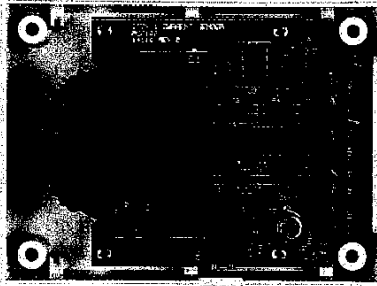


KEITHLEY METRABYTE

MODEL ITOV-1 NON-CONTACT AC AND DC CURRENT SENSOR

SIGNAL CONDITIONING PRODUCTS



FEATURES

- Non-contact Current measurements to 100 Amps.
- Signal Isolation to 1KV
- 0-2 Vdc Output signal
- Field Configurable for high Amperage

APPLICATIONS

- Measure AC & DC Ground Currents
- Measure Power Supply Ripple
- Pump and Mctor Efficiency monitoring
- Maintenance Scheduling

FUNCTIONAL DESCRIPTION

MetraByte's new ITOV current sensor is a small, lightweight, ruggedly reliable and cost effective device employing advanced Hall Effect technology for non-contact AC & DC current measurements. Two full scale ranges are provided: 0-2 Amps and 0-100 Amps. Additionally, the ITOV may be field configured for any full scale range to a maximum of 100 Amps.

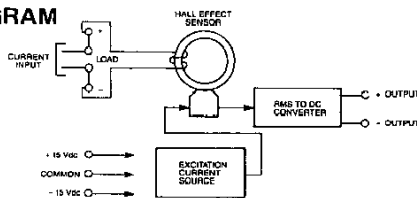
The ITOV accepts input signals from DC to 1 KHz and converts the throughput current to a 0-2 Vdc output signal. This output may be connected to any MetraByte analog input Digital Panel Meter.

The ITOV provides for both a Gain (R10) and Offset (R6) Adjustments allowing manual zero and span control for those less than ideal electrical environments or for fine tuning the ITOV to a specific application. The ITOV consists of a split iron core toroid with a Hall generator placed within the toroid gap (split). As current passes through the iron core and the magnetic field builds, the toroid core concentrates the magnetic flux of the conductor (iron) to the Hall generator located within the core gap. The Hall voltage (output) is directly proportional to the strength of the magnetic field generated within the iron core in response to the magnitude of the current passing through the core. Input signals may be wired directly to the LOAD terminals (+ & -) of the ITOV or for larger currents, the current carrying wire may be passed directly through the opening in the iron core.

The ITOV requires excitation in the range +12 thru +15 Vdc @ 45 mA and -12 thru -15 Vdc @ 5 mA. When excited, the ITOV will provide a fully isolated output voltage proportional to the current passing through the toroid. The ITOV may be used as configured from MetraByte (50 internal turns of 18 ga solid wire) for a full scale 0-2 Amps RMS (0 to 2 Vdc output) or may be externally re-wound for higher (100 Amps, max) current sensing applications. The wire size and number of external turns of wire are application dependent.

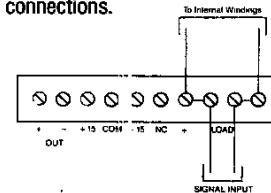
MetraByte's ITOV covers such wide ranging industrial measurement applications as pump and motor starting (surge) current, AC and DC ground currents, power supply ripple, high voltage applications through non-magnetic insulated wire, as well as pump and motor efficiency. Also, since the efficiency of many industrial machines is directly related to the amount of work it does (current draw), the ITOV is an invaluable monitoring device for maintenance scheduling and down time prevention. Examples of this can be found in machine shops (sharpness of a milling and drill bits), pump houses (viscosity of various liquids through a pump) and other load driven systems.

BLOCK DIAGRAM



CONNECTOR PINOUT

The following diagram illustrates the ITOV connector for signal input and primary power connections.



VOLTAGE OUTPUT CALCULATION

The ITOV accepts input signals from DC to 1 KHz and converts the throughput current to a 0-2 Vdc output signal according to the following formula:

- Internal Windings Output Signal = 1 Vdc/A RMS (Factor configuration)
- External Windings Output Signal = N/50 Vdc/A RMS
Where N = # of turns through toroid core (box)

NOTE: The Input frequency range is: from 1 KHz to DC, the current flow direction (+ or -), is not indicated. Also, as the input frequency approaches 1 KHz, the wire (windings) around the sensor creates an inductive reactance, resulting in several volts appearing across the load terminals at the 2 Amp max load current. This 1 KHz anomaly may be overcome by removing the internal windings and VERY LOOSELY wrapping the 50 turns around the outside (external) of the case and through the center of the toroid. This "loose" wrapping will lower the reactive effect of the coil.

SPECIFICATIONS

- Signal Input Range 0-2 Amps (Internally wound)
 0-100 Amps (Externally wound)
- Signal Isolation Voltage 1 KV (max)
- Input Frequency Range DC to 1 KHz
- Output Voltage 0-2 Vdc
- Accuracy @ 25 Deg C 1% of reading ± 10 mV
- Accuracy Tempco 0 to -0.10% per Deg C
- Response time 100 mSec (99%)
- Adjustments Gain (R10) and Offset (R6)

Power

- Positive Supply +12 to +15 Vdc @ 45 mA
- Negative Supply -12 to -15 Vdc @ 5 mA

Environmental

- Size 3.13x4.25x1.5 (in)
- Weight 7.7 oz.
- Operating Temp 0 to 70 Deg C
- Storage Temp -30 to 100 Deg C

ORDER: ITOV-1