Smart Pressure / Temperature Transmitter

Duon System Co., Ltd.
Dear customers,

Since it was established in May 1989, our company has focused on development of DCS market, a core of instrument industry, and we have performed successfully about 70 projects in various fields like Electricity Generation, desulfuration, petrochemistry, steel, food & beverage, water controlling, semi-conductor, glass, subway, etc.

However, we could not forget our dream to develop our own technologies and products that can represent Korea in the world. And, since we started the research with passion on 1995, we were finally successful to develop a transmitter with brand of AUTROL® with achieving CE Mark in 2001.

AUTROL®, were developed with our own technologies and now it is an obvious proud of Korea instrumental industry in the world. AUTROL® supporting Hart Protocol, has achieved several countries’ quality certificates like NEP, EM, KOSHA, KTL, ATEX, FM, CSA, KEPI, GOST, etc. with several patents in Korea and overseas based on a relative error 0.075%. And now AUTROL® entered into the second takeoff stage.

In the meantime, I and Duon System family will not satisfy by ourselves for the past results and your applause, but we promise that we will do our best to be a leader in the world general instrument industry based on more active investment on R&D and customer satisfaction.

Duon System Co., Ltd.
CEO Kim Young-Soo
Autrol Smart Process Instrumentation Series

The Autrol Smart Transmitter Series of Duon System is a microprocessor-based smart transmitter that features 2-wire digital communication with 4 to 20mA current loop and remote communication. These smart transmitters have excellent stability, high accuracy and the feature of convenient installation and easy maintenance. It can also communicate with the Control System such as DCS, PLC, PC and 275 or 375 Communicator through Digital HART Protocol to acquire process measured variable, configure and modify its various Parameters. And it has automatic temperature compensation function to ensure high reliability and performance corresponding to change of ambient temperature.

Electrical / Performance Specifications (*Please Refer to Individual Specification)

- **Power Supply**: 11.9 ~ 45 Vdc
- **Output Signal**: 4 ~ 20 mA dc / HART
- **HART Loop Resistance**: 250 ~ 550 ohm
- **Isolation**: 500 Vrms (707 Vdc)
- **Reference Accuracy**
  - ±0.075% of Span (±1% for 4PPM)
  - ±0.05% of Span (±0.025% for 4PPM)
- **Ambient Temperature**: -40 ~ 85°C
- **LCD Meter Ambient Temp.**: -30 ~ 60°C
- **Humidity Limits**: 3% ~ 100% RH
- **Ambient Temp. Effect**: ±0.01% of Span / °C
- **Process Temperature Limits**: -40°C ~ +120°C

SMART TRANSMITTER FOR PRESSURE MEASUREMENT

**APT3100-D/G/A/H**

- **Function**
  - Flexible Sensor Input: DP, GP, AP, HP
  - Various Output: 4 ~ 20mA, Digital Signals
  - Setting Various Parameters: Zero/Span, Trim, Unit, Fail-mode, etc.
  - Set Diagnostic Function: Sensor, Memory, A/D Converter, Power, etc.
  - Digital Communication with HART protocol
  - Explosion-proof Approval & Intrinsically Safe Approval: KOSHA, KTL, CSA, FM, ATEX, GOST
- **Features**
  - Superior Performance
  - High Reference Accuracy: ±0.075% of Calibrated Span
  - Long-term Stability
  - High Rangeability (100 : 1)
  - Flexibility
  - Data Configuration with HART Configurator
  - Zero Point Adjustment
  - Reliability
  - Continuous Self-Diagnostic Function
  - Automatic Ambient Temperature Compensation
  - Fail-mode Process Function
  - Electrode Wire Protection
  - CE/UL/EAC Conformity Standards (EN50081-2, EN50082-2)

**APT3100-MP**

- **Function**
  - Multi-Planar Pressure Transmitter
  - For Differential / Gauge / Absolute Pressure Measurement
- **Features**
  - Easy installation regardless fluid line conditions
  - Vertically installed without adaptor or various types of brackets regardless of the position of each fluid inflow

