Smart Transmitter for Gauge / Absolute Pressure Measurement

APT3200

Function

- Flexible Sensor Input: GP, AP, Vacuum
- Various Output: 4 ~20mA , Digital Signals
- Setting Various Parameters: 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 & Intrinsic Safety Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Express all pressure unit and fow unit, Use 5 digit for measured value

Features

- **Superior Performance**
  - High Accuracy: ±0.075% of Calibrated Span
  - Long-Term Stability
  - High Rangeability (100:1)
- **Flexibility**
  - Measuring GP,AP
  - Data Confguration with HART confgurator
- **Reliability**
  - Continuous Self-Diagnostic Function
  - Automatic Ambient Temperature Compensation
  - Fail-mode Process Function
  - EEPROM Write Protection
  - CE EMC Conformity Standards (EN50081-2, EN50082-2)

* Please contact us before order for detailed certifcate

Smart Transmitter for Pressure Measurement

APT3200-G | **APT3200-A**

Type and Specification

- **APT3200-G**
  Gauge Pressure Transmitter
- **Range(Model G)**
  Range Code #4 -100 ~ 1,000 Kpa
  #5 0 ~ 5,000 Kpa
  #6 0 ~ 20,000 Kpa
  #7 0 ~ 60,000 Kpa

Type And Specification

- **APT3200-A**
  Absolute Pressure Transmitter
- **Range(Model A)**
  Range Code #4 0 ~ 200 Kpa
  #5 0 ~ 1,000 Kpa
  #6 0 ~ 2,000 Kpa

Smart Transmitter with Diaphragm Seal for Pressure Measurement

APT3200L

Function

- Flexible Sensor Input: GP, AP, Vacuum
- Various Output: 4 ~20mA , Digital Signals
- Setting Various Parameters: 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 & Intrinsic Safety Approval : KOSHA, KTL, CSA, FM, ATEX, GOST
- 5 Digit LCD: Express all pressure unit and flow unit, Use 5 digit for measured value.

Features

- **Superior Performance**
  High Accuracy
  Long-Term Stability
- **Flexibility**
  Data Confguration with HART confgurator
- **Reliability**
  Continuous Self-Diagnostic Function
  Automatic Ambient Temperature Compensation
  Fail-mode Process Function
  EEPROM Write Protection
  CE EMC Conformity Standards (EN50081-2, EN50082-2)

* Please contact us before order for detailed certifcate

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 Detail

- Flush Diaphragm Seal and Capillary Type Transmitter
- Please Refer to Individual Specification For Detail

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

SPECIAL PERFORMANCE TYPE

- Available for Special Performance Type Transmitters As Order Basis
- For Paper, Beverage, Glass, Paper, Desulfuration, Petrochemistry Industry

AUTROL® America
SMART TRANSMITTERS

SMART PRESSURE TRANSMITTER

Range and Sensor Limits
Refer to Table 1

Zero and Span Adjustment Limits
- Zero and span values can be set anywhere within the range limits stated in Table 1.
- Span must be greater than or equal to the minimum span stated in Table 1

Output (Analog Current and Digital Data)
- Two wire 4~20mA user-configurable for linear output, digital process value superimposed on 4~20mA signal, available to any host that conforms to the HART protocol

Power Supply & Load Requirement •
- **External power supply required**
  Transmitters operate on 11.9 to 45 V dc.
  * 250 ohm load-- 17.4 Vdc
  * Up to a 550 ohm load -- 24 Vdc
  Max. Loop Resistance = (E - 11.9)/0.022
  (E = Power Supply Voltage)
- **Supply Voltage**
  11.9 ~ 45 Vdc -- operation
  17.4 ~ 45 Vdc -- HART Communications
  11.9 ~ 42 Vdc -- CSA Approval
- **Loop Load**
  0 ~ 1500 ohm – Operation
  250 ~ 550 ohm -- HART Communications

EMC Conformity Standards
- EMI (Emission) – EN50081-2:1993
- EMS (Immunity) – EN50082-2:1995

Update Time and Turn-On Time
- Update Time : 0.12 seconds
- Turn-On Time : 3 seconds

Failure Mode
- Fail High : Current ≥ 21.1 mA
- Fail Low : Current ≤ 3.78 mA

Storage Temperature
- -40^0 C to 85^0 C (without condensing)

Process Temperature Limits
(Range codes and approval codes may affect limits)
- -40^0 C to 120^0 C (-40 to 248 ^{0} F)

Isolation
- Input/output isolated to 500Vrms (707 Vdc)

