

## DPC SYSTEM OVERVIEW

The DPC-System (Diagnostic Power Conditioner System) is a power supply system for the installation of **FOUNDATION fieldbus H1** segments. It provides comprehensive diagnostic functions for monitoring **FOUNDATION fieldbus** segments, and supports asset management for the entire system. This includes asset management of the physical layer which is extremely valuable.

A DPC-system consists of one or more module racks (**DPC-49-40MB**) each with up to eight power supply modules (**DPC-49-IP51**) and one diagnostic module (**DPC-49-ADU**). Up to four H1 segments for each module rack can be operated and monitored redundantly. The diagnostic data from the H1 segments is transmitted via the HSE interface module **DPC-49-HSEID/2VDDC** to the higher level asset management system.

The diagnostic module (**DPC-49-ADU**) is used as a communication and diagnostic interface between the H1 segments and the power supply module. The diagnostics module monitors the electrical parameters and the communication parameters of the H1 segments. Operation without diagnostic module is possible. In this configuration, simple diagnostics are provided locally.

The diagnostic information is collected in the device and transmitted via the HSE interface module to the higher fieldbus level (e.g. to the host) as diagnostic and alarm data. The diagnostic module can be plugged and unplugged during operation (hot swappable).

The DPC system provides complete galvanic isolation, H1 to H1, H1 to 24 VDC power, ADU/DU to H1, and HSE to H1. The DPC system can also be used to supply devices in hazardous classified areas when Fisco power supplies/repeaters or multibarriers from TURCK are used.

TURCK extends its diagnostic power conditioner systems (DPC) with a new interface backplane for single **FOUNDATION fieldbus** segments. The new **DPC-49-1RMB** is specially suited for smaller fieldbus installations, and provides a handy alternative to the **DPC-49-40MB** multi-segment backplanes.

Like the multi-segment backplanes, the new **DPC-49-1RMB** features a redundant power supply, as well as a built-in diagnostics via a system alarm relay contact. Based on the established 500 mA supply **DPC-49-IP51**, the new backplane supplies power to a single **FOUNDATION fieldbus** segment. Connections to the host system and to the field are provided via removable 3-pin screw terminals.

### Communication Signal

The **FOUNDATION fieldbus H1** communication signal is a square waveform superimposed on a DC carrier. The frequency of the signal is 31.25 KHz. Although it is not a requirement, most devices derive their supply power from the fieldbus communications cable. The fieldbus specification states that devices must not be polarity sensitive. However, it is good electrical practice to have all devices wired with the same polarity. The voltage range allowed for proper operation is 15 to 32 VDC. A typical fieldbus device will consume 20 mA of current.

### Fieldbus Cable Specifications

The specifications for fieldbus H1 physical media are defined by IEC 61158-2 and the ISA-550.02 Part 2 Physical Layer Standards. The same standard is also listed in the **FOUNDATION fieldbus** specifications under 31.25 Kbps Physical Layer Profile FF-816-1.4. There are essentially four types of cable designations for fieldbus (see table). Type A cable is preferred for new installations, because it allows for the most versatile lengths. The other cable types are for installations where cable already exists from 4-20 mA systems.

	Type A	Type B	Type C	Type D
Cable Description	Shielded Twisted-Pair	Shielded Multi-Twisted Pair	Unshielded Multi-Twisted Pair	Unshielded Twisted-Pair
Conductor Size	18 AWG	20 AWG	20 AWG	20 AWG
Maximum Length	98.200 feet (30.200 meters)	1,200 feet (366 meters)	1,200 feet (366 meters)	200 meters (656 feet)



### Interface Modules with FDI/DTM

To simplify device set-up and installation time, TURCK's interface module (IM) family may now be programmed via a pc or on-board push buttons using FDI/DTM software, along with PAC/Tware. This software allows multiple parameters to be set and saved in a matter of seconds. The ease of use and structure of this system allows asset management ability with trending and data logging of values.

TURCK's IM modules may be used to monitor the speed of motors, shafts and conveyors, the temperature of RTDs and thermocouples, and to control or monitor analog signals for linear movement, temperature, pressure, level control or any other device using 4 to 20 mA signals. Intrinsically safe models to control devices in hazardous areas are also available.

All models are equipped with a two-line transfective LCD display, making it easy to read even in very bright light. The modules also incorporate a universal supply voltage and removable terminals, making them easy to install in new or existing systems.



