

TURCK

Industrial
Automation

excom[®]
**REMOTE I/O FOR
NON-EX AND
EX AREAS**



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

excom® – Remote I/O system



excom®, our remote I/O system, can be installed in zones 1, 2 and the non-Ex area. The user not only profits from components that are optimized for these zones, but also from an integrated concept for configuration and parametrization of the periphery and the field instrumentation.

field devices. The power supply modules provide the power for the entire system. Although, one module is enough for proper operation. To ensure the availability of redundant power supply, the module racks MT24-... and MT16-... and MT18-... have space for an additional power module.

The gateways act both as a master to the internal data bus and as a slave to the higher level fieldbus (PROFIBUS-DP). They control the entire data communication between an I/O module and the process control system (PLC). A second gateway can be plugged to enhance redundancy.

The modular system provides bus-compatible remote input and output modules in IP20 for connection of binary and analog intrinsically safe and non-intrinsically safe field devices. Depending on the deployed periphery, the system's Ex-protection rating enables installation in zones 1 and 2. The fieldbus circuits are approved for use in zone 0.

The system consists of different power supply modules, gateways, I/O modules as well as a module rack with integrated backplane to accommodate all components. The backplane serves for power distribution, data transfer and is the connection plane for the





Features

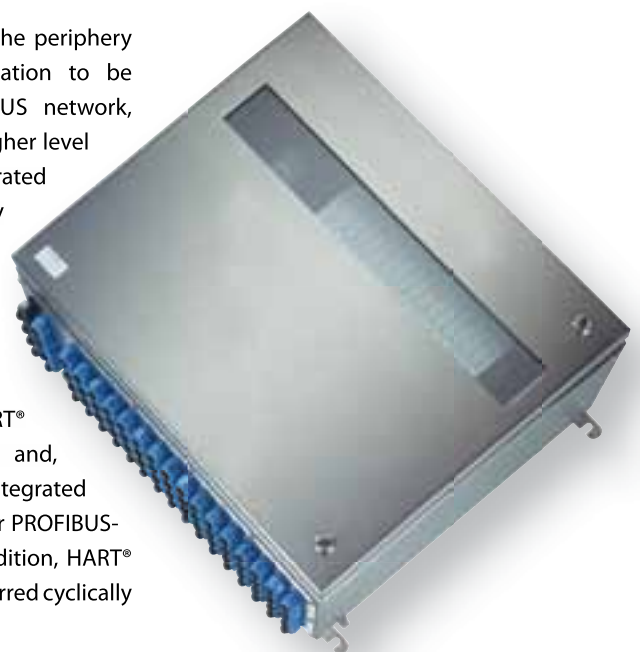
- Ex remote I/O system for application in zones 1, 2 and the non-Ex area
- Redundant power supply modules and gateways
- Online parametrization and configuration of all parameters (configuration in run)
- Integrated configuration and parametrization
- DTM based commissioning of the periphery and the field instrumentation, PLC-independent
- Integrated HART® parametrization, from the PLC level down to the field level
- Operating temperature -20...+60 °C
- Exchange of components and system extension during ongoing operation
- Plugging and unplugging of modules without tools
- Up to 192 binary or 96 analog intrinsically safe channels via a single bus address
- Forcing and substitute value programming for analog and binary I/Os

The I/O modules are the interface to the field devices, allowing Ex ia IIC rated field devices to be connected to the inputs and outputs. Depending on the module rack used, up to 24 I/O modules can be operated. The I/O modules are supplied via the backplane - no additional power supply is required. All modules are easily connected: Gateways, power supply modules and I/O modules are simply plugged onto the module rack and all internal connections are established; only the periphery has to be connected.

