioration de ses programmes. Aucun droit ne saurait découler de ce manuel d'utilisation.

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1 Consignes de sécurité et avertissements généraux

Lisez, assurez-vous de comprendre et suivez avec soin tous les avertissements et consignes de MS Schippers afin d'utiliser nos produits en toute sécurité. Ces avertissements et consignes peuvent se trouver sur l'appareil, dans les manuels, dans les brochures, sur notre site web ou en prenant contact avec nous. La sélection et l'application des produits de MS Schippers demeure la responsabilité de l'installateur ou de l'utilisateur final de l'appareil. MS Schippers n'est aucunement responsable de la manière dont ses produits sont utilisés. Tous les produits de MS Schippers doivent être livrés à l'utilisateur final assortis des avertissements et consignes adaptés relativement à une utilisation et un fonctionnement sûrs. MS Schippers n'est aucunement responsable des blessures corporelles, dommages matériels, pertes ou réclamations en conséquence d'une application erronée de ses produits.

1.1 Avertissements généraux

AVERTISSEMENT

- **Lisez et assurez-vous de comprendre tous les avertissements et consignes de MS Schippers avant d'installer, utiliser ou entretenir un de nos produits.**
- **Toute tâche effectuée en relation avec ce produit doit uniquement être réalisée par une personne qualifiée.**
- **Le produit peut uniquement être placé, utilisé ou stocké à des endroits qui ne sont pas accessibles pour les enfants.**
- **Employez la prudence lors de toute manipulation du produit ; tout(e) coup, secousse ou chute, même depuis une faible hauteur peuvent endommager le produit.**
- **N'exposez pas le produit à la lumière directe du soleil, à une forte chaleur ou un grand froid.**
- **Contrôlez toujours tous les réglages après une installation pour vous assurer qu'ils fonctionnent correctement.**
- **N'utilisez pas d'eau courante pour nettoyer votre ordinateur. L'ordinateur est résistant aux éclaboussures mais pas à l'eau !**

1.2 Avertissements de sécurité

AVERTISSEMENT

- **Ne portez aucun objets en métal ou conducteur tels que des bijoux (colliers, bracelets, boucles d'oreille, etc.) lors de l'installation ou de l'entretien des pièces ou composants électriques.**
- **Désactivez toujours l'électricité avant d'ouvrir le boîtier.**
- **N'enlevez jamais les composants ou les câbles des circuits imprimés électroniques lorsque l'appareil est sous tension.**
- **Utilisez la tension secteur correcte.**
- **Veillez pour cela à ce que toutes les vis de borne soient bien serrées.**
- **Utilisez toujours des presse-étoupes lors de l'installation de câbles dans le régulateur.**
- **Après l'installation, les presse-étoupes ou passe-câbles inutilisés doivent être rendus étanches pour prévenir l'introduction d'eau, de poussière et d'autres substances dans le régulateur.**
- **Si vous avez des raisons de croire que l'appareil ne peut plus être utilisé de façon sûre, débranchez-le immédiatement et veillez à ce qu'il ne puisse pas fonctionner par inadvertance.**

1.3 Mesures de précaution pour le câblage

AVERTISSEMENT

- Utilisez toujours un câble blindé pour tout câble de basse tension.
- Utilisez toujours un câble blindé pour tout câble de haute tension.
- Utilisez toujours un câble blindé à paire torsadée pour les câbles de communication.
- Ne raccordez pas le blindage du câble de basse tension à la terre.
- Ne raccordez pas le blindage du câble de communication à la terre.
- La longueur maximale du câble de communication ne peut pas dépasser 1 200 mètres.
- Séparez les branchements de haute tension des branchements de basse tension et/ou des câbles de communication pour prévenir les pannes.
- S'il faut connecter des charges inductives à l'appareil, telles que des contacteurs, Schippers conseille de supprimer les interférences de ces charges par le placement d'un filtre RC (100 ohms + 100 nF) en parallèle.

