TT300 Series

301 - 302 - 303

TEMPERATURE TRANSMITTERS

- **0.02% Basic Accuracy**

- **Excellent Long Term Stability due to Auto-zero at the Input Circuit**

- **Single Unit and Several Options for Sensors and Connections**

- **Signal Isolation**

- **PID Control Capability**

- **Advanced Diagnostics**

- **Largest Library of Function Block Execution Capacity**

- **Supported by DD, EDDL, and FDT/DTM**

- **Dual Channel**

- **Sensor Backup**

- **Three Bus Technology Options**

CEPEL
OCP-0007

INMETRO

CSA®

Ex

EXAM
BBG Prüf- und Zertifizier GmbH

FM
APPROVED

N

Ex
NEPSI

FOUNDATION

I'VE GOT MARKETABILITY

PROFI BUS®

FD

EDDL ELECTRONIC DEVICE DESCRIPTION LANGUAGE

smar

- 0.02% Accuracy;
- Built-in thermocouples and RTDs linearization;
- True non-interactive zero and span;
- Local zero and span adjustment;
- Remote configuration via Hand-Held Terminal or via PC;
- Alphanumerical LCD indication;
- Small and lightweight;
- Explosion proof and weather proof housing approved (IP67);
- Intrinsically safe certification;
- Signal simulation for loop tests;
- Signal isolation;
- Configurable user unit;
- Configurable local adjustment;
- EMC (Electromagnetic Compatibility) according to IEC 61000-6-2: 1999, IEC 61000-6-4: 1997 and IEC 61326: 2002;
- Write protection function;
- Three technology options: HART®, FOUNDATION™ Fieldbus, PROFIBUS PA.

HART® - 4 to 20 mA

- Excellent long term stability due to auto-zero at the input circuit;
- Two wire, 4-20 mA output plus direct digital communication;
- Special 16-point sensor characterization;
- Update output current in 0.5 s with 1.5 μA/bit resolution;
- Improved performance due to dedicated math co-processor;
- Multi-drop operation mode;
- PID control function;
- Set Point Generator function;
- Supports DTM, DD and EDDL.

FOUNDATION fieldbus™

- Self-diagnostics;
- Dual channel;
- Universal input accepts several thermocouples, RTDs, mV and Ohm;
- Sensor backup option;
- 12 mA consumption;
- 19 different types of function blocks for control strategies and advanced diagnostics;
- Up to 20 function blocks;
- Execution of up to 29 external links;
- Dynamic block instantiation improves interchangeability;
- Fieldbus Foundation™ registered and ITK approved;
- LAS Capability;
- MVC (Multivariable Container) enabled.

PROFIBUS PA

- Self-diagnostics;
- Dual channel;
- Universal input accepts several thermocouples, RTDs, mV and Ohm;
- Sensor backup option;
- 12mA consumption;
- 02 Analog Input Function Blocks;
- Integrated to Simatic PDM;
- Supports DTM and EDDL;
- Profile 3.0 improves interchangeability.

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TT300 Series offers:
- ± 0.02% accuracy;
- Built-in thermocouples and RTDs linearization;
- Compact and lightweight ;
- Interchangeable protocols.

The Smar **TT300 Series** is a transmitter mainly intended for measurement of temperature using RTDs or thermocouples. However, it can also accept other sensors with resistance or mV output such as: pyrometers, load cells, resistance position indicators, etc. The **TT300 Series** accepts up to two sensors and may operate in one of the modes:
- Single channel with single sensor measurement;
- Dual channel with dual sensor measurement;
- Single channel with dual sensor differential measurement;
- Single channel with dual sensor back-up measurement.

The Smar **TT300 Series** is a powerful and extremely versatile smart temperature transmitter. The digital technology used in the **TT300 Series** enables a single device to accept several types of sensors, wide ranges, single or multiple-ended measurement and an easy interface between the field and the control room. It also includes several interesting features that reduce considerably the installation, operation and maintenance costs. The transmitter accepts two channels, i.e., two measurements. This reduces the cost per channel.

