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## General Purpose Temperature Transmitter

Model : T155 (Circular Connector)

T156 (DIN Connector)

T157 (Flying Leads)

T158 (General Head)

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**WISE**  
SENSOR

### Advantages

- Two wire 4~20mA current output signal
- RTD inputs
- Measuring ranges from -50 to 500°C
- Loop powered 4~20mA
- Excellent accuracy and long term stability

### Applications

These are recommended in applications requiring amplification of low level mV / RTD signals to carry to a long distance or guard against heavy field electrical noise. The transmitter converts RTD inputs to an analog signal for direct interface with indicators, recorders, controllers, PLC, DCS systems can be used for a wide range of applications in process control, automatic machinery and hydraulic or pneumatic system design.

### Descriptions

T150 series temperature transmitters are designed to fit into standard weather terminal heads used on RTD assemblies to provide a 4~20mA transmission signal. It is a cost effective solution for all temperature measurement and accurate, durable and reliable. Numerous configurations for measurement in many different mediums are offered.

Generally the transmitter produces a linear 4~20mA output carried on a 2-wire system and optional voltage range of 1~5V DC can also be available.

The transmitter is supplied factory calibrated, but also has zero and span potentiometers for field adjustment or calibration.

T150 provides a loop powered 4~20mA / 2-wire and in the hazardous environment, explosion protected terminal head can be also available.



T155

T156



T157

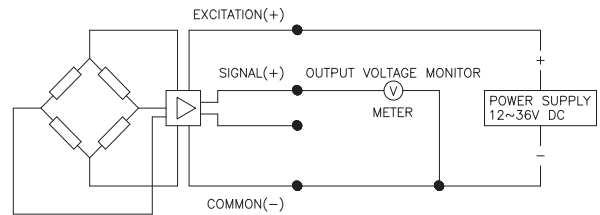
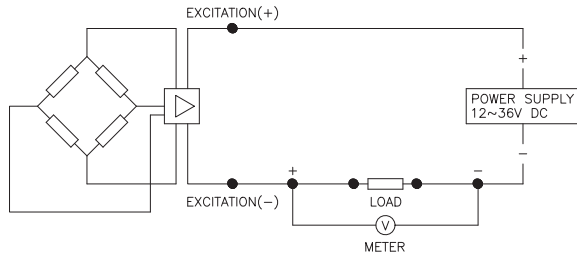
T158

## Specification

Input				
Measuring range	PT100 ohm, JIS-C-1604-1981			
Thermocouple	-50~500°C			
Output				
	Current output		Voltage output	
Electrical connection type	2-wire technique		3 or 4-wire technique	
Full scale output signal	20mA	± 0.2%	5V	± 0.2%
Zero measured output	4mA	± 0.03%	1V	± 0.03%
	Other signals available on request			
Electrical Specification				
Excitation voltage	24V DC (12~36V DC)			
Load resistance max @ 24V	500Ω at 24V			
Influence of excitation	0.01% FSO/V			
Burnout	Upscale (approx. 23mA DC) or downscale (approx. 3mA DC)			
Reverse polarity	Protected			
Shock resistance	No change in performance after 10Gs for 11ms			
Vibration	5g (10~2000Hz)			
Response time (10~90%)	± 500 mSec.			
Adjustment	± 20% FSO / zero and span			
Performance Specification				
Accuracy	≤± 0.2% FSO			
Non-Linearity	Better Than 0.10% FSO			
Repeatability	Better Than 0.05% FSO			
Long term stability	Better Than 0.05% FSO per month			
Cutoff frequency (-3 d B)	± 2KHz			
Ambient temperature limits	-20~85°C			
Ambient operating humidity	5~100% RH			
Physical Specification				
Process connection	PT, NPT male thread			
	Other connections available on request			
Process media	Gases and liquids compatible with stainless steel 316			
Materials wetted by process	Stainless steel 316 and others available on request			
Enclosure rating	IP65			
Influence of mounting position	Not critical			
Options	Protection well			

## System connection for 2-wire transmitter

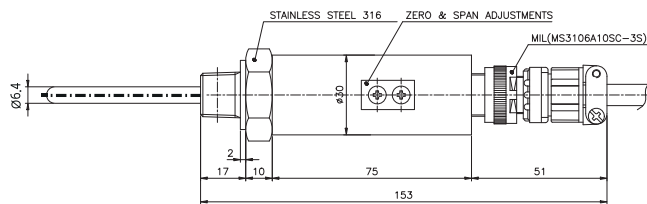
## System connection for 3-wire transmitter



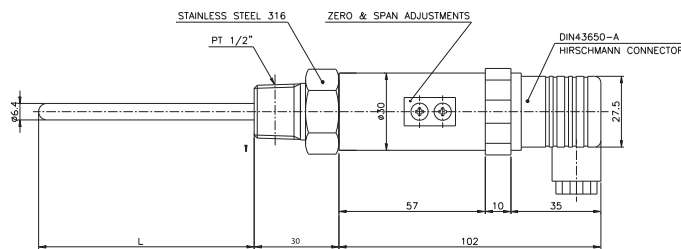
## Dimension (mm)

