

Overview

The LA12 Magnetic Direct Current Sensors (MDCS™) use our proprietary magnetic material and hall element for magnetic detection of direct current (DC), alternating current (AC), and pulse current. The output voltage varies in proportion to the strength of the current measured.

Applications

Typical applications include inverter-based home appliances (air conditioners); general-purpose inverters; AC variable-speed drives and servo drives; industrial machinery; UPSs; and DC motor controls.

Benefits

- Detection of DC, AC, and pulse currents
- Limited fluctuations in output from changes in the power supply voltage and the ambient temperature
- Excellent linearity of the measured current and the converted power output
- Insulation of measured current and secondary output side
- Compact and lightweight
- RoHS compliant

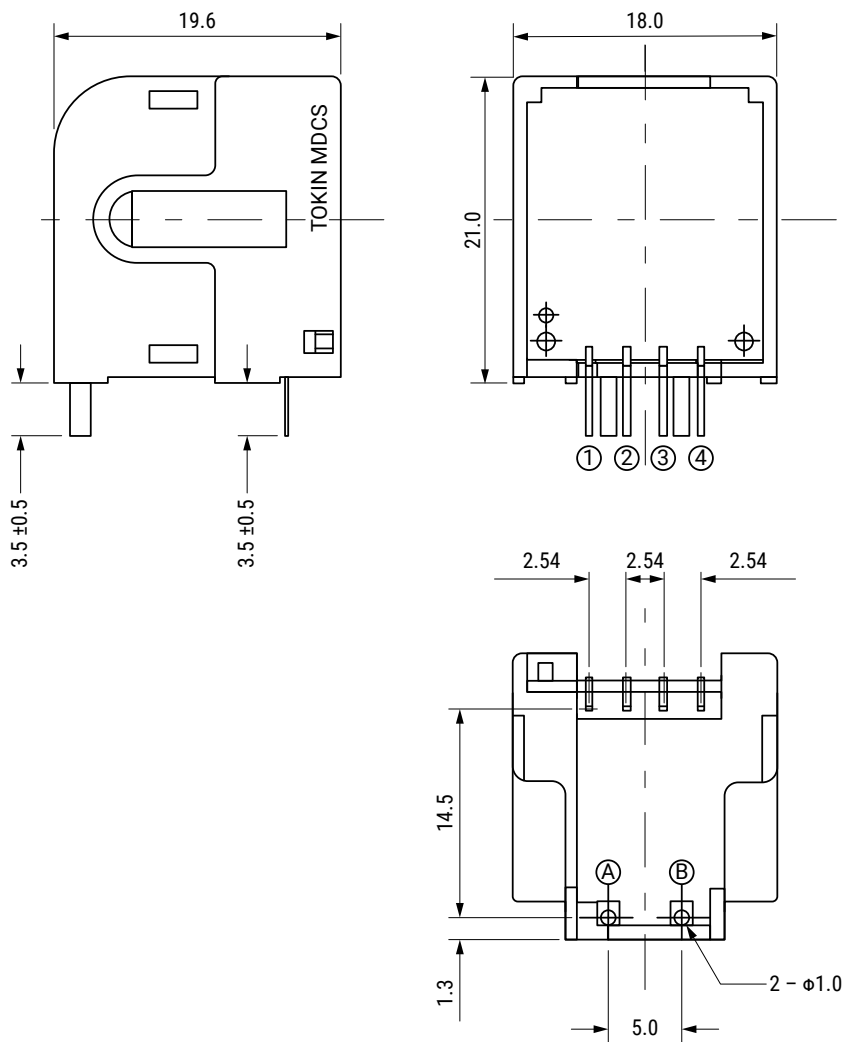


Ordering Information

LA12-	10	V21
Series	Rated Current AC (A)	Output Voltage (V)
LA12	10 48 50 60	V21 = 2

