

Product Overview

Foundation Fieldbus™ PROFIBUS PA

Control cabinet



Standard fieldbus power supply

Redundant or simplex



**FNICO
or
FISCO ic**

Process Fieldbus wired infrastructure

The Fieldbus (FB...) line of modular fieldbus components offers connectivity from the process controller to the field devices for Foundation Fieldbus or PROFIBUS PA applications. Solutions are provided for both the control cabinet and the field.

Fieldbus isolated supplies provide power while allowing digital communications to one segment. In the field, pre-configured field junction boxes with device couplers offer device connectivity and process protection.

Together with redundant bulk power, surge protection and cabling cordsets, a complete connection architecture is provided.

The FB... line was designed specifically to meet the tough requirements of the process environment.

For more information, please visit our Solutions Selector at:
www.phoenixcontact.net/processfieldbus

Comparison of energy-limited installations

Traditionally, energy limiting (voltage and current) was centralized in the control cabinet for both nonincendive (nL) and intrinsically safe (ia, ib, ic) protection applications.

- **Approaches:**

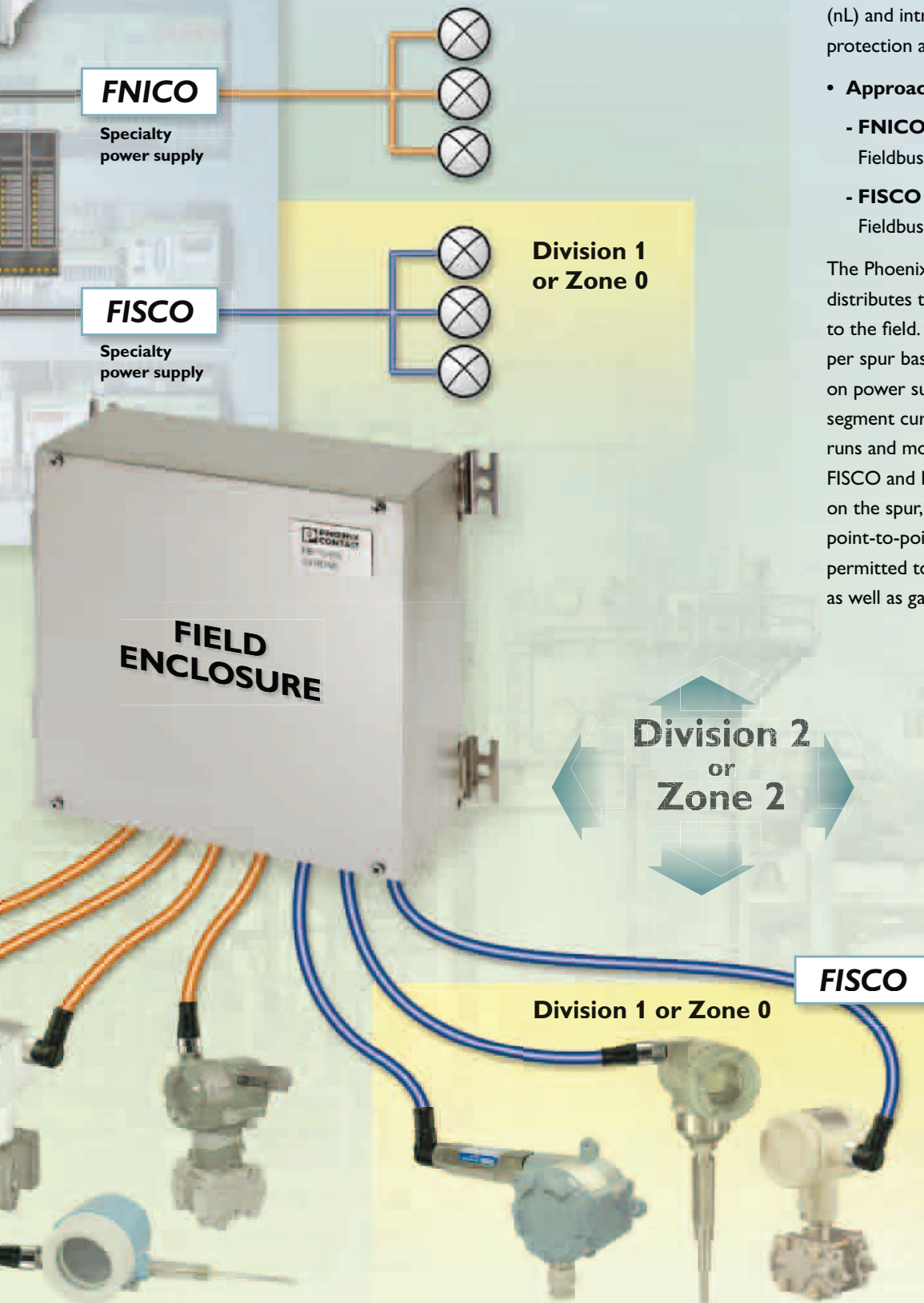
- **FNICO**

Fieldbus Nonincendive Concept

- **FISCO**

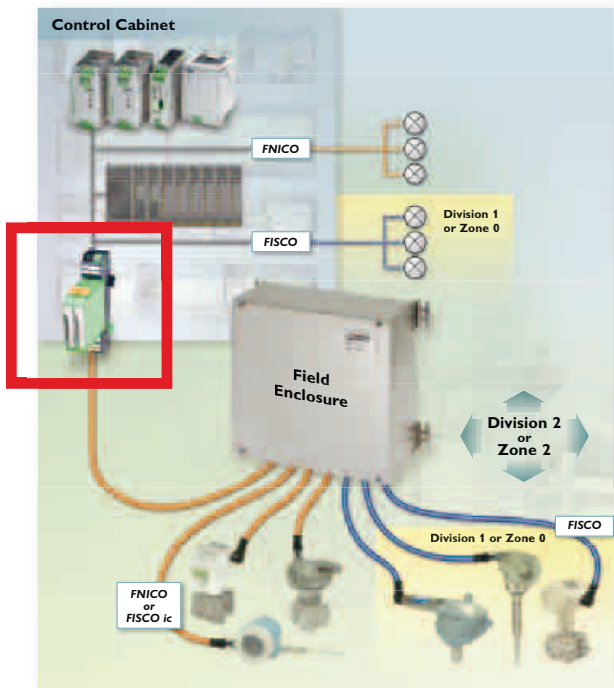
Fieldbus Intrinsically Safe Concept

The Phoenix Contact modular approach distributes the energy-limiting protection to the field. Since energy is limited on a per spur basis, restrictions are not imposed on power supply voltage or total allowable segment current. This means longer cable runs and more instruments per segment. FISCO and FNICO can still be employed on the spur, but to less benefit in such a point-to-point topology. Connection is permitted to Zone 0 and Division 1 areas, as well as gas groups IIC and ABCD.



