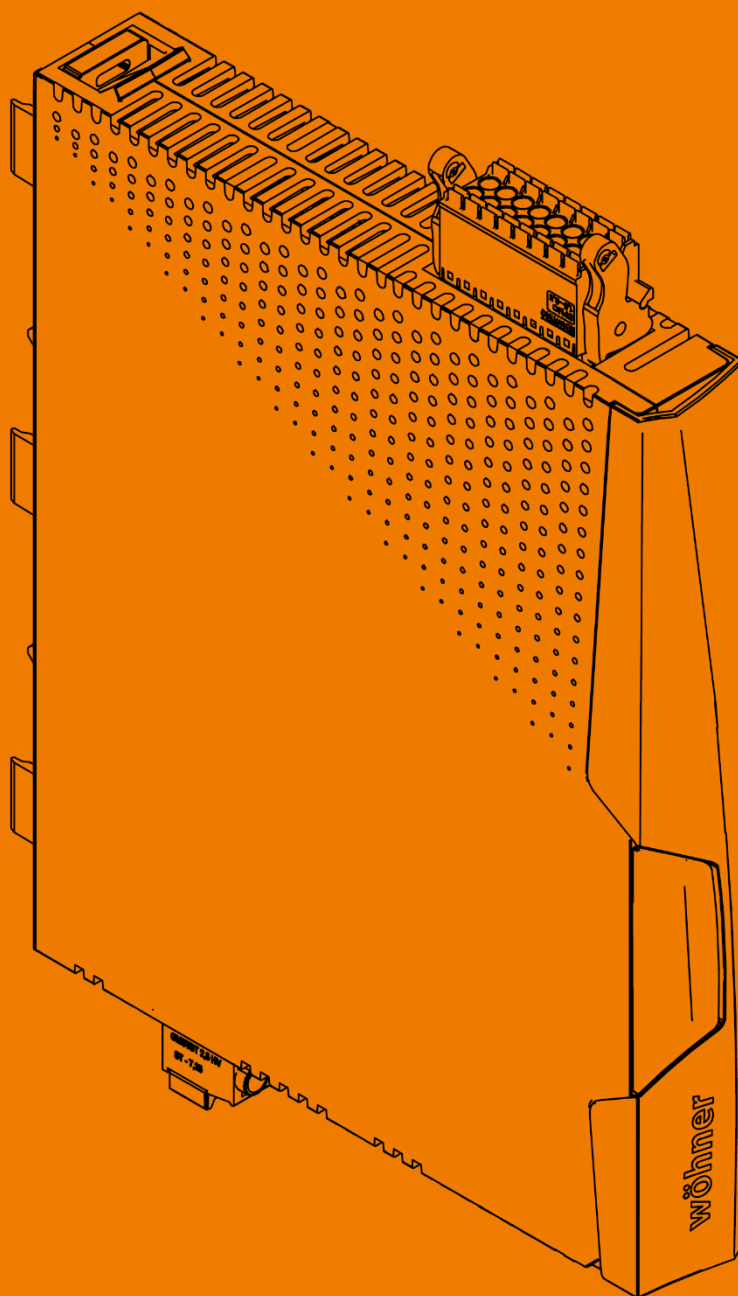


wöhner



MOTUS[®] C14

ALLES MIT SPANNUNG

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2 Description

The 3-phase Motor starter MOTUS®C14 is a compact switching device with 22,5 mm width. The electronic Motor starter includes the following functions:

- Operation mode: right rotation
- Operation mode: left rotation
- Direct- / Reverse Start
- Motor-Overload Protection
- C14 Electronic short circuit protection without fuses
- Galvanic disconnect
- Measurement of Operation Current, Voltage and Power Management
- IO-Link Communication Protocol

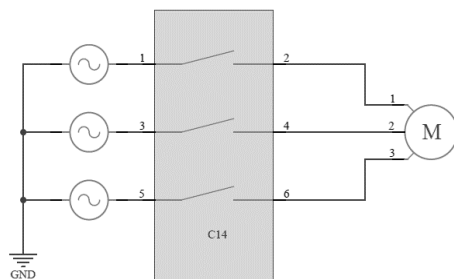
Wiring time is reduced by internal lock of the reverse functionality.

i Please be sure to always use the current document revision. All documents can be found in the download section of the Wöhner homepage, <https://www.woehner.com>

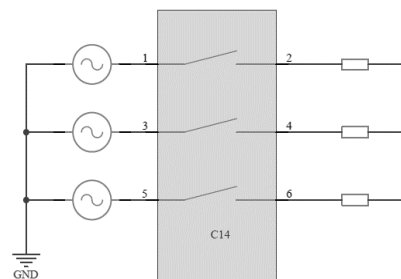
i This document is valid for all products listed in section 4 „Ordering Data“

3 Applications

3.1 Allowed applications



Operation Mode: Inductive Load



Operation Mode: Symmetric Resistive Load

Image 1 Possible applications

- The electronic motor starter is approved exclusively for operation on balanced 3-phase loads. 1-phase operation is not possible! Neutral must not be connected!

3.2 Forbidden applications

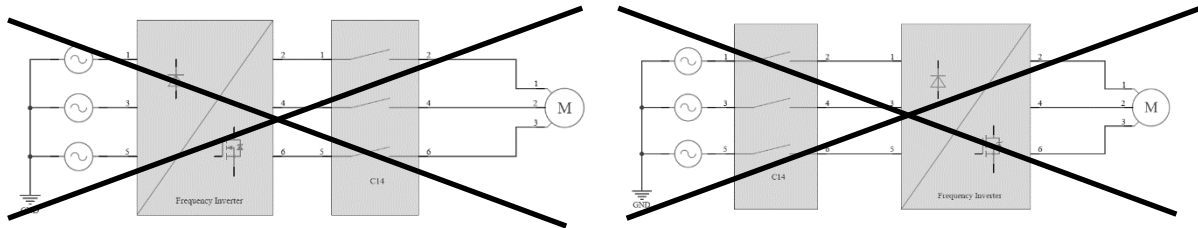


Image 2 Combination with frequency inverter

- The electronic motor starter can't be used in combination with frequency inverters. The typical current and voltage waveforms of a frequency inverter might lead to accidental triggering of internal safety mechanisms.

4 Ordering Data

Product designation	Description	PU	Weight kg/100	Part No.
MOTUS®C14 Connect 2,6 A Panel	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 243
MOTUS®C14 Connect 2,6 A 30Compact	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 244
MOTUS®C14 Connect 2,6 A 60Classic	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 245
MOTUS®C14 Connect 2,6 A CrossBoard	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 246
MOTUS®C14 Connect 6,6 A Panel	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 247
MOTUS®C14 Connect 6,6 A 30Compact	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 248
MOTUS®C14 Connect 6,6 A 60Classic	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 249
MOTUS®C14 Connect 6,6 A CrossBoard	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 250

Product designation	Description	PU	Weight kg/100	Part No.
MOTUS®C14 Connect Plus 2,6 A Panel	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 255
MOTUS®C14 Connect Plus 2,6 A 30Compact	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 256
MOTUS®C14 Connect Plus 2,6 A 60Classic	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 257
MOTUS®C14 Connect Plus 2,6 A CrossBoard	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 258
MOTUS®C14 Connect Plus 6,6 A Panel	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 259
MOTUS®C14 Connect Plus 6,6 A 30Compact	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 260
MOTUS®C14 Connect Plus 6,6 A 60Classic	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 261
MOTUS®C14 Connect Plus 6,6 A CrossBoard	Motor starter with IO-Link; Functions: Start Motor, Reverse Start Motor, Overload Protection, Short Circuit Protection; Selectable Trip Class	1	-	36 262

Mounting Accessories	Description	PU	Weight kg/100	Part No.
EQUES®Panel	Panel Adapter	1	7,2	36 112
EQUES®Compact	30Compact Busbar Adapter	1	7,2	36 113
EQUES®Classic	60Classic Busbar Adapter	1	7,2	36 114

5 Safety regulations / installation notes

5.1 Content EU-Declaration of Conformity

Manufacturer: Wöhner GmbH & Co. KG, Mönchrödener Straße 10, 96472 Rödental, Germany

The valid EU-Declaration of Conformity can be found in the download section linked to the product code on the Wöhner Homepage, <https://www.woehner.com>