Dimensions in mm

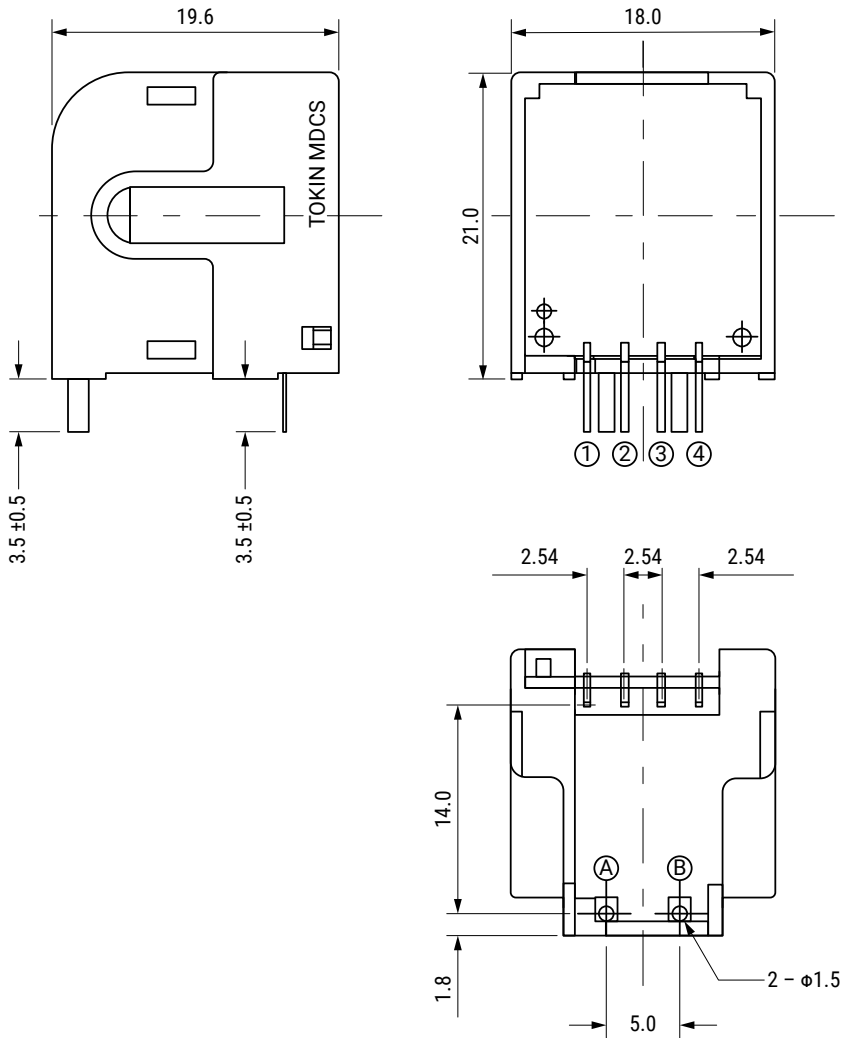
LA12-10V21



Pin Number	LA12
1	NC
2	GND (ground pin)
3	Vcc (+12 V)
4	V_{out} (output voltage pin)
A	(measured current \oplus pin)
B	(measured current \ominus pin)

Dimensions in mm cont.

