02 Digital Panel Instruments

Celsa Eine Voltage / Current

The digital panel meter programmable DPM Eine have been designed for industrial applications, which frequently require precise and on-site adjustment of the display range. It can be used in industrial automation and for laboratory uses.

Programmable DPM Eine measures important electrical parameters in 3 phase 4 Wire, 3 phase 3 Wire and single phase network and replaces the multiple analog panel meters.

Salient Features

- Fast & Easy Installation on panel with the help of external swivel screws.
- True RMS measurement.
- 4 Digits ultra bright LED Display.
- User selectable CT/PT Primary.
- User selectable CT/PT Secondary.
- User selectable 3ph3wire or 3ph4wire Network.
- Three auxillary Power Supply available 40V – 300V AC DC, 20-60V DC / 20-40V AC.
- Available in size - 96x96,48x96 mm

Products Features

True RMS measurement

The instrument measures distorted waveform up to 15th Harmonic.

User selectable CT Primary

The Primary of current transformer can be programmed on site from 1A to 999kA for Current DPM using front panel keys.

User selectable PT Primary

The Primary of Potential transformer can be programmed from on site 100 VLL to 999 kVLL for Voltage DPM (3V) and 57.5 VLN to 999 kVLN for Voltage DPM (V) using front panel keys.

User selectable CT Secondary

The Secondary of current transformer can be programmed on site to 1A or 5A for Current DPM using front panel keys.

User selectable PT Secondary

The Secondary of Potential transformer can be programmed on site from 100 VLL to 500 VLL for Voltage DPM (3V) and 57.5 VLN to 300VLN for Voltage DPM (V) using front panel keys.

4 digits LED display

14mm ultra bright 4 digits LED display.

User selectable 3 phase 3Wire or 4Wire Network(for 3A/3V)

User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire network using front panel keys.

Onsite selection of Auto scroll / Fixed Screen(for 3A/3V)

User can set the display in auto scrolling mode or fixed screen mode using front panel keys.

Function keys

Using two function keys it is possible to Display various parameters in Current and Voltage DPM. These function keys are also used for Network selection, CT/PT Primary values, CT/PT Secondary values, Auto Scroll mode selection.

Screen No. storage

In case of power failure, the instrument memorizes the last screen stored. For every 1 min. the instrument stores the screen no. in the non-volatile memory.

Low back depth

The instrument has very low back depth (behind the panel) of less than 40mm.

Enclosure Protection for dust and water

Conforms to IP 50 (for front face) & IP 20 (for back).

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EMC Compatibility

Compliance to International standard IEC 61326.

· Interference Emission :	IEC 61326-1 : 2005, Class A	
· Interference Immunity :	IEC 61326-1 : 2005	
· Electrostatic discharge :	IEC 61000-4-2 – 4kV/8kV contact/air. (ESD)	
· EM Field :	IEC 61000-4-3 – 10 V/m (80 MHz to 1 GHz)	
	– 3 V/m (1.4 Ghz to 2 GHz)	
	– 1 V/m (2 GHz to 2.7 GHz)	
· Burst :	IEC 61000-4-4 – 2 kV (5/50 ns, 5 kHz)	
· Surge :	IEC 61000-4-5 – 1 kVLL / 2 kVLN.	
· Conducted RF :	IEC 61000-4-5 – 3 V (150 kHz to 80 MHZ)	
· Rated Power Frequency magnetic Field :	IEC 61000-4-8 – 30 A/m	
· Voltage dip :	IEC 61000-4-11	– 0% during 1 cycle.
		– 40% during 10/12 cycles.
		– 70% during 25/30 cycles.
· Short interruptions :	IEC 61000-4-11 –	0% during 25/30 cycles.
		25 cycles for 50 Hz test.
		30 cycles for 60 Hz test.

