Your Global Automation Partner

TURCK

Cabinet Guard
IM12-CCM03…

Operating instructions

Contents

1 About these Instructions

These operating instructions describe the structure, functions and the use of the product, and will help you to operate the product as intended. Read these instructions carefully before using the product. This is to avoid possible damage to persons, property or the device. Retain the instructions for future use during the service life of the product. If the product is passed on, pass on these instructions as well.

1.1 Target groups

These instructions are aimed at qualified personnel and must be carefully read by anyone mounting, commissioning, operating, maintaining, dismantling or disposing of the device.

1.2 Explanation of symbols

The following symbols are used in these instructions:

DANGER
DANGER indicates an imminently hazardous situation with a high risk of death or serious injury if it is not prevented.

WARNING
WARNING indicates a potentially dangerous situation with medium risk of death or severe injury if not avoided.

CAUTION
CAUTION indicates a situation that may result in damage to property if it is not prevented.

NOTE
NOTE indicates tips, recommendations and important information. The notes will make work easier, contain information on specific action steps and help prevent more work due to incorrect processes.

➤ **CALL TO ACTION**
This symbol identifies steps that the user has to perform.

➥ **ACTION RESULT**
This symbol identifies relevant results of actions and action sequences.

1.3 Additional documents

Besides this document, the following material can be found on the Internet at www.turck.com:
- Data sheet
- Quick start guide

1.4 Feedback on these instructions

We are committed to always keeping these instructions as informative and as clear as possible. Should you have any suggestions for a better design or any information is missing from the instructions, please send your suggestions to techdoc@turck.com.

2 Notes on the Product

2.1 Product identification

These instructions apply to the following cabinet guards:

Model code	Terminal blocks	Power bridge connection
IM12-CCM03-MITS-3T-IOLC/24V	Screw terminals, removable	no
IM12-CCM03-MITS-3T-IOLC-PR/24V	Screw terminals, removable	yes
IM12-CCM03-MITS-3T-IOLC/24V/CC	Spring-clamp terminals, removable	no
IM12-CCM03-MITS-3T-IOLC-PR/24V/CC	Spring-clamp terminals, removable	yes

2.2 Scope of delivery

Included in the scope of delivery:
- Cabinet guard
- Quick start guide
- Adhesive film (Target) for attaching reflective surfaces

2.3 Legal requirements

The device is subject to the following EU directives:
- 2014/35/EU (low voltage)
- 2014/30/EU (electromagnetic compatibility)

2.4 Manufacturer and service

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats. You can access the product database at the following address: **http://www.turck.de/products/**
Should you have any further questions, please contact the sales and service team in Germany on the following telephone numbers:
Sales: +49 208 4952-380
Technology: +49 208 4952-390

Outside Germany, please contact your Turck representative.

Hans Turck GmbH & Co. KG
Witzlebenstraße 7
45472 Mülheim an der Ruhr
Germany

3 For Your Safety

The product is designed according to the state of the art. However, residual risks still exist. Observe the following warnings and safety regulations to prevent danger to persons and property. Turck accepts no liability for damage caused by failure to observe these warning and safety instructions.

3.1 Intended use

These devices are designed only for use in industrial areas.
The cabinet guards in the IM12-CCM… range monitor the temperature, humidity and door status inside control cabinets.
The devices may be used only as described in this guide. Any other usage will be considered improper and Turck cannot be held liable for any resulting damage.

3.2 Obvious misuse

The devices are not safety components and may not be used for personal or property protection.

3.3 General safety instructions

- The device may only be assembled, installed, operated, parameterized and maintained by professionally trained personnel
- The devices only meet the EMC requirements for industrial areas and are not suitable for use in residential areas
- The device must only be used in enclosed housing or control cabinets

4 Product Description

The IM12-CCM03… cabinet guards are available with removable screw terminals or spring-clamp terminals.

4.1 Equipment overview

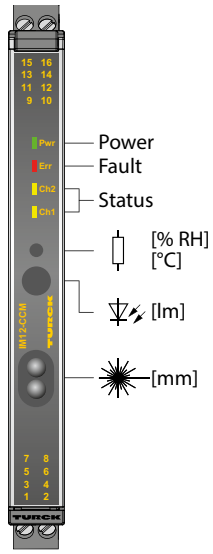


Fig. 1. Front view

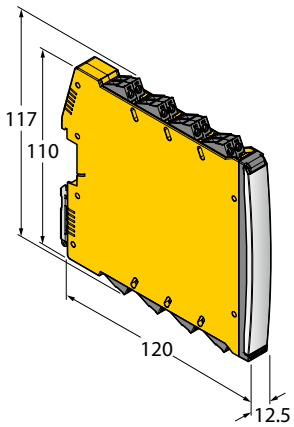


Fig. 2. Dimensions — device with screw terminals

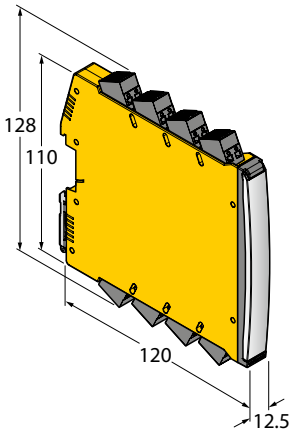


Fig. 3. Dimensions — device with spring-clamp terminals

4.1.1 Display elements

Each device features a green power LED (Pwr). They also feature a red error LED (Err) and two yellow status LEDs (Ch1 and Ch2).