Safety regulations and installation notes

- When working on the device, observe the national rules and regulations for electrical safety
- Not observing these safety regulations may result in death, serious injury or equipment damage.
- During operation, voltage is present on the device.
- This device may only be started up, assembled, modified or retrofitted by an authorized electrician. Operation should only be carried out in a suitable electrical cabinet.
- Before working on the device, disconnect the power.
- For safety-related applications, secure the device using access protection.
- Safety data can be found in this documentation and in the certificates.
- Install the device in an appropriate cabinet with a suitable degree of protection.
- Do not subject the device to mechanical and/or thermal loads that exceed the specified values according to IEC/EN 60529 for protection against mechanical or electrical damage.
- Install the device as specified in the installation instructions. Access to circuits inside the device is prohibited.
- Do not attempt to repair the device. Repairs may only be carried out by the manufacturer. The manufacturer is not liable for damage as a result of non-compliance.
- Only use power supply units with safe isolation and SELV/PELV in accordance with EN 50178/VDE 0160 (SELV/PELV). This prevents short circuits between the primary and secondary circuits.
- The minimum allowed Load Current: 2,6 A-device: ≥ 100 mA; 6,6 A-device: ≥ 100 mA

5.2 Area of application

- This is a product for environment A (industrial). The device can cause unwanted radio interference if used in Class B environments (household). If the product is used in Class B environments, additional measures may be required.


5.3 UL notes

 **WARNING: Risk of electrical shock and fire**

The opening of the branch-circuit protective device may be an indication that a fault current has occurred.

To reduce the risk of fire or electric shock, current-carrying parts and the other components of the controller should be examined and replaced if damaged.

Failure to follow instructions can result in death, serious injury, or equipment damage.

 **NOTE: The device is designed for use with a "low voltage, limited energy, isolated power supply". Use copper cables approved to at least 75 °C.**

SCCR

Suitable for use on a circuit with a maximum of 100 kA rms symmetrical amperes and ≤ 480 V.

FLA 2,6 A (480 V AC), 6,6 A (480 V AC).

6 Operating and indication

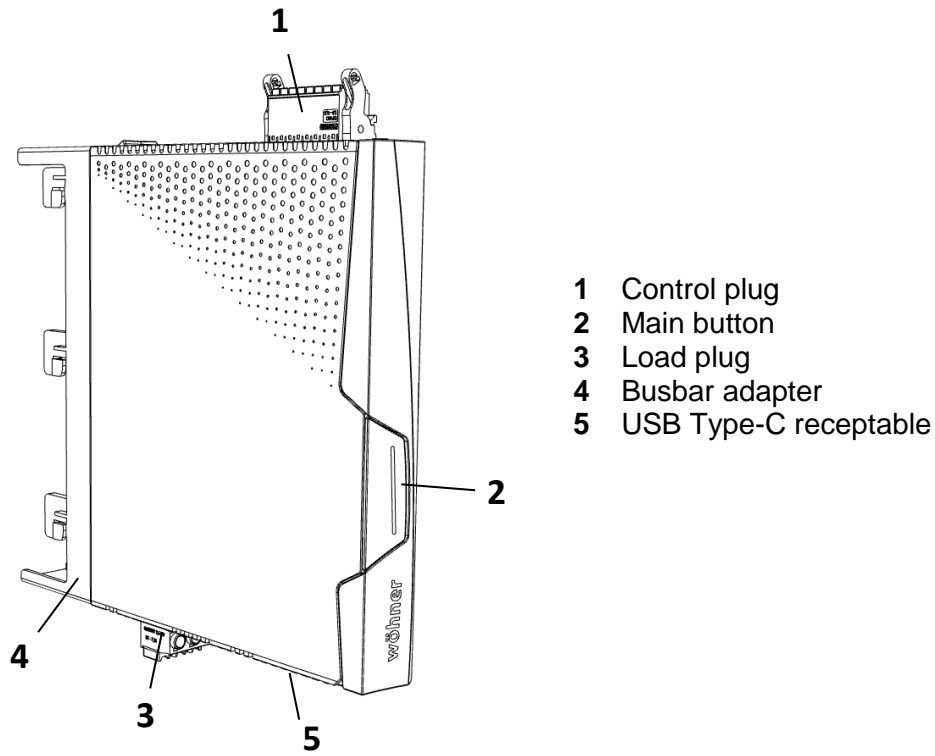


Image 3 Operating and indication for MOTUS®C14 Connect

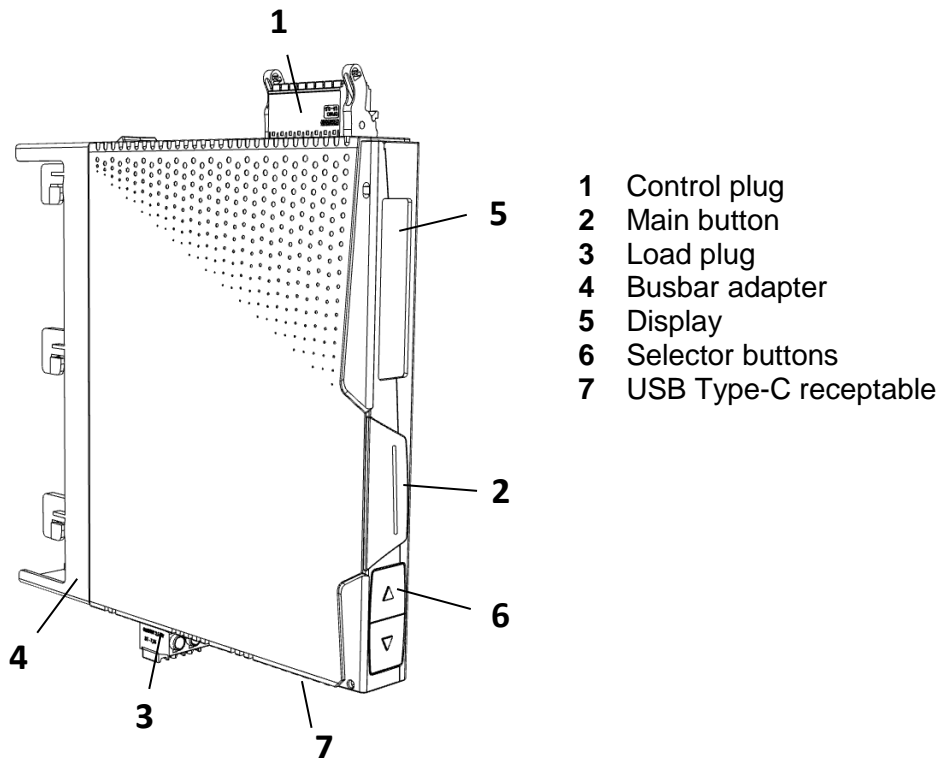


Image 4 Operating and indication for MOTUS®C14 Connect Plus

7 Connections



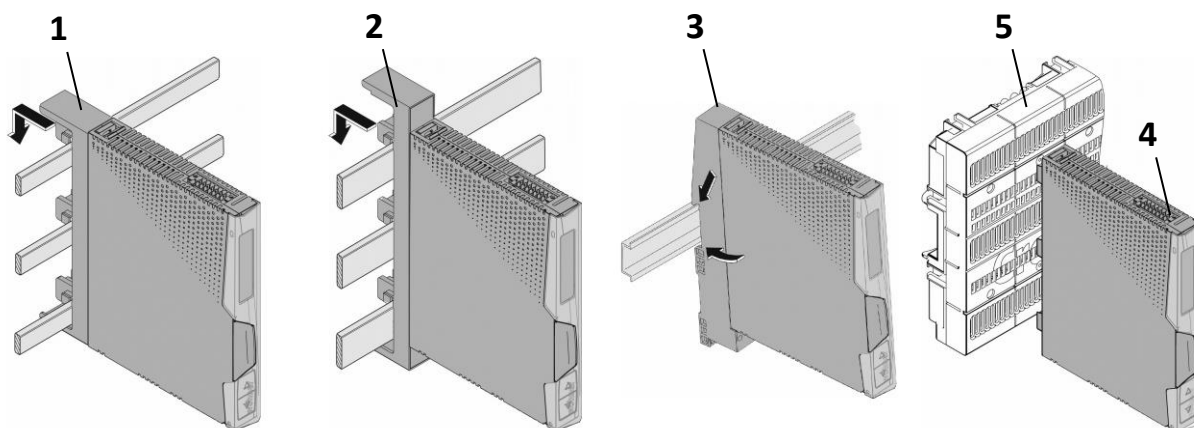
WARNING: Danger to life by electric shock
Never carry out work when voltage is present.

