

Documentation

KM2042

Sixteen channel digital output module with D-Sub Connector

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BECKHOFF

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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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The logo for EtherCAT, featuring the word "EtherCAT" in a bold, sans-serif font. A red arrow points from the top of the "A" towards the right, ending above the "T". A registered trademark symbol (®) is located to the right of the "T".

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

1.3 Documentation Issue Status

Version	Comment
2.0.0	<ul style="list-style-type: none">• Migration
1.0.0	<ul style="list-style-type: none">• First release

Firmware and hardware versions

Documentation, version	Firmware version	Hardware version
2.0.0	00	03
1.0.0	00	01

The firmware and hardware versions (delivery state) can be taken from the serial number printed on the side 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

HH - hardware version

Example with ser. no.: 31 09 00 01:

31 - week of production 31

09 - year of production 2009

00 - firmware version 00

01 - hardware version 01

2 Product overview

2.1 Introduction

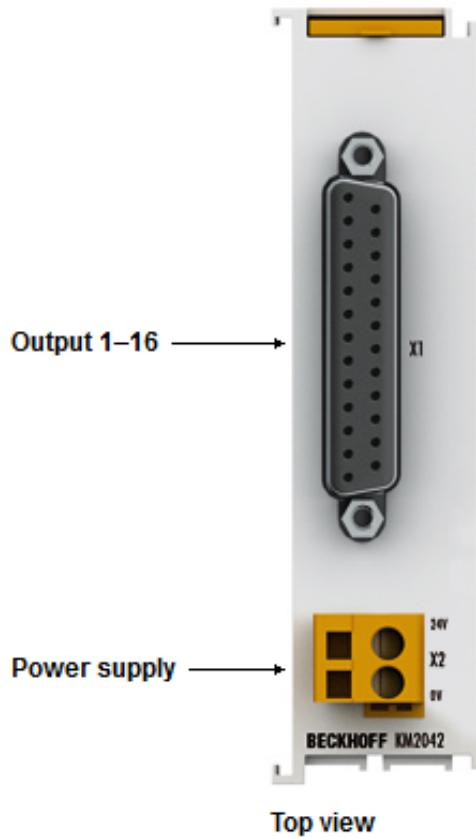


Fig. 1: KM2042

The KM2042 Terminal Module combines 16 digital outputs in a Sub-D plug connector in a compact design. The binary control signals are transferred (electrically isolated) to the actuators at the process level. Like the standard Bus Terminals, the terminal modules are integrated in the I/O system.

2.2 Technical Data

Technical Data	KM2042
Number of outputs	16
Rated load voltage	24 V _{DC} (-15 %/+20 %)
Load type	ohmic, inductive, lamp load
Output current	max. 0.5 A on each channel, individually short-circuit proof, Total current max. 4 A
Short circuit current	0.6...1.0 A
Breaking energy (ind.)	< 150 mJ/channel
Electrical isolation	500 V (K-bus/field voltage)
Power supply for the electronics	via the K-bus
Current consumption from the K-bus	typically 5 mA
Width of a bus terminal block	Maximum 64 standard Bus Terminals or 80 cm (one KM2042 corresponds to 2 standard Bus Terminals here)
Data width in the input process image	0 bit
Data width in the output process image	16 bit
Dimensions without antenna (W x H x D)	approx. 26.5 mm x 100 mm x 70 mm (width aligned: 24 mm)
Weight	app. 90 g
Permissible ambient temperature range during operation	0°C ... + 55°C
Permissible ambient temperature range during storage	-25°C ... + 85°C
Permissible relative air humidity	95 %, no condensation
Mounting [▶ 10]	on a 35 mm mounting rail [▶ 10] (e.g. DIN rail TH 35-7.5 conforming 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	IP 20
Installation position	variable
Approval	CE

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

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 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

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).



