TURCK
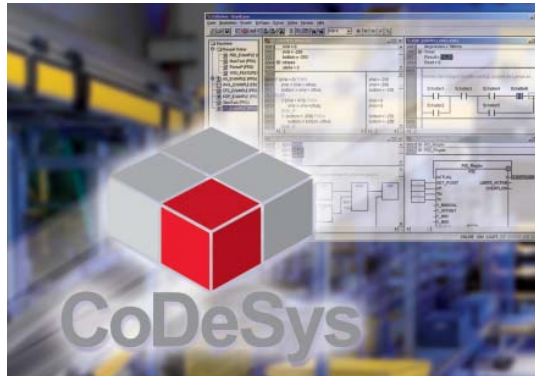
Industrial Automation

FIELDBUS TECHNOLOGY

**MODULAR
I/O SYSTEMS
AND COMPACT
I/O MODULES IN
IP20 AND IP67**

Sense it! Connect it! Bus it! Solve it!

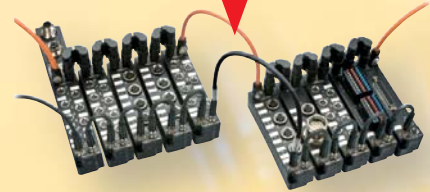# Modular I/O systems and compact I/O modules in IP20 and IP67

Perfect connections – no matter which fieldbus you use; TURCK provides you with a complete range of products:

- Modular and compact I/O systems in a variety of housing styles and IP-ratings
- Optimal support for planning, commissioning and service with the I/O-ASSISTANT software tool
- Decentralized intelligence with IEC 61131

	BL67 ▰ ▬ ▮ **page 4**	*piconet®* ▰ ▬ ▮ **page 6**	
Modular	✓	✓	
Compact		✓	
IP20		✓	
IP67	✓	✓	
Functions			
Digital I/O	✓	✓	
Analogue I/O	✓	✓	
Technology modules	✓	✓	
Fieldbus interfaces			
PROFIBUS-DP	✓	✓	
DeviceNet™	✓	✓	
CANopen	✓	✓	
INTERBUS		✓	
PROFINET IO	✓	✓	
EtherNet/IP™	✓	✓	
Modbus TCP	✓	✓	
System support			
Motor starter			
RFID	✓		
Valve terminals	✓	✓	
Zone 2			
Software			
CoDeSys programmable (see page 12)	✓		
I/O-ASSISTANT (see page 13)	✓	✓	

EtherNet/IP™   **PROFI NET** INDUSTRIAL ETHERNET   **Ethernet Modbus TCP**

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Compact I/O modules

IP67	IP20 page 8	BL20 page 10
		✓
✓	✓	
	✓	✓
✓		
✓	✓	✓
		✓
		✓
✓	✓	✓
✓	✓	✓
		✓
✓		
✓		✓
✓		✓
✓		✓
		✓
		✓
✓ (FXDP modules)		✓
		✓
✓ (FXEN modules)		✓
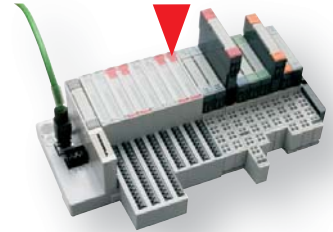
INTERBUS
CANopen
PROFIBUS PROCESS FIELD BUS
DeviceNet™

Certified! No.099

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The BL67 I/O system – the modular I/O system in IP67 for temperature range -25...+70 °C

Gateway:
The system control

- The interface to the higher level control system
- Gateways for PROFIBUS-DP, CANopen, DeviceNet™, PROFINET IO, EtherNet/IP™ and Ethernet Modbus TCP

Optional:
CoDeSys-programmable according to IEC 61131

- Relieves higher-level controller and bus system
- I/O modules independent of the fieldbus
- Prefabricated function blocks e. g. for the RFID *BL ident*® system and serial interfaces

Power Feeding Module

- Power supply for the field, sensors and acutators
- Enables the creation of potential groups which can be switched on or off according to the requirements of the application
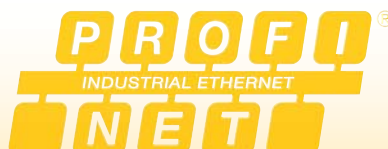
Operation control with Pick-to-Light sensors