4.2 Properties and characteristics

- Sensors for monitoring humidity, temperature and distance
- Manual teach-in process via gesture control
- Versions of the device available with either screw terminal or spring-clamp terminal connection
- Freely configurable switching outputs (NC contact/NO contact)

4.3 Functional principle

A humidity/temperature sensor and a triangulation sensor are used to detect the ambient conditions temperature, humidity and door status. LED display and the corresponding switching output signal if the limit values are exceeded or not met. Such instances are signaled to the higher fieldbus level via the switching contacts. The device processes the data via an 8-bit microprocessor with a 512 kB internal EEPROM.

4.4 Functions and operating modes

The devices use integrated sensors to monitor temperature, humidity and the door status inside a control cabinet. This is done by automatically comparing the measured values with specified limit values. The device automatically reports when limit values are exceeded. Two potential-free, galvanically isolated switching outputs and one IO-Link interface are available for this purpose. In addition, an extended diagnostic can be carried out via IO-Link. The integrated CAN bus can be used to connect two IM12-CCM with each other. A reed contact (e.g. an external door limit switch) can also be connected to the device.

4.4.1 IO-Link mode

In IO-Link mode, bidirectional IO-Link communication takes place between an IO-Link master and the sensors. For this, the devices are integrated via an IO-Link master in the control level. Information about when limit values are exceeded is made available with the process data via the IO-Link interface. In addition to the information about when limit values are exceeded, diagnostic and identification messages can also be requested via IO-Link.

Various device functions can be configured via the IO-Link interface. The maximum admissible length of the IO-Link connection is 20 m.

4.4.2 Master-slave mode

In master-slave mode, two IM12-CCM cabinet guards are connected with each other. The devices communicate via an internal CAN bus. The maximum transmission speed is 125 kBit.
The master-slave communication requires an active IO-Link connection between the master CCM and the IO-Link master. The cabinet guard that is connected to the IO-Link master is automatically defined as the master CCM.

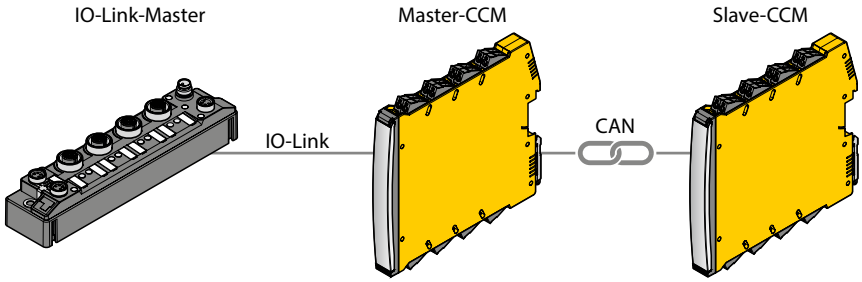


Fig.4: Master-slave communication (schematic layout)

The slave CCM transfers identification, statuses and measured values via the CAN bus to the master CCM. The master CCM displays when limit values are exceeded and reports these instances to the higher control level. The limit values can be defined via the master CCM during the teach-in process.

4.4.3 Internal EEPROM

The internal EEPROM has a total capacity of 512 kB and consists of four storage modules, each with a 128 kB capacity. 32 bytes per dataset are required to store internal sensor values. If solely internal sensor values are stored, the following recording periods are possible:

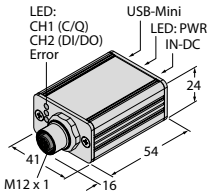
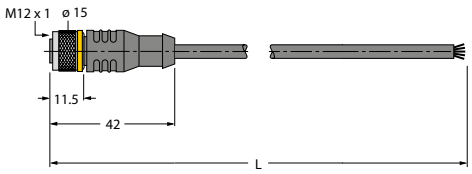
Time_interrupt_storage	at 32 data bytes
5 min	57 days
30 min	341 days
60 min	683 days

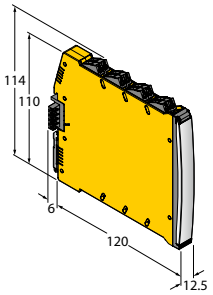
In addition to the internal sensor values, the following data is stored in the internal EEPROM:

- Article number
- Firmware version
- Production order
- Date of manufacture
- Device series number
- Limit values for humidity, temperature, distance and brightness
- Comparison values for humidity, temperature, distance and brightness
- Hysteresis for humidity, temperature and distance
- Supplementary values (in %) for automatically generating the limit values from the comparison values
- Time period for storing data in the external EEPROM
- Time period between two consecutive measurements
- Max. conditioning time until steady state
- Number of humidity, temperature and distance errors until the error message is triggered
- Configuration bytes and error byte

4.5 Accessories

The following accessories are not included in the scope of delivery:

Article name	Description	Figure
USB-2-IOL-0002	IO-Link adapter V1.1 with integrated USB interface	
RKC4.5-5T-2/TEL	Female connector, straight, with 2 m PVC cable, open end	

Article name	Description	Figure
IMX12-PS02-UI-UIR-PR/ 24VDC	Power bridge power supply module; collective fault messaging via relay; single and redundant power supply via terminals; removable screw terminals	

5 Mounting

The device can be mounted on a DIN rail according to EN 60715 (TH35).

CAUTION
Reflective surfaces
Malfunction when monitoring the cabinet door
➤ Furnish glass and highly reflective surfaces on the cabinet door with adhesive film (included in delivery).

➤ Secure the device to the DIN rail as shown in Fig. 4.