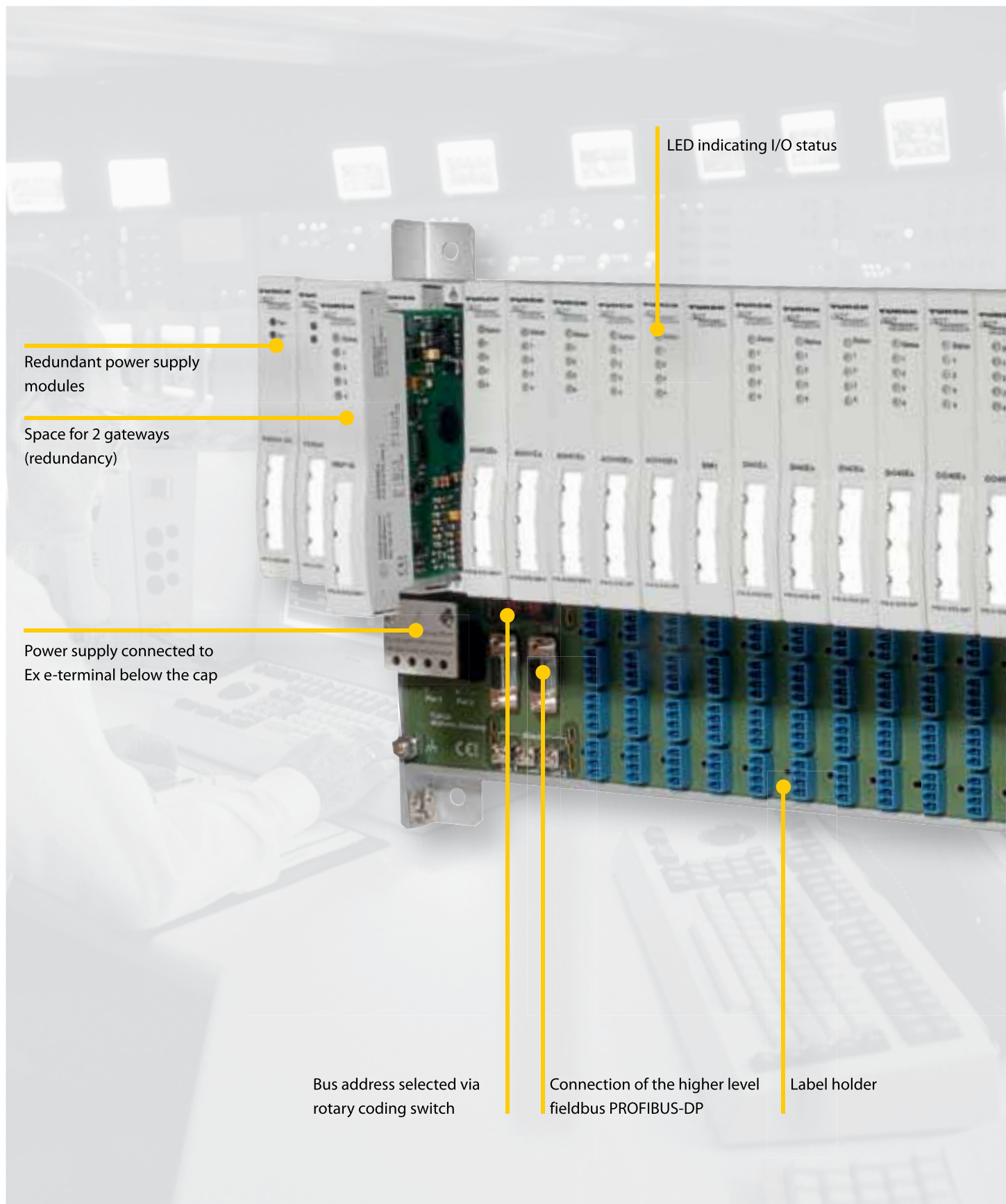
All modules can be plugged onto and removed from the rack during ongoing operation (hot swapping). The system automatically checks whether the new module matches the defined slot assignment.

The *excom*® DTM enables the periphery and the field instrumentation to be operated via the PROFIBUS network, independently from the higher level Master Class 1. The integrated system-scan functionality makes commissioning even faster and more failsafe.