The **TT300 Series** is suitable for direct field installation, being weather proof and explosion proof, as well as intrinsically safe, for use in hazardous areas.
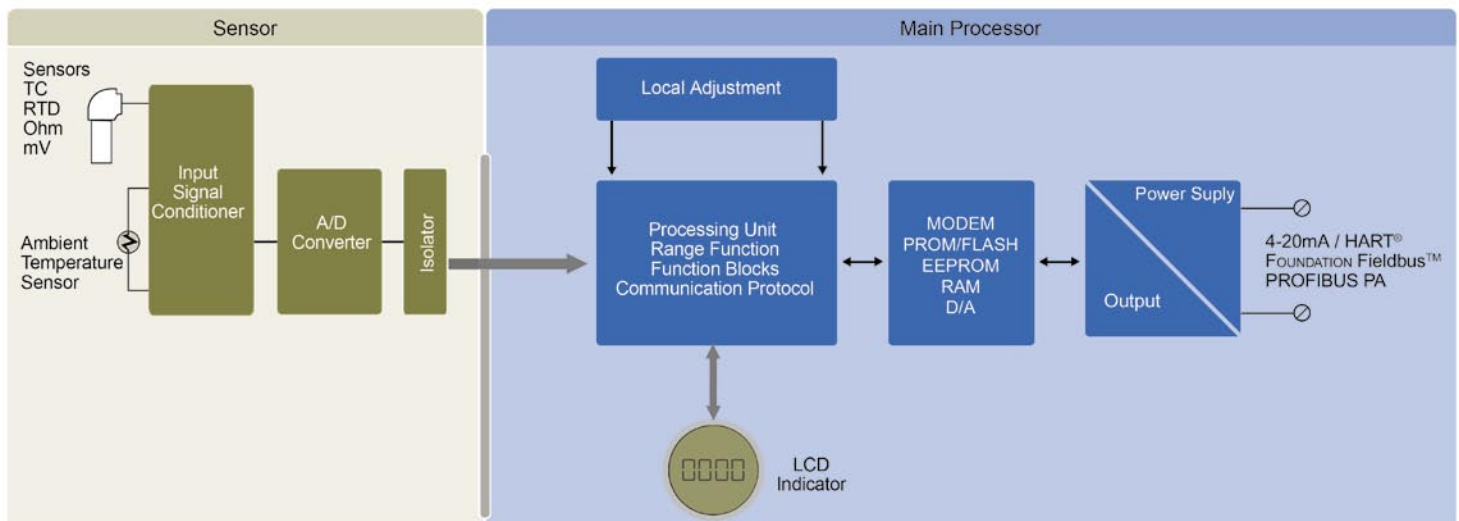
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Local Adjustment

TT300 Series are available in three different technologies: HART® (TT301), FOUNDATION Fieldbus™ (TT302) and PROFIBUS PA (TT303). These instruments can be configured with Smar software and other manufacturer configuration tools. Local adjustment is available in all **TT300 Series**. It is possible to configure zero and span, set point and other control functions using the magnetic screwdriver. Smar has developed Asset View, which is a user-friendly Web Tool that can be accessed anywhere and anytime using an Internet browser. It is designed for management and diagnostics of field devices to ensure reactive, preventive, predictive and proactive maintenance.

HART® - TT301

TT301 (HART® protocol) can be configured by:
- Smar CONF401 for Windows and UNIX;
- Smar DDCON100 for Windows and UNIX;
- Smar HPC301 for several models of Palms*;
- Other manufacturers' configuration tools based on DD (Device Description) or DTM (Device Type Manager), such as AMS™, FieldCare™, PACTware™, HHT275, HHT375 and PRM Device Viewer.

For management and diagnostics, AssetView ensures continuous information monitoring.

Requires HI311 (HART Serial Interface).

DDCON - Configuration Software

HPC301- Configuration Software

FOUNDATION Fieldbus™ - TT302

TT302 utilizes the FOUNDATION fieldbus™ H1 protocol, an open technology that allows any H1 enabled configuration tool to configure this device.

Syscon302 (System Configuration Tool) is a software tool used to configure, maintain and operate the field devices. Syscon offers efficient and friendly interaction with the user, using Windows NT version 4.0 or later, Windows 2000 and Windows XP.

Configuration tools such as AMS™, FieldCare™ and HHT375 can configure TT302 devices. DD (Device Description) and CF (Capability File) files can be downloaded at either the Smar or Fieldbus Foundation™ website.

TT302 supports complex strategies configuration due to the high capacity and variety of dynamic instantiable function blocks.
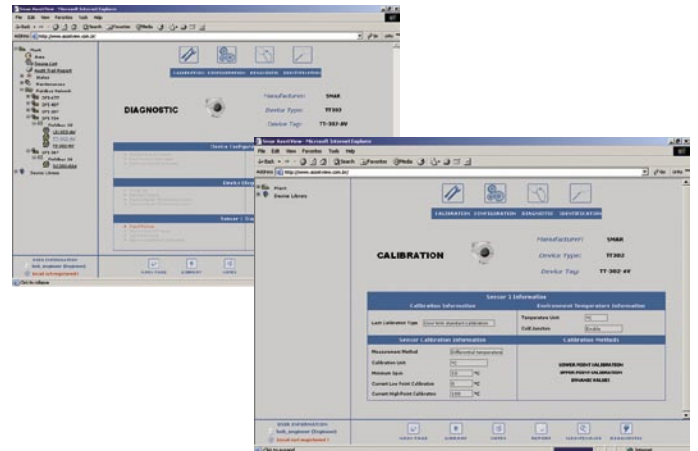