- Combined digital modules enable one input and one output per M12 connector
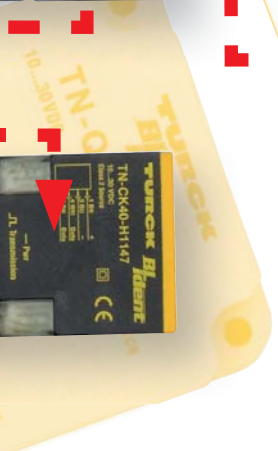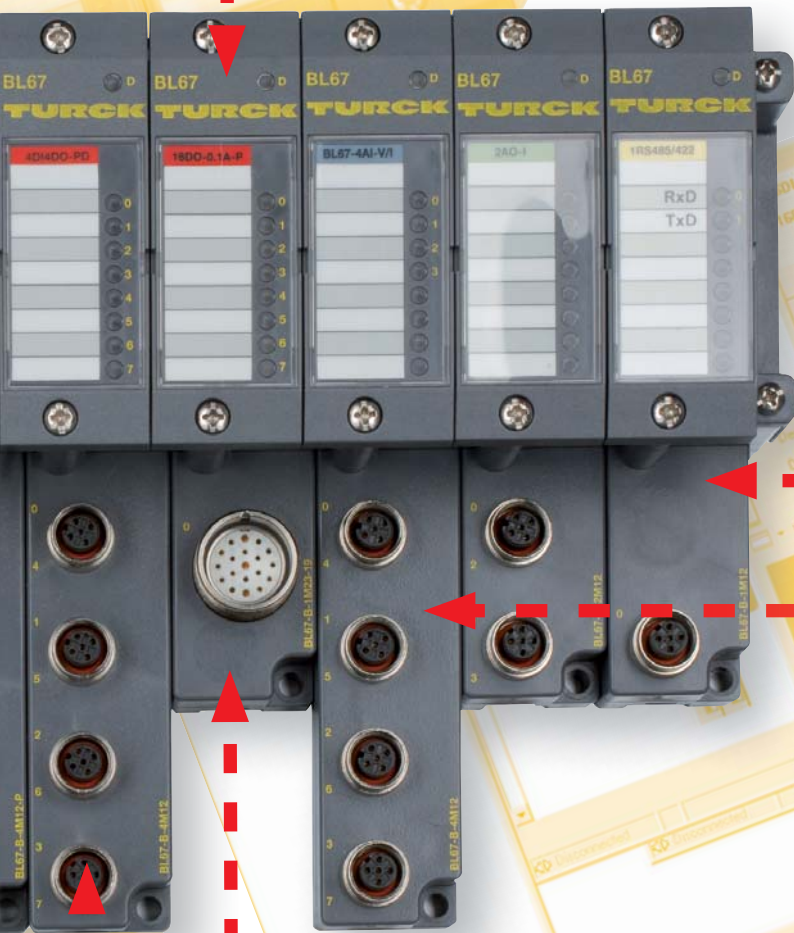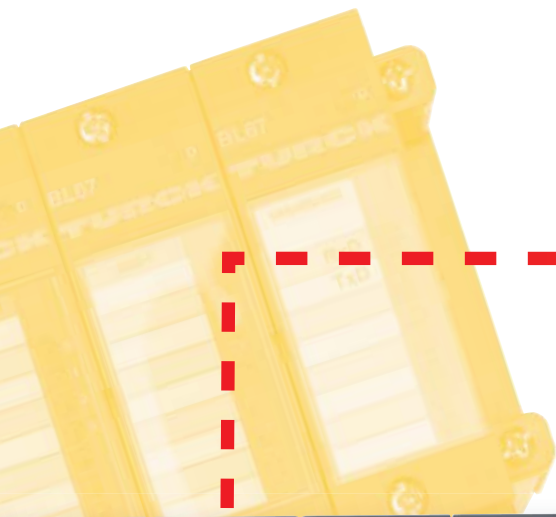- Prefabricated standard M12 sensor cables

BL ident® system

- The modular RFID system made by TURCK
- Modular extension, up to 8 channels Temperature range of the data carriers between -40 and +210 °C