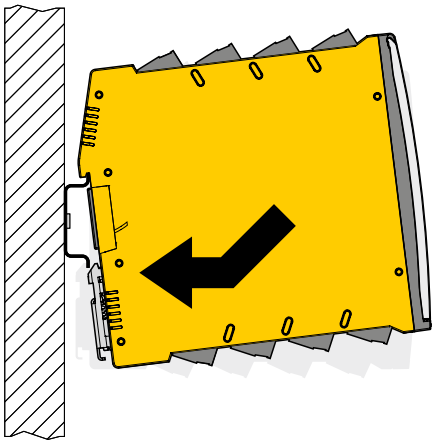


Fig.5: Mounting on a DIN rail

6 Connection

The inputs, outputs and power supply can all be connected using either a screw terminal or a spring-clamp terminal, depending on the type of device. The removable terminal blocks are coded.

6.1 Connecting the supply voltage via power bridge

Device types IM…-PR can receive their voltage supply via the power bridge connection. The supply voltage of 24 VDC is transmitted to the power bridge via the IMX12-PS02-UIR-PR/24VDC power supply module.

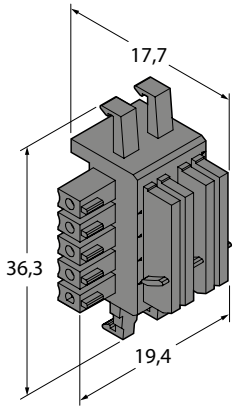


Fig.6: Power bridge connector

6.2 Connecting devices using screw terminals

➤ Only use cables (rigid or flexible) with a diameter of 0.2…2.5 mm².
➤ When wiring with stranded wires: Secure the end of the wires with splice ends.
➤ Insert stripped cable ends into the guides of the cable glands.
➤ Secure screws. The maximum tightening torque is 0.5 Nm.

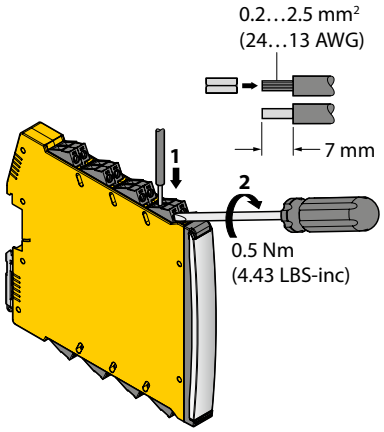


Fig.7: Connecting the device using screw terminals

6.3 Connecting devices using spring-clamp terminals

➤ Only use cables (rigid or flexible) with a diameter of 0.2…2.5 mm².
➤ When wiring with stranded wires: Secure the end of the wires with splice ends.
➤ Insert stripped cable ends into the guides of the spring-clamp terminals.

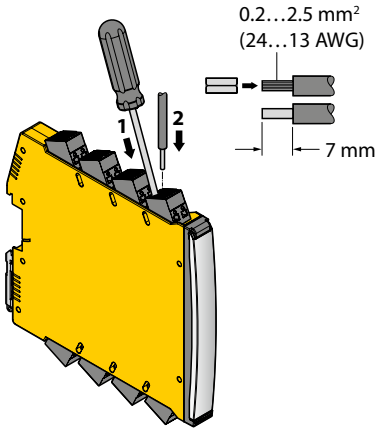


Fig.8: Connecting the device using spring-clamp terminals

6.4 Connection and wiring diagrams

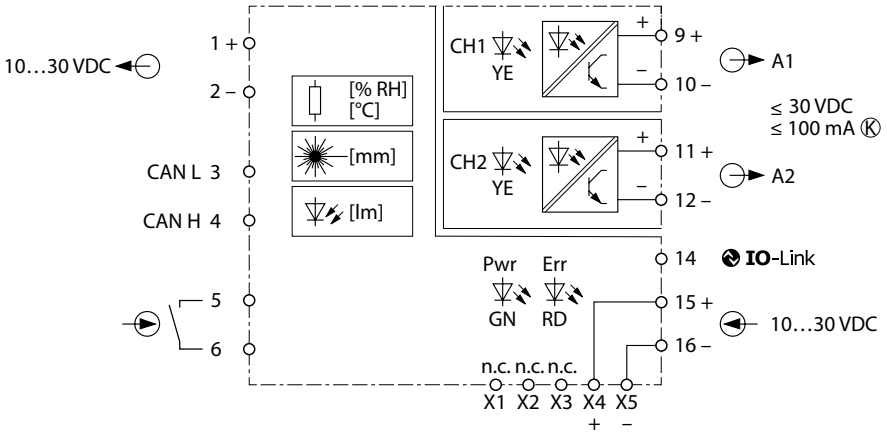


Fig.9: IM12-CCM03-MITS-3T-IOLC-PR/24V…connection and wiring diagram

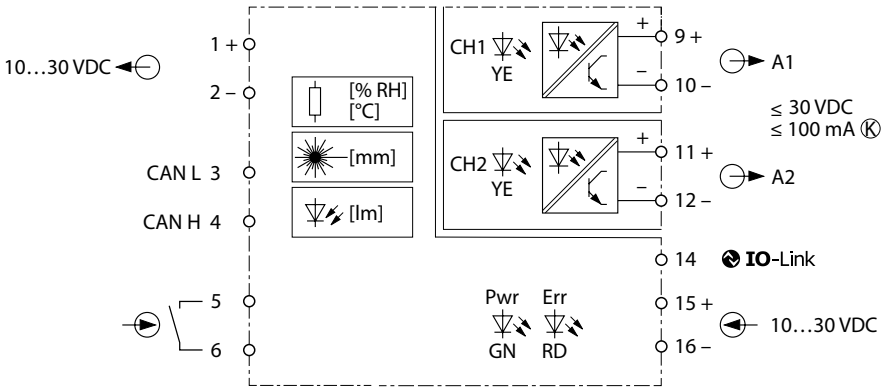


Fig.10: IM12-CCM03-MITS-3T-IOLC/24V…connection and wiring diagram

6.5 Connecting two CCM devices together

➤ Connect devices together via the CAN interface. The maximum cable length is 3 m
➥ Master-slave communication is established between the connected devices. The cabinet guard that is connected to the IO-Link master is automatically defined as the master CCM

6.6 Connecting reed contacts

➤ Connect the reed contact to the device via terminals 5 and 6

7 Commissioning

Once the cables and the supply voltage have been connected, the device will automatically go into operation.