7.1 Main connection and line protection

- When making the phase connection, it is essential to observe the terminal identification.
- The control supply voltage and control voltage inputs must be operated with power supply modules according to IEC 61131-2 (max. 5 % residual ripple).
- In order to avoid inductive or capacitive coupling of noise emissions, the use of shielded conductors is recommended.

7.2 Mounting

- Snap the electronic motor starter onto the respective busbar system 30Compact, 60Classic or directly onto the CrossBoard®.

**Image 5** Mounting onto adapters and CrossBoard

- 1 Busbar adapter 30Compact
- 2 Busbar adapter 60Classic
- 3 DIN rail adapter
- 4 Electronical motor starter
- 5 CrossBoard®

7.3 Standard connection

- The standard connection is made using a 16-pin connector. Connect the cables to the control plug of the motor starter.
- To put the motor into operation, you **have to** enable the device via the enable input.
- As soon as a valid signal is present at the enable input (at terminals EN + and EN-), the device will accept control commands.
- It is possible to assign a persistent valid signal at the enable inputs through connecting terminals (6) and (5) as well as terminals (8) and (7).

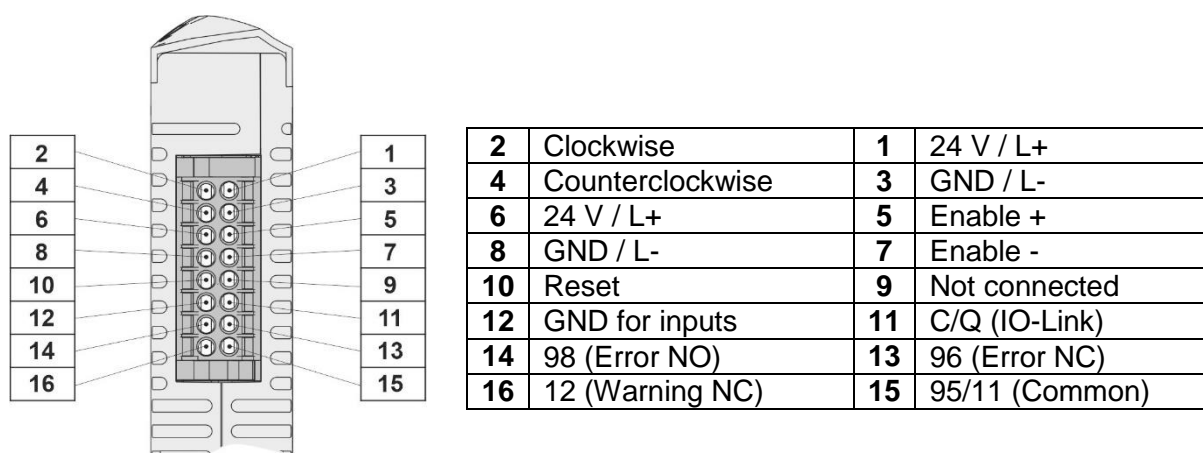


Image 6 Pin assignment – Control Plug

- The control inputs **Clockwise**, **Counterclockwise** and **Reset** are galvanically isolated from the 24V control circuit.
- Common reference for those control inputs is terminal **GND for inputs**.
- The enable terminals **Enable +** and **Enable -** are galvanically isolated from the 24V control circuit and from the other control inputs.
- Since a base insulation exists, it is allowed to wire the terminals **GND for inputs** and **GND** together.



WARNING: Do not use control voltages > 24V. Control voltages >24V will damage the device.

7.4 IO-Link connection

- The IO-Link connection is made using the same 16-pin connector as the standard connection.
- Only terminals **1**, **3**, **5 - 8** and **11** are necessary for correct device operation via IO-Link. The use of all remaining terminals is optional.
- To put the motor into operation, you **have to** enable the device via the enable input. (see 7.3 Standard connection)

7.5 Connecting the cables

7.5.1 Screw connection

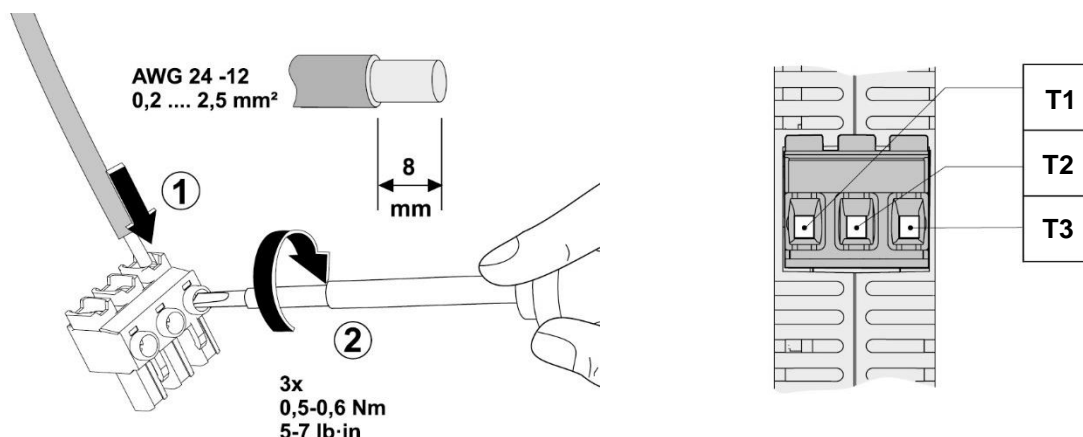


Image 7 Screw connection

- Strip 8 mm of insulation from the individual wires.
- Plug the conductor into the corresponding terminal block.
- Tighten the screw in the opening above the connection terminal with a screwdriver.

7.5.2 Push-in connection

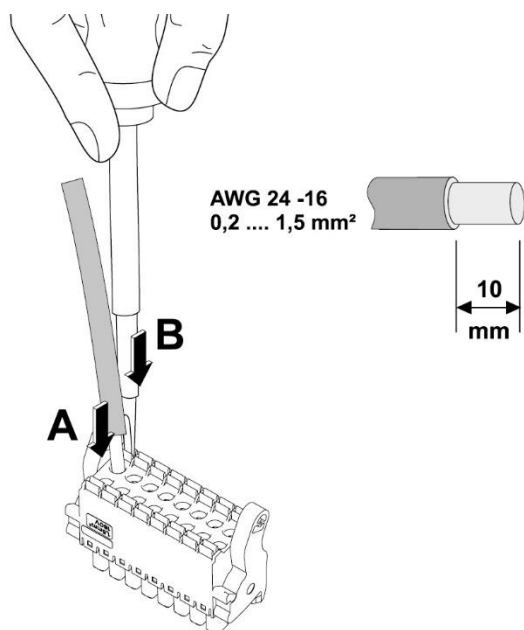


Image 8 Push-in connection

- Rigid or flexible conductors with ferrules, can be inserted directly into the terminal. (A).
- Flexible conductors without ferrules can be inserted safely by opening the terminal spring with the pressure release. (B).
- To remove the conductor, the terminal spring must be opened using the pressure release (B).
- If necessary, use a fixture to fix the plug during connection.