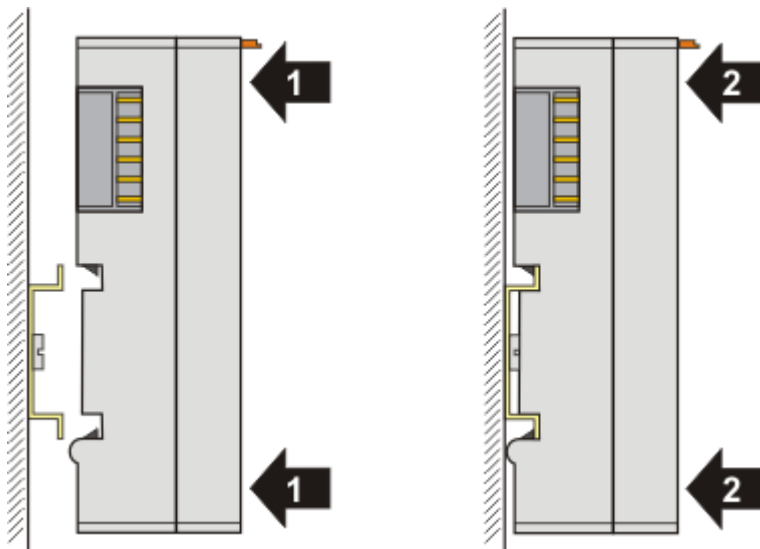
WARNING

Risk of electric shock and damage of device!

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.

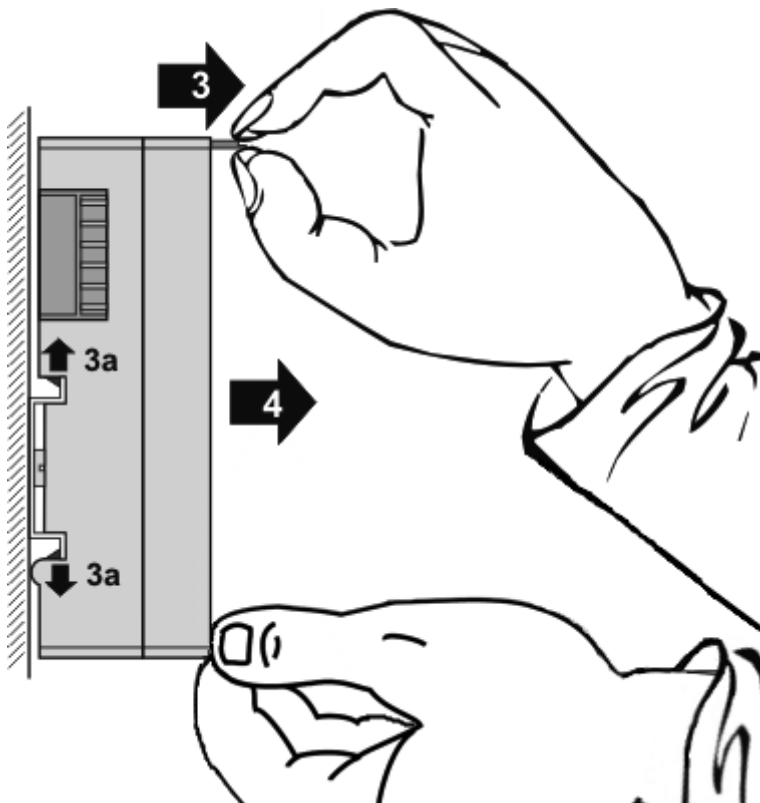


and press (1) the terminal module against the mounting rail until it latches in place on the mounting rail (2).

- 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.