NOTE
Turck recommends deactivating short circuit monitoring if the device is being supplied by a DCS/SPS card.

8 Operating the Device

During normal operation, the device conducts the following processes automatically:
- Reading configuration data
- Recording current measured values (temperature, humidity, brightness, distance)
- Monitoring whether measured values have exceeded or not met limit values
- Saving measured values to the external EEPROM
- Cyclically sampling teach-in processes

If an error with one of the integrated sensors occurs during normal operation, the red LED illuminates. The device continues to work in normal operation mode.

8.1 LED display

Each device features a green power LED (Pwr). They also feature a red error and two status LEDs.

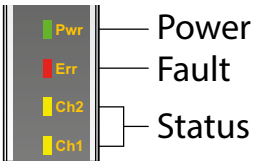


Fig.11: LED display

The LEDs have the following display functions:

LED	Color	Meaning
Pwr	Constant green light	Device is in state OPERATIONAL
	Flashing green (0.5 Hz)	Device in IO-Link operation
ERR	Constant red light	Hardware error
	Short red light	Manual input error
	Flashing red (0.5 Hz)	Teach-in error
Ch1	Yellow	Limit value of switching output 1 exceeded or not met
	Off	Parameters are within the limit values
	Yellow flashing (0.5 Hz)	Manual teach-in process running
Ch2	Yellow	Limit value of switching output 2 exceeded or not met
	Off	Parameters are within the limit values
	Yellow flashing (0.5 Hz)	Manual teach-in process running

The IO-Link interface outputs instances where the limit values have been exceeded or not met with five bytes process data as follows:

Byte no.	Bit							
	0	1	2	3	4	5	6	7
0	Output 3 [C/Q]	reserved	Output 1	Output 2	Reed contact CCM 1	Reed contact CCM 2	Teach-in status	reserved
1	Master CCM status	Slave CCM status	reserved	reserved	reserved	reserved	reserved	reserved
2	Tem-perature limit value exceeded master CCM	Tem-perature limit value exceeded slave CCM	reserved	reserved	reserved	reserved	reserved	reserved
3	Humidity limit value exceeded master CCM	Humidity limit value exceeded slave CCM	reserved	reserved	reserved	reserved	reserved	reserved
4	Distance limit value exceeded master CCM	Distance limit value exceeded slave CCM	reserved	reserved	reserved	reserved	reserved	reserved

8.2 Operating devices in IO-Link mode

A range of functions and adjustable characteristics are available in IO-Link mode. All parameters can be changed by the controller via bidirectional IO-Link communication, both during commissioning and during operation.

8.3 Operating devices in SIO mode

In SIO mode, the device operates in accordance with the most recent setting configured in IO-Link mode. The functions and adjustable characteristics of the device cannot be used in their full scope in SIO mode.

9 Setting and Parameterizing

The cabinet guard can be set via a manual teach-in or via the IO-Link interface.

9.1 Parameterizing limit values via manual teach-in

The device can be adapted to the relevant installation conditions via a manual teach-in process.

The following default limit values are configured on the device:

Parameter	Lower limit value	Upper limit value
Humidity	10%	90%
Temperature	-25°C	+70°C
Distance from the door	4 cm	50 cm

The teach-in process is controlled via the brightness sensor. During the teach-in process, the yellow LEDs flash at a frequency of 0.5 Hz. If there is an error during the teach-in process, the LED illuminates for one second and the green LED stops flashing and reverts to being constantly on. The teach-in process is aborted and the device reverts to normal mode.

➤ Cover door sensor (t1…t2) and keep covered.
➤ Cover brightness sensor for 2…10 seconds (t2…t3).
➤ Release brightness sensor for a maximum of 10 seconds (t3…t4).
➤ Cover brightness sensor for a maximum of 10 seconds (t4…t5).
➤ Release brightness sensor for a maximum of 10 seconds (t5…t6).
➤ Release door sensor (t6).
➤ Close cabinet door (t6…t7).
➥ The device accepts the measured values as the target configuration (t8) in normal operation after the tuning phase (t6…t9). The green LED is continuously illuminated.