### ZENER Diode Barriers

- Temperature monitoring and control of equipment and their surrounding areas with RTDs and thermocouples
- Load cells
- Control and monitor 4-20 mA transmitters
- Control or monitor all other analog signals for linear movement, temperature, pressure, level control or any other device using 4-20 mA signal feedback



Printed in USA

### NAMUR Sensors and Junctions

- Class I, Class II, Division 1 and Division 2 FM approved
- Full line of inductive, capacitive and magnet inductive sensors
- Numerous sizes and styles are available
- Eliminates multiple cable runs for wiring applications



### Intrinsically Safe Pressure Transmitters

- **PT4300** pressure transmitters are UL/CUL 1604 (CSA 21.3) Class I, Division 2, Groups A, B, C and D approved for hazardous area applications.
- **PT4400** pressure transmitters are UL/CUL 913 Class I, Division 1, Groups C and D approved when installed with an approved barrier, such as the IM33 isolation module.
- **PT4200** and **PT4000** sensors incorporate a 316 stainless steel measuring element that permits ranges from 0-10,000 psi, with high burst pressures up to 20,000 psi.
- **PT4500** submersible level transmitter is Class I, Division 1 approved when installed with an approved barrier, such as the IM33 isolation module.



### Intrinsically Safe R16 Level Probes

- Rated for FM Class I, Division 1 areas



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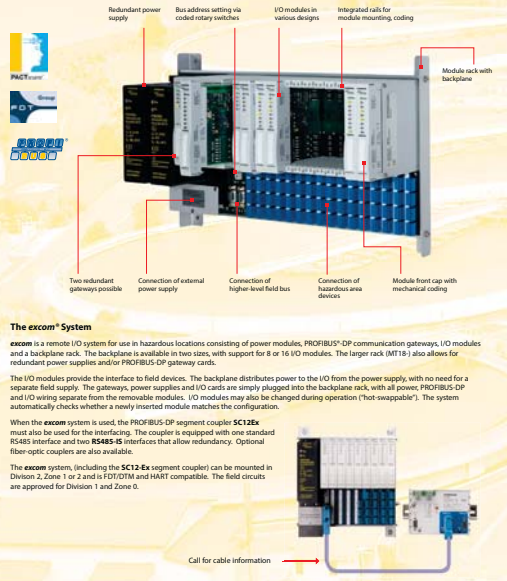
.....Sense It!.....Connect It!.....Bus It!.....Solve It!

**PROCESS AUTOMATION**

**INTERFACE & INTRINSIC SAFETY: QUICK REFERENCE GUIDE**

[www.turck.us](http://www.turck.us)

## excom® SYSTEM OVERVIEW



### The excom® System

**excom** is a remote I/O system for use in hazardous locations consisting of power modules, PROFIBUS-DP communication gateways, I/O modules and a backplane rack. The backplane is available in two sizes, with support for 8 or 16 I/O modules. The larger rack (MT18) also allows for redundant power supplies and/or PROFIBUS-DP gateway cards.

The I/O modules provide the interface to field devices. The backplane distributes power to the I/O from the power supply, with no need for a separate field supply. The gateways, power supplies and I/O cards are simply plugged into the backplane rack, with all power, PROFIBUS-DP and I/O wiring separate from the removable modules. I/O modules may also be changed during operation ("hot-swappable"). The system automatically checks whether a newly inserted module matches the configuration.

When the **excom** system is used, the PROFIBUS-DP segment coupler **SC11xx** must also be used for the interfacing. The coupler is equipped with one standard RS485 interface and two **RS485-IS** interfaces that allow redundancy. Optional fiber-optic couplers are also available.

The **excom** system (including the **SC12-Ex** segment coupler) can be mounted in Division 2, Zone 1 or 2 and is FDI/DTM and HART compatible. The field circuits are approved for Division 1 and Zone 0.

Call for cable information

**Hazardous Area Descriptions**

Class	Subclass	NEC/UL	Group
Class I (Zone)	Zone 1	NEC Class I, Division 1	Groups A, B, C, D
	Zone 2		
	Zone 20		
Class II (Zone)	Zone 20	NEC Class II, Division 1	Groups A, B, C, D
Class III (Zone)	Zone 20		

Maximum Surface Temperature Class	Temperature Class
100	T1
150	T2
200	T3
250	T4
300	T5
350	T6
400	T7
450	T8
500	T9
550	T10
600	T11
650	T12

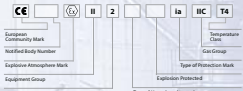
**NEC506 (Division Method)**



**NEC505 (Zone Method)**



**ATEX**



**Equipment Category**  
 Zone of Installation: Atmosphere  
 Single Apparatus: An electrical component or assembly of components of single construction with one or more electrical parts that are not greater than 1.5 m (5 ft) in height, 100 mm (4 in) in diameter, or a protection component of a device or part of a device that is not greater than 1.5 m (5 ft) in height and 100 mm (4 in) in diameter, or a protection component of a device or part of a device that is not greater than 1.5 m (5 ft) in height and 100 mm (4 in) in diameter, or a protection component of a device or part of a device that is not greater than 1.5 m (5 ft) in height and 100 mm (4 in) in diameter.

