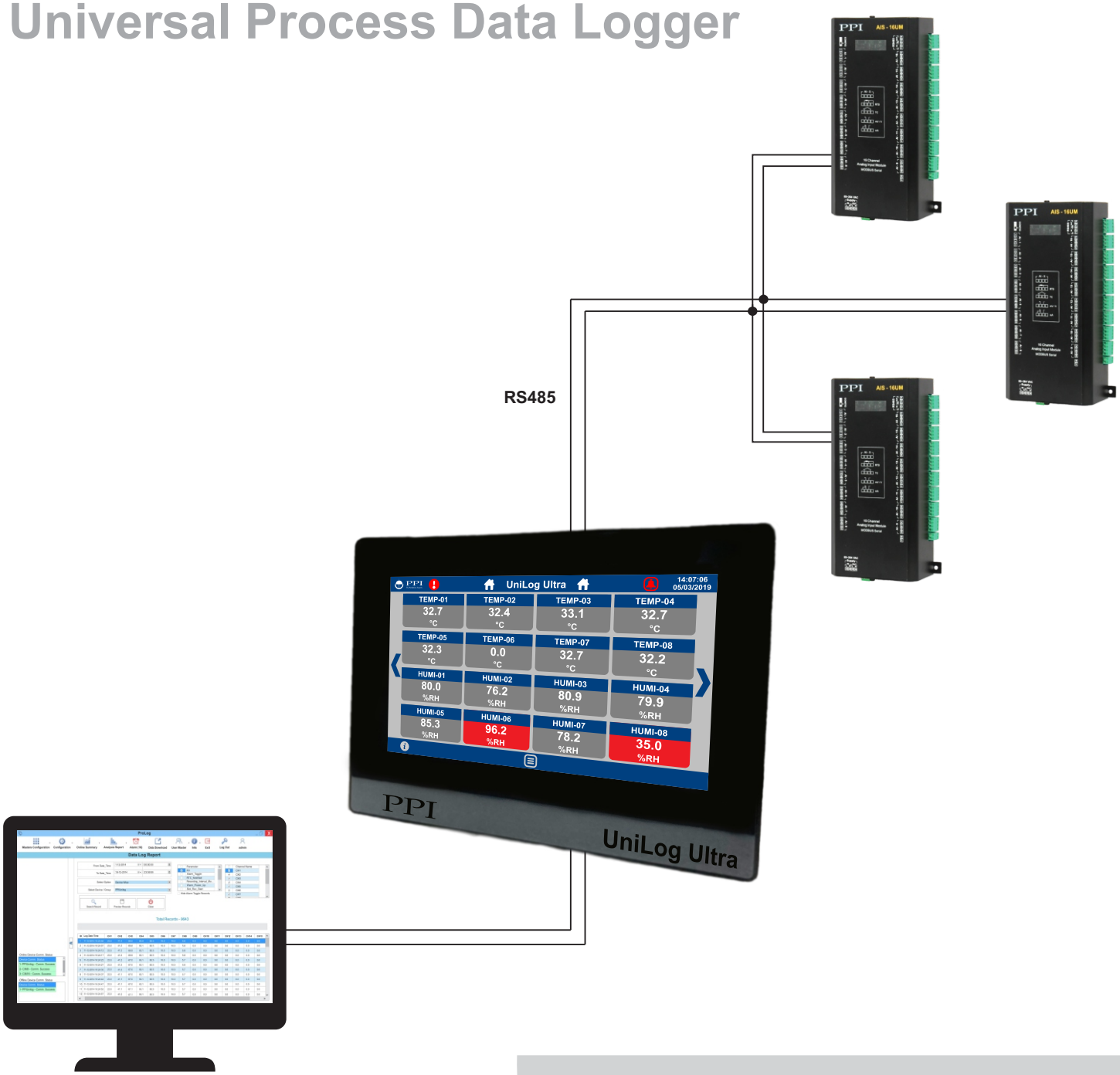
UniLog Ultra

8 to 48 Channel Touch Panel
Universal Process Data Logger



User Manual

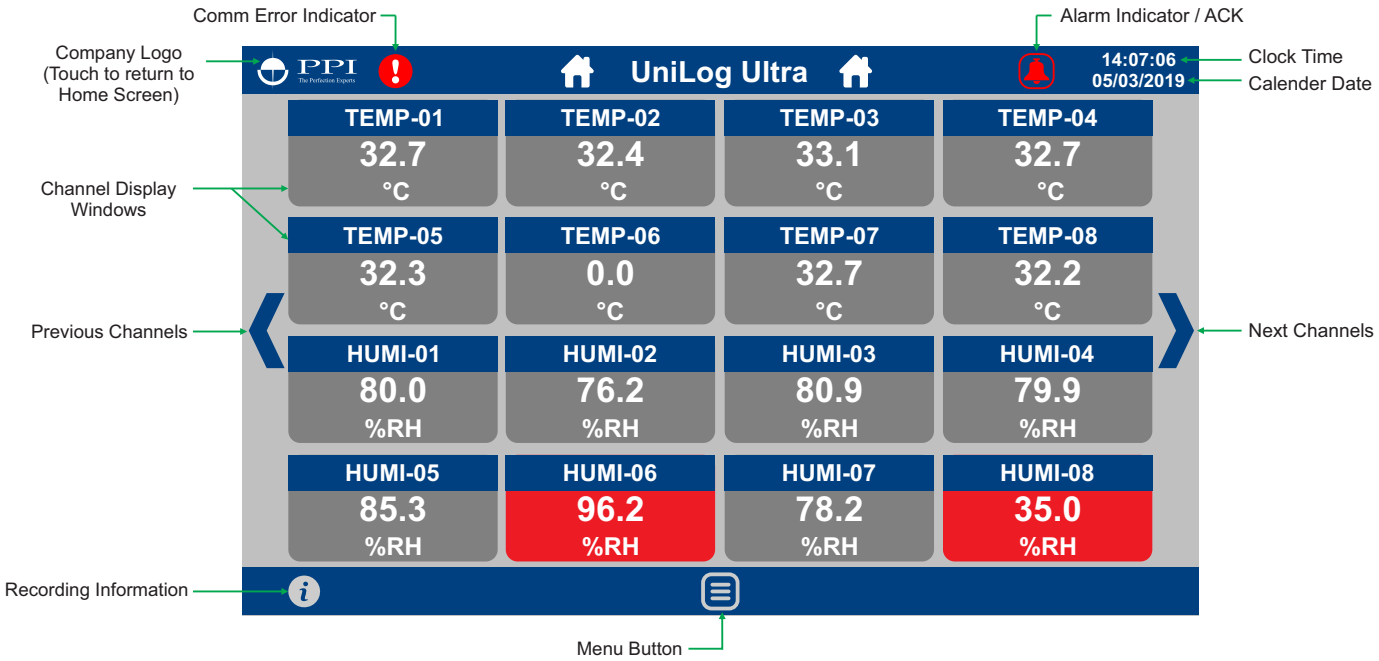
CONTENTS

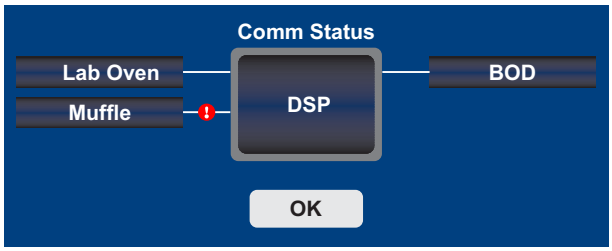
Section 1

BASIC OPERATION & PARAMETER ORGANIZATION

Upon Power up to the HMI, after a few initialization screens, the Home screen is displayed. This is the screen that shall be used most often and is described below in details.

Home Screen

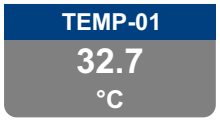


PPI	Short-cut button to return to Home Screen from any screen.
!	This symbol appears if the communication link fails between HMI and any one or more devices (Analog Channel Modules). The corresponding *channel display windows* also show the symbol. Touching this symbol pops-up the following information window showing the devices under communication error.  In the example above, the device named *Muffle* is under comm error condition as indicated by ! symbol. **Note that if any of the devices is in communication error, the values indicated in all Channel Display Windows could be erratic.**

This symbol appears if one or more channels of any devices is under Alarm condition. The corresponding *channel display windows* also flash with Red background.

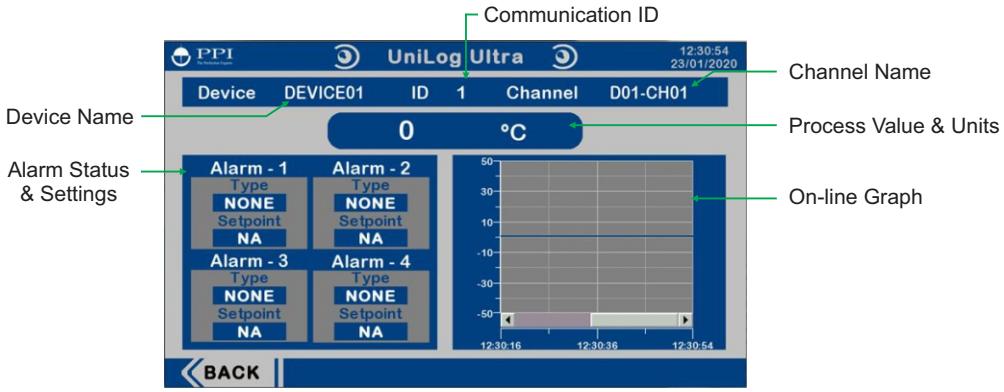
Touching this symbol acts as an acknowledgment. Upon Acknowledging, the symbol disappears and alarm channel windows also stop flashing.

The upper line shows clock time in HH:MM:SS (24 hours) format. The lower line shows calender date in DD/MM/YYYY format.

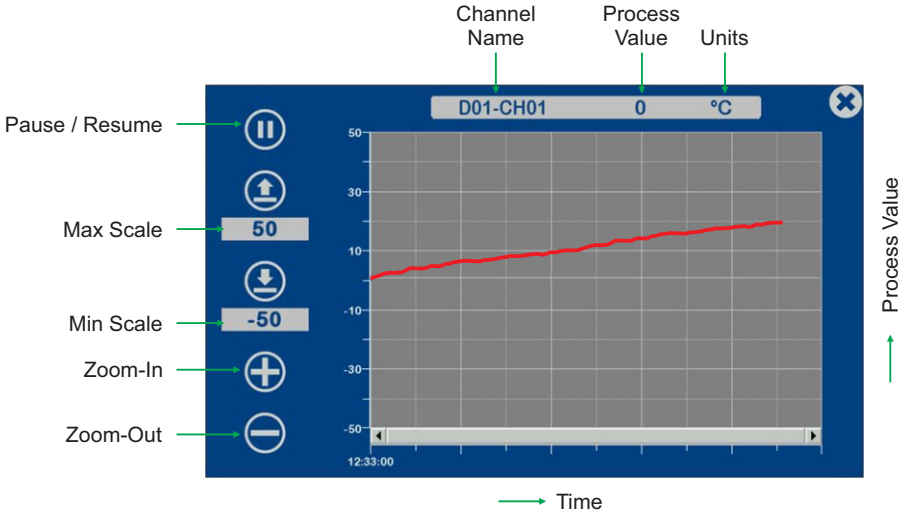


The *Channel Display Window* shows the Channel Name, the Process Value & the Units on top, middle & bottom line, respectively.

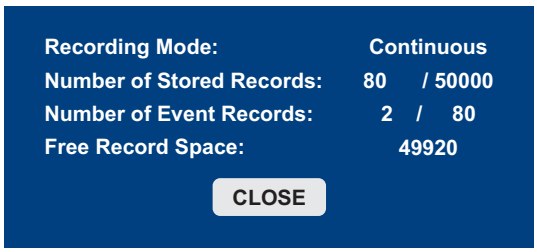
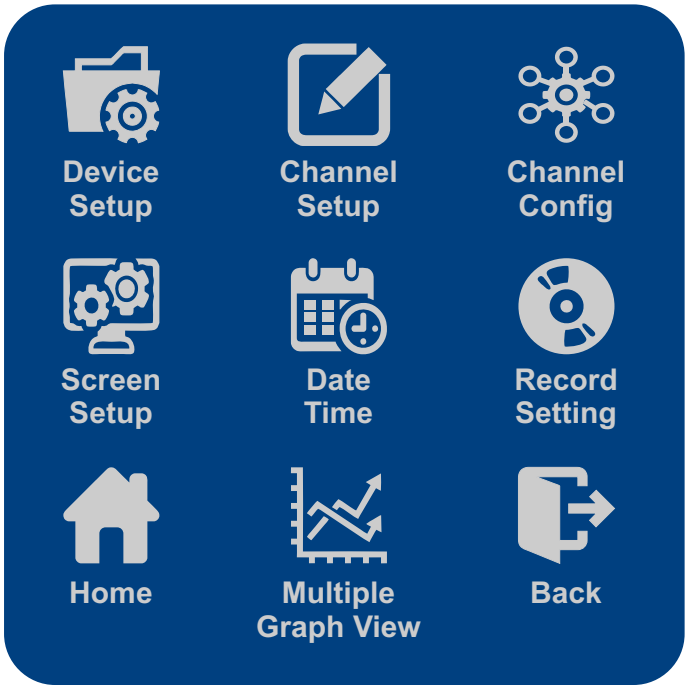
Touching the *Channel Display Window* shows the detailed Channel information :



Touching the online graph shows the enlarged graph view with scale settings & zoom in / out.