Technical Specifications

Input voltage	Nominal input voltage Ranges (AC RMS) (to be specified while ordering)	Phase –Neutral 57 - 288V L-N , Line-Line 100-500V L-L(For 3V) Phase –Neutral 57.5 - 300V L-N(For V) Phase –Neutral 600VL-N(Only for V(fixed)
	Max continuous input voltage	120% of rated value
	Nominal input voltage burden	< 0.3 VA approx. per phase. < 0.4 VA approx. (For 600VLN(1phase)
	System PT primary values	100VLL to 999kVLL programmable on site for 3 - Phase Voltage (3V). 57.5VLN to 999kVLN programmable on site for 1 - Phase Voltage (V).
Input current	Nominal input current Ranges	1A or 5A AC RMS
	System CT primary values	From 1A up to 999kA (for 1 or 5 A)
	Max continuous input current	120% of rated value (optional 150% of rated value)
	Nominal input current burden	< 0.3 VA approx. per phase
Overload indication	"-oL-" (If input is greater than 125% of secondary value for Voltage and 125% (optional 155%) of secondary value for current)	
Auxiliray supply	AC DC Auxiliary Supply	40-300V AC-DC (±5%) 20-40V AC / 20-60V DC
	Frequency range	45 to 65 Hz
	VA burden	< 3 VA Approx 1 VA approx at 24V AC/DC
Overload withstand	Voltage	2x rated value for 1 second, repeated 10 times at 10 second intervals
	Current	4x rated value for 1 second, repeated 5 times at 5 min intervals
Operating measuring ranges	Voltage Range	10 ... 120% of rated value
	Current Range	10 ... 120% of rated value (optional 10 ... 150% of rated value)
	Frequency	45...65 Hz
Reference conditions of accuracy	Reference temperature	23°C +/- 2°C
	Input waveform	Sinusoidal (distortion factor 0.005)
	Auxiliary supply voltage	Rated Value ±1%
	Auxiliary supply frequency	Rated Value ±1%
	Voltage Range	20...100% of Nominal Value
	Current Range	10...100% of Nominal Value
	Input Frequency	50 Hz / 60 Hz

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Accuracy	Voltage	±1.0% of Nominal value (Optional ±0.5% Available)	
	Current	±1.0% of Nominal value (Optional ±0.5% Available)	
Influence of variations	Temperature coefficient (for rated value range of use (0...50°C)	0.025%/°C for Voltage 0.05%/°C for Current	
Applicable standards	EMC	IEC 61326-1: 2005	
	Safety	IEC 61010-1-2001 , Permanently connected use	
	IP for water and dust	IEC60529	
Safety	Pollution degree	2	
	Installation category	III	
	High Voltage Test	2.2 kV AC, 50Hz for 1 minute.	
Environmental	Operating temperature	0 to +55°C	
	Storage temperature	-25°C to +70°C	
	Relative humidity	0... 90% non condensing	
	Warm up time	Minimum 3 minute	
	Shock	15g in 3 planes	
	Vibration	10... 55 Hz, 0.15mm amplitude	
Enclosure	Front	IP 50(IP 54 on request).	
	Back	IP 20	
Dimensions and weights	a) 96x96 DPM	Bezel size (DIN 43 718)	96 mm x 96 mm.
		Panel cut-out	92 +0.8 mm x 92 + 0.8 mm.
		Overall depth	40 mm.
		Weight	310 gm. Approx.
	b) 48x96 DPM	Bezel size (DIN 43 718)	48 mm x 96 mm.
		Panel cut-out	43.5 + 0.6 mm x 92 + 0.8 mm.
		Overall depth	68 mm.
		Weight	250 gm. Approx.

Parameters measured and displayed

A) DPM Eine 3V

Network type	Displayed Parameter
1) 3 Phase 4 wire	a. Phase –Neutral Voltage VL1 b. Phase –Neutral Voltage VL2 c. Phase –Neutral Voltage VL3 d. Line-Line Voltage VL1L2 e. Line-Line Voltage VL2L3 f. Line-Line Voltage VL3L1 g. System Voltage
2) 3 Phase 3 wire	a. Line-Line Voltage VL1L2 b. Line-Line Voltage VL2L3 c. Line-Line Voltage VL3L1 d. System Voltage

B) DPM Eine 3A

Network type	Displayed Parameter
1) 3 Phase 4 wire and 3 Phase 3 Wire	a. Phase Current IL1 b. Phase Current IL2 c. Phase Current IL3 d. System Current