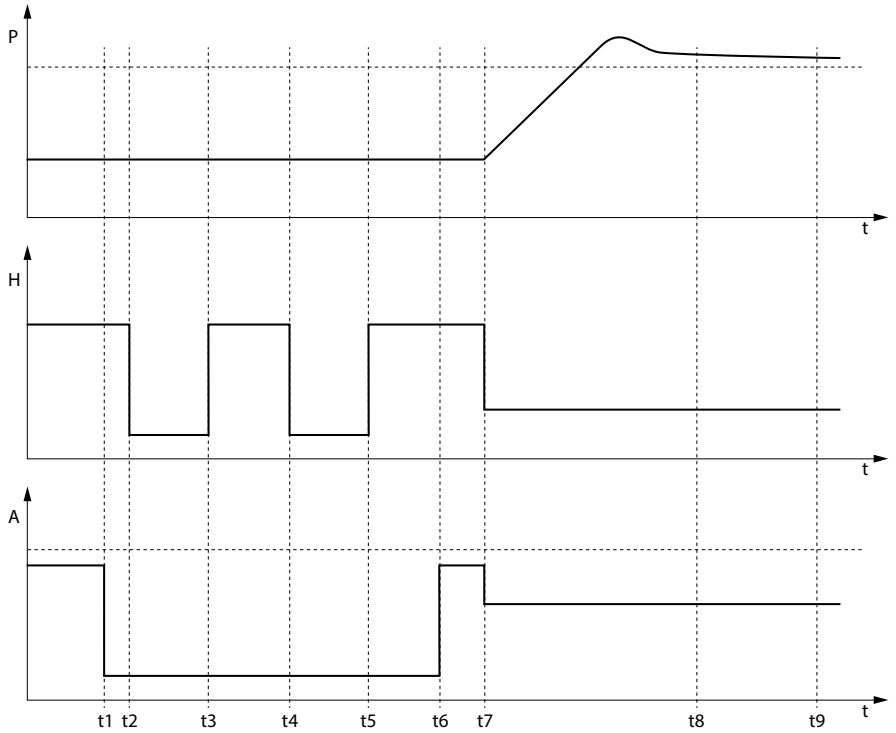


Fig.12: Teach function and tuning phase (P: fluctuating process variables such as temperature or humidity, H: brightness, A: distance value for door detection)

Within the tuning phase, the parameters for temperature, humidity and brightness in the control cabinet must be within the predefined values. The values are defined in the device as follows:

Parameter	Value
Humidity	Maximum humidity change: 1%
Temperature	Maximum temperature difference: 2 K
Distance from the door	Maximum change: 0.2 cm

If the values listed in the table above are not met during the tuning phase, the teach-in process is automatically aborted and must be repeated. The red LED flashes with a frequency of 0.5 Hz. An error confirmation is not required.

If there is an input error during the teach-in process, the red LED illuminates for one second and the green LED stops flashing and reverts to being constantly on. The teach-in process is aborted and the device reverts to normal mode.

NOTE
The configured limit values are recorded in the internal EEPROM if they are within the values given in the data sheet. If the configured limit values are outside of the data sheet specification, the values given in the data sheet are saved in the EEPROM.

9.2 Setting via IO-Link

The devices can be parameterized via the IO-Link communication interface within the technical specification (see data sheet). Further information regarding the IO-Link can be found in the IO-Link commissioning manual (D900633).

9.2.1 IO-Link parameters

A range of application-specific parameters can be configured via the IO-Link interface. Further information regarding the IO-Link parameters can be found in the IO-Link parameters manual. The default values are shown in bold.

Parameter	Meaning
System conditioning time (max.)	Maximum conditioning time until steady state of all system variables [min] **Default value: 240 min**
Measured value storage interval	Time between two consecutive data records that are stored in the external EEPROM [min] **Default value: 30 min**
Measured value recording interval	Time between two consecutive measurements [s] **Default value: 120 s**
System of units	Switching units in DTM between metric and imperial
Automatic limit value calculation	**Active: Carry out automatic limit value calculation** Inactive: Do not carry out automatic limit value calculation
Use reed contact	Active: Switch on reed contact **Inactive: Switch off reed contact**
Manual calibration process	**Active: Manual calibration process possible during teach-in** Inactive: Manual calibration process not possible during teach-in
Lower temperature limit value	**Default value: -25°C**
Upper temperature limit value	**Default value: +70°C**
Hysteresis value temperature	**Default value: 6 K**

Parameter	Meaning
Temperature hysteresis active	**Active: Temperature hysteresis on** Inactive: Temperature hysteresis off
Maximum number of temperature errors	Number of temperature errors that occurred before an error alarm was triggered **Default value: 2**
Factor for temperature threshold determination	Addition to the calibration value for the automatic definition of the limit value for temperature [%] **Default value: 20**
Humidity limit value	**Default value: 80%**
Hysteresis value humidity	**Default value: 10%**
Humidity hysteresis active	**Active: Humidity hysteresis on** Inactive: Humidity hysteresis off
Maximum number of humidity errors	Number of humidity errors that occurred before an error alarm was triggered **Default value: 2**
Factor for determination of humidity limit value	Addition to the calibration value for the automatic definition of the limit value for humidity [%] **Default value: 20**
Distance limit value for CCM1	**Default value: 50 cm**
Distance limit value for CCM2	**Default value: 50 cm**
Hysteresis value distance for door detection	**Default value: 4 mm**
Distance hysteresis for door detection active	**Active: Hysteresis for door detection on** Inactive: Hysteresis for door detection off
Maximum number of distance errors	Number of distance errors that occurred before an error alarm was triggered **Default value: 3**
Factor for determination of the distance limit value	Addition to the calibration value for the automatic definition of the limit value for distance to control cabinet door [%] **Default value: 20**
Brightness threshold	Limit value for brightness sensor (limit value > dark) [lx] **Default value: 12**
Switching output 1 if humidity limit value is exceeded	**Active: Output 1 switches if humidity limit value is exceeded** Inactive: Output 1 does not switch if humidity limit value is exceeded
Switching output 1 if temperature limit value is exceeded	**Active: Output 1 switches if temperature limit value is exceeded** Inactive: Output 1 does not switch if temperature limit value is exceeded
Switching output 1 if distance limit value is exceeded	**Active: Output 1 switches if distance limit value is exceeded** Inactive: Output 1 does not switch if distance limit value is exceeded
Switching output 1 if there is an error during the teach-in process	**Active: Output 1 switches if there is an error during the teach-in process** Inactive: Output 1 does not switch if there is an error during the teach-in process
Output function output 1	NC contact **NO contact**
Switching output 2 if humidity limit value is exceeded	**Active: Output 2 switches if humidity limit value is exceeded** Inactive: Output 2 does not switch if humidity limit value is exceeded
Switching output 2 if temperature limit value is exceeded	**Active: Output 2 switches if temperature limit value is exceeded** Inactive: Output 2 does not switch if temperature limit value is exceeded
Switching output 2 if distance limit value is exceeded	**Active: Output 2 switches if distance limit value is exceeded** Inactive: Output 2 does not switch if distance limit value is exceeded
Switching output 2 if there is an error during the teach-in process	**Active: Output 2 switches if there is an error during the teach-in process** Inactive: Output 2 does not switch if there is an error during the teach-in process
Output function output 2	NC contact **NO contact**