Moreover, *excom*® supports the connection of HART® capable field devices and, through this, enables integrated HART® communication over PROFIBUS-DPV1 up to the PLC. In addition, HART® side variables can be transferred cyclically via DPV0 communication.



excom[®] – System configuration



LED indicating I/O status

Redundant power supply modules

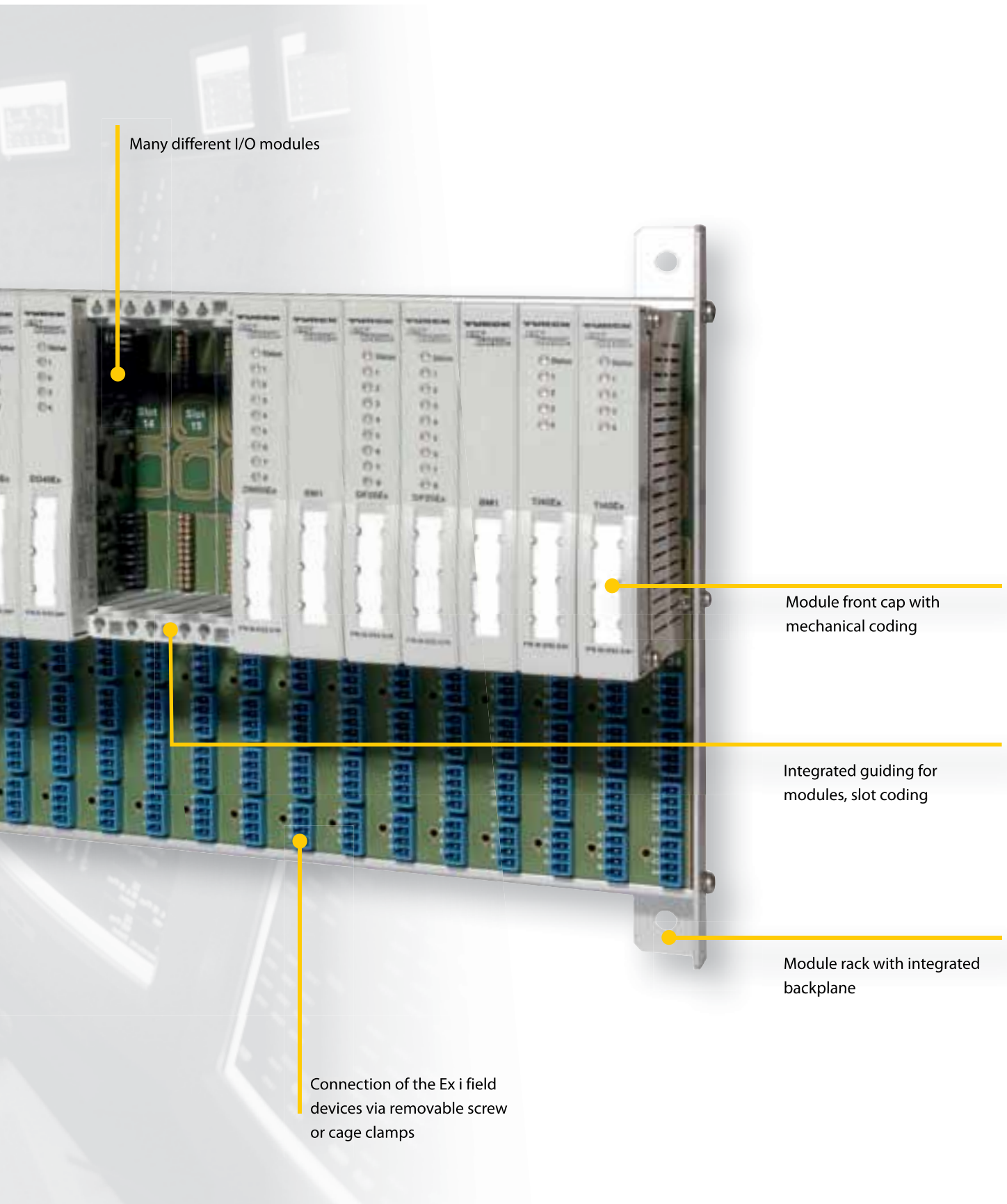
Space for 2 gateways (redundancy)