PROFIBUS PA - TT303

TT303 (PROFIBUS PA protocol) can be configured using Simatic PDM and by the FDT (Field Device Tool) and DTM (Device Type Manager) concept tools, such as FieldCare™ and PACTware™. It can also be integrated by any PROFI-BUS System using the GSD file.
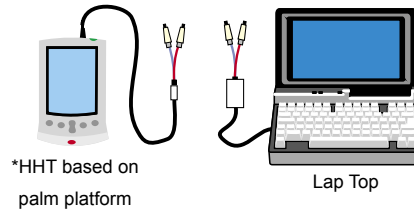
PROFIBUS PA also has quality and diagnostic information, improving plant management and maintenance.
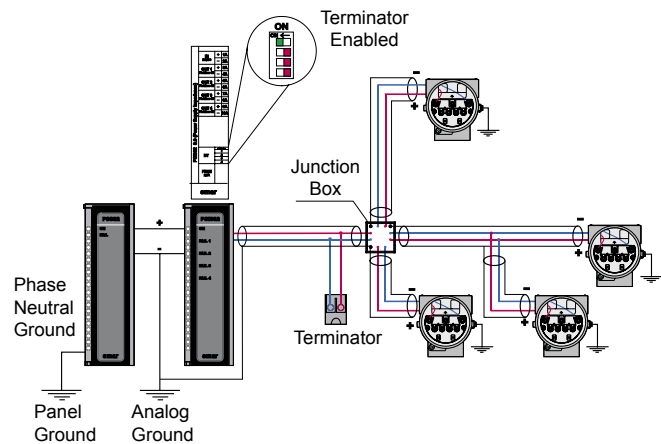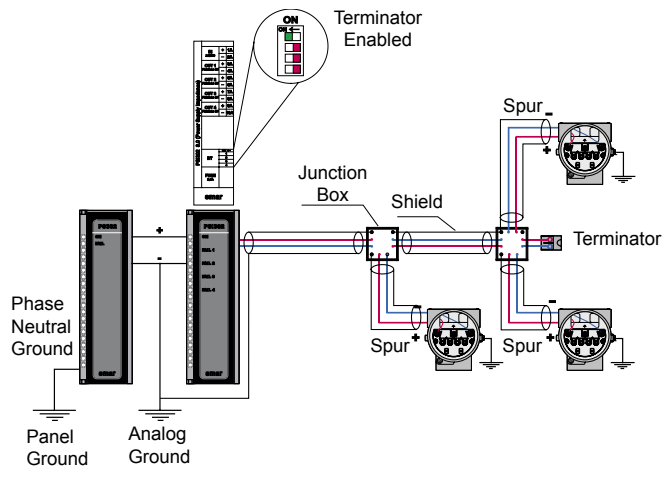

smar
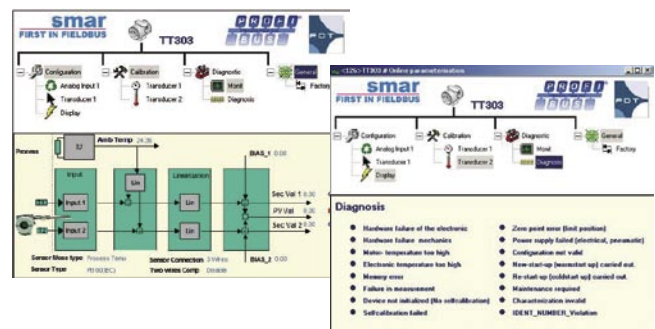
HART® - TT301
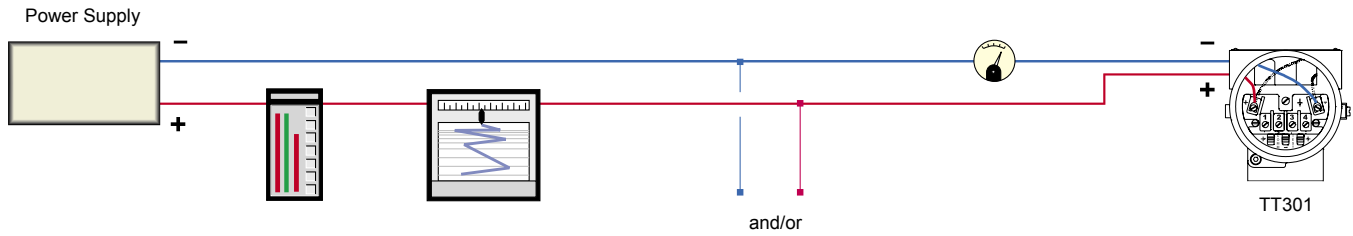
Power Supply

For an adequate communication, a minimun load of 250Ω is required between the palm and the power supply.