Parameter	Meaning
Switching output 3 if humidity limit value is exceeded	**Active: Output 3 switches if humidity limit value is exceeded** Inactive: Output 3 does not switch if humidity limit value is exceeded
Switching output 3 if temperature limit value is exceeded	**Active: Output 3 switches if temperature limit value is exceeded** Inactive: Output 3 does not switch if temperature limit value is exceeded
Switching output 3 if distance limit value is exceeded	**Active: Output 3 switches if distance limit value is exceeded** Inactive: Output 3 does not switch if distance limit value is exceeded
Switching output 3 if there is an error during the teach-in process	**Active: Output 3 switches if there is an error during the teach-in process** Inactive: Output 3 does not switch if there is an error during the teach-in process
Output function output 3	NC contact **NO contact**
Time stamp RTC	**Default value:** **Minutes: 0** **Hours: 0** **Day: 1** **Month: 1** **Year: 17**

10 Eliminating Interference

CAUTION
Reflective surfaces
Malfunction when monitoring the cabinet door
➤ Furnish glass and highly reflective surfaces on the cabinet door with adhesive film (included in delivery).

If the device does not work as expected, first check whether ambient interference is present. If there is no ambient interference, check the connections of the device for faults.
If there are no faults, there is a device malfunction. In this case, decommission the device and replace it with a new device of the same type.

11 Maintenance

Ensure that the plug connections and cables are always in good condition.
The devices are maintenance-free; if necessary clean dry.

12 Repairs

The device is not intended for repair by the user. If the device is faulty, take it out of operation.
When returning to Turck, refer to our return policies.

12.1 Returning devices

If a device has to be returned, bear in mind that only devices with a decontamination declaration will be accepted. This is available for download at
http://www.turck.de/static/media/downloads/01_Declaration_of_Decontamination_EN.pdf
and must be filled in completely and affixed to the outside of the packaging such that it is secure and cannot be impaired by adverse weather.

13 Decommissioning

13.1 Removing the device

➤ Loosen the terminal connections on the device.
➤ Remove the device from its DIN rail mounting according to the figure.

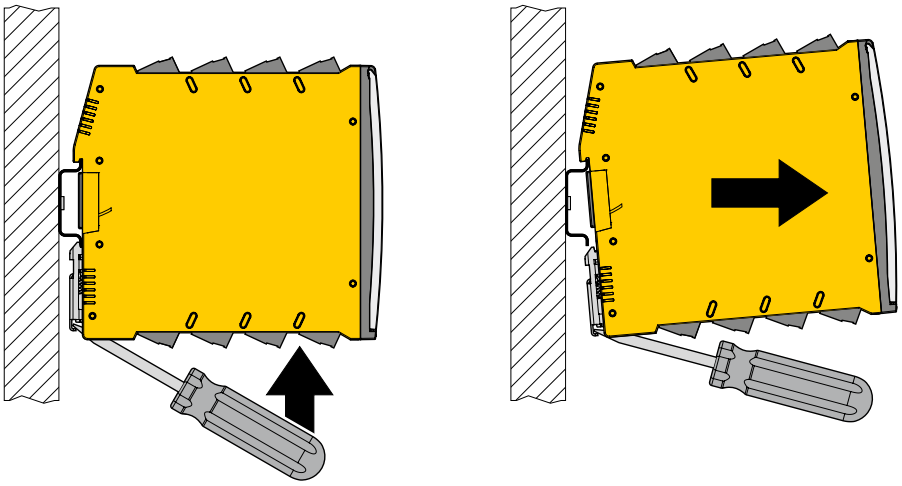


Fig.13: Dismantling the device — without power bridge connector

14 Disposal

Devices must be properly disposed of and must not be included in general household waste.

15 Technical Data

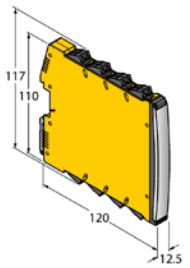
Technical Data	
Maximum depth of the control cabinet	50 cm
Maximum distance between the door and the sensor	4 cm
Operational temperature range	-25…+70°C
Maximum humidity	90%
Voltage range	10…30 VDC

15.1 Technical data – IM12-CCM03-MTIS-3T-IOLC/24V

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC/24V

Type designation	IM12-CCM03-MTIS-3T-IOLC/24V
Ident no.	7570100
Nominal voltage	24 VDC
Operating voltage range	10…30 VDC
Power consumption	≤ 0.5 W
Installed sensors CCM	Triangulation sensor 40…500 mm, Humidity sensor 10…90% rel. hum., Brightness sensor Temperature sensor -25 °C…+70 °C
Reference temperature	23 °C
Semicondutor output circuit(s)	
Output circuits (digital)	2 x transistor (potential-free) NO/NC
Switching voltage	≤ 30 VDC
Switching current per output	≤ 0.1 A
Voltage drop	≤ 1 V
Moisture Sensor	
Accuracy max.	+/- 4.5 % RF in the range 10…90%
Repeat accuracy	0.2 % RF
Temperature Sensor	
Max. accuracy	+/- 2 °C
Repeat accuracy	0.16 °C
Distance Sensor	
Beam angle	6 °
Measuring range	40…500 mm
Accuracy	+/-50 mm In the range of ≤ 500 mm
Temperature coefficient	+/- 30 mm in the range of ≤ 500 mm at -25°C ≤ T ≤ 70°C +/- 15 mm in the range of ≤ 500 mm at 0 °C ≤ T ≤ 50 °C
Max. linearity error	≤ 2 % of full scale
Indication	
Operational readiness	green
Switching state	yellow
Error indication	red