Overpressure Limits (silicone oil)
Overpressure Limits (silicone oil)

Model G	-100 ~ 400 KPa	------- # 3
	-100 ~ 4000 KPa	------- # 4
	0 ~ 14,000 KPa	------- # 5
	0 ~ 70,000 KPa	------ # 6
	0 ~ 80,000 KPa	------ # 7
Model A	0 ~ 700 KPa	------ # 4
	0 ~ 4000 KPa	------ # 5
	0 ~ 7000 KPa	------ # 6

Physical Specifications

Wetted Materials
- Isolating Diaphragms ----316L SST, Monel, Tantalum, HAST-C

Non-wetted materials
- Fill Fluid ----------Silicone oil
- Electronics Housing ---Aluminum, Flameproof and Waterproof (IP67)
- Cover O-ring ----------Buna-N
- Paint ----------Epoxy-Polyester or Polyurethane
- Mounting Bracket -------2-inch Pipe, 304 SST, Painted Carbon Steel with 304 SST U-bolt
- Nameplate ----------304 SST

Electrical connections
- 1/2-14 NPT conduit with M4 Screw Terminals

Process Connections
- 1/2-14 NPT Female
- 1/4-18 NPT (option)

Weight
- 1.7 kg (excluding options)

Hazardous Location Certifications (option)

KOSHA Approvals (KOSHA: Korea Occupational Safety & Health Agency)
K1 Code:
Flameproof for Class I, Zone 1: Ex d IIC T6, IP67
Ambient Temperature: -20 to 60 °C
Max. Process Temperature: 80 °C
Power Supply: Max. 45 Vdc
Output: 4 to 20 mA + HART, Max. 22 mA

KTL Certification (KTL: Korea Testing Laboratory)
K2 Code:
Intrinsic Safety: Ex ia IIC T5
Ambient Temperature: -20 to 60 °C
Max. Process Temperature: Max. 100 °C
Entity Parameter: Umax=40Vdc, Imax=165mA, Pmax = 0.9W

CSA (Canadian Standards Association) Approvals
C1 Code:
"SEAL NOT REQUIRED"
Explosion proof for Class I, Division 1, Groups A, B, C & D
Dust-ignition proof for Class II, Division 1, Groups E, F & G; Class III
Flameproof for Class I, Zone 1: Ex d IIC
"T6, See Instruction for temperature code if process temperature above 85 °C"
Class I, Division 2, Groups A, B, C, D;
Class II, Division 2, Groups E, F, G;
Class III T4
Non sparking Equipment for Class I Zone 2: Ex nA IIC T4
Enclosure: Type 4x, IP66
Power Supply: 11.9 to 42 Vdc Max.
Output Signal: 4 to 20 mA + HART

FM (Factory Mutual explosion proof) Approvals
F1 Code:
Explosion proof for Class I, Division 1 Groups A, B, C and D
Dust-ignition proof for Class II, Division 1, Groups E, F and G
Dust-ignition proof for Class II, Division 1
"T6, see instruction for temperature code if Process temperature above 85°C"
Ambient Temperature: -20 to 60°C
Enclosure: indoors and outdoors, NEMA Type 4X
Conduit seal required within 18" for Group A only.
Nonincendive for Class I, Division 2, Groups A, B, C & D
Class II, Division 2, Groups E, F & G; and Class III, Division 1,
Temperature Code T4
Ambient Temperature: -20 to 60°C
Enclosure: indoors and outdoors, NEMA Type 4X

ATEX Approvals
E1 Code:
ATEX Certificate number: KEMA07ATEX0103
CE0344 Ⓔx II 2 G
Ex d IIC T6 or T5

Operating Temperature: -20°C ≤ Tamb ≤ +60°C
T6 for process < 85°C; T5 for process < 100°C

**** If you need to order the model with the certificate of CSA, FM and ATEX, Please contact the manufacturer before order.***

General Specifications

1) APT3200 –G/A Pressure Sensor Range (Rangeability = 100 : 1)

Table 1

	APT3200 – G		APT3200 - A	
	Range (KPa)	Calibrated Span (KPa)	Range (KPa)	Calibrated Span (KPa)
3	*-100 ~ 150*	*1.5 ~ 150*	*NA*	*NA*
4	*-100 ~ 1,500*	*15 ~ 1,500*	*0 ~ 250*	*2.5 ~ 250*
5	*0 ~ 5,000*	*50 ~ 5,000*	*0 ~ 1,500*	*15 ~ 1,500*
6	*0 ~ 25,000*	*250 ~ 25,000*	*0 ~ 2,500*	*25 ~ 2,500*
7	*0 ~ 60,000*	*600 ~ 60,000*	*NA*	*NA*