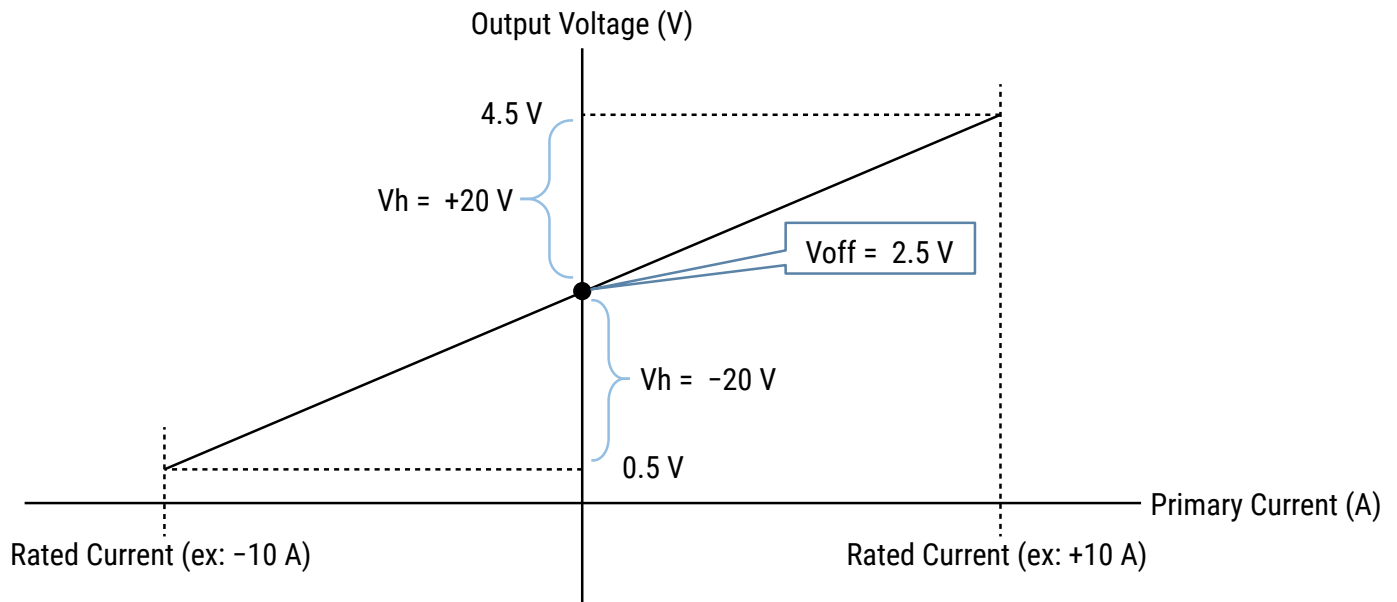
LA12-48V21, LA12-50V21, & LA12-60V21



Pin Number	LA12
1	NC
2	GND (ground pin)
3	Vcc (+12 V)
4	V _{out} (output voltage pin)
A	(measured current ⊕ pin)
B	(measured current ⊖ pin)

AC Output Characteristics

Output Voltage Example LA12-10V21



Environmental Compliance

All LA12 sensors are RoHS compliant.



Specifications

Item	Performance Characteristics
Rated Current	10 – 60 A
Power Supply Voltage	12 V
Consumption Current	40 mA Maximum
Output Voltage	2,000 ±0.06 V
Residual Voltage	2,500 ±0.06 V
Hysteresis	60 mV Maximum
Pulse Response	20 µs maximum (di/dt = 100 AT/µs)
Linearity	-2 to 2
Insulation Withstand Voltage	2,000 VAC/1 minute
Insulation Resistance	500 VDC at 500 MΩ (between wires and terminal)
Operating Temperature Range	-10°C to +75°C
Storage Temperature Range	-15°C to +80°C

Table 1 – Ratings & Part Number Reference

Part Number	Rated Current (A)	Primary Side Windings (Turn)	Scope of Measurement	Power Supply Voltage ¹ (V)	Output Voltage ² (V)	Residual Voltage ³ (V)	Insulation Withstand Voltage ⁴	Insulation Resistance ⁴	Weight (g)
LA12-10V21	10	6	0 to 100% of rated current	12 ±5%	2,000 ±0.06	2,500 ±0.06	2,000 VAC /1 minute	500 MΩ	9.0
LA12-48V21	48	2							7.8
LA12-50V21	50	2							7.8
LA12-60V21	60	1							7.4

¹ A power supply voltage variation 30 mV maximum

² At rated current and RL = 10 kΩ, temperature characteristics ±0.15 %/°C

³ At 0A and RL = 10 kΩ, temperature characteristics ±4 mV/°C

⁴ At 500 VDC, between wire and terminals

Soldering Process

LA12-10V21, LA12-48V21, LA12-50V21, & LA12-60V21

Reflow Soldering	Heating temperature	260°C
	Heating time	within 10 seconds
Iron Soldering	Temperature of tip	350°C or lower
	Worktime	within 3 seconds

Packaging

Part Number	Packaging Type	Pieces Per Box
LA12-10V21	Tray	400
LA12-48V21		
LA12-50V21		
LA12-60V21		

Handling Precautions

Precautions for Product Storage

Current sensors should be stored in normal working environments. While the sensors are quite robust in other environments, exposure to high temperatures, high humidity, corrosive atmospheres, and long-term storage degrade solderability.

KEMET recommends that maximum storage temperature not exceed 80°C and atmospheres should be free of chlorine and sulfur-bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts. Avoid storage near strong magnetic fields, as they can magnetize the product and cause its characteristics to change. Limit ambient magnetic fields to 50e or less.

For optimized solderability, the stock of current sensors should be used within 12 months of receipt.

Before Using Magnetic Direct Current Sensors

- Do NOT drop or apply any other mechanical stress, as such stresses may change performance characteristics.
- Do NOT exceed 260°C for 10 seconds when soldering. This is the maximum heat resistance grade of these sensors. Use a low-corrosion type flux when soldering.
- Do NOT allow strong static electricity near the sensor, as the circuit uses ICs. Static electricity can cause damage. Take static electricity precautions when handling.

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Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

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