Dimensions



interface modul

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC/24V

Protection class	IP20
Flammability class acc. to UL 94	V-0
Ambient temperature	-25…+70 °C
Storage temperature	-25…+80 °C
Relative humidity	≤ 95 %
Dimensions	120 x 12.5 x 117 mm
Weight	0 g
Mounting instructions	DIN rail (NS35)
Housing material	Polycarbonate/ABS
Electrical connection	Removable screw terminals, 2-pin
Terminal cross-section	0.2…2.5 mm² (24 … 13 AWG)
Tightening torque	0.5 Nm
Tightening torque	4.43 LBS-Inch
Environmental conditions	

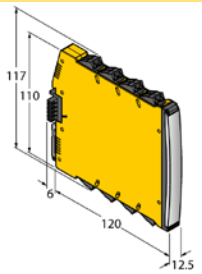
Operating altitude	Up to 2000 m above sea level
Pollution degree	II
Standards used	
Voltage resistance and insulation	
	EN 50178
	EN 61010-1
Shock	
	EN 60068-2-6
	EN 60068-2-27
Temperature	
	EN 60068-2-1 Ad
	EN 60068-2-2 Bd
	EN 60068-2-1
Humidity	
	EN 60068-2-38
EMC	
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8
Emission	
	CISPR16

15.2 Technical data – IM12-CCM03-MTIS-3T-IOLC-PR/24V

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC-PR/24V

Type designation	IM12-CCM03-MTIS-3T-IOLC-PR/24V
Ident no.	7570102
Nominal voltage	24 VDC
Operating voltage range	10…30 VDC
Power consumption	≤ 0.5 W
Installed sensors CCM	Triangulation sensor 40…500 mm, Humidity sensor 10…90% rel. hum., Brightness sensor Temperature sensor -25 °C…+70 °C
Reference temperature	23 °C
Semicondutor output circuit(s)	
Output circuits (digital)	2 x transistor (potential-free) NO/NC
Switching voltage	≤ 30 VDC
Switching current per output	≤ 0.1 A
Voltage drop	≤ 1 V
Moisture Sensor	
Accuracy max.	+/- 4.5 % RF in the range 10…90%
Repeat accuracy	0.2 % RF
Temperature Sensor	
Max. accuracy	+/- 2 °C
Repeat accuracy	0.16 °C
Distance Sensor	
Beam angle	6 °
Measuring range	40…500 mm
Accuracy	+/-50 mm In the range of ≤ 500 mm
Temperature coefficient	+/- 30 mm in the range of ≤ 500 mm at -25°C ≤ T ≤ 70°C +/- 15 mm in the range of ≤ 500 mm at 0 °C ≤ T ≤ 50 °C
Max. linearity error	≤ 2 % of full scale
Indication	
Operational readiness	green
Switching state	yellow
Error indication	red

Dimensions



interface modul

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC-PR/24V

Protection class	IP20
Flammability class acc. to UL 94	V-0
Ambient temperature	-25…+70 °C
Storage temperature	-25…+80 °C
Relative humidity	≤ 95 %
Dimensions	120 x 12.5 x 117 mm
Weight	0 g
Mounting instructions	DIN rail (NS35)
Housing material	Polycarbonate/ABS
Electrical connection	Removable screw terminals, 2-pin
Terminal cross-section	0.2…2.5 mm² (24 … 13 AWG)
Tightening torque	0.5 Nm
Tightening torque	4.43 LBS-Inch
Environmental conditions	

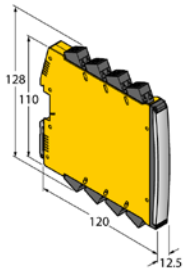
Operating altitude	Up to 2000 m above sea level
Pollution degree	II
Standards used	
Voltage resistance and insulation	
	EN 50178
	EN 61010-1
Shock	
	EN 60068-2-6
	EN 60068-2-27
Temperature	
	EN 60068-2-1 Ad
	EN 60068-2-2 Bd
	EN 60068-2-1
Humidity	
	EN 60068-2-38
EMC	
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8
Emission	
	CISPR16

15.3 Technical data – IM12-CCM03-MTIS-3T-IOLC/24V/CC

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC/24V/CC

Type designation	IM12-CCM03-MTIS-3T-IOLC/24V/CC
Ident no.	7570101
Nominal voltage	24 VDC
Operating voltage range	10…30 VDC
Power consumption	≤ 0.5 W
Installed sensors CCM	Triangulation sensor 40…500 mm, Humidity sensor 10…90% rel. hum., Brightness sensor Temperature sensor -25 °C…+70 °C
Reference temperature	23 °C
Semicondutor output circuit(s)	
Output circuits (digital)	2 x transistor (potential-free) NO/NC
Switching voltage	≤ 30 VDC
Switching current per output	≤ 0.1 A
Voltage drop	≤ 1 V
Moisture Sensor	
Accuracy max.	+/- 4.5 % RF in the range 10…90%
Repeat accuracy	0.2 % RF
Temperature Sensor	
Max. accuracy	+/- 2 °C
Repeat accuracy	0.16 °C
Distance Sensor	
Beam angle	6 °
Measuring range	40…500 mm
Accuracy	+/-50 mm In the range of ≤ 500 mm
Temperature coefficient	+/- 30 mm in the range of ≤ 500 mm at -25°C ≤ T ≤ 70°C +/- 15 mm in the range of ≤ 500 mm at 0 °C ≤ T ≤ 50 °C
Max. linearity error	≤ 2 % of full scale
Indication	
Operational readiness	green
Switching state	yellow
Error indication	red

