

CIP-V/I - Transducers of voltage or current



- True RMD Measurement
- Onsite selectable output type (DC current/ DC voltage)
- Accuracy class 0.5 (IEC/EN60688)
- Wide auxiliary power supply which can be accept any between 60 - 300V AC/DC or 24V - 60V AC/DC
- Output response time < 400ms
- Fast and easy installation on DIN RAIL or onto a wall or in a panel using optional screw hole bracket
- Connection terminal: Conventional screw type
- LCD display
- Fully onsite programmable input range for CIP-V and input current range for CIP-I

Optional

- Available in single or dual output type
- RS485 (MODBUS) Communication

Application

The transducers CIP-V / CIP-I are used to measure and convert AC voltage or current input into a load independent DC current or voltage output signal. Output signal generated is proportional to the root mean square value of the input current or voltage.

Product Features

Measuring Input

AC voltage/current input signal, sine wave or distorted wave form

Analog Output (Single or dual)

Isolated analog output which can be set onsite either to voltage or current output..

Accuracy

Output signal accuracy class 0.5 as per International Standard IEC/ EN60688.

Programmable Input/Output

The transducer can be programmed using front key and display or through RS485.

LED Indication

LED Indication for power in and output type.
(Current output: red LED / Voltage output: green LED).

Display Module

Optional 7 segment LCD display with backlit and keypad. For displaying measured parameters and onsite configuration of input/output.

RS485 Communication (Optional)

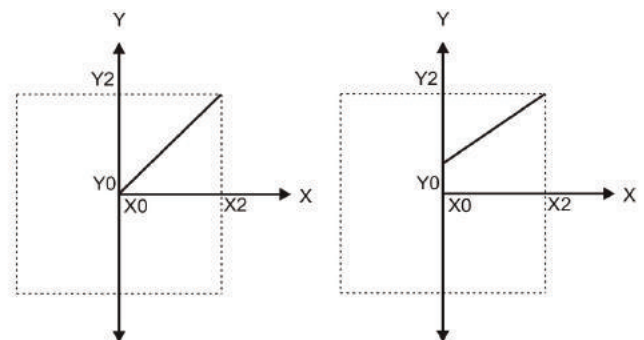
Optional RS485 communication is available. For reading measured parameters and onsite configuration of input/output.

Symbols and their meaning

X	Input AC Voltage / AC Current
X0	Start value of input
X1	Elbow value of input
X2	End value of input
Y	Output DC Voltage / DC Current
Y0	Start value of output DC Voltage / DC Current
Y1	Elbow value of output DC Voltage / DC Current
Y2	End value of output DC Voltage / DC Current
R_N	Rated value of output burden
U_N	Nominal input voltage

Output characteristics:

Example of setting with Linear Characteristics



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

Note: End value (Y2) of output cannot be changed onsite

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Technical Specifications

Measuring Input X

Voltage Transducer CIP-V

Nominal input voltage U_N (AC RMS) (PT Secondary range)	$57\text{ V} \leq U_N \leq 500\text{ V}$
PT primary range	57 V to 400 KV
Nominal Frequency F_N	45...66 Hz
Nominal input voltage burden	< 0.6 VA at U_N
Overload capacity	1.2* U_N , continuously 2* for 1 second, repeated 10 times at 10 minute intervals (but maximum 300V with power supply powered from measuring input)

No need of external potentiometer. User can set full scale output for desired input with the help of programmable PT secondary.

Current Transducer CIP-I

Nominal input current I_N (AC RMS) (CT Secondary range)	$1\text{ A} \leq I_N \leq 5\text{ A}$
CT primary range	1 A to 9999 A
Nominal Frequency F_N	45...66 Hz
Nominal input current burden	< 0.2 VA at I_N
Overload capacity	1.2* U_N , continuously 10* for 3 second, repeated 5 times at 5 minute intervals 50* for 1 second, repeated 1 time at 1 hour interval (max 250A)

No need of external potentiometer. User can set full scale output for desired input with the help of programmable CT secondary.

Measuring Output Y (Single or optional dual)

Output type	Load independent DC voltage or DC current (onsite selectable through DIP switches or programming)		
Load independent DC output	0...20mA / 4...20mA or 0...10V		
Output burden with DC current Signal	$0\text{V} \leq R \leq 15\text{V}/\text{Y}2$		
Output burden with DC voltage Signal	$\text{Y}2/(2\text{mA}) \leq R \leq \infty$		
Current limit under overload	R=0	$\leq 1.25 * \text{Y}2$ with current output $\leq 100\text{mA}$ with voltage output	
Voltage limit under	R= ∞	$\leq 1.25 * \text{Y}2$ with voltage output $\leq 30\text{V}$ with current output	
Residual Ripple in output signal	$\leq 1\%$ pk-pk		
Response time	< 400ms		

Auxiliary Power Supply

AC/DC auxiliary supply	60V...300V AC/DC $\pm 5\%$	or	24V...60V AC/DC $\pm 105\%$
AC auxiliary supply frequency range	45 to 65Hz		
Auxiliary supply consumption	60V...300V AC/DC	$\leq 8\text{VA}$ for single output	$\leq 10\text{VA}$ for dual output
	24V...60V AC/DC	$\leq 5\text{VA}$ for single output	$\leq 6\text{VA}$ for dual output

Accuracy (According to IEC 60688)