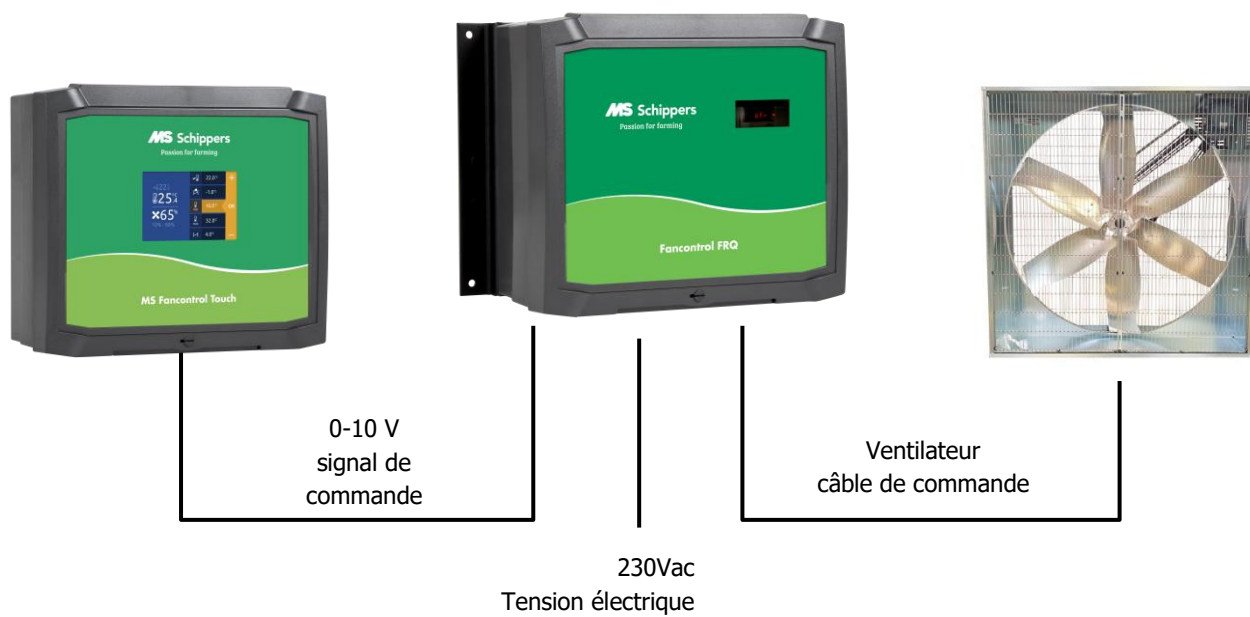
1.4 Élimination



Les appareils électroniques sont recyclables et ne doivent pas être éliminés avec les ordures ménagères. Éliminez le produit à la fin de sa durée de vie selon les réglementations légales valables.

2 Description du MS Fancontrol FRQ

Le MS Fancontrol FRQ est un poste d'utilisation comprenant un régulateur de régime intégré de 0,75 kW pour la commande des ventilateurs. La valeur de la tension d'entrée est de 230 VCA pour 50/60 Hz et la valeur de la tension de sortie est de 3x 230 VCA triphasée. Une plaque de montage permet un simple montage mural de l'appareil.



3 Alarmes

Lorsque le régulateur de régime constate une alarme, le relais d'alarme se déclenche (ouverture du contact). Plusieurs causes différentes peuvent provoquer le déclenchement d'une alarme. Lisez l'écran du régulateur de régime pour consulter le signalement de pannes. La liste ci-dessous présente les pannes possibles.

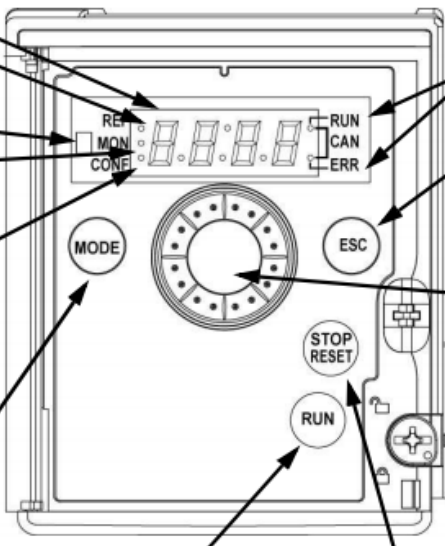
Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
tHt-	Motor thermal protection menu		
ItH 	• Motor thermal current Current used for the motor thermal detection. Set ItH to the nominal current on the motor rating plate.	0.2 to 1.5 In (1)	According to drive rating
tHt ACL FCL	• Motor protection type • Self-ventilated • Motor-ventilated		ACL
OLL nO YES	• Overload fault management Type of stop in the event of a motor thermal fault. • Fault ignored • Freewheel stop Setting Overload fault management OLL to nO inhibits the Motor overload OLF page 89. CAUTION RISK OF DAMAGE TO THE MOTOR If OLL is set to nO, motor thermal protection is no longer provided by the drive. Provide an alternative means of thermal protection. Failure to follow these instructions can result in equipment damage.		YES
MtM nO YES	• Motor thermal state memo • Motor thermal state not stored at power off. • Motor thermal state is stored at power off.		nO
FLt-	Fault detection management menu (continued)		
OPL nO YES	• Output Phase loss • Function inactive • Tripping on OPF1 (1 phase loss) or OPF2 (3 phase loss) fault with freewheel stop.		YES
IPL nO YES	• Input Phase loss Invisible if drive rating is F1 and factory setting is nO Invisible if drive rating is ER12-...KU/BU and ER12-...K/B. In this case no factory settings appears. • Fault ignored. To be used when the drive is supplied via a single phase supply. • Fault with freewheel stop. If one phase disappears, the drive switches to fault mode Input Phase loss IPL but if 2 or 3 phases disappear, the drive continues to operate until it trips on an undervoltage fault.		According to drive rating