3.3 Dimensions

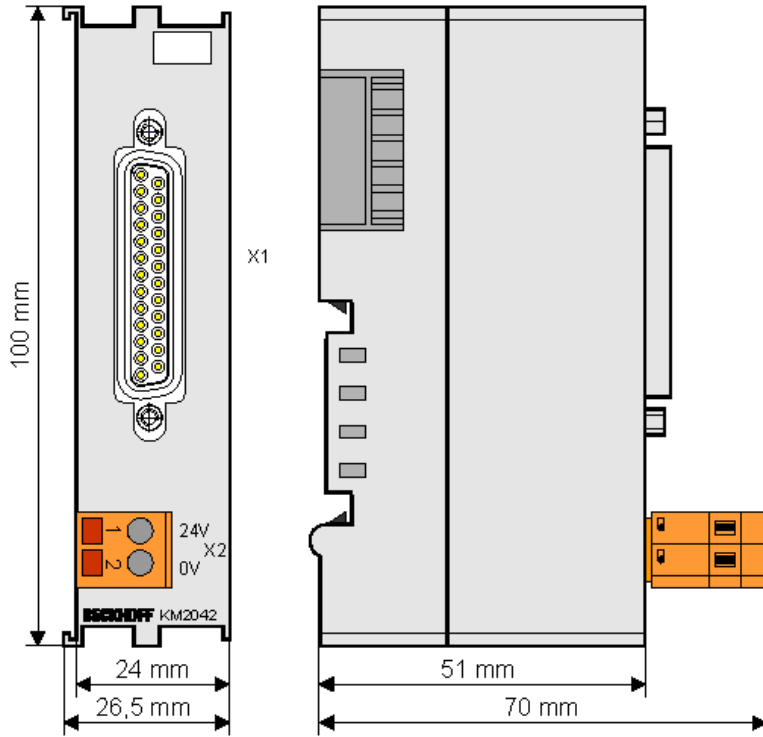


Fig. 2: KM2042 - Dimensions

3.4 Connection

X1: Signal connection, digital outputs, D-Sub 25

The KM2042 digital output module transmits the binary control signals from the automation device on to the actuators at the process level.

The 16 outputs deliver load currents of up to 0.5 A, although the total current from all the outputs must not exceed 4 A.

The signal connection is made through a 25-pin D-Sub socket.

The outputs are short-circuit proof and protected against inverse connection.

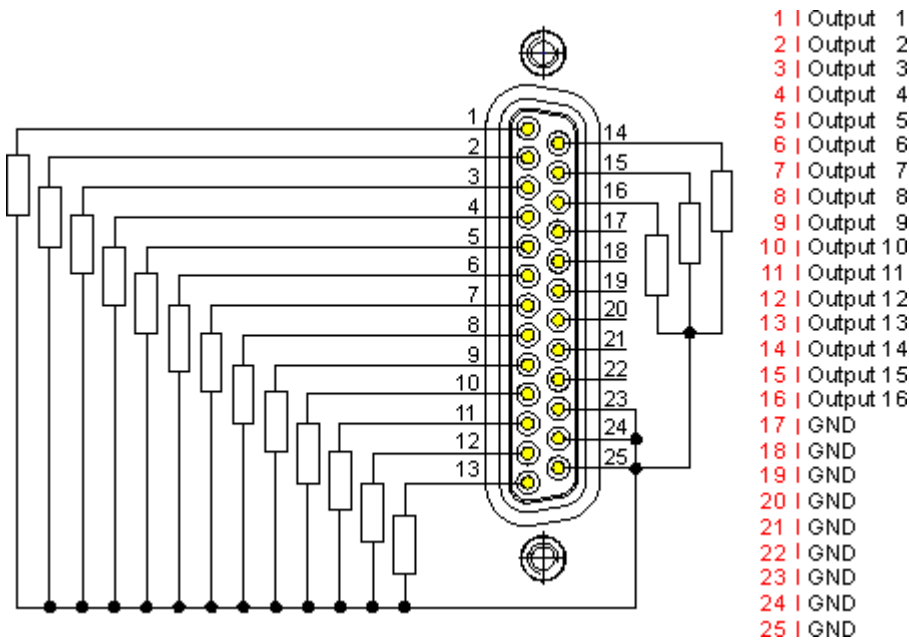


Fig. 3: Assignment of the 25-pin D-sub socket

X2: Connection of the voltage supply for the outputs

Name	Description
24 V	Supply voltage 24 V
0 V	Supply voltage 0 V

Block diagram

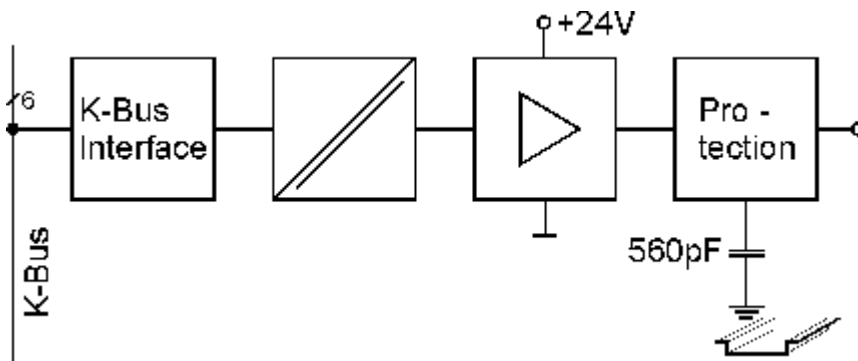


Fig. 4: Block diagram

4 Appendix

4.1 Support and Service

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