

SIG-221D
SIG-351D / SIG-352D
SIG-351T / SIG-352T

Process Precision Instruments
Vasai Road (E), Dist. Palghar - 401210,
Maharashtra, India

www.ppiindia.net

User Manual

SIG-221D



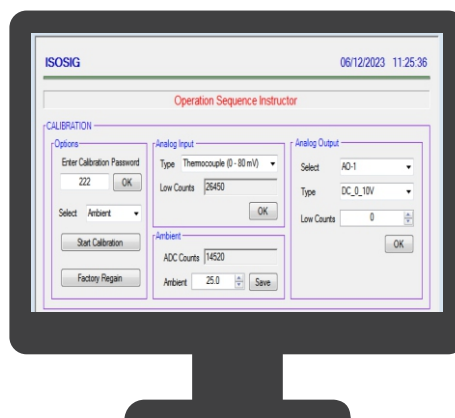
SIG-351D
SIG352D



SIG-351T
SIG352T



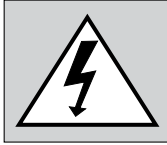
Configuration Tool



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Section 1 ELECTRICAL CONNECTIONS



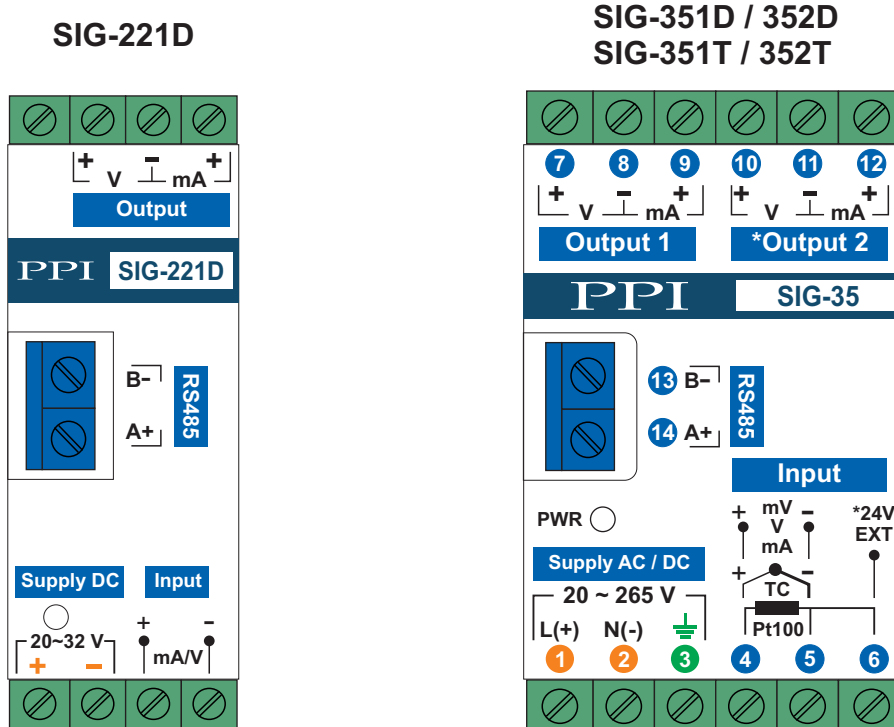
WARNING
MISHANDLING / NEGLIGENCE CAN RESULT
IN PERSONAL DEATH OR SERIOUS INJURY.

1. The user must rigidly observe the Local Electrical Regulations.
2. Do not make any connections to the unused terminals for making a tie-point for other wires (or for any other reasons) as they may have some internal connections. Failing to observe this may result in permanent damage to the indicator.
3. Run power supply cables separated from the low-level signal cables (like RTD, Thermocouples, DC Linear Current / Voltage etc.). If the cables are run through conduits, use separate conduits for power supply cable and low-level signal cables.
4. Use appropriate fuses and switches, wherever necessary, for driving the high voltage loads to protect the module from any possible damage due to high voltage surges of extended duration or short-circuits on loads.
5. Take care not to over-tighten the terminal screws while making connections.
6. Make sure that the module supply is switched-off while making/removing any connections.

CONNECTION DIAGRAM

The Figure 1.1 illustrates Electrical Connection Diagrams.

