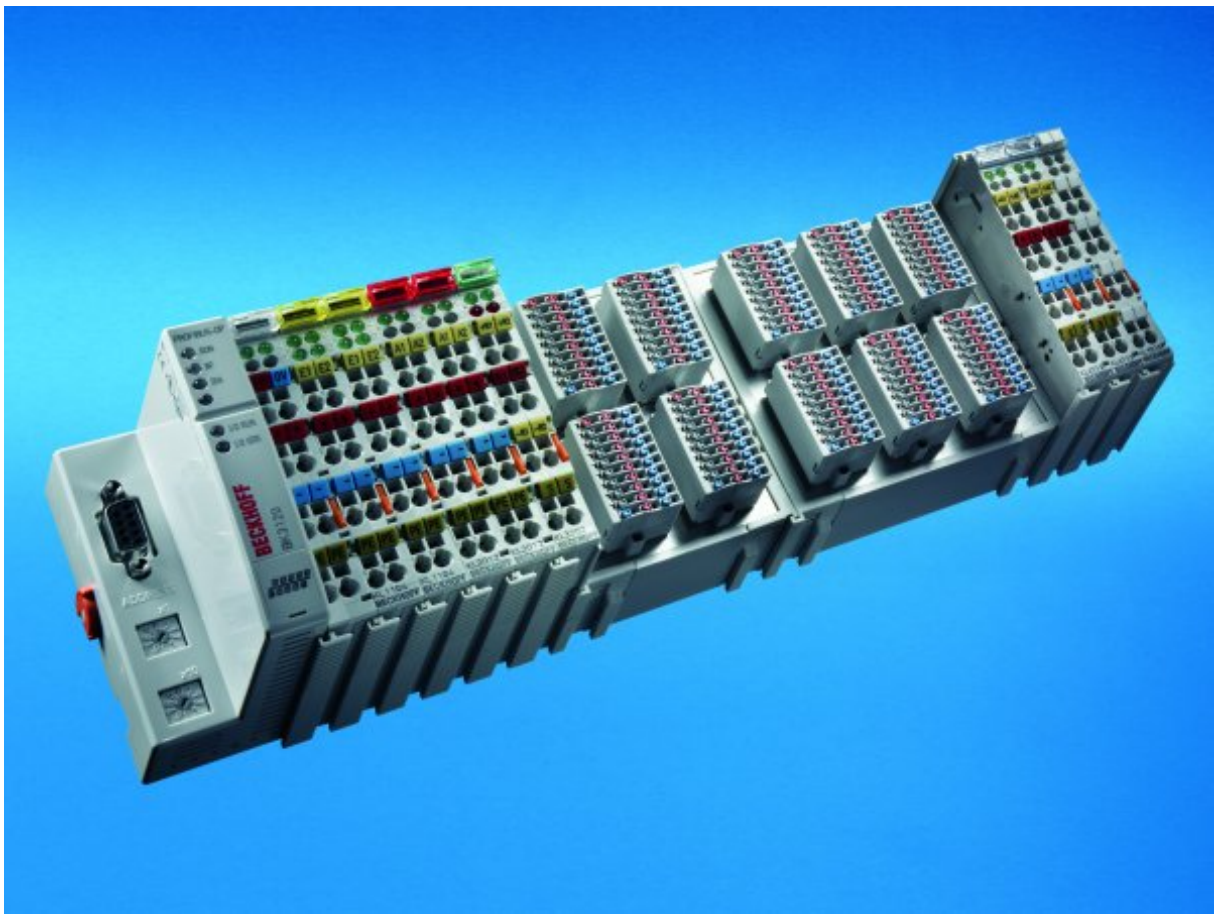

Documentation

# KM10xx

## Terminal Modules with Digital Inputs

Version: 3.1.0
Date: 2017-01-23

BECKHOFF

# Product overview KM10xx

# Table of contents

# 1 Foreword

## 1.1 Notes on the documentation

**Intended audience**

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with the applicable national standards.
It is essential that the documentation and the following notes and explanations are followed when installing and commissioning these components.
It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

**Disclaimer**

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement.

No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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The EtherCAT Technology is covered, including but not limited to the following patent applications and patents: EP1590927, EP1789857, DE102004044764, DE102007017835 with corresponding applications or registrations in various other countries.

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## 1.2 Safety instructions

### Safety regulations

Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

### Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

### Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

### Description of symbols

In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

| | |
|---|---|
|  **DANGER** | **Serious risk of injury!**<br>Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons. |
|  **WARNING** | **Risk of injury!**<br>Failure to follow the safety instructions associated with this symbol endangers the life and health of persons. |
|  **CAUTION** | **Personal injuries!**<br>Failure to follow the safety instructions associated with this symbol can lead to injuries to persons. |
|  **Attention** | **Damage to the environment or devices**<br>Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment. |
|  **Note** | **Tip or pointer**<br>This symbol indicates information that contributes to better understanding. |

## 1.3 Documentation issue status

| Version | Comment |
|---|---|
| 3.1.0 | • Technical data for KM plug connectors updated |
| 3.0.0 | • Migration<br>• Structural adjustment<br>• Technical data for KM plug connectors extended |
| 2.0.0 | • Notes for mounting and wiring updated<br>• Technical data updated |
| 1.0.2 | • Technical data corrected<br>• Pin assignment of KM connector X1 corrected |
| 1.0.1 | • Notes for mounting and wiring updated<br>• Technical data updated |
| 1.0.0 | • KM1004, KM1014, KM1008 and KM1018 added<br>• Mounting and demounting added<br>• Dimensional drawings added |
| 0.1 | First provisional documentation for KM1002 and KM1012 |

**Firmware and hardware versions**

| Documentation Version | Hardware version | | | | | |
|---|---|---|---|---|---|---|
| | KM1002 | KM1012 | KM1004 | KM1014 | KM1008 | KM1018 |
| 3.1.0 | 09 | 08 | 06 | 06 | 07 | 04 |
| 3.0.0 | 09 | 08 | 06 | 06 | 07 | 04 |
| 2.0.0 | 07 | 05 | 04 | 04 | 04 | 02 |
| 1.0.2 | 04 | 03 | 02 | 02 | 02 | 01 |
| 1.0.1 | 01 | 01 | 01 | 01 | 01 | 01 |
| 1.0.0 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0.1 | 00 | 00 | - | - | - | - |

The hardware version is indicated in the serial number printed on the top of the terminal module.

**Syntax of the serial number**

Structure of the serial number: WW YY FF HH

WW - week of production (calendar week)
YY - year of production
FF - firmware version (not applicable for digital modules)
HH - hardware version

Example with serial number: 35 05 00 01:

35 - week of production 35
05 - year of production 2005
00 - firmware version 00
01 - hardware version 01

# 2 Product overview

## 2.1 Terminal Modules - System Overview

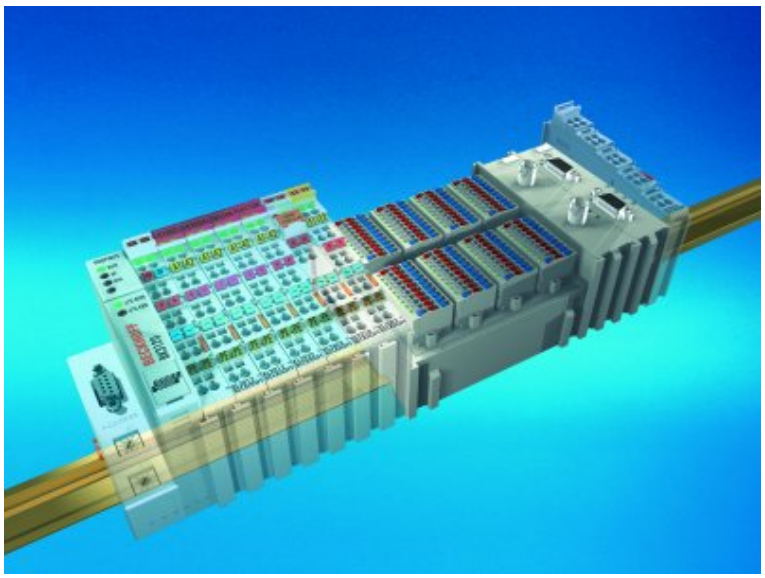


Fig. 1: Bus Terminal Block

Better sensor and actuator functionality makes machines and systems more and more powerful. The Bus Terminal reliably meets increased requirements for I/O signals through its modularity and compact design. The existing Beckhoff Bus Terminal system is complemented by the new version of the EMxxxx / KMxxxx Terminal Module with increased packing density. In many areas of application, cost benefits can be realized through lower overall installed size and application-specific signal mix.

