azbil

Specification

Advanced Temperature Transmitter

ATT085

FOUNDATION Fieldbus™ communication

Application

- Temperature transmitter with 2 universal input channels and FOUNDATION Fieldbus™ protocol for the conversion of different input signals into digital output signals
- The ATT085 stands out due to signal reliability, long-term stability, high precision and advanced diagnostics (important in critical processes)
- For the highest level of safety, availability and risk reduction
- Universal input usable for resistance thermometer (RTD), thermocouple (TC), resistance transmitter (Ω), voltage transmitter (mV)
- DIN B style transmitter to fit in the smallest terminal heads or in remote housings in accordance with DIN EN 50446
- Optional installation in field housings even for use in Ex d areas
- Mounting bracket pipe or wall for the field housing

Your benefits

- Easy and standardized communication via FOUNDATION Fieldbus™ H1
- Meets the EMC requirements as per NAMUR NE21 and the recommendations of NE89 with regard to temperature transmitters with digital signal processing
- Straightforward design of measuring points in Ex-areas through FISCO/FNICO conformity in accordance with IEC 600079-27
- Safe operation in hazardous areas thanks to international approvals such as
  - FM IS, NI
  - ATEX Ex ia, Ex nA
- for intrinsically safe installation in zone 1 and zone 2
- High accuracy through sensor-transmitter matching
- Reliable operation with sensor monitoring and device hardware fault recognition
- Several mounting versions and sensor connection combinations
- Rapid no-tools wiring due to optional spring terminal technology

Input

Measured variable

Temperature (temperature linear transmission behavior), resistance and voltage.

Measuring range

The transmitter records different measuring ranges depending on the sensor connection and input signals (see "Type of input").

Type of input

It is possible to connect two sensors which are independent of each other. The measuring inputs are not galvanically isolated from each other.

Type of input	Designation	Measuring range limits
Resistance thermometer (RTD)	Pt100	-200 to +850 °C (-328 to +1562 °F)
as per IEC 60751 (α = 0.00385)	Pt200	-200 to +850 °C (-328 to +1562 °F)
	Pt500	-200 to +250 °C (-328 to +482 °F)
	Pt1000	-200 to +250 °C (-238 to +482 °F)
as per JIS C1604-81	Pt100	-200 to +649 °C (-328 to +1200 °F)
(α = 0.003916)	• Connection type: 2-wire, 3-wire or 4-wire connection, sensor current: ≤ 0.3 mA • For 2-wire circuit, compensation for wire resistance possible (0 to 30 Ω) • For 3-wire and 4-wire connection, sensor wire resistance up to max. 50 Ω per wire	
Resistance transmitter	Resistance Ω	10 to 400 Ω
		10 to 2000 Ω
ThermocouplesThermocouples (TC)	Type B (PtRh30-PtRh6)	40 to 1820 °C (104 to 3308 °F)
as per IEC 584, Part 1	Type E (NiCr-CuNi)	-270 to +1000 °C (-454 to +1832 °F)
	Type J (Fe-CuNi)	-210 to +1200 °C (-346 to +2192 °F)
	Type K (NiCr-Ni)	-270 to +1372 °C (-454 to +2501 °F)
	Type N (NiCrSi-NiSi)	-270 to +1300 °C (-454 to +2372 °F)
	Type R (PtRh13-Pt)	-50 to +1768 °C (-58 to +3214 °F)
	Type S (PtRh10-Pt)	-50 to +1768 °C (-58 to +3214 °F)
	Type T (Cu-CuNi)	-260 to +400 °C (-436 to +752 °F)
as per ASTM E988	Type C (W5Re-W26Re)	0 to 2315 °C (32 to 4199 °F)
	Type D (W3Re-W25Re)	0 to 2315 °C (32 to 4199 °F)
	• Internal cold junction (Pt100, Class B) • External cold junction: value adjustable from -40 to +85 °C (-40 to +185 °F) • Maximum sensor resistance 10 kΩ (if the sensor resistance is greater than 10 kΩ, an error message is output in accordance with NAMUR NE89)	
Voltage transmitter (mV)	Millivolt transmitter (mV)	-20 to +100 mV

When assigning both sensor inputs, the following connection combinations are possible:

		Sensor input 1			
		RTD or resistance transmitter, 2- wire	RTD or resistance transmitter, 3- wire	RTD or resistance transmitter, 4- wire	Thermocouple (TC), voltage transmitter
Sensor input 2	RTD or resistance transmitter, 2-wire	✓	✓	-	✓
	RTD or resistance transmitter, 3-wire	✓	✓	-	✓
	RTD or resistance transmitter, 4-wire	-	-	-	-
	Thermocouple (TC), voltage transmitter	✓	✓	✓	✓