and/or

*HHT based on

palm platform

Lap Top

*HHT: Hand Held Terminal

TT301

FOUNDATION Fieldbus™ - TT302

Terminator Enabled

Spur

Junction Box

Shield

Terminator

Phase
Neutral
Ground

Spur

Spur

Panel
Ground

Analog
Ground

Terminator Enabled

Junction Box

Phase
Neutral
Ground

Terminator

Panel
Ground

Analog
Ground

PROFIBUS - TT303

Spur

DP/PA
Coupler

Junction
Box

Shield

Terminator

Terminator

Spur

Spur

Panel
Ground

Analog
Ground

DP/PA
Coupler

Junction
Box

Terminator

Panel
Ground

Analog
Ground
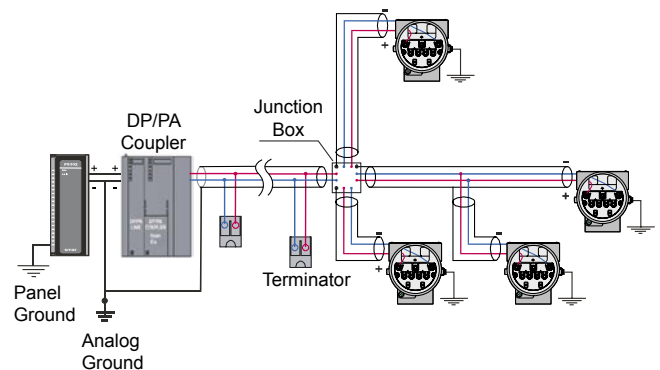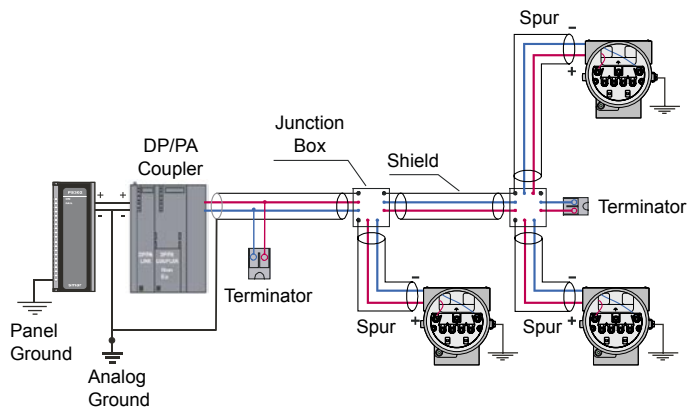
* For some DP/PA couplers, the bus terminator is built in.
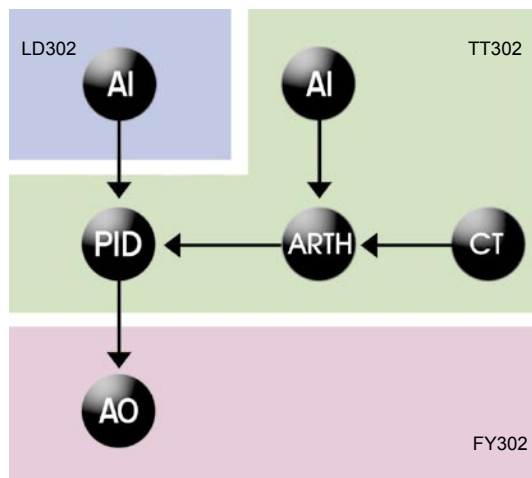
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TT300 Series

HART® - TT301

Power Supply

Control Room Plant
Floor

2506

HART®

Interface

DCS Or Computer With CONF301

TT301

TT301

TT301

TT301

Power Supply

Pyrometer

Load Cell

FOUNDATION FieldbusTM - TT302

LD302

Wine

Power Supply
+
Bus Impedance

DF
52

DF
53

DF
50

DF
62

HSE
Link Device

FY302

TT302

BT302
Bus
Terminator

BT302
Bus Terminator

LD302

TT302

AI

AI

PID

ARTH

CT

AO

FY302

PROFIBUS - TT303

LD303

Wine

FY303

TT303

Power Supply

DF
52

BT302
Bus Terminator

PA
DP

DF
50

DF
73

Profibus DP
Master

BT302
Bus
Terminator

LD303

TT303

AI

AI

PID

CHAR

CT

DF73

ARTH

AO

FY303

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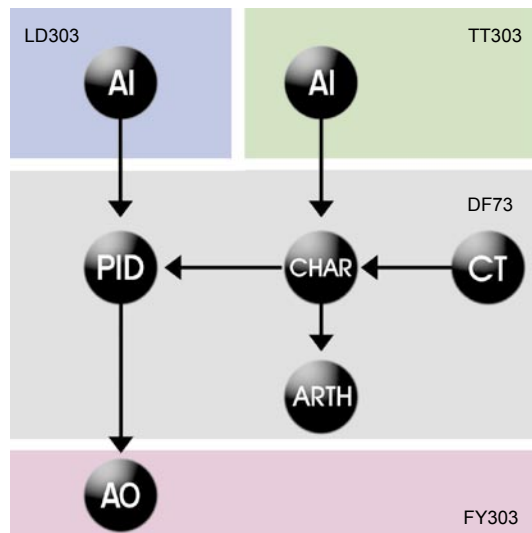
Functional Specifications

Inputs	See table 1, 2 and 3
Output and Communication Protocol	**HART®:** Two-wire, 4-20 mA according to NAMUR NE43 specification, with super-imposed digital communication (HART® Protocol). **FOUNDATION fieldbus™ and PROFIBUS PA:** Digital only. Complies with IEC 61158-2: 2000 (H1): 31.25 kbit/s voltage mode, bus powered.
Power Supply / Current Consumption	**HART®:** 12 to 45 Vdc. **FOUNDATION fieldbus™ and PROFIBUS PA:** Bus powered: 9 - 32 Vdc. Quiescent current consumption: 12 mA.
Indicator	4½-digit numerical and 5-character alphanumerical LCD indicator (optional).
Hazardous Area Certifications	**HART®, FOUNDATION fieldbus™ and PROFIBUS PA:** Explosion proof, weather proof, intrinsically safe (CENELEC, NBR, CSA and FM standards), dust ignition proof for Class II and III, non incendive (CSA and FM) and coal mines (CENELEC). **FOUNDATION fieldbus™ and PROFIBUS PA:** Complies with FISCO (PTB-W-53e report).
European Directive Information	**EMC Directive (89/336/EEC) - Electromagnetic Compatibility** The EMC test was performed according to standard IEC61326:2002. **ATEX Directive (94/9/EC) - Explosive Atmosphere, Hazardous Location** This product was certified according to NEMKO and EXAM (old DMT) European Standards. The EC declarations of conformity for all applicable European directives for this product can be found at www.smar.com.
Zero and Span Adjustments	Noninteractive, via local adjustment and digital communication.
Failure Alarm (Diagnostics)	Detailed diagnostics through communication for all protocols. **HART®:** In case of sensor or circuit failure, the self diagnostics drives the output to 3.6 or 21.0 mA, according to the user's choice and NAMUR NE43 specification. **FOUNDATION fieldbus™:** For sensor circuit failures, events are generated and status is sent to link outputs. Detailed diagnostics are available in the contained parameters. **PROFIBUS PA:** For sensor or circuit failures, status is is sent to link outputs. Detailed diagnostics are available in the contained parameters.
Temperature Limits	Operation: -40 °C to 85 °C (-40 to 185 °F) -40 °C to 120 °C (-40 to 248 °F) Storage: -10 °C to 60 °C (-14 to 140 °F) (operation) Digital Display: -40 °C to 85 °C (-40 to 185 °F) (without damage)