## Electrical connection

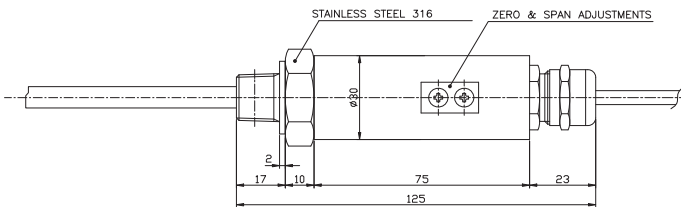
T155



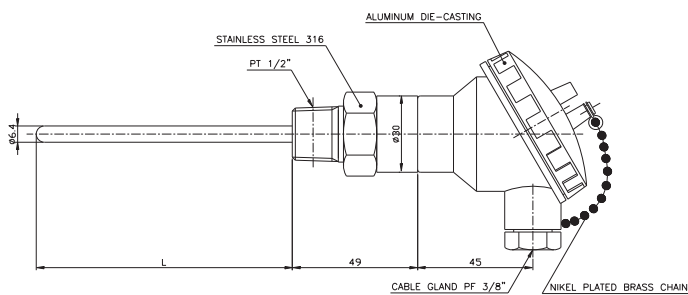
T156



T157



T158



E : Excitation  
S : Signal  
C : Common

### Circular connector

System Color	2-Wire	3-Wire	4-Wire
Red	E +	E +	E +
Black	E -	C -	E -
Green		S +	S +
White			S -
GND	Shielded	Shielded	Shielded

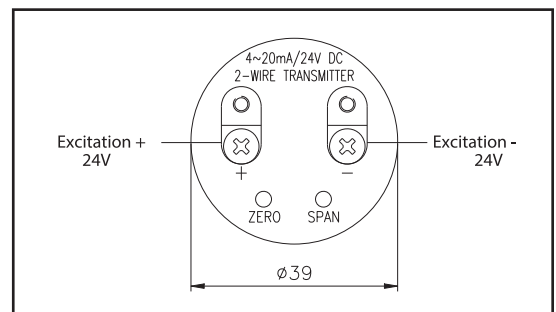
### DIN connector

System Color	2-Wire	3-Wire	4-Wire
1	E +	E +	E +
2	E -	C -	E -
3		S +	S +
GND	Shielded	Shielded	S -

### Flying Lead

System Color	2-Wire	3-Wire	4-Wire
Red	E +	E +	E +
Black	E -	C -	E -
Green		S +	S +
White			S -
GND	Shielded	Shielded	Shielded

### General head



## Ordering Information

### General Purpose Temperature Transmitter

#### 1. Base model

T155										Circular Connector
T156										DIN Connector
T157										Flying lead (1.5m cable)
T158										General Head

#### 2. Input signal

P										PT100Ω
N										None signal

#### 3. Process connection type "1"

M										Male thread
F										Flange mounted

#### 4. Process connection type "2"

T										PT thread as standard
J										Frang per JIS
D										Frang per DIN
A										Frang per ANSI
X										Other process connection available on request

#### 5. Process connection size

1										1/2"
2										1"
3										2"
X										Other size available on request

#### 6. Thermo-well

S										With protection thermo-well
N										Without protection thermo-well

#### 7. Measuring range

01										-50~0
02										-50~50
03										-20~80
04										-50~150
05										0~50
06										0~100
07										0~150
08										0~200
09										0~300
10										0~400
11										0~500
X										Other calibration ranges available on request

#### 8. Unit

K										Calibration in Celsius scale (°C)
A										Calibration in Fahrenheit scale (°F)

#### 9. Output

N										None options
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T156	P	M	T	1	N	01	K	N		Sample ordering code
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Specifications subject to change without notice

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## Explosion Proof Type Temperature Transmitter with Indicating

Model : T700 (Standard head)  
T710 (Miniature head)

The logo for WISE SENSOR, featuring the word "WISE" in white capital letters above the word "SENSOR" in white capital letters, both set against a red square background.

### Advantages

Explosion Proof transmitter for industrial applications

- Two wire 4~20mA current output signal
- RTD and thermocouple inputs
- Measuring ranges from -50 to 500 C
- Loop powered 4~20mA with LED local display
- Excellent accuracy and long term stability

### Applications

These are recommended in applications requiring amplification of RTD or T/C signals to carry to a long distance or guard against heavy field electrical noise.

The transmitter converts RTD or T/C inputs to an analog signal for direct interface with indicators, recorders, controllers, PLC, DCS systems can be used for a wide range of applications in process control, automatic machinery and hydraulic or pneumatic system design.

### Descriptions

T700 / T710 series temperature transmitters are designed to fit into standard weather or explosion-proofed terminal heads used on RTD or thermocouple assemblies to provide a 4~20mA transmission signal. It is cost effective solution for all temperature measurement and accurate, durable and reliable. Numerous configurations for measurement in many different mediums are offered. Generally the transmitter produces a linear 4~20mA output carried on a two-wire system and optional voltage range of 1~5V DC can also be available. The transmitter is supplied factory calibrated, but also has zero and span potentiometers for field adjustment or calibration.

T700 / T710 provides a loop powered 4~20mA / 2-wire with LED local display and in the hazardous environment, explosion protected terminal head can be also available.



