FRI303

PROFIBUS-PA

REMOTE I/O

- Discrete I/O connected direct onto PROFIBUS-PA
- Input and Output Function Blocks
- Two built-in Solid State Relay Outputs
- Discrete Function Blocks in the field
- Integrated I/O on the same hardware
- Two dry contact inputs
- Designed for DC and AC loads
- Mix Profibus with conventional devices
- Reduce wiring cost

PROFIBUS®

EDDL ELECTRONIC DEVICE DESCRIPTION LANGUAGE

FDT

smar

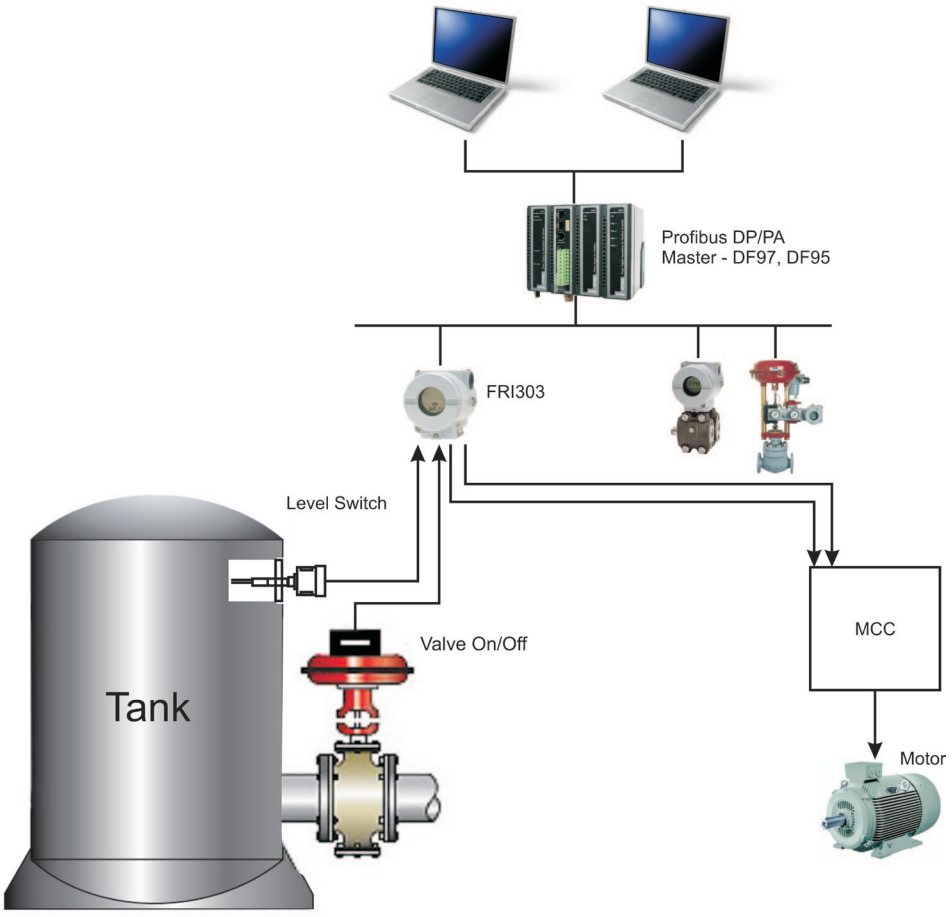
Until all types of devices are available with PROFIBUS-PA systems, they will have to be a hybrid nature accepting both Profibus and conventional signals. A mixed traditional and Profibus environment is inevitable during the transition to a Profibus technology. FRI303 Remote I/O makes integration of Profibus and conventional I/O easy. Discrete devices such as pressure switches, push buttons, on/off valves, pumps and conveyors are integrated to the system over the PROFIBUS-PA field-level network using FRI303. It is a single and compact device with easy installation.

The FRI303 is an integral part of SYSTEM302 but also integrates into other systems supporting Profibus.

Easy Installation

The FRI303 may be installed close to the conventional discrete elements, thereby eliminating long wire runs, associated marshalling panels and cable trays for the conventional output. With subsequent savings further reducing overall system costs.

The use of FRI303 makes it possible to distribute outputs at various locations in the field and connect them via PROFIBUS-PA.