The new Terminal Modules are fully system-compatible. Like the Bus Terminals, they are bus-neutral and can therefore be operated with any Beckhoff Bus Coupler and Bus Terminal Controller. Like the standard Bus Terminals, the EM / KM modules are integrated in the I/O system and connected with the internal terminal bus (E-bus / K-bus). Bus Terminals and terminal modules can be combined without restriction.

**Plug connector**

Like for the Bus Terminals, no tools are required for the wiring. Spring-loaded technology is used, however the connection layer is pluggable (fixed wiring).

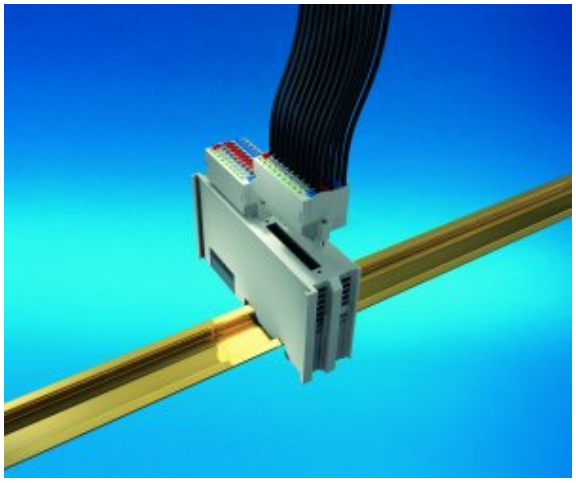


Fig. 2: Pluggable connection (fixed wiring)

### Connection

Plug connectors are available for single and triple conductor connection methods.

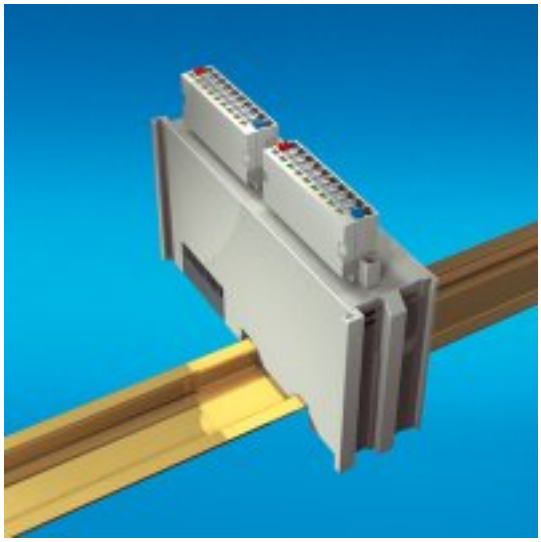


Fig. 3: Terminal module with plug connector for single conductor connection method (ZS2001-0002)

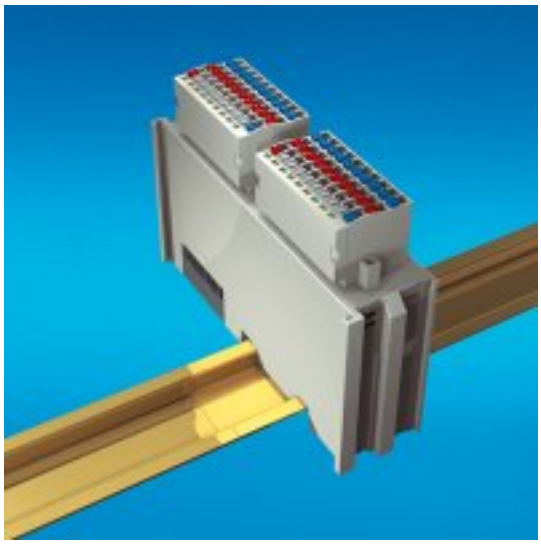


Fig. 4: Terminal module with plug connector for triple-conductor connection method (ZS2001-0004)

### Packing density

The Terminal Modules combine 16, 32 or 64 digital inputs or outputs on a very small area. This compact and slimline design enables very high packing densities, leading to smaller control cabinets and terminal boxes.