Power supplies for the control cabinet

Each DIN rail-mounted fieldbus power supply provides high-integrity power for one H1 segment. They are galvanically isolated and include a fixed end-of-line terminator. Built-in output impedance allows digital communications and DC power to coexist on a pair of wires. Passive filtering allows for low heat dissipation and long service life. Pluggable connectors and local diagnostic LEDs permit easy installation and troubleshooting.





Why simplex versus redundant?

Users can choose redundant or simplex (non-redundant) power supplies depending on the demands of their application.

When the power supply is a single point, serving multiple instruments on a segment, continued operation is a critical consideration over the life of the process. If interruption to a segment would cause unscheduled plant downtime, a redundant supply is likely the right choice.

If segment interruption is tolerable, as in monitoring applications, a simplex supply is likely an adequate solution.

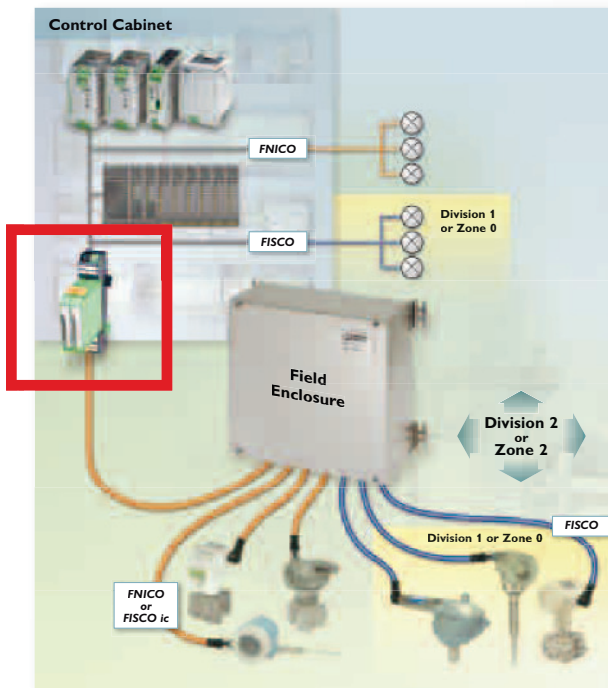
Fieldbus power supply (FB-PS ...), Simplex

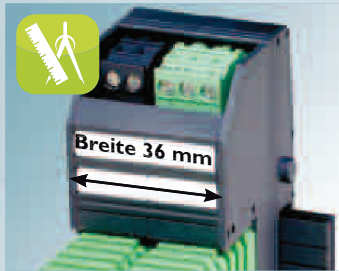
- Non-redundant power for one segment
- Connections for redundant bulk power
- Input power can be distributed along the DIN rail using the T-bus connector, thus reducing wiring
- No space required between modules optimizes cabinet size
- Output 360 mA at 25 V

Power supplies for the control cabinet

Fieldbus power supply (FB-PS ...), Redundant

- Redundant power for one segment per base module
- Swappable plugs provide high availability
- Ample pluggable connectors makes wiring easy
- High power output, 500 mA at 28 V





