Instrument Description VP log-i range

The "VPlog-i" is a 4-20mA AC current sensor that measures AC currents up to 3200A (true-rms on a single phase power cable).

WARNING

This device should only be installed by qualified persons, who are trained and comply with local legislations for work on electrical installations.

High voltage can be deadly! To avoid damage, personal injury or death, follow these precautions:

- To avoid electric shock, use caution during installation and use of this product; high voltages and currents may be present in circuit under test.

- Do not use the VPLog-i if damaged. Always connect to display device before it is installed around the conductor.

- Use the VPLog-i only as specified in the operating instructions; otherwise the safety features may not protect you.

- The clamp should be used on insulated cables and it is not recommended to use this clamp on open bus bars. If it is used on open bars the max voltage is **300V** to ground (This is the limit of signal cable)

- Adhere to local and national safety codes. Individual protective equipment must be used to prevent the shock and arc blast injury where hazardous live conductors are exposed.

- Before each use, inspect the VPLog-i. Look for cracks or missing portions of the housing or output cable insulation. Also look for loose or weakened components. Pay particular attention to the insulation surrounding the coil.

- Use caution when working with voltages above 60 V dc, 30 V ac rms or 42 V ac peak. Such voltages pose a shock hazard.

- Do not use VPLog-i in wet environments or in locations that hazardous gases exist.

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Product description

The sensor has 2 outputs:
- The analogue output is proportional to measured input and ranges from 4 to 20 mA.
- The pulse output generates a pulse frequency proportional to the current measured. This allows that the VPlog-i can be used as a simple power meter if a pulse counter is attached to the pulse output.
  The pulse outputs of up to 3 VPlog-i sensors can be connected together. The hard and software assures that there is no overlap between the pulses of different sensors.
- The sensor has an indication LED. This blinks when the "VPlog-I" is powered. The rate at which it blinks is proportional to the output current.

The following figure shows the module dimensions. The area of the loop formed by the measurement coil (light grey on the figure) depends on the full range capacity. For large currents, the area is larger to cope with wide power cables.
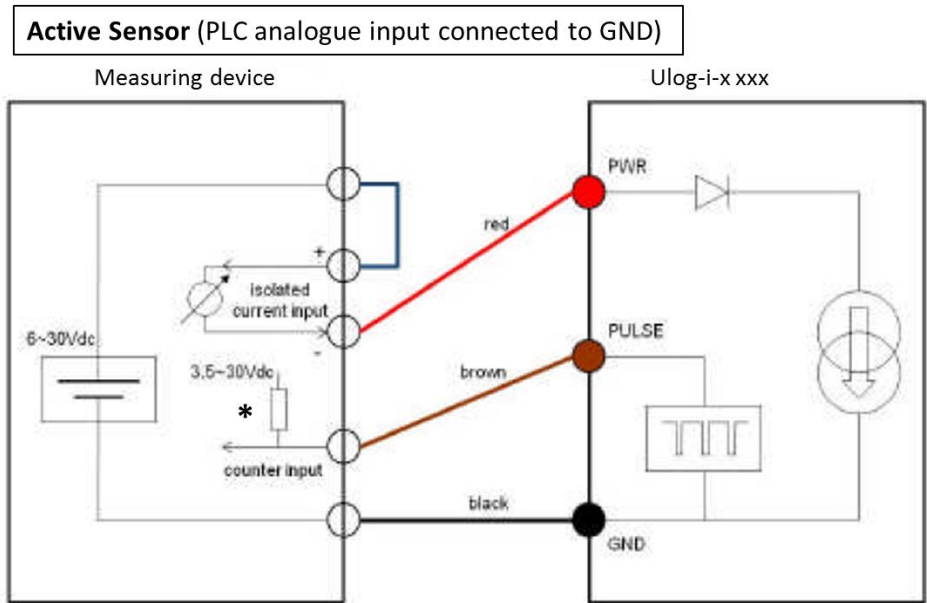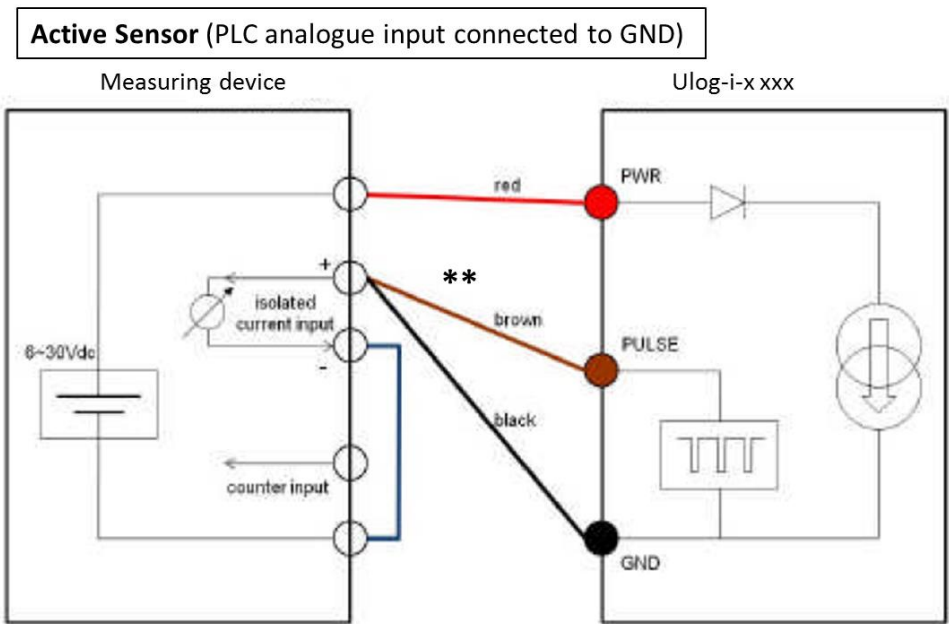
Figure 1 Global view of the sensor