Output

Output signal

- FOUNDATION Fieldbus™ H1, IEC 61158-2
- FDE (Fault Disconnection Electronic) = 0 mA
- Data transmission rate: supported baud rate = 31.25 kBit/s
- Signal coding = Manchester II
- Output data:
  Available values via AI blocks: temperature (PV), temp sensor 1 + 2, terminal temperature
- LAS (link active scheduler), LM (link master) function is supported:
  Thus, the head transmitter can assume the function of a link active scheduler (LAS) if the current link master (LM) is no longer available. The device is supplied as a BASIC device. To use the device as an LAS, this must be defined in the distributed control system and activated by downloading the configuration to the device.
- In accordance with IEC 60079-27, FISCO/FNICO

Breakdown information

Status message in accordance with FOUNDATION Fieldbus™ specification.

Linearization/transmission behavior

Temperature linear, resistance linear, voltage linear

Mains voltage filter

50/60 Hz

Galvanic isolation

U = 2 kV AC (sensor input to the output)

Current consumption

≤ 11 mA

Switch-on delay

8 s

Data of the FOUNDATION Fieldbus interface

Basic Data

Device Type	10CE
Device Revision	02
Node address	Default: 247
ITK Version	5.0.1
ITK-Certification Driver-No.	IT050600
Link Master (LAS) capable	yes
Link Master / Basic Device selectable	yes; Default: Basic Device
Number VCRs	44
Number of Link-Objects in VFD	50

Virtual communication references (VCRs)

Permanent Entries	44
Client VCRs	0
Server VCRs	5
Source VCRs	8
Sink VCRs	0
Subscriber VCRs	12
Publisher VCRs	19

Basic Data

Slot time	4
Min. Inter PDU delay	12
Max. response delay * slot time	40

Blocks

Block description	Block index*1	Execution time (macro cycle ≤ 500 ms)	Block class
Resource Block	400	-	Extended
Transducer Block Sensor 1	500	-	Manufacturer-specific
Transducer Block Sensor 2	600	-	Manufacturer-specific
Transducer Block Display	700	-	Manufacturer-specific
Transducer Block Adv. Diag.	800	-	Manufacturer-specific
Function block AI1	900	35 ms	Extended
Function block AI2	1000	35 ms	Extended
Function block AI3	1100	35 ms	Extended
Function block AI4	(1200)	35 ms (not instantiated)	Extended
Function block AI5	(1300)	35 ms (not instantiated)	Extended
Function block AI6	(1400)	35 ms (not instantiated)	Extended
Function block PID	1200 (1500)	100 ms	Standard
Function block ISEL	1300 (1600)	35 ms	Standard

*1. The values in brackets are valid if all the AI blocks (AI1-AI6) are instantiated.

Brief description of the blocks

Resource Block

The Resource Block contains all the data that clearly identify and characterize the device. It is like an electronic device nameplate. In addition to parameters that are needed to operate the device on the fieldbus, the Resource Block also makes other information available such as the order code, device ID, hardware revision, software revision, device release etc.

Transducer Block "Sensor 1" and "Sensor 2"

The Transducer Blocks of the head transmitter contain all the measurement-related and device-specific parameters that are relevant for measuring the input variables.

Display Transducer

The parameters of the "Display" Transducer Block allow the configuration of the optional display.

Advanced Diagnostic

All the parameters for automatic monitoring and diagnosis are grouped together in this Transducer Block.

Analog Input (AI)

In the AI function block, the process variables from the Transducer Blocks are prepared for subsequent automation functions in the control system (e.g. scaling, limit value processing).

PID

This function block contains input channel processing, proportional integral-differential control (PID) and analog output channel processing. The following can be implemented: basic controls, feedforward control, cascade control and cascade control with limiting.

Input Selector (ISEL)

The block for selecting a signal (Input Selector Block - ISEL) allows the user to choose up to four inputs and generates an output based on the configured action.

