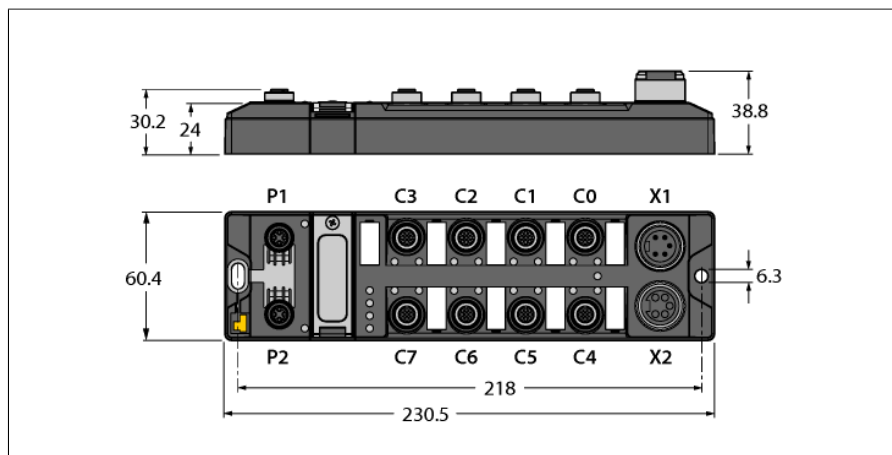


# Compact Multiprotocol RFID Module for Ethernet

## Compact RFID and I/O module programmable via CODESYS V3

### TBEN-L5-4RFID-8DXP-CDS



|      |                        |
|------|------------------------|
| Type | TBEN-L5-4RFID-8DXP-CDS |
| ID   | 6814120                |

|                            |                                                                                                                                   |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Supply                     |                                                                                                                                   |
| Supply voltage             | 24 VDC                                                                                                                            |
| Admissible range           | 18...30 VDC<br>Total current V1 max. 8 A [UL: 7 A] + V2 max. 9 A at 70 °C [UL: 55 °C] per module                                  |
| Voltage supply connection  | 7/8", 5-pin                                                                                                                       |
| Operating current          | V1: max. 200 mA<br>V2: max. 50 mA                                                                                                 |
| RFID supply $V_{AUX 1}$    | Slots C0–C3 from V1<br>Short-circuit proof, 2 A per channel at 70 °C, [UL: 1.74 A per channel at 55 °C]                           |
| Sensor/actuator supply     | Slots C4–C7 powered by V2<br>Power supply Pin1 switchable for each slot<br>Short-circuit proof, 2 A per slot at 70 °C [UL: 55 °C] |
| Electrical isolation       | galvanic isolation of the voltage groups V1 and V2, voltages up to 500 VAC                                                        |
| Power dissipation, typical | ≤ 6.5 W                                                                                                                           |

|                                |                                |
|--------------------------------|--------------------------------|
| system description             |                                |
| Processor                      | ARM Cortex A8, 32 Bit, 800 MHz |
| Program memory and data memory | 20 MB                          |
| Memory                         | 256 MB Flash                   |
| RAM memory                     | 128 MB DDR3                    |
| Add-on memory                  | 1 x USB host port              |
| Real time clock                | yes                            |
| Operating system               | Linux                          |

- CODESYS V3 PLC runtime
- CODESYS OPC UA server/client
- PROFINET device, EtherNet/IP device or Modbus TCP client/server
- 4 channels with M12 connection for RFID
- 8 universal digital channels, configurable as PNP inputs or outputs, 2 A
- Switched or dual MAC mode
- Integrated Ethernet switch
- Supports 10 Mbps/100 Mbps
- Glass fiber reinforced housing
- Shock and vibration tested
- Fully potted module electronics
- Protection classes IP65, IP67, IP69K
- ATEX zone 2/22
- CCC-Ex
- Integration in PLC systems without the use of a special function module
- Up to 128 bytes of user data per read/write cycle per channel as well as the use of fragments with 16 kilobytes of FIFO memory each
- Data interface for convenient use of the RFID functions
- Continuous HF bus mode with up to 32 HF read/write heads per channel
- 4 channels with M12 connection for RFID
- 8 universal digital channels, configurable as PNP inputs or outputs, 2 A

