AUTROL®
America
SMART TRANSMITTERS

39.995
PSI

SMART PRESSURE TRANSMITTER

AUTROL America
autroltransmitters.com

SMART TRANSMITTERS : Differential | Gauge | Absolute | Temperature | Flow | Level

Autrol is a TM of Duon Systems

Introduction

Autrol America Inc., (AAI) is a global leader in "smart" Pressure, Differential Pressure and Temperature transmitters. AAI offers a full range of Autrol smart transmitters for high accuracy Process Temperature, Gauge, Absolute, Vacuum and Differential Pressure, DP Flow and Tank Level measurements.

Autrol Smart Transmitters are "smart" microprocessor-based transmitters that feature 2-wire loop powered 4-20mA analog current outputs and digital HART communication(s) for Online Pressure, Differential Pressure and Temperature measurements in Water and Wastewater, Chemicals and Petrochemical, Oil and Gas, Pulp and Paper, Food and Beverage, Pharmaceutical, Energy and Power, Biofuels and Alternate Fuel processes.

The ATT2100, APT3100 and APT3200 series of smart transmitters have excellent stability, high accuracy and include features that facilitate easy installation, start up and minimum maintenance thereby lowering process downtime and overall cost of ownership in the long run. Autrol transmitters are equipped with analog (4-20mA, 2-wire) and digital (HART or Foundation Fieldbus) communication protocols for seamless integration with a Host Control system such as DCS, PLC, SCADA, AMS, PDM and/or Hand Held Communicator(HHC). Using Digital HART Protocol, one can easily acquire process measured variables and configure/modify its various Parameters like Range, Tag Name, Damping, Transfer Function, Trimming, etc.. These transmitters are equipped with an automatic temperature compensation function integrated into the advanced signal processing circuitry to ensure high reliability, performance, and stability.

Salient features include:

1. TRUE SMART: The heart of Autrol smart transmitters are microprocessor-based high performance modules. In addition, each transmitter is ambient temperature characterized using state of the art technologies to ensure maximum transmitter accuracy and minimized drift over a wide range of operating temperatures.

For integrated sensor models such as the APT3100 series transmitters, the characteristic data of the sensor is stored in an internal non-volatile EEPROM to minimize measuring error. On nonsensor transmitter models such as the ATT2100 temperature transmitters, there is a linearization table built in wherein the user can modify various necessary values in field per the added temperature sensor (RTD or T/C) characteristics to get better accuracy from the overall measurement system. Its integral microprocessor module then automatically converts the required value referring to the customized linearization table.

All transmitters include advanced self diagnostic functions for detecting any malfunctions of the sensor and/or fault of the A/D converter, internal memory, or microprocessor. All diagnostic/error status is transmitted to a connected Master by analog current signal (fail mode current 3.75mA or 22mA) or digital HART (or FF) communication.

The transmitters have Last Value Status (LVS) function for safety of instrumentation. When the sensor input is out of specification, the output is fixed to the previous value and automatically updated to the current value when normal is restored. On the other hand if abnormal status of the sensor is not reset during the defined interval, the fault is recognized as a sensor failure and reported accordingly for corrective action.

2. OPEN ARCHITECTURE: Using a Device Master (AMS, PMD, etc.) or a hand-held terminal, PC configuration program or HART compatible DCS, PLC, or SCADA, the user can change, modify, and review parameters of smart transmitters through HART communication. These functions provide convenience to users for routine transmitter calibration and maintenance.

3. FIELD PROGRAMMABLE: All Autrol transmitters have a fully programmable front panel from which users can directly input values (e.g. range, zero/span, sensor type, thermocouples, RTD and mV, basic bench calibration, zero trimming, etc.) to reduce cost of installation and commissioning, eliminating the need of additional configuration tools. This allows for lower overhead and operating costs.