T700

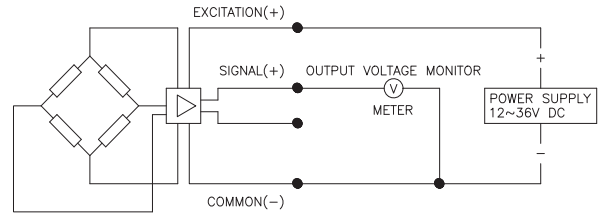
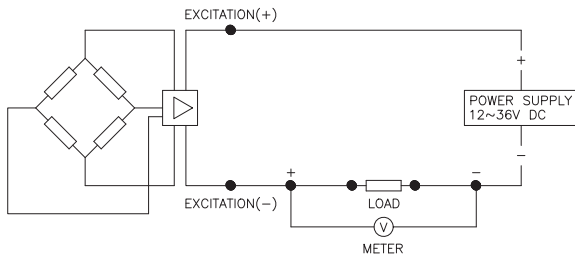
T710

## Specification

Input				
Technology	RTD (PT100 ohm, JIS-C-1604-1981)			
	Thermocouple Type (B, E, J, K, N, R, S, T) (Only available T700)			
Output				
	Current output		Voltage output	
Electrical connection type	2-wire technique		3 or 4-wire technique	
Full scale output signal	20mA	± 0.2%	5V	± 0.2%
Zero measured output	4mA	± 0.03%	1V	± 0.03%
	Other signals available on request			
Electrical Specification				
Excitation voltage	12~36V DC			
Load resistance max @ 24V	500Ω at 24V			
Influence of excitation	0.01% FSO / V			
Shock resistance	No change in performance after 10Gs for 11ms			
Response time(10~90%)	± 500 mSec.			
Adjustment	± 20% FSO / zero and span			
Performance Specification				
Accuracy	≤± 0.2% FSO			
Non-linearity	Better Than 0.10% FSO			
Repeatability	Better Than 0.05% FSO			
Long term stability	Better Than 0.05% FSO per month			
Cutoff frequency(-3 d B)	± 2kHz			
Ambient temperature limits	-20~70 °C			
Ambient humidity limits	5 to 100% R.H			
Physical Specification				
Process connection	PT1/2" male thread			
	Flange & other connections available on request			
Process media	Gases and liquids compatible with stainless steel 316			
Materials wetted by process	Stainless steel 316L and other available on request			
Materials of terminal head	Aluminum Die-casting			
Local display range	4 digit			
Enclosure rating	IP65			
Explosion protection	Ex d IIC T6 (IP65)			
Influence of mounting position	Not critical			
Options	Protection well			

## System connection for 2-wire transmitter

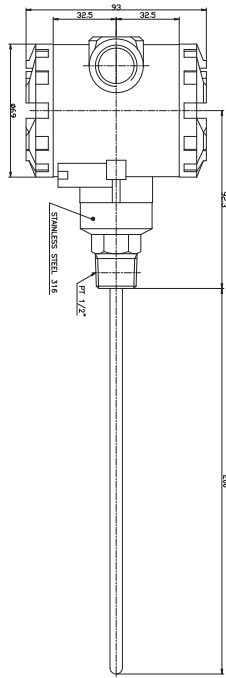
## System connection for 3-wire transmitter



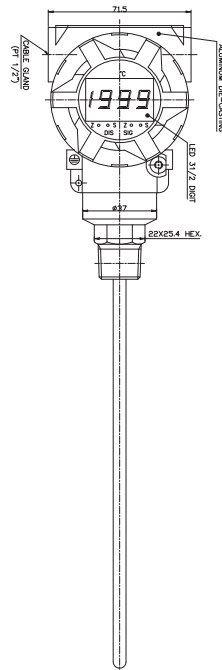
## Dimension (mm)