Power supply connected to Ex e-terminal below the cap

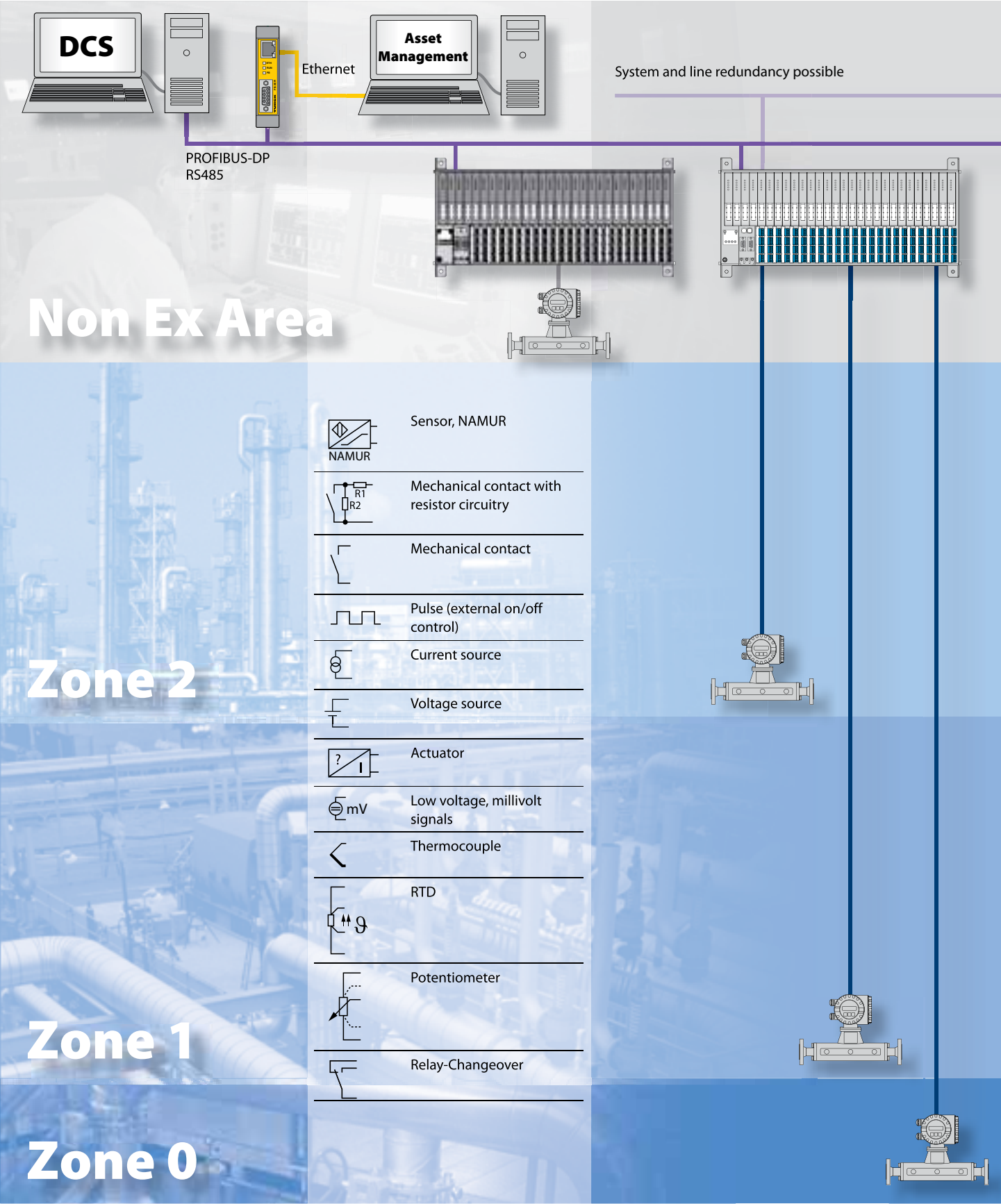
Bus address selected via rotary coding switch