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Turn-on Time	**HART®:** Performs within specifications in less than 5 seconds after power is applied to the transmitter. **FOUNDATION FieldbusTM and PROFIBUS PA:** Performs within specifications in less than 10 seconds after power is applied to the transmitter.
Configuration	**HART®:** By digital communication (HART® protocol) using the configuration software CONF401, DDCON100 (for windows) or HPC301 (for Palms). It can also be configured using DD and FDT/DTM tools, and can be partially configured through local adjustment. **FOUNDATION FieldbusTM and PROFIBUS PA:** Basic configuration may be done using the local adjustment magnetic tool if device is fitted with display. Complete configuration is possible using configuration tools such as Syscon302 (System Configuration Tool), AMSTM, FieldCareTM and HHT375, The TT303 can be configured via Simatic PDM using EDDL.
Humidity Limits	0 to 100% RH
Damping Adjustment	User configurable from 0 to 32 seconds (via digital communication).

Performance Specifications

Accuracy	See tables 1, 2 and 3
Temperature Effect	For a 10 °C variation: mV (-6 to 22 mV), TC (NBS: B, R, S,T): ± 0.03% of the input milivoltage or 0.002 mV whichever is greater; mV (-10 to 100 mV), TC (NBS: E, J, K, N; DIN: L, U): ± 0.03% of the input milivoltage or 0.01 mV whichever is greater; mV (-50 to 500 mV): ± 0.03% of the input milivoltage or 0.05 mV whichever is greater; Ohm (0 to 100Ω), RTD (GE: Cu10): ± 0.03% of the input resistence or 0.01Ω whichever is greater; Ohm (0 to 400Ω), RTD (DIN: Ni120; IEC: Pt50, Pt100; JIS: Pt50, Pt100): ± 0.03% of the input resistence or 0.04Ω whichever is greater; Ohm (0 to 2000Ω), RTD (IEC: Pt500): ± 0.03% of the input resistence or 0.2Ω whichever is greater; TC: cold-junction compensation rejection 60:1 (Reference: 25.0 ± 0.3 °C).
Power Supply Effect	± 0.005% of calibrated span per volt
Electro-magnetic Interference Effect	Approved according to IEC 61000-6-2: 1999, IEC 61000-6-4: 1997 and IEC 61326: 2002
Electrical Connection	1/2 - 14 NPT M20 X 1.5 PG 13.5 DIN	1/2 - 14 NPT X 3/4 NPT (316 SST) - with adapter 1/2 - 14 NPT X 3/4 BSP (316 SST) - with adapter 1/2 - 14 NPT X 1/2 BSP (316 SST) - with adapter Note: Explosion proof approvals do not apply to adapter, only to transmitter.
Mounting	Can be attached directly to the sensor. With an optional bracket can be installed on a 2" pipe or fixed on a wall or panel.

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Physical Specifications

Approximate Weights	Without display and mounting bracket: 0.80 kg Add for digital display: 0.13 kg Add for mounting bracket: 0.60 kg
Control Functions Characteristics (Optional)	**HART®:** PID, Alarm and SPG **FOUNDATION fieldbus™ Function Blocks:** RES, TRD, DSP, DIAG, AI, PID, EPID, ARTH, INTG, ISEL, CHAR, SPLT, AALM, SPG, TIME, LLAG, OSLD and CT **PROFIBUS PA Function Blocks:** PHY, TRD, DSP and AI