## Electrical connection

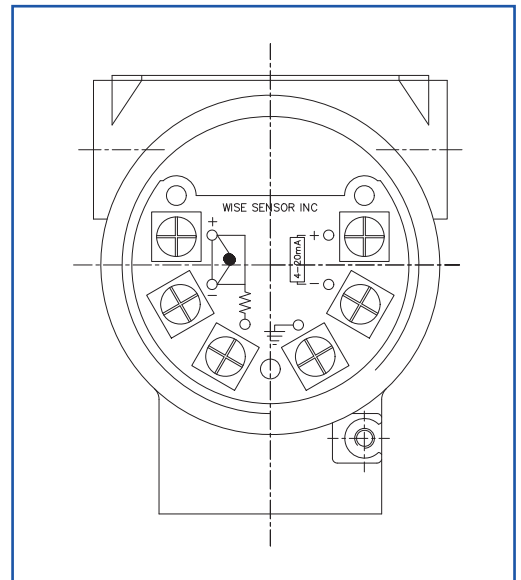
T700 Side view



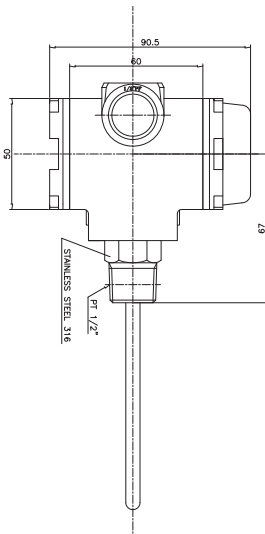
T700 Front view



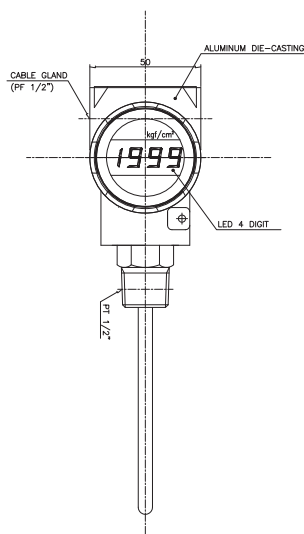
T700 Terminal block



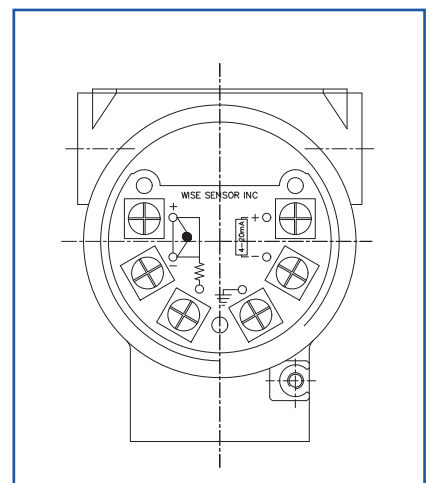
T710 Side view



T710 Front view



T710 Terminal block



## Ordering Information

### Explosion Proof Type Temperature Transmitter with Indicating

#### 1. Base model

T700										Explosion Proof Standard Head
T710										Explosion Proof Miniature Head

#### 2. Input signal

P										RTD (PT 100 Ω)
B										Thermocouple Type "B" (Only available T700)
E										Thermocouple Type "E" (Only available T700)
J										Thermocouple Type "J" (Only available T700)
K										Thermocouple Type "K" (Only available T700)
N										Thermocouple Type "N" (Only available T700)
R										Thermocouple Type "R" (Only available T700)
S										Thermocouple Type "S" (Only available T700)
T										Thermocouple Type "T" (Only available T700)
O										Other Input signal available on request

#### 3. Process connection

M										Male thread mounted
F										Flange mounted

#### 4. Process connection type

T										PT thread as standard
J										Flange per JIS
D										Flange per DIN
A										Flange per ANSI
X										Other process connections available on request

#### 5. Process connection size

1										1/2"
2										1"
3										2"
X										Specify the flange unit clearly

#### 6. Thermo-well

S										With protection thermo-well
N										Without protection thermo-well

#### 7. Measuring range

01										-50~0
02										-50~50
03										-20~80
04										-50~150
05										0~50
06										0~100
07										0~150
08										0~200
09										0~300
10										0~400
11										0~500
xx										Other calibration ranges available on request

#### 8. Unit

C										Calibration in Celsius scale (°C)
F										Calibration in Fahrenheit scale (°F)

#### 9. Output signal / Electrical connection type

A1										4~20mA, DC, 2-wire output
A2										4~20mA, DC, 4-wire output
B1										1~5V, DC, 3-wire output
B2										1~5V, DC, 4-wire output

#### 10. Option

N										None options
M										2 inch pipe mounting bracket

T700	P	M	T	1	N	06	C	A1	N	Sample ordering code
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Specifications subject to change without notice



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## Temperature Transmitter with Digital Switch

Model : T800S (General head)

T800 (Explosion Proof head)

**WISE**  
SENSOR

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### Advantages

- Micro-processor based digital temperature switch/transmitter for industrial applications
- Adjustable switch points allow the user to obtain various temperature settings for each of the 2 switches and span
- Measuring ranges from -50 to 500°C
- RTD input
- Excellent accuracy and long term stability
- 4 digit LED local display
- 2 switching points with analog output
- Measuring range turn down maximum 10:1

### Applications

The T800, T800S micro-processor based digital temperature switch with analog output signal can be used for a wide range of applications in process control, automatic machinery and hydraulic or pneumatic system design.

- Chemical, petrochemical, food and drug process controls
- Hydraulic and pneumatic equipments
- Machine tools and automatic machinery
- LPG and LNG transmission control and storage tank monitoring
- Engine monitoring and control



### Descriptions

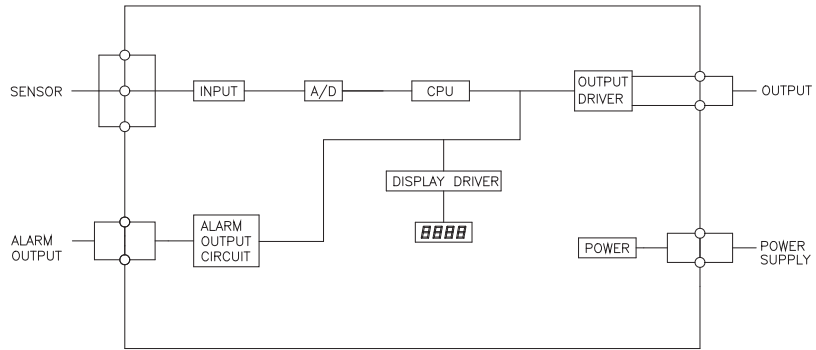
T800 Series micro-processor based digital temperature switch addresses all the fundamental issues of industrial temperature sensing that require highly accurate process control and monitoring.

The T800S / P800, with its built-in RTD, a 4-digit digital display, 2 switching points, 4~20mA analog output signal and a front function keys, offer the user all the advantages of a modern electronic temperature measurement. External adjustments allow the user to set the measuring ranges, switch points, dead band and zero or span calibration, etc. It has a water resistant, aluminum die-cast housing for complete protection from harsh environments and its 4~20mA current output is ideal for remote monitoring of both primary and secondary process variables. It has been designed as an advanced device for measuring temperature in industrial applications.