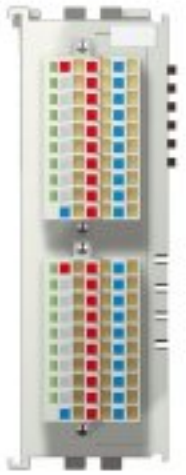


Fig. 5: Terminal module with 16 channels

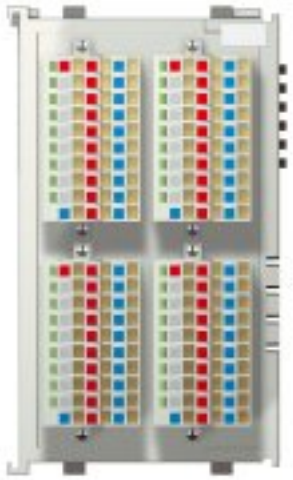


Fig. 6: Terminal module with 32 channels

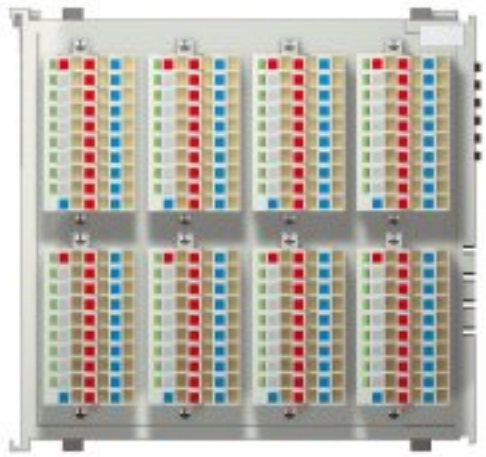


Fig. 7: Terminal module with 64 channels

# 2.2 KM1002, KM1012

## 2.2.1 Introduction

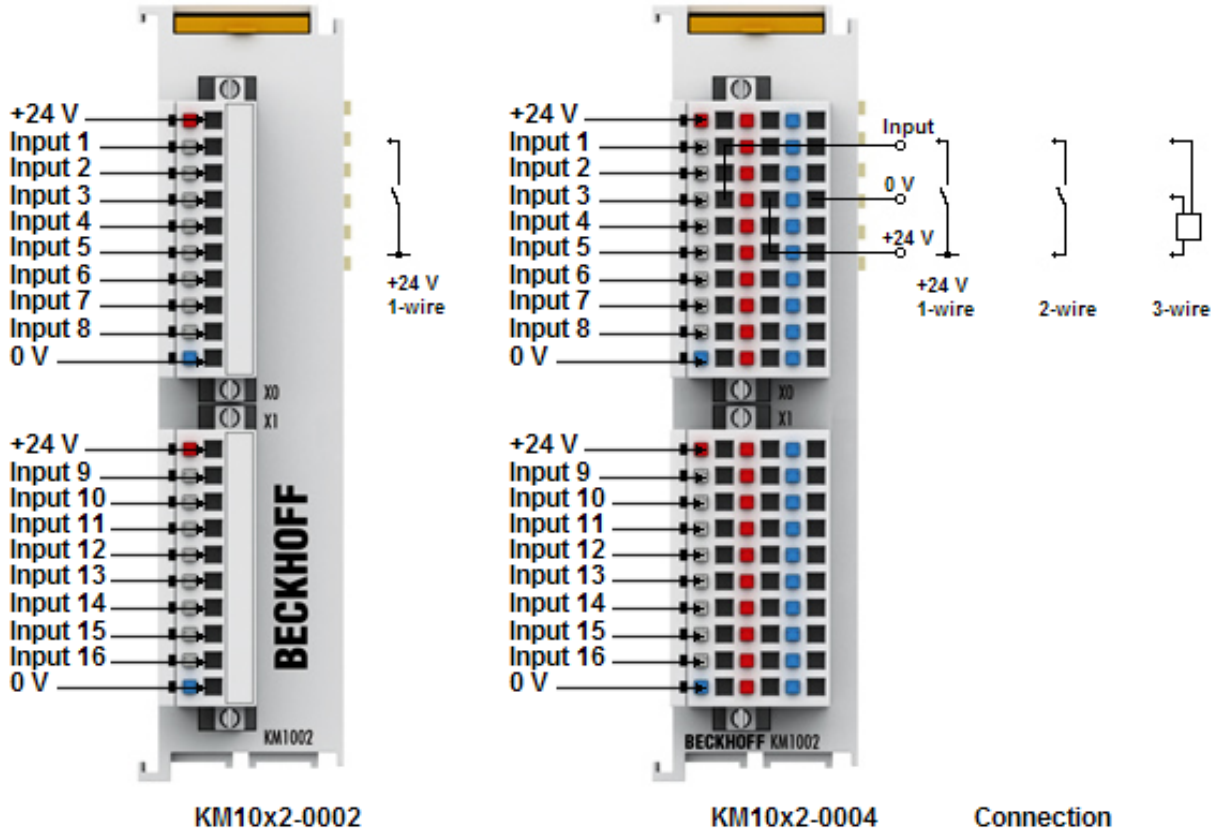



Fig. 8: KM10x2-0002, KM10x2-0004

**Digital terminal module with 16 input channels (24 $V_{DC}$)**

The terminal modules KM1002 and KM1012 combine 16 digital inputs with 8 channels per plug connector in a compact design. The control signals are transmitted (electrically isolated) to the higher-level automation device. Like the standard Bus Terminals, the terminal modules are integrated in the Beckhoff I/O system. Plug connectors with spring connections enable permanent wiring and are optionally available with 1 or 3 pins. LEDs integrated in the connector indicate the signal state for each channel directly at the wire. The KM1002 and KM1012 versions have input filters with different speeds.

**Ordering information for terminal modules with 16 digital inputs**

| Order identifier | Scope of supply |
|---|---|
| KM1002-0000 | digital input module, 16 channels (3.0 ms), without connector |
| KM1002-0001 | digital input module, 16 channels (3.0 ms), with 2 connectors ZS2001-0001 |
| KM1002-0002 | digital input module, 16 channels (3.0 ms), with 2 connectors ZS2001-0002 |
| KM1002-0004 | digital input module, 16 channels (3.0 ms), with 2 connectors ZS2001-0004 |
| KM1012-0000 | digital input module, 16 channels (0.2 ms), without connector |
| KM1012-0001 | digital input module, 16 channels (0.2 ms), with 2 connectors ZS2001-0001 |
| KM1012-0002 | digital input module, 16 channels (0.2 ms), with 2 connectors ZS2001-0002 |
| KM1012-0004 | digital input module, 16 channels (0.2 ms), with 2 connectors ZS2001-0004 |

See also section Ordering information for KM connectors [▶ 16].

## 2.2.2 Technical data

| Technical data | KM1002 | KM1012 |
|---|---|---|
| Number of inputs | 16 (2 x 8) | |
| Rated voltage | 24 $V_{DC}$ (-15%/+20%) | |
| Signal voltage “0” | -3 V ... 5 V | |
| Signal voltage “1” | 15 V ... 30 V | |
| Input filter | 3.0 ms | 0.2 ms |
| Input current | typically 5 mA | |
| Power supply for the electronics | via the K-Bus | |
| Current consumption from K-bus | typically 3 mA | |
| Width of a bus terminal block | Maximum [▶ 18] 64 standard Bus Terminals or 80 cm<br>(one KM10x2 corresponds to 2 standard Bus Terminals here) | |
| Electrical isolation | 500 V (K-Bus / signal voltage) | |
| Bit width in the input process image | 16 bit | |
| Dimensions with connectors (w x h x d) | approx. 26.5mm x 100mm x 71mm (width aligned: 24mm), see dimensional drawing [▶ 18] | |
| Weight (without connectors) | approx. 70 g | |
| Permissible ambient temperature range during operation | 0°C ... +55°C | |
| Permissible ambient temperature range during storage | -25°C ... +85°C | |
| Permissible relative humidity | 95%, no condensation | |
| Mounting [▶ 22] | on 35 mm mounting rail conforms to EN 60715 | |
| Vibration/shock resistance | conforms to EN 60068-2-6 / EN 60068-2-27 | |
| EMC immunity / emission | conforms to EN 61000-6-2 / EN 61000-6-4 | |
| Protection class | IP20 | |
| Installation position | variable | |
| Approval | CE | |

# 2.3 KM1004, KM1014

## 2.3.1 Introduction

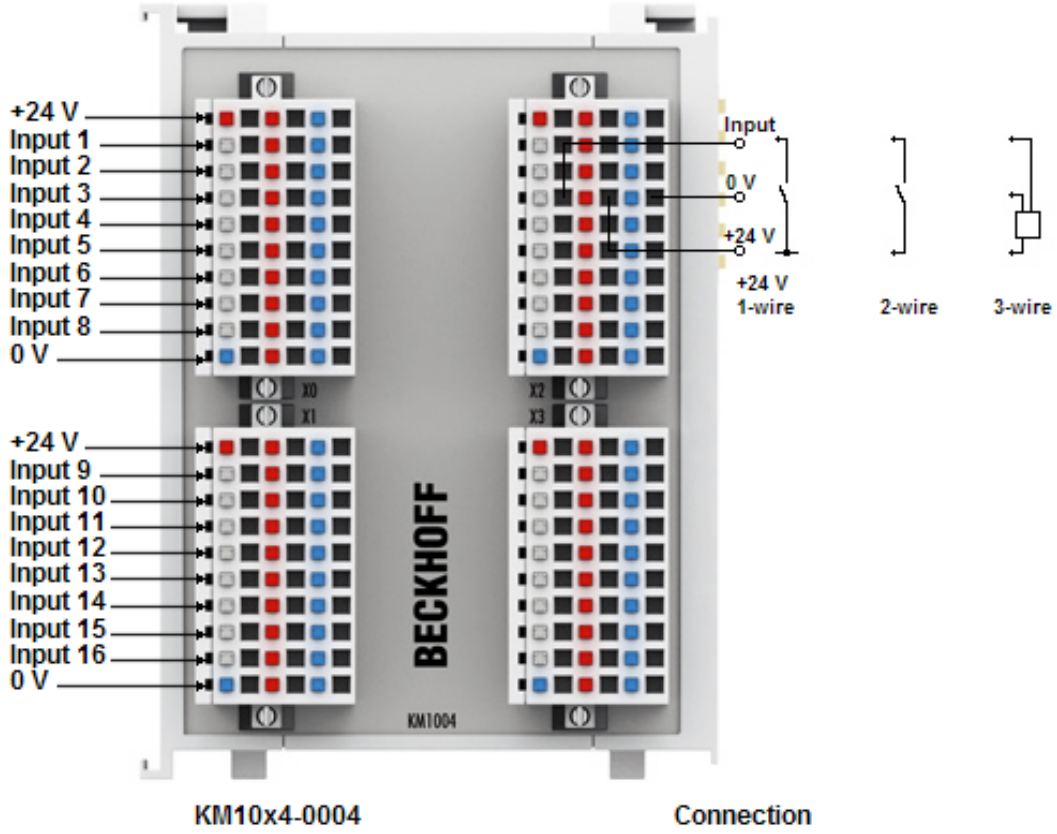



Fig. 9: KM10x4-0004

**Digital terminal module with 32 input channels (24 $V_{DC}$)**

The terminal modules KM1004 and KM1014 combine 32 digital inputs with 8 channels per plug connector in a compact design. The control signals are transmitted (electrically isolated) to the higher-level automation device. Like the standard Bus Terminals, the terminal modules are integrated in the Beckhoff I/O system. Plug connectors with spring connections enable permanent wiring and are optionally available with 1 or 3 pins. LEDs integrated in the connector indicate the signal state for each channel directly at the wire. The KM1004 and KM1014 versions have input filters with different speeds.