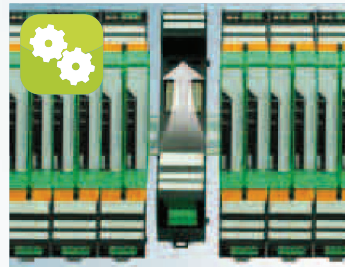
Design and engineering

- Modular base eliminates unused capacity
- Compact width optimizes critical cabinet space
- High efficiency operation, featuring MOSFET outputs
- Each power module is integrated with an on-board diagnostics relay, eliminating the need for a separate basic diagnostics and relay module



Installation

- Enhanced integrated marking capability
- Quick-latch modules and base
- Integrated rail-clip for grounding shield
- Busable power and relay through pluggable side-base connectors
- Redundant host connections to common segment
- Redundant bulk power connections feeding each power module independently



Operation

- Independent bases per segment for increased plant integrity
- Redundant power modules, with common "conditioning" in the base, gives greatest system performance and reliability
- ACB (auto current balance) technology enhances product life by closely sharing power between modules



Maintenance

- Swappable bases allow maintenance without affecting adjacent segments
- Preventive function monitoring, smart self diagnostics
- Dedicated relay connection per base

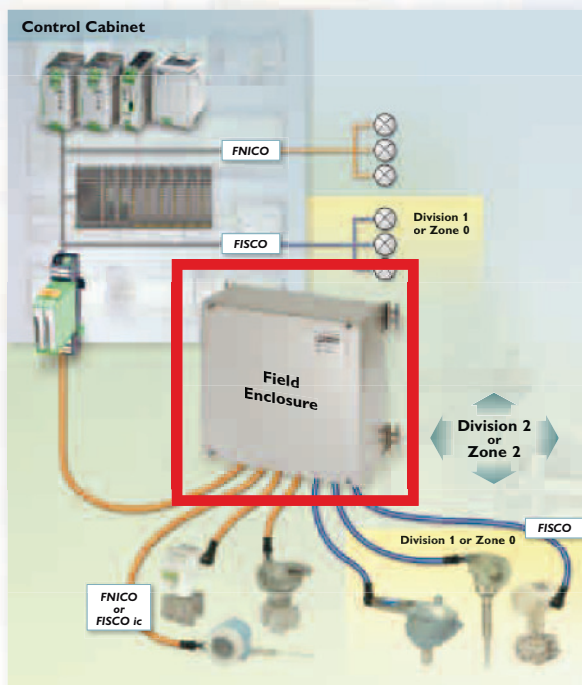
ACB
TECHNOLOGY

Field junction box assemblies

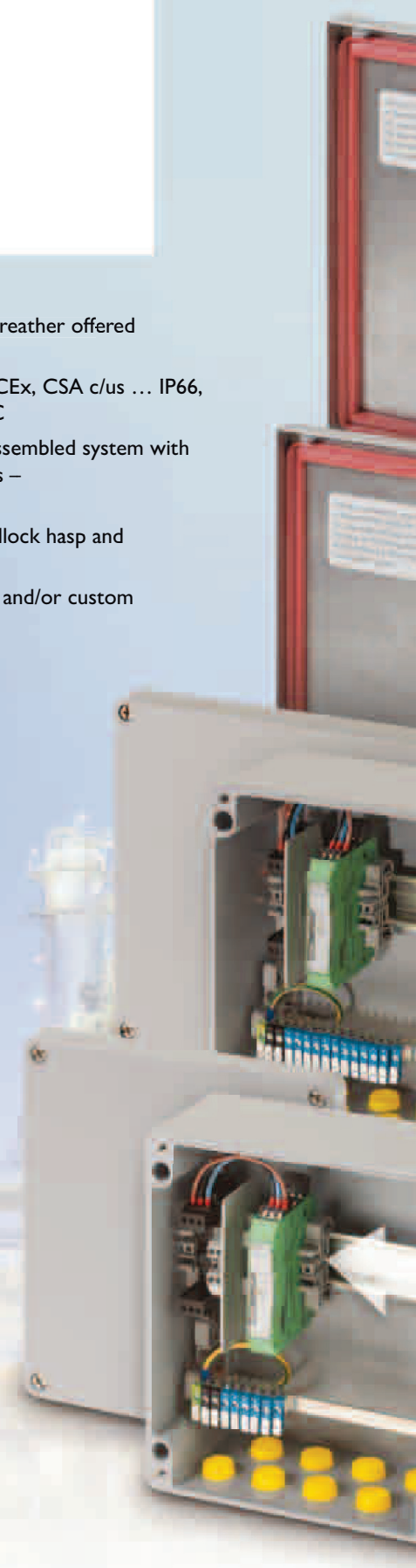
Designed specifically for field device coupler systems, these assemblies allow for easy wiring and convenient cable management. Choose from two sizes of aluminum and two sizes of stainless steel.