## Specification

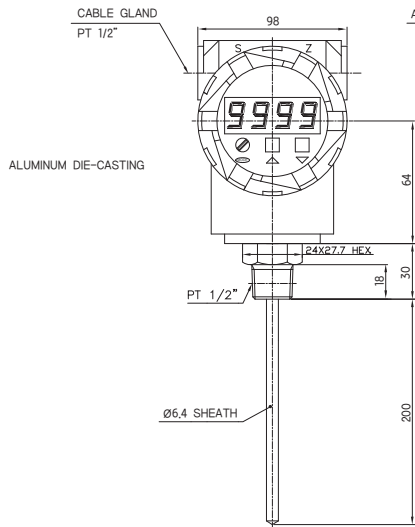
Input	
Technology	RTD (PT100 ohm, IEC, DIN, JIS-C-1604-1981)
Measuring range	-50~500 °C
Output	
Output signal	4~20mA analog output / Optional 1~5V DC available on request 2 switching points with 4~20mA analog output
Local display	LED 4 digit
Electrical connection type	Terminal Head
Electrical Specification	
Excitation voltage	24V DC (12~36V DC), 85~260V AC (Optional)
Load resistance max @ 24V	500Ω at 24V
Influence of excitation	0.01% FSO / V
Power ripple	≤ 500mV P-P
Reverse polarity\	Protected
Shock resistance	No change in performance after 10Gs for 11ms
Vibration	0.1G (1m / s / s) maximum
Response time (10~90%)	± 500 mSec.
Switching current	Maximum 1.2A
Adjustment range	Zero and span can be fully adjustable using front keys
Performance Specification	
Accuracy	≤± 0.2% FSO
Non-linearity	± 0.2% FSO
Repeatability	± 0.1% FSO
Long term stability	Better Than 0.05% FSO per month
Storage temperature range	0~70 °C
Ambient temperature range	-20~70 °C
Ambient humidity limits	5 to 100% R.H
Thermal sensitivity shift	≤± 0.05% FSO in reference to 35°C typical
Thermal zero shift	≤± 0.05% FSO in reference to 35°C typical
Thermal hysteresis	≤± 0.1% FSO in reference to 35°C typical
Physical Specification	
Process connection	PT1/2" male thread (standard) Flange & other connections available on request
Electrical connection	PF3/8" female (T800S), PT1/2" female (T800)
Process media	Gases and liquids compatible with stainless steel 316
Materials wetted by process	Probe : stainless steel 316 Housing : Aluminum Die-casting terminal head
Local display range	4 digit
Enclosure rating	IP65
Explosion protection	Ex d IIC T6 (Only T800)
Influence of mounting position	Not critical
Options	Protection well

