Advanced Temperature Transmitter with FOUNDATION™ fieldbus

Model ATT60

OVERVIEW

The model ATT with FOUNDATION™ fieldbus is an accurate, stable, and reliable temperature transmitter, which fully complies with the 31.25kbps voltage mode FOUNDATION™ fieldbus. Its built-in AI function blocks provide process variables to devices on the Fieldbus network and its PID control function block enables process control from the field.
Since the model ATT has been FOUNDATION™ approved, it will operate seamlessly with other FOUNDATION™ approved field devices as well as different host systems for a wide range of control applications.

FEATURES

Compact and Lightweight

The model ATT is the most compact and the most lightweight FOUNDATION™ fieldbus temperature transmitter on the market today. It has excellent anti-vibration characteristics and can be direct mounted.

Function Blocks

The model ATT has the following 7 function blocks that comply with FOUNDATION™ fieldbus.

- Transducer Block × 1
- AI Function Block × 3
- Resource Block × 1
- PID Block × 2
- Input Selector Block × 1
- Signal Characterizer Block × 2
- Diagnostics Block × 1

Up to three of the following four outputs can be assigned to the three AI function blocks:

- Sensor 1
- Sensor 2
- Differential Temperature
- Terminal Temperature

Also the Input Selector block can be used to select any one of the following outputs:

- Hot Backup
- Average Temperature
- First Good Temperature
- Minimum Temperature
- Maximum Temperature
- Midpoint Temperature

The PID block provides PID control for out in the field.

Built-in indicator (Optional)

The optional built-in indicator allows the operator to check the temperature in the field. This is useful for daily inspections.

FUNCTIONAL SPECIFICATIONS

Input

Thermocouples
Type J, K, T, N, S, R, E, B

Resistance thermobulbs (RTD)
Pt100, JPT100
mV

Measuring range

Thermocouples and Resistance thermobulbs

Table 1

Sensor type	Guaranteed accuracy range	Configurable range	Regulation applied
J	-50 to 1200°C	-200 to 1200°C	JIS. C1602-1995 ASTM E230-1996 IEC584-1-1995 (ITS-90)
K	-170 to 1200°C	-200 to 1370°C	
T	-120 to 400°C	-250 to 400°C	
E	-100 to 1000°C	-200 to 1000°C	
N	0 to 1300°C	-200 to 1300°C	
R	0 to 1760°C	-50 to 1760°C	
S	0 to 1760°C	-50 to 1760°C	
B	400 to 1820°C	200 to 1820°C	
Pt100	-200 to 850°C	-200 to 850°C	IEC PUB.75 (ITS-90) JIS. C1604-1997
JPt100	-200 to 640°C	-200 to 640°C	JIS. C1604-1989
mV	-20 to 120mV	-20 to 120 mV	---

mV
-20 to 120 mV

Cold junction compensation
Internal / External

Communication
FOUNDATION™ fieldbus (See “Table 3 ” on page 3.)

Input / Output insulation characteristics
500 V AC

Ambient temperature limits
Without LCD display: -40 to 85ºC
With LCD display: -20 to 70ºC

Ambient humidity limits
5 to 100% RH

Additional characteristics
Ambient temperature: ± 0.5% F.S. / 30ºC
Humidity: ± 0.01% F.S. (5 to 100% RH)

Digital display
4.5-digit LCD plus a bar graph displaying the output level.
The value that is displayed can be selected.

Lightning protection
Peak value of voltage surge: 100 kV
Peak value of current surge: 1000 A

Vibration characteristic (Without mounting bracket)
9 to 2000 Hz 3G

PERFORMANCE SPECIFICATIONS

Conversion accuracy

Table 2 Conversion accuracy

Sensor type	Digital accuracy	CJC accuracy	Minimum span
J	± 0.3°C	± 0.3°C	25°C
K	± 0.4°C		
T	± 0.4°C		
E	± 0.3°C		
N	± 0.5°C		
R	± 0.6 °C		
S	± 0.6 °C		
B	± 0.8 °C		
Pt100	± 0.2°C	N.A.	10°C
JPt100	± 0.2°C		
mV	± 0.05% of reading, or ± 5 μV, Whichever is greater		2 mV