Power supply

Electrical connection

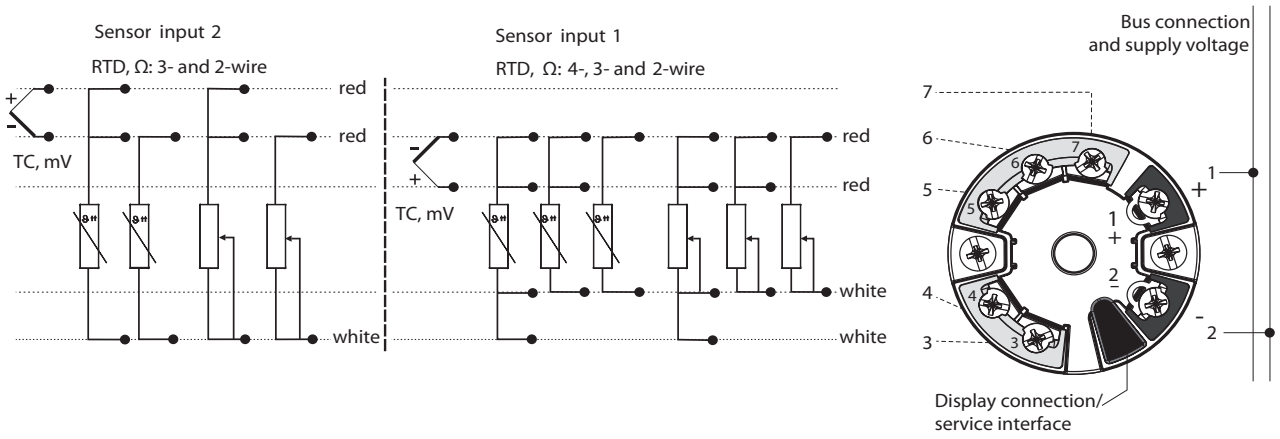


Fig 1. Terminal assignment of head transmitter.

Supply voltage

U = 9 to 32 V DC, polarity independent (max. voltage Ub = 35 V)

Performance characteristics

Response time

1 s per channel

Reference operating conditions

- Calibration temperature: + 25 °C ± 5 K (77 °F ± 9 °F)
- Supply voltage: 24 V DC
- 4-wire circuit for resistance adjustment

Resolution

Resolution A/D converter = 18 bit

Maximum measured error

The accuracy data are typical values and correspond to a standard deviation of ± 3σ (normal distribution), i.e. 99.8% of all the measured values achieve the given values or better values.

	Execution time (macro cycle ≤ 500 ms)	Block class
Resistance thermometer (RTD) (3-wire, 4-wire)	Pt100 Pt500 Pt1000 Pt200	0.1 °C (0.18 °F) 0.3 °C (0.54 °F) 0.2 °C (0.36 °F) 1 °C (1.8 °F)
Resistance thermometer (RTD) (2-wire)	Pt100 Pt500 Pt1000 Pt200	0.8 °C (1.44 °F) 0.8 °C (1.44 °F) 0.8°C (1.44 °F) 1.5 °C (2.7 °F)
Thermocouples (TC)	Type: K, J, T, E Type: N, C, D Type: S, B, R	typ. 0.25 °C (0.45 °F) typ. 0.5 °C (0.9 °F) typ. 1.0 °C (1.8 °F)
	Measuring range	**Performance characteristics**
Resistance transmitters (Ω)	10 to 400 Ω 10 to 2000 Ω	± 0.04 Ω ± 0.8 Ω
Voltage transmitters (mV)	-20 to 100 mV	± 10 µV

Sensor transmitter matching

RTD sensors are one of the most linear temperature measuring elements. Nevertheless, the output must be linearized. To improve temperature measurement accuracy significantly, the device enables the use of two methods:

- Callendar-Van Dusen coefficients (Pt100 resistance thermometer) The Callendar-Van Dusen equation is described as:

$$R_T = R_0[1+AT+BT^2+C\,(T\text{-}100)\,T^3]$$

The coefficients A, B and C are used to match the sensor (platinum) and transmitter in order to improve the accuracy of the measuring system. The coefficients for a standard sensor are specified in IEC 751. If no standard sensor is available or if greater accuracy is required, the coefficients for each sensor can be determined specifically by means of sensor calibration.

- Linearization for copper/nickel resistance thermometers (RTD) The polynomial equations for nickel are described as:

$$R_T = R_0[1+AT+BT^2+C\,(T\text{-}100)\,T^3]$$

The equations for copper, subject to temperature, are described as:

$$R_T = R_0(1+AT)$$

T = -50 to +200 °C (-58 to +392 °F)

$$R_T = R_0[1+AT+B(T+6.7)+CT^2]$$

T = -180 to -50 °C (-292 to -58 °F)

These coefficients A, B and C are used for the linearization

of nickel or copper resistance thermometers (RTD). The exact values of the coefficients derive from the calibration data and are specific to each sensor.

Sensor transmitter matching using one of the above-named methods significantly improves the temperature measurement accuracy of the entire system. This is due to the fact that to calculate the temperature measured, the transmitter uses the specific data pertaining to the connected sensor instead of using the standardized sensor curve data.