C) DPM Eine V

Network type	Displayed Parameter
1 Phase 2 wire	Phase –Neutral Voltage VL

D) DPM Eine 3A

Network type	Displayed Parameter
1 Phase 2 wire	Phase Current IL

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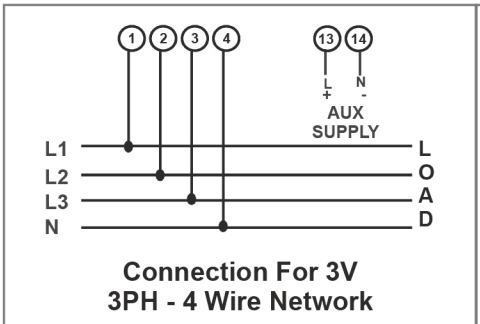
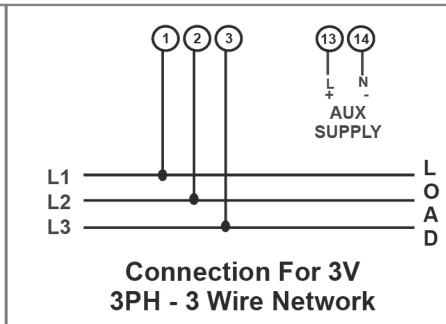
Parameters measured and displayed