Easy Configuration

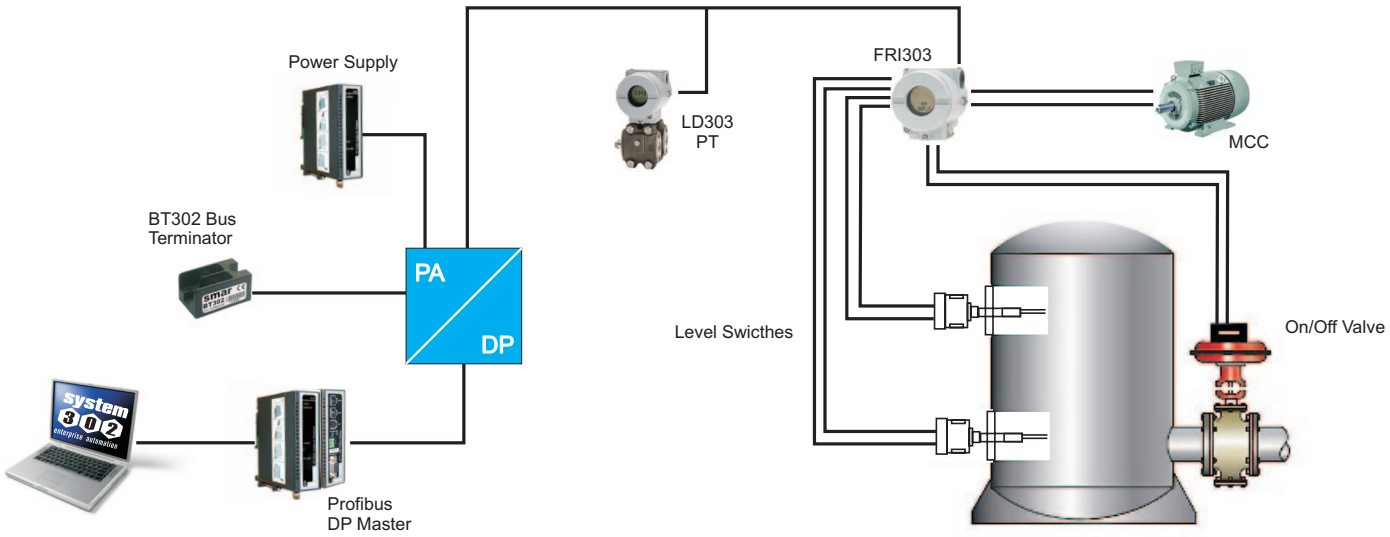
The FRI303 is fully configured through the SYSTEM302 or any other Profibus configuration tool based on EDDL or FDT/DTM.

Function Blocks

The FRI303 has 02 Discrete Input (DI) blocks and 02 Discrete Output (DO) blocks.

Conventional discrete I/O now works together with pure Profibus devices on the same network and in the same loop. Output function blocks include standard PROFIBUS-PA safety mechanism in case of failures. Inputs and outputs are isolated from each other.

Application



The FRI303 has 2 Discrete Input (DI) blocks and 2 Discrete Output (DO) blocks.

Conventional discrete I/O now works together with pure Profibus devices on the same network and in the same loop. Output function blocks include standard PROFIBUS-PA safety mechanism in case of failures. Inputs and outputs are isolated from each other.

Function Blocks

PHY	This block contains data that is specific to the hardware that is associated with the resource.
DISCRETE INPUT	The DI block takes the manufacture's discrete input data, selected by channel number, and makes available to other function block at its output.
DISCRETE OUTPUT	The DO block converts the value in SP_D to something useful for the hardware found at the CHANNEL selection.

General

Communication	PROFIBUS-PA on 31.25 kbit/s voltage mode according to IEC 61158-2.
Power Consumption	Quiescente 17 mA (bus power).
Turn-on Time	Approximately 10 seconds.
Update Time	Approximately 0.5 second.
Humidity Limits	0 to 100% RH.
Output Impedance	Non-intrinsic safety from 7.8 kHz - 39 kHz should be greater or equal to 3 kΩ. Intrinsic safety output impedance (assuming an IS barrier in the power supply) from 7.8 kHz – 39 kHz should be greater or equal to 400 Ω.
Function Blocks	2 Discrete Input Function Blocks (DIs) and 2 Discrete Output Function Blocks (DOs).
Indication	Optional LCD indicator.
Temperature Limits	Operation: -40 to 85 ºC (-40 to 185 ºF). Storage: -40 to 110 ºC (-40 to 230 ºF). Display: -10 to 60 ºC (14 to 140 ºF) Operation; -40 to 85 ºC (-40 to 185 ºF) without damage.
Vibration Effect	Meets SAMA PMC 31.1.
EMI	According to IEC 801.
Hardware	According to IEC 61158-2 and FISCO model.
Electrical Connection	1/2-14 NPT, PG 13.5 or M20 x 1.5.
Local Configuration	Using local adjustment magnetic tool if device is fitted with LCD display. Complete configuration is possible using PC software interface.
Configuration	Via Profibus Communication using tools based on EDDL and FDT/DTM.
Housing	Injected low copper aluminum with polyester painting or 316 stainless steel housing.
Mounting	Wall, panel, or 2" pipe with optional bracket.
Weight	Nominal: 0.80 kg; Digital display adds: 0.13 kg; Mounting bracket adds: 0.60 kg.