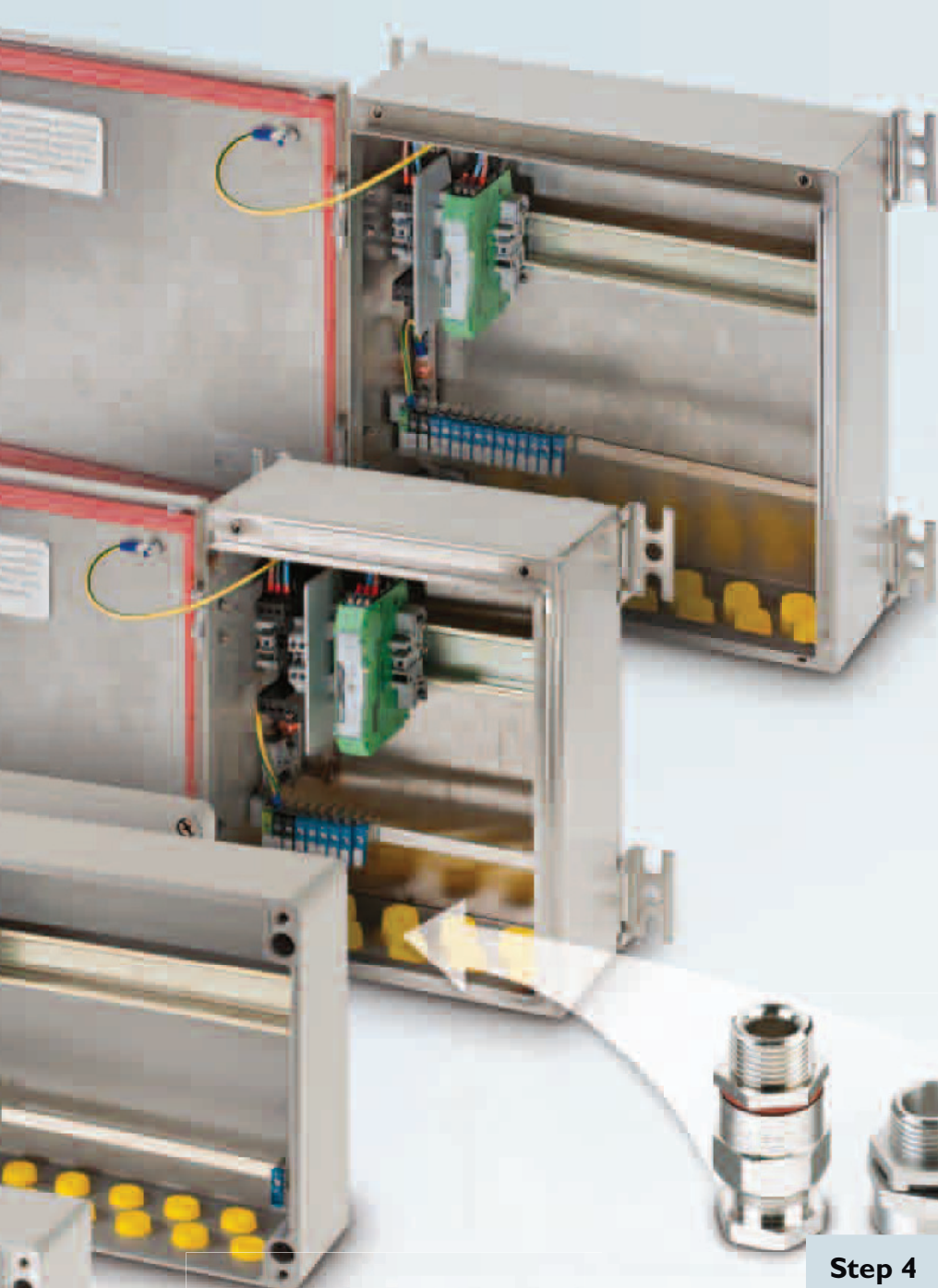
Junction boxes

- Size and weight optimized
- “Starter” rail with PT base, terminals, end clips and FB-ET
- Busbar and shield clamps
- Allows flexible addition of FB-2SP and FB-ISO, offered separately
- PT plug ordered separately, or base used as a simple wiring terminal
- Entries for trunk-in, trunk-out and breather
- Large: 10 spurs and 2 spares
- Small: 5 spurs and 1 spare



- Cable glands, plugs and breather offered separately
- Ex nA e tD ... ATEX, IECEx, CSA c/us ... IP66, NEMA 4x ... -40 to 85 C
- PRE-APPROVED as an assembled system with the ISO and 2SP modules – ready to install
- SST: 316L, hinged lid, padlock hasp and electro-polished
- Contact us for complete and/or custom assemblies





Step 1

Choose junction box with pre-installed configuration for trunk connection. Also included is the busbar and shield clamps.

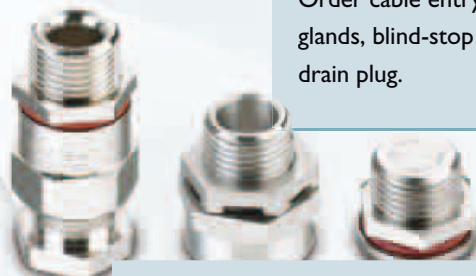
Step 2

Order the flexible configuration of FB-ISO or FB-2SP coupler modules as needed.