Non-repeatability

As per EN 61298-2

Physical input measuring range of sensors		Non-repeatability
10 to 400 Ω	Pt100	15 mΩ
10 to 2000 Ω	Pt200, Pt500, Pt1000	100 ppm × measured value
-20 to +100 mV	Thermocouples type: C, D, E, J, K, N	4 µV
-5 to +30 mV	Thermocouples type: B, R, S, T	3 µV

Long-term stability

≤ 0.1 °C/year (≤ 0.18 °F/year) in reference operating conditions

Influence of ambient temperature (temperature drift)

Impact on accuracy when ambient temperature changes by 1 K (1.8 °F):	
Input 10 to 400 Ω	0.001% of the measured value, min. 1 mΩ
Input 10 to 2000 Ω	0.001% of the measured value, min. 10 mΩ
Input -20 to +100 mV	0.001% of the measured value, min. 0.2 µV
Input -5 to +30 mV	0.001% of the measured value, min. 0.2 µV

Typical sensitivity of resistance thermometers		
Pt: 0.00385 * R_{nom}/K	Cu: 0.0043 * R_{nom}/K	Ni: 0.00617 * R_{nom}/K

Example Pt100: 0.00385 x 100 Ω/K = 0.385 Ω/K

Typical sensitivity of thermocouples					
B: 10 µV/K	C: 20 µV/K	D: 20 µV/K	E: 75 µV/K	J: 55 µV/K	K: 40 µV/K
L: 55 µV/K	N: 35 µV/K	R: 12 µV/K	S: 12 µV/K	T: 50 µV/K	U: 60 µV/K

Example of calculating the measured error with ambient temperature drift:

- Input temperature drift ϑ = 10 K (18 °F), Pt100, measuring range 0 to 100 °C (32 to 212 °F)
- Maximum process temperature: 100 °C (212 °F)
- Measured resistance value: 138.5 Ω (DIN EN 60751) at maximum process temperature

Typical temperature drift in Ω: (0.001% of 138.5 Ω) * 10 = 0.01385 Ω
Conversion to Kelvin: 0.01385 Ω / 0.385 Ω/K = 0.04 K (0.054 °F)

Influence of reference point (cold junction)

Pt100 DIN EN 60751 Cl. B, internal reference point for thermocouples TC

Installation conditions

Installation instructions

- Mounting location:

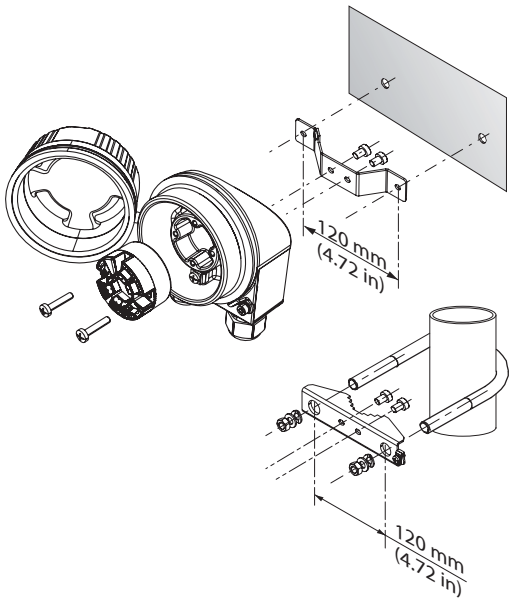


Fig 2. Separated from process in field housing, wall or pipe mounting

- Orientation:

No restrictions

Environment conditions

Ambient temperature range

-40 to +85 °C (-40 to +185 °F), for hazardous areas see Ex documentation and "Approvals" section.

Storage temperature

-40 to +100 °C (-40 to +212 °F)

Altitude

up to 4000 m (4374.5 yd) above mean sea level in accordance with IEC 61010-1, CSA 1010.1-92

Climate class

as per IEC 60654-1, Class C

Humidity

- Condensation as per IEC 60068-2-33 permitted
- Max. rel. humidity: 95% as per IEC 60068-2-30

Degree of protection

- IP66/67

Shock and vibration resistance

10 to 2000 Hz for 5g as per IEC 60068-2-6

Electromagnetic compatibility (EMC)

CE EMC compliance

The device meets all of the requirements mentioned in IEC 61326-1, 2007 and NAMUR NE21:2006.

This recommendation is a consistent determination whether the devices used in laboratories and in process control systems are immune to interference, thus increasing their functional safety.