FRI303 Relay Outputs

The outputs are designed with Solid State relays that are able to drive incandescence lamps, solenoids and other DC and AC loads.

When the output relays are N.C., if via function block is assigned a state “on” to the outputs, it means that the loads will be switched off.

When the output relays are N.O., if via function block is assigned a state “on” to the outputs, it means that the loads will be switched on.

Technical specifications for Normally Closed relays

Architecture	Number of Outputs: 2.
Switching Voltage	350 Vpeak.
Switching Current: AC mode	100 mA.
Switching Current: DC mode	165 mA.
On Resistance AC mode	18 Ω.
On Resistance DC mode	4.5 Ω.
Off State Resistance	Min: 0.1 GΩ. Typ: 1.4 GΩ.
Off State Leakage	Typ: 1.0 µA.
Turn On Time	5 ms.
Turn Off Time	1 ms.
Capacitance - Across Output	20 to 200 pF.
Thermal Offset Voltage	0.20 mV.
Output Status (load) with no power supply connected to the PROFIBUS-PA bus.	ON.
Output Status (load) During: Firmware Download	ON.
Output Status (load) During: Turn-on Time	ON.

Technical specifications for Normally Opened relays

Architecture	Number of Outputs: 2.
Switching Voltage	400 Vpeak.
Switching Current: AC mode	150 mA.
Switching Current: DC mode	250 mA.
On Resistance AC mode	18 Ω.
On Resistance DC mode	4.5 Ω.
Off State Resistance	Min: 0.5 GΩ. Typ: 5000 GΩ.
Off State Leakage	Typ: 0.5 µA.
Turn On Time	5 ms.
Turn Off Time	1 ms.
Capacitance - Across Output	10 to 95 pF.
Thermal Offset Voltage	0.20 mV.
Output Status (load) with no power supply connected to the PROFIBUS-PA bus.	OFF.
Output Status (load) During: Firmware Download	OFF.
Output Status (load) During: Turn-on Time	OFF.

Technical Specifications for Dry Contact Input

Digital Input	2 (two) dry contact inputs electrically isolated from each other: • Resistance value lower than 2K: close contact; • Resistance value upper than 3K5: open contact.