(1) In = nominal drive current

Code	Name/Description	Adjustment range	Factory setting
FLt-	Fault detection management menu (continued)		
USb-	Undervoltage menu		
USb O 1	• Undervoltage fault management Behavior of the drive in the event of an undervoltage • Detected fault and R1 relay open. • Detected fault and R1 relay closed.		0
StP nO rMP	• Undervoltage prevention Behavior in the event of the undervoltage fault prevention level being reached • No action (freewheel) • Stop following an adjustable ramp Undervoltage ramp deceleration time StM.		nO
StM 	• Undervoltage ramp deceleration time Ramp time if Undervoltage prevention StP = rMP.	0.0 to 10.0 s	1.0 s
FLt-	Fault detection management menu (continued)		
Strt nO YES	• IGBT test • No test • The IGBTs are tested on power up and every time a run command is sent. These tests cause a slight delay (a few ms). In the event of a fault, the drive will lock. The following faults can be detected: - Drive output short-circuit (terminals U-V-W): SCF display - IGBT faulty: xxF, where x indicates the number of the IGBT concerned IGBT short-circuited: x2F, where x indicates the number of the IGBT concerned		nO
LFL1 nO YES	• 4-20 mA loss behaviour • Fault ignored. This configuration is the only one possible if A11 current scaling parameter of 0% CrL1 page 51 is not greater than 3 mA or if A11 type A11t = 10U. • Freewheel stop.		nO
InH nO L1H L2H L3H L4H  2 s	• Detected fault inhibition assignment To assign fault inhibit, press and hold down the "ENT" key for 2 s. • Function inactive • L1h: LI1 active high • L2h: LI2 active high • L3h: LI3 active high • L4h: LI4 active high		nO
CAUTION RISK OF EQUIPMENT DAMAGE Inhibiting faults results in the drive not being protected. This invalidates the warranty. Check that the possible consequences do not present any risk. Failure to follow these instructions can result in equipment damage.			