**TYPE and SPECIFICATION**

- **APT3100-D**
  - Differential Pressure Measurement
  - Calibrated Span: Min 0.075 kPa Max 41370 kPa
- **APT3100-G**
  - Gauge Pressure Measurement
  - Ranges: Lower Limit -100 kPa Upper Limit 41370 kPa
- **APT3100-A**
  - Absolute Pressure Measurement
  - Ranges: 0 kPa to 2000 kPa
- **APT3100-H**
  - High-line Pressure Measurement
  - Static Pressure: 31.02 MPa / 4500 psi

*Please Refer to Individual Specification For Detail*
**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
- Setting Various Parameters: Zero/Span, Fail-mode, etc.
- Self Diagnostic Function: Sensor, A/D Converter, Memory, 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 Configuration with HART Configurator
- Zero Point Adjustment
- Reliability
- Continuous Self-Diagnostic Function
- Automatic Ambient Temperature Compensation
- Fail-mode Process Function
- EEPROM Write Protection
- CE EMC Conformity Standards (EN50081-2, EN50082-2)

**SMART TRANSMITTER WITH DIAPHRAGM SEAL**

**APT3100-L Direct Mount Type**
- Flush Diaphragm Seal and Direct Mount Type Transmitter

**APT3100-L Capillary Type**
- Flush Diaphragm Seal and Capillary Type Transmitter
  - (Two Remote)
  - (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 Seal)
  - (One remote Seal)
- Extended Diaphragm Seal and Capillary Type Transmitter
  - (Two remote Seal)

**APT3200**

**Function**
- Flexible Sensor input: GP, AP, Vacuum
- Various output: 4 ~ 20mA, Digital Signals
- Setting Various Parameters: Zero/Span, Trim, 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, ATEX, GOST
- 5 Digit LCD: Express all pressure unit and flow unit, use 5 digit for measured value

**Features**
- Superior Performance
- High Accuracy: ±0.075% of Calibrated Span (*Specially ±0.04%*)
- Long-Term Stability
- High Rangeability (100:1)
- Flexibility
  - Measuring GP, AP
  - Data Configuration with HART configurator
- Reliability
  - Continuous Self-Diagnostic Function
  - Automatic Ambient Temperature Compensation
  - Fail-mode Process Function
  - EEPROM Write Protection
  - CE EMC Conformity Standards (EN50081-2, EN50082-2)

**SMART TRANSMITTER FOR PRESSURE MEASUREMENT**

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

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

**Please contact us before order for detailed certificate**
# APT3700N - For Nuclear Service

## Description of Product

The APT3700 Smart Pressure Transmitter is a micro-processor based high performance transmitter, which has flexible pressure calibration and output, automatic compensation of ambient temperature and process variable, configuration of various parameters, communication with HART protocol. The application is very versatile, as measuring pressure, flow and level by application method.

### Performance Specifications

- **Quality Assurance Program**
  - In accordance with IEC 61516 & IEC 61517
- **Nuclear Cleaning**
  - To 1 ppm chloride content
- **Hydraulic**
  - 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 5 SSE and 1 OBE.
- **Class 1E safety related Applications**
  - Seismic test: IEEE Std 344-1987 at 5 OBE and 1 SSE response spectrum
  - EMI / RFI Test: MIL-STD-461D & 462D, RG 1.180, IEC61000-4-2 (EMC, ESD, EFT/Burst, Surge)

## SMART TRANSMITTER WITH DIAPHRAGM SEAL

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

### Type and Specification

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<th>Type</th>
<th>Specification</th>
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| **APT3200-L Direct Mount** | - Diaphragm Seal and Direct Mount Type  
- Please refer to Individual Specification for detail |
| **APT3200-L Capillary Type** | - Diaphragm Seal and Capillary Type Transmitter  
- Please refer to Individual Specification for detail |
| **APT3200-L Triclamp Type** | - 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

## Type and Specification

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| **APT3700N-D** Differential Pressure Measurement  
Collected Span: Min 0.075 Kpa Max 41370 Kpa  
Gauge Pressure Measurement: Ranges: Lower Limit -95 Kpa Upper Limit 41370 Kpa  
Absolute Pressure Measurement: Range: 0 Kpa to 2000 Kpa  
Highline Pressure Measurement: Static Pressure: 31.02 Mpa / 4500 psi |
| **APT3700N-G** Gauge Pressure Measurement  
Collected Range: Min 0.075 Kpa Max 41370 Kpa  
Gauge Pressure Measurement: Ranges: Lower Limit -95 Kpa Upper Limit 41370 Kpa  
Absolute Pressure Measurement: Range: 0 Kpa to 2000 Kpa  
Highline Pressure Measurement: Static Pressure: 31.02 Mpa / 4500 psi |
ATT2100

