MEGGiTT
smart engineering for
extreme environments

IOC4T

Input / output card

FEATURES

- From the Vibro-Meter® product line
- Signal interface card with 6 channels, for the MPC4 machinery protection card
- Screw terminal strip (48 terminals) for all input/output connections
- Contains 4 relays which can be attributed to alarm signals, under software control
- 32 fully-programmable open-collector outputs (jumper selectable) to IRC4 and RLC16 relay cards
- Provides buffered raw, voltage and current vibration outputs
- EMI protection for all inputs and outputs
- Live insertion and removal of cards (hot-swappable)

IOC4T

DESCRIPTION

The IOC4T input / output card acts as a signal interface for the VM600 series MPC4 machinery protection card, from Meggitt Sensing Systems' Vibro-Meter® product line. It is installed in the rear of a VM600 (ABE04x) rack and connects directly to the rack backplane via two connectors.

Each IOC4T card is associated with a specific MPC4 card and is mounted directly behind it in the rack. The IOC4T operates in slave mode and communicates with the MPC4, through connector P2, using an Industry Pack (IP) interface.

The front panel of the IOC4T (found on the rear of the VM600 rack) contains a terminal strip to connect to the transmission cables coming from the transducers/ conditioners. This strip is also used to

DESCRIPTION *(continued)*

input all signals from and output all signals to any external control system.

The IOC4T card protects all inputs and outputs against electromagnetic interference (EMI) and signal surges and also meets electromagnetic compatibility (EMC) standards.

The IOC4T connects the raw dynamic (vibration) and speed signals from the sensors to the MPC4. These signals, once processed, are passed back to the IOC4T and made available on the terminal strip on its front panel (rear of VM600). For the dynamic signals, four on-board digital-to-analog converters (DACs) provide calibrated signal outputs in the range 0 to 10 V. Four built-in voltage-to-current converters also allow signals in the range 4 to 20 mA to be obtained (jumper selectable).

The IOC4T contains four “local” relays that can be attributed to any specific alarm signals under software control. For example, these may be used to signal an MPC4 fault or a problem detected by a common alarm (Sensor OK, Alarm and Danger) in a typical application.

In addition, 32 digital signals representing alarms are passed to the rack backplane and may be used by optional IRC4 and RLC16 relay cards mounted in the rack (jumper selectable).

SPECIFICATIONS

Vibration inputs

Filtering	:	Filtered for protection against electromagnetic interference (conforms to EC standards). Refer to the MPC4 data sheet for additional specifications.

Vibration outputs

Filtering	:	Filtered for protection against electromagnetic interference (conforms to EC standards). Refer to the MPC4 data sheet for additional specifications.

Speed / phase reference inputs

Filtering	:	Filtered for protection against electromagnetic interference (conforms to EC standards). Refer to the MPC4 data sheet for additional specifications.

DSI control signal inputs

Operating principle	:	Detection of an open or closed circuit on the input
Alarm reset (AR)	:	A closed contact between the AR and RET inputs resets latched alarms
Danger bypass (DB)	:	A closed contact between the DB and RET inputs allows the operator to inhibit the danger relay outputs
Trip multiply (TM)	:	A closed contact between the TM and RET inputs, multiplies the alarm levels by a scale factor (software settable). When TM is open, the scale factor is not taken into account.

Alarm outputs

Quantity and type	:	32 outputs on rack backplane bus, for use by the VM600 relay cards: the IRC4 intelligent relay card and the RLC16 relay card