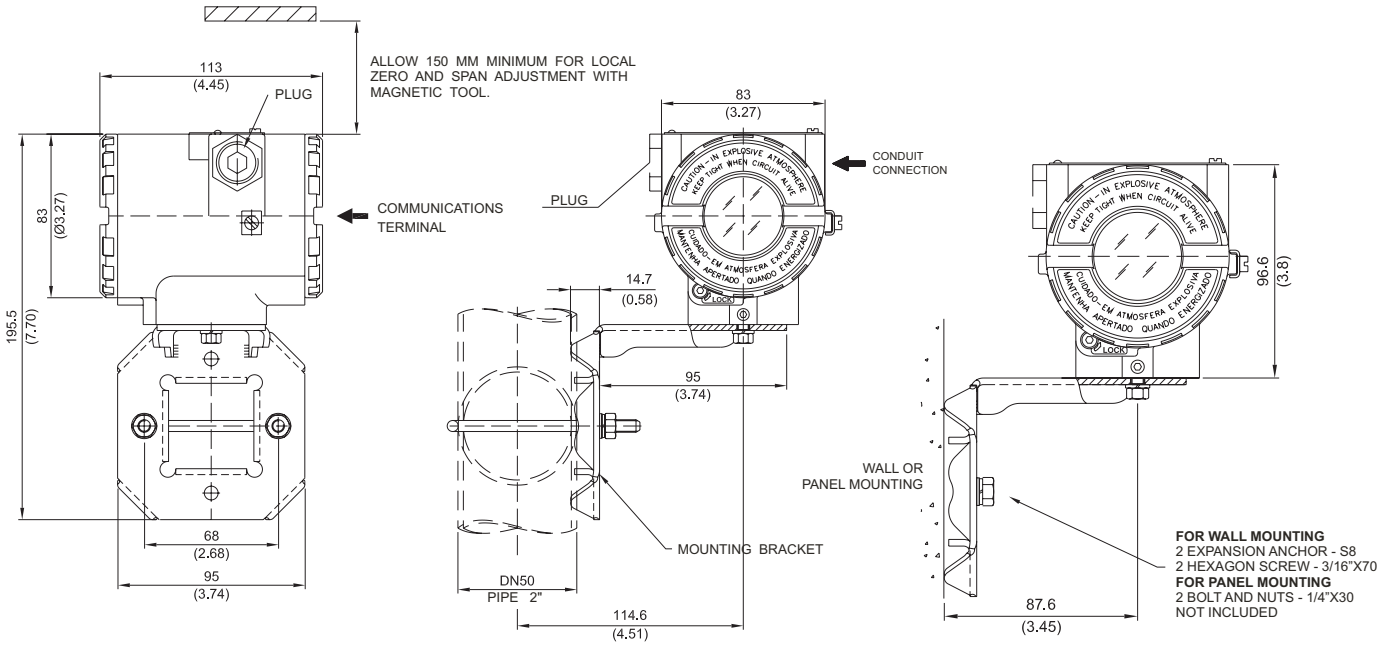
Ordering Code

MODEL		
FRI303	PROFIBUS-PA REMOTE I/O	
	COD.	Local Indicator
	0	Without Indicator
	1	With Digital Indicator
	COD.	Relay Output Condition
	1	Both Normally Open (N.O.)
	2	Both Normally Closed (N.C.)
	3	One N.O. and other N.C.
	COD.	Mounting Bracket for 2" Pipe Mounting
	0	Without Bracket
	1	Carbon Steel Bracket
	2	316 SST Bracket
	COD.	Electrical Connections
	0	1/2-14 NPT
	A	M20 x 1.5
	B	PG 13.5 DIN
	COD.	Options
	H1	316 SST Housing
	A1	316 SST Bolts
	ZZ	Special Options – Specify