Step 3

Order cable entry hardware: glands, blind-stop plugs, and breather drain plug.



Step 4

Install the cable entry hardware as needed.

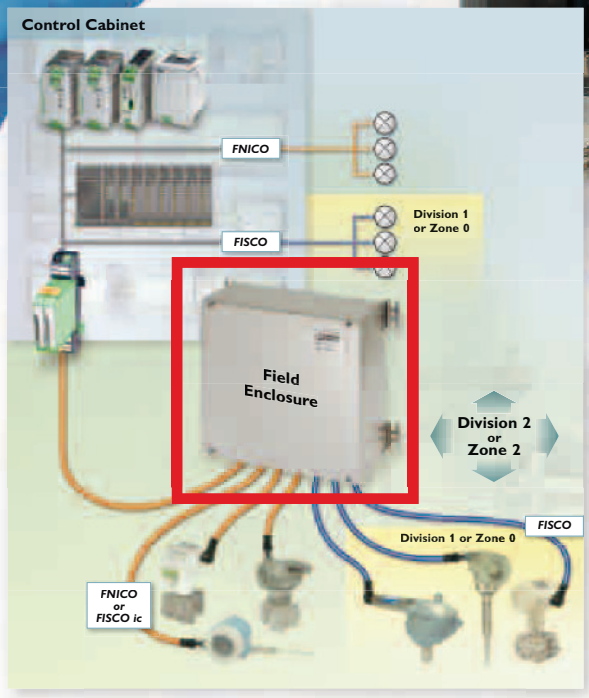


Step 5

Snap on the T-bus rail connector (included with each ISO or 2SP coupler) and snap on the coupler module. It's ready to mount and wire! Connect the trunk to the terminals of the black PT base and wire the field instruments to terminals on each coupler.

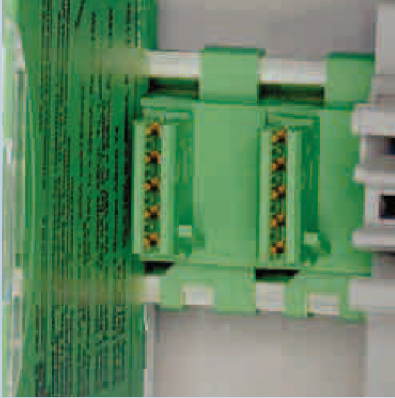
Field junction box assemblies

- Ease-of-use with flexibility, scalability and maintainability
- Modularity, reduced size, advanced packaging and unsurpassed reliability



Device couplers

FB-ET connects to the trunk and includes a pre-installed external terminator to avoid errors at commissioning. For hazardous locations, FB-2SP and FB-ISO connect to field devices and provide short-circuit and energy limiting. Voltage and communication are routed via modular T-bus connectors installed on the DIN rail. Compact module width and single-sided spur wiring allow size and weight optimization of the junction box.



Live pluggable

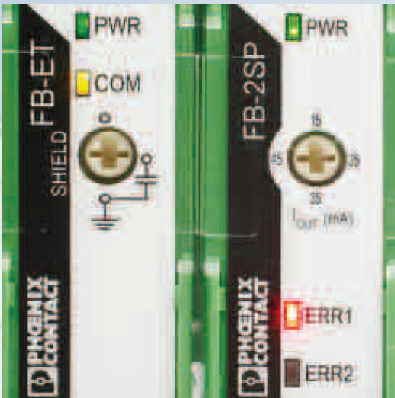
- No need to design-in unused spurs, creating 20 percent future spare capacity



Design and engineering

Easy configuration

- Optimized segment overhead with configurable current limit setpoints per module
- Float shield or connect to earth (via DIN rail) directly or capacitively
- Status indication – fault, power, communications, termination and low-voltage warnings



Installation

Flexibility

- Module types may be mixed on segment and in the junction box
- Optimization based on classified approval types and isolation needs
- Brownfield expansion for an instrument with a different approval type is easily accomplished (E.g., a Zone-0 point can be added to a segment with otherwise Zone-2 points)