Figure 1.1

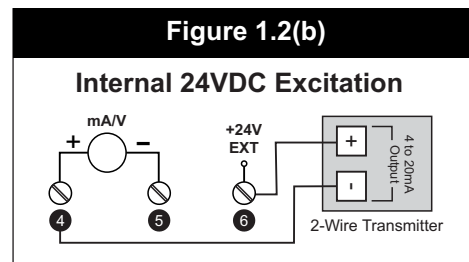
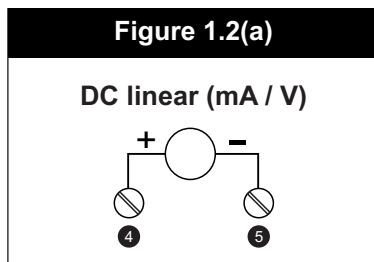


INPUT CONNECTIONS

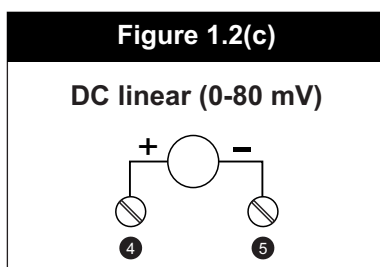
DC Linear Current / Voltage (mA / mV / V)

Use a shielded twisted pair with the shield grounded at the signal source for connecting mA / mV / V source. Connect common to terminal (-) and the signal to terminal (+), as shown in **Figures 1.2(a), 1.2(b), 1.2(c) & 1.2(d)**.

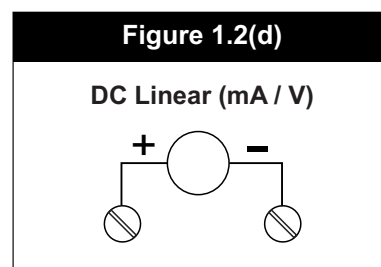
Models : 351D & 352D



Models : 351T & 352T



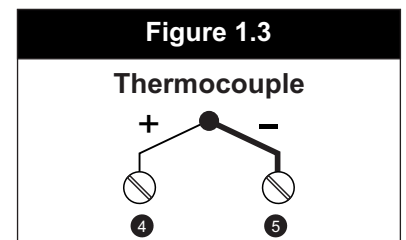
Model : 221D



Thermocouple

Connect Thermocouple Positive (+) to terminal 4 and Negative (-) to terminal 5 as shown in **Figure 1.3**. Use the correct type of Thermocouple extension lead wires or compensating cable for the entire distance ensuring the correct polarity throughout. Avoid joints in the cable.

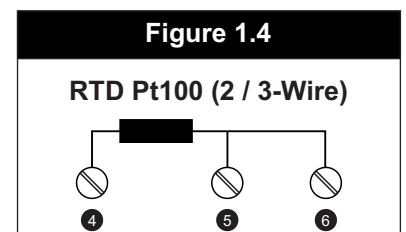
Models : 351T & 352T



RTD Pt100, 3-wire

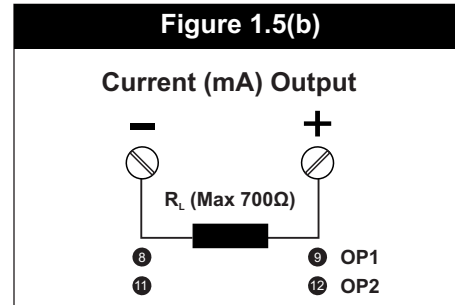
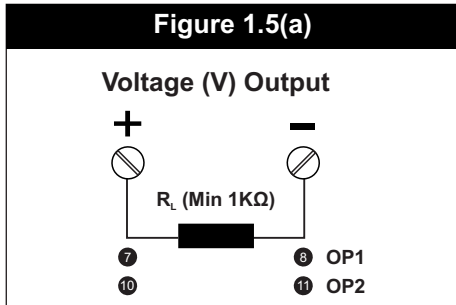
Connect single lead end of **RTD** bulb to terminal 4 and the double lead ends to terminals 5 and 6 (interchangeable) as shown in **Figure 1.4**. Use copper conductor leads of very low resistance ensuring that all 3 leads are of the same gauge and length. Avoid joints in the cable.