**Ordering information for terminal modules with 32 digital inputs**

| Order identifier | Scope of supply |
|---|---|
| KM1004-0000 | digital input module, 32 channels (3.0 ms), without connector |
| KM1004-0001 | digital input module, 32 channels (3.0 ms), with 4 connectors ZS2001-0001 |
| KM1004-0002 | digital input module, 32 channels (3.0 ms), with 4 connectors ZS2001-0002 |
| KM1004-0004 | digital input module, 32 channels (3.0 ms), with 4 connectors ZS2001-0004 |
| KM1014-0000 | digital input module, 32 channels (0.2 ms), without connector |
| KM1014-0001 | digital input module, 32 channels (0.2 ms), with 4 connectors ZS2001-0001 |
| KM1014-0002 | digital input module, 32 channels (0.2 ms), with 4 connectors ZS2001-0002 |
| KM1014-0004 | digital input module, 32 channels (0.2 ms), with 4 connectors ZS2001-0004 |

See also section Ordering information for KM connectors [▶ 16].

## 2.3.2 Technical data

| Technical data | KM1004 | KM1014 |
|---|---|---|
| Number of inputs | 32 (4 x 8) | |
| Rated voltage | 24 $V_{DC}$ (-15%/+20%) | |
| Signal voltage “0” | -3 V ... 5 V | |
| Signal voltage “1” | 15 V ... 30 V | |
| Input filter | 3.0 ms | 0.2 ms |
| Input current | typically 5 mA | |
| Power supply for the electronics | via the K-Bus | |
| Current consumption from K-bus | typically 3 mA | |
| Width of a bus terminal block | Maximum [▶ 18] 64 standard Bus Terminals or 80 cm<br>(one KM10x4 corresponds to 4 standard Bus Terminals here) | |
| Electrical isolation | 500 V (K-Bus / signal voltage) | |
| Bit width in the input process image | 32 bit | |
| Dimensions with connectors (w x h x d) | approx. 75mm x 100mm x 55mm (width aligned: 73mm), see dimensional drawing [▶ 18] | |
| Weight (without connectors) | approx. 150 g | |
| Permissible ambient temperature range during operation | 0°C ... +55°C | |
| Permissible ambient temperature range during storage | -25°C ... +85°C | |
| Permissible relative humidity | 95%, no condensation | |
| Mounting [▶ 22] | on 35 mm mounting rail conforms to EN 60715 | |
| Vibration/shock resistance | conforms to EN 60068-2-6 / EN 60068-2-27 | |
| EMC immunity / emission | conforms to EN 61000-6-2 / EN 61000-6-4 | |
| Protection class | IP20 | |
| Installation position | variable | |
| Approval | CE | |

# 2.4 KM1008, KM1018

## 2.4.1 Introduction

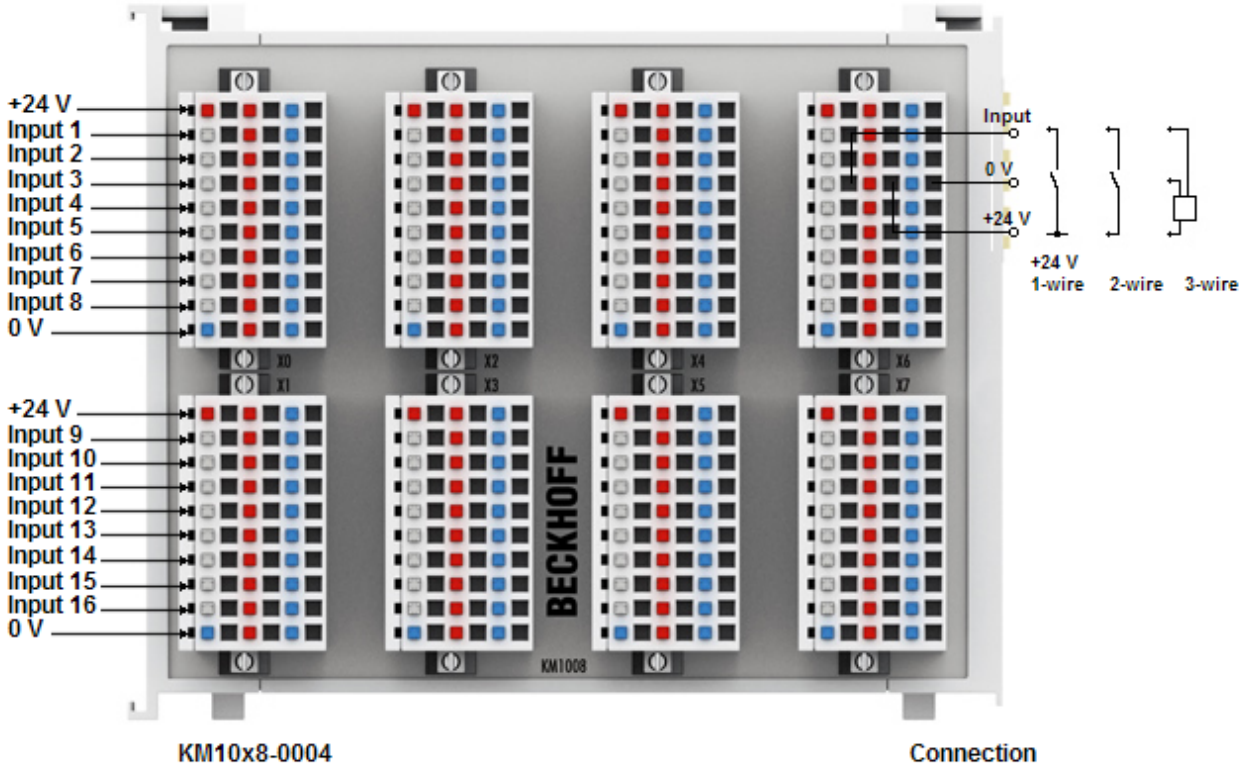



Fig. 10: KM10x8-0004

**Digital terminal module with 64 input channels (24 $V_{DC}$)**

The terminal modules KM1008 and KM1018 combine 64 digital inputs with 8 channels per plug connector in a compact design. The control signals are transmitted (electrically isolated) to the higher-level automation device. Like the standard Bus Terminals, the terminal modules are integrated in the Beckhoff I/O system. Plug connectors with spring connections enable permanent wiring and are optionally available with 1 or 3 pins. LEDs integrated in the connector indicate the signal state for each channel directly at the wire. The KM1008 and KM1018 versions have input filters with different speeds.

**Ordering information for terminal modules with 64 digital inputs**

| Order identifier | Scope of supply |
|---|---|
| KM1008-0000 | digital input module, 64 channels (3.0 ms), without connector |
| KM1008-0001 | digital input module, 64 channels (3.0 ms), with 8 connectors ZS2001-0001 |
| KM1008-0002 | digital input module, 64 channels (3.0 ms), with 8 connectors ZS2001-0002 |
| KM1008-0004 | digital input module, 64 channels (3.0 ms), with 8 connectors ZS2001-0004 |
| KM1018-0000 | digital input module, 64 channels (0.2 ms), without connector |
| KM1018-0001 | digital input module, 64 channels (0.2 ms), with 8 connectors ZS2001-0001 |
| KM1018-0002 | digital input module, 64 channels (0.2 ms), with 8 connectors ZS2001-0002 |
| KM1018-0004 | digital input module, 64 channels (0.2 ms), with 8 connectors ZS2001-0004 |

See also section Ordering information for KM connectors [▶ 16].