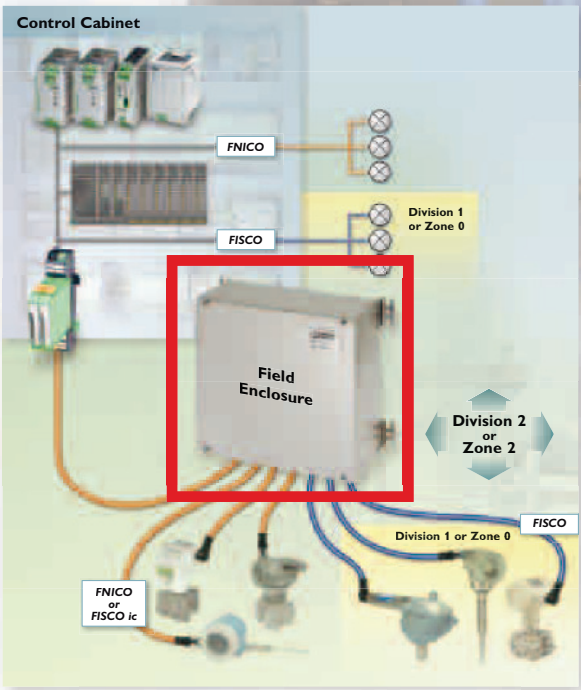
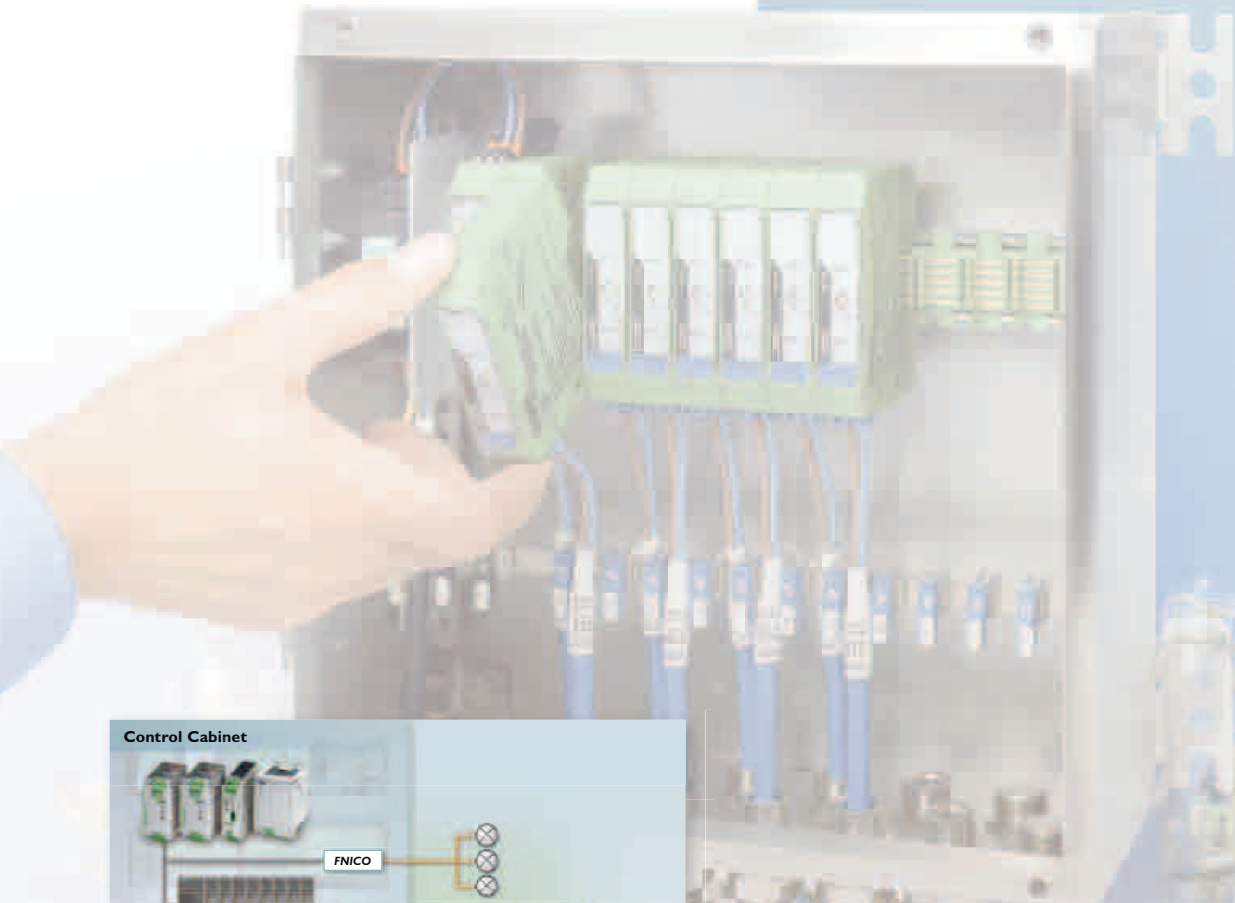


Isolation

- Substantial galvanic isolation, spur-to-spur and spur-to-trunk contains disturbances instead of impacting multiple spurs