Note) Total accuracy = (Sensor error)+(Conversion accuracy)
= (Sensor error)+(Digital accuracy)
+ (CJC accuracy)

PHYSICAL SPECIFICATIONS

Finish

Standard
Corrosion resistant paint (baked acrylic paint)

Corrosion resistant paint
Corrosion resistant paint (baked acrylic paint) and Fungus proof finish

Corrosion proof paint
Corrosion resistant paint (baked epoxy paint) and Fungus proof finish

Color
Metallic Green (Munsell 5G7/8)

Weight
Approx 0.9 kg

INSTALLATION

Electrical connection

G1/2, 1/2NPT internal thread,
M20×1.5, Pg13.5 (with adapter)

Mounting

Can be installed on a 2-inch pipe
(Can be directly mounted on the process)

The model ATT is shipped from the factory with the settings and specifications as listed below. (Unless otherwise specified)

Sensor type	:	Pt100
Number of wires	:	3
Number of sensors	:	1
Tag No.	:	XXXXXXXX (Printed on the tag plate)
Output conformity	:	Linear
AI function block filter time constant:		6.3 sec.
Cold junction compensation	:	Internal
Node address	:	248 (F8)
Tag ID	:	“Spaces”
Device ID	:	0DFC96YamatakeXXXXXXXXXX

Table 3

Function Blocks	Function Blocks	Number of blocks	Execution time msec	
	AI Function block	3	75	FF standard
	Input selector block	1	100	FF standard
	Signal characterizer block	2	100	FF standard
	PID block	2	125	FF standard
	Transducer block	1	-	FF standard with original Yamatake parameters
	Resource block	1	-	FF standard with original Yamatake parameters
	Diagnostics block	1	50	FF standard
Objects	Trend object	FF standard		
	Alert object	FF standard		
	View object	FF standard		
	Link object	10		
Network Parameters	Slot time: V(ST)	5 to 100		
	Max Response Delay: V(MRD)	V(MRD) × V(ST) shall be greater than 20 and V(MRD) shall be less than 11, inclusive.		
	Min Inter-Pdu Delay: V(MID)	10 to (V(MRD) -1) × V(ST), less than 120 inclusive.		
Number of VCR	16			
Power supply	9 to 32 V			
Power consumption	20mA max.			
ITK	ITK 4.01			

MODEL SELECTION

Advanced temperature transmitter with FOUNDATION™ fieldbus

Model ATT60 - I II III - IV V VI - Options

Basic model no.		Selection 1			Selection 2			Option				
ATT60	-				-			-				

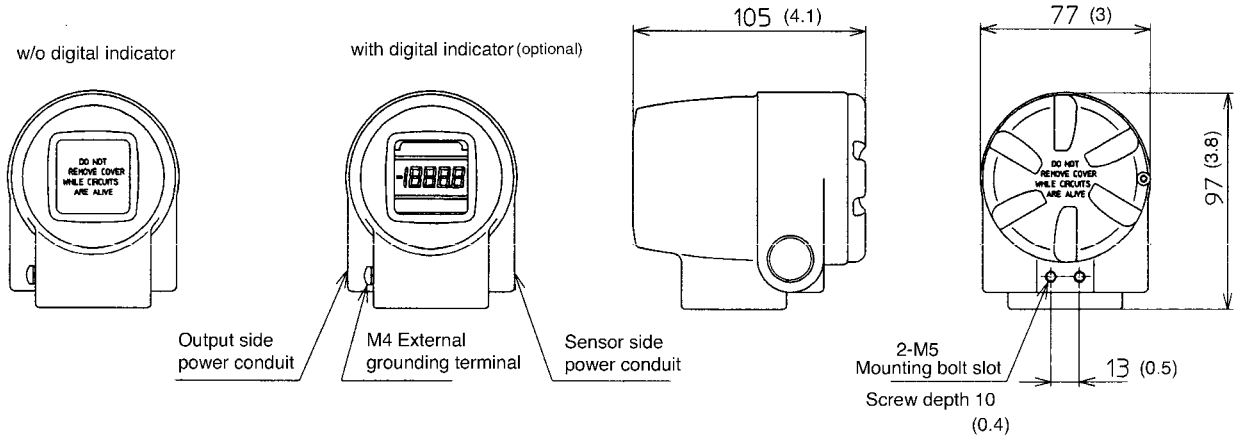
Output	FOUNDATION™ fieldbus *1	F
Housing	Water-proof and dust -proof structure	1
Electrical connection	G1 / 2	1
	1 / 2NPT	2
	M20×1.5 (with adaptor)	3
	Pg13.5 (with adaptor)	4
Integral digital meter	Without	X
	LCD meter (PV in deg. F)	F
	LCD meter (PV in deg. C)	M
Finish	Standard finish	S
	Corrosion -resistant finish	A
	Corrosion -proof finish	B
Burnout feature	No selection	X