Approvals

Autrol Smart Process Instrumentation Series

APT3100

Smart Pressure Transmitter for Differential/Gauge/Absolute/ Flow/Highline Pressure Measurement

APT3100L

Smart Transmitter with Diaphragm Seals for level or flow measurements

APT3200

Smart Pressure Transmitter for Gauge/Absolute Pressure Measurement

APT3200L

Smart Gauge Pressure Transmitter with Diaphragm Seal

APT3700N

Smart Pressure Transmitter for Nuclear Service (Differential/ Gauge/Absolute)
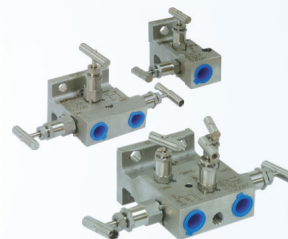
ATT2100

Smart Transmitter for Temperature Measurement

ATT2200

Smart Transmitter for Temperature Measurement (DIN Rail Type)

MANIFOLD

Gauge Root, and 2W/3W/5W Manifold Valve

Description

The Smart Transmitter Series of AUTROL® Duon System is a microprocessor-based smart transmitter that features 2-wire digital communication with 4-20mA current loop and remote digital HART communication.

These smart transmitters have excellent stability, high accuracy, convenient installation and easy maintenance. It can communicate with various Control Systems (such as DCS, PLC, PC and 275 or 375 Communicators) through Digital HART Protocol to acquire process measured variables and configure/modify various parameters. They have automatic temperature compensation function to ensure high reliability, stability and performance corresponding to change of the ambient temperature.

Electrical / Performance Specifications (*Individual specifications available on the Autrol website.)

Power Supply	11.9–45 Vdc	Output Signal	4-20mA, DC/HART
HART Loop Resistance	250–550 ohm	Isolation	500 Vrms (707 Vdc)
Reference Accuracy	± 0.075% of Span (0.1 URLSSpan sURL)	Ambient Temperature	-45°**– +85°C
(For APT31 00 Series)	±[0.025+0.005x(URL/Span)]% of Span	LCD Meter Ambient Temp.	-30° – +80°C
	(0.01 URLSSpan<0.1 URL)	Humidity Limits	5% – 100% RH
Ambient Temp. Effect	±[0.019%URL +0.125% Span] /28°C	Process Temperature Limits	-45°** – +120°C

** Lower temperature restrictions may apply based on local approval agencies for hazardous area installations. Please check relevant approval certification for applicable operating limits.

Smart Transmitter for Differential / Gauge / Absolute / HighLine Pressure Measurement

APT3100

Function

- Flexible Sensor Input: DP, GP, AP, HP, F
- Various Output: 4–20mA, Digital Signals
- Internal magnetic push buttons for configuration of: Zero/Span, Trim, Units, Fail-mode, etc.
- Self Diagnostic Function: Sensor, Memory, A/D Converter, Power, etc.
- Digital Communication with HART protocol
- Explosion-proof Approval and Intrinsic Safety Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Programmable pressure and engineering units, flow, level, etc., auto ranging or user defined resolution.

Features

Superior Performance
- High Reference Accuracy: ±0.075% of Calibrated Span (*Specially ±0.04%)
- Long-Term Stability
- High Rangeability (100:1)

Flexibility
- Data Configuration with HART Configurator
- Zero Point Adjustment measuring GP, AP

Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection
- CE EMC Conformity Standards (EN50081-2, EN50082-2)
- Linear or Square Root outputs (user programmable)

Smart Transmitter For Pressure Measurement

APT3100-D/G/A/H/F

- **APT3100-D**
  Differential Pressure Measurement
  Calibrated Span: Min 0.30 H20
                     Max 1000 psiD
  Static Pressure: 13.79 MPa / 2000 psi
- **APT3100-G**
  Gauge Pressure Measurement
  Range: Lower Limit: - 0.20 psig
           Upper Limit: - 6000 psig
- **APT3100-A**
  Absolute Pressure Measurement
  Range: 0 psiA to 362.5 psiA
- **APT3100-H**
  HighLine Pressure Measurement
  Static Pressure: 31.02 Mpa / 4500 psi
- **APT3100-F**
  Flow Transmitter
  Measures and expresses Flow Rate as a Secondary Pulse output for use with a user defined pulse/volume factor for driving an external counter/totalizer.