Field junction box assemblies

Module-based architecture for single-loop integrity



**TO CONTROL
CABINET**

Phoenix Contact's module-based architecture

Reduce the risk of process downtime



Maintenance

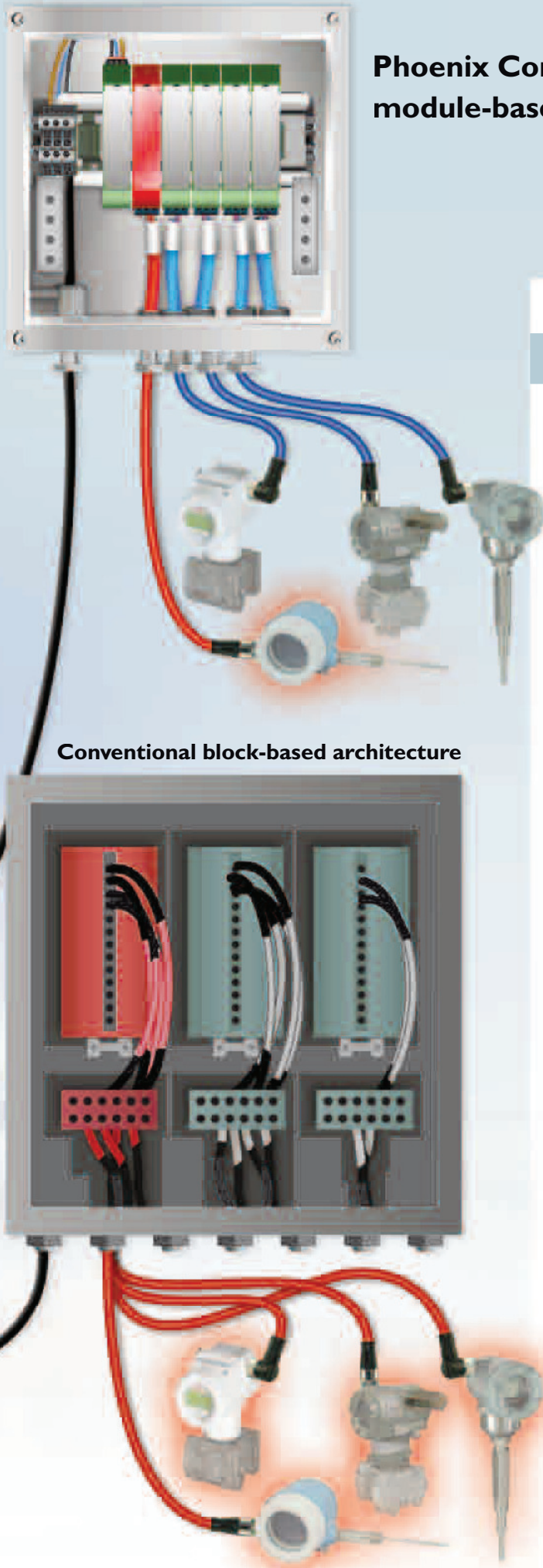
- Hot-swappable – perform maintenance without suspending segment operation or affecting multiple instruments
- Minimize stock with standardization on only two couplers article numbers for any application



Operation

- Failure of traditional block-based architecture leads to process shutdown
- Failure of a single field device does not lead to process shutdown. Likewise, failure of a single coupler, connected to a single field device, does not lead to process shutdown
- Single-point integrity is achieved by the connection of a single device coupler to a single field device
- Single-loop integrity limits the possibility of a single failure impacting more than one control loop
- With the circuitry of each device coupler dedicated to one spur (or one loop, i.e., pair of spurs), the redundancy required at the segment power supply is not compromised as a result of shared circuitry in the field

Conventional block-based architecture



Online tools

For more information, please visit our Solutions Selector at:

www.phoenixcontact.net/processfieldbus

Online solutions selector





Easily navigate through the end-to-end infrastructure solution to find exactly what you're looking for – including links into our online catalog.



Segment design tool

Interactive drag-and-drop software to easily engineer your field junction boxes with the Phoenix Contact modular system. Analyzes segment electrical parameters based on variables such as power supply capacity, line length, cable type and ambient temperature limits. Evaluates fault conditions to ensure adequate overhead.