EtherNet/IP™

PROFINET INDUSTRIAL ETHERNET
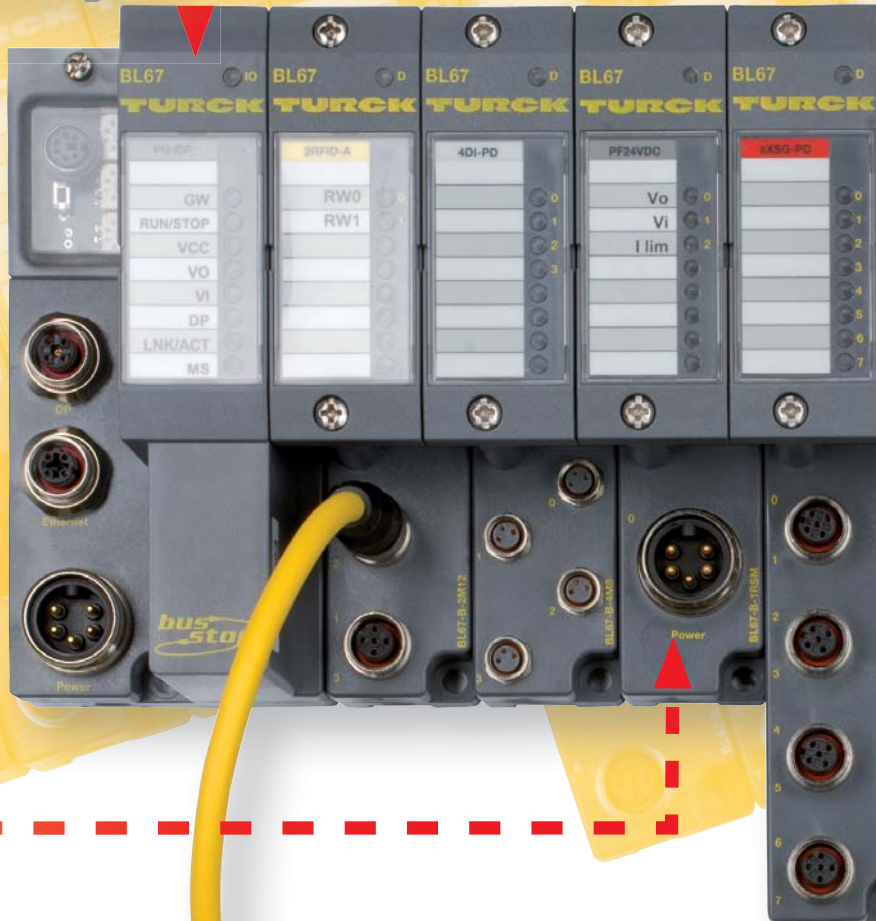
Modbus TCP

Elektronic modules

- Digital, analog, temperature, RS232, SSI, CANopen interface and more
- Independent form the applied fieldbus
- Free choice of connection technology
- Available as 2, 4, 8 or 16-channel version
- Local diagnostics and status display via LEDs
- Hot-Swapping function

Base modules

- Passive connection components for sensors and actuators
- Available as M8, M12, M23 and 7/8 connectors
- Connection of I/O modules with single, dual or multicore wiring
- Fast replacement of electronics through the use of separate connection bases

Material recognition

- Distinction of different metals or metalic compositions
- Distance independent material detection
- Inductive sensor with two analog voltage outputs
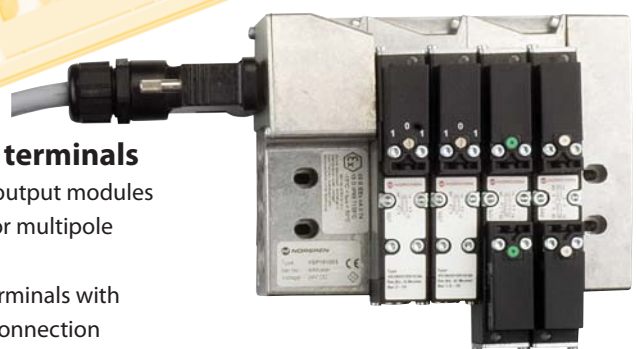
Integration of valve terminals

- 4, 8 or 16-channel digital output modules with M23 base modules for multipole valve terminals
- Up to 8 CANopen valve terminals with one CAN-valve interface connection module

I/O-ASSISTANT

- Planning, configuration, commissioning and diagnostic software
- Based on FDT/DTM technology
- Available as freeware on www.turck.com

The *piconet* ® I/O system – in miniature housings for highest industrial requirements

piconet® – Coupling modules

- As interface to the higher level control system
- Gateway between PROFIBUS-DP, CANopen, DeviceNet™, INTERBUS, EtherNet/IP™, Modbus TCP, PROFINET and fiber-optic cable based Sub-Bus „IP-Link"
- Coupling modules connect the higher level open fieldbus and the economical extension modules.
- Fiber-optic subnet (IP-Link) for connection of up to 120 extension modules per coupling module
- High-speed transmission, 1000 I/Os in approx. 1 ms via prefabricated and interference-free fiber-optic cables.
- Fiber-optic cable length up to 15 m