8 Eplan symbol

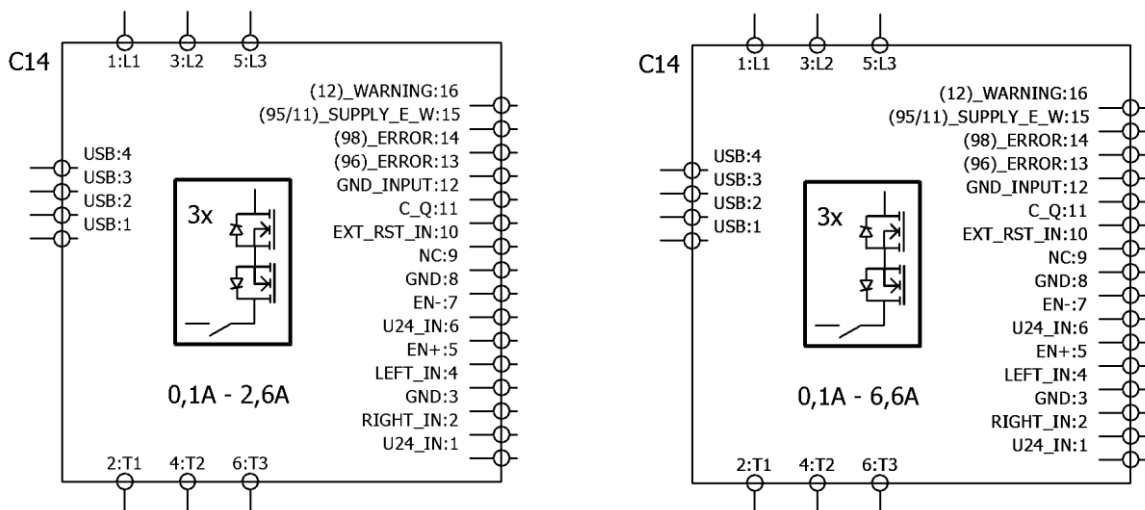


Image 9 Eplan symbol MOTUS®C14

9 ServiceTool

- The MOTUS®C14 can be configured using a PC via the ServiceTool. The connection between the device and PC is established via a USB-cable.
- The current version of the ServiceTool can be downloaded at: <https://www.motus-c14.de/en/servicetool>
- The ServiceTool has a user management where different roles are available:
 - „Customer“ does not require a password and only has read permissions.
 - „Supervisor“ has a predefined password: „C14Supervisor“ and has write permissions for device configuration.

10 User interface

- Navigate through the main menu screens by pressing the main button (1)
- The main menu screens are: home screen, settings menu and three measurement screens displaying current, voltage and power.
- Scroll through the settings menu by pressing the arrow buttons (2 and 3). To select/confirm a setting you want to change press the main button (1).

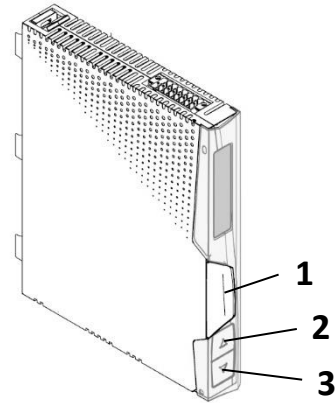


Image 10 Main button and Arrow buttons

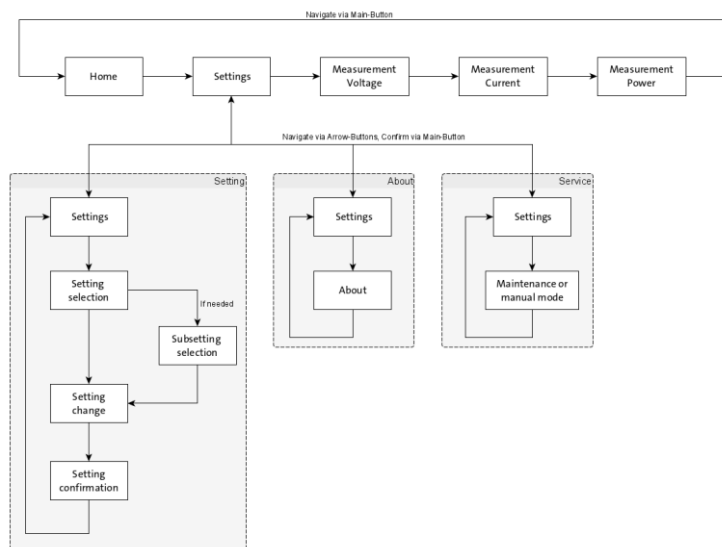


Image 11 User interaction - MOTUS®C14 Connect+

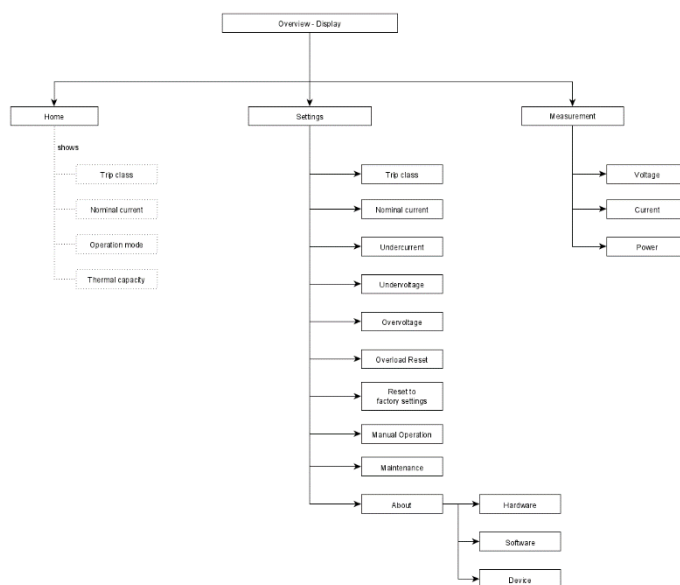


Image 12 Screen overview - MOTUS®C14 Connect+

11 Warnings and Errors


11.1 Warning codes

W1402	Load undercurrent (adjustable)
W1403	Main overvoltage (adjustable)
W1404	Main undervoltage (adjustable)
W1405	Device overtemperature (>60 °C)
W1406	Motor overload (depending on selected tripping class and nominal current)
W1407	Asymmetric Load (>33 %)
W1408	Phase loss (Load)
W1409	Phase loss (Main)
W1413	Undervoltage (control circuit supply; <20,0 Vdc)
W1414	Overvoltage (control circuit supply; >28,8 Vdc)
W1415	No security clearance (at enable terminals)
W1416	Switching frequency too high (>2 Hz)
W1417	Loss IO-Link communication

11.2 Error codes


E1402	Load undercurrent (adjustable)
E1403	Main overvoltage (adjustable)
E1404	Main undervoltage (adjustable)
E1405	Device overtemperature (>80 °C)
E1406	Motor overload (depending on selected tripping class and nominal current)
E1407	Asymmetric Load (>66 %)
E1408	Phase loss (Load)
E1409	Phase loss (Main)
E1410	Short circuit (Load)
E1411	Device error
E1412	No UART-communication
E1413	Undervoltage (control circuit supply; <17,0 Vdc)
E1414	Overvoltage (control circuit supply; >30,0 Vdc)

11.3 Error Acknowledgement

 In case that a warning occurs, the connected load will continue to operate normally.

- Warnings **cannot** be acknowledged.
- As soon as the cause of a warning disappeared the warning will also disappear without user interaction.

 **Important: Errors are leading to a load switch-off.**

 **Important: The root cause of an error has to be analyzed and fixed before acknowledging the error.**

- An error can be acknowledged by pressing the main button for 2s, via a Analog Reset Signal or via IO-Link.

12 Reset to Factory Settings

- It is possible to reset the device setting to factory defaults using the ServiceTool or the Display.

13 Nominal current – Tripclass Combinations, 2,6 A

Nominal current	TC 2E	TC 3E	TC 5	TC 10A	TC 10	TC 20	TC 30	TC 40E
0,1 A	X	X	X	X	X	X	X	X
0,2 A	X	X	X	X	X	X	X	X
0,3 A	X	X	X	X	X	X	X	X
0,4 A	X	X	X	X	X	X	X	X
0,5 A	X	X	X	X	X	X	X	X
0,6 A	X	X	X	X	X	X	X	X
0,7 A	X	X	X	X	X	X	X	X
0,8 A	X	X	X	X	X	X	X	X
0,9 A	X	X	X	X	X	X	X	X
1,0 A	X	X	X	X	X	X	X	X
1,1 A	X	X	X	X	X	X	X	X
1,2 A	X	X	X	X	X	X	X	X
1,3 A	X	X	X	X	X	X	X	X
1,4 A	X	X	X	X	X	X	X	X
1,5 A	X	X	X	X	X	X	X	X
1,6 A	X	X	X	X	X	X	X	X
1,7 A	X	X	X	X	X	X	X	X
1,8 A	X	X	X	X	X	X	X	X
1,9 A	X	X	X	X	X	X	X	X
2,0 A	X	X	X	X	X	X	X	○
2,1 A	X	X	X	X	X	X	X	○
2,2 A	X	X	X	X	X	X	X	○
2,3 A	X	X	X	X	X	X	X	○
2,4 A	X	X	X	X	X	X	X	○
2,5 A	X	X	X	X	X	X	○	○
2,6 A	X	X	X	X	X	X	○	○