# System connection for digital switch

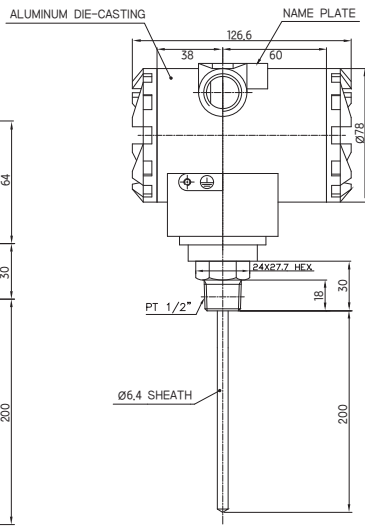


# Dimension (mm) Electrical connection

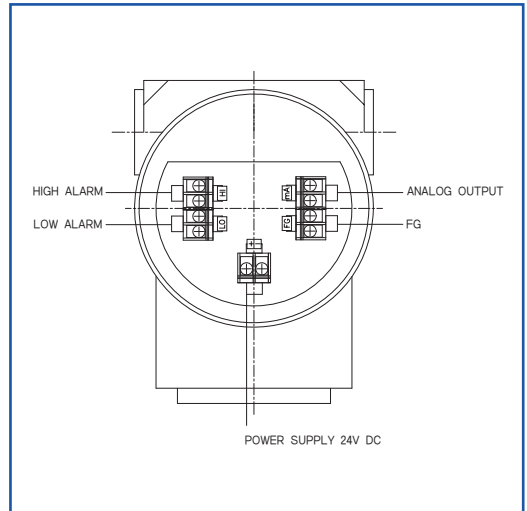
**P800 Front view**



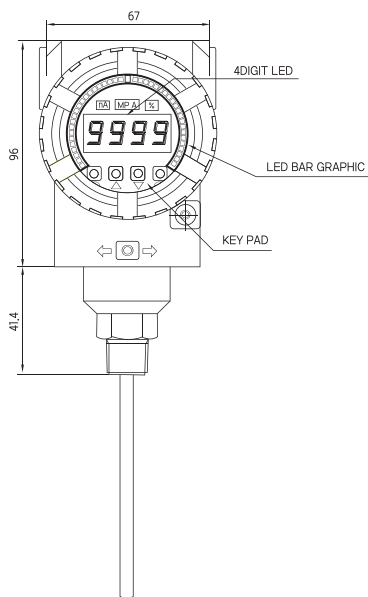
**P800 Side view**



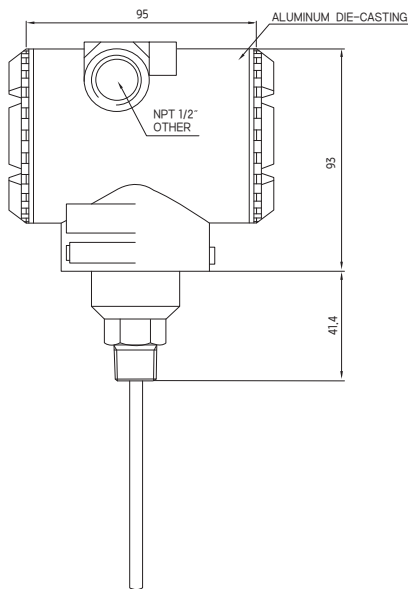
**P800 Terminal**



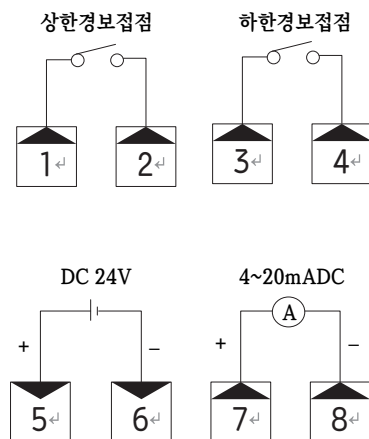
**P800S Front view**



**P800S Side view**



**P800S Terminal**



## Ordering Information

### Temperature Transmitter with Digital Switch

#### 1. Base model

T800S										General Head
T800										Explosion Proof Type Head

#### 2. Input signal

P										RTD (PT 100 Ω)
O										Other Input signal available on request

#### 3. Process connection

1										Male thread mounted
2										Flange mounted

#### 4. Process connection type

T										PT thread as standard
J										Flange per JIS
D										Flange per DIN
A										Flange per ANSI
X										Other process connections available on request

#### 5. Process connection size

1										1/2"
2										1"
3										2"
X										Specify the flange unit clearly

#### 6. Thermo-well

S										With protection thermo-well
N										Without protection thermo-well

#### 7. Measuring range

01										-50~0
02										-50~50
03										-20~80
04										-50~150
05										0~50
06										0~100
07										0~150
08										0~200
09										0~300
10										0~400
11										0~500
xx										Other calibration ranges available on request

#### 8. Unit

C										Calibration in Celsius scale (°C)
F										Calibration in Fahrenheit scale (°F)

#### 9. Output signal / Electrical connection type

S										2 switching points / only available local display
C										4~20mA Current output signal
D										2 switching points with analog output signal / only available local display
X										Other signal available on request

#### 10. Option

A										AC 220V, 4 wire system
D										DC 12~36V, 4 wire system
M										2 inch pipe mounting bracket
N										None

T800S	P	1	T	1	N	06	C	S	N	Sample ordering code
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Specifications subject to change without notice

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## Programmable Multi input temperature transmitter Model : T900 Series (Head mounting type)



### Advantages

- Two wire 4-20 mA current output signals  
Universal input signals
  - RTD temperature sensor
  - T/C elements
  - mV, V, mA, DC signals
- Programmable function setting
  - Input signal type
  - Measuring range
  - Burnout Low/High setting
  - mA output offset
- Excellent accuracy and a long term stability
- Low cost effective



T900



Hand held  
Program loader



USB  
Program loader

### Applications

Applications for requiring an amplification of various signals to carry to a long distance or guard against heavy field electrical noise. Loader of the user can select and use a wide variety of separate inputs. For a direct interface with indicators, recorders, controllers, PLC and DCS systems can be used for a wide range of applications in its process control, automatic machinery and hydraulic or pneumatic system design.

### Descriptions

T900 series temperature transmitters are designed to fit into a standard molded terminal heads used on RTD and thermocouple assemblies to provide a 4~20 mA transmission signals. It is a cost effective solution for all temperature measuring process. It is accurate, durable, and reliable. Numerous configurations for measurement in many deferent mediums are offered. Generally the transmitter produces a linear 4~20 mA output carried on a two-wire system. The transmitter is supplied factory calibrated, but also has zero and span potentiometers for a field adjustment.

## Specification

Input		
Temperature sensor type	See table "Sensor type, range and accuracy"	
Signal source	See table "Sensor type, range and accuracy"	
Output		
Current output	4~20 mA loop powered	
Electrical connection type	2-wire technique	
Full scale output signal	20mA $\pm$ 0.2%	
Zero measured output	4mA $\pm$ 0.03%	
Sensor burnout	High (20.5 mA DC) or Low (3.9 mA)	
Electrical specification		
Excitation voltage	18~30 V DC (Noise range : 20 mVp-p)	
Load resistance max	600 $\Omega$ with 24 V	
Influence of excitation	0.01% FSO/V	
Reverse polarity	Protected	
Shock resistance	No change in performance after 20Gs	
Vibration	0.1g max.	
Response time (10~90%)	$\pm$ 500 mSec.	
Adjustment range	Free	
Performance specification		
Accuracy	$\pm$ 0.2% FSO	
Non-linearity	Better than $\pm$ 0.10% FSO	
Repeatability	Better than $\pm$ 0.05% FSO	
Long term stability	Better than $\pm$ 0.05% FSO per month	
Cutoff frequency	$\pm$ 1kHz	
Ambient temperature limits	-10~70°C	
Ambient humidity limits	10 to 90% RH	
Physical specification		
Material	Case	ABS resin
	Cover	ABS resin
Dimension	45(W) x 22.7(H) mm	
Mounting	2 x M3 screw	
Weight	100 g max.	
Options	Multi type program loader	