4 Menu d'états

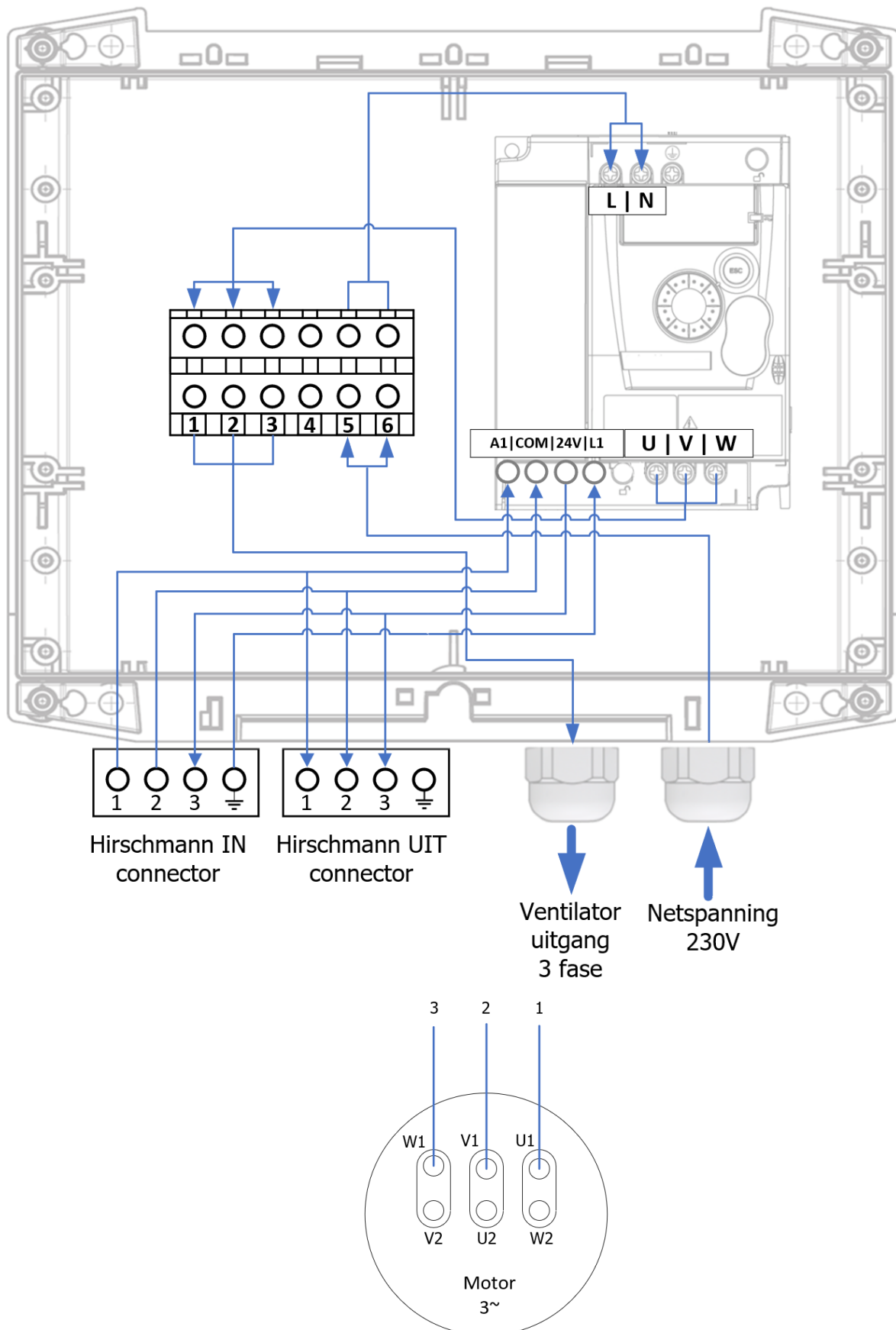
Functions of the display and keys

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 - CONF LED, illuminated when **SEt**, **drC**, **I-O**, **CtL**, **FUn**, **FLt** or **COM** menu is active
 - MODE button: When **rEF-** displayed, switches to **SEt**-menu. Otherwise, switches to **rEF-** menu. See page 28
 - RUN button: Controls motor switch-on in forward mode if parameter **tCC** in the **I-O** menu is set to **LOC** page 27
 - 2 CANopen status LEDs
 - Exits a menu or parameter, or clears the displayed value to return to the previous stored value
 - Jog dial - Acts as a potentiometer in local mode. For navigation when turned clockwise + or counterclockwise - and selection / validation when pushed.  = ENT
 - It acts as reference potentiometer, if parameter **Fr1** in the **CtL-** menu is set to **AIU1**
 - STOP/RESET button
 - Used to reset faults to zero
 - It can be used to control motor stopping
 - If **tCC** (**I-O** menu) is not set to **LOC**, it is a freewheel stop.
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Normal display, with no detected faults, and the motor not running:

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- **InIt**: Initialization sequence
- **rdY**: Drive ready
- **dCb**: DC injection braking in progress
- **nSt**: Freewheel stop
- **FSt**: Fast stop
- **tUn**: Auto-tuning in progress

5 Schéma de câblage



Spécifications

Dimensions (extérieures)	: 170 x 290 x 230 mm (profondeur x largeur x hauteur)
Boîtier	: Plastique IP54
Raccordements	: Via un connecteur Hirschmann et un câblage fixe
Tension électrique	: 230 VCA -15 %/+10 %
Fréquence de secteur	: 50/60 Hz $\pm$ 5 %
Signal d'entrée (commande en tension)	: 0-10 V
Relais d'alarme, courant de charge maximal	: 24 VCA/CC, 100 mA
Tension de sortie	: triphasée, 0 - 230 VCA
Relais d'alarme, régulateur de régime	: 0,75 kW