|                              |                                                  |
|------------------------------|--------------------------------------------------|
| <b>PLC data</b>              |                                                  |
| Programming                  | CODESYS V3                                       |
| Released for CODESYS version | V 3.5.11.20                                      |
| Programming languages        | IEC 61131-3 (AWL, KOP, FUP, AS, ST)              |
| Application tasks            | 10                                               |
| Number of POU's              | 1024                                             |
| Programming interface        | Ethernet, USB                                    |
| Cycle time                   | < 1 ms for 1000 AWL commands (without I/O cycle) |
| Input data                   | 8 kByte                                          |
| Output data                  | 8 kByte                                          |

|                                |                         |
|--------------------------------|-------------------------|
| <b>System data</b>             |                         |
| Transmission rate Ethernet     | 10/100 Mbps             |
| Connection technology Ethernet | 2 x M12, 4-pin, D-coded |
| Web server                     | Default: 192.168.1.100  |
| Service interface              | Ethernet via P1 or P2   |

|                           |                                           |
|---------------------------|-------------------------------------------|
| <b>Modbus TCP</b>         |                                           |
| Addressing                | Static IP, BOOTP, DHCP                    |
| Supported function codes  | FC1, FC2, FC3, FC4, FC6, FC15, FC16, FC23 |
| Number of TCP connections | 8                                         |

|                                 |                                   |
|---------------------------------|-----------------------------------|
| <b>Ethernet/IP</b>              |                                   |
| Addressing                      | acc. to EtherNet/IP specification |
| Class 3 connections (TCP)       | 3                                 |
| Class 1 connections (CIP)       | 10                                |
| Input Assembly Instance         | 103                               |
| Input Data Size                 | 248 INT                           |
| Output Assembly Instance        | 104                               |
| Output Data Size                | 248 INT                           |
| Configuration Assembly Instance | 106                               |

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>PROFINET</b>                 |                                 |
| Addressing                      | DCP                             |
| MinCycleTime                    | 4 ms                            |
| Diagnostics                     | acc. to PROFINET alarm handling |
| Automatic addressing            | supported                       |
| Media Redundancy Protocol (MRP) | supported                       |

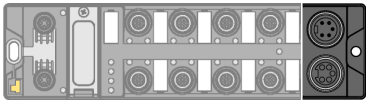
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| <b>RFID</b>           |                                                                                                                                                           |
| Number of channels    | 4                                                                                                                                                         |
| Connectivity          | M12                                                                                                                                                       |
| Power supply          | 2 A per channel at 70 °C [UL: 1.74 A per channel at 55 °C], short-circuit proof                                                                           |
| Operation per channel | 1 × HF or UHF read/write head, up to 32 bus-compatible HF read/write heads ending on /C53 (additional power supply may be needed for static applications) |
| Mixed operation of    | HF and UHF read/write heads                                                                                                                               |
| RFID data interface   | HF und UHF                                                                                                                                                |
| Cable length          | Max. 50 m                                                                                                                                                 |

|                           |                                                                   |
|---------------------------|-------------------------------------------------------------------|
| <b>Digital inputs</b>     |                                                                   |
| Number of channels        | 8                                                                 |
| Connectivity inputs       | M12, 5-pin                                                        |
| Input type                | PNP                                                               |
| Type of input diagnostics | Channel diagnostics                                               |
| Switching threshold       | EN 61131-2 Typ 3, PNP                                             |
| Low-level signal voltage  | < 5 V                                                             |
| High level signal voltage | > 11 V                                                            |
| Low level signal current  | < 1.5 mA                                                          |
| High level signal current | > 2 mA                                                            |
| Electrical isolation      | Galvanically isolated to the fieldbus<br>Voltage proof up 500 VDC |

|                            |                                                                   |
|----------------------------|-------------------------------------------------------------------|
| <b>Digital outputs</b>     |                                                                   |
| Number of channels         | 8                                                                 |
| Connectivity outputs       | M12, 5-pin                                                        |
| Output type                | PNP                                                               |
| Type of output diagnostics | Channel diagnostics                                               |
| Output voltage             | 24 VDC from potential group                                       |
| Output current per channel | 2.0 A, short-circuit proof, max. 4.0 A per port                   |
| Simultaneity factor        | 0.56                                                              |
| Load type                  | EN 60947-5-1: DC-13                                               |
| Short-circuit protection   | yes                                                               |
| Electrical isolation       | Galvanically isolated to the fieldbus<br>Voltage proof up 500 VDC |