APT3100-MP

Type and Specification

- **APT3100-MP**
  Multi-Planar Pressure Transmitter
  * For Differential/Gauge/Absolute Pressure Measurement
  * Easy installation regardless of fluid line conditions
  * Vertically Installed without adaptor or various types of brackets regardless of the position of each fluid inflow line
  * Direct replacement for coplanar style design

Smart Pressure Transmitter with Diaphragm Seal

APT3100L

Function

- Flexible Sensor Input: Measuring hydrostatic pressure head and transmitting liquid level
- Various Output: 4–20mA (Analog), Digital Signals
- Automatic Compensation of Ambient Temperature
- Integral magnetic push buttons for configuration of: Zero/Span, Fail-mode, Unit, Trim, etc.
- Self Diagnostic Function: Sensor, A/D Converter, Memory, Power, etc.
- Digital Communication with HART protocol
- Explosion-proof Approval and Intrinsic Safety Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Programmable pressure and engineering units, flow, level, etc., auto ranging or user defined resolution

Features

Superior Performance
- High Reference Accuracy
- Long-Term Stability

Flexibility
- Data Configuration with HART Configurator
- Zero Point Adjustment measuring GP, AP

Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection
- CE EMC Conformity Standards (EN50081-2, EN50082-2)
- Linear or Square Root outputs (user programmable)

Smart Transmitter with Diaphragm Seal

APT3100-L Direct Mount Type

APT3100-L Capillary Type (Two Remote)

APT3100-L Capillary Type (One Remote)

Type and Specification

- Flush Diaphragm Seal and Direct Mount Type Transmitter
- Extended Diaphragm Seal and Direct Mount Type Transmitter

- Flush Diaphragm Seal and Capillary Type Transmitter (Two remote Seals)
- Extended Diaphragm Seal and Capillary Type Transmitter (Two remote Seals)

- Flush Diaphragm Seal and Capillary Type Transmitter (One remote Seal)
- Extended Diaphragm Seal and Capillary Type Transmitter (One remote Seal)

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S M A R T   T R A N S M I T T E R S

Smart Transmitter for Gauge / Absolute Pressure Measurement

APT3200

Function
- Flexible Sensor Input: DP, GP, AP, HP, F
- Various Output: 4-20mA (Analog), Digital Signals
- Internal magnetic push buttons for configuration of: Zero/Span, Trim, Units, Fail-mode, etc.
- Self Diagnostic Function: Sensor, Memory A/D Converter, Power, etc.
- Digital Communication with HART protocol
- Explosion-proof Approval and Intrinsic Safety Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Programmable pressure and engineering units, flow, level, etc., auto ranging or user defined resolution

Features
Superior Performance
- High Reference Accuracy: ±0.075% of Calibrated Span (*Specially ±0.04%)
- Long-Term Stability
- High Range Ability (100:1)
Flexibility
- Data Configuration with HART Configurator
- Zero Point Adjustment measuring GP, AP
Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection
- CE EMC Conformity Standards (EN50081-2, EN50082-2)
- Linear or Square Root outputs (user programmable)

*Please contact us before ordering for detailed certificate

Smart Transmitter for Pressure Measurement

APT3200-G

APT3200-A

Type and Specification

- **APT3200-G**
  Gauge Pressure Transmitter
- **Range(Model G)**
  Range Code #3 (-14.5 to 21.7 psig)
  #4 (-14.5 to 217.5 psig)
  #5 (0 to 725 psig)
  #6 (0 to 3625 psig)
  #7 (0 to 8702 psig)

Type And Specification

- **APT3200-A**
  Absolute Pressure Transmitter
- **Range(Model A)**
  Range Code #4 (0 to 36.2 psia)
  #5 (0 to 217.5 psia)
  #6 (0 to 362.5 psia)