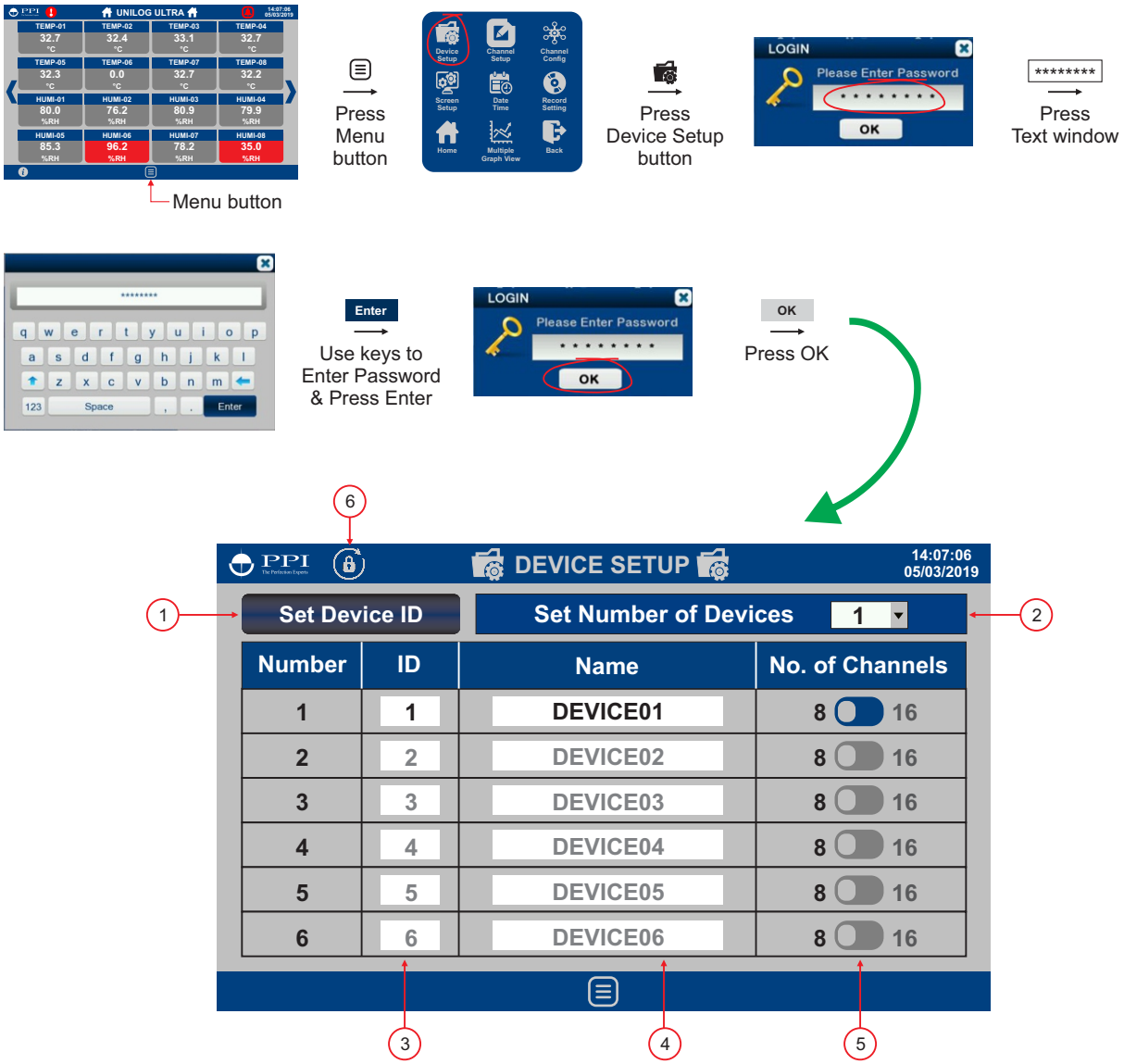


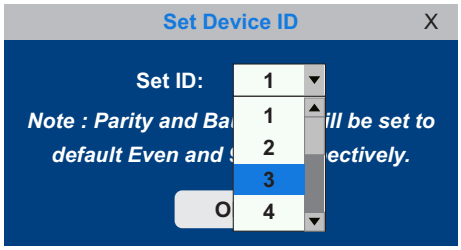
This symbol appears if there are previous *Channel Display Windows* available for view. Touch to go to previous screen.

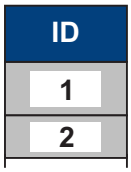
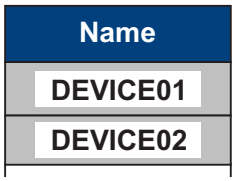
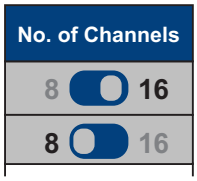
	This symbol appears if there are next *Channel Display Windows* available for view. Touch to go to next screen.
	Touch this button to view information related to recording. Upon touching the following screen pops-up. 
	This is the **Menu** button. Touch this to access different screens for viewing graphs & setting up device / channel configuration / operation parameters. Upon touching up the **Menu** button the following screen pops-up with buttons to access different screens.  The screens accessible through each of the 9 buttons, except **Home** & **Back** buttons, are described in next few sections. The **Home** button returns directly to the Home screen while the **Back** button returns to the current screen where the Menu button is pressed.

Section 2

DEVICE SETUP

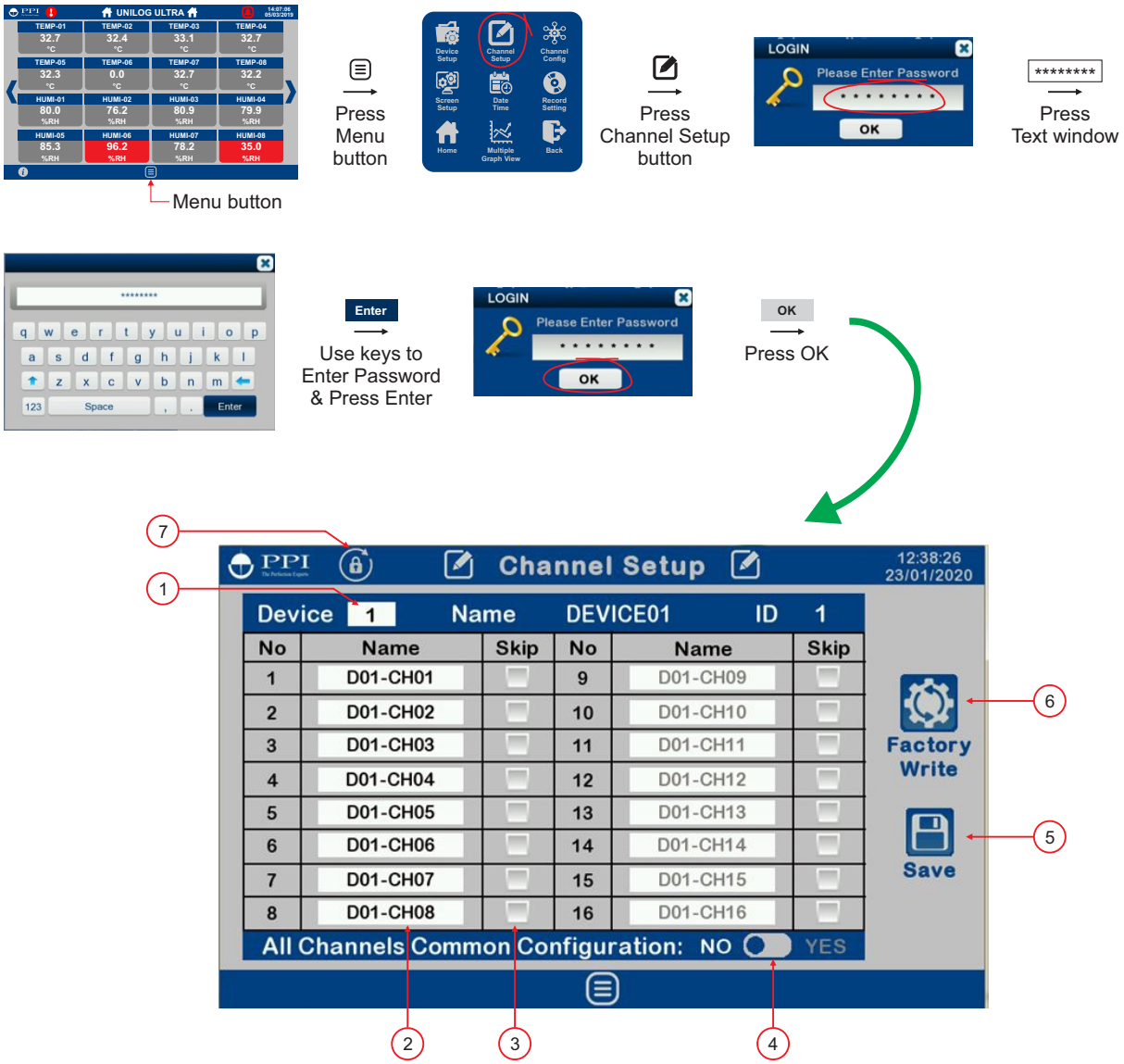


1 **Set Device ID**	This button can be used for setting the *Slave ID* for each device. The devices must be connected 1 at a time & must be put in configuration mode using the slide switch provided on the devices (Refer User Manual for model AIS-8UM / AIS-16UM). Upon pressing button the following screen pops-up. Set the Slave ID (1 to 15) for the connected device using Drop-down list. Each device must be assigned a unique *Slave ID*. The *Parity* & *Baud Rate* are automatically set to 'Even' & '9600', respectively. 

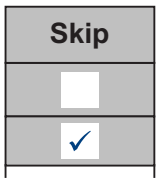
2 	Set number of devices (8 Channel AIS-8UM / 16Channel AIS-16UM) to be connected. The total number of channels must not exceed 48 thus a maximum of 6 devices (each 8 channel) can be connected. Use drop down list to set the number of devices.
3 	Mention device-wise *Slave ID* assigned. The Slave ID assigned need not necessarily be in the same order as the device numbers. That is, for example, device number 1 may have been assigned Slave ID 6. Use Numeric Keypad for entering the Slave ID.
4 	Name each device (Maximum 8 characters) for easy identification. The default device names assigned are DEVICE01, DEVICE02,..... Use Alpha-Numeric (QWERTY) keypad to enter names.
5 	Set device-wise number of channels; 8 for AIS-8UM & 16 for AIS-16UM. Use touch to toggle number of channels.
6 	Change Passwords. Refer Section 9.

Section 3

CHANNEL SETUP

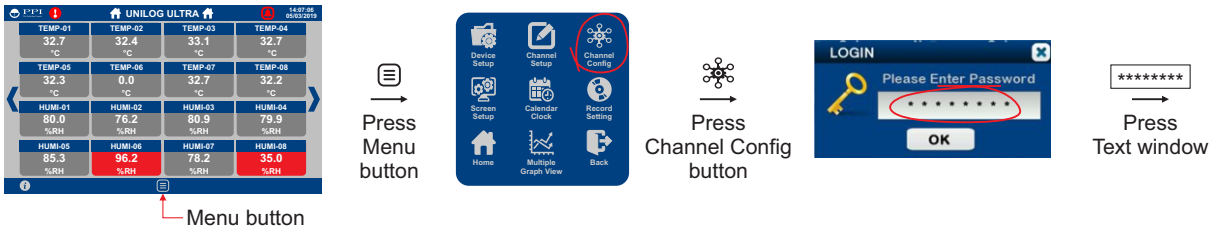


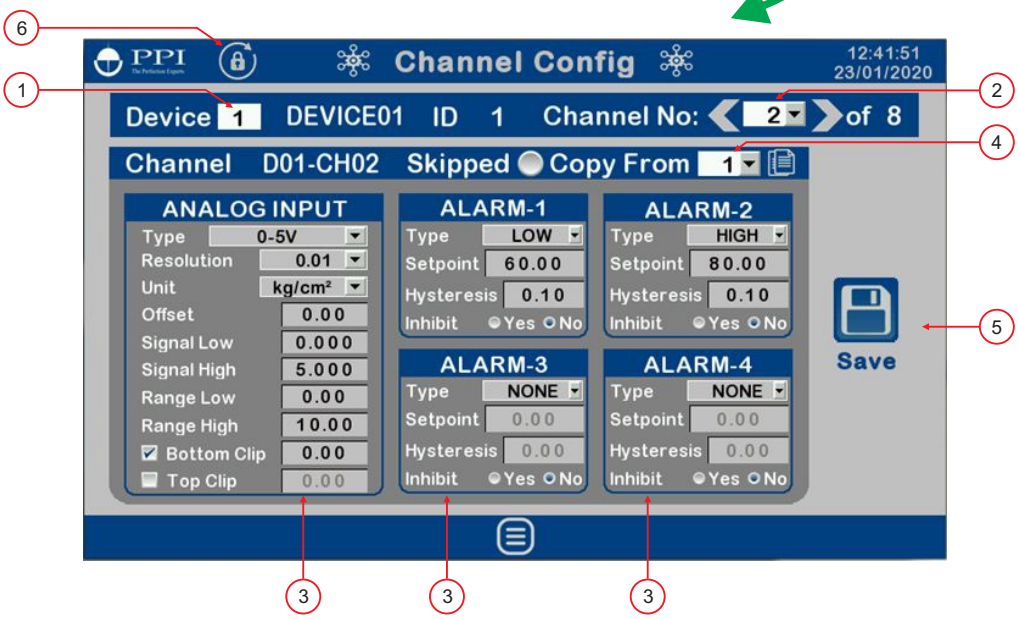
1 Device 1	Select the device (by number) for which channel setup is desired. Use numeric keypad to select the device number.
2 Name D01-CH01 D02-CH02	Name each channel (Maximum 8 characters), of the selected device, for easy identification. The default channel names are assigned using device number & the channel number. For example, Channel 1 of Device 1 is assigned default name D01-CH01. Use Alpha-Numeric (QWERTY) keypad to enter names.