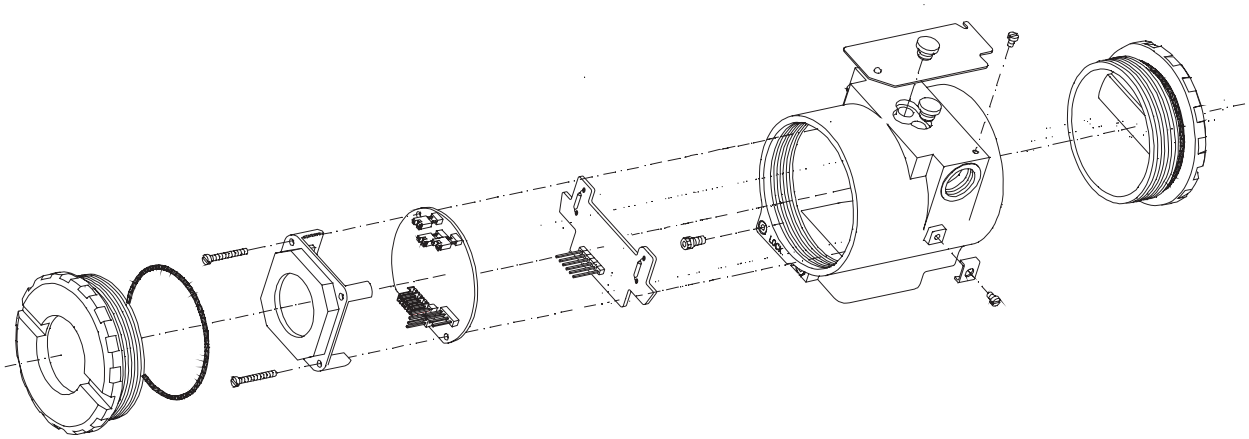
FRI303 - 1 1 - 1 0 / * ← TYPICAL MODEL

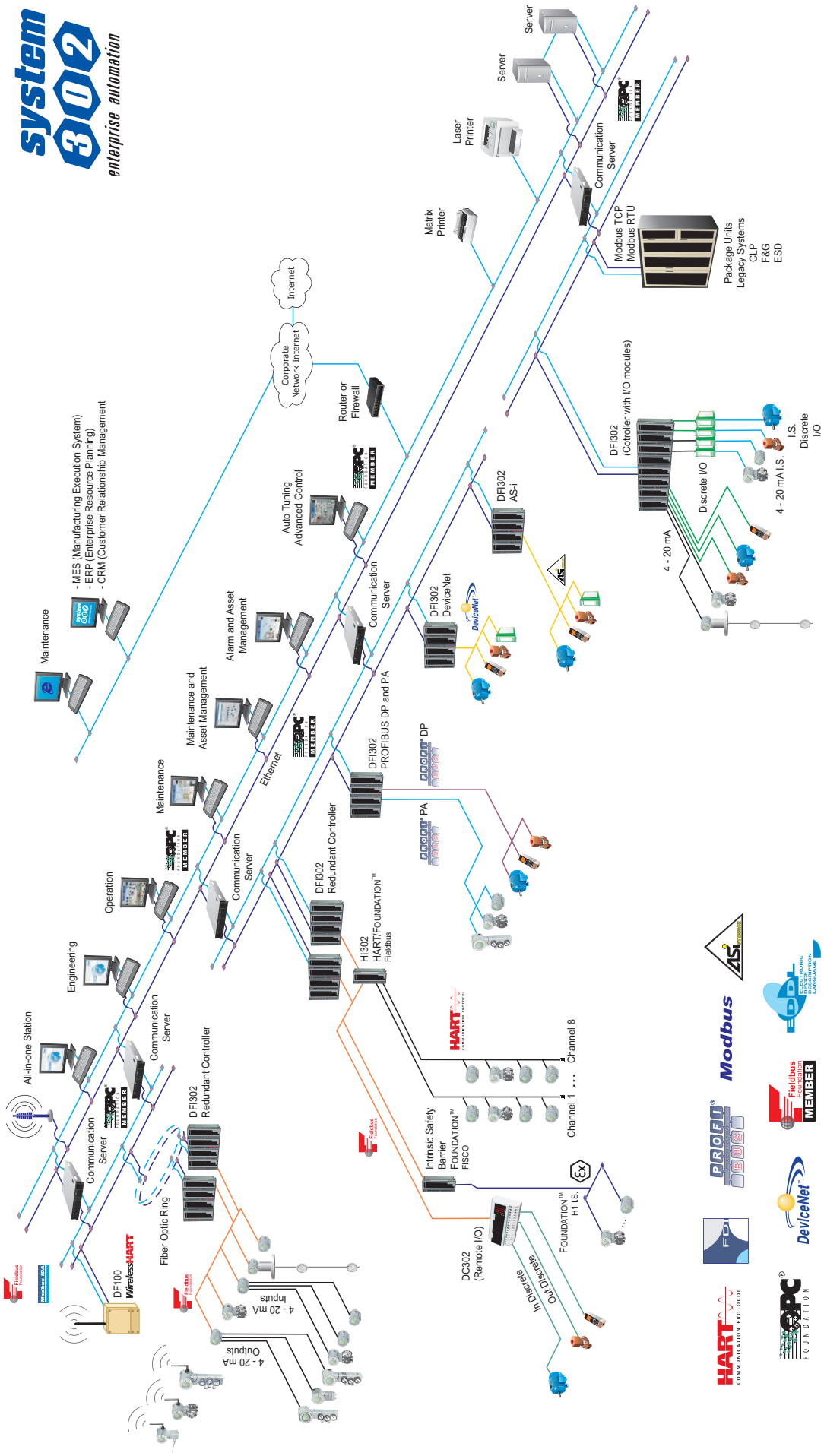
* Leave it blank for no optional items

Dimensions



Exploded View




system 302
enterprise automation
Server
Server
Laser Printer
Communication Server
Matrix Printer
Modbus TCP
Modbus RTU
Package Units
Legacy Systems
CLP
F&G
ESD
Internet
Corporate Network Internet
Router or Firewall
- MES (Manufacturing Execution System)
- ERP (Enterprise Resource Planning)
- CRM (Customer Relationship Management
Maintenance
Auto Tuning
Advanced Control
Alarm and Asset Management
Maintenance and Asset Management
Maintenance
Operation
Engineering
All-in-one Station
Communication Server
Communication Server
Communication Server
Communication Server
Ethernet
DFI302
(Cotroller with I/O modules)
Discrete I/O
4 - 20 mA
4 - 20 mA I.S.
I.S.
Discrete I/O
DFI302
AS-i
DFI302
DeviceNet
DFI302
PROFIBUS DP and PA
DFI302
Redundant Controller
DFI302
Redundant Controller
PROFIBUS DP
PROFIBUS PA
HI302
HART/FOUNDATION™
Fieldbus
HART
Intrinsic Safety Barrier
FOUNDATION™
FISCO
Channel 1 ... Channel 8
FOUNDATION™
H1 I.S.
DC302
(Remote I/O)
Out Distribute
In Distribute
DF100
WirelessHART
Fiber Optic Ring
4 - 20 mA
Inputs
4 - 20 mA
Outputs
Modbus
PROFIBUS
DeviceNet
HART
COMMUNICATION PROTOCOL
OPC
FOUNDATION