Smart Transmitter with Diaphragm Seal for Pressure Measurement

APT3200L

Function
- Flexible Sensor Input: GP, AP, Vacuum
- Various output: 4-20mA (Analog), Digital Signals
- Internal Magnetic push buttons for configuration of: Zero/Span, Trim, Unit, Fail-mode, etc.
- Self Diagnostic Function: Sensor, Memory, A/D Converter, Power, etc.
- Digital Communication with HART protocol
- Explosion-proof Approval and Intrinsic Safety Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Programmable pressure and engineering units, flow, level, etc., auto ranging or user defined resolution

Features
Superior Performance
- High Reference Accuracy ±0.075% of Calibrated Span
- Long-Term Stability
- High Range Ability (100:1)
Flexibility
- Data Configuration with HART Configurations
- Zero Point Adjustment measuring GP, AP
Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection
- CE EMC Conformity Standards (EN50081-2, EN50082-2)
- Linear or Square root outputs (user programmable)
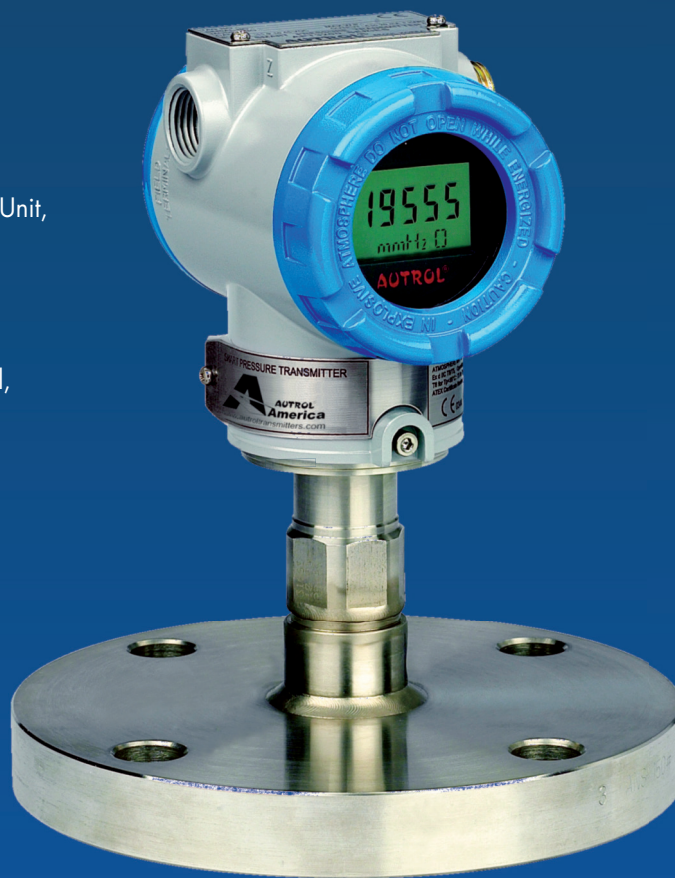
Smart Transmitter with Diaphragm Seal

APT3200-L Direct Mount	APT3200-L Capillary Type	APT3200-L Triclamp Type

TYPE and SPECIFICATION

- Flush Diaphragm Seal and Direct Mount Type Transmitter
- Please refer to individual specification for details

- Flush Diaphragm Seal and Capillary Type Transmitter
- Please refer to individual specification for details

- Flush Diaphragm Seal with Triclamp Type Transmitter
- Please contact us before ordering for detailed specification

SPECIAL PERFORMANCE TYPE

- Available for Special Performance Type Transmitters on order basis
- For Paper, Beverage, Glass, Desulfuration, Petrochemistry Industries

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S M A R T   T R A N S M I T T E R S

APT3700N - For Nuclear Service

Description of Product

The APT3700N Smart Pressure Transmitter is a microprocessor-based high performance transmitter which has flexible pressure calibration and output, automatic compensation of ambient temperature and process variable, configuration of various parameters, and communication with HART protocol.