SPECIFICATIONS *(continued)*

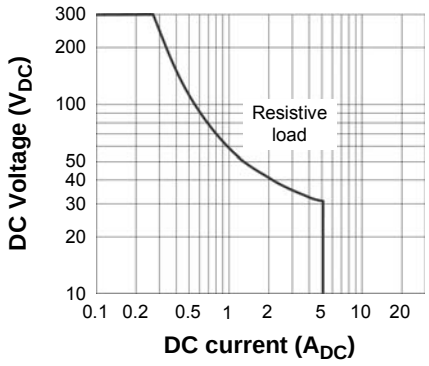
DC outputs

Number of outputs	: 4 per IOC4T card
Signal range	: 0 to 10 V or 4 to 20 mA (selectable by jumper on IOC4T for each output). **Note: An output range of 0 to 23 mA is available for applications where the current signal is also used to monitor open and short circuits.**
Accuracy	: ≤ ±0.5%
Linearity error	: ≤ ±0.5%
Admissible load on output	: > 100 kΩ for voltage output < 325 Ω for current output

Relay characteristics

Relay names	: RL1 to RL4
Type	: PE014005
Contact arrangement	: 1 x NC or 1 x NO contact/relay (user selectable). The selected contacts are available on J2.
Nominal rated voltage	: 250 V_{AC}
Nominal rated current	: 5 A_{AC}
Maximum breaking capacity (without contact protection)	: 1250 VA

Maximum DC load breaking capacity curve:



Operate / release / bounce time	: Typically 8 / 8 / 6 ms
Dielectric strength test voltages	
• *Between open contacts*	: 1000 V_{AC}
• *Between contact and coil*	: 4000 V_{AC}
Mechanical life	: 15 x 10^6 operations
Electrical life	: > 10^5 operations

⚠ **When used in a VM600 Slimline rack (ABE056) with a DC power supply, the relay contacts on a IOC4T card have a maximum switching voltage of 70 V_{DC} / 33 $V_{AC\ (RMS)}$ (46.7 $V_{AC\ (PEAK)}$).**

SPECIFICATIONS *(continued)*

Communications

Bus to MPC4 card : Similar to Industry Pack (IP)

Power supply to IOC4T

Consumption from +5 V_{DC} supply : 1.5 W
Consumption from ±12 V_{DC} supply : 0.7 W, plus an additional 0.25 W per current output used

Environmental

Operating
- *Temperature* : −25 to +65°C (−13 to +149°F)
- *Humidity* : 0 to 90% non-condensing

Storage
- *Temperature* : −40 to +85°C (−40 to +185°F)
- *Humidity* : 0 to 90% non-condensing

EMC regulations : EN 50081-2
EN 50082-2

Physical

Height : 6U (262 mm, 10.3 in)
Width : 20 mm (0.8 in)
Depth : 125 mm (4.9 in)
Weight : 0.25 kg (0.55 lb)

ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number
IOC4T	Input/output card	
	Standard version	200-560-000-1Hh
	Separate circuits version, in accordance with IEC/CEI 60255-5	200-560-000-2Hh

Notes
“Hh” represents the hardware version.
“H” increments for major modifications that can affect product interchangeability.
“h” increments for minor modifications that have no effect on interchangeability.

Headquartered in the UK, Meggitt PLC is a global engineering group specializing in extreme environment components and smart sub-systems for aerospace, defence and energy markets.
Meggitt Sensing Systems is the operating division of Meggitt specializing in sensing and monitoring systems, which has operated through its antecedents since 1927 under the names of ECET, Endevco, Ferroperm Piezoceramics, Lodge Ignition, Sensorex, Vibro-Meter and Wilcoxon Research. Today, these operations are integrated under one strategic business unit called Meggitt Sensing Systems, headquartered in Switzerland and providing complete systems, using these renowned brands, from a single supply base.
The Meggitt Sensing Systems facility in Fribourg, Switzerland was formerly known as Vibro-Meter SA, but is now Meggitt SA. This site produces a wide range of vibration and dynamic pressure sensors capable of operation in extreme environments, leading-edge microwave sensors, electronics monitoring systems and innovative software for aerospace and land-based turbo-machinery.

In this publication, a dot (.) is used as the decimal separator and thousands are separated by thin spaces. Example: 12345.67890.

Sales offices

Meggitt Sensing Systems has offices in more than 30 countries. For a complete list, please visit our website.

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