Inputs

SENSOR	TYPE	2, 3 or 4 wires				DIFFERENTIAL			
		RANGE °C	RANGE °F	MINIMUM SPAN °C	°C DIGITAL ACCURACY*	RANGE °C	RANGE °F	MINIMUM SPAN °C	°C DIGITAL ACCURACY*
RTD	Cu 10 GE	-20 to 250	-4 to 482	50	± 1.0	-270 to 270	-486 to 486	50	± 2.0
	Ni120 DIN	-50 to 270	-58 to 518	5	± 0.1	-320 to 320	-576 to 576	5	± 0.5
	Pt50 IEC	-200 to 850	-328 to 1562	10	± 0.25	-1050 to 1050	-1890 to 1890	10	± 1.0
	Pt100 IEC	-200 to 850	-328 to 1562	10	± 0.2	-1050 to 1050	-1890 to 1890	10	± 1.0
	Pt500 IEC	-200 to 450	-328 to 842	10	± 0.2	NA	NA	NA	NA
	Pt50 JIS	-200 to 600	-328 to 1112	10	± 0.25	-800 to 800	-1440 to 1440	10	± 1.0
	Pt100 JIS	-200 to 600	-328 to 1112	10	± 0.25	-800 to 800	-1440 to 1440	10	± 1.5
THERMO-COUPLE	BNBS	100 to 1800	212 to 3272	50	± 0.5**	-1700 to 1700	-3060 to 3060	60	± 1.0**
	ENBS	-100 to 1000	-148 to 1832	20	± 0.2	-1100 to 1100	-1980 to 1980	20	± 1.0
	JNBS	-150 to 750	-238 to 1382	30	± 0.3	-900 to 900	-1620 to 1620	30	± 0.6
	KNBS	-200 to 1350	-328 to 2462	60	± 0.6	-1550 to 1550	-2790 to 2790	60	± 1.2
	NNBS	-100 to 1300	-148 to 2372	50	± 0.5	-1400 to 1400	-2520 to 2520	50	± 1.0
	RNBS	0 to 1750	32 to 3182	40	± 0.4	-1750 to 1750	-3150 to 3150	40	± 2.0
	SNBS	0 to 1750	32 to 3182	40	± 0.4	-1750 to 1750	-3150 to 3150	40	± 2.0
	TNBS	-200 to 400	-328 to 752	15	± 0.15	-600 to 600	-1080 to 1080	15	± 0.8
	LDIN	-200 to 900	-328 to 1652	35	± 0.35	-1100 to 1100	-1980 to 1980	35	± 0.7
	UDIN	-200 to 600	-328 to 1112	50	± 0.5	-800 to 800	-1440 to 1440	50	± 2.5

Table 1 - Sensor Characteristics

SENSOR	RANGE mV	MINIMUM SPAN mV	DIGITAL* ACCURACY %
mV	-6 to 22	0.40	± 0.02% or ± 2 µV
	-10 to 100	2.00	± 0.02% or ± 10 µV
	-50 to 500	10.00	± 0.02% or ± 50 µV
mV DIF.	-28 to 28	0.40	± 0.1% or ± 10 µV
	-110 to 110	2.0	± 0.1% or ± 50 µV

Table 2 - mV Sensor Characteristics

SENSOR	RANGE Ohm	MINIMUM SPAN Ohm	DIGITAL* ACCURACY %
Ohm	0 to 100	1	± 0.02% or ± 0.01 Ohm
	0 to 400	4	± 0.02% or ± 0.04 Ohm
	0 to 2000	20	± 0.02% or ± 0.20 Ohm
Ohm DIF.	-100 to 100	1	± 0.08% or ± 0.04 Ohm
	-400 to 400	4	± 0.1% or ± 0.2 Ohm

Table 3 - Ohm Sensor Characteristics

* Accuracy of value read on display and accessed by communication. The 4-20 mA accuracy is the digital accuracy ±0.03%

** Not applicable for the first 20% of the range (up to 440 °C).

NA: Not applicable.

MODEL	TEMPERATURE TRANSMITTER
TT301	HART®
TT302	Foundation Fieldbus™
TT303	PROFIBUS PA

COD.	Local Indicator		
0	Without Indicator	**1**	With Digital Indicator

COD.	Mounting Bracket		
0	Without Bracket	**2**	316 SST Bracket
1	Carbon Steel Bracket	**7**	Carbon Steel Bracket with 316 SST Fasteners

COD.	Set this code as "1" for TT301 and exclude for the others

COD.	Electrical Connections				
0	1/2 - 14 NPT	**3**	1/2 - 14 NPT X 1/2 BSP (316 SST) - With adapter **(2)**	**Z**	According to user´s notes
1	1/2 - 14 NPT X 3/4 NPT (316 SST) - With adapter **(2)**	**A**	M20 x 1.5		
2	1/2 - 14 NPT X 3/4 BSP (316 SST) - With adapter **(2)**	**B**	Pg 13.5 DIN		

COD.	Housing Material		
H0	Aluminum	**H1**	316 SST

COD.	Identification Plate				
I1	FM: XP, IS, NI, DI, IP	**I3**	CSA: XP, IS, NI, DI, IP	**I5**	CEPEL: Ex-d, Ex-ia, IP	**I7** EXAM (DMT): Group I, M1 EEx-ia	**IF** CEPEL: Ex-d, IP **(4)**
I2	NEMKO: EEx-d, EEx-ia, IP	**I4**	EXAM (DMT): EEx-ia, IP	**I6**	Without Certification	**IE** NEPSI: Ex-ia **(3)**

COD.	Tag Plate		
J0	With tag, when specified (Default)	**J2**	According to user's notes
J1	Blank		

COD.	Sensor Connection		
L2	2-wire	**LB**	Backup **(3)**
L3	3-wire	**LF**	Differential
L4	4-wire	**LD**	Double 2-wire **(3)**