3 	Skip unused channels of the selected device. Use touch to toggle the *Skip* status; the Skipped status is indicated by ✓ mark.
4 	 Set this parameter to 'Yes' if all 8 / 16 Channels of the selected device have identical configuration parameter settings. The Parameter Values set for Channel 1 in CHANNEL CONFIG menu are then applied to all 8 / 16 channels. Touch the button to toggle between 'No' & 'Yes'.
5 	Touch this button to save all the edited values in non-volatile memory.
6 	Touching this button sets all the channel configuration parameters (available in CHANNEL CONFIG menu) to their default values. Since this is an irreversible action, a reconfirmation screen pops-up upon touching this button. Press 'YES' if you are sure to regain default values for all the channel configuration parameters for the selected device.
7 	Change Passwords. Refer Section 9.

Section 4

CHANNEL CONFIG





1 Device 1	Select the device (by number) for which channel configuration is desired. Use numeric keypad to select the device number.
2 Channel No: ❮ 1 ❯ of 8	Select the channel number of the selected device for which configuration parameters are to be set. Use drop down list or ❮ , ❯ arrows for selecting the channels.
3	For detailed parameter definition and settings, refer Table 4.1 : Analog Input & Table 4.2 : Alarm Settings. Use drop down list or numeric keypad, as applicable, for setting the parameter values.
4 Copy From 1	If the selected channel has its parameter values identical (or almost similar) to those of an already configured channel then use 'Copy From' feature to set the values. Set the channel number from which to copy & press this button.

5  Save	Touch this button to save the edited values for the selected channel of the selected device in non-volatile memory. **This button operation is required independently for every channel that is edited.**
6 	Change Passwords. Refer Section 9.

Table 4.1 : Analog Input

Parameter Description	Settings (Default Value)
The parameters described below are identical for all devices / channels. The values set are applied to the selected channel of the selected device. **Ensure that Save button is pressed after setting the values for each selected channel before switching to next / previous channel or switching to other screen, else the edited values will be lost.**	
Type Set the type of Thermocouple / RTD / DC Linear signal input type connected to the selected channel.	Refer Table 4.3 (Default : 0 to 10 V)
Resolution Set the process value indication resolution (decimal point). All the resolution based parameters (Range Low, Range High, Alarm Setpoint, etc.) then follow this resolution setting.	Refer Table 4.3
Unit Select the Units that shall be displayed along with the measured PV on the display. For temperature input (Thermocouple & RTD), only °C and °F units are available and represent actual converted values. All other units available for DC Linear signal input are for indication purpose only and should be selected as per the units specified by the transmitter.	Refer Table 4.4 (Default : °C)
Offset In many application, the measured **PV** at the input requires a constant value to be added or subtracted to obtain a final process value for removing sensor zero error or to compensate known thermal gradient. This parameter is used to remove such errors. Actual (Displayed) PV = Measured PV + Offset for PV.	-30000 to +30000 (Default : 0)
Signal Low **(Applicable only for DC Linear Inputs)** The transmitter output signal value corresponding to RANGE LOW process value. Refer *Appendix-A : DC Linear Signal Interface* for details.	

Input Type	Settings	Default
0 to 20 mA	0.00 to Signal High	0.00
4 to 20 mA	4.00 to Signal High	4.00
0 to 80 mV	0.00 to Signal High	0.00
0 to 1.25 V	0.000 to Signal High	0.000
0 to 5 V	0.000 to Signal High	0.000
0 to 10 V	0.00 to Signal High	0.00
1 to 5 V	1.000 to Signal High	1.000

<table>
<tr><th>Parameter Description</th><th>Settings
(Default Value)</th></tr>
<tr><td>Signal High
(Applicable only for DC Linear Inputs)
The transmitter output signal value corresponding to RANGE HIGH process value.
Refer Appendix-A : DC Linear Signal Interface for details.</td><td>
<table>
<tr><th>Input Type</th><th>Settings</th><th>Default</th></tr>
<tr><td>0 to 20 mA</td><td>Signal Low to 20.00</td><td>20.00</td></tr>
<tr><td>4 to 20 mA</td><td>Signal Low to 20.00</td><td>20.00</td></tr>
<tr><td>0 to 80 mV</td><td>Signal Low to 80.00</td><td>80.00</td></tr>
<tr><td>0 to 1.25 V</td><td>Signal Low to 1.250</td><td>1.250</td></tr>
<tr><td>0 to 5 V</td><td>Signal Low to 5.000</td><td>5.000</td></tr>
<tr><td>0 to 10 V</td><td>Signal Low to 10.00</td><td>10.00</td></tr>
<tr><td>1 to 5 V</td><td>Signal Low to 5.000</td><td>5.000</td></tr>
</table>
</td></tr>
<tr><td>Range Low
(Applicable only for DC Linear Inputs)
The Process Value corresponding to the SIGNAL LOW value from the transmitter.
Refer Appendix-A : DC Linear Signal Interface for details.</td><td>-30000 to +30000
(Default : 0)</td></tr>
<tr><td>Range High
(Applicable only for DC Linear Inputs)
The Process Value corresponding to the SIGNAL HIGH value from the transmitter.
Refer Appendix-A : DC Linear Signal Interface for details.</td><td>-30000 to +30000
(Default : 1000)</td></tr>
<tr><td>Bottom Clip (Enable / Disable)
(Applicable only for DC Linear Inputs)
Refer Appendix-B.</td><td>☐ Disable
☑ Enable
(Default : Disable)</td></tr>
<tr><td>Bottom Clip (Value)
(Applicable only for DC Linear Inputs)
Refer Appendix-B.</td><td>-30000 to Top Clip Value
(Default : 0)</td></tr>
<tr><td>Top Clip (Enable / Disable)
(Applicable only for DC Linear Inputs)
Refer Appendix-B.</td><td>☐ Disable
☑ Enable
(Default : Disable)</td></tr>
<tr><td>Top Clip (Value)
(Applicable only for DC Linear Inputs)
Refer Appendix-B.</td><td>Bottom Clip Value to 30000
(Default : 1000)</td></tr>
</table>

Table 4.2 : Alarm Settings

Parameter Description	Settings (Default Value)
The parameters described below are identical for all 4 Alarms of the selected channel. **Ensure that Save button is pressed after setting the values for each selected channel before switching to next / previous channel or switching to other screen, else the edited values will be lost.**	
Type **NONE :** Disable Alarm. **LOW :** Process Low Alarm. The Alarm activates when the PV equals or falls below the 'Alarm Setpoint' value. **HIGH :** Process High Alarm. The Alarm activates when the PV equals or exceeds the 'Alarm Setpoint' value.	NONE LOW HIGH (Default : NONE)
Setpoint Setpoint Value for 'LOW' or 'HIGH' Alarm.	Min. to Max. of selected input type range (Default : 0)
Hysteresis This Parameter Value sets a differential (dead) band between the ON and OFF Alarm states.	1 to 30000 (Default : 20)
Inhibit **No :** The Alarm is not suppressed during the start-up Alarm conditions. **Yes :** The Alarm activation is suppressed until the PV is within Alarm limits from the time the Recorder is switched ON.	No Yes (Default : No)

Table 4.3

<table>
<tr><th>Option</th><th>Range (Min. to Max.)</th><th>Resolution &Unit</th></tr>
<tr><td>Type J</td><td>0.0 to +960.0°C / +32.0 to +1760.0°F</td><td rowspan="9">1 °C / °F
or
0.1 °C /°F</td></tr>
<tr><td>Type K</td><td>-200.0 to +1376.0°C / -328.0 to +2508.0°F</td></tr>
<tr><td>Type T</td><td>-200.0 to +387.0°C / -328.0 to +728.0°F</td></tr>
<tr><td>Type R</td><td>0.0 to +1771.0°C / +32.0 to +3219.0°F</td></tr>
<tr><td>Type S</td><td>0.0 to +1768.0°C / +32.0 to +3214.0°F</td></tr>
<tr><td>Type B</td><td>0.0 to +1826.0°C / +32.0 to +3218.0°F</td></tr>
<tr><td>Type N</td><td>0.0 to +1314.0°C / +32.0 to +2397.0°F</td></tr>
<tr><td colspan="2">Reserved for customer specific Thermocouple type not listed above. The type shall be specified in accordance with the ordered (optional on request) Thermocouple type.</td></tr>
<tr><td>RTD Pt100</td><td>-199 to +600 °C -328 to +1112 °F
or
-199.9 to +600.0 °C / -328.0 to +1112.0 °F</td><td>1°C
or
0.1 °C</td></tr>
<tr><td>0 to 20 mA</td><td rowspan="3">-30000 to 30000 units</td><td rowspan="6">1 Unit
0.1 Unit
0.01 Unit
0.001 Unit</td></tr>
<tr><td>4 to 20 mA</td></tr>
<tr><td>0 to 80 mV</td></tr>
<tr><td colspan="2">Reserved</td></tr>
<tr><td>0 to 1.25 V</td><td rowspan="4">-30000 to 30000 units</td></tr>
<tr><td>0 to 5 V</td></tr>
<tr><td>0 to 10 V</td></tr>
<tr><td>1 to 5 V</td></tr>
</table>

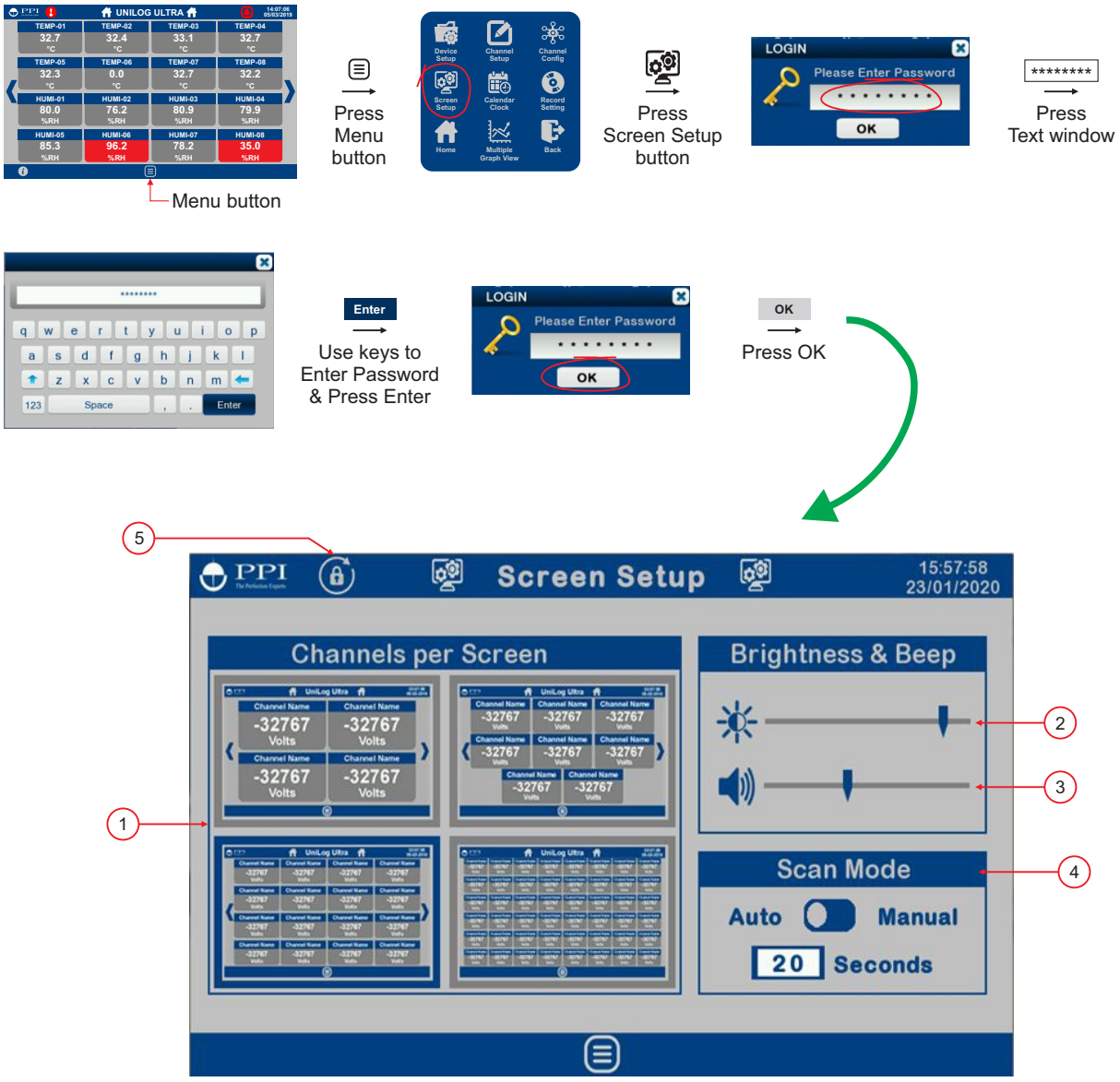
Table 4.4

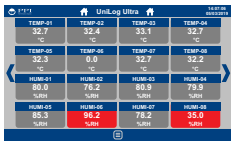
Option	Description
°C	Degree Centigrade
°F	Degree Fahrenheit
(none)	No Unit (Blank)
°K	Degree Kelvin
EU	Engineering Units
%	Percentage
Pa	Pascals
Mpa	Mpascals
kPa	Kpascals
bar	Bar
mbar	Milli bar
psi	PSI
kg/sq.cm	kg/cm²
mmH_2O	mm water gauge
inH_2O	Inches water gauge
mmHg	mm mercury
Torr	Torr
litre/hr	Litres per hour
litre/min	Litres per minute
%RH	% Relative Humidity
$\%O^2$	% Oxygen
$\%CO^2$	% Carbon di-oxide
%CP	% Carbon Potential
V	Volts
A	Amps

