BECKHOFF New Automation Technology

Documentation | EN

KM2042

Sixteen channel digital output module with D-Sub Connector

2024-03-13 | Version: 2.2.0

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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.
The qualified personnel is obliged to always use the currently valid documentation.

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.

Trademarks

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Patent Pending

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents: EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702 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.

Signal words

The signal words used in the documentation are classified below. In order to prevent injury and damage to persons and property, read and follow the safety and warning notices.

Personal injury warnings

⚠ DANGER
Hazard with high risk of death or serious injury.

⚠ WARNING
Hazard with medium risk of death or serious injury.

⚠ CAUTION
There is a low-risk hazard that could result in medium or minor injury.

Warning of damage to property or environment

NOTICE
The environment, equipment, or data may be damaged.

Information on handling the product

This information includes, for example:
recommendations for action, assistance or further information on the product.

1.3 Documentation Issue Status

Version	Comment
2.2.0	• Chapter “Recommended mounting rails” removed
2.1.0	• Chapter “Technical data” updated • Document structure updated • Chapter “Disposal” added • New title page • Revision status updated
2.0.0	• Migration
1.0.0	• First release

Firmware and hardware versions

Documentation, version	Firmware version	Hardware version
2.2.0	00	05
2.1.0	00	05
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	Example with serial number 31 09 00 01:
WW - week of production (calendar week)	31 - week of production 31
YY - year of production	09 - year of production 2009
FF - firmware version	00 - firmware version 00
HH - hardware version	01 - hardware version 01

2 Product overview

2.1 Introduction

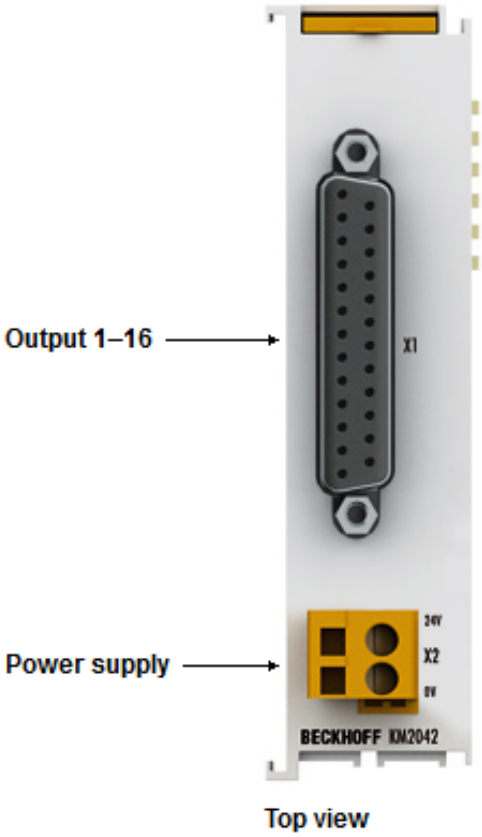


Fig. 1: KM2042 - sixteen channel digital output module with D-Sub connector

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 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
Approvals / markings*	CE, UKCA, EAC

*) Real applicable approvals/markings see type plate on the side (product marking).

3 Mounting and wiring

3.1 Instructions for ESD protection

NOTICE

Destruction of the devices by electrostatic discharge possible!

The devices contain components at risk from electrostatic discharge caused by improper handling.

- Please ensure you are electrostatically discharged and avoid touching the spring contacts (see fig.) of the device directly.
- Avoid contact with highly insulating materials (synthetic fibers, plastic film etc.).
- Surroundings (working place, packaging and personnel) should by grounded probably, when handling with the devices.
- Each assembly must be terminated at the right hand end with a KL9010 bus end terminal, to ensure the protection class and ESD protection.

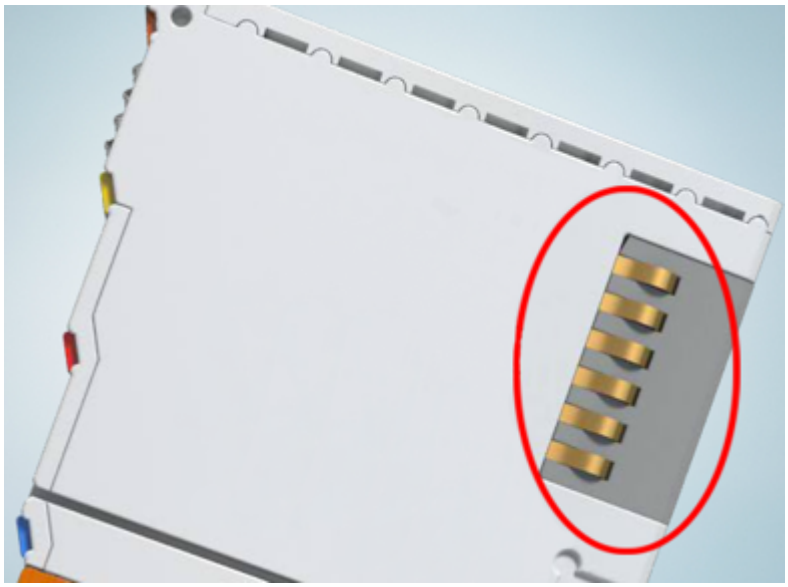


Fig. 2: Spring contacts of the Beckhoff I/O components

3.2 Mounting and demounting - top 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).

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).