COD.	PID Configuration - Only available for TT301		
M0	With PID (Default)	**M1**	Without PID

COD.	LCD1 Indication - Only available for TT301		
Y0	LCD1: Percentage (Default)	**Y3**	LCD1: Temperature (Engineering Unit)
Y1	LCD1: Current - I (mA)	**YU**	LCD1: According to user notes **(1)**

COD.	LCD2 Indication - Only available for TT301		
Y0	LCD2: Percentage (Default)	**Y6**	LCD2: Temperature (Engineering Unit)
Y4	LCD2: Current - I (mA)	**YU**	LCD2: According to user notes **(1)**

COD.	Painting				
P0	Gray Munsell N 6,5 Polyester (Default)	**P5**	Yellow Polyester	**PC**	Safety Blue Polyester - Electrostatic Painting
P3	Black Polyester	**P8**	Without Painting		
P4	White Epoxy	**P9**	Safety Blue Epoxy - Electrostatic Painting		

COD.	Sensor Type				
T1	RTD Cu10 - GE	**TA**	Thermocouple type B - NBS	**TJ**	Thermocouple type K - DIN
T2	RTD Ni120 - DIN	**TB**	Thermocouple type E - NBS	**TL**	Thermocouple type S - DIN
T3	RTD PT50 - IEC	**TC**	Thermocouple type J - NBS	**TM**	Thermocouple type T - DIN
T4	RTD PT100 - IEC	**TD**	Thermocouple type K - NBS	**TN**	100 OHM
T5	RTD PT500 - IEC	**TE**	Thermocouple type N - NBS	**TO**	Special OHM
T6	RTD PT50 - JIS	**TF**	Thermocouple type R - NBS	**TQ**	22 mV
T7	RTD PT100 - JIS	**TG**	Thermocouple type S - NBS	**TR**	100 mV
T8	2K OHM	**TH**	Thermocouple type T - NBS	**TS**	500 mV
T9	400 OHM	**TI**	Thermocouple type J - DIN	**TT**	Special mV

COD.	Burn-out - Only available for TT301
BD	Up Scale
BU	Down Scale

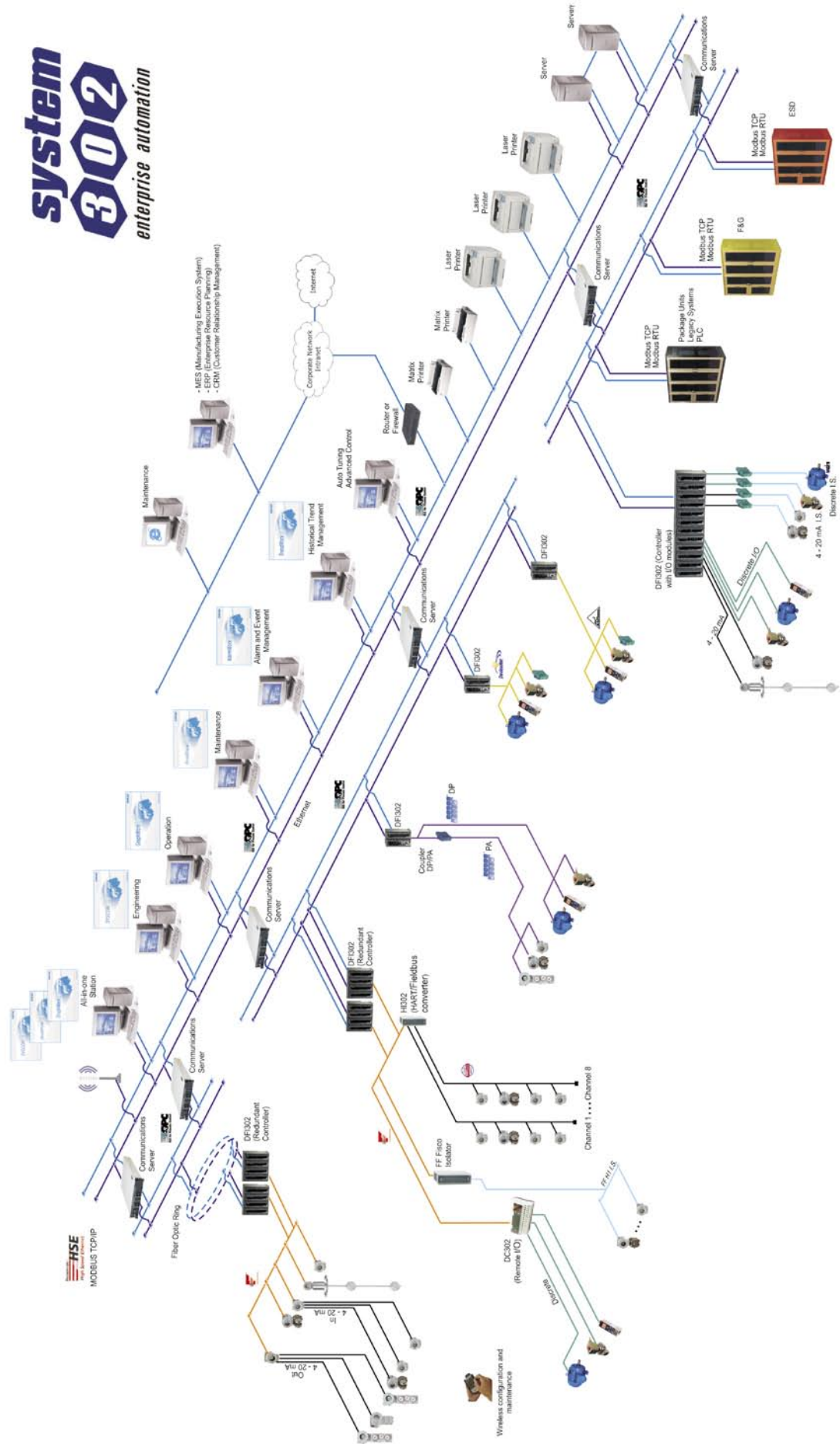| TT301	1	2	1	0	H1	I1	J0	L2	M0	Y0	Y0	P8	T1	BU
TT302	1	2		0	H1	I1	J0	L2				P8	T1	
TT303	1	2		0	H1	I1	J0	L2				P8	T1	