2)Electrical Specifications

Power Supply	*11.9 ~ 45 Vdc*	Output Signal	*4 ~ 20 mA dc/HART*
HART loop resistance	*250 ~ 550 ohm*	Isolation	*500 Vrms (707 Vdc)*

3)Performance Specifications

Reference Accuracy	*APT3200 – G/APT 3200 - A* *± 0.075% of Span (0.1URL≤Span ≤URL)* *± [0.025+0.005x(URL/Span)]% of Span (0.01URL≤Span<0.1URL)*	Ambient Temperature	*-40ºC ~ +85°C*
		LCD Meter Ambient Temp.	*-30ºC ~ +80 °C*
		Humidity Limits	*5% ~ 98% RH*
Ambient Temperature Effect	*APT3200 – G/APT 3200 - A* *± [0.019%URL+0.125% Span] / 28°C*	Process Temperature Limits	*-30°C ~ +100°C*
		Power Supply Effects	*±0.005% of Span per Volt*
		Stability	*APT3200-G/APT3200 – A* *± 0.125%URL for 12 months*

4)Physical Specifications

Isolating Diaphragm	*316L SST*	Process Connection Size	*1/2 – 14 NPT Female*
Electronic Housing	*Aluminum(Option: SST)*	Electrical Connections	*1/2 – 14 NPT with M4*
Housing Class	*Waterproof (IP67)*	2” Pipe Stanchion Type bracket	*Angle or Flat type*
		Weight (excluding Option Items)	*1.7 Kg*

5)Hazardous Location Certifications (option)

Available Approval
Flameproof Approval : Ex d IIC T6 (KOSHA) *Intrinsic Safety Approval : Ex ia IIC T5 (KTL)* CSA (Canadian Standards Association) *FM Explosion proof approval* *ATEX Flame proof Approval*