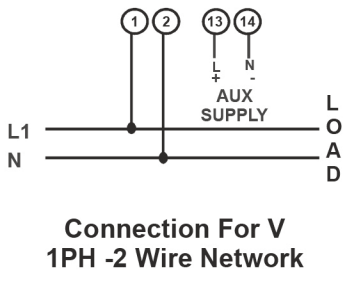
A) For 96x96 DPM



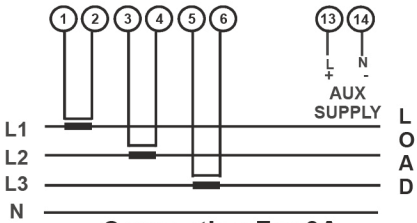
Connection For 3V
3PH - 4 Wire Network



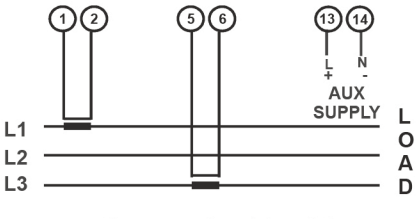
Connection For 3V
3PH - 3 Wire Network



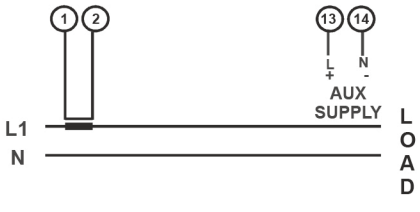
Connection For V
1PH -2 Wire Network



Connection For 3A
3PH - 4 Wire Network

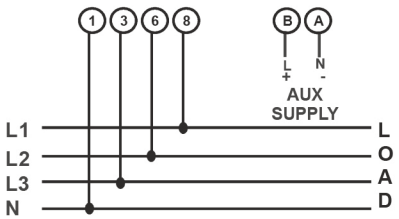


Connection For 3A
3PH - 3 Wire Network

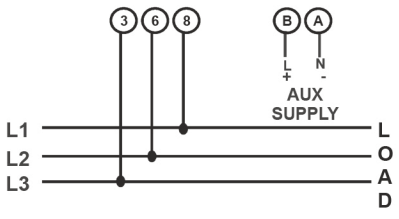


Connection For A
1PH - 2 Wire Network

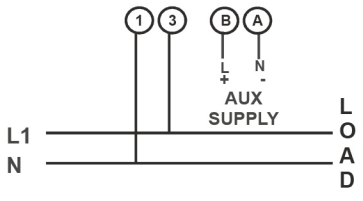
B) For 48x96 DPM



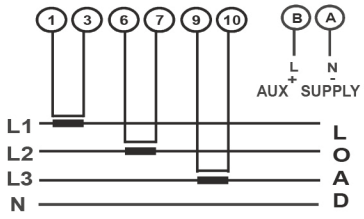
Connection For 3V
3PH - 4 Wire Network



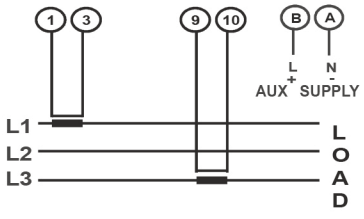
Connection For 3V
3PH - 3 Wire Network



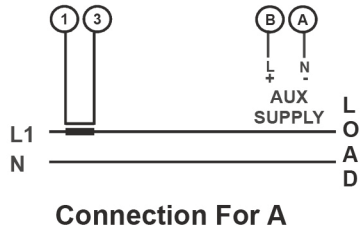
Connection For V
1PH Network



Connection For 3A
3PH - 4 Wire Network



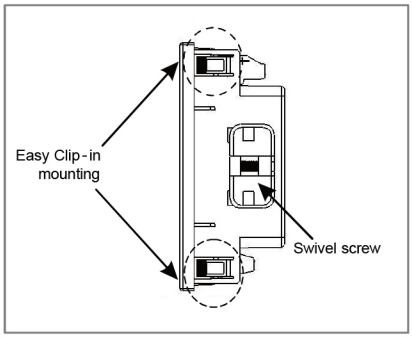
Connection For 3A
3PH - 3 Wire Network



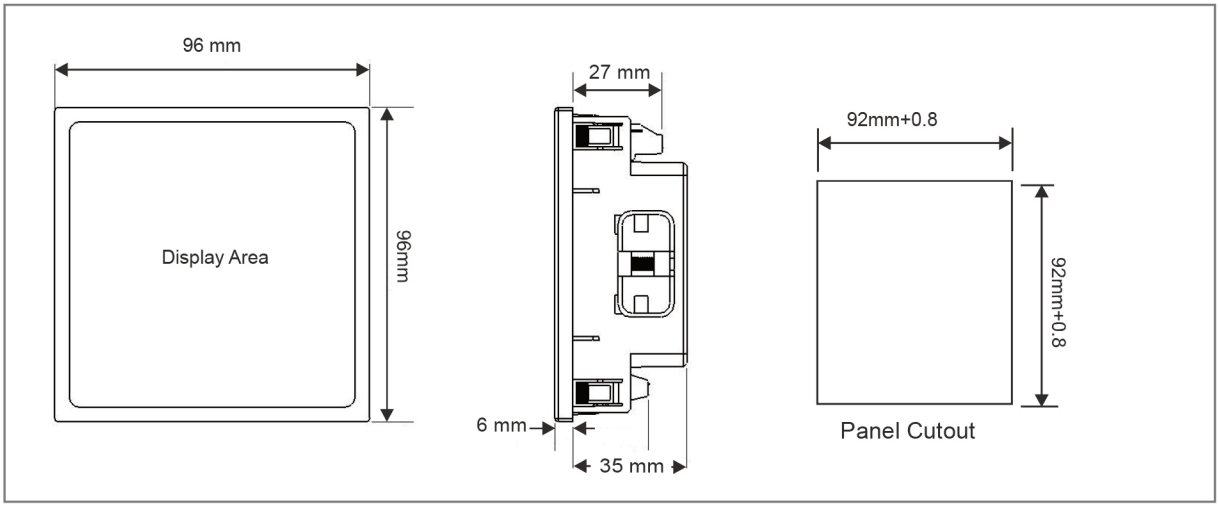
Connection For A
1PH Network

Installation and Dimensions

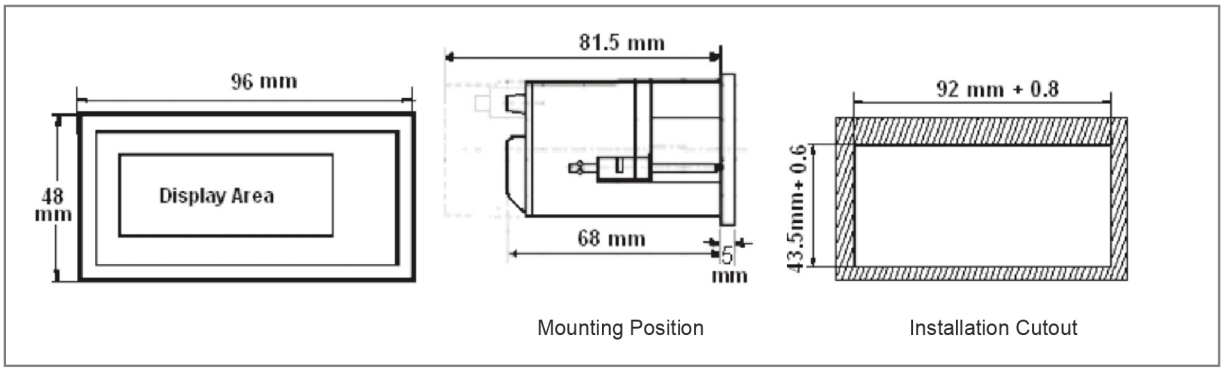
Easy Clip in Installation on Panel for 96x96 DPM:



A) For 96x96 DPM



A) For 48x96 DPM



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Ordering information

Celsa Eine Voltage

A) 3-Phase Voltage (3V)