Models : 351T & 352T

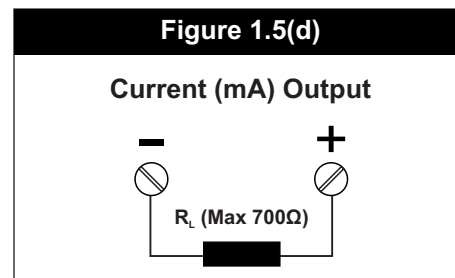
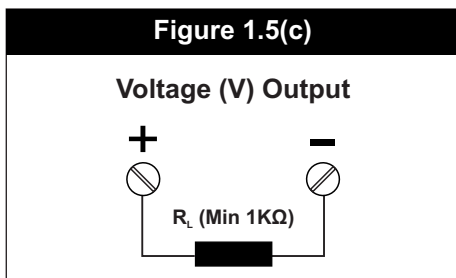


OUTPUT CONNECTIONS

Models : 351D & 352D
351T & 352T



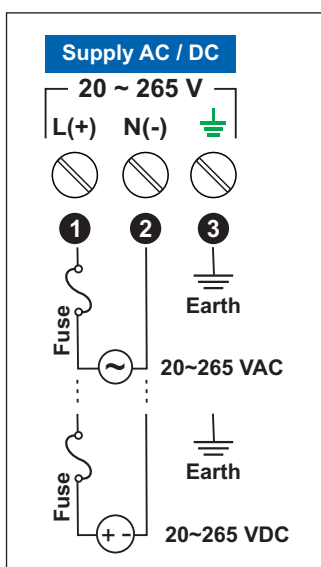
Model : 221D



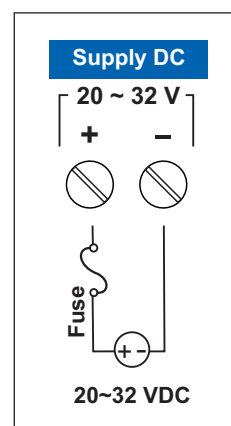
POWER SUPPLY

Figure 1.6

Models : 351D & 352D
351T & 352T



Model : 221D



Note :
The model SIG-221D operates on 20 to 32 VDC.

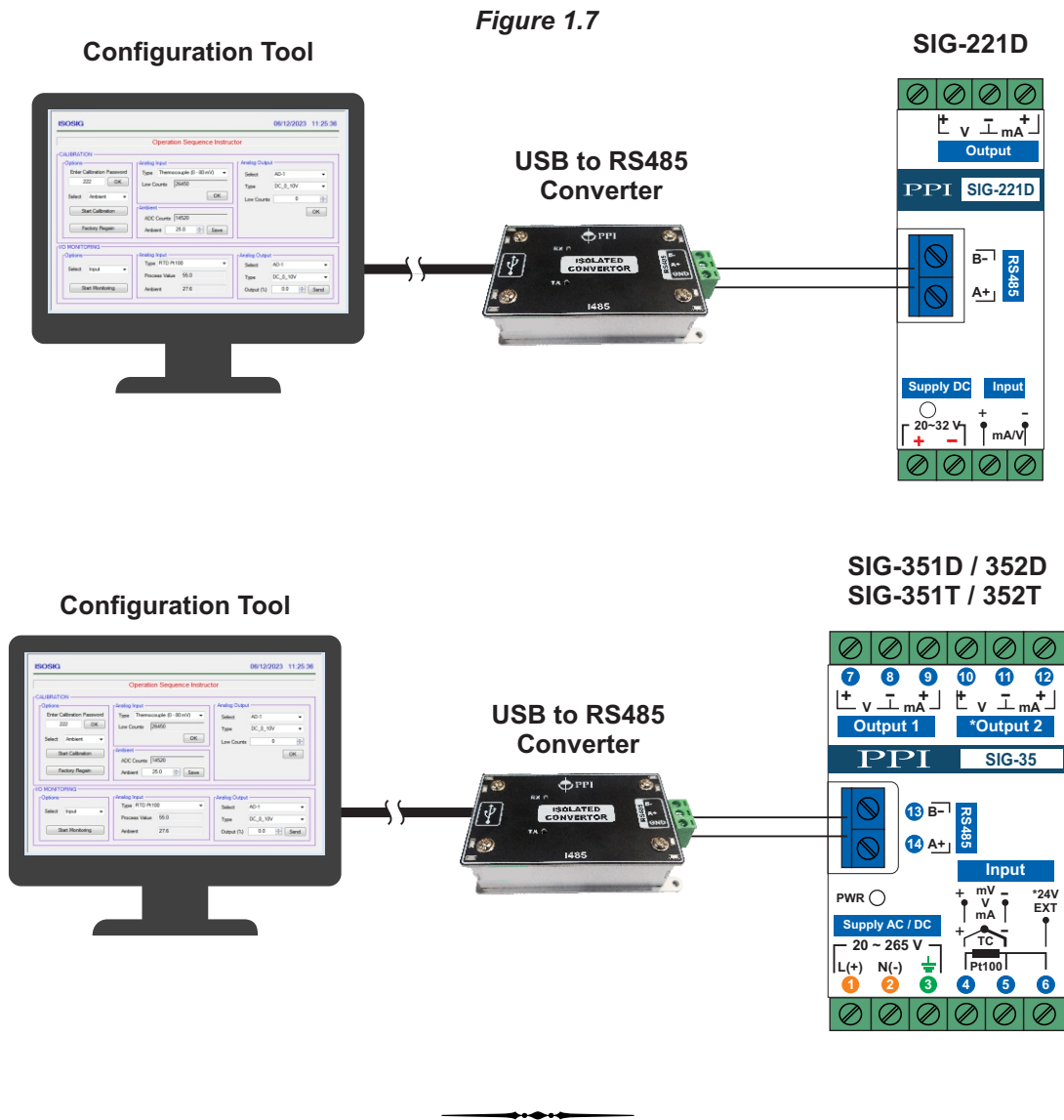
The models SIG-351D / 352D / 351T / 352T operates on both AC & DC Voltage; 20 to 265 V AC/DC.