Options	No selection	X
	Certificate of traceability	A
	Mounting bracket	B
	Customer configurations (sensor type and measuring range)	C
	Two additional wire conduits	F
	Tropical finish	H
	Calibration test report	T
	Fieldbus communication stack BASIC class (used with option output code “F”) *1	1

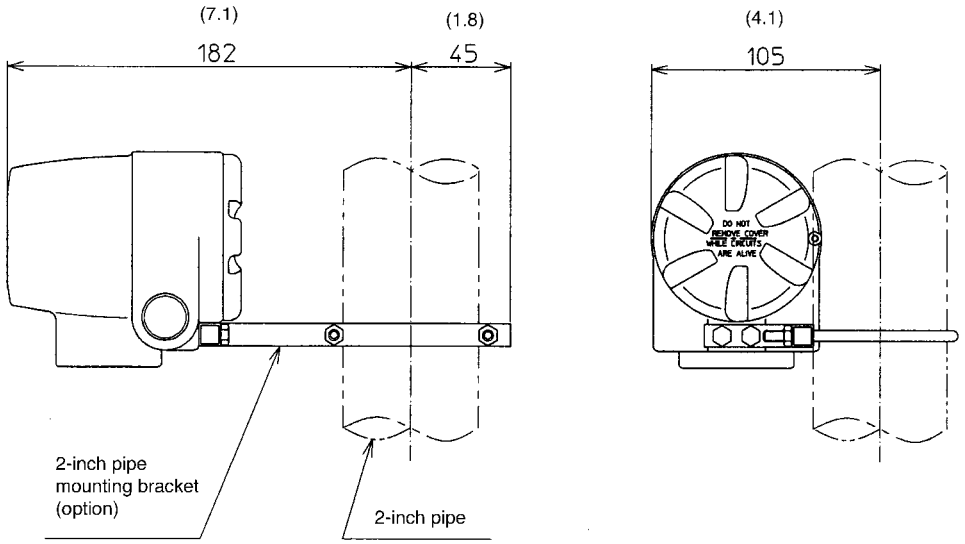
*Note) *1 If output code “F” FOUNDATION™ fieldbus is selected, option code “1” must be selected.*