### 2.4.2 Technical data

| Technical data | KM1008 | KM1018 |
|---|---|---|
| Number of inputs | 64 (8 x 8) | |
| Rated voltage | 24 $V_{DC}$ (-15%/+20%) | |
| Signal voltage “0” | -3 V ... 5 V | |
| Signal voltage “1” | 15 V ... 30 V | |
| Input filter | 3.0 ms | 0.2 ms |
| Input current | typically 5 mA | |
| Power supply for the electronics | via the K-Bus | |
| Current consumption from K-bus | typically 3 mA | |
| Width of a bus terminal block | Maximum [▶ 18] 64 standard Bus Terminals or 80 cm<br>(one KM10x8 corresponds to 8 standard Bus Terminals here) | |
| Electrical isolation | 500 V (K-Bus / signal voltage) | |
| Bit width in the input process image | 64 bit | |
| Dimensions with connectors (w x h x d) | approx. 123mm x 100mm x 55mm (width aligned: 121mm), see dimensional drawing [▶ 18] | |
| Weight (without connectors) | approx. 225 g | |
| Permissible ambient temperature range during operation | 0°C ... +55°C | |
| Permissible ambient temperature range during storage | -25°C ... +85°C | |
| Permissible relative humidity | 95%, no condensation | |
| Mounting [▶ 22] | on 35 mm mounting rail conforms to EN 60715 | |
| Vibration/shock resistance | conforms to EN 60068-2-6 / EN 60068-2-27 | |
| EMC immunity / emission | conforms to EN 61000-6-2 / EN 61000-6-4 | |
| Protection class | IP20 | |
| Installation position | variable | |
| Approval | CE | |

## 2.5 KM connector

### 2.5.1 Ordering information for KM plug-in connector

Fig. 11: KM plug-in connector for single-wire connection (ZS2001-0001, ZS2001-0002)

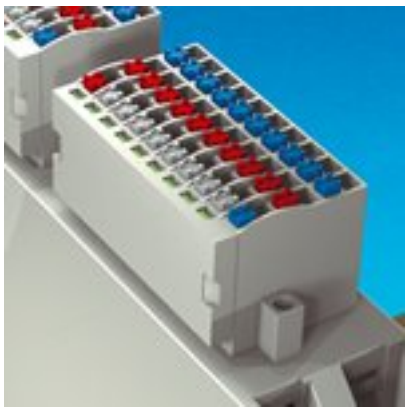


Fig. 12: KM plug-in connector for tree-wire connection (ZS2001-0004)

| Ordering name | Signal LEDs | Wiring technique | | |
|---|---|---|---|---|
| | | single-wire | two-wire | three-wire |
| ZS2001-0001 | no | yes | no | no |
| ZS2001-0002 | yes | yes | no | no |
| ZS2001-0004 | yes | yes | yes | yes |

## 2.5.2 Technical Data

| Technical Data | ZS2001-0001 | ZS2001-0002 | ZS2001-0004 |
|---|---|---|---|
| Number of terminal points | 10 | 10 | 30 |
| Signal LEDs | no | yes | yes |
| Nominal voltage | 24 $V_{DC}$ | | |
| Nominal current | 2 A | | |
| Cycle of connector operation | 25 | | |
| Wire size width<br>Solid:<br>stranded:<br>with ferrule: | <br>0.2 $mm^2$ ... 1.0 $mm^2$ (H05V-U, H07V-U)<br>0.2 $mm^2$ ... 1.5 mm (H05V-K, H07V-K)<br>0.2 $mm^2$ ... 1.0 $mm^2$ (ferrule to DIN 46 228 pt 1)<br>0.2 $mm^2$ ... 0.75 $mm^2$ (ferrule with plastic collar to DIN 46 228 pt 4) | | |
| Maximum outer diameter of the conductor | 2.9 mm | | |
| Wire stripping length | 8 mm, 10 mm for use with ferrule | | |
| Dimensions (w x h x d) | app. 42mm x 10.3mm x 26.9mm | app. 42mm x 12.7mm x 26.9mm | app. 42mm x 20.8mm x 26.9mm |
| Weight | app. 11 g | app. 13 g | app. 23 g |
| Permissible ambient temperature range during operation | 0°C ... +55°C | | |
| Permissible ambient temperature range during storage | -25°C ... +55°C | | |
| Permissible relative humidity | 80%, no condensation | | |
| Vibration / shock resistance | conforms to EN 60068-2-6 / EN 60068-2-27 | | |
| EMC resistance burst / ESD | conforms to EN 61000-6-2 / EN 61000-6-4 | | |
| Protection class | IP20 | | |
| Installation position | variable | | |

# 3 Mounting and wiring

## 3.1 Recommended mounting rails

Terminal Modules und EtherCAT Modules of KMxxxx and EMxxxx series, same as the terminals of the EL66xx and EL67xx series can be snapped onto the following recommended mounting rails:

- DIN Rail TH 35-7.5 with 1 mm material thickness (according to EN 60715)
- DIN Rail TH 35-15 with 1,5 mm material thickness

| | |
|---|---|
| **Note** | **Pay attention to the material thickness of the DIN Rail**<br>Terminal Modules und EtherCAT Modules of KMxxxx and EMxxxx series, same as the terminals of the EL66xx and EL67xx series does not fit to the DIN Rail TH 35-15 with 2,2 to 2,5 mm material thickness (according to EN 60715)! |