The accuracy / performance of the Module is not affected by the variations in the supply within specified limits. Use well-insulated copper conductor wire of the size not smaller than 0.5mm² for power supply connections ensuring proper polarity as shown in Figure 1.6. The Module is not provided with fuse and power switch. If necessary, mount them separately. Use a slow blow fuse rated for 0.5A current.

For safety and enhanced electrical noise immunity, it is highly recommended to connect Main Power Supply 'Earth' to the terminal provided for earthing connection.

SERIAL COMMUNICATION PORT

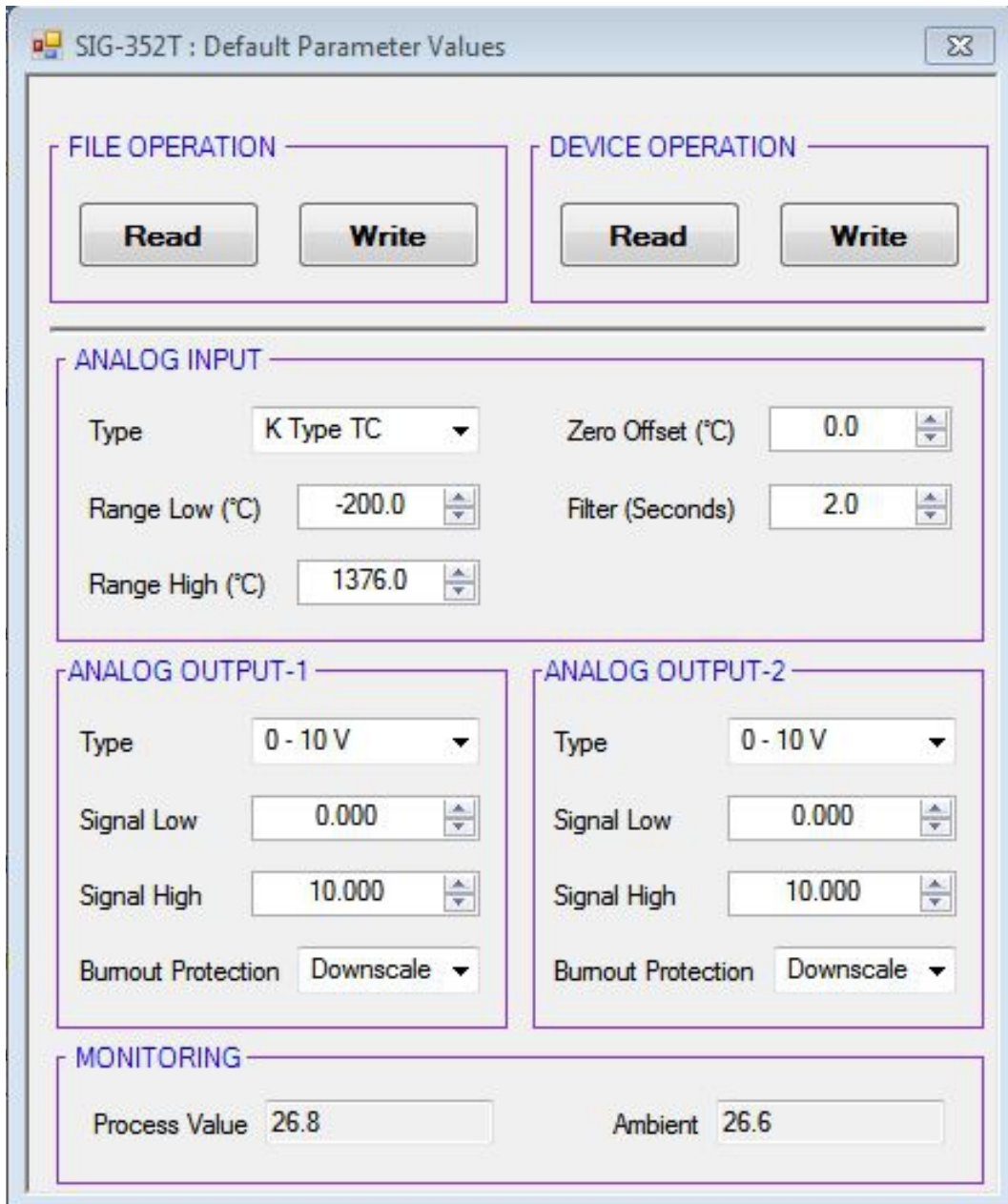
The wiring connections for connecting the module to the PC for Configuration / Calibration is shown in the figure 1.7.