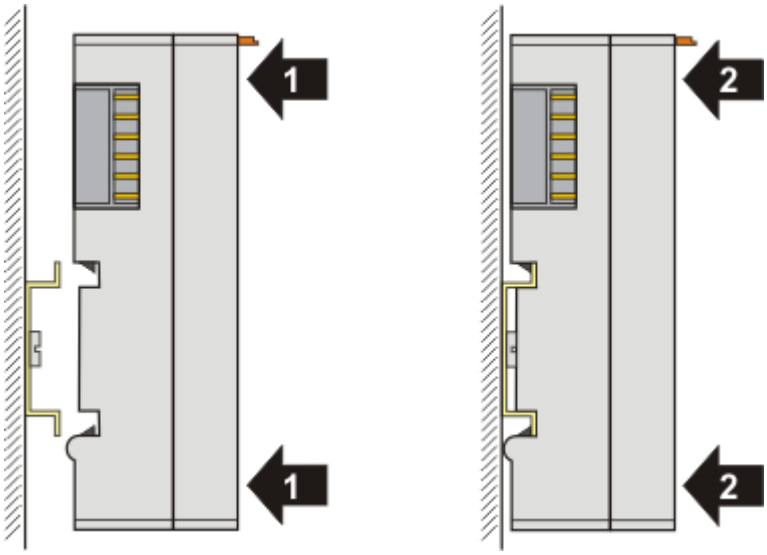
⚠ WARNING

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.

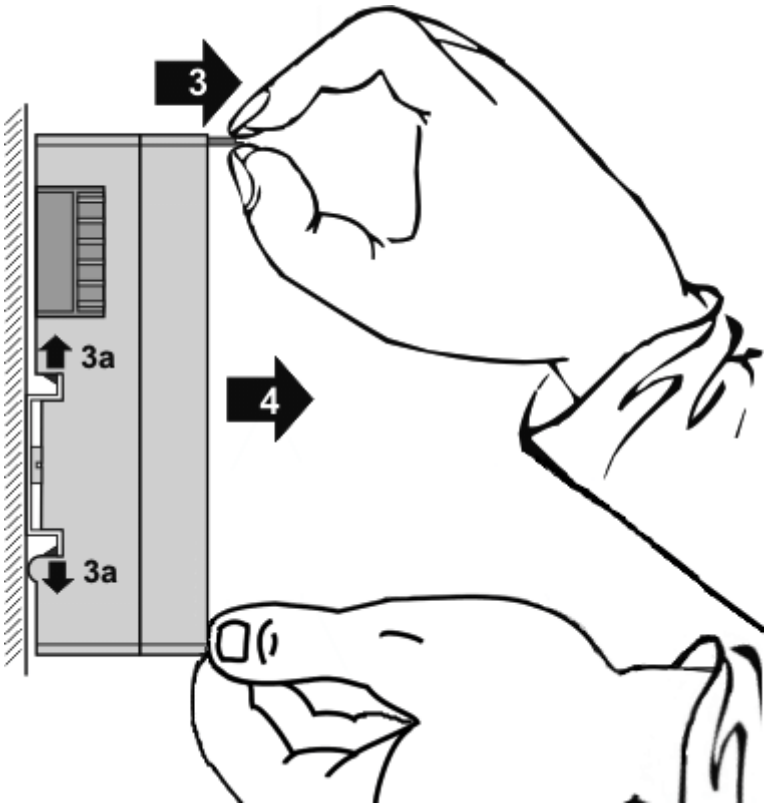


and press (1) the terminal module against the mounting rail until it latches in place on the mounting rail (2).

- 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 Disposal

Products marked with a crossed-out wheeled bin shall not be discarded with the normal waste stream. The device is considered as waste electrical and electronic equipment. The national regulations for the disposal of waste electrical and electronic equipment must be observed.