## 3.2 Dimensions

**KM10x2, KM20x2**

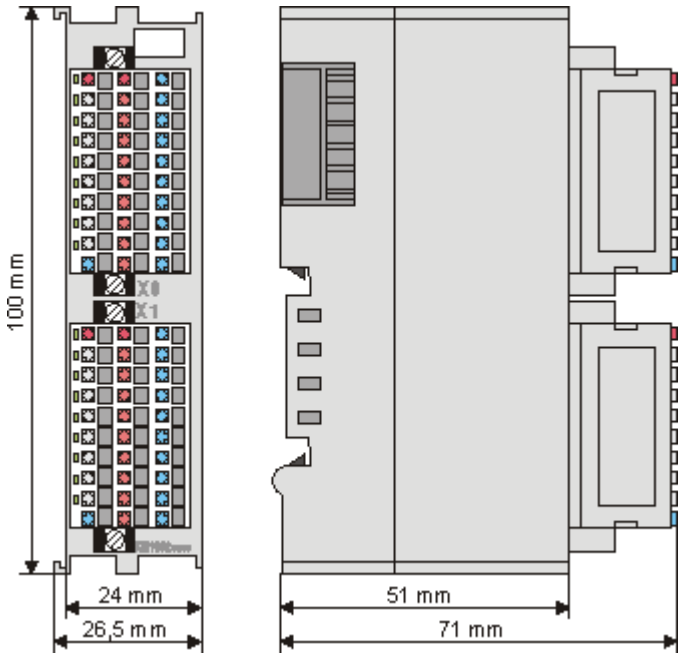



Fig. 13: Dimensions KM10x2, KM20x2

**KM10x4, KM20x4**

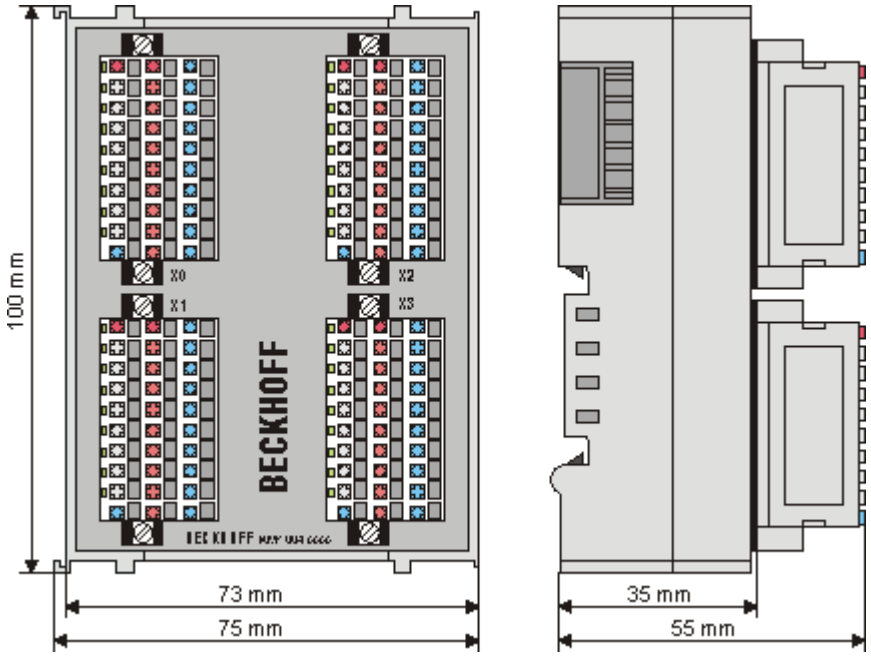



Fig. 14: Dimensions KM10x4, KM20x4

**KM10x8, KM20x8**

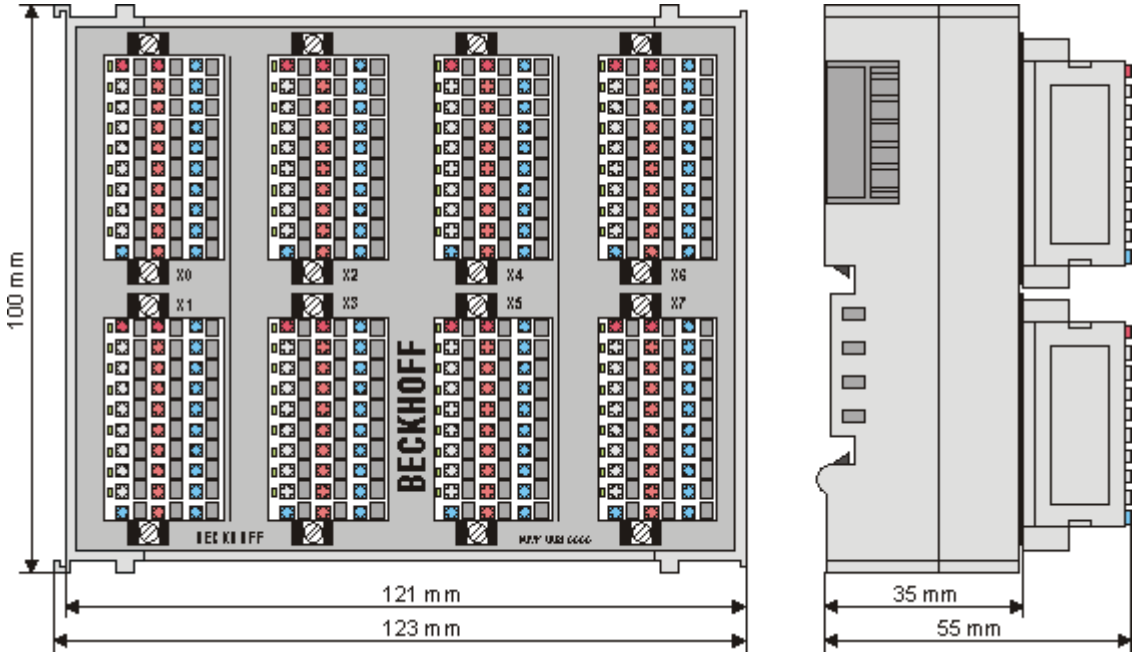



Fig. 15: Dimensions KM10x8, KM20x8

**Width of a Bus Terminal block**

| | |
|---|---|
| **Attention** | **Pay attention to the maximum with and the current consumption**<br>A maximum of 64 Bus Terminals or Bus Terminal Modules may be aligned to a Bus Coupler! An overall with of 80 cm must not be exceeded! Also take care that the current consumption of the Bus Terminals / Bus Terminal Modules does not overstrain the K-Bus power supply of the Bus Coupler! |

## 3.3 Mounting and demounting - terminals with traction lever unlocking

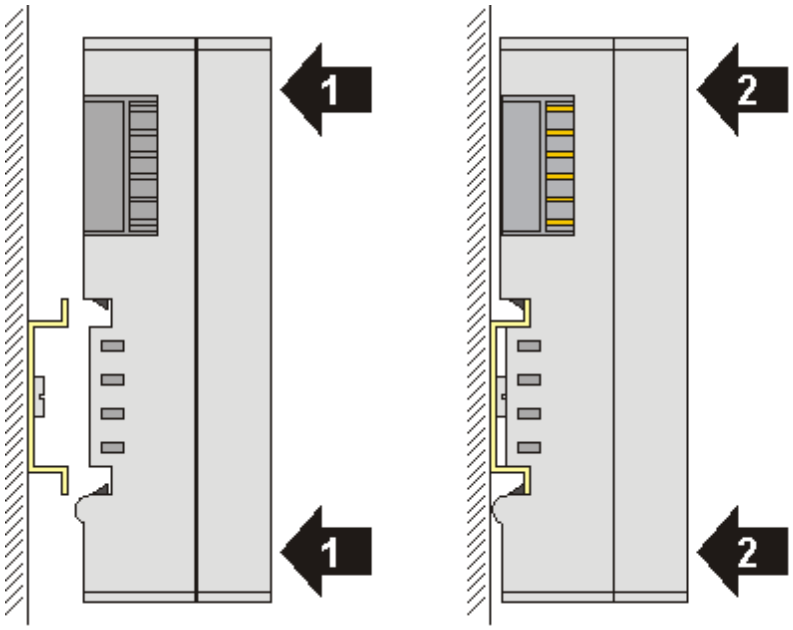
The terminal modules are fastened to the assembly surface with the aid of a 35 mm mounting rail (e.g. mounting rail TH 35-15).

| | |
|---|---|
| Note | **Fixing of mounting rails**<br>The locking mechanism of the terminals and couplers extends to the profile of the mounting rail. At the installation, the locking mechanism of the components must not come into conflict with the fixing bolts of the mounting rail. To mount the recommended mounting rails under the terminals and couplers, you should use flat mounting connections (e.g. countersunk screws or blind rivets). |

| | |
|---|---|
| WARNING | **Risk of electric shock and damage of device!**<br>Bring the bus terminal system into a safe, powered down state before starting installation, disassembly or wiring of the Bus Terminals! |

### Mounting

- Fit the mounting rail to the planned assembly location.

