



RHP-303

PROFIBUS

PROFIBUS HUB REPEATER

- IP 20 classification
- 5 insulated channels
- Transparent for all PROFIBUS-DP protocol versions
- RS-485 specifications for each channel
- Maximum 12 Mbps communication rate
- Supports up to 31 devices per channel
- Supports up to 1200 m length of spur line
- No address required
- Integrated terminator
- Supports Modbus protocol in manual mode on 9.6 Kbps and 19.2 Kbps
- Ideal for applications in areas susceptible to EMI
- Allows expansion of the PROFIBUS-DP/Modbus RTU network with reliability
- Regenerates PROFIBUS-DP/Modbus RTU signals that were affected by capacitive effects
- Insertion and removal of slave equipment during the operation
- Protection against short circuit and indication on each channel
- Compact and robust construction
- Status and error display per channel
- Compatible with all DP cables
- Provides more convenient arrangement for the network cables
- Easily extensible installations
- DB9 connector available for diagnostics
- Cost savings with cabling and repeaters



**PROFI[®]
BUS** **Modbus**

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RHP303 is an active element serving as interface between segments on Profibus network and ensures adequate signal levels, while guarantees the communication signal integrity. The repeater prevents signal deterioration in long distances. Essentially it receives the signal from a network segment, cleans, amplifies and transmits it to other segments. This way, the original message is preserved for all network segments. The RHP303 executes this function bidirectionally. In addition, serves to galvanically isolate the segments.

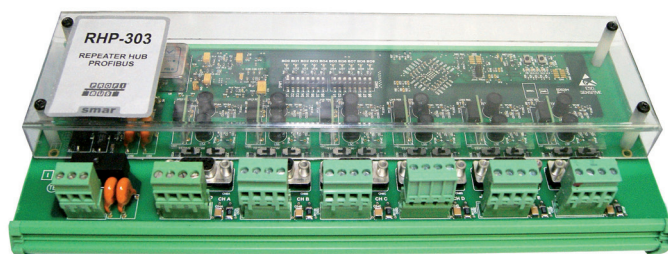
The PROFIBUS-DP is a high speed communication bus that follows strict spur lines rules due to possible reflections that disturb communications.

The RHP303 is the innovative solution for applications that need spur lines or star segments. It is the most economical solution to install reliable spur lines on high speed DP networks. It has 5 insulated galvanic transparent repeaters, allowing network structures with extended spur lines, which, individually, may include up to 31 devices and a length equal to the main bus. The RHP303 regenerates the electric signal in one channel and transfers it to all the others (chicken foot topology).

As RHP303 creates insulated segments, the devices can be removed and inserted during the operation. Likewise, electric bus problems and EMC disturbances on a spur do not spread to other segments. The RHP303 smart circuits and its insulation do not electrically modify the communication signal. These circuits also identify automatically the transmission speed.

The RHP303 has a differential feature that is to work in Modbus for two communication rates in manual mode: 9.6 Kbps and 19.2 Kbps.

To help installation, a terminator is integrated and can be turned on or off. The RHP303 is powered by 12 to 30Vdc voltage. For faults identification, maintenance and commission, it has LEDs that indicate each channel status.