Main Smar Products

Pressure

4-20 mA LD290

LD291

LD292

LD293

Pressure Transmitter

LD1.0

Gauge Economic Capacitive Pressure Transmitter

Pressure, Level and Flow

LD301

LD302

LD303

Pressure Transmitter

LD400

Pressure Transmitter with high performance

Level

RD400

Level Transmitter

Density/Concentration

DT301

DT302

DT303

Intelligent Density / Concentration Transmitter

Position

FY301

FY302

FY303

Valve Positioner

FY400

Valve Positioner with auto tuning

FY301

FY302

FY303

Valve Positioner with remote sensor

TP301

TP302

TP303

PositionTransmitter

Temperature

TT301

TT302

TT303

Temperature Transmitter

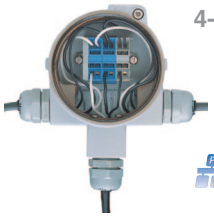
TT411

Panel Mounting Temperature Transmitter

TT421

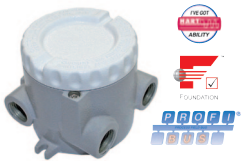
Head Mouting Temperature Transmitter

Junction Box



4-20 mA

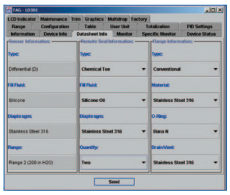
3 Ways Junction Box JM1



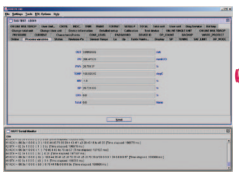
4-20 mA

4 Ways Junction Box JM400

Configurators



HART® Configurator Interface CONF401



HART® Configurator Interface DDCON 100

HART® Configurator for Palm HPC301

Interfaces

HART-RS232 Interface HI311

HART-USB Interface Hi321

Converters

FP302
FP303

Fieldbus to Pneumatic Signal Converter

IF302
IF303

Current to Fieldbus Converter

FI302
FI303

Fieldbus to Current Converter

HART® / Fieldbus Interface HI302

HART® / Current Converter HCC301

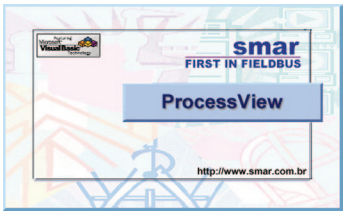
Controllers

Programmable Logical Controller
LC700

Digital Controller
CD600Plus

Interface Universal Fieldbus
DFI302

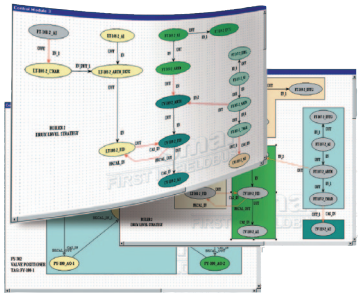
Systems



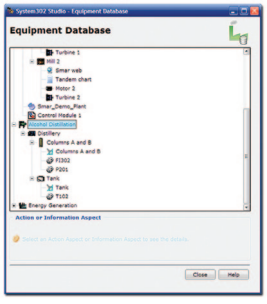
ProcessView
Process Visualization Tool

Studio302
System302 Management Tool

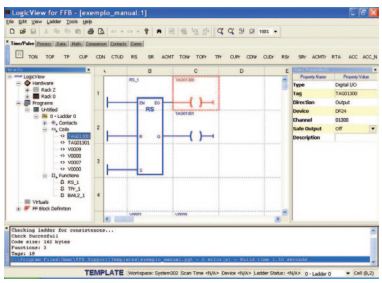
AssetView
On Line Plant Asset Management Tool



Syscon
System Configurator



Equipment Database
Plant Information Management



LogicView
IEC61131
Programming Tool

smar

www.smar.com

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

FRI 303 CE

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