**SWITCH AMPLIFIERS**

For further assistance please call Application Support: 1-800-544-7769

IM1-1204-R	IM1-1204-T	IM1-2204-R	IM1-2204-T	IM1-2204-R	IM1-2204-T	IM1-2204-R	IM1-2204-T	IM1-2204-R	IM1-2204-T	IM1-2204-R
Voltage Supply	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC
Inputs	1 NAMUR sensor or contact	1 NAMUR sensor or contact	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts	2 NAMUR sensor or contacts
Outputs	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay	2 SPST Relay
Approvals	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL

**ANALOG INPUT OUTPUT**

IM1-1104-R	IM1-1204-R	IM1-1204-T	IM1-1204-R	IM1-1204-T	IM1-1204-R	IM1-1204-T	IM1-1204-R	IM1-1204-T	IM1-1204-R	IM1-1204-T
Voltage Supply	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC	20-250V AC
Inputs	4-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA
Outputs	4-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA	0-20 mA
Approvals	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL

**ROTATIONAL SPEED MONITORS**

IM1-14-CON	IM1-14-CON	IM1-14-CON	IM1-14-CON	IM1-14-CON
Voltage Supply	20-250V AC	20-250V AC	20-250V AC	20-250V AC
Inputs	NAMUR sensor or contact	NAMUR sensor or contact	NAMUR sensor or contact	NAMUR sensor or contact
Outputs	4-20 mA	4-20 mA	4-20 mA	4-20 mA
Approvals	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL	CE, ATEX, FM, CSA, UL

**POWER SUPPLIES**

IM1-24-2.5	IM1-24-5.0	IM1-24-10	IM1-24-20
Voltage Supply	100-240V AC	100-240V AC	100-240V AC
Outputs	24VDC/2.5A	24VDC/5.0A	24VDC/10A
Approvals	UL, CE, ODD	UL, CE, ODD	UL, CE, ODD

**IMC INTERFACE MODULE CARTRIDGES**

Part Number Description  
 IMC-01-2204-PNB24VDC NAMUR sensor, contact with indicator  
 IMC-01-2204-PNB24VDC NAMUR sensor, contact with indicator  
 IMC-01-1104-04VDC Active transmitter, Current source  
 IMC-01-1104-04VDC Passive 2-wire transmitter, Current sink  
 IMC-01-1104-04VDC Active transmitter, Current sink  
 IMC-01-1104-04VDC Passive 2-wire transmitter, Current sink  
 IMC-01-1104-04VDC Active transmitter, Current sink  
 IMC-01-1104-04VDC Passive 2-wire transmitter, Current sink

The exceptional compact and rugged device series creates new options and possibilities for the user. In addition to your standard mounting cabinet solution, increase the flexibility of your system by using TURCK interface module cartridges.

- IP 67 protection with screw on connectors
- Mounting in Zone 2, Application area in accordance with ATEX-II (1) Gb, II (2) GD
- Ambient temperature -25° to +70°C
- Standard signals
- Plug & play connection technology, M12 connectors

**IMS SIGNAL CONDITIONERS**

Part Number Description  
 IMS-01-22-24-UL 0-1x 20 mA loop powered dual channel  
 IMS-01-08-04VDC Universal multi-channel  
 IMS-01-08-04VDC 10-100 mA/0-5V

TURCK introduces the new IMS interface module measuring merely 6.2 mm wide. The module may be configured with a laterally mounted DIP switch for added convenience. This extremely compact module provides complete galvanic isolation, up to 2.5 kV between the input, output and power supply. Galvanically isolated IMS modules are available with dead zero to live-zero signal conditioning, or one and two channel modules are available without signal conditioning.

Modules are also available for temperature detection using Pt 100 technology or other thermo-elements. These that use Pt 100 technology achieve 0.1 percent of the full scale, and are available with 2-, 3- or 4-wire connections. An analog signal transmitter that achieves 0.1 percent of the full scale completes the IMS line.

- Applications:
- Signal conditioning
  - Analog conversion
  - Temperature measurement
  - UL, Division 2 approved