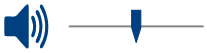
Option	Description
mA	Milli Amps
mV	Milli Volts
ohm	Ohms
ppm	Parts per million
rpm	Revolutions per minute
mSec	Milli seconds
Sec	Seconds
min	Minutes
hrs	Hours
PH	PH
%PH	%PH
miles/hr	Miles per hour
mg	Milli grams
g	Grams
kg	Kilo grams

Section 5

SCREEN SETUP

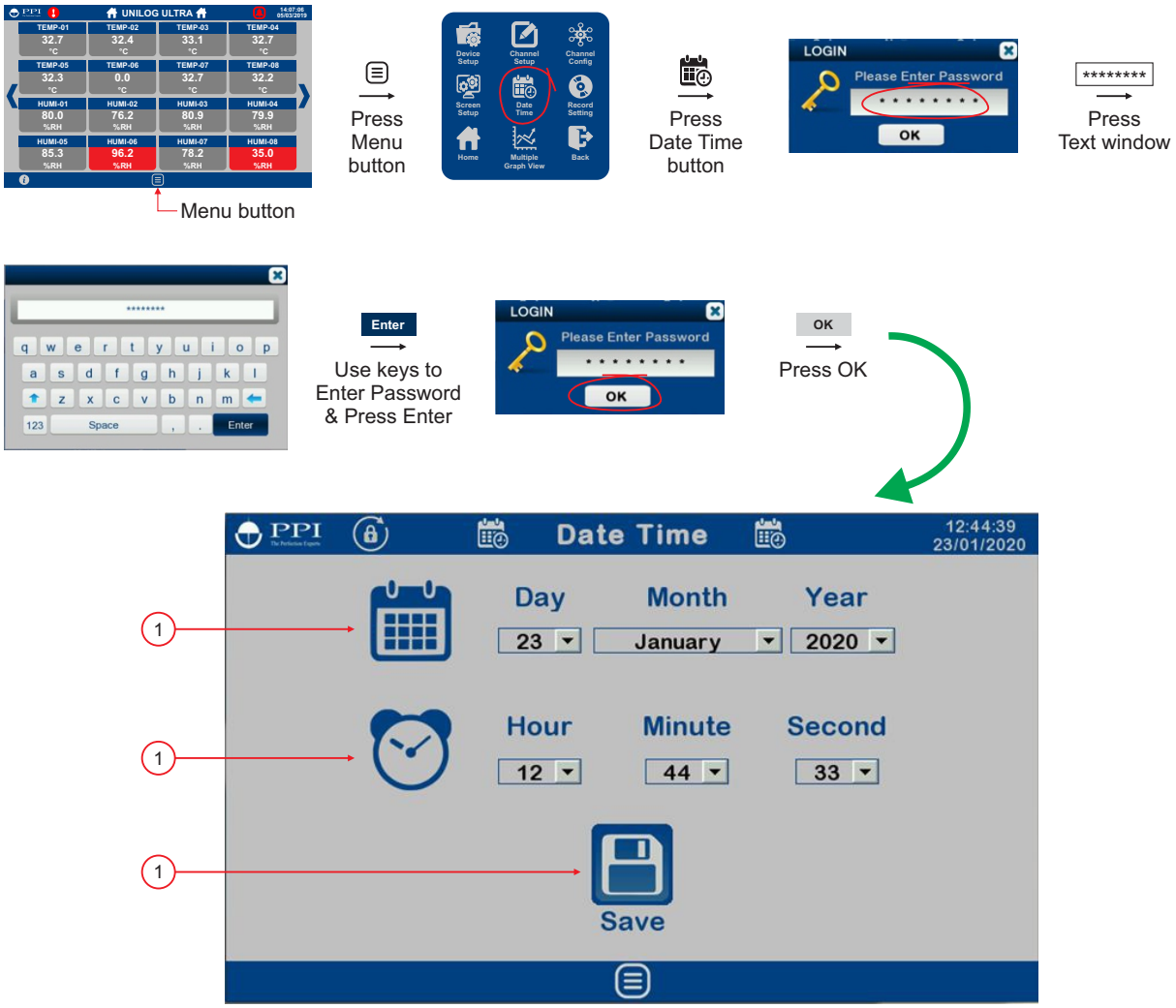


1 	Select the numbers of *Channel Display Windows* on the Home Screen : 4, 8, 16 & 48.
2 	Use Slide Switch to adjust the Screen Brightness.

3 	Use Slide Switch to adjust the Beep Sound.
4	The *Channel Display Windows* can be scanned on the Home Screen in **Auto** or **Manual** mode. In Auto mode the scan interval is settable from 5 to 99 Seconds. For Manual scanning, use ❮,❯ arrows.
5 	Change Passwords. Refer Section 9.

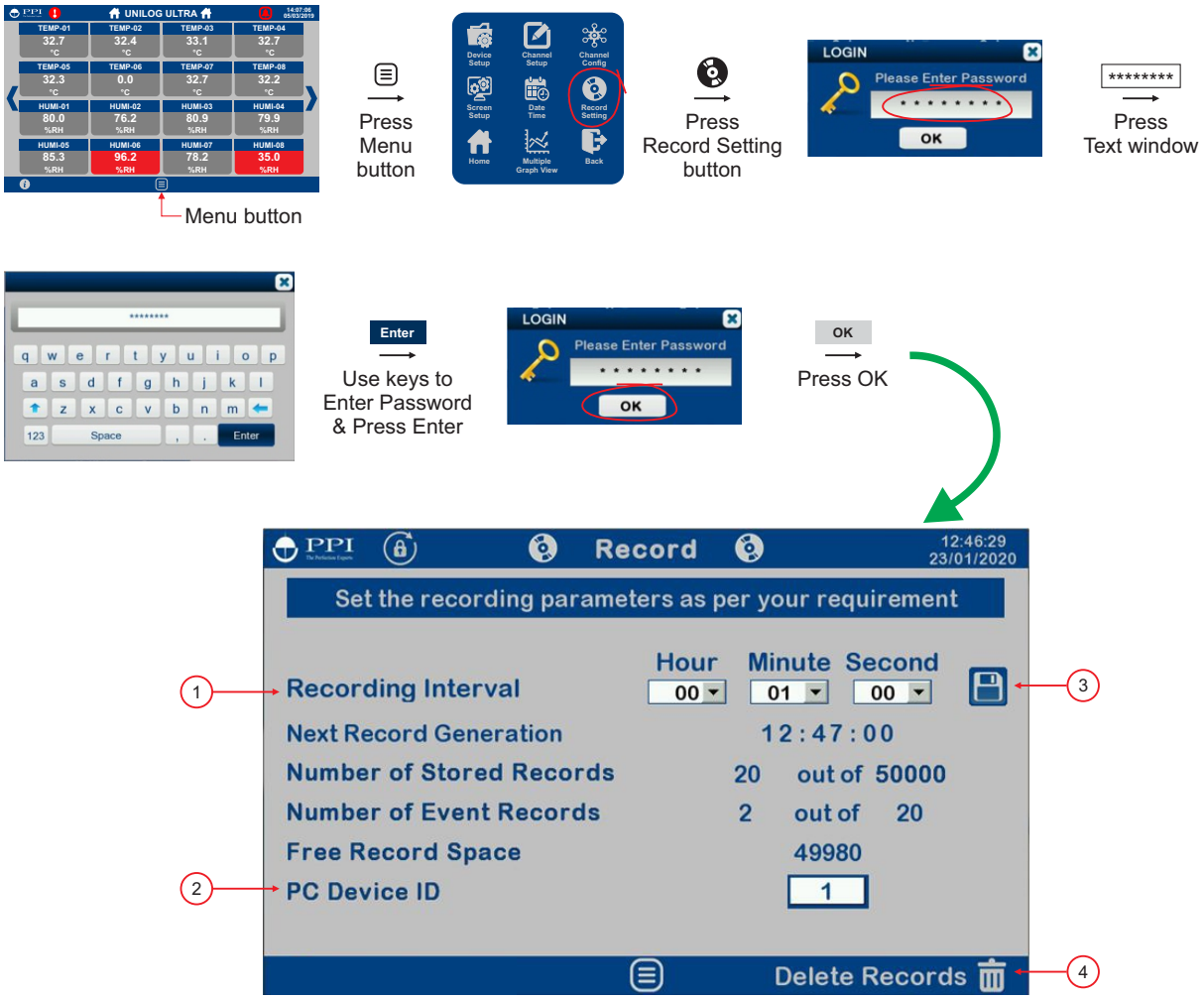
Section 6

DATE / TIME



1	Set Calendar Date : Day / Month / Year.
2	Set Clock Time (24 Hours format) : Hour : Minute : Second.
3 Save	Press Save button to apply new Date & Time.

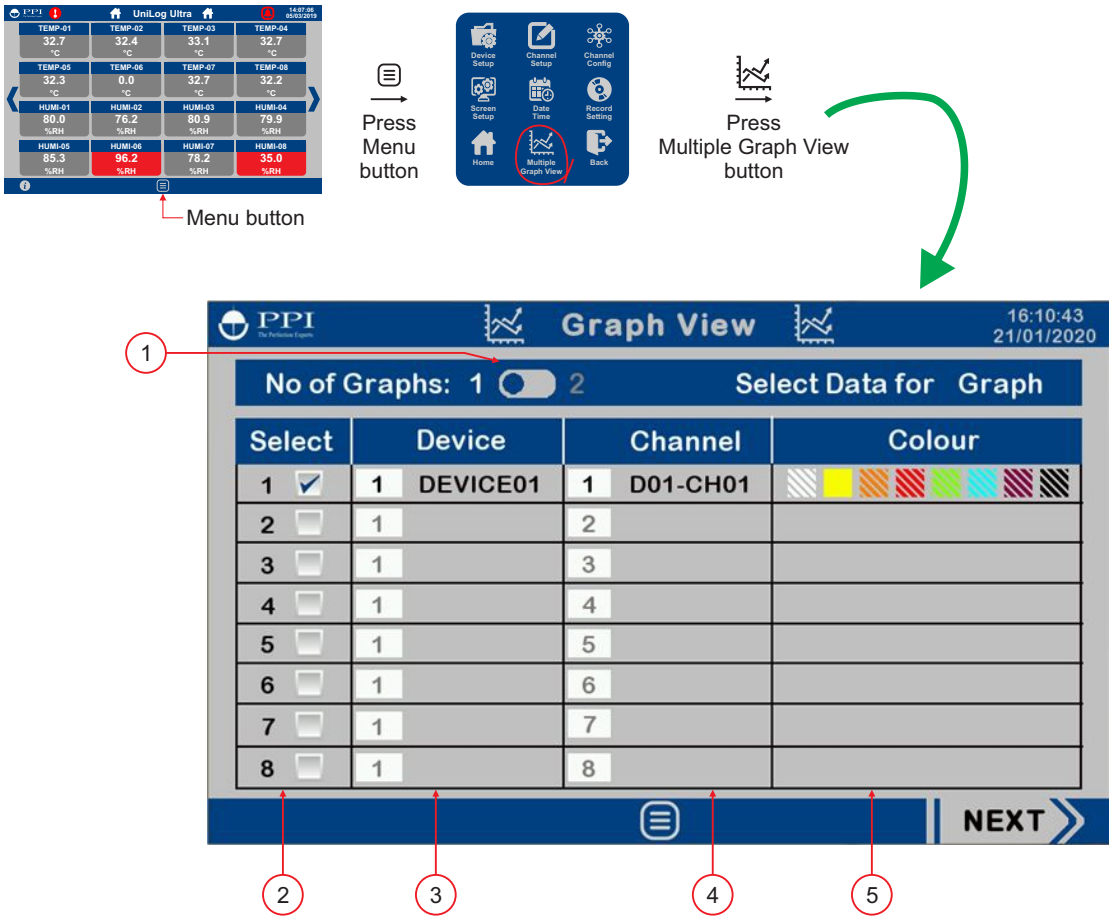
Section 7
RECORD SETTING

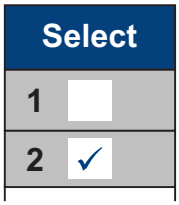


1	Set the time interval (HH:MM:SS) for periodic record generation.
2	Set the unique HMI ID (1 to 247) for communication with PC
3 	Touch this button to save all the edited values in non-volatile memory.
4 	Touch this button to delete all the stored records from the memory. Be careful, as this action can not be undone. Upon touching this button the below conformation window pops-up. Press 'Yes' if you are sure that you want to erase all records, else press 'No'. 