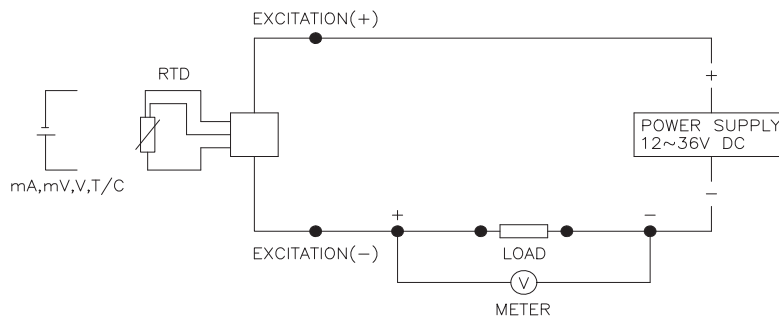
## Sensor type, range, accuracy

Resistance temperature detector (RTD)				
Input	Measuring range	Min. measured span	Calibration range	Analog output (mA) Error
Pt100	-200~850 °C	10°C	-200~850°C	0.2% of span
JPt100	-200~650°C	10°C	-200~650°C	

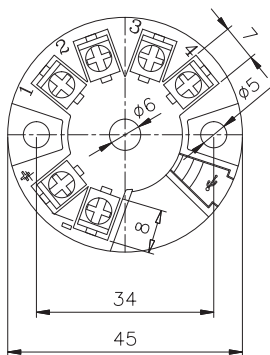
## Specification

Thermocouple elements (T/C)				
Input	Measuring range	Min. measured span	Calibration range	Analog output (mA) Error
Type B	100~1820°C	300°C	100~400°C	0.2% of span
		100°C	400~1820°C	
Type E	-200~1000°C	50°C	-200~1000°C	
Type J	-200~1200°C	50°C	-200~1200°C	
Type K	-200~1370°C	50°C	-200~1370°C	
Type N	-200~1300°C	50°C	-200~1300°C	
Type R	0~1760°C	100°C	0~1760°C	
Type S	0~1760°C	100°C	0~1760°C	
Type T	-200~400°C	40°C	-200~400°C	
mV, V, mA sensor				
Input	Measuring range	Min. measured span	Calibration range	Analog output (mA) Error
mV	0~999 mV	2 mV	0~999 mV	0.2% of span
V	0~10 V	1 V	0~10 V	
mA	0~30 mA	4 mA	0~30 mA	
	Input resistor : 250 Ω (External)			

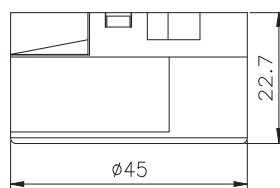
## System connection for 2-wire transmitter



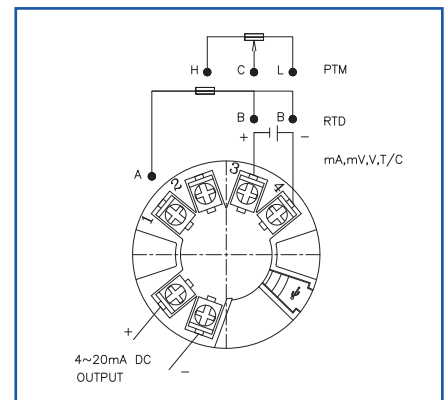
## Dimension (mm)



## Transmitter



## Electrical connection



## Ordering Information

### Programmable temperature transmitter

T900										Head mounting type multi input 2wire transmitter		
	N									Normal input (Standard)		
	O									Order input		
		PT								Input signal RTD	Pt 100 Ω	
		JP									JPt 100 Ω	
		TR								Thermo couple	R type	
		TK									K type	
		TE									E type	
		TJ									J type	
		TT									T type	
		TB									B type	
		TS									S type	
		TN									N type	
		mV									Signals	mV Input
		mA										mA Input
		DV								Voltage Input		
			01							Measuring range	-50~0	
			02								-50~50	
			03								-20~80	
			04								-50~150	
			05								0~100	
			06								0~200	
			07								0~300	
			08								0~400	
			09								0~500	
			10								0~600	
			11								0~700	
			12								0~800	
			13								0~900	
			14								0~1000	
			XX							Other calibration ranges available on request		
				C						Calibration in Celsius scale (°C)		
				F						Calibration in Fahrenheit scale (°F)		
					C					Output signal	DC 4~20 mA current	
					V						DC 1~5 V Voltage	
					N						Non-output	
					X						Other signal available on request	
						N				None option		
						L				Hand held program loader		
						U				USB type program loader		

T900	N	PT	01	C	C	N	0	0	0	N Sample ordering code
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## General Type Temperature Transmitter Model : T990 (Head mounting type)

**WISE  
SENSOR**

### Advantages

- Two wire 4-20 mA current output signals
- RTD input
- Measuring ranges -50~400°C
- Fixed Range (Factory set)
- Excellent accuracy and long term stability
- Low - cost



T990

### Applications

These are recommended in applications requiring amplification of RTD signals to carry to a long distance or guard against heavy field electrical noise.