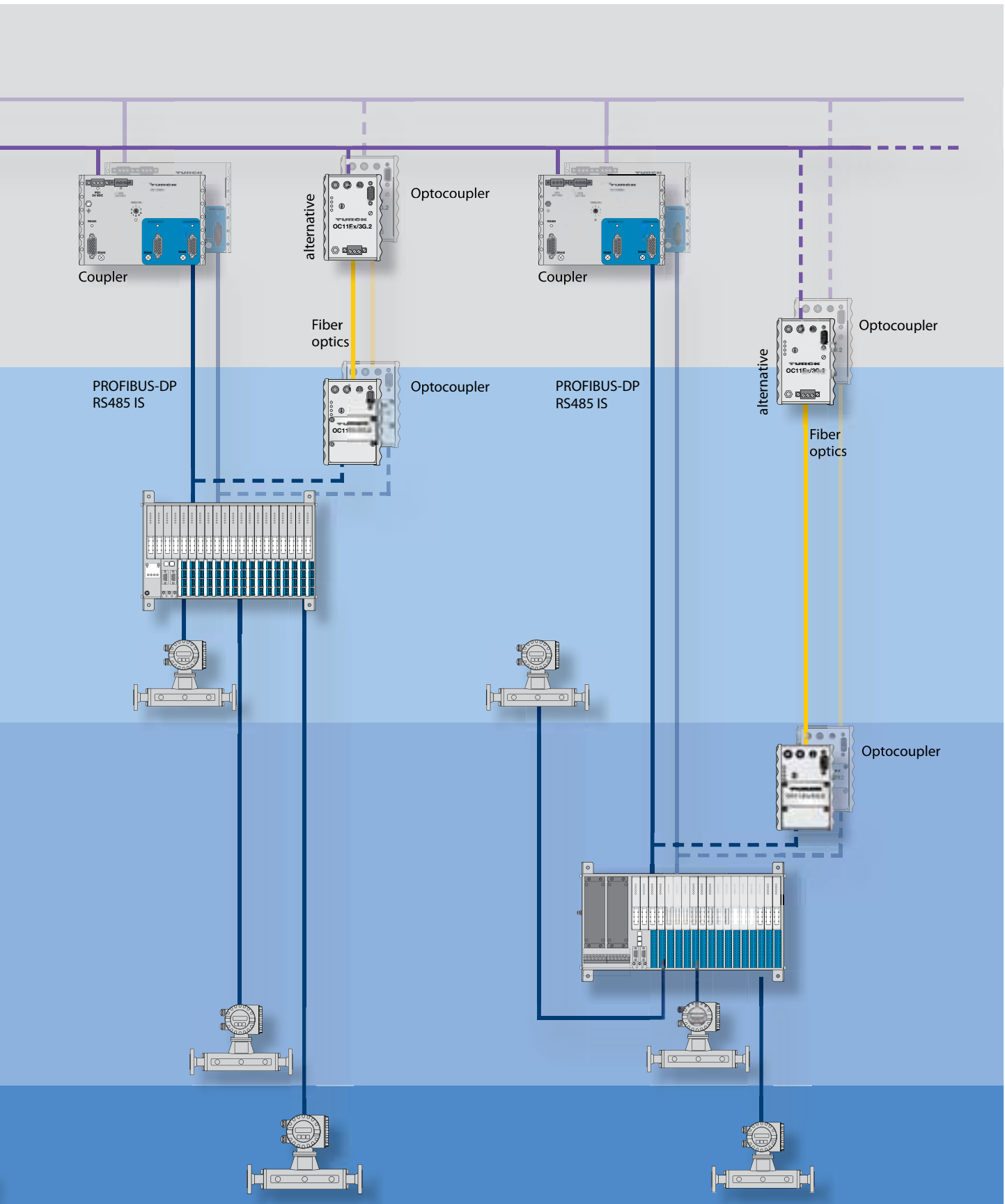
Connection of the higher level fieldbus PROFIBUS-DP

Label holder



Installation overview





Application areas

excom® for non-intrinsically safe applications

The new module rack MT24-N is designed for the non-Ex area and is designed to collect non-Ex signals only. In addition to the redundant power supply modules and gateways, the MT24-N can take up to 24 I/O modules. Ex as well as non-Ex modules are designed in form of pluggable cards. The modules and the module rack are mechanically coded to avoid wrong plugging.



excom® for intrinsically safe circuits and installation in non-Ex area and zone 2



The module racks MT16-3G and MT24-3G take intrinsically safe field devices. They can be mounted in the non-Ex area and zone 2. The GDP-NI gateway can be installed in the non-Ex area. The GDP-IS gateway instead can be installed in zone 2 together with a segment coupler (SC12 or OC11) arranged upstream of the gateway. This allows modules to be plugged and unplugged during ongoing operation. Up to 16 or 24 I/O modules can be plugged, depending on the type of module rack used.

excom® for intrinsically safe circuits and installation in zone 1

The module racks MT18... and MT16-2 are designed for intrinsically safe signals and can be mounted in zone 1. These module racks are also operated with the GDP-IS gateway and upstreamed segment coupler (SC12 or OC11). This allows modules to be plugged and unplugged during ongoing operation.