3.4 Dimensions

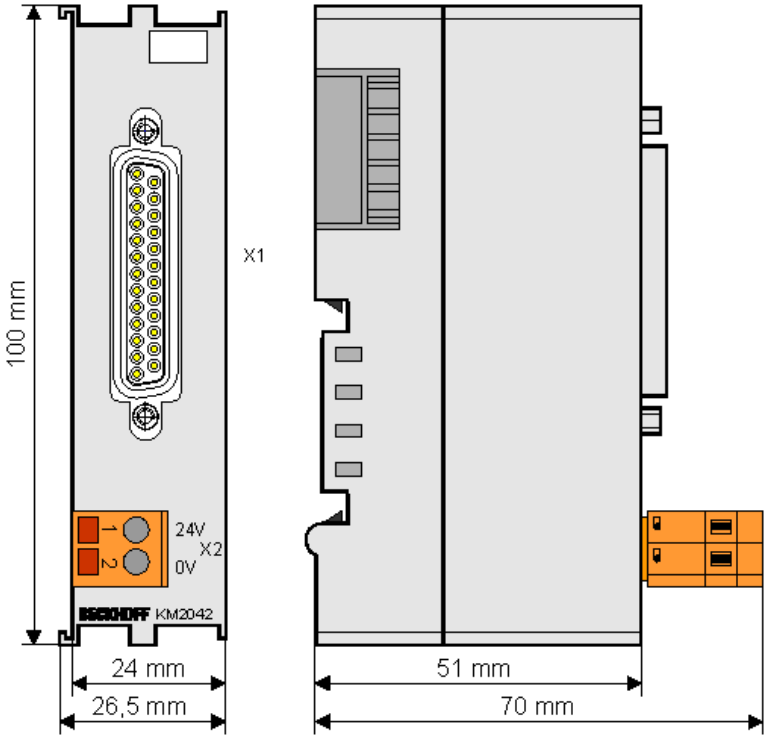


Fig. 3: KM2042 - Dimensions

3.5 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.

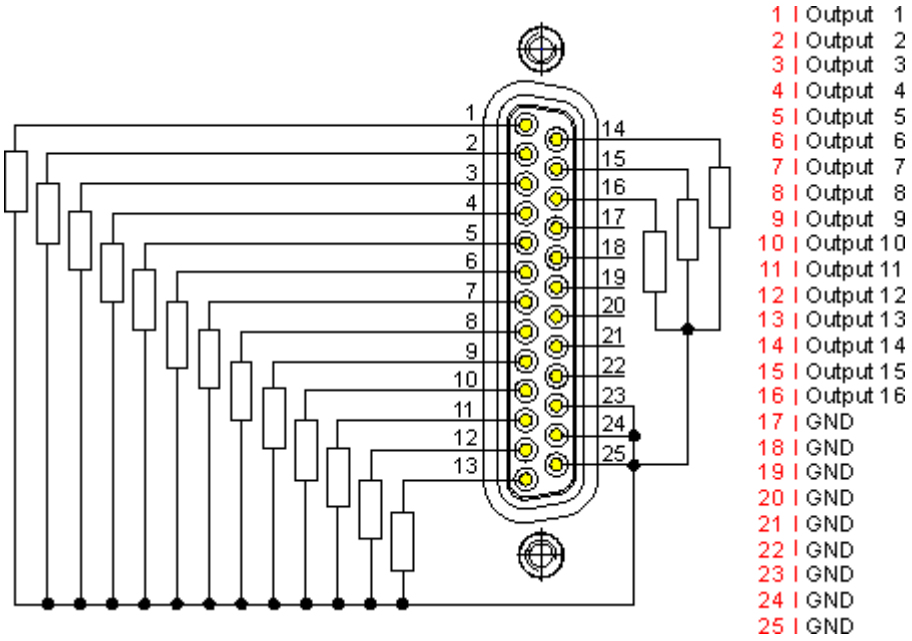


Fig. 4: Assignment of the 25-pin D-sub socket

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

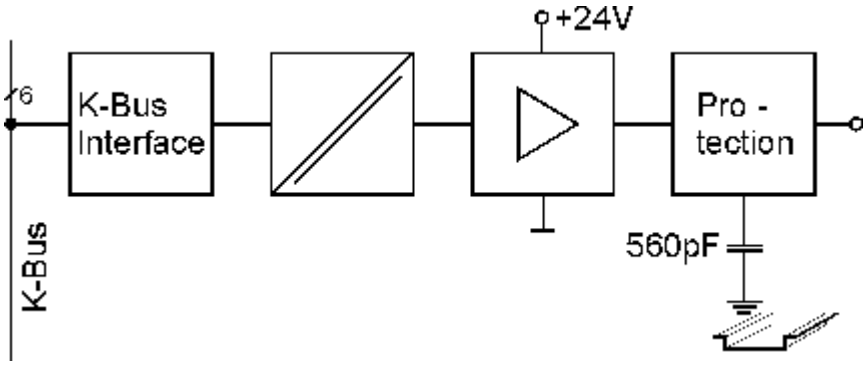


Fig. 5: Block diagram

4 Appendix

4.1 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.

Beckhoff's branch offices and representatives

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

The addresses of Beckhoff's branch offices and representatives round the world can be found on her internet pages: www.beckhoff.com

You will also find further documentation for Beckhoff components there.

Support

The Beckhoff Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- support
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- and extensive training program for Beckhoff system components

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