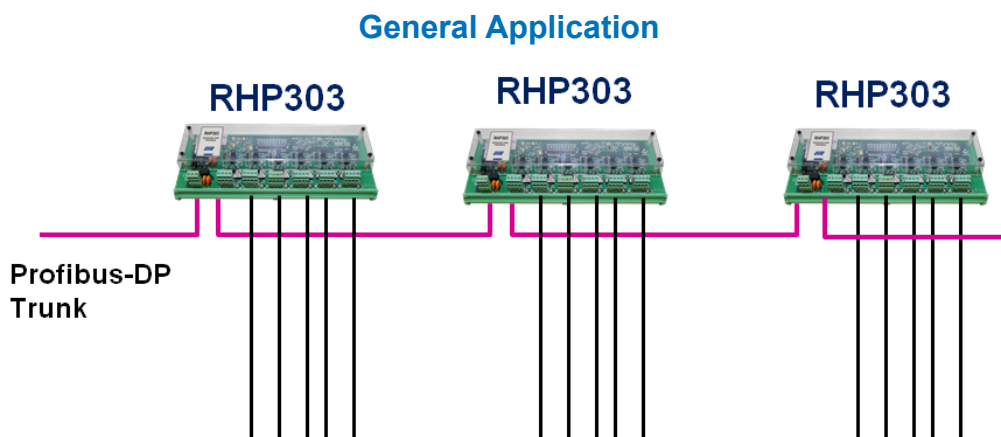


Areas of Application

- Dynamic spur lines for actuators, flow meters and pH analyzers;
- Inverters and motors;
- Motor control centers;
- Barrier for galvanic and non-insulated equipment;
- Large star/tree structured networks.

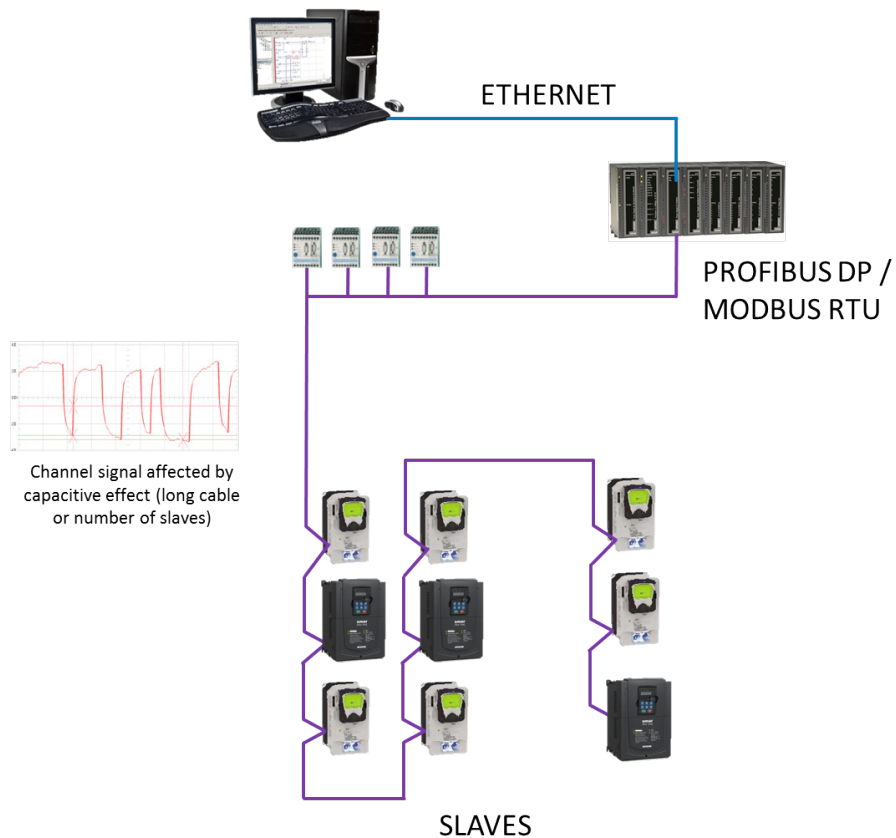
Examples of Application

The figure below shows a general RHP303 application. Each insulated channel prevents short circuit propagation from one channel to another and allows expansion of up to 1200m per segment.