Section 2 PARAMETERS

The Modules can be configured for a variety of Input and Output types depending on the models. A PC based Configuration & Calibration Software Tool is available for download (free of cost) from the website.

The table 2.1 below describes the various settable parameters with their respective ranges / options.



SIG-352T : Default Parameter Values

FILE OPERATION

Read Write

DEVICE OPERATION

Read Write

ANALOG INPUT

Type: K Type TC

Zero Offset (°C): 0.0

Range Low (°C): -200.0

Filter (Seconds): 2.0

Range High (°C): 1376.0

ANALOG OUTPUT-1

Type: 0 - 10 V

Signal Low: 0.000

Signal High: 10.000

Burnout Protection: Downscale

ANALOG OUTPUT-2

Type: 0 - 10 V

Signal Low: 0.000

Signal High: 10.000

Burnout Protection: Downscale

MONITORING

Process Value: 26.8

Ambient: 26.6

Table 2.1 : Input Registers (Read-Only Parameters)

ANALOG INPUT																																						
Parameter Description	Applicable Models	Settings																																				
<p>Type</p> <p>Select Input type in accordance with the type of Thermocouple or RTD sensor or transducer output connected to the module.</p>	<p>221D 351D 352D 351T 352T</p>	<p>Models : 221D, 351D & 352D</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0 - 20 mA</td> <td>0 to 20 mA</td> </tr> <tr> <td>4 - 20 mA</td> <td>4 to 20 mA</td> </tr> <tr> <td>0 - 1.25 V</td> <td>0 to 1.25 V</td> </tr> <tr> <td>0 - 5 V</td> <td>0 to 5 V</td> </tr> <tr> <td>0 - 10 V</td> <td>0 to 10 V</td> </tr> <tr> <td>1 - 5 V</td> <td>1 to 5 V</td> </tr> </tbody> </table> <p>Models : 351T & 352T</p> <table border="1"> <thead> <tr> <th>Option</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>J Type TC</td> <td>Type J Thermocouple</td> </tr> <tr> <td>K Type TC</td> <td>Type K Thermocouple</td> </tr> <tr> <td>T Type TC</td> <td>Type T Thermocouple</td> </tr> <tr> <td>R Type TC</td> <td>Type R Thermocouple</td> </tr> <tr> <td>S Type TC</td> <td>Type S Thermocouple</td> </tr> <tr> <td>B Type TC</td> <td>Type B Thermocouple</td> </tr> <tr> <td>N Type TC</td> <td>Type N Thermocouple</td> </tr> <tr> <td>E Type TC</td> <td>Type E Thermocouple</td> </tr> <tr> <td>RTD Pt100</td> <td>RTD Pt100, 3-wire</td> </tr> <tr> <td>0 - 80 mV</td> <td>0 to 80 mV</td> </tr> </tbody> </table>	Option	Description	0 - 20 mA	0 to 20 mA	4 - 20 mA	4 to 20 mA	0 - 1.25 V	0 to 1.25 V	0 - 5 V	0 to 5 V	0 - 10 V	0 to 10 V	1 - 5 V	1 to 5 V	Option	Description	J Type TC	Type J Thermocouple	K Type TC	Type K Thermocouple	T Type TC	Type T Thermocouple	R Type TC	Type R Thermocouple	S Type TC	Type S Thermocouple	B Type TC	Type B Thermocouple	N Type TC	Type N Thermocouple	E Type TC	Type E Thermocouple	RTD Pt100	RTD Pt100, 3-wire	0 - 80 mV	0 to 80 mV
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Parameter Description	Applicable Models	Settings																																				