Allowed Combination

Restricted Combination

14 Nominal current - Tripclass Combinations, 6,6 A

Nominal Current	TC 2E	TC 3E	TC 5	TC 10A	TC 10	TC 20	TC 30	TC 40E
0,1 A	X	X	X	X	X	X	X	X
0,2 A	X	X	X	X	X	X	X	X
0,3 A	X	X	X	X	X	X	X	X
0,4 A	X	X	X	X	X	X	X	X
0,5 A	X	X	X	X	X	X	X	X
0,6 A	X	X	X	X	X	X	X	X
0,7 A	X	X	X	X	X	X	X	X
0,8 A	X	X	X	X	X	X	X	X
0,9 A	X	X	X	X	X	X	X	X
1,0 A	X	X	X	X	X	X	X	X
1,1 A	X	X	X	X	X	X	X	X
1,2 A	X	X	X	X	X	X	X	X
1,3 A	X	X	X	X	X	X	X	X
1,4 A	X	X	X	X	X	X	X	X
1,5 A	X	X	X	X	X	X	X	X
1,6 A	X	X	X	X	X	X	X	X
1,7 A	X	X	X	X	X	X	X	X
1,8 A	X	X	X	X	X	X	X	X
1,9 A	X	X	X	X	X	X	X	X
2,0 A	X	X	X	X	X	X	X	X
2,1 A	X	X	X	X	X	X	X	X
2,2 A	X	X	X	X	X	X	X	X
2,3 A	X	X	X	X	X	X	X	X
2,4 A	X	X	X	X	X	X	X	X
2,5 A	X	X	X	X	X	X	X	○
2,6 A	X	X	X	X	X	X	X	○
2,7 A	X	X	X	X	X	X	X	○
2,8 A	X	X	X	X	X	X	X	○
2,9 A	X	X	X	X	X	X	X	○
3,0 A	X	X	X	X	X	X	X	○
3,1 A	X	X	X	X	X	X	○	○
3,2 A	X	X	X	X	X	X	○	○
3,3 A	X	X	X	X	X	X	○	○
3,4 A	X	X	X	X	X	X	○	○
3,5 A	X	X	X	X	X	X	○	○
3,6 A	X	X	X	X	X	○	○	○
3,7 A	X	X	X	X	X	○	○	○
3,8 A	X	X	X	X	X	○	○	○
3,9 A	X	X	X	X	X	○	○	○
4,0 A	X	X	X	X	X	○	○	○
4,1 A	X	X	X	X	X	○	○	○
4,2 A	X	X	X	X	X	○	○	○
4,3 A	X	X	X	X	X	○	○	○
4,4 A	X	X	X	X	X	○	○	○
4,5 A	X	X	X	X	X	○	○	○
4,6 A	X	X	X	X	X	○	○	○
4,7 A	X	X	X	X	○	○	○	○
4,8 A	X	X	X	X	○	○	○	○
4,9 A	X	X	X	X	○	○	○	○
5,0 A	X	X	X	X	○	○	○	○
5,1 A	X	X	X	X	○	○	○	○
5,2 A	X	X	X	X	○	○	○	○
5,3 A	X	X	X	X	○	○	○	○
5,4 A	X	X	X	X	○	○	○	○
5,5 A	X	X	X	X	○	○	○	○
5,6 A	X	X	X	X	○	○	○	○
5,7 A	X	X	X	X	○	○	○	○
5,8 A	X	X	X	X	○	○	○	○
5,9 A	X	X	X	X	○	○	○	○
6,0 A	X	X	X	X	○	○	○	○
6,1 A	X	X	X	X	○	○	○	○
6,2 A	X	X	X	X	○	○	○	○
6,3 A	X	X	X	X	○	○	○	○
6,4 A	X	X	X	○	○	○	○	○
6,5 A	X	X	X	○	○	○	○	○
6,6 A	X	X	X	○	○	○	○	○

Allowed Combination

Restricted Combination

15 Tripping curves (cold state)

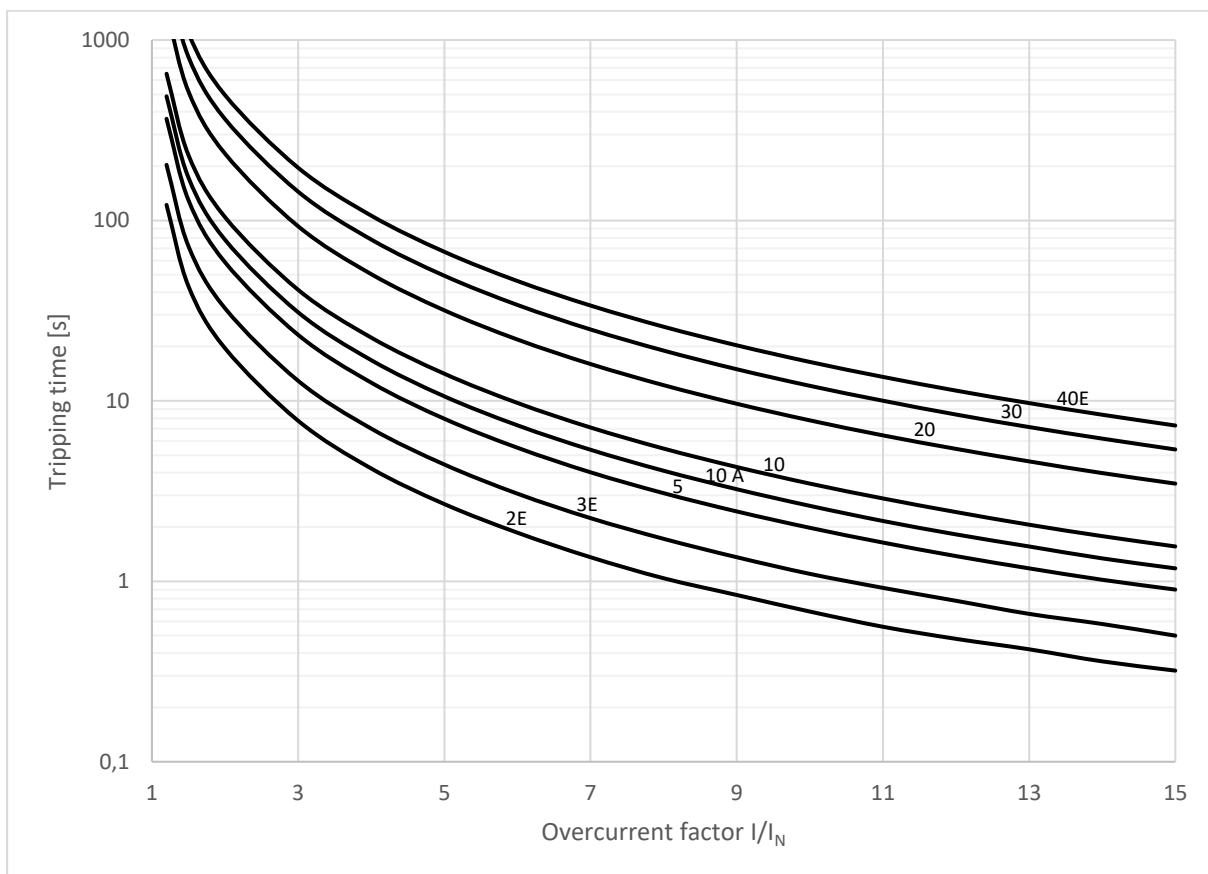


Image 13 Diagram - Tripping times (cold state)

Table 1: Tripping times [hh:mm:ss] (cold state)