The transmitter converts RTD inputs to an analog signal for direct interface with indicators, recorders, controllers, PLC, DCS systems can be used for a wide range of applications in process control, automatic machinery and hydraulic or pneumatic system design.

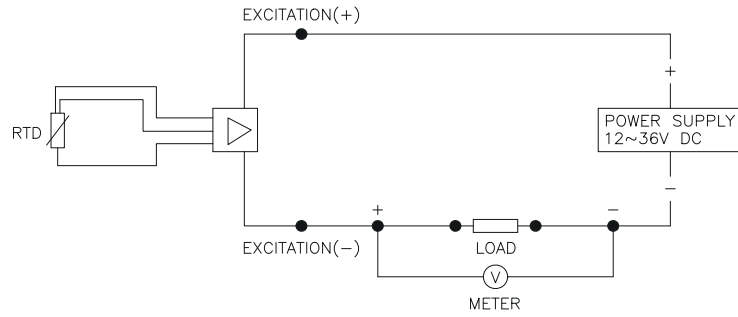
### Descriptions

T990 series temperature transmitters are designed to fit into standard molded terminal heads used on RTD assemblies to provide a 4~20 mA transmission signal. It is a cost effective solution for all temperature measurement and accurate, durable and reliable. Numerous configurations for measurement in many different mediums are offered. Generally the transmitter produces a linear 4~20 mA output carried on a two-wire system. The transmitter is supplied factory calibrated, but also has zero and span potentiometers for field adjustment or calibration.

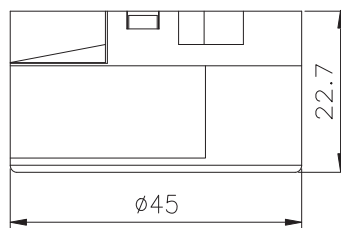
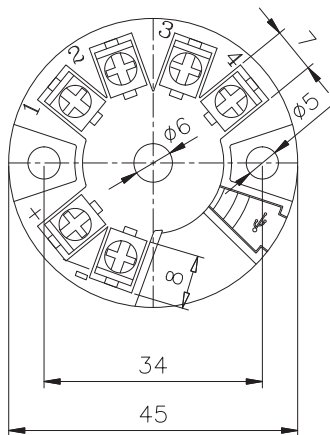
## Specification

Input		
Measuring range	Pt100 ohm, JIS-C-1604-1981	
Output		
	Current output	
Electrical connection type	2-wire technique	
Full scale output signal	20mA $\pm$ 0.2%	
Zero measured output	4mA $\pm$ 0.03%	
	Other output signals available on request	
Electrical Specification		
Excitation voltage	18~30 V DC	
Load resistance max @ 24V	500 $\Omega$ at 24V	
Influence of excitation	0.01% FSO / V	
Burnout	Upscale (approx. 23 mA DC) or downscale (approx. 4 mA DC)	
Reverse polarity	Protected	
Shock resistance	No change in performance after 10Gs for 11ms	
Vibration	5g (10~2000 Hz)	
Response time(10~90%)	$\leq$ 0.5 seconds	
Adjustment range	$\pm$ 15% FSO / zero and span	
Performance Specification		
Accuracy	$\leq \pm$ 0.2% FSO	
Non-linearity	Better than 0.10% FSO	
Repeatability	Better than 0.05% FSO	
Long term stability	Better Than 0.05% FSO per month	
Cutoff frequency(-3 d B)	$\pm$ 2 kHz	
Ambient temperature range	-20~70 °C	
Ambient humidity limits	5 to 100% R.H	
Physical Specification		
Material	Case	ABS resin
	Cover	ABS resin
Dimension	45(W) x 22.7(H) mm	
Mounting	2 x M3 screw	
Weight	100g max.	

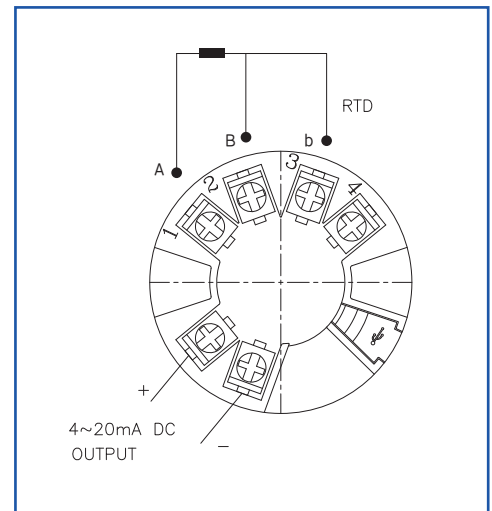
## System connection for 2-wire transmitter



## Dimension (mm)



## Electrical connection



## Ordering Information

### Head mounting type General temperature transmitter

#### 1. Base model

T990										General temperature transmitter
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#### 2. Input signal

JP										JIS standard (JPt 100 ohm)
PT										DIN standard (Pt 100 ohm)

#### 3. Measuring range

10										0~100°C
15										0~150°C
20										0~200°C
30										0~300°C
50										None standard range

T990	PT	10								Sample ordering code
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Specifications subject to change without notice