<p>Range Low</p> <p>The Process Value / DC Input Signal corresponding to the Output Signal Low value.</p>	221D 351D 352D 351T 352T	<p align="center">Models : 221D, 351D & 352D</p> <table border="1"> <thead> <tr> <th>Selected Input Type</th> <th>Range Low to Range High Span</th> </tr> </thead> <tbody> <tr> <td>0 - 20 mA</td> <td>0.000 to 20.000 mA</td> </tr> <tr> <td>4 - 20 mA</td> <td>4.000 to 20.000 mA</td> </tr> <tr> <td>0 - 1.25 V</td> <td>0.000 to 1.250 V</td> </tr> <tr> <td>0 - 5 V</td> <td>0.000 to 5.000 V</td> </tr> <tr> <td>0 - 10 V</td> <td>0.000 to 10.000 V</td> </tr> <tr> <td>1 - 5 V</td> <td>1.000 to 5.000 V</td> </tr> </tbody> </table> <p align="center">Models : 351T & 352T</p> <table border="1"> <thead> <tr> <th>Selected Input Type</th> <th>Range Low to Range High Span</th> </tr> </thead> <tbody> <tr> <td>J Type TC</td> <td>0 to +960°C</td> </tr> <tr> <td>K Type TC</td> <td>-200 to +1376°C</td> </tr> <tr> <td>T Type TC</td> <td>-200 to +387°C</td> </tr> <tr> <td>R Type TC</td> <td>0 to +1771°C</td> </tr> <tr> <td>S Type TC</td> <td>0 to +1768°C</td> </tr> <tr> <td>B Type TC</td> <td>0 to +1826°C</td> </tr> <tr> <td>N Type TC</td> <td>0 to +1314°C</td> </tr> <tr> <td>E Type TC</td> <td>-200 to +1000°C</td> </tr> <tr> <td>RTD Pt100</td> <td>-199 to +850°C</td> </tr> <tr> <td>0 - 80 mV</td> <td>0.00 to +80.00 mV</td> </tr> </tbody> </table>	Selected Input Type	Range Low to Range High Span	0 - 20 mA	0.000 to 20.000 mA	4 - 20 mA	4.000 to 20.000 mA	0 - 1.25 V	0.000 to 1.250 V	0 - 5 V	0.000 to 5.000 V	0 - 10 V	0.000 to 10.000 V	1 - 5 V	1.000 to 5.000 V	Selected Input Type	Range Low to Range High Span	J Type TC	0 to +960°C	K Type TC	-200 to +1376°C	T Type TC	-200 to +387°C	R Type TC	0 to +1771°C	S Type TC	0 to +1768°C	B Type TC	0 to +1826°C	N Type TC	0 to +1314°C	E Type TC	-200 to +1000°C	RTD Pt100	-199 to +850°C	0 - 80 mV	0.00 to +80.00 mV
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<p>Range High</p> <p>The Process Value / DC Input Signal corresponding to the Output Signal High value.</p>																																						
<p>Zero Offset (°C)</p> <p>This value is algebraically added to the measured PV to derive the final PV.</p> <p>Final PV = Measured PV + Offset</p>	351T 352T	<p>Note : Not available if selected type is 0 to 80 mV.</p> <p align="center">-199.9 to 999.9 °C</p>																																				
<p>Filter (Seconds)</p> <p>Sets the time constant, in seconds, for the low-pass digital filter applied to the measured PV. The filter helps smoothing / averaging the signal input and removing the undesired noise. The higher the filter value the slower the PV response.</p>	221D 351D 352D 351T 352T	<p align="center">0.5 to 60.0 Seconds (in steps of 0.5 Seconds)</p>																																				

