



PROFIBUS-DP/PA

HIGH SPEED COUPLER PROFIBUS DP/PA

- Transparent from 9.6 kbps up to 12 Mbps
- Automatically detects the baud rate
- Models with 2 or 4 PROFIBUS-PA channels
- Works in a transparent manner, without needing additional configuration
- Can directly replace non-Ex PROFIBUS-PA couplers
- Options for 340 mA or 500 mA maximum current per PROFIBUS-PA channel
- Can be used with intrinsic safety barriers for hazardous areas
- Accepts versions of PROFIBUS-DPV1 and DPV0 protocols
- Modular solution









In the search for practical solutions and high performance, Smar presents its new solution on connectivity for industrial networks: the high speed coupler for PROFIBUS-DP/PA, the HSC303.

The PROFIBUS-DP/PA high speed coupler of Smar, HSC303, is a module whose function is to allow access to PROFIBUS-PA devices via PROFIBUS-DP network.

Operating with baud rates from 9600 bps to 12 Mbps on PROFIBUS-DP network, the HSC303 works seamlessly, requiring no additional configuration. It allows access of multiple masters to PROFIBUS-PA devices, in addition to the separate use of one master for control and the other for asset management or parameterization, when desired. It does not have limit of devices per PROFIBUS-PA channel, being limited by the power supply and impedance used to power the channel.



System Architecture

The elements below make up the complete solution to access the PROFIBUS-PA network. They are:

- DF93: Rack for HSC303 modules With diagnostics via LEDs, it is easy to check the voltage levels delivered to the modules;
- DF50 / DF56: Power supplies for the HSC303 Available for alternate or continuous input voltages;
- HSC303-2 or HSC303-4 High performance couplers with transparent work without needing additional configurations with 2 or 4 PROFIBUS-PA independent channels;
- DF52 / DF60: Alternate or continuous voltage power supplies for impedance modules;
- DF53 / DF98: Power supply impedances with PROFIBUS-PA independent channels of 340 mA or 500 mA;
- DF47-12 / DF47-17: Intrinsic safety barriers for Ex-ia segments of 1.2W or 1.7W;
- DF9: Individual support for module expansion;
- DF2: Rack terminator.





The following three scenarios are shown with options for using the HSC303.

Scenario 1 - DF50/HSC303/DF52/DF53 - Up to 4 channels of 340 mA/channel



Scenario 2 - DF50/HSC303/DF52/DF98/DF52/DF98 - Up to 4 channels of 500 mA/channel



Scenario 3 - DF50/HSC303/DF52/DF47/DF52/DF47 - With intrinsic safety barrier and up to 4 PROFIBUS-PA channels





PROFIBUS-DP Channel	
Baud Rate	From 9.6 Kbps up to 12 Mbps
Standard	EN 50170 and EN 50254
Physical layer	EIA RS-485
Connector	M12

PROFIBUS-PA Channels	
Number of channels	HSC303-2: 2 channels HSC303-4: 4 channels
Communication rate	31,25 kbps
Standard	EN 61158-2, EN 50170
Physical layer	ISA-S50.02-1992
МАՍ Туре	Passive (not powered bus)
Insulation	500 Vac

Failure Relay		
Output Type	Solid state relay, normally closed (NC), isolated	
Maximum voltage	30 Vdc	
Maximum current	200 mA	
Overload protection	Does not have. It must be provided externally	
Normal operation	Opened contacts	
Failure condition	Closed contacts	
Maximum cable length connected to the relay	30 m	

The power supply for the load activated by the failure relay must not come from an external network (outside the panel).

IMB BUS	
Voltage	5 Vdc
Hot swap	Yes

Module Characteristics

Processor		
FPGA	Changes CycloneIII	
Storage Memory	4 KB	
Processor	NiosII	
Running Memory	1 MB	
Clock	85 MHz	
Operation Voltage	3.3 V for I/O, 2.5 V for PLL, 1.2 V for core and 5 V for communication channels.	





Card	
Power supply voltage	5 V (± 5% of tolerance)
Typical current	750 mA
Real consumption	2.75 W
Environment air temperature for operation	0 to 60 °C according to the IEC 1131 standard
Storage temperature	-20 to 80 °C according to the IEC 1131 standard
Relative air humidity for operation	5% to 95% non-condensing
Cooling mode	Air convection
Weight	0.318 kg
Dimensions (HxWxD) in mm	149 x 40 x 138

Dimensional Drawings





HSC303-2	High speed coupler with 2 PROFIBUS-PA channels for connection to PROFIBUS-DP channel
HSC303-4	High speed coupler with 4 PROFIBUS-PA channels for connection to PROFIBUS-DP channel



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