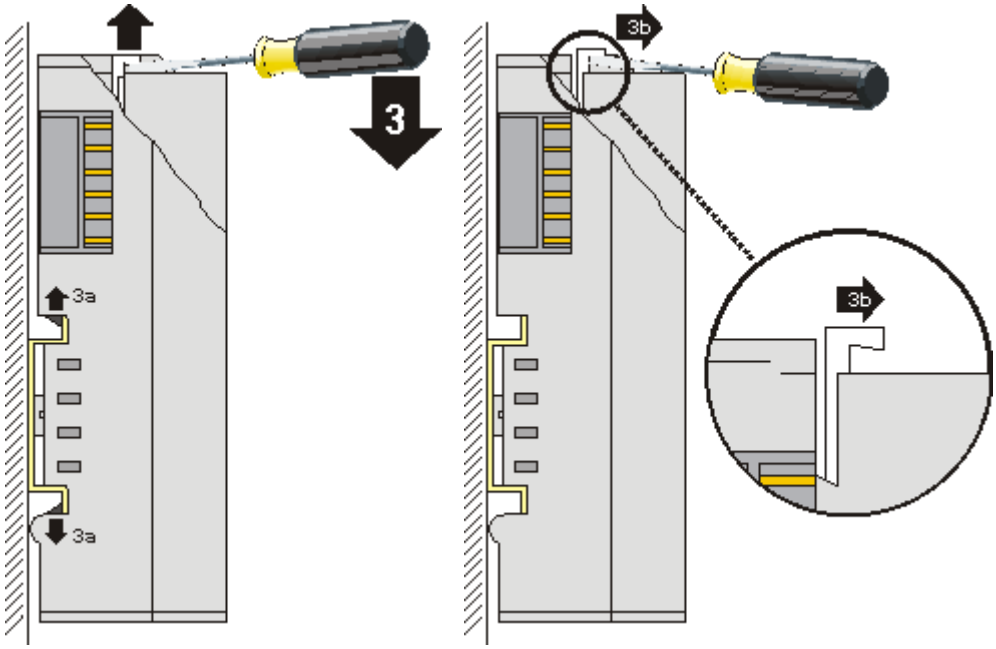



  and press (1) the terminal module against the mounting rail until it latches in place on the mounting rail (2).

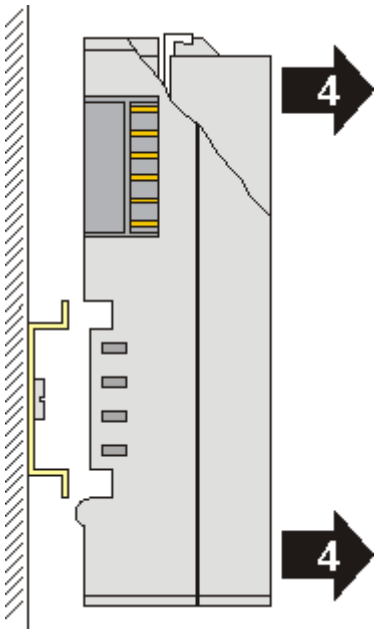
- Attach the cables.

### Demounting

- Remove all the cables. Thanks to the KM/EM connector, it is not necessary to remove all the cables separately for this, but for each KM/EM connector simply undo 2 screws so that you can pull them off (fixed wiring)!
- Lever the unlatching hook on the left-hand side of the terminal module upwards with a screwdriver (3). As you do this
  - an internal mechanism pulls the two latching lugs (3a) from the top hat rail back into the terminal module,
  - the unlatching hook moves forwards (3b) and engages




- In the case 32 and 64 channel terminal modules (KMxxx4 and KMxxx8 or EMxxx4 and EMxxx8) you now lever the second unlatching hook on the right-hand side of the terminal module upwards in the same way.
- Pull (4) the terminal module away from the mounting surface.



# 3.4 Mounting and demounting - terminals with front unlocking

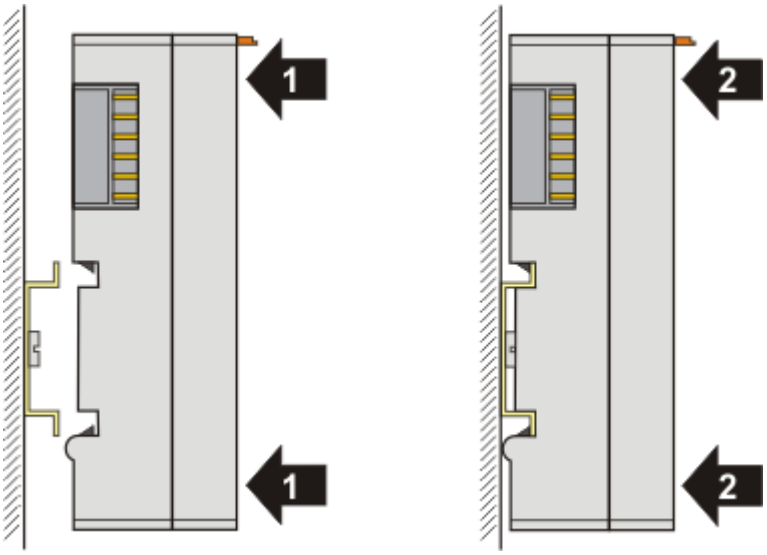
The terminal modules are fastened to the assembly surface with the aid of a 35 mm mounting rail (e.g. mounting rail TH 35-15).

| | |
|---|---|
| Note | **Fixing of mounting rails**<br>The locking mechanism of the terminals and couplers extends to the profile of the mounting rail. At the installation, the locking mechanism of the components must not come into conflict with the fixing bolts of the mounting rail. To mount the recommended mounting rails under the terminals and couplers, you should use flat mounting connections (e.g. countersunk screws or blind rivets). |

| | |
|---|---|
| WARNING | **Risk of electric shock and damage of device!**<br>Bring the bus terminal system into a safe, powered down state before starting installation, disassembly or wiring of the Bus Terminals! |

### Mounting

- Fit the mounting rail to the planned assembly location.

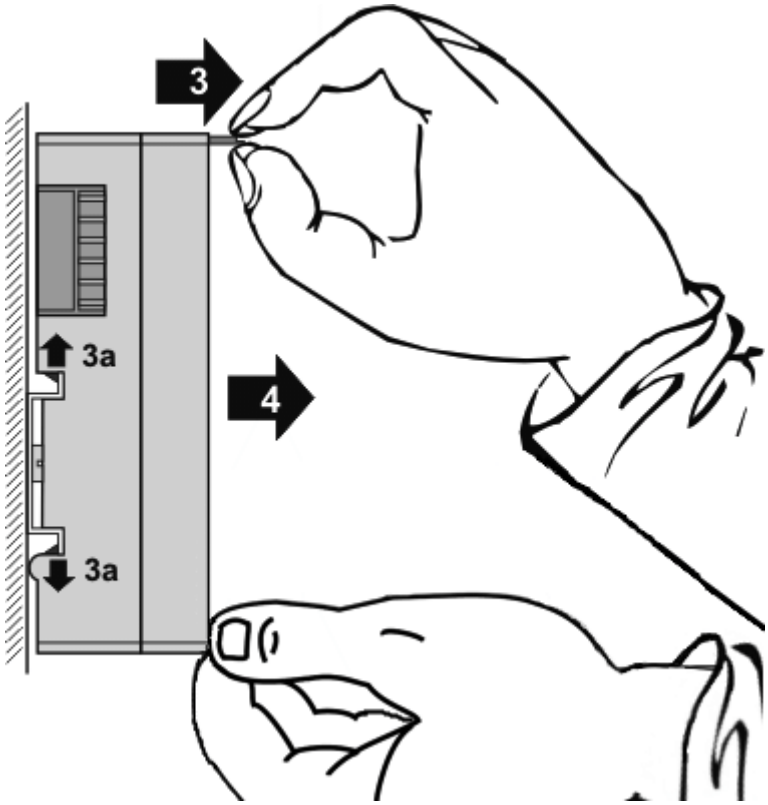



and press (1) the terminal module against the mounting rail until it latches in place on the mounting rail (2).

- Attach the cables.

### Demounting

- Remove all the cables.
- Lever the unlatching hook back with thumb and forefinger (3). An internal mechanism pulls the two latching lugs (3a) from the top hat rail back into the terminal module.




- Pull (4) the terminal module away from the mounting surface.
  Avoid canting of the module; you should stabilize the module with the other hand, if required.

# 3.5 Wiring

| | |
|---|---|
| **WARNING** | **Risk of electric shock and damage of device!**<br>Bring the bus terminal system into a safe, powered down state before starting installation, disassembly or wiring of the Bus Terminals! |

### Supply voltage connection

The illustration shows the connection of the supply voltage for the module electronics and the actuators to two KM connectors.