ESD (electrostatic discharge)	IEC 61000-4-2	6 kV cont., 8 kV air	
Electromagnetic fields	IEC 61000-4-3	0.08 to 4 GHz	10 V/m
Burst (fast transients)	IEC 61000-4-4	1 kV	
Surge	IEC 61000-4-5	1 kV asym.	
Conducted RF	IEC 61000-4-6	0.01 to 80 MHz	10 V

Measuring category

Measuring category II as per IEC 61010-1. The measuring category is provided for measuring on power circuits that are directly connected electrically with the low-voltage network.

Degree of contamination

Pollution degree 2 as per IEC 61010-1.

Mechanical construction

Design, dimensions

Specifications in mm (in)

Head transmitter

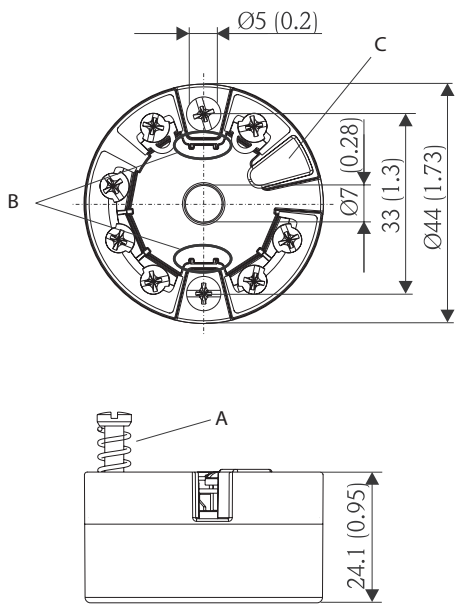
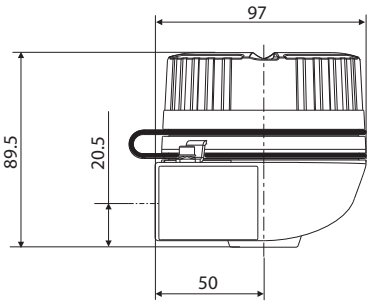
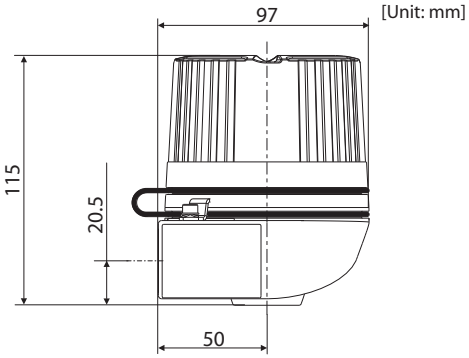


Fig 3. Model with screw terminals

Pos. A: Spring range L ≥5 mm (not applicable to US - M4 mounting screws)
Pos. B: Fixing elements for detachable measured value display
Pos. C: Interface for contacting measured value display

Field housings

without display	Specification
	• Flameproof (XP) version, explosion-protected, captive screw cap, with two cable entries • Temperature: -50 to +150 °C (-58 to +302 °F) for rubber • seal without cable gland (observe max. permitted temperature of the cable gland!) • Material: aluminum; polyester powder coated • Cable entry glands: 1/2"NPT, M20 × 1.5 • Head color: gray RAL 7035 • Cap color: gray RAL 7035 • Weight: 640 g (22.6 oz)

with display window in cover	Specification
	• Flameproof (XP) version, explosion-protected, captive screw cap, with two cable entries • Temperature: -50 to +150 °C (-58 to +302 °F) for rubber seal without cable gland (observe max. permitted temperature of the cable gland!) • Material: aluminum; polyester powder coated • Cable entry glands: 1/2"NPT, M20 × 1.5 • Head color: gray RAL 7035 • Cap color: gray RAL 7035 • Weight: 860 g (30.33 oz)

Weight

- Head transmitter: approx. 40 to 50 g (1.4 to 1.8 oz)
- Field housing: see specifications

Material

All materials used are RoHS-compliant.

Head transmitter

- Housing: Polycarbonate (PC), complies with UL94 HB flammability standard (HB: horizontal burning test)
- Terminals
  Screw terminals: Nickel-plated brass and gold-plated contact
  Spring terminals: Tin-plated brass, contact spring V2A
- Potting: WEVO PU 403 FP / FL, according to UL94 V0 flammability standard (V0: vertical burning test)

Field housing: see specifications

Terminals

Terminals version	Wire version	Conductor cross-section
Screw terminals (with latches at the fieldbus terminals for easy connection of a handheld terminal)	Rigid or flexible	≤ 2.5 mm² (14 AWG)

No ferrules have to be used when connecting flexible wires to spring terminals.