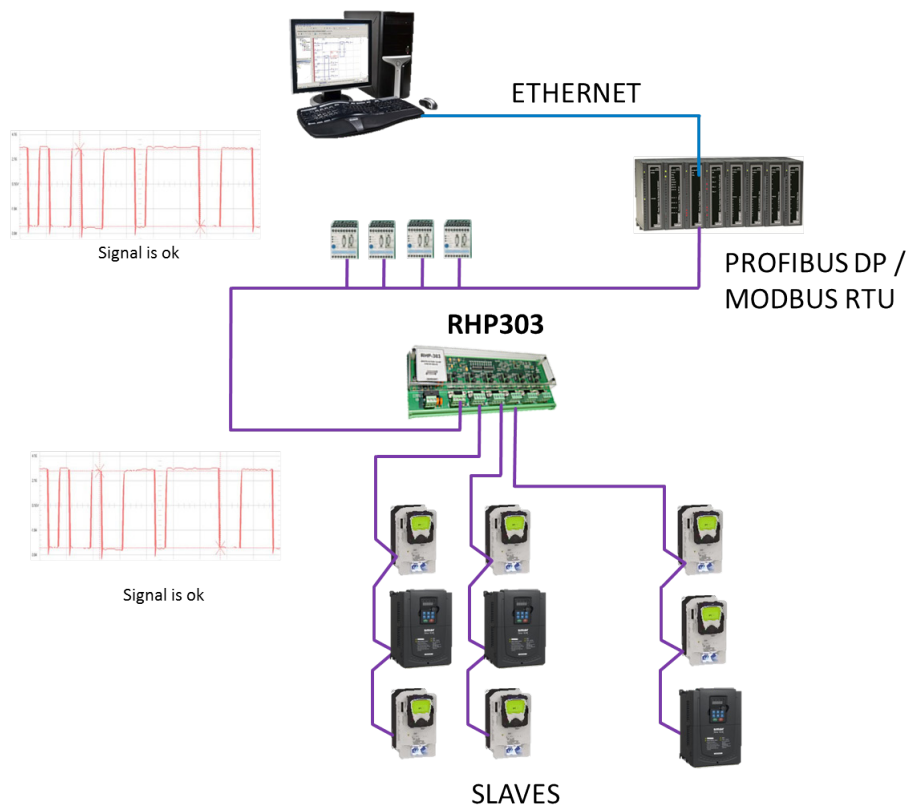
Furthermore, the RHP303 amplifies and corrects communication signals that are affected by capacitive effects in the segments. See example in the following figure of a network affected by capacitive effect:

Communication signals affected by capacitive effect



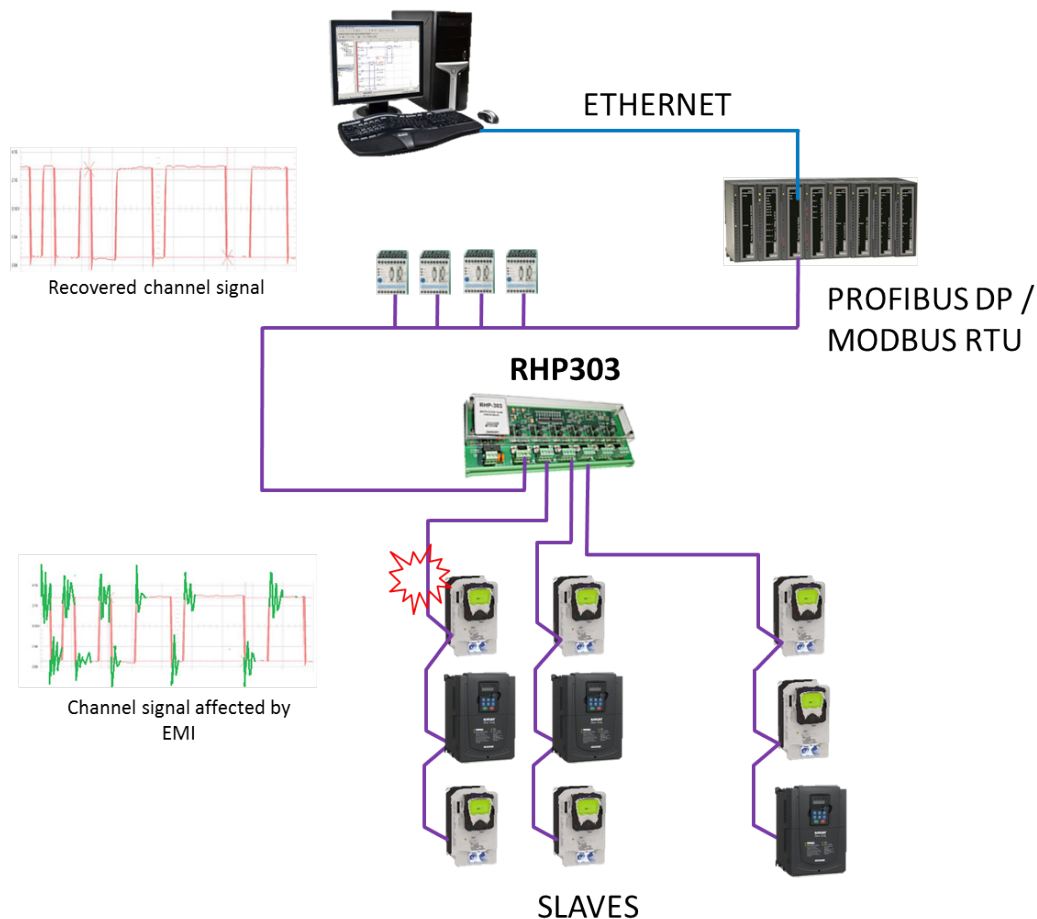
The following figure shows the communication signals recovered by RHP303.