Bus addressing switch and service interface to I/O-ASSISTANT software

Bus LEDs

Module/

IP-Link LEDs
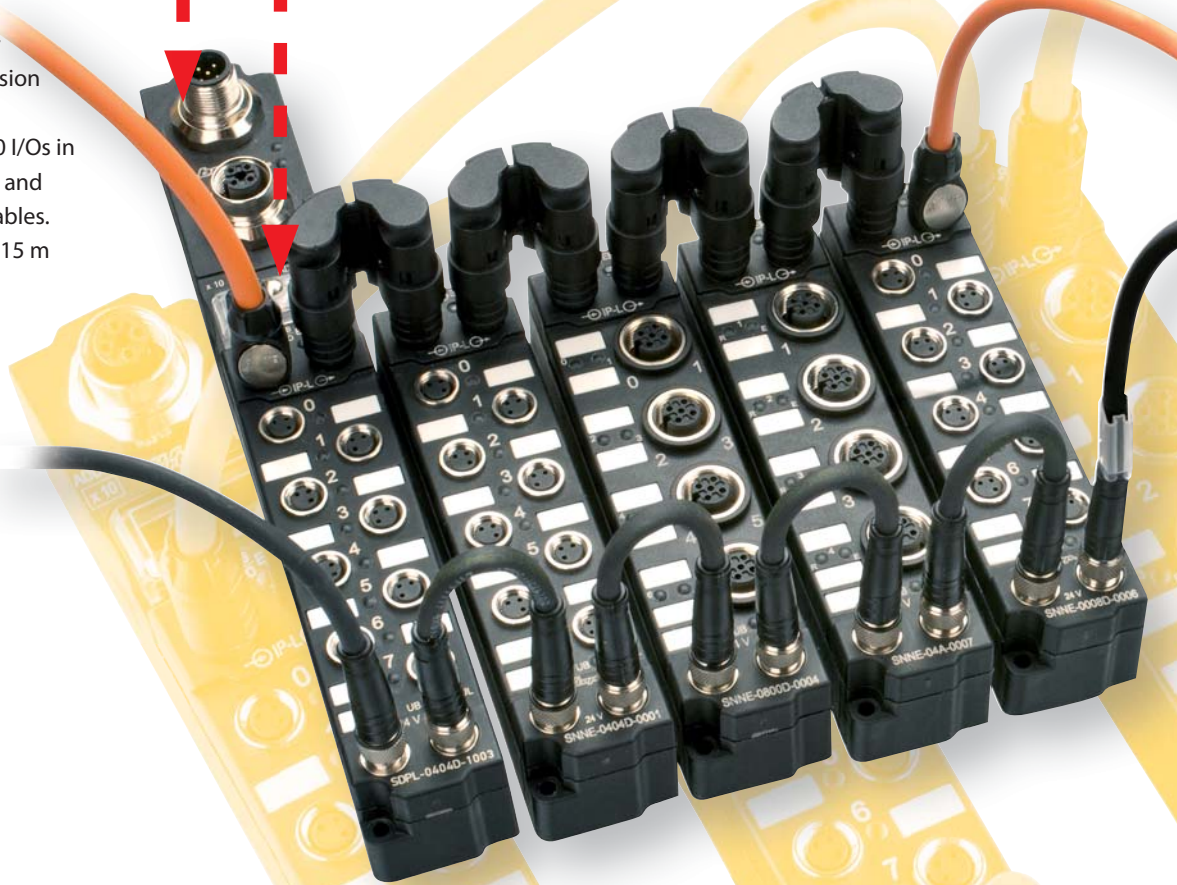
Compact and robust housing

- Only 26.5 mm high, 30 mm wide and 210, 175 or 126 mm long
- Fully encapsulated IP67 housing
- Suited for direct use on the machine
- Ideally suited for special or serial machine engineering as well as for various field applications

piconet®-Stand-alone module

- Stand-alone modules connect the integrated I/Os directly with the open fieldbus, e.g. PROFIBUS-DP, CANopen, DeviceNet™, INTERBUS, Modbus TCP, EtherNet/IP and PROFINET

A secure connection

- Prefabricated bus, fiber optic, power and I/O cables
- Field-wireable connectors
- Additional networking components such as T-pieces, terminating resistors etc.