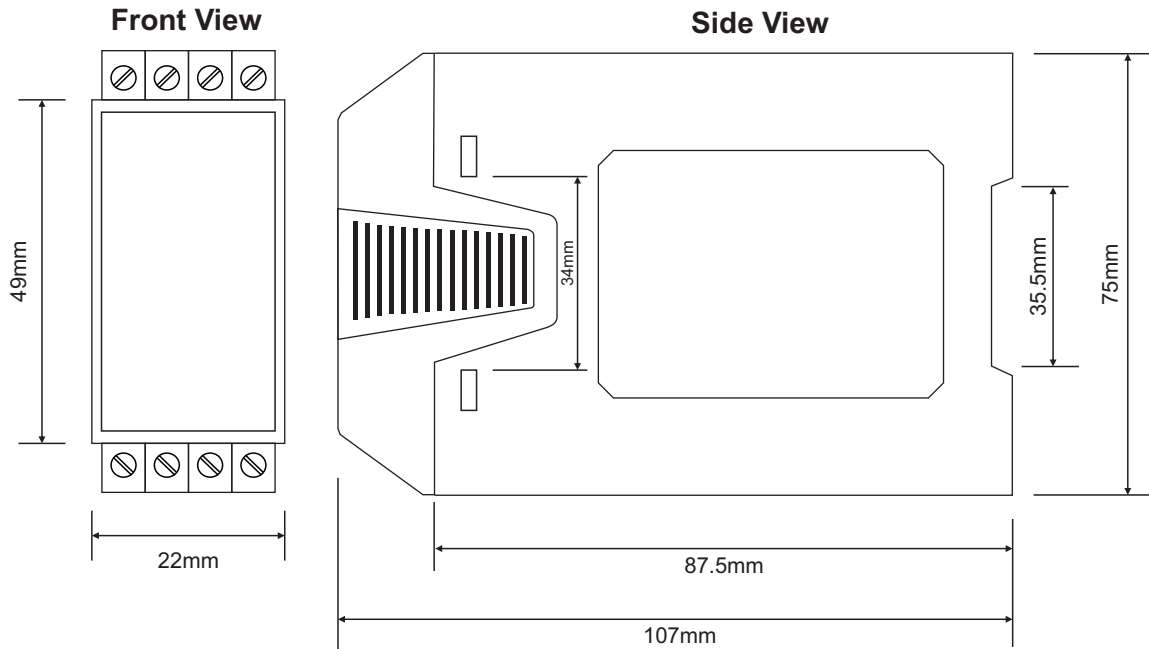
ANALOG OUTPUT-1 (Models : 221D, 351D, 352D, 351T & 352T)
ANALOG OUTPUT-2 (Models : 352D & 352T)

Parameter Description	Settings														
<p>Type</p> <p>Select the desired output signal type.</p>	<table border="1"> <thead> <tr> <th data-bbox="829 472 1015 517">Option</th> <th data-bbox="1015 472 1356 517">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="829 517 1015 555">0 - 10 V</td> <td data-bbox="1015 517 1356 555">0 to 10 V</td> </tr> <tr> <td data-bbox="829 555 1015 593">1 - 5 V</td> <td data-bbox="1015 555 1356 593">1 to 5 V</td> </tr> <tr> <td data-bbox="829 593 1015 631">0 - 5 V</td> <td data-bbox="1015 593 1356 631">0 to 5 V</td> </tr> <tr> <td data-bbox="829 631 1015 669">0 - 20 mA</td> <td data-bbox="1015 631 1356 669">0 to 20 mA</td> </tr> <tr> <td data-bbox="829 669 1015 707">4 - 20 mA</td> <td data-bbox="1015 669 1356 707">4 to 20 mA</td> </tr> <tr> <td data-bbox="829 707 1015 745">0 - 10 mA</td> <td data-bbox="1015 707 1356 745">0 to 10 mA</td> </tr> </tbody> </table>	Option	Description	0 - 10 V	0 to 10 V	1 - 5 V	1 to 5 V	0 - 5 V	0 to 5 V	0 - 20 mA	0 to 20 mA	4 - 20 mA	4 to 20 mA	0 - 10 mA	0 to 10 mA
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4 - 20 mA	4 to 20 mA														
0 - 10 mA	0 to 10 mA														
<p>Signal Low</p> <p>The Output Signal Value corresponding to the set Range Low Process Value / DC Input Signal.</p>	<table border="1"> <thead> <tr> <th data-bbox="829 801 1015 869">Selected Output Type</th> <th data-bbox="1015 801 1356 869">Signal Low to Signal High Span</th> </tr> </thead> <tbody> <tr> <td data-bbox="829 869 1015 907">0 - 10 V</td> <td data-bbox="1015 869 1356 907">0.000 to 10.000 V</td> </tr> <tr> <td data-bbox="829 907 1015 945">1 - 5 V</td> <td data-bbox="1015 907 1356 945">1.000 to 5.000 V</td> </tr> <tr> <td data-bbox="829 945 1015 983">0 - 5 V</td> <td data-bbox="1015 945 1356 983">0.000 to 5.000 V</td> </tr> <tr> <td data-bbox="829 983 1015 1021">0 - 20 mA</td> <td data-bbox="1015 983 1356 1021">0.000 to 20.000 mA</td> </tr> <tr> <td data-bbox="829 1021 1015 1059">4 - 20 mA</td> <td data-bbox="1015 1021 1356 1059">4.000 to 20.000 mA</td> </tr> <tr> <td data-bbox="829 1059 1015 1097">0 - 10 mA</td> <td data-bbox="1015 1059 1356 1097">0.000 to 10.000 mA</td> </tr> </tbody> </table>	Selected Output Type	Signal Low to Signal High Span	0 - 10 V	0.000 to 10.000 V	1 - 5 V	1.000 to 5.000 V	0 - 5 V	0.000 to 5.000 V	0 - 20 mA	0.000 to 20.000 mA	4 - 20 mA	4.000 to 20.000 mA	0 - 10 mA	0.000 to 10.000 mA
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0 - 20 mA	0.000 to 20.000 mA														
4 - 20 mA	4.000 to 20.000 mA														
0 - 10 mA	0.000 to 10.000 mA														
<p>Signal High</p> <p>The Output Signal Value corresponding to the set Range High Process Value / DC Input Signal.</p>															
<p>Burnout Protection</p> <p>This parameter determines the “Output Signal Value” in case of Process Value error or the Input signal exceeding the min / max range.</p> <p>If set to “Upscale” the output signal corresponds to the set “Signal High” Value.</p> <p>If set to “Downscale” the output signal corresponds to the set “Signal Low” Value.</p>	<p>Upscale Downscale</p>														