Order information

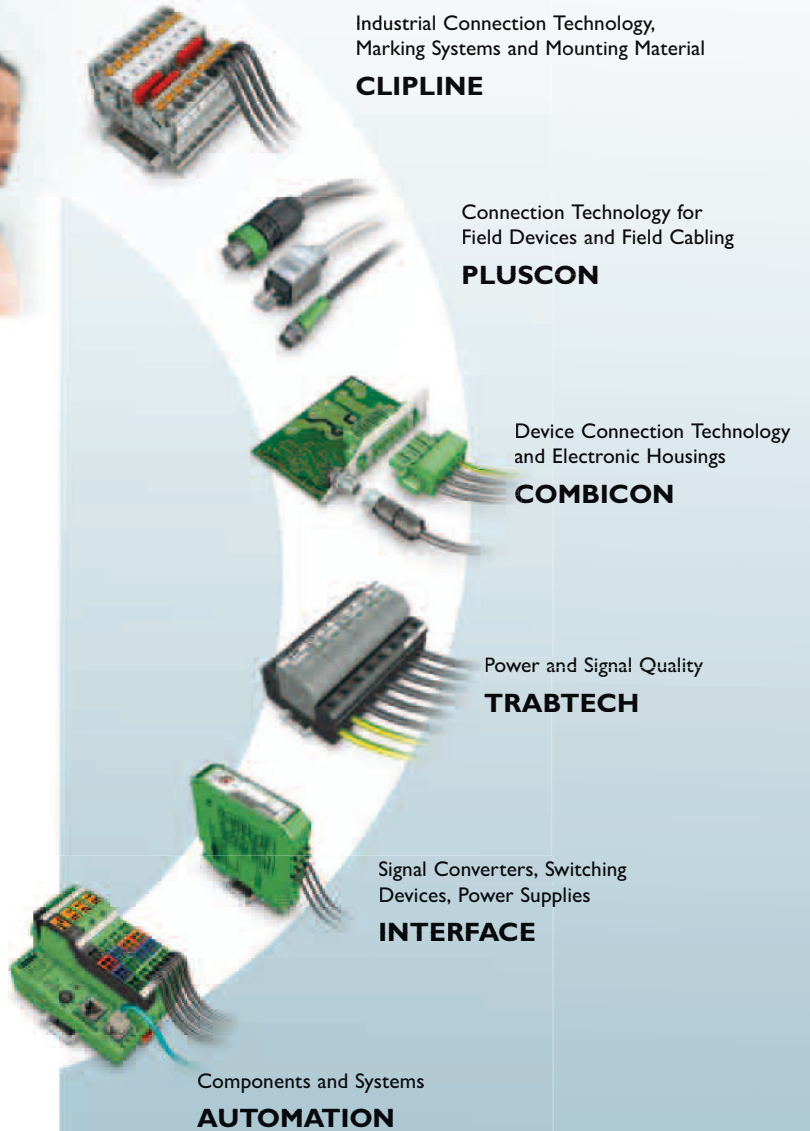
	Redundant power supply		
	2316132	FB-PS-PLUG...	Redundant power supply plug, 28 V at 0.5 A output
	2316145	FB-PS-BASE...	Redundant power supply base
	Simplex power supply		
	2316035	FB-PS-25/0.36A	Power supply/conditioner for one fieldbus segment
	Device couplers		
	2316064	FB-ISO	1-spur, isolated, for Zone 0/Div 1 connection
	2316051	FB-2SP	2-spurs, for Zone 2/Div 2 connection
	2316048	FB-ET	Trunk module with external terminator (included with field junction box)
	Field junction box assemblies		
	2316187	FB-15-AL	Aluminum, 15 entry
	2316190	FB-15-SS	Stainless, 15 entry
	2316200	FB-8-AL	Aluminum, 8 entry
	2316213	FB-9-SS	Stainless, 9 entry

Accessories		
2709561	ME 17.5 TBUS...	Bulk power bus for simplex PS (not included with the simplex PS)
2707437	ME 22.5 TBUS...	Spare for field device couplers (included with each device coupler)
2316226	D-FB-PS	Cover, redundant power supply, side base connections
1793260	ZEC 1.5/4...	Connector, redundant power supply, side base for power bussing, black
1915699	ZEC 1.0/6...	Connector, redundant power supply, side base for relay bussing, green
2800755	PT 2X2-FF-ST	Protective plug for surge protector (not included with field junction box)
2839402	PT 4-BE	Surge base, with direct bridge between shield and rail ground
2839415	PT 4+F-BE	Surge base, with gas-filled surge arrestor between shield and rail ground (included with each field junction box)
2800034	S-PT-EX-24DC	Surge instrument, threaded pipe, M20 (other threads available)
2880671	S-PT-EX(I)-24DC	Surge instrument, threaded in-line pipe, M20 (other threads available)
2900197	FB-M-KV...	Cable gland, M20, NPB, silicone, 4.0-8.4 mm OD unarmored, with nut, Ex e
2900209	FB-M-BS...	Blind stop plug, M20, NPB, silicone, with nut, Ex e
2901859	FB-M-BD...	Breather drain, M20, SST, silicone, with nut, Ex e
0819217	UC-TM 16	UniCard marker, for redundant power supply base
0819262	UC-TMF 16	UniCard marker, for redundant power supply base
0800377	WMS 9.5...	Heat-shrink markers on roll
3022218	CLIPFIX 35	End bracket for rail assemblies
2713780	E/ME TBUS...	End bracket for rail assemblies with T-bus protrusion
3044076	UT 2.5	Terminal block (included with small field junction boxes)
3047028	D-UT 2.5/10	Terminal block cover
3200030	AI 1-8 RD	Ferrule for Type A fieldbus cable
143...	SAC-4P...	Fieldbus cordsets, various styles, angles, colors, and lengths
143...	SAC-2P...	Fieldbus Type A cable on reel, various colors
2866763	QUINT-PS...	Bulk power supply, 10 A
2320173	QUINT-ORING...	Auto current balancing redundancy module for bulk power
2320225	QUINT-UPS...	Smart DC UPS
2320319	QUINT-BAT...	Battery for DC UPS

Further information on the products presented here and on the world of solutions from Phoenix Contact can be found at www.phoenixcontact.net/catalog



Or contact us directly.



PHOENIX CONTACT GmbH & Co. KG
Flachmarktstraße 8
32825 Blomberg, Germany
Phone: +49 (0) 52 35 3-00
Fax: +49 (0) 52 35 3-4 12 00
E-Mail: info@phoenixcontact.com
www.phoenixcontact.com