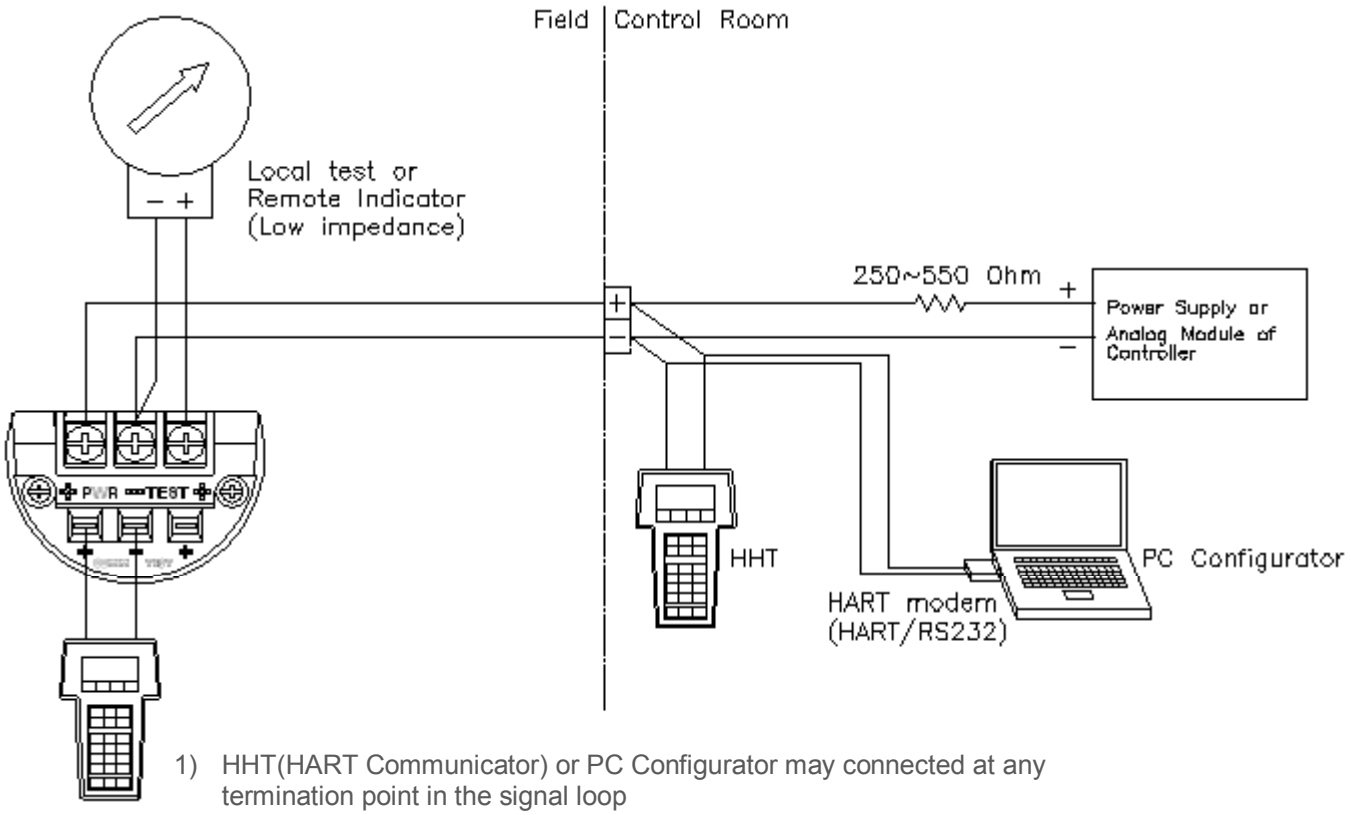
APT 3200 Configuration Sheet

Model	Code	Description					
APT3200	-G	*Gauge Pressure Transmitter (reference accuracy : 0.075 % of span)*					
	-A	*Absolute Pressure Transmitter (reference accuracy : 0.075 % of span)*					
Range		*G*		*A*			
		Range(KPa)	*Min. Span (KPa)*	*Range (Kpa)*	*Min. Span (KPa)*		
	3	*-100 ~ 150*	*1.5*	*NA*	*NA*		
	4	*-100 ~ 1,500*	*15*	*0 ~ 250*	*2.5*		
	5	*0 ~ 5,000*	*50*	*0 ~ 1,500*	*15*		
	6	*0 ~ 25,000*	*250*	*0 ~ 2,500*	*25*		
	7	*0 ~ 60,000*	*600*	*NA*	*NA*		
	X	*Special*					
Mounting Flange Size Material		*DIAPHRAGM*		*OTHER*			
	M11	*316 SST*		*316 SST*			
	M12	*HAST-C*		*316 SST*			
	M13	*Tantulam*		*316 SST*			
	M21	*HAST-C*		*HAST-C*			
Hazardous Location Certificates	K0	*Maker Standard (Waterproof : IP67)*	*E1	*ATEX(KEMA) Flameproof*			
	K1	*KOSHA Flameproof Approval : Ex d IIC T6*	*E2	*ATEX(KEMA) Intrinsic Safety*			
	K2	*KTL Intrinsic Safety Approval : Ex ia IIC T5*	F1	*FM/FMC Explosion proof (for USA & Canada)*			
	*F2	*FM Intrinsic Safety*					
Fill Fluid	1	*Silicone*					
	*2	*Inert fill Fluid (Halocarbon Oil)*					
Process Connection	S	*1/2 – 1/4 NPT Female (Standard)*	O	*1/4 - 18 NPT Female Adapter)*	X	*Special*	
Electrical Connection	1	*1/2-14NPT*	*2	*G1/2*	X	*Special*	
Option	M1	*LCD Indicator(5digit)*					
	LP	*Lighting Protector (Internal Type)*					
	K	*Oil Free Finish*					
	2W	*2 Way Manifold Flange Type (Add Remark "Remote Type")*					
	BA	*Stainless Steel Bracket (Angle type) with SST Bolts*					
	BF	*Stainless Steel Bracket (Flat type) with SST Bolts*					
	ST	*Stainless Steel (SUS 316) Housing*					

Example: APT3200-G5-M11-K0-1-S-1-M1

Note 1: Request manufacturer for Draft Range, Absolute (small pressure and vacuum) and Items marked "" before order.*

Connection Diagram of Signal, Power, HHT for Transmitter



1) HHT(HART Communicator) or PC Configurator may connected at any termination point in the signal loop
2) HART Communication requires a loop resistance between 250 and 550 ohm @ 24 Vdc
3) Transmitter operates on 11.9 to 45.0 Vdc transmitter terminal voltage.
   [Applied Power]
   * 11.9 ~ 45.0 Vdc for General Operation
   * 17.4 ~ 45.0 Vdc for HART Communication
   * 17.4 ~ 42.0 Vdc for CSA Approval (Power supply must not exceed 42.0 Vdc)

Dimensions of Transmitter (mm)