Human interface

Display and operating elements

There are no display or operating elements present at the head transmitter.

Optional the plug-on display can be used in connection with the head transmitter. It will display information regarding the actual measured value and the measurement point identification. In the event of a fault in the measurement chain this will be displayed in inverse color showing the channel identification and diagnostics code. DIP-switches can be found on the rear of the display. This enables the hardware set-up such as the FOUNDATION Fieldbus™ hardware write protection.

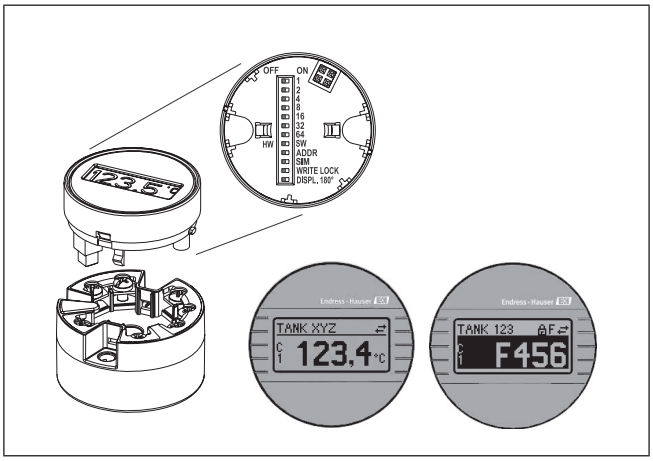


Fig 4. Pluggable display

If the transmitter is installed in a field housing and used with a display, a housing with glass window needs to be used.

Remote operation

The configuration of FOUNDATION Fieldbus™ functions and of device-specific parameters is performed via fieldbus communication. Special configuration systems provided by various manufacturers are available for this purpose.

Certificates and approvals

CE-Mark

The device meets the legal requirements of the EC directives. The device has been successfully tested by applying the CE mark.

Hazardous area approvals

ATEX/IECEx approval

ATT085		ATEX II 1G	Ex ia IIC	T6/T5/T4
Power supply (Terminals + and -)		$U_i \leq 17.5$ V DC $I_i \leq 500$ mA $C_i \leq 5$ nF L_i = negligibly small	or	$U_i \leq 24$ V DC $I_i \leq 250$ mA
Suitable for connecting to a fieldbus system as per the FISCO/FNICO model				
Sensor circuit (Terminals 3 to 7)		$U_0 \leq 7.2$ V DC $I_0 \leq 25.9$ mA $P_0 \leq 46.7$ mW C_i = negligibly small L_i = negligibly small		
Max. connection data	Ex ia IIC Ex ia IIB Ex ia IIA	$L_0 = 20$ mH $L_0 = 50$ mH $L_0 = 100$ mH	$C_0 = 0.7$ µF $C_0 = 4.6$ µF $C_0 = 6.0$ µF	
Temperature range	 T6 T5 T4	Zone 1, 2: Ta = -40 to +55 °C (-40 to +130 °F) Ta = -40 to +70 °C (-40 to +158 °F) Ta = -40 to +85 °C (-40 to +185 °F)	Zone 0: Ta = -20 to +40 °C (-4 to +104 °F) Ta = -20 to +50 °C (-4 to +122 °F) Ta = -20 to +60 °C (-4 to +140 °F)	

Application:
- Equipment category: potentially explosive gas and air mixtures (G)
- Category 1 zone 0, 1 or 2

For zone 0: potentially explosive steam and air mixtures may only occur under following atmospheric conditions:
- -20 °C ≤ Ta ≤ +60 °C (-4 °F ≤ Ta ≤ +140 °F)
- 0.8 bar ≤ p ≤ 1.1 bar (11.6 psi ≤ p ≤ 16 psi)

ATT085		ATEX • II 2G Ex d IIC T6…T4 Gb • II 2D Ex tb IIIC T85 °C…T105 °C Db IECEx • Ex d IIC T6…T4 Gb • Ex tb IIIC T85 °C…T105 °C Db
Power supply (terminals + and -)		U ≤ 35 V DC
Output		FOUNDATION Fieldbus™ Current consumption ≤ 11 mA
Temperature range	T6 T5 T4	-40 °C ≤ Ta ≤ +65 °C -40 °C ≤ Ta ≤ +80 °C -40 °C ≤ Ta ≤ +85 °C
Maximum surface temperature housing	T85°C T100°C T105°C	-40 °C ≤ Ta ≤ +65 °C -40 °C ≤ Ta ≤ +80 °C -40 °C ≤ Ta ≤ +85 °C