Performance Specifications

- **Quality Assurance Program**
  In accordance with KEPIC-QAP and KEPIC-EN
- **Nuclear Cleaning**
  To 1 ppm chloride content
- **Hydrostatic**
  All Transmitters are tested for a minimum of 10 minutes at 1.5 times the design pressure with no detectable leakage
- **Seismic**
  Accuracy within ±0.25% of upper range limit during and after seismic disturbance of 1 SSE and 5 OBE
- **Class 1 E safety related Applications**
  Seismic test: IEEE Std 344-1987 at 5 OBE and 1 SSE response spectrum
  Environment test: IEEE Std 323-1983 (Thermal, Radiation, Functional Aging)
  EMI/RFI Test: MIL-STD-461 D and 462D, RG 1.180, IEC61000-4-2 (EMC, ESD, EFT/Burst, Surge)

Function

- Flexible Sensor Input: DP, GP, AP, Vacuum
- Various output: 4-20mA (Analog), Digital Signals
- Self Diagnostic Function: Sensor, Memory, A/D Converter, Power, etc.
- Qualified per IEEE Std 344-1987 and IEEE Std 323-1983, Regulatory Guide 1.180
- 5 Digit LCD: Programmable pressure and engineering units, flow, level, etc., auto ranging or user defined resolution

Features

Superior Performance
- High Reference Accuracy ±0.075% of Calibrated Span
- Long-Term Stability: ±0.025% URL per 24 months
- High Range Ability (100:1)

Flexibility
- Data Configuration with HART Configurator
- Zero Point Adjustment and Suppression measuring GP, AP

Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection

Equipment Qualifications
- Environmental Qualifications
- Series Qualification and EMI/REI Test
- Linear or Square root outputs (user programmable)

TYPE and Specification

- **APT3700N-D** Differential Pressure Measurement
  Range: -0.21psi to 1000psi Static Pressure: 13.79 MPa/2000psi
- **APT3700N-G** Gauge Pressure Measurement
  Range: -14.7psi to 6000psi Static Pressure: 13.79 MPa/2000psi
- **APT3700N-A** Absolute Pressure Measurement
  Range: -0psi to 290psi
- **APT3100N-H** HighLine Pressure Measurement
  Range: -5.4psi to 6000psi Static Pressure: 31.02 MPa/4500psi

Smart Temperature Transmitter

ATT2100/ATT2200

The ATT2100 and ATT2200 Smart Temperature Transmitters are microprocessor-based high performance transmitters. They have flexible sensor input and output, automatic compensation of ambient temperature and process parameters, configuration of various parameters, and communication with HART protocol. All Data of the Sensors (Tag No., type, range, etc.) is to be input, modified, and stored in EEPROM.

ATT2100

Features (ATT2100 / ATT2200)

Superior Performance
- Excellent Accuracy
- Long-Term Stability

Flexibility
- Selection of various T/C, RTD, mV, Ohm
- Data Configuration with HART Configurator

Reliability
- Automatic Compensation: Linearization of sensor input, Ambient temperature compensation
- Continuous Self Diagnostic
- Fail-mode Process function
- EEPROM Write Protection
- I/O Isolation: Grounded Thermocouple
- CE EMC Conformity Standard (EN0081-2, EN50082-2)

Sensor Inputs (ATT2100/ATT2200)

- Sensor Inputs
  The models ATT 2100 and ATT 2200 are compatible with a variety of temperature sensors, including 2W, 3W, 4Wire RTDs, thermocouples, and other resistance and millivolt inputs (see individual specifications).
  < Input Sensor Types >
  - RTD: 2W, 3W and 4Wire
  - Thermocouple: B, E, J, K, N, R, S, T type
  - mV: (-10 to 75mV)
  - Ohm: (0 to 430 ohm)
  - Dual Sensor Input (optional)

Function (ATT2100/ATT2200)