Ordering Information	Ordering Code
Celsa Eine Voltage - 3V	
System Type 3 Phase Programable as 4 wire or 3 wire on site	 **3V**
Auxiliary Voltage 40 - 300V AC - DC (± 5%) 20 - 60V DC / 20-40V AC (± 5%)	 **AD** **D**
Size 48x96 96x96	 **48** **96**

B) 1-Phase Voltage (V)

Ordering Information	Ordering Code
Celsa Eine Voltage - V	
System Type 1 Phase	 **V**
Input Voltage 57.5V L-N to 300V L-N 600V L-N	 **300** **600**
Auxiliary Supply 40 - 300V AC - DC (± 5%) 20 - 60V DC / 20-40V AC (± 5%)	 **AD** **D**
Size 48x96 96x96	 **48** **96**

Order Code Example:

- Celsa Eine Voltage – 3V – AD - 96:

  Celsa Eine Voltage, 3 phases, 40-300V AC auxiliary supply, Dimensions 96x96mm

- Celsa Eine Voltage – V – 300 – AD - 48:

  Celsa Eine Voltage, single phase, 57.5 to 300V L-N input voltage, 40-300V AC auxiliary supply, Dimensions 48x96mm

Celsa Eine Current

Ordering Information	Ordering Code
Celsa Eine Current	
System Type 3 Phase (Programable as 4 wire or 3 wire on site) 1 Phase	 **3A** **A**
Auxiliary Voltage 40 - 300V AC - DC (± 5%) 20 - 60V DC / 20-40V AC (± 5%)	 **AD** **D**
Size 48x96 96x96	 **48** **96**

Order Code example:

- Celsa Eine Current 3A - AD - 96:

  Celsa Eine Current, 3 Phase, 40-300 V AC-DC Auxiliary Supply, Dimensions: 96x96 mm

Celsa Eine + DC Voltage / Current

Celsa Eine + Voltage / Current are specially designed to measure electrical parameters like DC Voltage or DC Current and display it in terms of any parameter or process value.

RISH Eine has been designed for industrial applications, which frequently require precise and on-site adjustment of the display range.

Application

- Distribution and Control Panels
- Electrical load monitoring
- In Laboratories
- In Industrial automation

Product Features

Low Back Depth

The instrument has very low back depth (behind the panel) of less than 40 mm.

Rescalable Display range

The meter is completely programmable and user can easily scale the values as per his requirements onfield.Setting for '-ve' sign and decimal point position is also provided.

Function keys

Using 2 function keys it becomes easy and convenient for user to program the meter without any difficulty.

Bent Characteristics

The meter supports bent characteristics. Hence user can configure the meter as per requirement.

Power Factor Display

The meter can be configured to display power factor also.

Ambient Temperature Indication

The meter gives an accurate indication of the ambient temperature in °C and °F.

Auxillary Supply

The Auxillary supply ranges 40-300V AC-DC and 20-60V DC / 20-40V AC are supported.

4 Full digits Ultra Bright LED display

14mm full range display possible of 4 digits having maximum count - 9999.

Wide Input Range

Wide range of voltages and currents to choose from.

Enclosure Protection for dust and water

Conforms to IP 50 (front face) as per IEC 60529.

Compliance to International Safety standards

Compliance to International Safety standard IEC 61010-1- 2010.

EMC Compatibility

Compliance to International standard IEC 61326 Class B.

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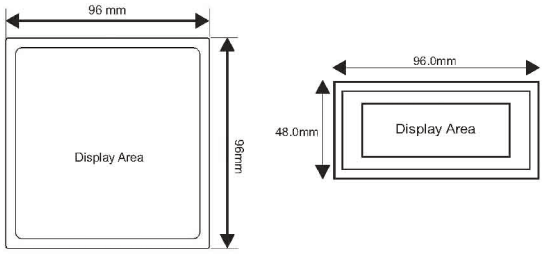
Technical Specifications