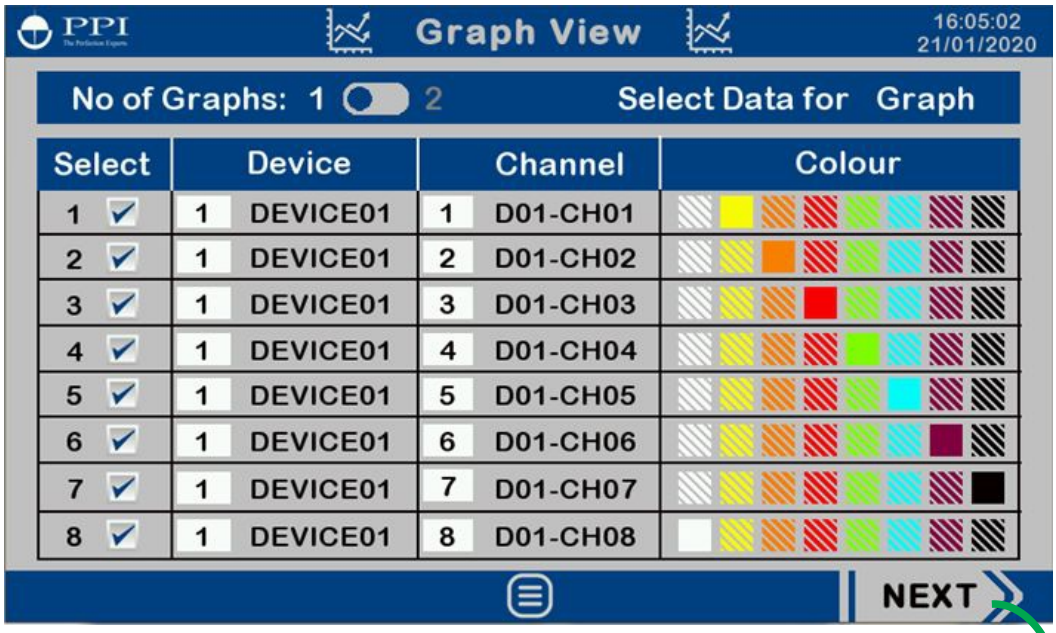
Section 8

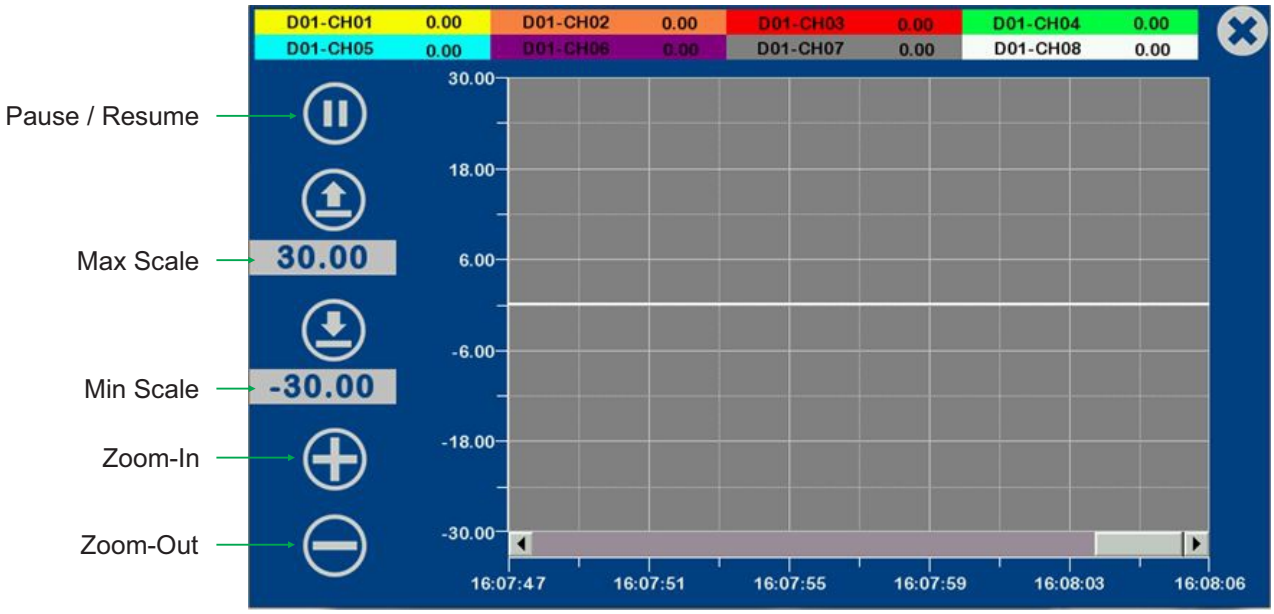
MULTIPLE GRAPH VIEW



1 	Select wether single or dual graphs, each of maximum 8 channels, to be viewed on a single screen. (More details available later in this section).
2 	Select how many channels to be viewed (Maximum 8).
3 4	Select the *Device Name* & the *Channel Name* for the channels to be viewed.
5	Select the color independently for each channel.

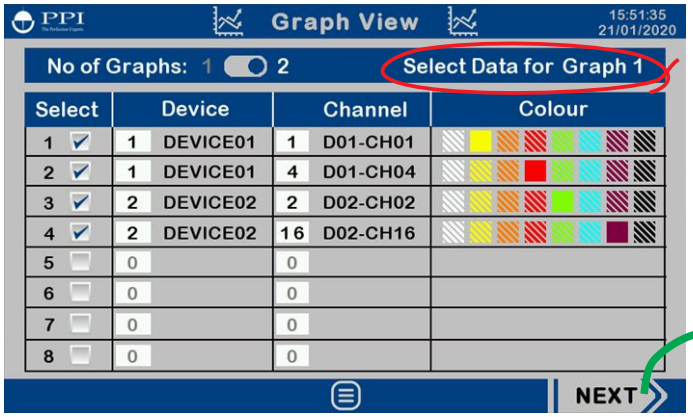
Single Graph Window



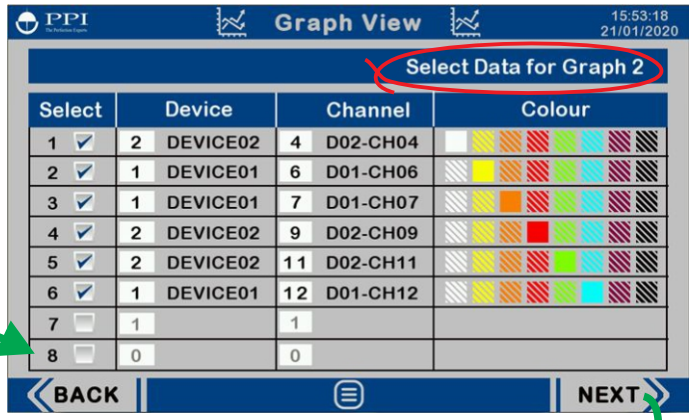


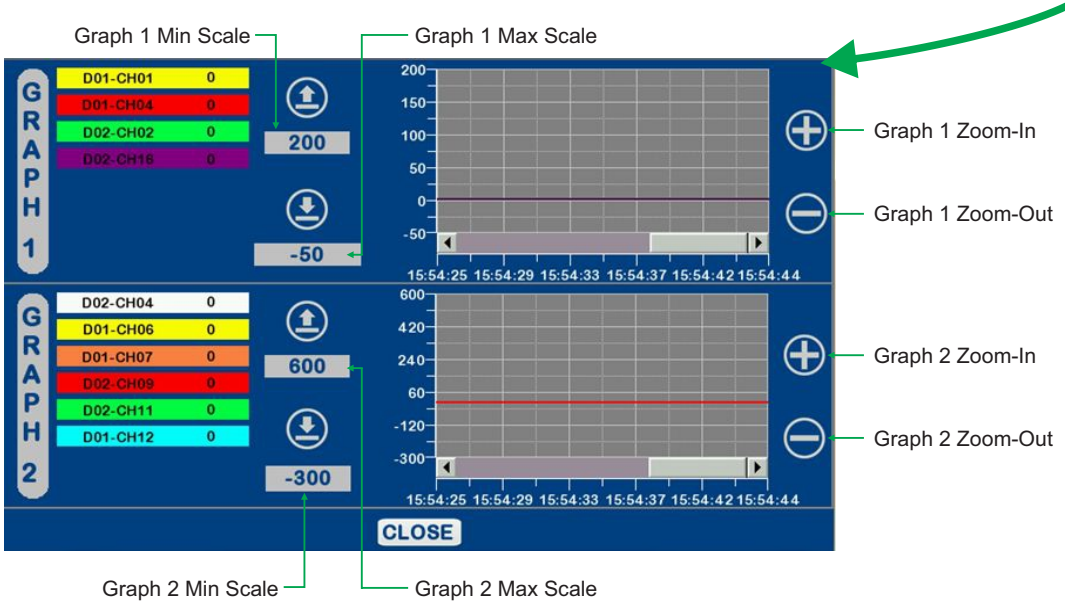
Dual Graph Window

Select Channels for Graph 1



Select Channels for Graph 2





Section 9
CHANGE PASSWORD

The device setup, channel setup, Channel Configuration, Record setting, Date / Time Setting & Screen Setup are protected by 3 levels of passwords, as below.

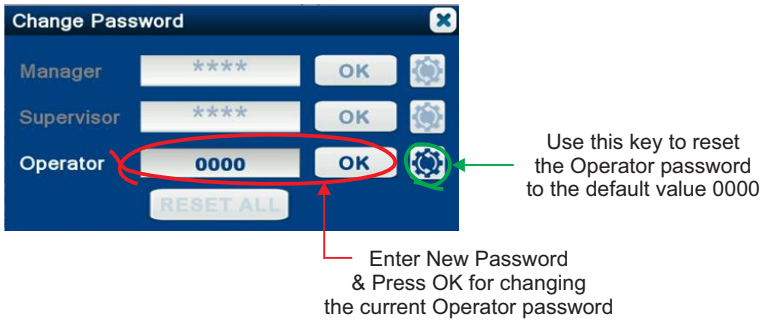
Access Level	Default Password	Accessible Menu Items
Operator (Lowest Level)	0000	Screen Setup
Supervisor (Middle Level)	0001	Screen Setup, Date Time, Record Setting
Manager (Highest Level)	0002	All

The password values can be any combination of up to 8 printable characters. Examples : abcd, ABCD, 1234, 12#abcDE, etc.

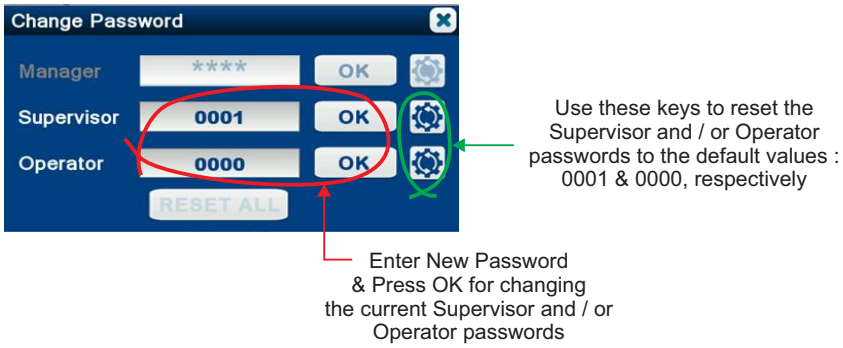
Changing Password

An existing password can only be changed after opening any of the Menu Screens (by entering current password) and pressing button.

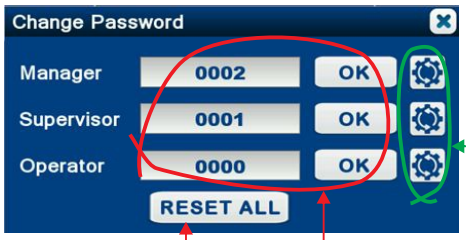
Changing Operator Password



Changing Supervisor Password



Changing Manager Password



Use these keys to reset the Manager, Supervisor and / or Operator passwords to the default values : 0002, 0001 & 0000, respectively

Use this key to **simultaneously** reset the Manager, Supervisor and Operator passwords to the default values : 0002, 0001 & 0000, respectively

Enter New Password & Press OK for changing the current Manager, Supervisor and / or Operator passwords

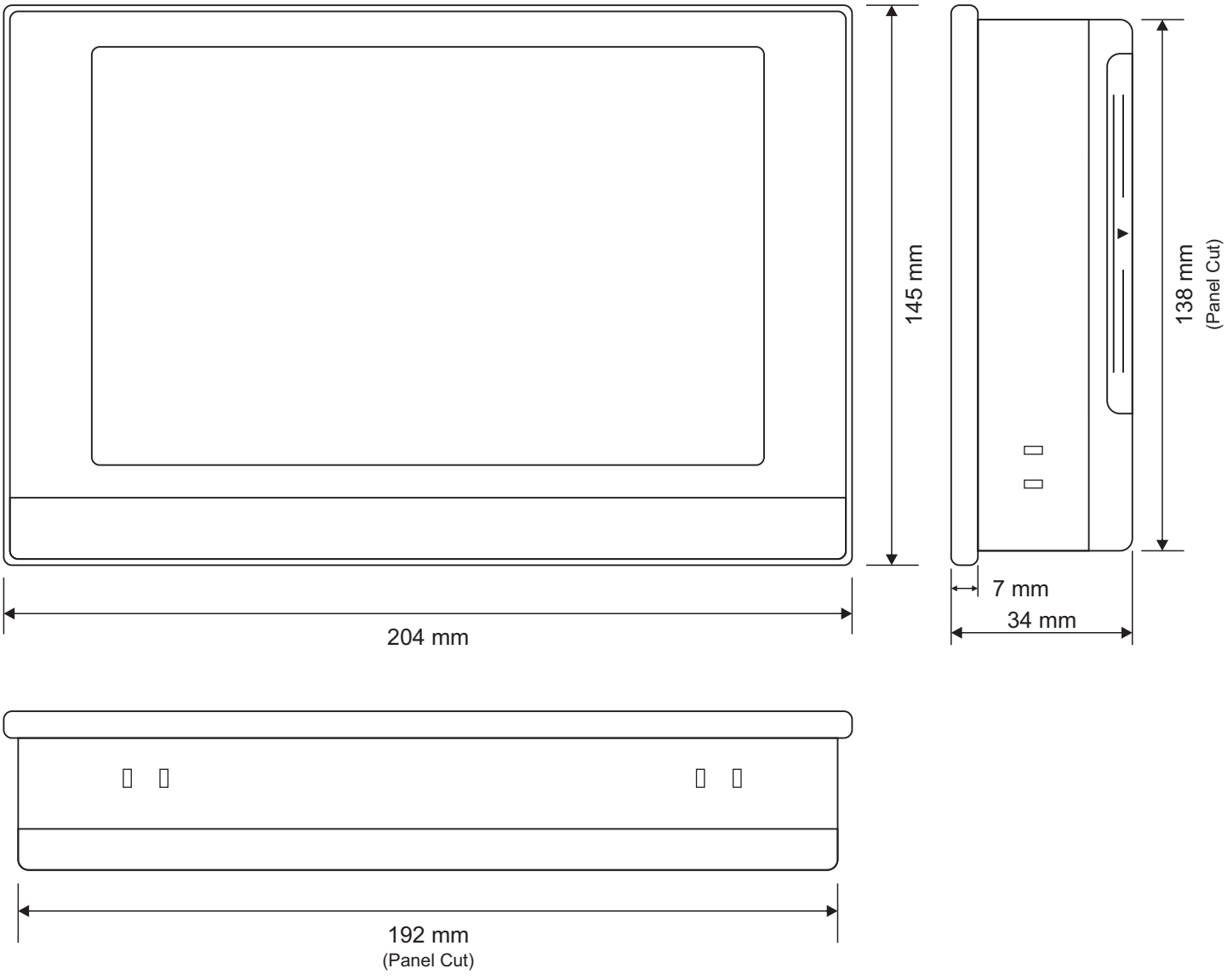
Section 10

MECHANICAL MOUNTING

HMI New Version

HMI (Touch Panel)