The PROFIBUS-DP segment coupler SC12EX and the optocoupler OC11EX/... from TURCK have been designed for intrinsically safe PROFIBUS connection. The couplers convert the PROFIBUS-DP RS485 signal into an intrinsically safe PROFIBUS-DP RS485-IS signal. The RS485-IS layer is entirely implemented acc. to the "PROFIBUS RS 485-IS User and Installation Guideline".

Both couplers are transparent bus nodes which means, they do not require an own bus address. Up to 31 bus nodes can be connected to the coupler outputs. Baud rates of 9.6 kbps up to 1.5 Mbps are automatically detected. LEDs indicate the status



Features

- I.S. barrier between RS485 and RS485-IS
- Automatic baud rate detection (selection of baud rate via rotary switch)
- Regeneration of amplitude and phase
- Detection of corrupt protocols

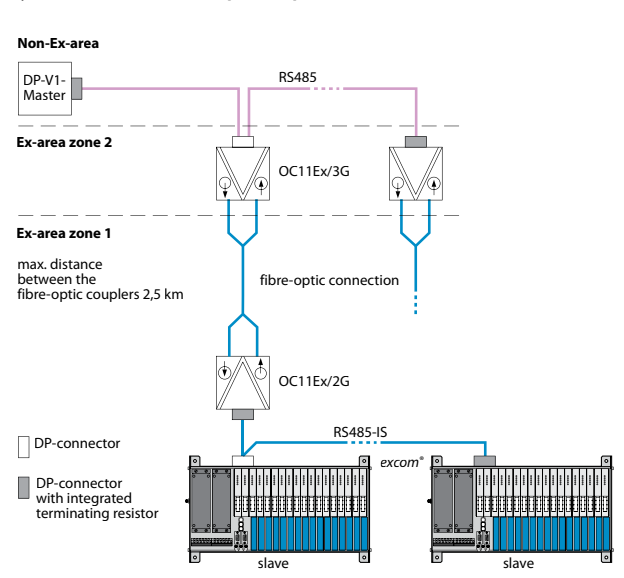
SC12EX

- 2 x RS485-IS for up to 62 additional modules or 31 modules in case of line redundancy
- Restoration of line redundancy to single line configuration
- All segments operate as equal communication channels

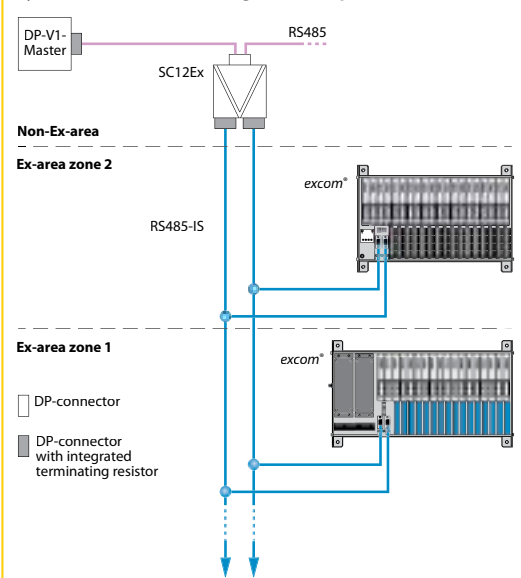
OC11EX

- Fiber-optic coupler OC11EX/2G.2 for zones 2 or 1
- Fiber-optic coupler OC11EX/3G.2 for zone 2
- RS485 or RS485-IS interface for up to 31 nodes
- Transfer of bus signals over long distances (up to 2500 m)
- Interference-free communication

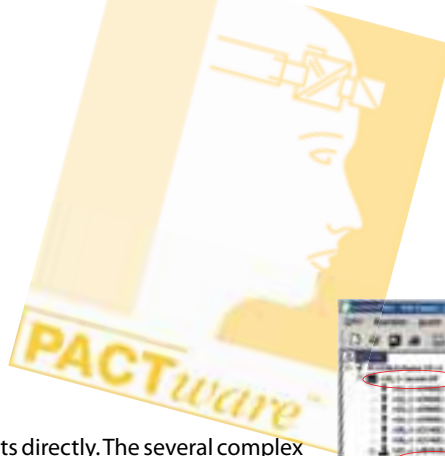
System structure with optocoupler OC11EX/...