Reference value	Output end value $\text{Y}2$ (voltage or current)		
Basic accuracy	class 0.5		
Factor C (the highest value applies if calculated C is less than 1, then C=1 applies)	Linear characteristics		
	$C = \frac{1-(\text{Y}0/\text{Y}2)}{1-(\text{X}0/\text{X}2)}$	or C=1	
		For $\text{X}0 \leq \text{X} \leq \text{X}1$	Bent characteristics $C = \frac{(\text{Y}1-\text{Y}0) \cdot \text{X}2}{(\text{X}1-\text{X}0) \cdot \text{Y}2}$ or C=1
		For $\text{X}1 \leq \text{X} \leq \text{X}2$	$C = \frac{1-(\text{Y}1/\text{Y}2)}{1-(\text{X}1/\text{X}2)}$ or C=1

Reference conditions for Accuracy

Ambient temperature	23°C +/- 1°C	
Pre-conditioning	30min according to IEC EN 60688	
Input variable	Rated voltage / Rated current	
Input waveform	Sinusoidal, form factor 1.1107	
Input signal frequency	50 or 60Hz	
Auxiliary supply voltage	at nominal range	
Output load	$R_n = 7.5\text{V} / \text{Y}2 \pm 1\%$	with DC current output signal
	$R_n = \text{Y}2 / 1\text{mA} \pm 1\%$	with DC voltage output signal
Miscellaneous	according to IEC EN 60688	

Additional Error

Temperature influence	$\pm 0.2\%$ / 10°C
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Influence of Variations

As per IEC EN 60688 Standard	Output Stability	< 30min
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Environmental

Nominal range of use	0°C...23°C...45°C (usage group II)
Storage temperature	-40 to +70°C
Relative humidity of annual mean	$\leq 75\%$
Altitude	2000m max.

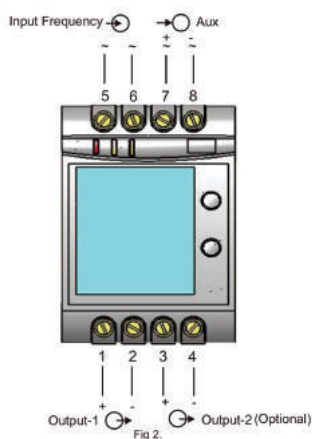
Safety	
Protection class	II (Protection isolated, EN 61010)
Protection	IP40, housing according to EN 60 529 IP20, terminal according to EN 60 529
Pollution degree	2
Installation category	III
Installation voltage	50 Hz, 1 min (EN 61 010-1) 5500V DC, input versus outer surface 3700V DC, input versus all other circuits 3700V DC, auxiliary supply versus outer surface and output 490V DC, output versus output versus each other versus outer surface
Installation data	
Mechanical housing	Lexan 940, polycarbonate, flammability class V-0 according to UL94, self xtinguishing, non dripping, free of halogen
Mounting position	Rail mounting/ wall mounting
Weight	approx. 0.4kg
Ambient tests	
EN 60 068-2-6	Vibration
Acceleration	± 2 g
Frequency range	10...150..10Hz
Rate of frequency sweep	1 octave /minute
Number of cycles	10, in each of the three axes
EN 60 068-2-7	Schock
Acceleration	3x50g / 3 shocks in each direction
IEC 61000-4-2/-3/-4/-5/-6 EN 55 011	Electromagnetic compatibility

LED Indication

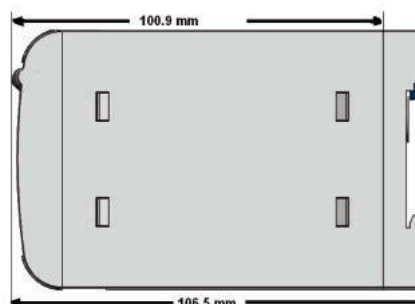
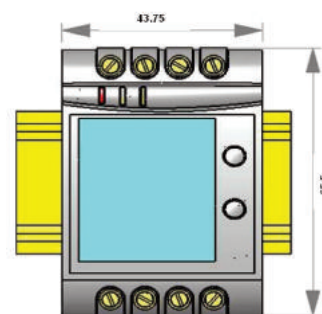
ON LED	Aux. supply healthy condition	Green LED continuous ON
O/P1 LED	Output1 voltage selection	Green LED continuous ON
	Output1 current selection	Red LED continuous ON
O/P2 LED	Output2 voltage selection	Green LED continuous ON
	Output2 current selection	Red LED continuous ON

Electrical Connections

Connection	Terminal details	
Measuring input	~	5
	~	6
Auxiliary power supply	~ +	7
	~ -	8
Measuring output-1	+	1
	-	2
Measuring output-2	+	3
	-	4



Dimensions



Programming

Can be done in two ways:

1. Programming via front LCD and two keys
2. Programming via optional RS485 (MODBUS) communication port
(Device address, Password, communication parameter, Output Type and simulation mode can be programmed).



Configuration CIP Transducer

To configure CIP Transducers Input/Output one of the two programming methods to be adapted along with mechanical switch setting (DIP switch setting on PCB)

DIP Switch Setting for Output

Type of output (current to voltage signal) has to be set by DIP switch. For programming of DIP switch the user needs to open the transducer housing and set the DIP switch located on PCB to the desired output type voltage or current output range changing is not possible with DIP switch setting.

The four pole DIP switch is located on the PCB on the CIP Transducers

DIP Swith Setting	Type of output signal
	load-independent current
	load-independent voltage

Type	Description	Output (to indicate)	Auxiliary supply (to indicate)
CIP-CA	Compact 1 output Current	0 - 20 mA 4 - 20 mA 0 - 10V	40 - 300V AC/DC 24 - 60V AC/DC
CIP-CV	Compact 1 output Voltage	0 - 20 mA 4 - 20 mA 0 - 10V	40 - 300V AC/DC 24 - 60V AC/DC