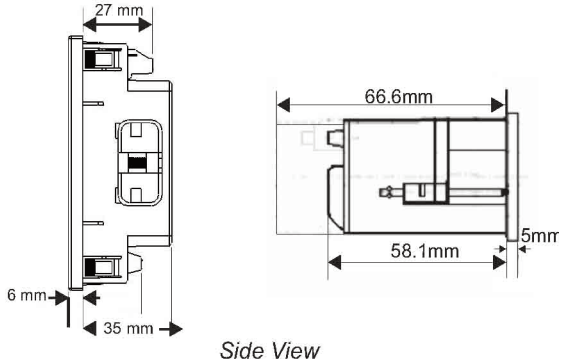
Measuring ranges Celsa Eine + Voltage	Input mV ranges	-75...0...75mV, -150...0...150mV
	Input Voltage range	-5...0...5V, -10...0...10V, 0...500V, 0...1000V
	Max continuous input voltage	120% of Nominal value
Measuring ranges Celsa Eine + Current	Input Current ranges	-10...0...10mA, -20...0...20mA, 4...20mA, -1...0...1A, -5...0...5A
	Max continuous input current	120% of Nominal value
Accuracy	Celsa Eine + Voltage	<0.5% of Display End value ±1 digit (Input current < 300uA) for V/mV
	Celsa Eine + Current	<0.5% of Display End value ±1 digit (Voltage drop < 600mV) for A/mA
	Ambient Temperature	±3 °C
Influence of variations	Temperature coefficient	0.05% / °C, plus
	Zero point drift	0.025% / °C
Display	Type	1 line 4-digit LED display
	Display Count Setting	-9999...-10 or +10...+9999 counts
	Digit Height	14mm
	Decimal point position	Configurable
	Negative Display indication	'-'
	Overload Indication	" - oL - " (above 125% of nominal value)
Auxiliary supply	External Aux	40 - 300V AC - DC 20 - 60V DC / 20-40V AC 80 - 300V AC (for model 96x96)
	Frequency range	45 - 65Hz
	VA burden	< 4.5VA approx. at $240V_{LN}$, 50Hz < 1VA approx. at $24V_{LN}$, 50Hz
Reference conditions for accuracy	Reference Temperature	23°C ±2°C
	Auxiliary Supply Voltage	Rated Value ±1%
	Auxiliary Supply Frequency	Rated Value ±1%
Applicable standards	EMC	IEC 61326-1:2005
	Immunity	IEC 61000-4-1 up to 4. Level 3 industrial
	Safety	Low level IEC 61010-1:2010 , Permanently connected use IP for water & dust IEC60529
	Pollution degree	2
	Installation category	III
	High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits
Environmental	Operating temperature	-10 to +55°C
	Storage temperature	-20 to +70°C
	Relative humidity	0... 90% non condensing
	Warm up time	Minimum 3 minute
	Shock	15g in 3 planes
	Vibration	10... 55 Hz, 0.15mm amplitude
Dimensions and weight	Bezel size	96 mm x 96 mm DIN43718 (for model 96x96) 48 mm x 96 mm DIN43718 (for model 48x96)
	Panel cut-out	92 +0.8mm x 92 + 0.8mm (for model 96x96) 43.5 +0.6mm x 92 + 0.8mm (for model 48x96)
	Overall depth	<40mm (for model 96x96) <75mm (for model 48x96)
	Weight	310 gr. approx. (for model 96x96) 250gr. approx. (for model 48x96)
Factor C (The highest value applies if calculated C is less than 1, then C=1 applies)	Linear characteristics: $C = \frac{1 - (Y0/Y2)}{1 - (X0/X2)}$ or C=1	Bent characteristics: For X0 ≤ X ≤ X1 $C = \frac{Y1 - Y0}{X1 - X0} \cdot \frac{X2}{Y2}$ or C=1 For X1 ≤ X ≤ X2 $C = \frac{1 - (Y1/Y2)}{1 - (X1/X2)}$ or C=1

X0 = Start value of input, Y0 = Start value of display ,
X1 = Elbow value of input ,Y1 = Elbow value of display
X2 = End value of input ,Y2 = End value of display

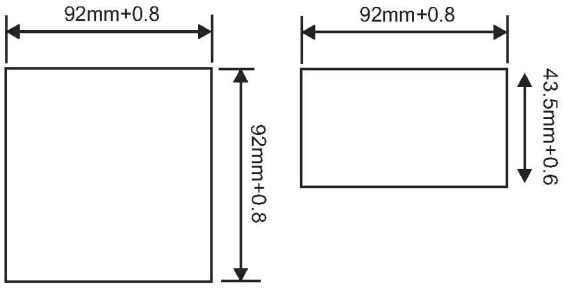
Dimensions:



Front View

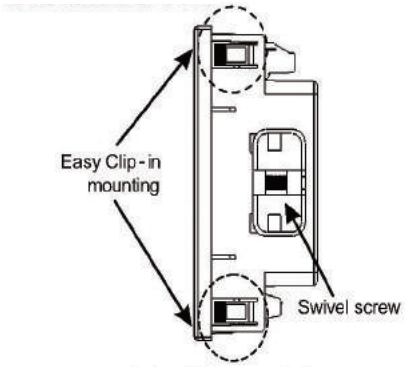


Side View

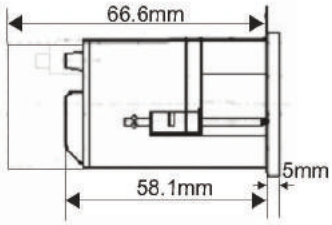


Panel Cutout

Installation:

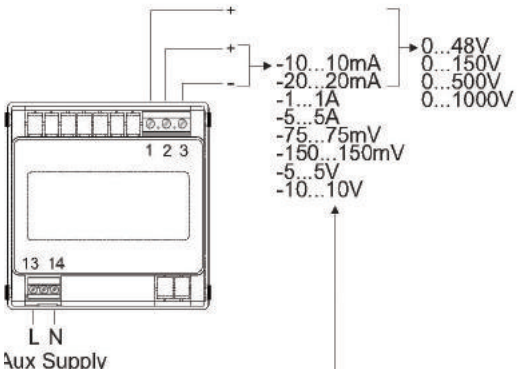


96x96 model



48x96 model

Electrical connections:



Ordering information for model 96x96:

Ordering Information	Ordering Code
Celsa Eine + Voltage	1
Input Voltage	
75 mV	**75M**
150 mV	**150M**
0 - 5V	**5**
0 - 10V	**10**
0 - 48V	**48**
0 - 150V	**150**
0 - 500V	**500**
0 - 1000V	**1000**
Auxiliary Supply	
40 - 300V AC - DC (± 5%)	**HA**
80 - 300V AC	**LA**
20 - 60V DC / 20-40V AC (± 5%)	**L**

Ordering Information	Ordering Code
Celsa Eine + Current	1
Input Current	
0 - 10 mA	**10M**
0 - 20 mA	**20M**
4 - 20 mA	**20MZ**
0 - 1A	**1A**
0 - 5A	**5A**
Auxiliary Supply	
40-300V AC - DC (± 5%)	**HA**
80-300V AC	**LA**
20-60V DC / 20-40V AC (± 5%)	**L**

Order Code Example:

- Celsa Eine + Voltage – 1 – 500 – L : Celsa Eine + Voltage , VDC, 500 V input voltage, 80-300V AC auxiliary supply
- Celsa Eine + Current – 2 – 20M – HA: Celsa Eine + Current , ADC, 20 mA input current, 40-300 V AC-DC auxiliary supply
- Celsa Eine + Voltage – 1 – 500 – L: Celsa Eine + Voltage, VDC, 500 V input voltage, 20-60V DC / 20-40V AC auxiliary supply
- Celsa Eine + Current – 2 – 20M – L: Celsa Eine + Current , ADC, 20 mA input current, 20-60V DC / 20-40V AC auxiliary supply

Ordering information for model 48x96:

Ordering Information	Ordering Code
Celsa Eine + Voltage	148
Input Voltage	
75 mV	**75M**
150 mV	**150M**
0 - 5V	**5**
0 - 10V	**10**
0 - 48V	**48**
0 - 150V	**150**
0 - 500V	**500**
0 - 1000V	**1000**
Auxiliary Supply	
40 - 300V AC - DC (± 5%)	**HA**
80 - 300V AC	**LA**
20 - 60V DC / 20-40V AC (± 5%)	**L**

Ordering Information	Ordering Code
Celsa Eine + Current	248
Input Current	
0 - 10 mA	**10M**
0 - 20 mA	**20M**
4 - 20 mA	**20MZ**
0 - 1A	**1A**
0 - 5A	**5A**
Auxiliary Supply	
40-300V AC - DC (± 5%)	**HA**
80-300V AC	**LA**
20-60V DC / 20-40V AC (± 5%)	**L**

Order Code Example:

- Celsa Eine + Voltage – 148 – 500 – LA : Celsa Eine + Voltage , VDC, 500 V input voltage, 20-60V DC / 20-40 AC auxiliary supply
- Celsa Eine + Current – 248 – 20M – HA: Celsa Eine + Current , ADC, 20 mA input current, 40-300 V AC-DC auxiliary supply

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