I / I _N	TC 2E	TC 3E	TC 5	TC 10A	TC 10	TC 20	TC 30	TC 40E
1,2	00:02:02	00:03:23	00:06:06	00:08:08	00:10:50	00:24:23	00:37:56	00:51:29
1,5	00:00:43	00:01:12	00:02:09	00:02:52	00:03:50	00:08:37	00:13:25	00:18:12
2	00:00:20	00:00:33	00:00:59	00:01:18	00:01:44	00:03:54	00:06:05	00:08:15
3	00:00:08	00:00:13	00:00:23	00:00:31	00:00:41	00:01:33	00:02:24	00:03:16
4	00:00:04	00:00:07	00:00:13	00:00:17	00:00:22	00:00:50	00:01:18	00:01:46
5	00:00:03	00:00:04	00:00:08	00:00:11	00:00:14	00:00:32	00:00:49	00:01:07
6	00:00:02	00:00:03	00:00:05	00:00:07	00:00:10	00:00:22	00:00:34	00:00:46
7	00:00:01	00:00:02	00:00:04	00:00:05	00:00:07	00:00:16	00:00:25	00:00:34
8	00:00:01	00:00:02	00:00:03	00:00:04	00:00:05	00:00:12	00:00:19	00:00:26
9	00:00:01	00:00:01	00:00:02	00:00:03	00:00:04	00:00:10	00:00:15	00:00:20
10	00:00:01	00:00:01	00:00:02	00:00:03	00:00:03	00:00:08	00:00:12	00:00:16
11	00:00:01	00:00:01	00:00:02	00:00:02	00:00:03	00:00:06	00:00:10	00:00:14
12	00:00:00	00:00:01	00:00:01	00:00:02	00:00:02	00:00:05	00:00:08	00:00:11
13	00:00:00	00:00:01	00:00:01	00:00:02	00:00:02	00:00:05	00:00:07	00:00:10
14	00:00:00	00:00:01	00:00:01	00:00:01	00:00:02	00:00:04	00:00:06	00:00:08
15	00:00:00	00:00:01	00:00:01	00:00:01	00:00:02	00:00:03	00:00:05	00:00:07

16 Tripping curves (thermal equilibrium)

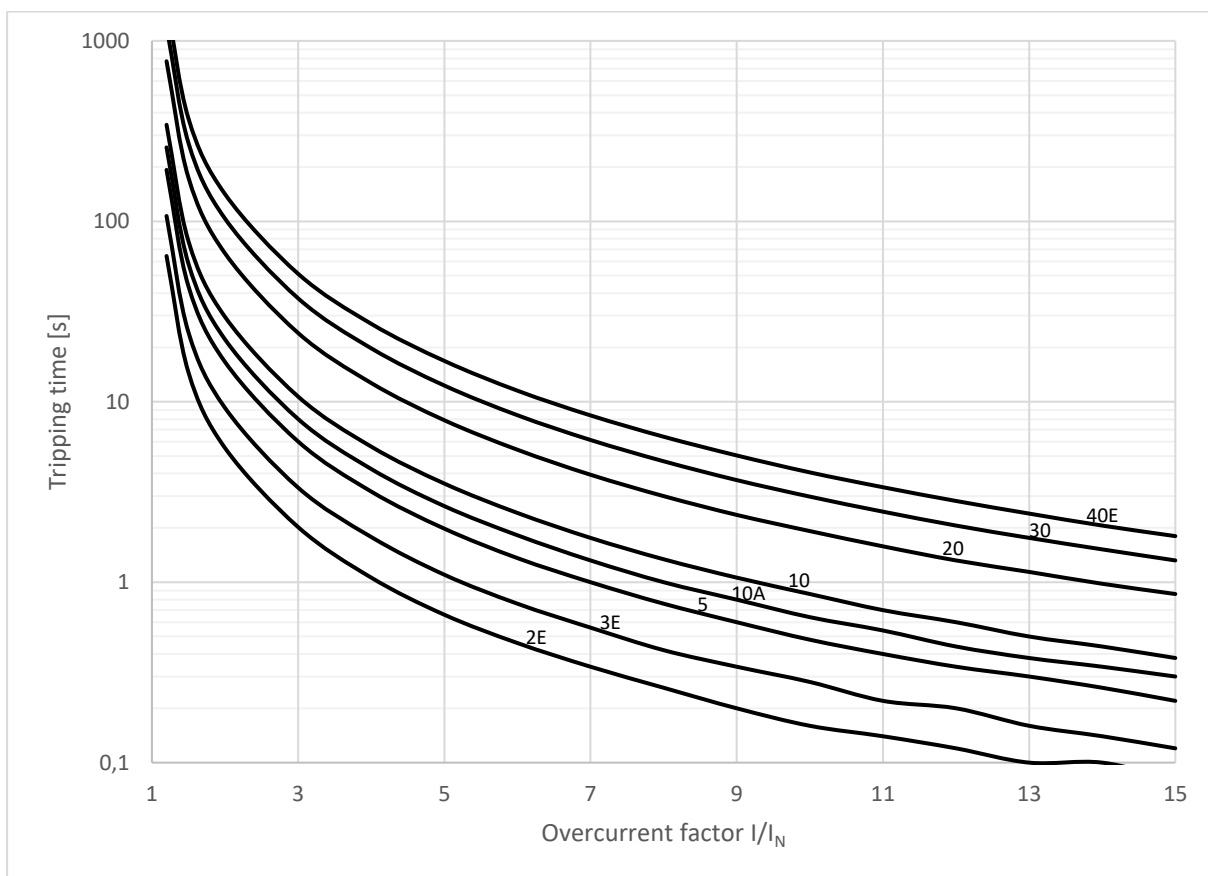


Image 14 Diagram - tripping times (thermal equilibrium)

Table 2: Tripping time [hh:mm:ss] (thermal equilibrium)

I / I _N	TC 2E	TC 3E	TC 5	TC 10A	TC 10	TC 20	TC 30	TC 40E
1,2	00:01:04	00:01:47	00:03:13	00:04:17	00:05:43	00:12:51	00:20:00	00:27:15
1,5	00:00:15	00:00:24	00:00:44	00:00:58	00:01:17	00:02:54	00:04:31	00:06:11
2	00:00:06	00:00:09	00:00:17	00:00:22	00:00:30	00:01:06	00:01:43	00:02:21
3	00:00:02	00:00:03	00:00:06	00:00:08	00:00:11	00:00:24	00:00:37	00:00:51
4	00:00:01	00:00:02	00:00:03	00:00:04	00:00:06	00:00:13	00:00:20	00:00:27
5	00:00:01	00:00:01	00:00:02	00:00:03	00:00:04	00:00:08	00:00:12	00:00:17
6	00:00:00	00:00:01	00:00:01	00:00:02	00:00:02	00:00:05	00:00:08	00:00:12
7	00:00:00	00:00:01	00:00:01	00:00:01	00:00:02	00:00:04	00:00:06	00:00:08
8	00:00:00	00:00:00	00:00:01	00:00:01	00:00:01	00:00:03	00:00:05	00:00:06
9	00:00:00	00:00:00	00:00:01	00:00:01	00:00:01	00:00:02	00:00:04	00:00:05
10	00:00:00	00:00:00	00:00:00	00:00:01	00:00:01	00:00:02	00:00:03	00:00:04
11	00:00:00	00:00:00	00:00:00	00:00:01	00:00:01	00:00:02	00:00:02	00:00:03
12	00:00:00	00:00:00	00:00:00	00:00:00	00:00:01	00:00:01	00:00:02	00:00:03
13	00:00:00	00:00:00	00:00:00	00:00:00	00:00:01	00:00:01	00:00:02	00:00:02
14	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:01	00:00:02	00:00:02
15	00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	00:00:01	00:00:01	00:00:02

17 Overload cool down times

The "overload" error can only be acknowledged when the value of the thermal capacity has fallen below 75 %.