Communication signals recovered by RHP303



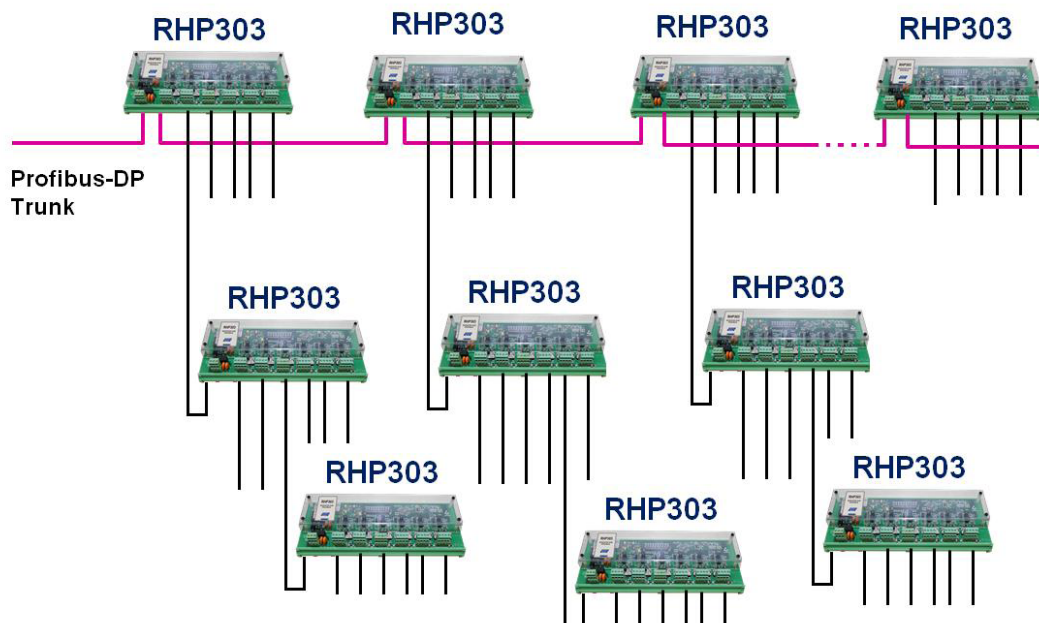
The RHP303 increases the network availability by filtering EMI noises so that one channel does not interfere with the other or with the main trunk. The isolated RHP303 spurs ensure that common noise in critical areas, such as MCCs, does not interfere in the remaining areas.