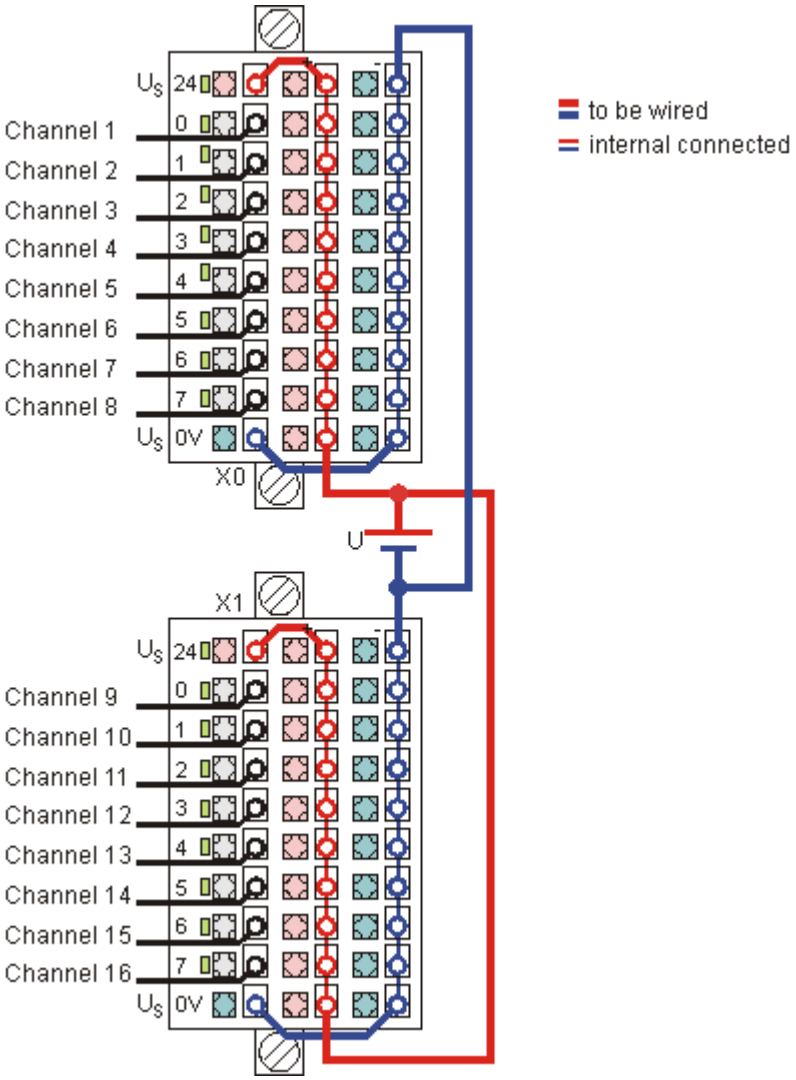



Fig. 16: Supply voltage connection

| | |
|---|---|
| **Note** | **Power the internal electronics**<br>• the positive supply voltage to terminal location +24 V<br>• the negative supply voltage to terminal location 0 V |

### Connecting the actuators

#### Pin assignment for channels 1 to 16

| Channel | Terminal point | at KM connector |
|---|---|---|
| 1 | 0 | X0 |
| 2 | 1 | X0 |
| 3 | 2 | X0 |
| 4 | 3 | X0 |
| 5 | 4 | X0 |
| 6 | 5 | X0 |
| 7 | 6 | X0 |
| 8 | 7 | X0 |
| 9 | 0 | X1 |
| 10 | 1 | X1 |
| 11 | 2 | X1 |
| 12 | 3 | X1 |
| 13 | 4 | X1 |
| 14 | 5 | X1 |
| 15 | 6 | X1 |
| 16 | 7 | X1 |

For terminal modules with more than 16 channels, you will find the assignment of the channels to the additional KM connectors in the description of the Process image.

## 3.6 Connection technology

The sensors can be connected in

- single-conductor (see example, terminal point 0),
- two-conductor (see example, terminal point 3), or
- three-conductor mode (see example, terminal point 6)

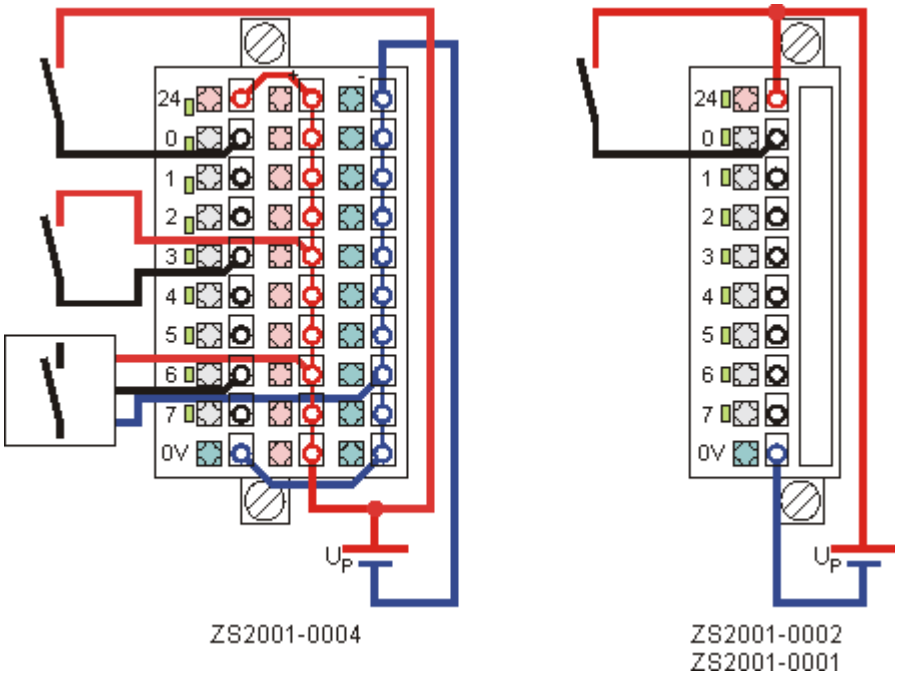



Fig. 17: Connection

# 4 Access from the user program

## 4.1 Process image

### KM1002, KM1012

The process image of the KM1002/KM1012 terminal modules consists of 2 bytes of input data.

| Byte offset | Format | Input data | KM connector |
|---|---|---|---|
| 0 | Byte | DataIN (channel 1 to 8) | X0 |
| 1 | Byte | DataIN (channel 9 to 16) | X1 |

### KM1004, KM1014

The process image of the KM1004/KM1014 terminal modules consists of 4 bytes of input data.

| Byte offset | Format | Input data | KM connector |
|---|---|---|---|
| 0 | Byte | DataIN (channel 1 to 8) | X0 |
| 1 | Byte | DataIN (channel 9 to 16) | X1 |
| 2 | Byte | DataIN (channel 17 to 24) | X2 |
| 3 | Byte | DataIN (channel 25 to 32) | X3 |

### KM1008, KM1018

The process image of the KM1008/KM1018 terminal modules consists of 8 bytes of input data.

| Byte offset | Format | Input data | KM connector |
|---|---|---|---|
| 0 | Byte | DataIN (channel 1 to 8) | X0 |
| 1 | Byte | DataIN (channel 9 to 16) | X1 |
| 2 | Byte | DataIN (channel 17 to 24) | X2 |
| 3 | Byte | DataIN (channel 25 to 32) | X3 |
| 4 | Byte | DataIN (channel 33 to 40) | X4 |
| 5 | Byte | DataIN (channel 41 to 48) | X5 |
| 6 | Byte | DataIN (channel 49 to 56) | X6 |
| 7 | Byte | DataIN (channel 57 to 64) | X7 |

# 5 Appendix

## 5.1 Support and Service

Beckhoff and their partners around the world offer comprehensive support and service, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

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Please contact your Beckhoff branch office or representative for local support and service on Beckhoff products!

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# List of illustrations