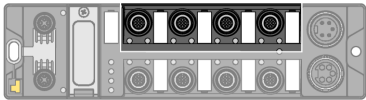
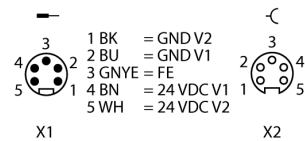
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| <b>Standard/Directive conformity</b> |                                                                                                                 |
| Vibration test                       | Acc. to EN 60068-2-6<br>Acceleration up to 20 g                                                                 |
| Shock test                           | acc. to EN 60068-2-27                                                                                           |
| Drop and topple                      | acc. to EN 60068-2-31/IEC 60068-2-32                                                                            |
| Electromagnetic compatibility        | Acc. to EN 61131-2                                                                                              |
| Approvals and certificates           | CE<br>UKCA<br>ATEX zone 2/22<br>CCC-Ex<br>FM class I, zone 2,<br>UV resistant acc. to DIN EN ISO 4892-2A (2013) |
| UL Certificate                       | cULus LISTED 21 W2, Encl.type 1 IND.CONT.EQ.                                                                    |
| Note on ATEX/IECEX                   | The Quick Start Guide with information on use in Ex areas must be observed.                                     |

|                            |                                          |
|----------------------------|------------------------------------------|
| <b>General Information</b> |                                          |
| Dimensions (W x L x H)     | 60.4 x 230.4 x 38.8 mm                   |
| Ambient temperature        | -40...+70 °C<br>UL: +55 °C               |
| Storage temperature        | -40...+85 °C                             |
| Altitude                   | Max. 5000 m                              |
| Protection class           | IP65<br>IP67<br>IP69K                    |
| MTTF                       | 75 years acc. to SN 29500 (Ed. 99) 20 °C |
| Housing material           | PA6-GF30                                 |
| Housing color              | Black                                    |
| Connector material         | Nickel-plated brass                      |
| Window material            | Lexan                                    |
| Material screw             | 303 stainless steel                      |
| Material label             | Polycarbonate                            |
| Halogen-free               | yes                                      |
| Mounting                   | 2 mounting holes Ø 6.3 mm                |



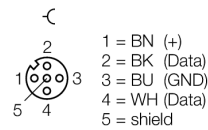
**Note**  
Power supply cable (example):  
RSM RKM 50-2M  
Ident. no. U2282-0

7/8" Power Supply

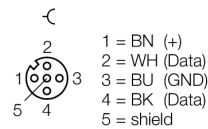


**Note**  
RFID cable (example):  
RK4.5T-2-RS4.5T/S2501  
Ident. no. U3-01243  
Connection of TB and TN read/write heads (example):  
TN-CK40-H1147  
Ident. no. 7030006

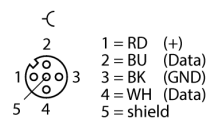
.../S2500 Connectors



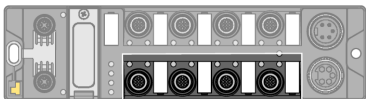
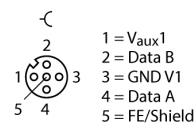
.../S2501 Connectors



Connectors .../S2503

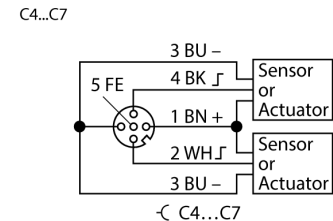
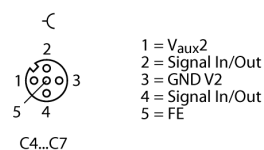


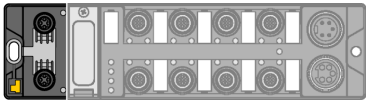
Wiring diagram



**Note**  
Actuator and sensor cable/PUR connection cable (example):  
RK4.4T-2-RS4.4T  
Ident. no. U2445  
Connection Y piece for single assignment  
YB2-FSM4.5-2FKM4.5  
Ident-No. U0875-78

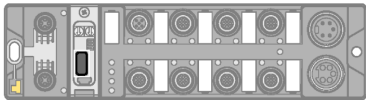
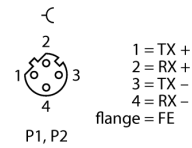
M12 x 1 I/O Port





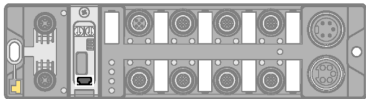
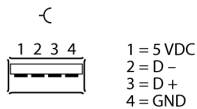
**Note**  
Ethernet cable (example):  
RSSD-RSSD-441-2M  
Ident. no. U-02482

M12 x 1 Ethernet



**USB Host Interface**  
For use with USB sticks

USB 2.0 A Jack



**USB Device Interface**  
For use as a programming interface (alternative to Ethernet)  
USB cable

USB 2.0 mini-B Jack