Description of Product (ATT2100 / ATT2200)

The ATT2100, 2200 Smart Temperature Transmitter is a microprocessor-based high performance transmitter, which has flexible sensor input and output, automatic compensation of ambient temperature and process parameters, configuration of various parameters, communication with HART protocol. All Data of Sensor (Tag No., type, range etc.) is to be input, modified and stored in EEPROM.

Features (ATT2100 / ATT2200)

- Superior Performance
- Excellent Accuracy
- Long-term Instability
- 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 Standards (EN50081-2, EN50082-2)

ATT2200

Sensor Inputs (ATT2100 / ATT2200)

- Sensor Inputs
  - The model ATT 2100, 2200 is compatible with a various of temperature sensors, including 2W, 3W, 4Wire RTDs, Thermocouples, and other resistance and millivolt inputs (see individual specification).
- Input Sensor Types
  - RTD: 2W, 3W, 4Wire
  - Thermocouple: B, E, J, K, N, R, S, T type
  - mV: -10 ~ 75mA
  - Ohm: 0 ~ 430 Ω
  - Dual Sensor Input (option)

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 necessary values
- Automatic Compensation of Ambient temperature
- Setting Various Parameters: Zero/Span, Unit, Fail-mode, Trim, etc.
- Digital Communication with HART protocol
- Flameproof Approval and Intrinsically Safe: Approval(ATT2100): KOSHA, KTL, CSA, ATEX

DIN Rail Type

* Please contact us before order for detailed certificate

AUTROL HAND HELD COMMUNICATOR

ACONF-321 UMPC COMMUNICATOR

OS : WIN XP

AUTROL ACONF-321 UMPC

HART Modem

OTHER AVAILABLE HART HAND HELD COMMUNICATOR

- 275 field communicator, 375 field communicator, MFC 4100 HART communicator

AUTROL STT20 SOFTWARE FOR UMPC

DUCK SYSTEM CO., LTD. 10111
Company History

1989 • Incorporated as Korea WAD System

1990 • Registered Trade Business License at Korea International Trade Association / Joined technical partnership with WESTINGHOUSE, USA / Registered to factory office at Korea Industrial Export Association

1991 • Registered to qualified Bidder for Foreign Materials of Public Procurement Service

1992 • Registered to qualified Bidder for Domestic Materials of Public Procurement Service / Registered to qualified Bidder to KEPCO (Korea Electric Power Corporation)

1996 • Designated as a manufacturing company for power generating components of KEPCO

1998 • Registered R&D Center at the Korean Government / Registered HART Communication Foundation

1999 • Renamed DUON SYSTEM CO., LTD. / Supplied power generating components of KEPCO

2000 • Appointed as Venture Estimation Excellent Company by Medium and Small Enterprises Promotion Public Corporation and Small Business Administration

2001 • Main Business Center and Factory moved to the current place, (60-31, Gumcheon-gu, Gasan-dong, Seoul, Korea) / Excellent Technology Company designated by Industrial Bank of Korea

2002 • Eamed CE Mark in EMC from RWTUV KZ-01-E-01301, KZ-01-E-01311 / Qualified NI (Transmitter : Agency for Technology and Standards of Ministry of Commerce, Industry and Energy)

2003 • The prime minister commendation at a National Small & Medium Business Association Conference. Awarded at the first of Safety Instruments Examination (APT-3100: Korea Occupational Safety & Health Agency) Obtained ISO 9001:2000 Version (for Transmitter Division //EAQA

2004 • Certificated of KEPIC-EN (DUON System APT-3200) / Certificated as the 2nd stage of maturity of Productivity


2006 • Certificated of ATEX (APT-3100) / Certificated of FM (APT-3100)

2008 • Certificated of GOST (APT-3100, APT-3200, ATT-2100)