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piconet® – Extension modules

- Flexible and tested I/O connection technology in M8 x 1, M12 x 1 and M23 x 1
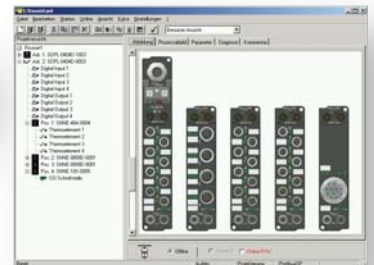- Extension modules independent of the higher lever fielbus system

piconet® – Bridges for fibre optics and power cables

- Compact mounting
- Reduced space requirements
- Easy installation
- IP67

Easy planning and configuration with the I/O-ASSISTANT

Configuration software for

- Project planning
- Configuration
- Parameterization

Power LEDs

High current module Σ12 A with 2 x M8 connectors

Description

The configuration software I/O-ASISSTANT supports you in planning and implementation of an I/O system.

Whether in the online or offline mode, the I/O-ASSISTANT simplifies module configuration and parameterization.

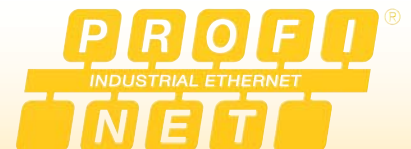The software is also extremely helpful in system set-up and testing.

INTERBUS

Certified! No.099

Modbus TCP **EtherNet/IP**™

PROFI **NET** **INDUSTRIAL ETHERNET**

Compact fieldbus I/O modules in IP67 and IP20

Compact fieldbus modules

These rugged modules are ideal for use in harsh industrial environments (both electrical and mechanical).

No matter if PROFIBUS-DP, DeviceNet™, Modbus TCP, EtherNet/IP™ or PROFINET protocols are required, all compact fieldbus I/O modules are designed with the same mechanical concept and have the following characteristics:

- Fibre-glass reinforced plastic housing
- Fully encapsulated module electronics
- Standard connection technology
- Metal round connector
- Vibration and shock tested
- Degree of protection IP67

FXDP – Configurable PROFIBUS-DP modules
- Freely configurable I/Os
- Channel-specific diagnostics
- Diagnostics according to PROFIBUS standard
- Diagnostics can be mapped to user data area
- Up to 16 digital channels

FGDP – PROFIBUS-DP-Modules with galvanic isolation
- Channel-specific diagnostics
- Diagnostics according to PROFIBUS standard
- Diagnostics can be mapped to user data area
- Up to 16 digital channels
- Galvanic isolation of operating and load voltage

FLDP – PROFIBUS-DP modules
- Module-specific diagnostics
- Up to 32 digital channels

FDNL – DeviceNet™ modules

- Channel-specific diagnostics (LX series) or module-specific diagnostics (SE series)
- Up to 16 digital channels
- Power supply via DeviceNet™

FDNP – DeviceNet™ modules

- Channel-specific diagnostics (LX series) or module-specific diagnostics (SE series)
- Up to 16 digital channels
- Separate power supply for the outputs

FDN/FDP – IP20 modules

- Extremely compact for mounting in tight spaces
- PROFIBUS-DP or DeviceNet™
- Up to 16 digital channels

**DEGREE OF PROTECTION**

IP20

FXEN – Configurable Ethernet modules

- Integrated Ethernet switch
- Freely configurable I/Os
- Channel-specific diagnostics
- Up to 16 digital channels

Accessories

- Cordsets – premoulded cables for bus, power supply and I/Os
- T and Y pieces Terminating resistors
- Flange connectors
- Feed-through receptacles
- Passive junction boxes

EtherNet/IP™

PROFI INDUSTRIAL ETHERNET **NET**®
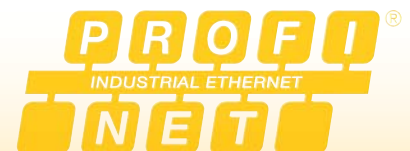
The BL20 I/O system –
The integrator for fieldbus, ident system, motor starter

Gateway – The system control
- The interface to the higher level control system
- Gateways e.g. for PROFIBUS-DP, CAN-open, DeviceNet™, Ethernet/IP™ and Modbus TCP – also available as economy version