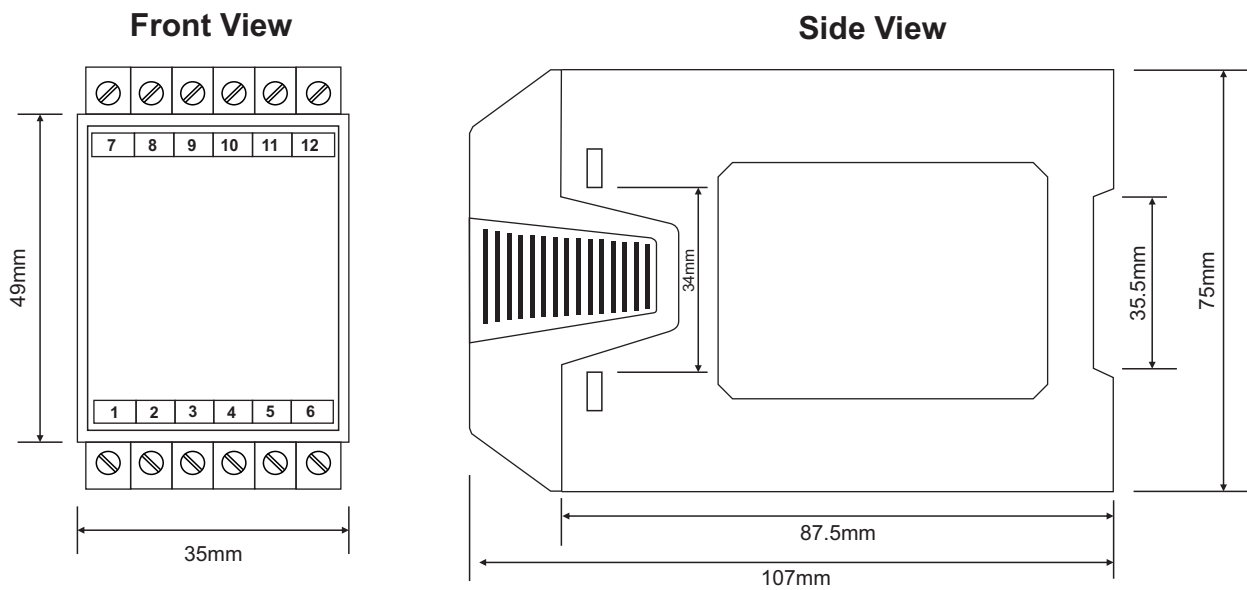
Section 3
MECHANICAL DIMENSIONS

SIG-221D



Overall Dimensions : 22(W) X 75(H) X 107(D), mm





SIG-351D / 352D SIG-351T / 352T



Overall Dimensions : 35(W) X 75(H) X 107(D), mm



Process Precision Instruments (An ISO 9001 : 2008 Company)

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