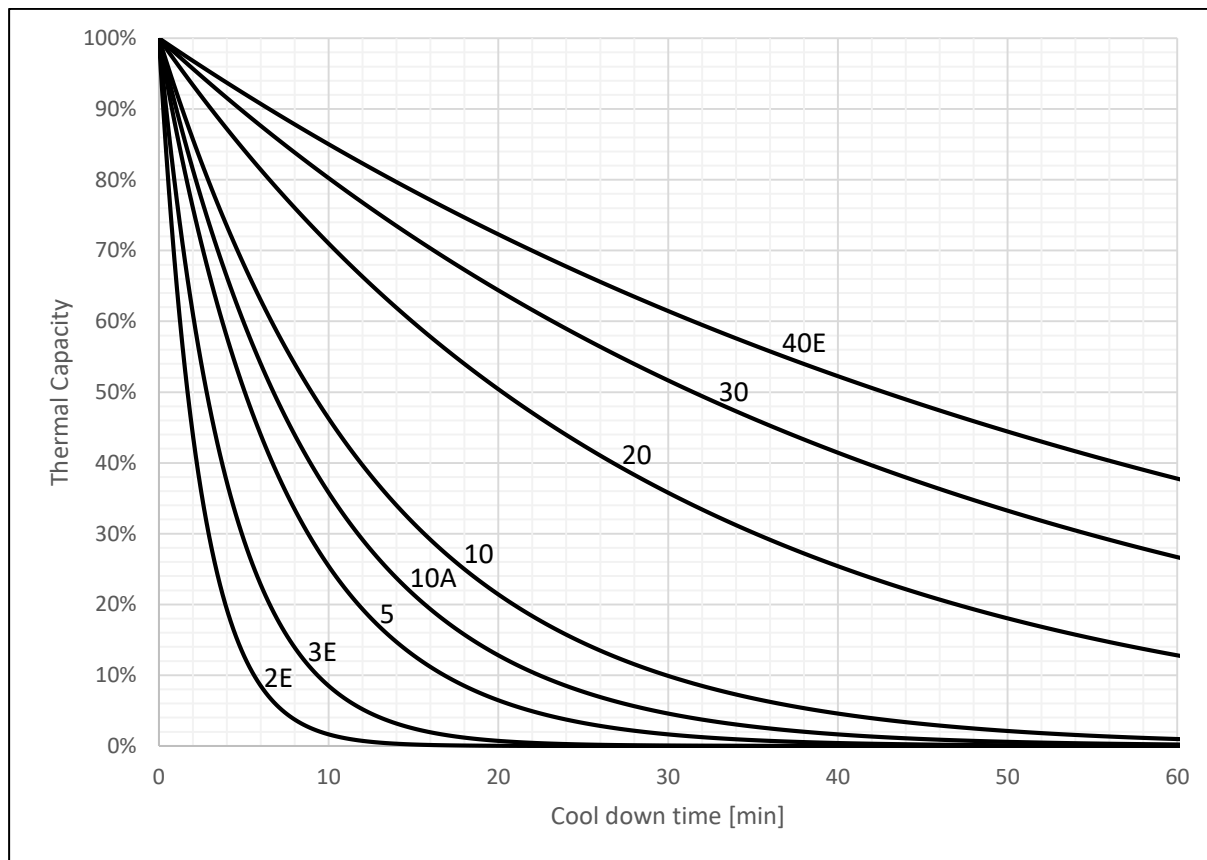


Image 15 Diagram – cool down times

Table 3: Cool down times [hh:mm:ss]

Therm. C.	TC 2E	TC 3E	TC 5	TC 10A	TC 10	TC 20	TC 30	TC 40E
100 – 75 %	00:00:42	00:01:10	00:02:06	00:02:48	00:03:44	00:08:24	00:13:04	00:17:44
100 – 50 %	00:01:41	00:02:48	00:05:04	00:06:44	00:09:00	00:20:14	00:31:28	00:42:42
100 – 25 %	00:03:22	00:05:38	00:10:07	00:13:29	00:17:58	00:40:28	01:02:56	01:25:26
100 – 0 %	00:11:14	00:18:42	00:33:38	00:44:50	00:59:46	01:07:14	01:44:34	02:21:56

18 Permitted overcurrent factors

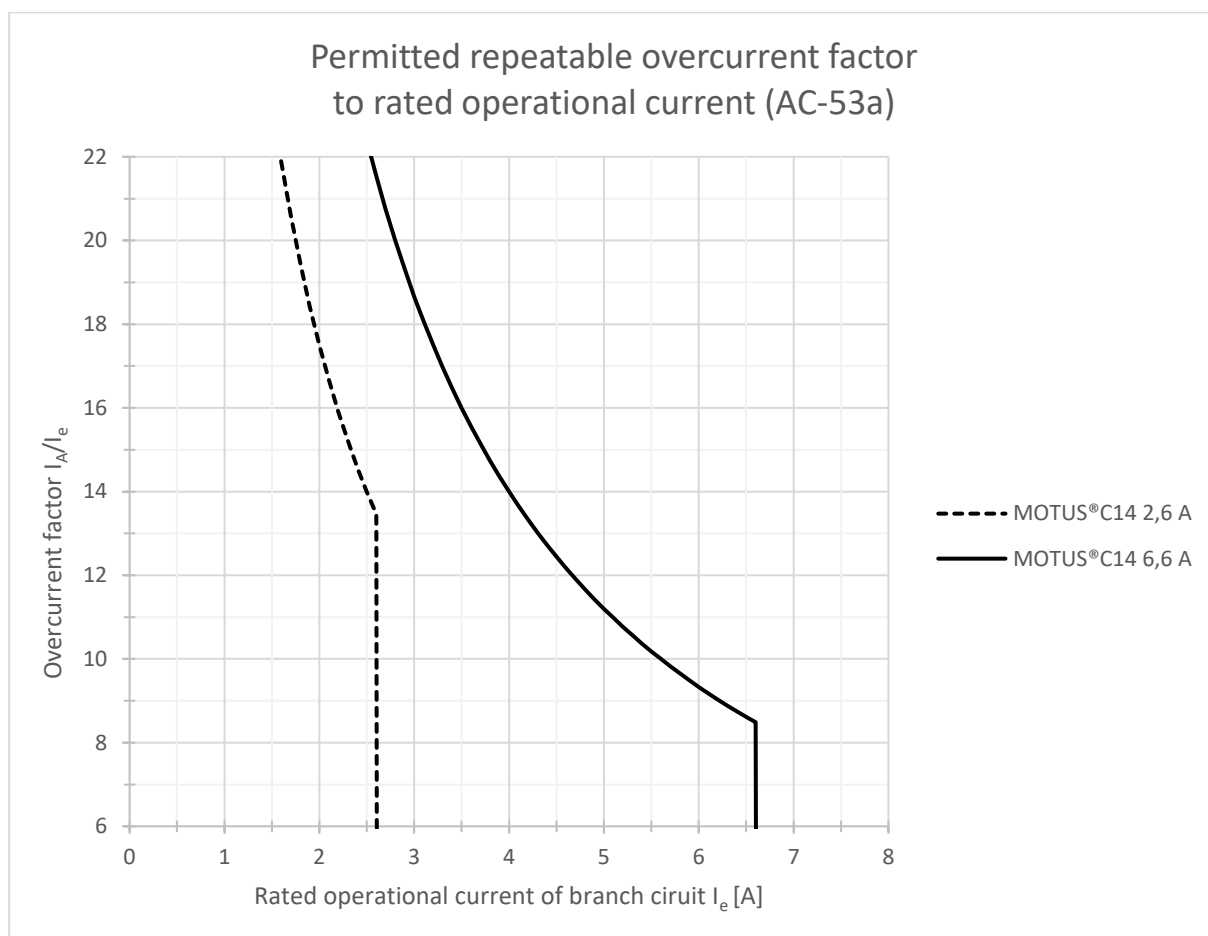


Image 16 Permitted repeatable overcurrent factor to rated operational current

- The starting current of the load must not exceed 56 A (6,6A device) resp. 35 A (2,6A device)
- Higher currents can cause the internal protective circuits to trip

19 Derating

2,6 A-devices: device vertical, motor output below

Ambient temperature [°C]	35	55	70
Max. load current [A], with 22,5mm spacing between devices	2,6	2,6	-
Max. load current [A], without spacing	2,6	2,4	-

6,6 A-devices: device vertical, motor output below (dynamic fan control)

Ambient temperature [°C]	35	55	70
Max. load current [A], with 22,5mm spacing between devices	6,6	6,6	-
Max. load current [A], without spacing	5,3	5,3	-

20 IO-Link interface

20.1 Process Data In (PDIN)

Byte	Bit offset	Name	Datatype
1	72	Bit 7: reserved Bit 6: reserved Bit 5: Softstart active Bit 4: External enable signal Bit 3: Counterclockwise rotation Bit 2: Clockwise rotation Bit 1: Warning detected Bit 0: Error detected	bool
2	64	Bit 7: reserved Bit 6: reserved Bit 5: reserved Bit 4: 0: error, overload 1: no error Bit 3...0: error type 0: Device OK 1: Short circuit 2: Overload 3: Phase asymmetry 4: Phase loss 5: Undercurrent 6: Supply loss 7: Undervoltage Supply 8: Overvoltage Supply 9: Overtemperature 10: Undervoltage Aux 11: Overvoltage Aux 12: Device error 13: Communication error 14: Security clearance	
3	56	Nominal current [unit 100mA]	uint8
4	48	Bit 7...6: Phase ID 0: Phase L1 1: Phase L2 2: Phase L3 Bit 5: reserved Bit 4: reserved Bit 3: reserved Bit 2...0: Trip class 0: Class 2E 1: Class 3 2: Class 5 3: Class 10A 4: Class 10 5: Class 20 6: Class 30 7: Class 40E	enum
5	32	Motor current [unit: 10mA]	uint16
6	16	Input voltage [unit: 10mV]	uint16
7	8	Thermal load [unit: %]	uint8