- Flexible Sensor input: RTD, T/C, mV, Ohm
- Various output: 4-20mA(Analog), Digital Signals
- Automatic Compensation by Linearization table in which user can modify the various values
- Automatic Compensation of Ambient Temperature
- Setting Various Parameters: Zero/Span, Unit, Fail-mode, Trim, etc.
- Self Diagnostic Function: Sensor, A/D Converter, Memory, Power, etc.
- Digital Communication with HART protocol
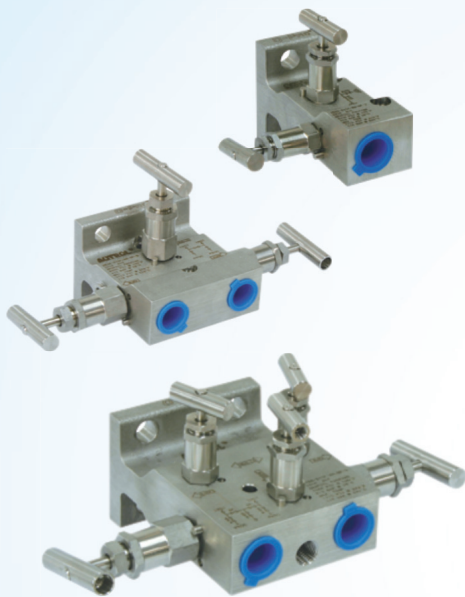- Flameproof Approval and Intrinsic Safety Approval(ATT2100): KOSHA, KTL, CSA, ATEX

DIN Rail Type

ATT2200

* Please contact us before ordering for detailed certificate

AUTROL®
America
SMART TRANSMITTERS

Manifold Valve and Hand Held Communicator

Manifold
Instrument Manifolds

**Flange Type Manifold**　　　　　　　　　　**Remote Type Manifold**

- **2W F/R**
  Block and Bleed
  Bleed port female NPT
  2 valve Remote Mount Manifold (2WF)
  2 valve Direct Mount Manifold (2WF)

- **3W F/R**
  Block and Bleed
  Bleed port female NPT
  3 valve Remote Mount Manifold (2WF)
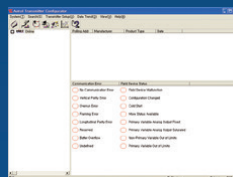 3 valve Direct Mount Manifold (2WF)

- **5W F/R**
  Block and Bleed
  Bleed port female NPT
  5 valve Remote Mount Manifold (2WF)
  5 valve Direct Mount Manifold (2WF)
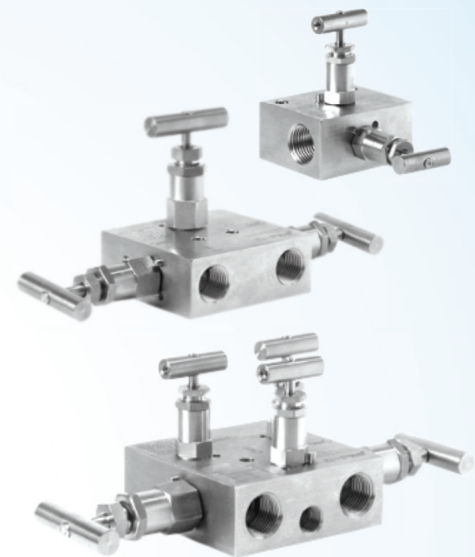
* Every Manifold and Gauge is pressure tested for determining leakage rate of the seat.

AUTROL HAND HELD COMMUNICATOR

ACONF-312 UMPC COMMUNICATOR

OS : WIN XP
AUTROL ACONF-321 UMPC　　　**AUTROL STT20 SOFTWARE FOR UMPC**　　　**HART MODEM**

AUTROL®

AUTROL®
Transmitter
Configurator V2

OTHER AVAILABLE HART HAND HELD COMMUNICATOR

• 275 Field communicator, 375 Field communicator, MFC 4100 HART communicator