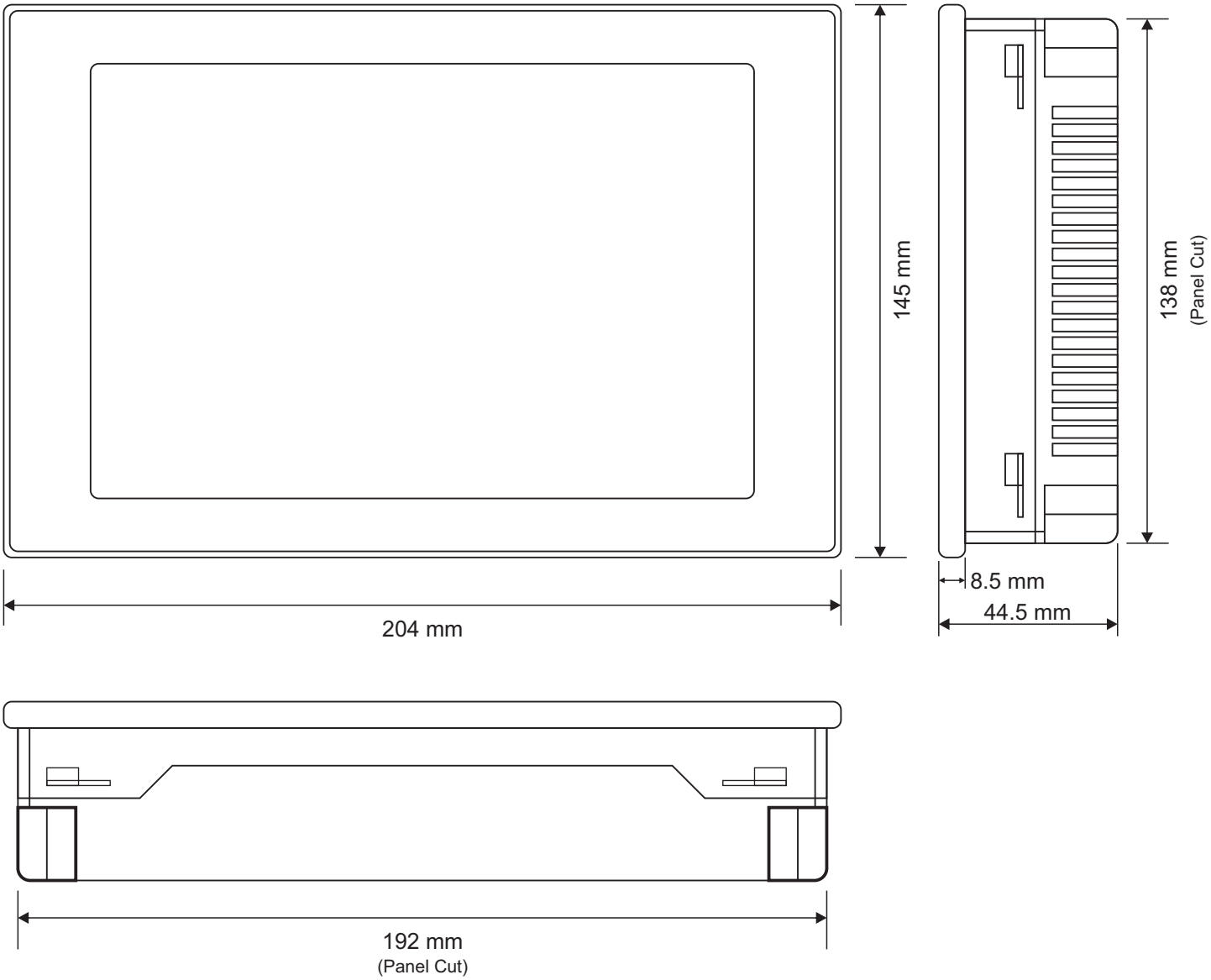
Dimensions	
Overall	204(W) X 145(H) X 34(D), mm
Panel Cutout	192(W) X 138(H), mm



HMI Old Version

HMI (Touch Panel)

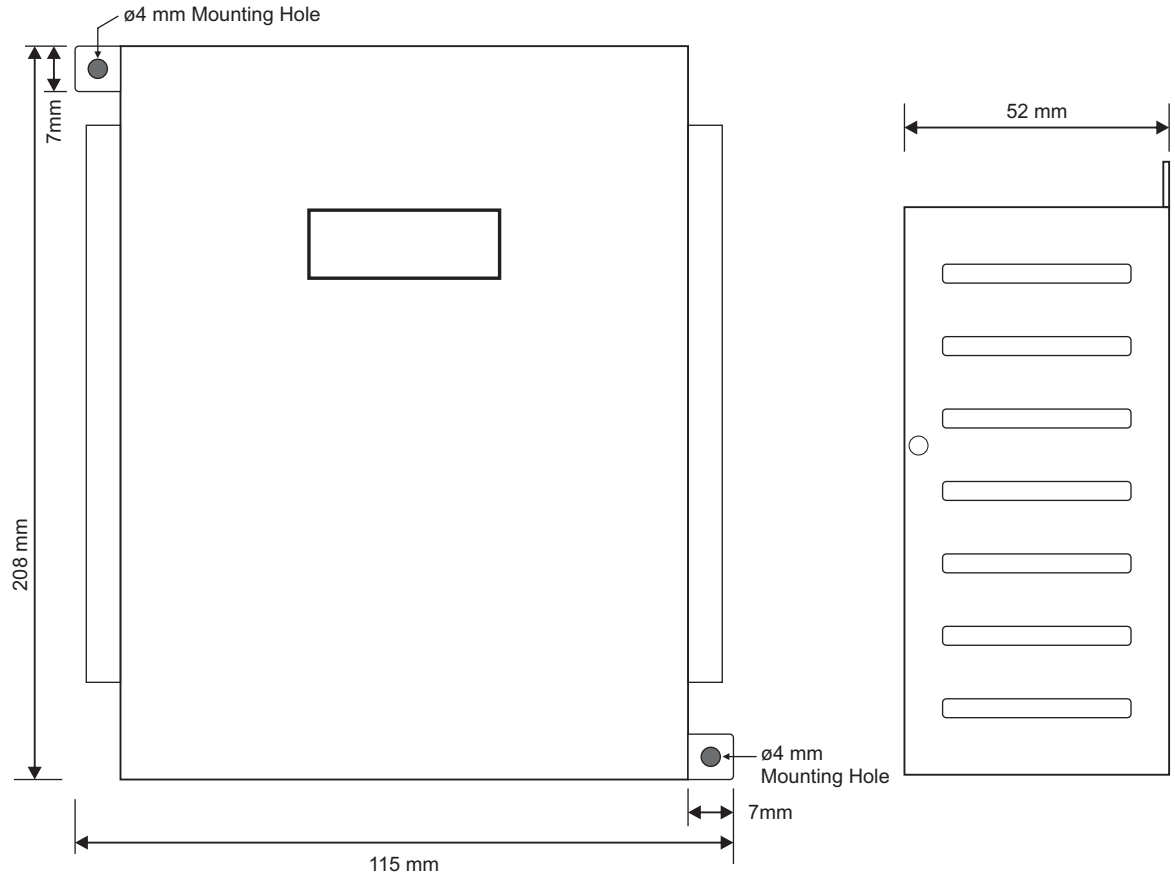
Dimensions	
Overall	204(W) X 145(H) X 44.5(D), mm
Panel Cutout	192(W) X 138(H), mm