CoDeSys

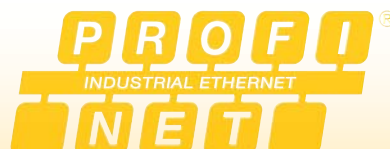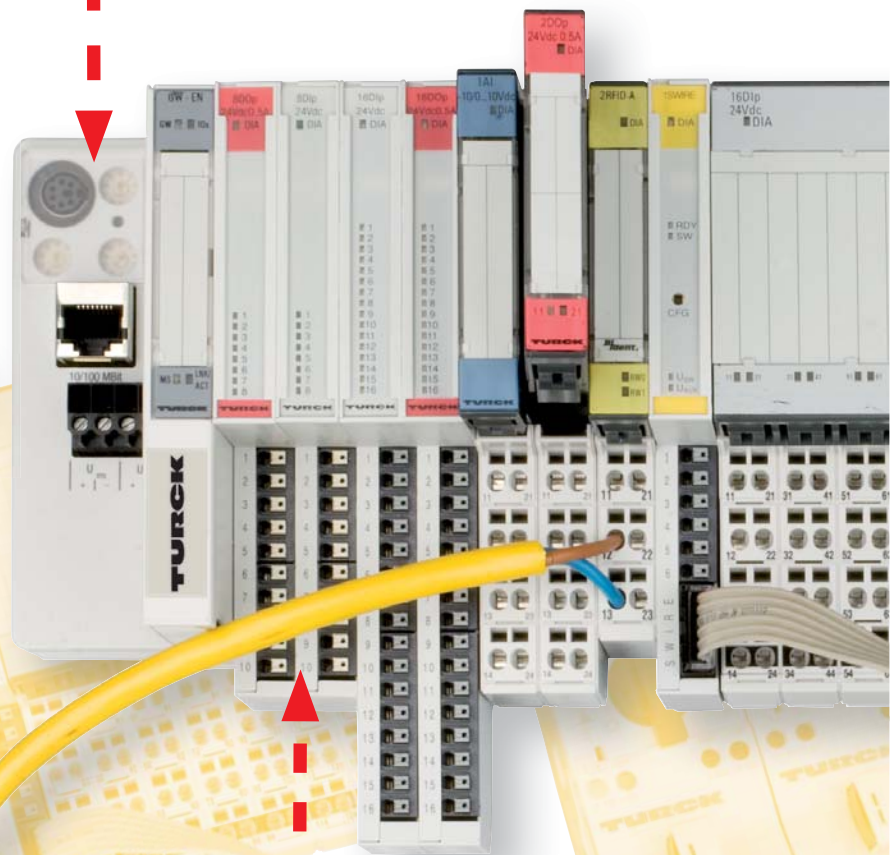## Optional – CoDeSys programmable according to IEC 61131
- Relieves higher-level controller and bus system
- I/O modules independent of the fieldbus
- Prefabricated function blocks e.g. for the RFID system *BL ident®*

Economy I/O – extremely compact and competitively priced
- 8 or 16 I/Os in only 12,5 mm
- Integrated connection level with „Push-in" tension spring technology, no tools necessary
- Economy I/Os combinable with standard I/O slices

BL ident®, the RFID system
- Up to 8 RFID channels
- Pre-processing in programmable gateway relieves the higher-level controller.

EtherNet/IP™

PROFINET INDUSTRIAL ETHERNET

Modbus TCP

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Standard I/O – multifunctional and system friendly

- Exchangeable electronic modules – disconnection of field wiring is not necessary
- Up to two neighbouring modules are exchangeable during normal system operation without disrupting system functions
- Single or block modules with screw or cage clamp terminals

I/O-ASSISTANT

- Planning, configuration, commissioning and diagnostic software
- Based on FDT/DTM technology
- Available as freeware on www.turck.com

Motor starter

(Direct and reversing starters up to 15 kW acc. to IEC/EN 60947-4-1)

- 3 connection-slices per gateway
- Up to 16 devices per slice
- Simple wiring

The motor starters consequently build upon the advantages of the BL20 system:

- Modular
- Flexible
- Simple mounting and operation
- Cost-efficient

CoDeSys

Easy programming with CoDeSys according to IEC 61131-3

The programmable gateways become decentral control units with the CoDeSys programming software.
The graphical programming interface supports all IEC-61131-3 programming languages