8	0	Bit 7: reserved Bit 6: reserved Bit 5: reserved Bit 4: reserved Bit 3...0: Device Type 0: Motorstarter C14 Connect Plus 2,6 A 1: Motorstarter C14 Connect Plus 6,6 A 2: Motorstarter C14 Connect Plus 8,5 A 3: Motorstarter C14 Connect 2,6 A 4: Motorstarter C14 Connect 6,6 A 5: Motorstarter C14 Connect 8,5 A	enum
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20.2 Process Data Out (PDOOUT)

Byte	Bit offset	Name	Datatype
1	0	Bit 7: reserved Bit 6: reserved Bit 5: External stop signal Bit 4: Soft start on/off Bit 3: Automatic reset Bit 2: Manual reset Bit 1: Counterclockwise rotation Bit 0: Clockwise rotation	bool

20.3 Predefined ISDU parameters

Index	Parameter Name	Length	Access	Value / Default Value
16	Vendor Name	max 64 Bytes	RO	Wöhner GmbH & Co. KG
17	Vendor Text	max 64 Bytes	RO	www.woehner.de
18	Product Name	max 64 Bytes	RO	MOTUS®C14 Connect Plus 2,6 A e-motor starter*
19	Product ID	max 64 Bytes	RO	36258*
20	Product Text	max 64 Bytes	RO	MOTUS®C14 Connect Plus 2,6 A e-motor starter IO-Link*
21	Serial Number	max 16 Bytes	RO	00001*
22	Hardware Revision	max 64 Bytes	RO	01:06:07* (CB:PB:DB)
23	Firmware Revision	max 64 Bytes	RO	V0.4.2.5*
24	Application Specific Tag	32 Bytes	RW	"" (string)
25	Function Tag	32 Bytes	RW	"" (string)
26	Location Tag	32 Bytes	RW	"" (string)
32	Error Count	2 Bytes	RO	-
36	Device Status	1 Byte	RO	- (current device status)
37	Detailed Device Status	21 Bytes	RO	- (currently pending events)
40	Process Data Input	10 Bytes	RO	-
41	Process Data Output	1 Byte	RO	-

* Beispiel

20.4 Application specific parameters

Index	Data Type	Length	Access	Name	Description	Default Value	Unit
66	uint	1 Byte	RW	Nominal Current	Maximum value 26 / 66	1 = 100 mA	100 mA
67	uint	1 Byte	RW	Trip class	0: Class 2E 1: Class 3 2: Class 5 3: Class 10A 4: Class 10 5: Class 20 6: Class 30 7: Class 40E	0	
68	uint	2 Bytes	RO	Motor current L1 (RMS)			100 mA
69	uint	2 Bytes	RO	Motor current L2 (RMS)			100 mA
70	uint	2 Bytes	RO	Motor current L3 (RMS)			100 mA
71	uint	2 Bytes	RO	Input Voltage L1 (RMS)			10 mV
72	uint	2 Bytes	RO	Input Voltage L2 (RMS)			10 mV
73	uint	2 Bytes	RO	Input Voltage L3 (RMS)			10 mV

20.5 System Commands

Command	Name
128	Device Reset
129	Application Reset
130	Restore factory settings

21 Technical Data

Device supply	
Rated control circuit supply voltage U_s	24 V DC
Control supply voltage range	20,4 V DC - 26,4 V DC
Rated control supply current I_s	200 mA
Protective circuits	Overvoltage protection Reverse polarity protection

Digital input in acc. IEC 60947-1 Annex S	
Rated actuating voltage U_c	24 V DC
Rated actuating current I_c	7 mA
Switching level	< 6 V („0“/Low-Signal) >12 V („1“/High-Signal)
Switch-On time typ.	< 20 ms
Switch-Off time typ.	< 20 ms

AC output	
Rated operational voltage range U_e	130 V AC - 500 V AC
Rated insulation voltage U_i	500 V AC
Load current range, see 19 Derating	0,1 - 2,6 A / 0,1 A - 6,6 A
Maximum starting current	35A (2,6 A) / 56A (6,6 A)
Rated conditional short-circuit current I_q	100 kA (coordination type 2, without additional fuse)
SCCR	100 kA
Trigger characteristic in acc. IEC 60947-4-2	2E, 3E, 5, 10A, 10, 20, 30, 40E
Tripping current	110% Nominal current
Overload cooling time	Dynamic, see tripping curves
100% to 75% (2E, nominal current 1 A)	45 s
100% to 75% (2E, nominal current 3 A)	45 s
100% to 75% (10, nominal current 3 A)	3 min 45 s
100% to 75% (30, nominal current 1 A)	13 min
Rated operating current I_e AC-53a	2,6 A / 6,6 A
Rated operating current I_e AC-51	2,6 A / 6,6 A
Leakage current	0,5 mA
Protective circuits	Overvoltage protection Varistors

Indication of main button LEDs	
Ready for Operation	white
Operation Mode (Forward / Backward)	green
Warning	yellow
Error	red

General data	
Mounting position	vertical (horizontal DIN rail, motor output below)
Mounting	alignable, for spacing see Derating
Operation mode	100 % ED
Protection class	IP20
Power Loss min./max.	6 W / 11 W (2,6 A), 21 W (6,6 A)
Dimensions W / H / D	22,5 mm / 160 mm / 132,5 mm
Warning relay	NO: 277 Vac, 1 A 30 Vdc, 2 A (4 A up to 40 °C)
Error relay	CO: 277 Vac, 1 A 30 Vdc, 2 A (4 A up to 40 °C)

Insulation properties	
Rated insulation voltage	500 V
Rated surge voltage	4 kV
Overvoltage category (incl. requirement for safe separation)	
at maximum rated operational voltage to earth ≤ 300 V	I - III
at maximum rated operational voltage to earth ≤ 500 V	I - II
Overvoltage category (without requirement for safe separation)	
at maximum rated operational voltage to earth ≤ 300 V	I - IV
at maximum rated operational voltage to earth ≤ 500 V	I - III
Degree of pollution	2

Connection data	
Designation of connection	Control circuit
Connection type	Push-in connection
Conductor cross section flexible without ferrule	0,2 - 1,5 mm ² /AWG 24 - 16
Conductor cross section flexible with ferrule without plastic sleeve	0,25 - 1,5 mm ² /AWG 24 - 16
Conductor cross section flexible with ferrule with plastic sleeve	0,14 - 0,75 mm ² /AWG 26 - 18
Conductor cross section solid	0,2 - 1,5 mm ² /AWG 24 - 16
Stripping length	10 mm
Designation of connection	Load circuit
Connection type	Screw connection
Tightening torque	0,5 - 0,6 Nm / 5 lb _f -in. - 7 lb _f -in.
Conductor cross section flexible without ferrule	0,2 - 2,5 mm ² (f)/AWG 24 - 12
Conductor cross section flexible with ferrule without plastic sleeve	0,2 - 2,5 mm ² (f+AE)/AWG 24 - 14
Conductor cross section flexible with ferrule with plastic sleeve	0,2 - 2,5 mm ² (f+AE)/AWG 24 - 14
Conductor cross section solid	0,2 - 2,5 mm ² (re)/AWG 24 - 14
Stripping length	8 mm

Ambient conditions	
Ambient temperature (operation)	-5 °C - +55 °C (note derating)
Relative humidity r.H.	5 - 95 %, non condensing
Ambient temperature (storage/transport)	-40 °C - +70 °C

Standards / regulations	
Standards	IEC / EN 60947-4-2 IEC / EN 60947-1
UL approval	E510845
For use with Adapters	MCC-60-2, MCC-30-2, MCC-PA-2

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