ATT085		ATEX II 3G Ex nA II T6/T5/T4 ATEX II 3D
Power supply (terminals + and -)		U ≤ 35 V DC
Output		FOUNDATION Fieldbus™ Current consumption ≤ 11 mA
Temperature range	T6 T5 T4	Ta = -40 to +55 °C (-40 to +130 °F) Ta = -40 to +70 °C (-40 to +158 °F) Ta = -40 to +85 °C (-40 to +185 °F)

Application (ATEX II 3G Ex nA II T6/T5/T4):
- Equipment category: potentially explosive gas and air mixtures (G)
- Category zone 2

Application (ATEX II 3D):
- Equipment category: potentially explosive dust and air mixtures (D)
- Category zone 22

FM approval
Labeling: IS / I / 1 / ABCD / T4, Entity* or FISCO*;
I / 0 / AEx ia IIC / T4 Ta, Entity* or FISCO*
NI / I / 2 / ABCD / T4, NIFW* or FNICO*;
FM XP, NI, DIP I, II, III / 1+2 / A-G
*= Entity, FISCO, NIFW and FNICO parameters in accordance with control drawings

For electrical parameters see table on ATEX approval ATEX II 1G

KCs (Korea)
Ex d II C T6 TSurFace ≤ 85 °C
-40 °C ≤ Tamb ≤ +65 °C
Ex d II C T5 TSurFace ≤ 100 °C
-40 °C ≤ Tamb ≤ +80 °C
Ex d II C T4 C TSurFace ≤ 105 °C
-40 °C ≤ Tamb ≤ +85°C

Other standards and guidelines
- IEC 60529:
  Degrees of protection through housing (IP code)
- IEC 61158-2:
  Fieldbus standard
- IEC 61326-1:2007:
  Electromagnetic compatibility (EMC requirements)
- IEC 60068-2-27 and IEC 60068-2-6:
  Shock and vibration resistance
- NAMUR
  International user association of automation technology in process industries

Certification FOUNDATION Fieldbus™
The temperature transmitter is certified and registered by the Fieldbus FOUNDATION. The device thus meets all the requirements of the specifications following:
- Certified according to FOUNDATION Fieldbus™ specification
- The device meets all the specifications of the FOUNDATION Fieldbus™ H1
- Interoperability Test Kit (ITK), revision status 5.0.1 (device certification no. available on request): the device can also be operated with certified devices of other manufacturers
- Physical layer conformance test of the FOUNDATION Fieldbus™ (FF-830 FS 1.0)

Model Number Configuration Table

Basic model		Selections					Options
ATT085	-					AA -	

I	Approval:	Non-hazardous area	A1			
		ATEX II1G Ex ia IIC T4/T5/T6	B1			
		ATEX II2G Ex d IICT6, II2D Ex tb IIIC	B6			
		FM IS, NI I/1+2/ABCD	C1			
		FM XP, NI, DIP I, II, III/1+2/A-G	F3			
		KCs Ex d T6 Gb, Ex tb IIIC Db	HA			
		IECEx Ex d T6 Gb, Ex tb IIIC Db	I6			
II	Communication; Output Signal:	Foundation Fieldbus H1		A		
III	Electrical Connection:	Screw terminals			2	
IV	Field Housing:	2 entry (M20x1.5) w/o display				D
		2 entry (M20x1.5) with display				E
		2 entry (1/2NPT) w/o display				F
		2 entry (1/2NPT) with display				G

Options	Configuration Universal Input *1 (You may select only one from this part.)	Ch1: RTD 2-wire, Ch2: inactive	A1
		Ch1: RTD 2-wire, Ch2: RTD 2-wire	A2
		Ch1: RTD 2-wire, Ch2: RTD 3-wire	A3
		Ch1: RTD 2-wire, Ch2: TC	A4
		Ch1: RTD 3-wire, Ch2: inactive	B1
		Ch1: RTD 3-wire, Ch2: RTD 2-wire	B2
		Ch1: RTD 3-wire, Ch2: RTD 3-wire	B3
		Ch1: RTD 3-wire, Ch2: TC	B4
		Ch1: RTD 4-wire, Ch2: inactive	C1
		Ch1: RTD 4-wire, Ch2: TC	C2
		Ch1: TC, Ch2: inactive	D1
		Ch1: TC, Ch2: TC	D2
	Display		E1
	Calibration certificate *2		F1
	Configuration alarm limit low		H1
	Mounting bracket wall, 316L		PA
	Mounting bracket pipe, 316L diameter 1-2"		PB
	Tagging (TAG), metal plate		Z1
	Tagging (TAG), on name plate		Z2
	Tagging (Long TAG), write in the		Z4
	Bus adress, write in the memory		Z5

*1: If you do not select "Configuration Universal Input", shipped by default with Ch1: RTD 3-wire; Ch2:

*2: If you do not select "Configuration Universal Input", calibration done by Ch1: RTD 3-wire.