DIMENSIONS

Dimensions of converter

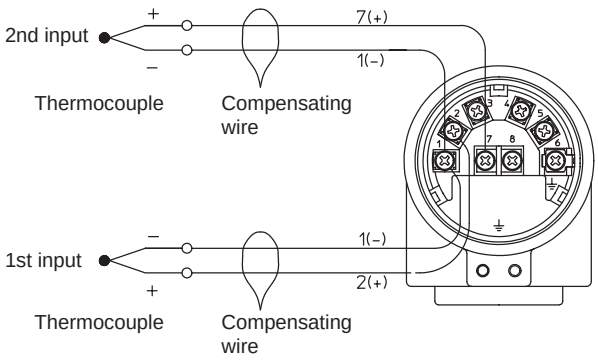


Dimension of field mounting

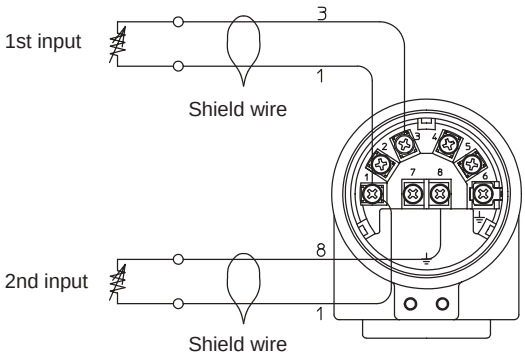


Terminal connection diagram

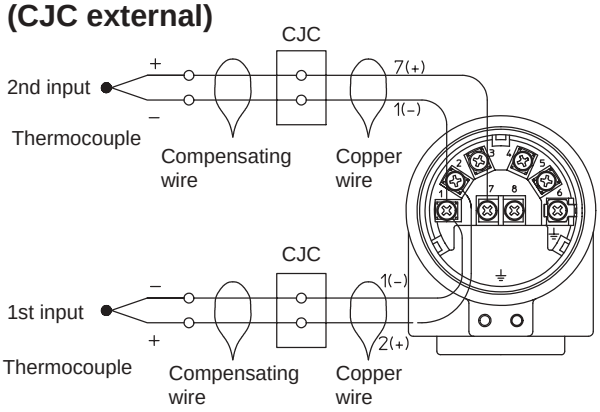
Thermocouple (CJC internal)



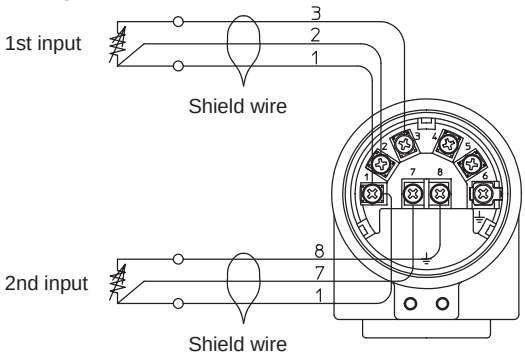
RTD (2-wire)



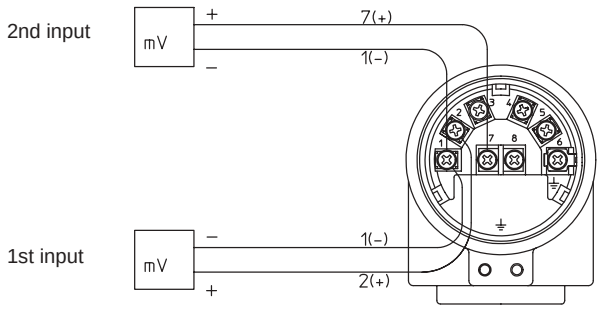
Thermocouple (CJC external)



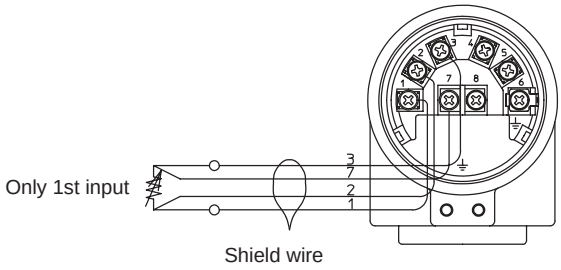
RTD (3-wire)



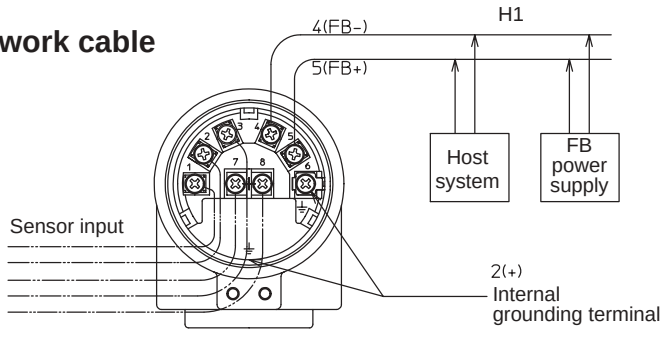
MV input



RTD (4-wire)



FB network cable



Note

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Yamatake Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan

URL:http://www.azbil.com

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