Connection diagram

Active Sensor (PLC analogue input connected to GND)
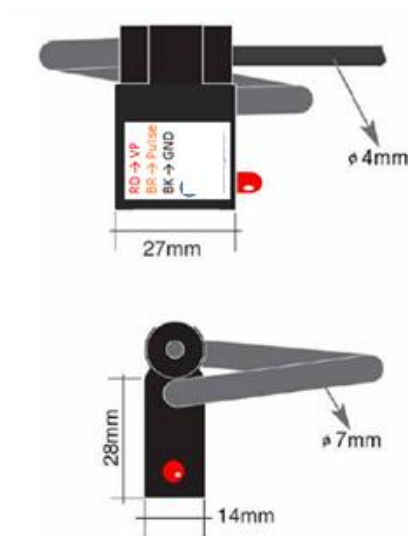
Note: * The pull-up resistor shall be calculated for a current of +/- 10mA
Example: A power supply of 24V = 2.2K ohm

Active Sensor (PLC analogue input connected to GND)

Note: ** When the pulse output is not used, connect it directly to GND or through a pull-up resistor to a supply. Never connect it directly to the supply, the supply will then be shorted to GND whenever a pulse is sent.

The VPlog-i sensor has 3 wires. Two of these are used for the supply. The third is a pulse output. This sensor has 2 outputs:

- One 4 to 20mA current output

- One pulse output.

The output of 4 to 20mA flows in the supply lines. The current can be measured either in the power line or the ground line. When the pulse output is used, the ground line is not suited because it carries extra current from the pulse output.

The pulse output requires a pull-up resistor. It can be connected to a counter input. The pulse output generates some extra current consumption.
When the pulse output is not used, connect it directly to GND or through a pull-up resistor to a supply. Never connect it directly to the supply, the supply will then be shorted to GND whenever a pulse is sent.

Terminals

Terminal	Colour	Designation
GND	Black	Ground
PWR	Red	6 to 30 Vdc
Pulse	Brown	GND-Pulse-PWR Connect to a supply with a pull-up resistor

Table: Sensor terminals

Safety

This device should only be installed by qualified persons, who are trained and comply with local legislations for work on electrical installations.
The clamp should be used on insulated cables and it is not recommended to use this clamp on open bus bars. If it is used on open bars the max voltage is 300V to ground (This is the limit of signal cable)

Technical Specifications

Specification	Unit	Min	Typ	Max	Conditions
Voltage (PWR to GND)	Vdc	6	-	30	(1), (2)
Pulse Supply Voltage	Vdc	3.5	-	30	(3), (4)
Power consumption	mA	4	-	20	
LED blink frequency	Hz		0.4		No current
			2.8		Full range
Power-on delay until valid	s		1.2		Output within 1% after valid
Crest factor	-		2.8		
Measurement bandwidth	Hz		720		50/60Hz version
			3400		400Hz version
Noise	A-rms		0.2		50/60Hz version
			0.04		400Hz version range 40A
Supply coefficient	ppm/V		160		(5)
Temperature coefficient	ppm/°C		100		(6)
Accuracy	% full scale	-1		1	(7)

Table: Electrical Specifications

(1) The sensor works with a supply down to 5Vdc. However, below 6Vdc the accuracy is about 1% worse for high output current.
(2) The sensor is loop powered, there is no need for a separate power supply.
(3) A pull-up resistor must be included between the PULSE output and the pulse supply voltage.
(4) The pulse supply voltage can be lowered to 3V. However the pulses will then be active only if the power consumption is below 10mA.
(5) The change of the output current, if the sensor voltage changes one Volt.
(6) The change of the output current, if the sensor temperature changes one degree Celsius.
(7) When mounted as shown in paragraph 6.1.

Specification	Unit	Min	Typ	Max	Conditions
Current output	mA	4	-	20	
Current input	A-rms	100	-	3200	50Hz current
		20	-	80	400Hz current
Pulse rate	Hz	0	-	2.66	

Table: Output ranges

Specification	Value
Coil length	170mm, 250mm, 350mm
Allowed cable diameter	35mm, 65mm, 95mm
Coil diameter	7mm
Coil bend radius	35mm
Housing W x H x D	26.7mm x 41.4mm x 13.6mm
Output cable	3m length, UL-LiYY, Double insulation
Weight (Housing + Coil)	120gr

Table: Mechanical specs

Specification	Value
Position sensitivity	0.7% of full scale for sensor rotated over 5˚
Operational ambient temp.	-20˚C t +70˚C
Operational relative humidity	Max. 95%, non condensing
Storage ambient temp.	-20˚C t +70˚C
Storage relative humidity	Max. 95%, non condensing

Table: Environmental specs

Ordering codes

The VPlog-i sensor is available in different models. These are shown in the table below.

Label	Ordering code	Frequency	Current range	Pulses/Ah	Coil length
	-	Hz	Arms		mm
VPlog-i-A100	i-A100	50/60	100	10	170
VPlog-i-A200	i-A200	50/60	200	10	170
VPlog-i-A400	i-A400	50/60	400	10	170
VPlog-i-A800	i-A800	50/60	800	10	170
VPlog-i-B800	i-B800	50/60	800	1	250
VPlog-i-B1500	i-B1500	50/60	1500	1	250
VPlog-i-C1500	i-C1500	50/60	1500	1	350
VPlog-i-C3200	i-C3200	50/60	3200	1	350
VPlog-i-H40	i-H40	400	40	100	170
VPlog-i-H80	i-H80	400	80	100	170

Table: Ordering codes