Dimensions

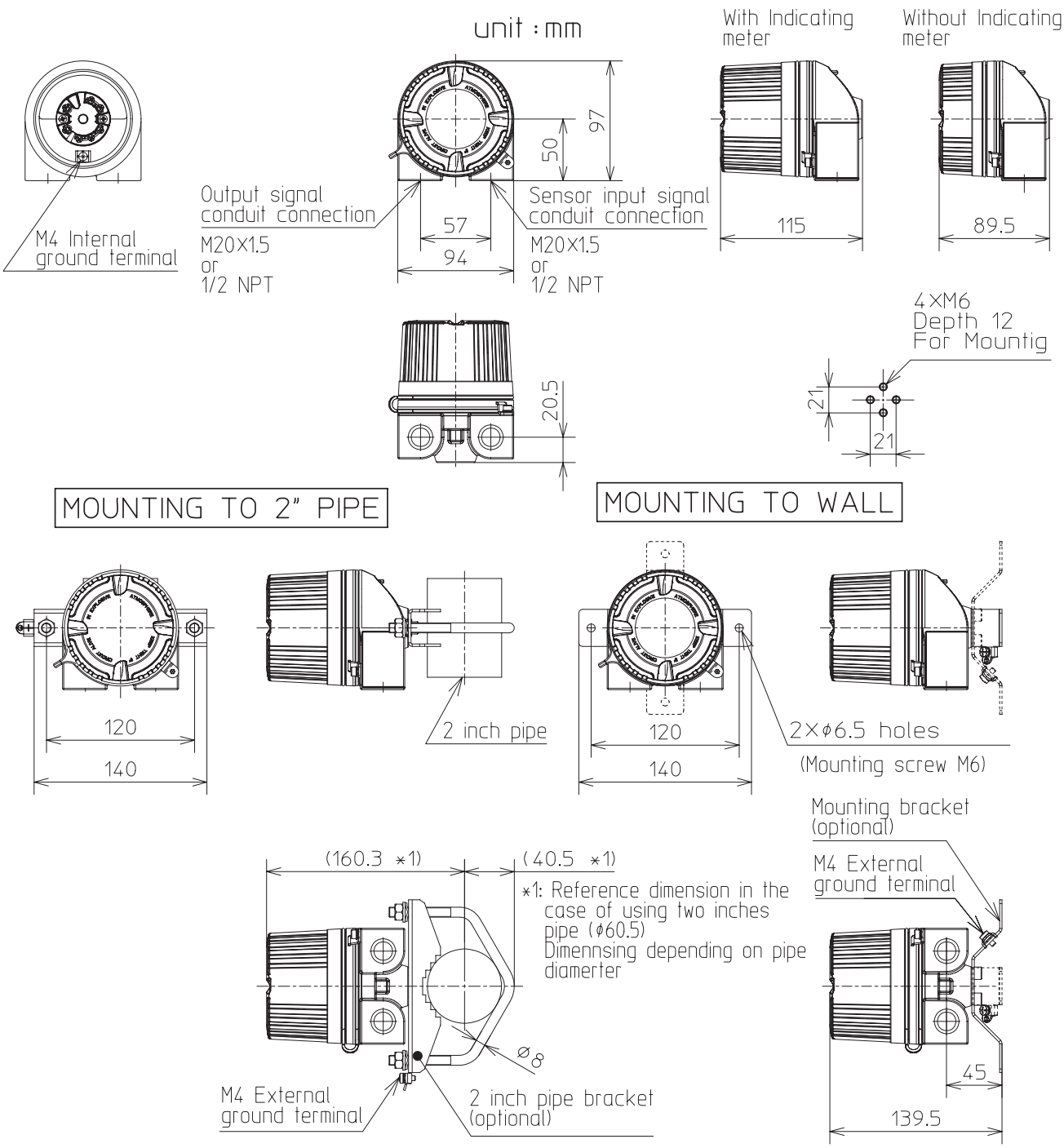


Fig 5. Dimensions

Please read "Terms and Conditions" from the following URL before ordering and use.

http://www.azbil.com/products/factory/order.html

Specifications are subject to change without notice.

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