Application in areas susceptible to Electromagnetic Interference

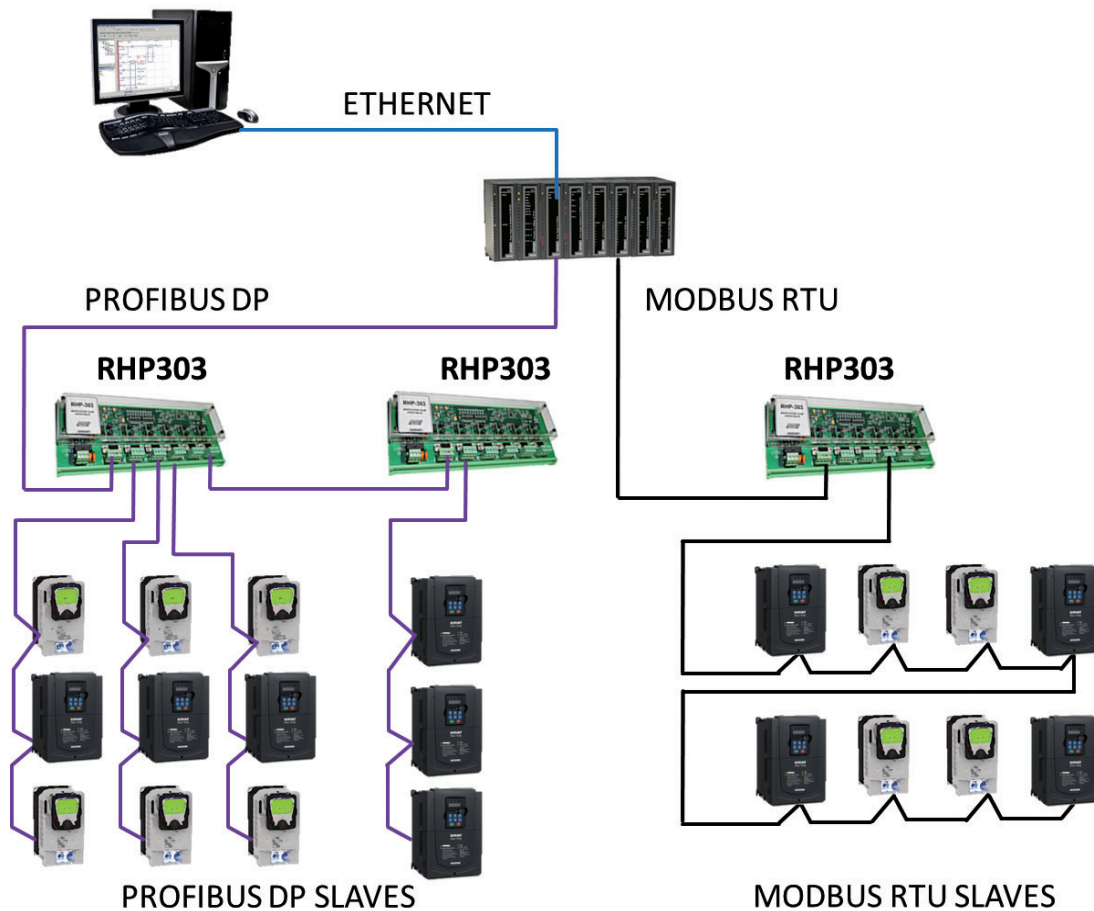


PROFIBUS-DP / Modbus RTU networks can be expanded in tree or star topology, without limits for RHP303 in cascade. Thus it is possible to increase channel length and its number of devices with communication signal integrity. See the next figure:

Expansion of PROFIBUS-DP networks



Application example of PROFIBUS-DP and Modbus RTU



Technical Specifications

Power Supply	
Power connector	3-pin terminal block
Voltage	12 to 30 Vdc (24 Vdc nominal)
Maximum current	270 mA @ 24 Vdc
Protection against reverse polarity	Yes
Cabling	< 2.5 mm ²

Function Specifications	
Supported protocols	Modbus, DP-V0, DP- V1, DP-V2, FDL, MPI, FMS, PROFIsafe, PROFIdrive and any other FDL-based protocol
Communication rates (kbps)	9.6; 19.2; 45.45; 93.75; 187.5; 500; 1500; 3000; 6000 and 12000
Communication rate detection	Self-detectable by default or switch configurable
Communication rate selection switch	0 = Self-detectable by default
Communication rate detection time	< 5 s (if self-detection selected)
Data delay time	1 Tbit for all rates
Jitter delay time	±0.1 Tbit for all rates
Terminators	One on each spur

Environment Conditions	
Operation temperature	0 to 60 °C
Protection degree	IP 20

Dimensions and Weight	
Dimensions (LxWxH)	296 x 125.4 x 65 mm
Weight	612 g

Mounting	
Support	DIN rail

Spare Part Components

Spare Components List	
Components Description	Code
5 x 20 mm Fuse – 500 mA (package with 10 pieces)	400-1241

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Specifications and information are subject to change without notice.
Up-to-date address information is available on our website.

web: www.smar.com/contactus.asp



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