- Instruction List (IL)
- Sequential Function Chart (AS)
- Function Block Diagramm (FBD)
- Structured Text (ST)
- Ladder Diagram (LD)
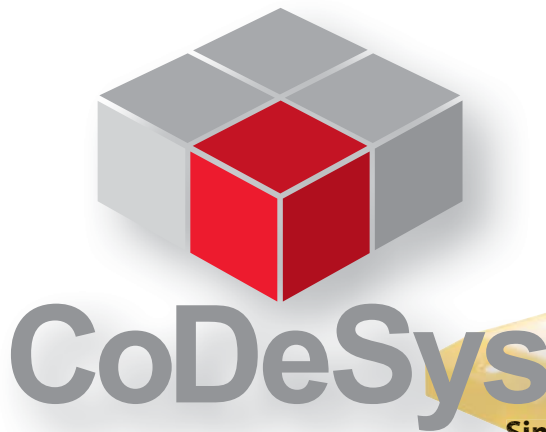
Simple connection

- Quick and simple connection of hetero-geneous systems
- Standard transmission protocols such as e.g. TCP/IP and UDP/IP
- Network-global variables
- Bidirectional data exchange between CoDeSys systems
- Additional programming is not required
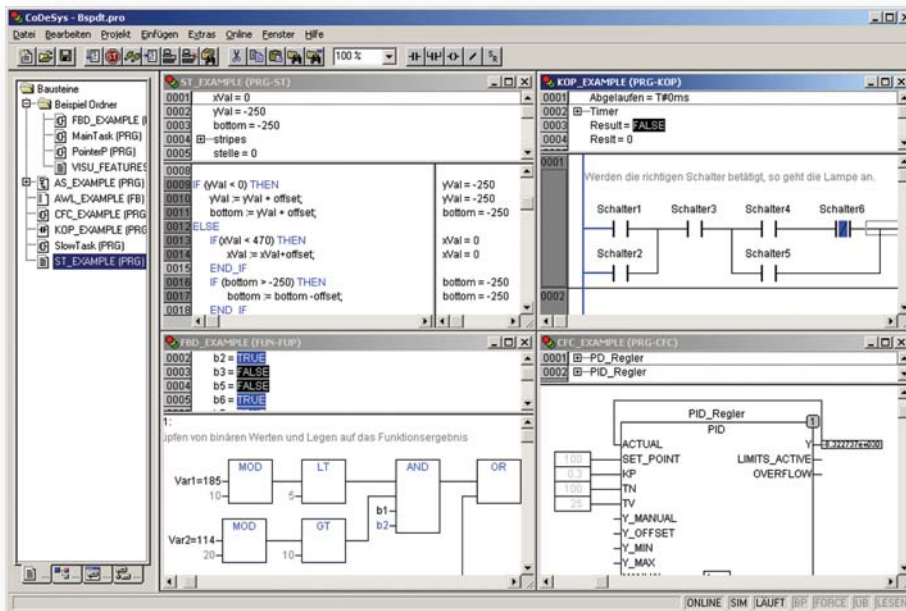
Project planning and configuration

- Target-Support-Package as driver for the target system
- Drag and Drop function for the hardware configuration
- Standard editor for I/O configuration and parameterization
- Symbolic display of variables for I/O addresses
- Numerous diagnostics and commission-ing functions
- Function blocks e. g. for the RFID system *BL ident®*

Data exchange via Ethernet
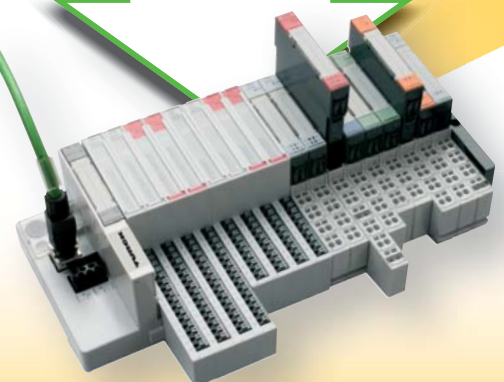
I/O-ASSISTANT