8 Chanel Module (AIS - 8UM)

Overall Dimensions	
AIS-8UM	115(W) X 131(H) X 52(D), mm

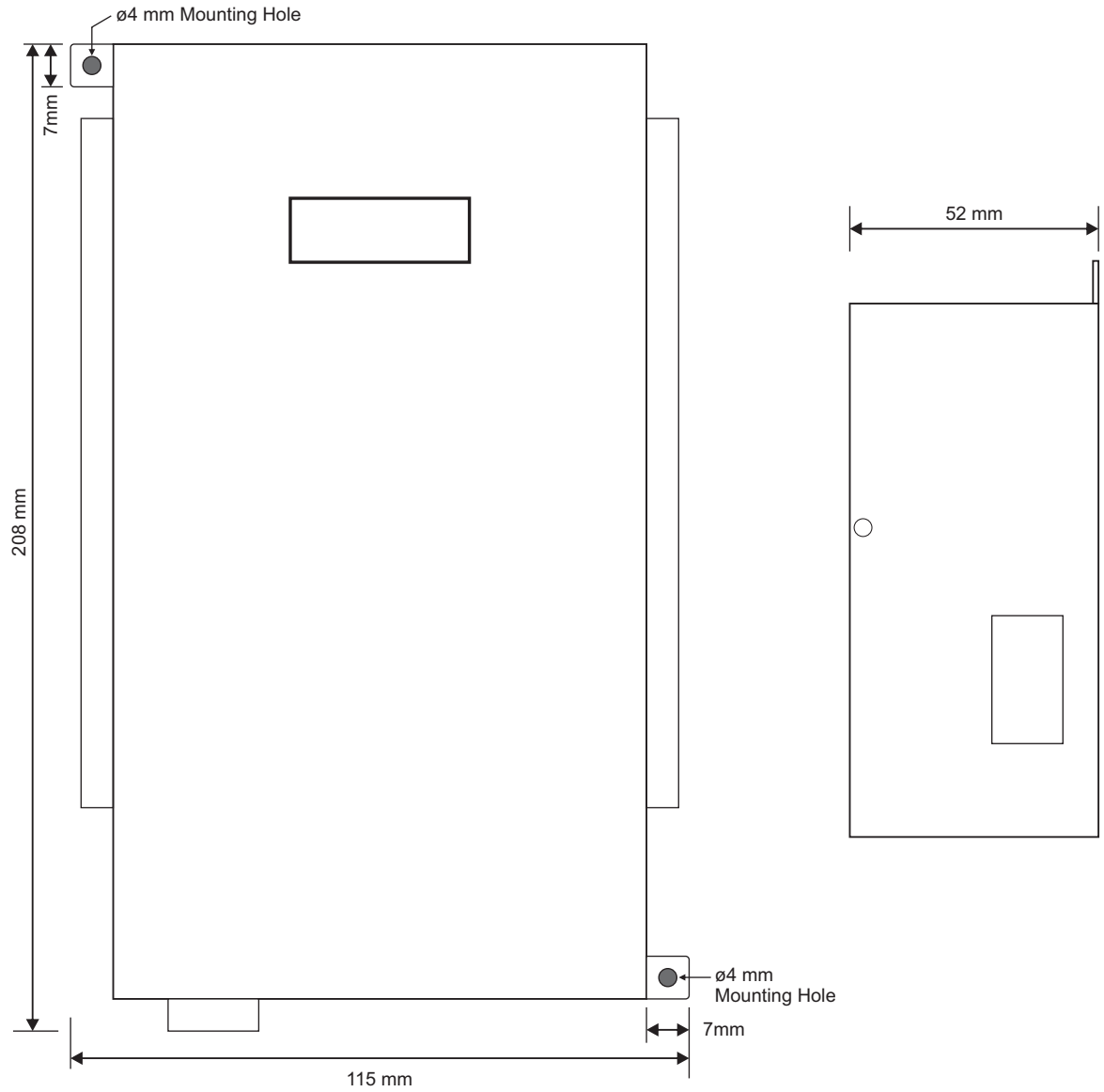
AIS - 8UM



16 Chanel Module (AIS - 16UM)

Overall Dimensions	
AIS-16UM	115(W) X 208(H) X 52(D), mm

AIS - 16UM

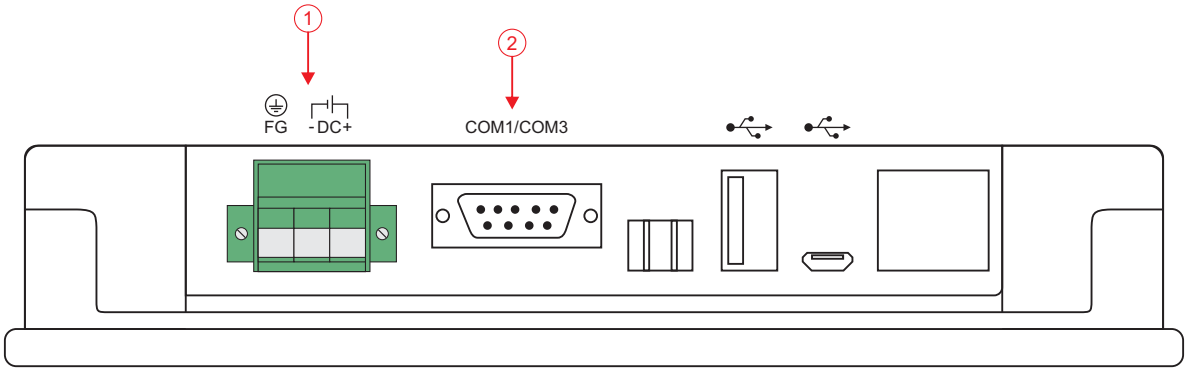


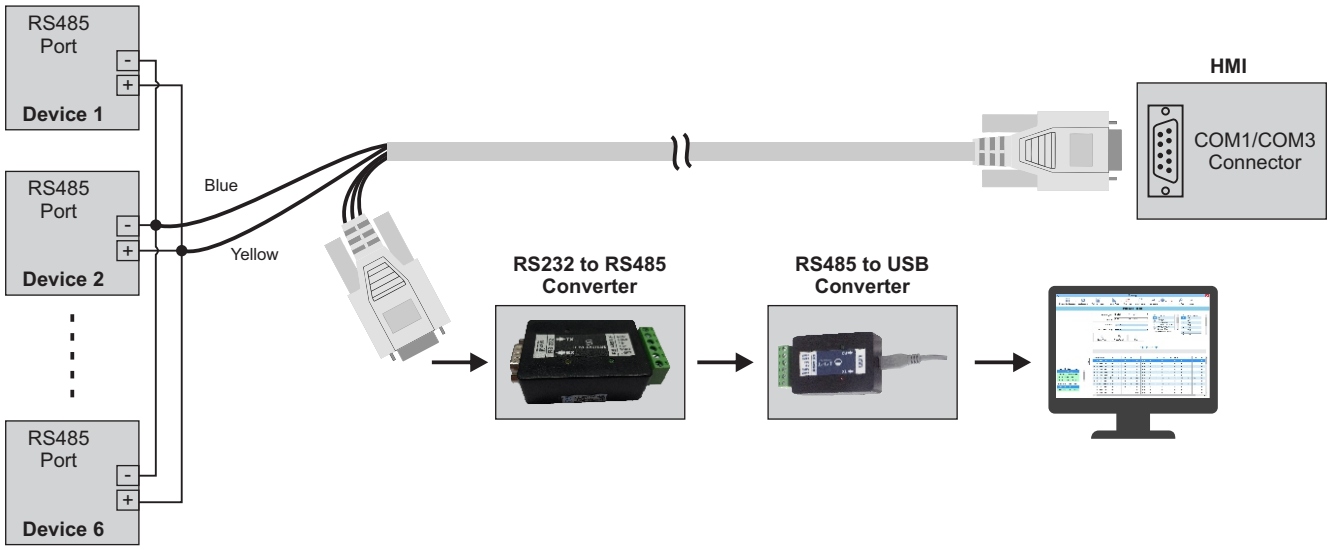
Section 11

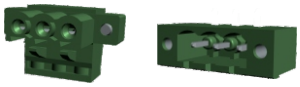
ELECTRICAL CONNECTIONS

HMI New Version

HMI (Touch Panel)

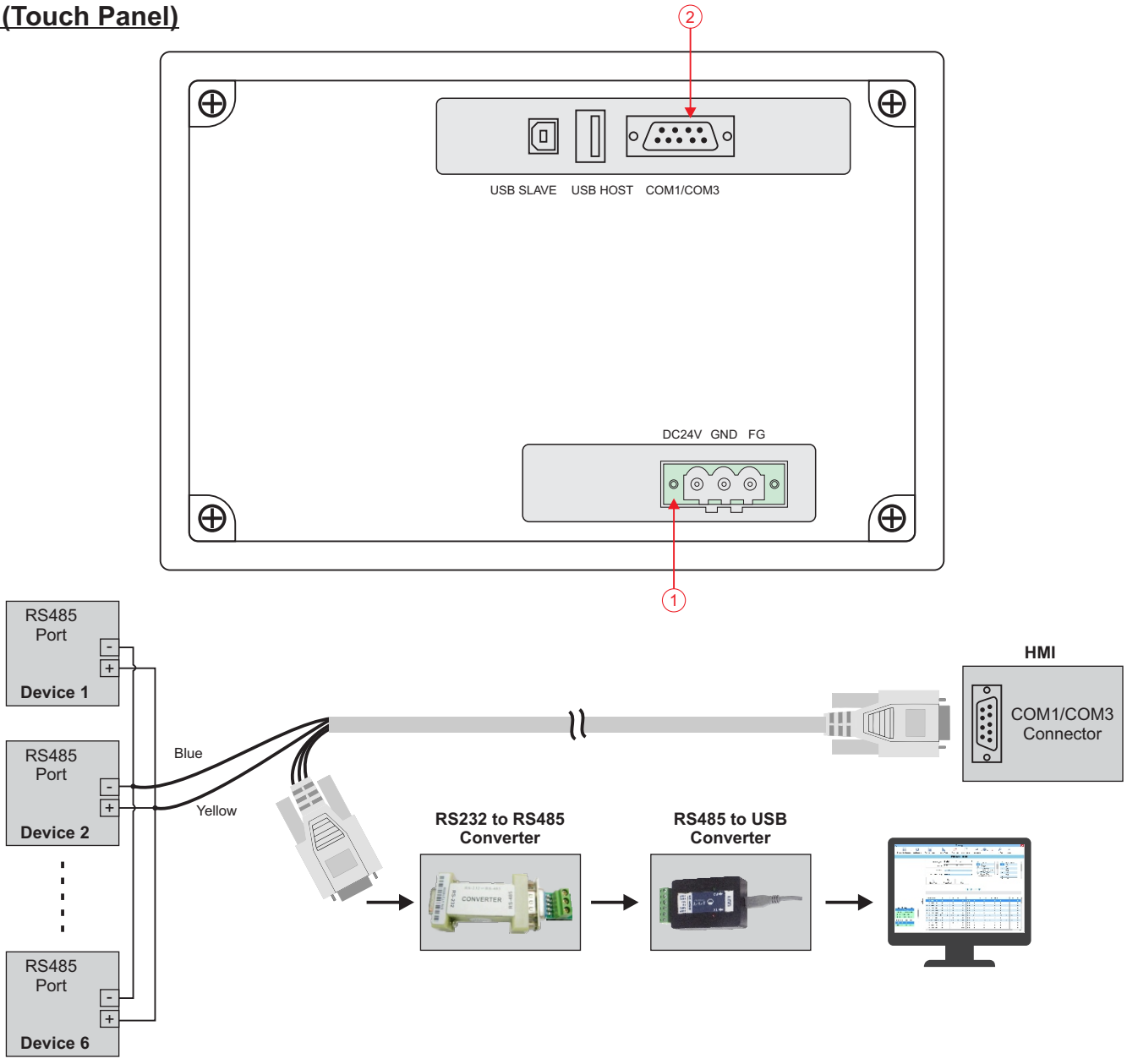


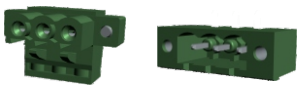


1		**3-Pin Male / Female Connector (5.08 mm pitch)** Supply Voltage : 20 to 28 VDC (24 V Nominal)
2	 9 Pin	**9 Pin D Type Connector** RS485 Serial Communication with Control Unit & PC

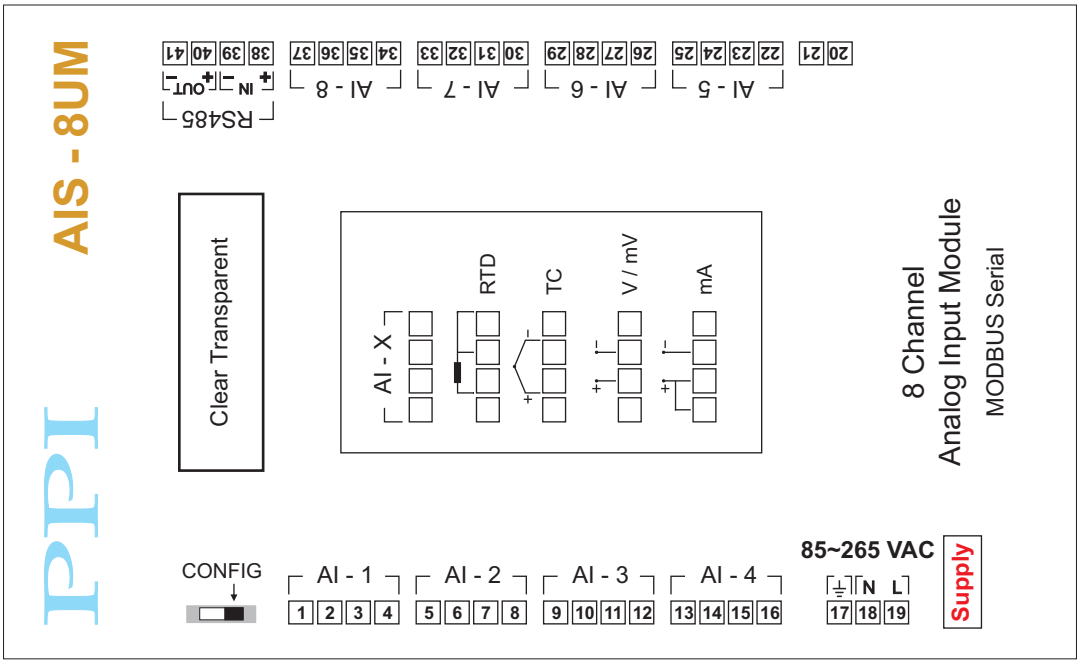
HMI Old Version

HMI (Touch Panel)

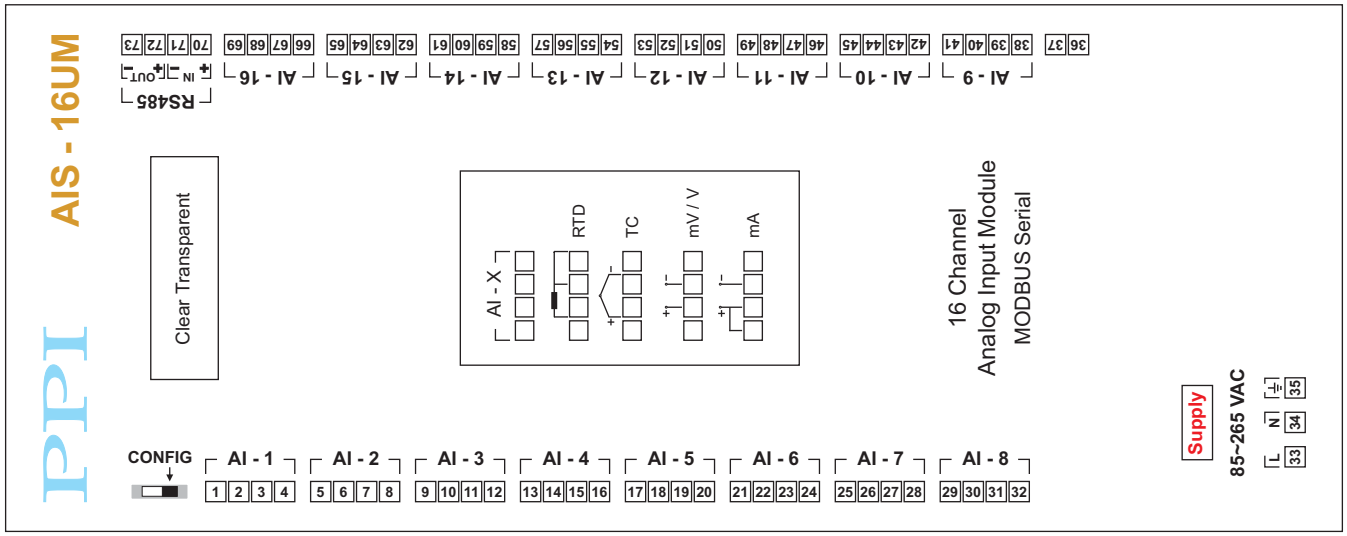


1		**3-Pin Male / Female Connector (5.08 mm pitch)** Supply Voltage : 20 to 28 VDC (24 V Nominal)
2	 9 Pin	**9 Pin D Type Connector** RS485 Serial Communication with Control Unit & PC

8 Chanel Module (AIS - 8UM)



16 Chanel Module (AIS - 16UM)



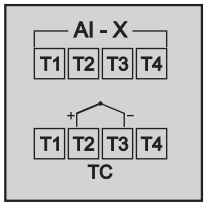
Input Channels

Each of the 8 or 16 input channels are identical from wiring connection viewpoint. For explanation purpose, the 4 terminals pertaining to each channel have been marked as T1, T2 ,T3 & T4 in the following pages. The descriptions below apply to all the channels with no deviations.

Thermocouple

Connect Thermocouple Positive (+) to terminal T2 and Negative (-) to terminal T3 as shown in **Figure 11.1**. 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.

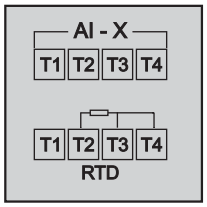
Figure 11.1



RTD Pt100, 3-wire

Connect single leaded end of **RTD** bulb to terminal T2 and the double leaded ends to terminals T3 and T4 (interchangeable) as shown in **Figure 11.2.** 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.