Note:

(1) Values limited to 4 ½ digits; units limited to 5 characters

(2) Explosion proof approvals do not apply to adapter, only to transmitter

(3) Only available for TT302 and TT303

(4) Only available for TT301

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First in Fieldbus

system 302
enterprise automation

- MES (Manufacturing Execution System)
- ERP (Enterprise Resource Planning)
- CRM (Customer Relationship Management)

Internet

Corporate Network Intranet

Maintenance

Router or Firewall

Auto Tuning Advanced Control

Historical Trend Management

Alarm and Event Management

Maintenance

Operation

Engineering

All-in-one Station

Communications Server

Communications Server

DFI302 (Redundant Controller)

HSE High Speed Ethernet

MODBUS TCP/IP

Fiber Optic Ring

DFI302 (Redundant Controller)

Ethernet

Communications Server

Communications Server

DFI302 (Redundant Controller)

HI302 HART/Fieldbus converter

FF Fisco Isolator

DC302 (Remote I/O)

Wireless configuration and maintenance

Out 4 - 20 mA
In 4 - 20 mA

Channel 1 ... Channel 8

FF H1 I.S.

Profibus

DFI302

DFI302

Coupler DP/PA

DP

PA

Server

Server

Communications Server

Laser Printer

Laser Printer

Laser Printer

Laser Printer

Matrix Printer

Matrix Printer

Communications Server

DFI302 (Controller with I/O modules)

Modbus TCP Modbus RTU   ESD

Modbus TCP Modbus RTU   F&G

Modbus TCP Modbus RTU

Package Units Legacy Systems PLC

4 - 20 mA I.S.

Discrete I.S.

Discrete I/O

4 - 20 mA

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11

Pressure

4 to 20 mA LD290

LD291
LD292
LD293

LD301
LD302
LD303

Pressure Transmitter

Position

FY301
FY302
FY303

TP301
TP302
TP303

Valve Positioner

Position Transmitter

Density/Concentration

DT301
DT302
DT303

Intelligent Density/Concentration Transmitter

Temperature
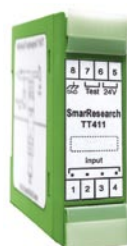
TT411

TT421

TT411 Panel Mounting Temperature Transmitter

TT421 Head Mounting Temperature Transmitter

Configurators

HART® Configurator Interface CONF401
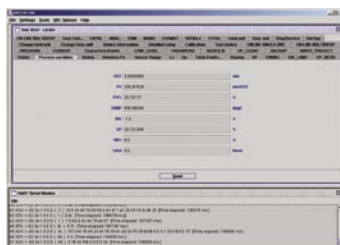
HART® Configurator Interface DDCON100

HART® Configurator for Palm HPC301

Controllers

Programmable Logical Controller LC700

Digital Controller CD600Plus

Discrete

Foundation Fieldbus™ Relay FR302

Foundation Fieldbus™ Remote I/O DC302

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Accessories

RP302   **DF48**
H1 Fieldbus Repeaters

SB312   **DF47**
Isolated Intrinsic Safety Barrier

4-20 mA
3 Ways Junction Box JM1

4-20 mA
4 Ways Junction Box JM400

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

Systems

ProcessView
Process Visualization Interface Process View

Control System System302
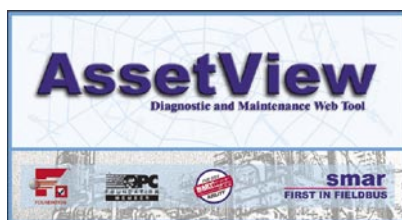
AssetView
On Line Plant Asset Management Tool Asset View

Foundation Fieldbus™ Universal Interface DFI302

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Dimensions are mm (in)

83
(3.26)

97
(3.81)

195
(7.67)

94
(3.70)

113
(4.44)

Ø83
(3.27)

51
(2.00)

119
(4.67)

Mounting Bracket

2" PIPE

Allow 150mm minimum for local zero
and span adjustment with magnetic tool

Electrical Connection
(Both Sides)

Certificado ISO 9001
BVQi
OCS - 0006
INMETRO

Quality Management System Certified according to ISO 9001:2000

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First in Fieldbus

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