Dimensions



interface modul

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC/24V/CC

Protection class	IP20
Flammability class acc. to UL 94	V-0
Ambient temperature	-25…+70 °C
Storage temperature	-25…+80 °C
Relative humidity	≤ 95 %
Dimensions	120 x 12.5 x 128 mm
Weight	0 g
Mounting instructions	DIN rail (NS35)
Housing material	Polycarbonate/ABS
Electrical connection	Removable cage clamp terminals, 2-pin
Terminal cross-section	0.2…2.5 mm² (24 … 13 AWG)
Environmental conditions	

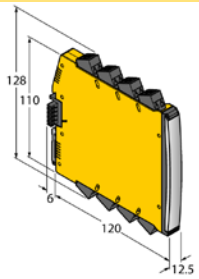
Operating altitude	Up to 2000 m above sea level
Pollution degree	II
Standards used	
Voltage resistance and insulation	
	EN 50178
	EN 61010-1
Shock	
	EN 60068-2-6
	EN 60068-2-27
Temperature	
	EN 60068-2-1 Ad
	EN 60068-2-2 Bd
	EN 60068-2-1
Humidity	
	EN 60068-2-38
EMC	
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8
Emission	
	CISPR16

15.4 Technical data – IM12-CCM03-MTIS-3T-IOLC-PR/24V/CC

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC-PR/24V/CC

Type designation	IM12-CCM03-MTIS-3T-IOLC-PR/24V/CC
Ident no.	7570103
Nominal voltage	24 VDC
Operating voltage range	10…30 VDC
Power consumption	≤ 0.5 W
Installed sensors CCM	Triangulation sensor 40…500 mm, Humidity sensor 10…90% rel. hum., Brightness sensor Temperature sensor -25 °C…+70 °C
Reference temperature	23 °C
Semicondutor output circuit(s)	
Output circuits (digital)	2 x transistor (potential-free) NO/NC
Switching voltage	≤ 30 VDC
Switching current per output	≤ 0.1 A
Voltage drop	≤ 1 V
Moisture Sensor	
Accuracy max.	+/- 4.5 % RF in the range 10…90%
Repeat accuracy	0.2 % RF
Temperature Sensor	
Max. accuracy	+/- 2 °C
Repeat accuracy	0.16 °C
Distance Sensor	
Beam angle	6 °
Measuring range	40…500 mm
Accuracy	+/-50 mm In the range of ≤ 500 mm
Temperature coefficient	+/- 30 mm in the range of ≤ 500 mm at -25°C ≤ T ≤ 70°C +/- 15 mm in the range of ≤ 500 mm at 0 °C ≤ T ≤ 50 °C
Max. linearity error	≤ 2 % of full scale
Indication	
Operational readiness	green
Switching state	yellow
Error indication	red

Dimensions



interface modul

Cabinet Guard
Internal and External Sensors
IM12-CCM03-MTIS-3T-IOLC-PR/24V/CC

Protection class	IP20
Flammability class acc. to UL 94	V-0
Ambient temperature	-25…+70 °C
Storage temperature	-25…+80 °C
Relative humidity	≤ 95 %
Dimensions	120 x 12.5 x 128 mm
Weight	0 g
Mounting instructions	DIN rail (NS35)
Housing material	Polycarbonate/ABS
Electrical connection	Removable cage clamp terminals, 2-pin
Terminal cross-section	0.2…2.5 mm² (24 … 13 AWG)
Environmental conditions	

Operating altitude	Up to 2000 m above sea level
Pollution degree	II
Standards used	
Voltage resistance and insulation	
	EN 50178
	EN 61010-1
Shock	
	EN 60068-2-6
	EN 60068-2-27
Temperature	
	EN 60068-2-1 Ad
	EN 60068-2-2 Bd
	EN 60068-2-1
Humidity	
	EN 60068-2-38
EMC	
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8
Emission	
	CISPR16

16 Appendix: Declarations of conformity and approvals

16.1 Certificates of conformity

EU-Konformitätserklärung Nr. 5197M
EU Declaration of Conformity No.:

TURCK

Wir/ We HANS TURCK GMBH & CO KG
WITZLEBENSTR. 7, D – 45472 MÜLHEIM A.D. RUHR

erklären in alleiniger Verantwortung, dass die Produkte
declare under our sole responsibility that the products

Schaltschrankwächter /Cabinet Guard

Typ / type : IM12-CCM*

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der folgenden Normen genügen:
to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following standards:

EMV – Richtlinie / EMC Directive	2014 / 30 / EU	26. Feb. 2014
EN 61000-6-2:2005	EN 61000-6-4:2007+A1:2011	

Weitere Normen, Bemerkungen
additional standards, remarks

Zusätzliche Informationen:

Mülheim, den 20.04.2017

i.V. Dr. M. Linde, Leiter Zulassungen / Manager Approvals

Ort und Datum der Ausstellung /
Place and date of issue

Name, Funktion und Unterschrift des Befugten /
Name, function and signature of authorized person

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