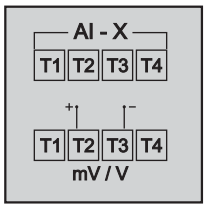
Figure 11.2



DC Linear Voltage (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 T3 and the signal (+) to terminal T2, as shown in **Figure 11.3.**

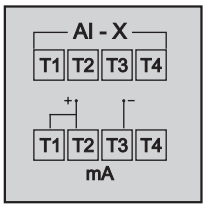
Figure 11.3



DC Linear Current (mA)

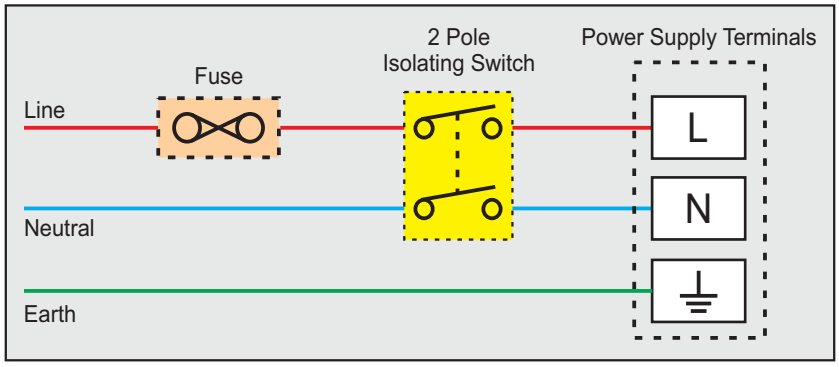
Use a shielded twisted pair with the shield grounded at the signal source for connecting mA source. Connect common (-) to terminal T3 and the signal (+) to terminal T2. Also **short** terminals T1 & T2. Refer **Figure 11.4.**

Figure 11.4



POWER SUPPLY

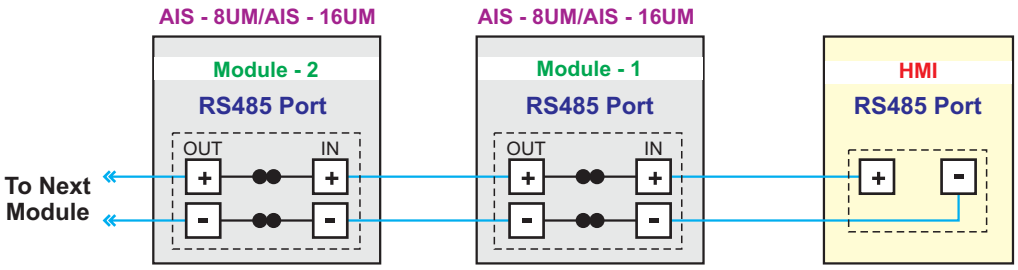
Figure 11.5



As standard, the module is supplied with power connections suited for 85 to 264 VAC line supply. 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 11.5. The module is not provided with fuse and power switch. If necessary, mount them separately. Use a time lag fuse rated 1A @ 240 VAC.

SERIAL COMMUNICATION PORT

Figure 11.6



The wiring connections for interfacing the HMI with one or multiple Module(s) is shown in the figure 1.6.

APPENDIX - A

DC LINEAR SIGNAL INTERFACE

This appendix describes the parameters required to interface process transmitters that produce Linear DC Voltage (mV/V) or Current (mA) signals in proportion to the measured process values. A few examples of such transmitters are;

1. Pressure Transmitter producing **4 to 20 mA** for **0 to 5 psi**
2. Relative Humidity Transmitter producing **1 to 4.5 V** for **5 to 95 %RH**
3. Temperature Transmitter producing **0 to 20 mA** for **-50 to 250 °C**

The instrument (indicator/controller/recorder) that accepts the linear signal from the transmitter computes the measured process value by solving the mathematical equation for Straight-Line in the form:

$$Y = mX + C$$

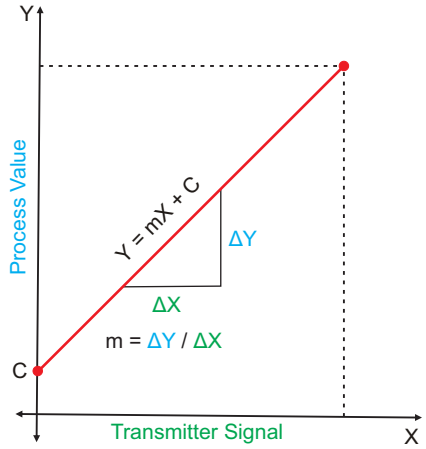
Where;

X : Signal Value from Transmitter

Y : Process Value Corresponding to Signal Value X

C : Process Value Corresponding to X = 0 (Y-intercept)

m : Change in Process Value per unit Change in Signal Value (Slope)



As is evident from the aforementioned transmitter examples, different transmitters produce signals varying both in *Type* (mV/V/mA) and *Range*. Most PPI instruments, thus, provide programmable Signal Type and Range to facilitate interface with a variety of transmitters. A few industry standard signal types and ranges offered by the PPI instruments are: 0-50mV, 0-200mV, 0-5 V, 1-5 V, 0-10V, 0-20 mA, 4-20 mA, etc.

Also, the output signal range (e.g. 1 to 4.5 V) from different transmitters corresponds to different process value range (e.g. 5 to 95 %RH); the instruments thus also provide facility for programming the measured process value range with programmable Resolution.

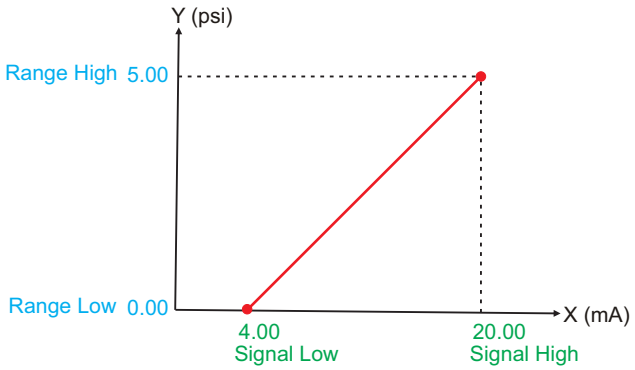
The linear transmitters usually specify two signal values (Signal Low and Signal High) and the corresponding Process Values (Range Low and Range High). In the example Pressure Transmitter above; the Signal Low, Signal High, Range Low & Range High values specified are: 4 mA, 20 mA, 0 psi & 5 psi, respectively.

In summary, the following 6 parameters are required for interfacing Linear Transmitters:

1. Input Type : Standard DC Signal Type in which the transmitter signal range fits (e.g. 4-20 mA)
2. Signal Low : Signal value corresponding to Range Low process value (e.g. 4 mA)
3. Signal High : Signal value corresponding to Range High process value (e.g. 20 mA)
4. PV Resolution : Resolution (least count) with which to compute process value (e.g. 0.01)
5. Range Low : Process value corresponding to Signal Low value (e.g. 0.00 psi)
6. Range High : Process value corresponding to Signal High value (e.g. 5.00 psi)

The following examples illustrate appropriate parameter value selections.

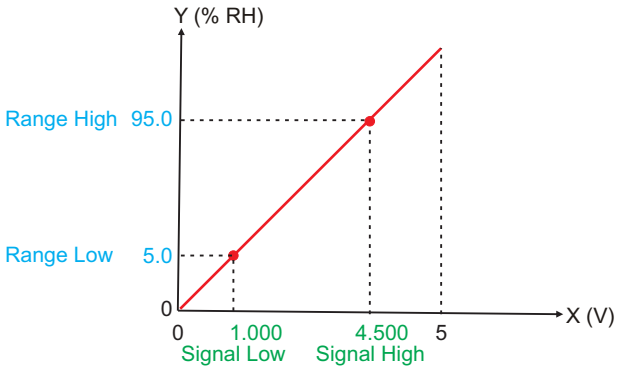
Example 1: Pressure Transmitter producing **4 to 20 mA** for **0 to 5 psi**



Presume the pressure is to be measured with 0.01 Resolution, that is 0.00 to 5.00 psi.

Input Type	:	4-20 mA
Signal Low	:	4.00 mA
Signal High	:	20.00 mA
PV Resolution	:	0.01
Range Low	:	0.00
Range High	:	5.00

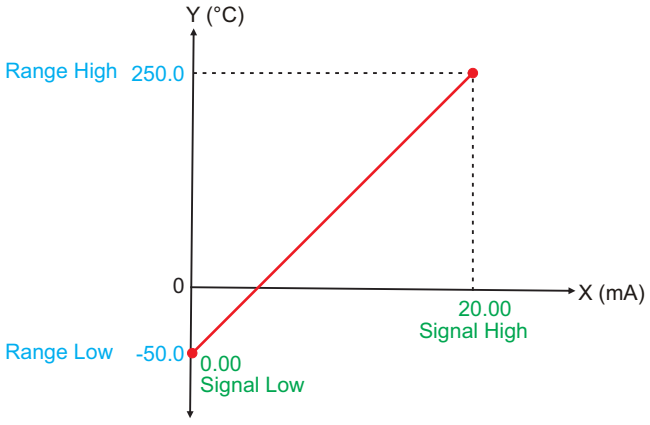
Example 2: Relative Humidity Transmitter producing **1 to 4.5 V** for **5 to 95 %RH**



Presume the humidity is to be measured with 0.1 Resolution, that is 0.0 to 100.0 %.

Input Type	:	0-5 V
Signal Low	:	1.000 V
Signal High	:	4.500 V
PV Resolution	:	0.1
Range Low	:	5.0
Range High	:	95.0

Example 3: Temperature Transmitter producing **0 to 20 mA** for **-50 to 250 °C**



Presume the Temperature is to be measured with 0.1 Resolution, that is -50.0 to 250.0°C.

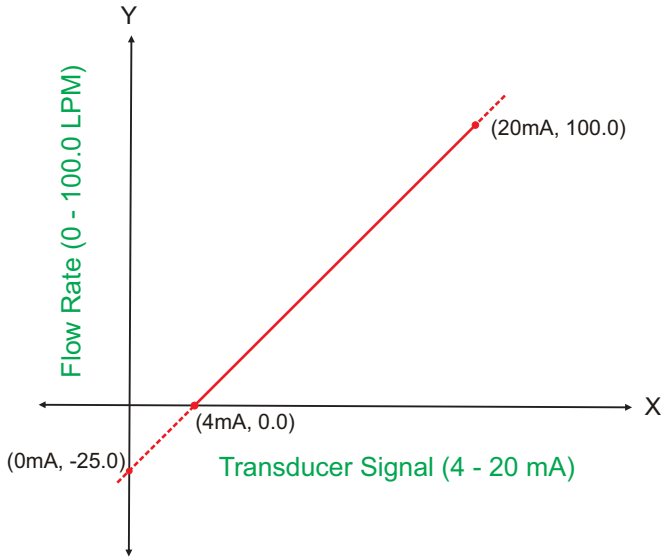
Input Type	:	0-20 mA
Signal Low	:	0.00 mA
Signal High	:	20.00 mA
PV Resolution	:	0.1
Range Low	:	-50.0
Range High	:	250.0

APPENDIX B
BOTTOM / TOP CLIPPING

For mA/mV/V inputs the measured PV is a scaled value between the set values for 'PV Range Low' and 'PV Range High' parameters corresponding to the Signal Minimum and Signal Maximum values respectively. Refer Appendix A.

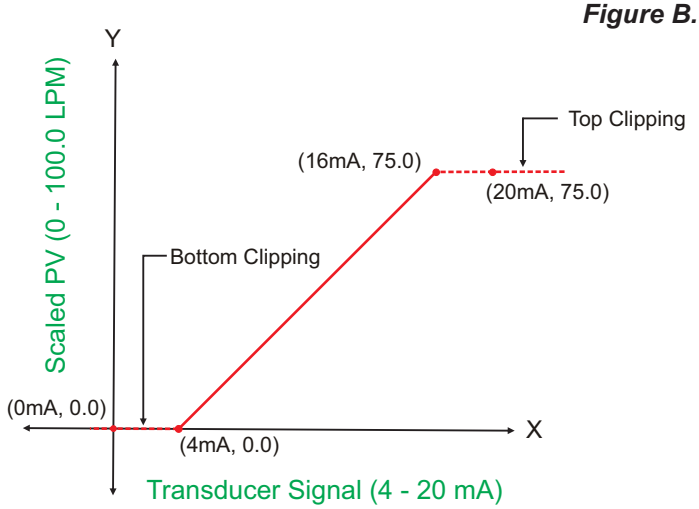
The Figure B.1 below illustrates an example of flow rate measurement using a transmitter / transducer producing a signal range of 4 - 20 mA corresponding to 0.0 to 100.0 Liters per Minute (LPM).

Figure B.1



If this transmitter is to be used for a system having a flow rate range of 0.0 to 75.0 LPM then the actual useful signal range from the example transmitter is 4 mA (~ 0.0 LPM) to 16 mA (~ 75.0 LPM) only. If no Clipping is applied on the measured flow rate then the scaled PV will also include 'out-of-range' values for the signal values below 4 mA and above 16 mA (may be due to open sensor condition or calibration errors). These out-of-range values can be suppressed by enabling the Bottom and/or Top Clippings with appropriate Clip values as shown in figure B.2 below.

Figure B.2



Parameter Values

PV Range Low	: 0.0
PV Range High	: 100.0
Enable Bottom Clipping	: Yes
Bottom Clip Value	: 0.0
Enable Top Clipping	: Yes
Top Clip Value	: 75.0

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101, Diamond Industrial Estate, Navghar, Vasai Road (E),
Dist. Palghar - 401 210.Maharashtra, India
Sales : 8208199048 / 8208141446
Support : 07498799226 / 08767395333
sales@ppiindia.net, support@ppiindia.net

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