Easy parameterization with I/O-ASSISTANT on the basis of FDT/DTM

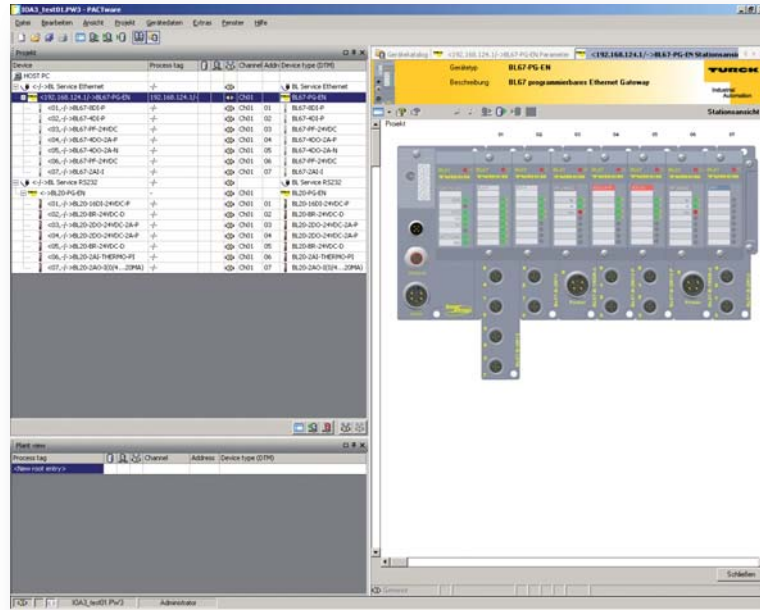- System configuration, parameterization and diagnostics with a graphical interface based on FDT/DTM technology
- DTMs can be integrated in any FDT frame application for configuration, commissioning and maintenance
- I/O-ASSISTANT and DTMs are available free of charge on www.turck.com

Description

The configuration software I/O-ASSISTANT supports you in planning and implementation of an I/O system. No matter if you are online or offline, the I/O-ASSISTANT simplifies the configuration as well as the configuration and parameterization of the modules.

This software is also extremely helpful in system set-up and testing.

Functions

- Supporting software tool
- Selection of the required modules
- Offline planning and configuration of BL67 and BL20 modules
- Configuration, parameterization and commissioning of individual modules
- Reading and setting of process data
- Commissioning help for testing the wiring and sensors without PLC
- Realistic display of configured BL67 components
- Automatic documentation of configured BL67 and BL20 systems

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Components for fieldbus and power supply infrastructure

Premoulded and tested connector systems significantly reduce the error rate of fieldbus installations and speed up system set-up. The components are simply plugged together – „Plug and Play" is the motto!

Fieldbus cables
- PROFIBUS-DP
- DeviceNet™
- Ethernet/Industrial Ethernet

Passive junction boxes in IP67 for
- Fieldbus
- Power supply
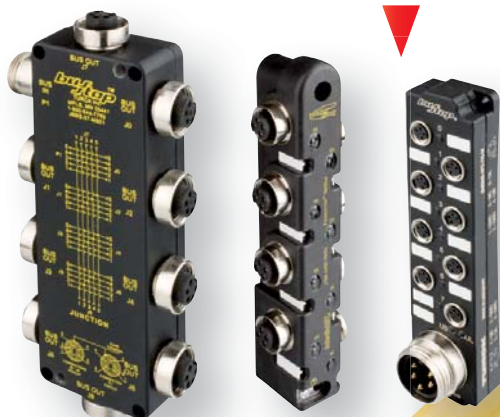
Active junction boxes in IP67
- Repeater
- Spanner
- Ethernet switches

Fieldbus accessories
- T-pieces
- Y-pieces
- Flange connectors
- Feed-through receptacles
- Terminating resistors
- Field-wireable connectors

EtherNet/IP™

PROFI NET INDUSTRIAL ETHERNET

DeviceNet™

Power supply

- Premoulded cables
- Field-wireable connectors
- T-pieces
- Feed-through receptacles
- Flange connectors

JIT – Delivery program

Ideally the length of the cord set is adjusted according to the requirements of the plant. For this reason TURCK now offers a Just-In-Time-delivery service (JIT) for premoulded cables.

The new JIT-5D-Program for perfect connections:

- Just-In-Time delivery within 5 days only*
- Free choice of cable length
- Premoulded fieldbus and power cables
- High flexibility with respect to planning and mounting of your application
- High cost savings

**Work-
day** **1.**

**Ordering
until 12 pm**

Production

JUST
IN
TIME!

Sensor cables

- M8
- M12
- M23
- valve connector

**Delivery
3 workdays
after ordering**

**Arrival
at the
customer**

Power supplies in IP67

PSU67-11-2420/M
ID-No. 6884140

Input
Output

POWER

www.turck.com
Made in Germany

**5. Work-
day**

* the 5 days apply only for deliveries within the European Union (EU)

CANopen

PROFI
BUS
PROCESS FIELD BUS

Ethernet Modbus TCP

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...and more than 60 representatives and agencies world-wide.