System structure with segment coupler SC12EX



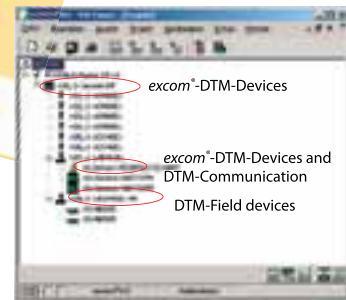
FDT/DTM



DTM for Remote I/O

The *excom*® DTM is modularly designed. The single components are arranged as follows in the FDT frame: Rack, module, channel resp. connected device. Based on this hierarchy, the user can browse the

single assets directly. The several complex functionalities of the Remote I/O *excom*® can thus be controlled individually via the modular DTM:



Operating and monitoring

A dialog box can be opened for each *excom*® module to view the parameters. The module specific settings are displayed channel-based. Unlike with GSD based configuration, wrong parametrization is not possible here, because the entries are directly checked for plausibility.

To visualize the periphery, each DTM provides a view of the I/O level, showing the current process data. The status also delivers information about the validity of the data. Depending on the type of module, the data are either indicated via LED band, value window or via light points.

System start-up

The *excom*® DTM enables the periphery and the field instrumentation to be operated via the PROFIBUS network, independently from the higher level

Master Class 1. The integrated system-scan functionality makes commissioning even faster and more failsafe.



Simulation

The commissioning of *excom*® and the periphery is displayed highly simplified in the DTM's simulation view. Input data can be overwritten to simulate benchmark figures of the field instrumentation for example. Via the output data, the actuators are then set to

the simulated state. Analog values, such as shown in the example, can either be displayed in percentage or in mA. The related simulation value is set via slider or entered as a numerical value.

Diagnostic messaging and identification

The DTM has two more useful functions, the dialog windows "Diagnostic" and "Identification". The diagnostics view shows channel errors of the periphery. The error messages are reported in plain text together with the channel number. The related clamps are red marked. The identification view shows the control

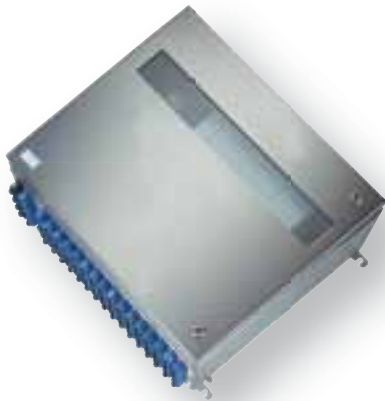
relevant data such as:

- Device type
- Order number
- Batch code
- Revision statuses
- other device information



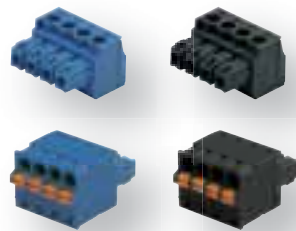
Housing

- Stainless steel, available in different sizes
- Inspection window
- System approval



Removable terminal blocks

- Screw or cage clamp terminals



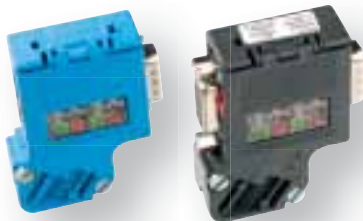
Label holder

- For marking the terminals



Sub-D connector

- Different types



Venting pipes

- IP67
- Stainless steel and plastic



AC/DC converter PPSA 151/230 VAC



Socket spanner

- For easy fastening of the cables to the gland



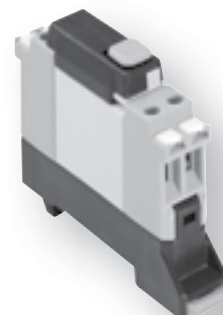
SK8

- Shield clamp



Modex switching terminal

- For shutdown of non-intrinsically safe circuits in the Ex area



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