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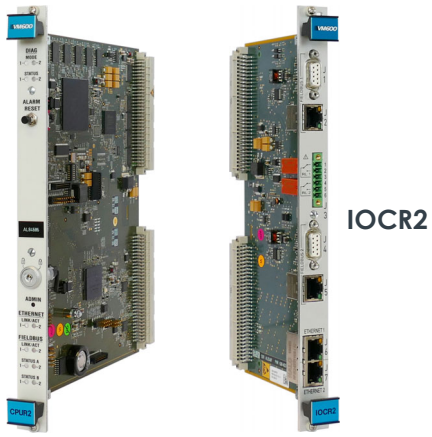
DATA SHEET

vibro-meter®

VM600 CPUR2 and IOCR2 rack controller and communications interface card pair



KEY FEATURES AND BENEFITS

- VibroSight® compatible hardware from the vibro-meter® product line
- VM600 CPUR2/IOCR2 rack controller and communications interface card pair with support for Modbus TCP and PROFIBUS DP
- "One-Shot" configuration management of protection cards (MPC4) in a VM600 rack using an Ethernet connection to a computer running the VM600 MPSx and VibroSight® software
- Mathematical processing of data to be shared via fieldbus
- CPUR2/IOCR2 card pair status (health) information available via fieldbus
- Front-panel alarm reset (AR) button
- VM600 MPS rack (CPUR2) security with a removable key
- Industry standard fieldbus communications interfaces: Modbus TCP and PROFIBUS DP
- Two system Ethernet connections and two fieldbus connections can run simultaneously
- Communications redundancy with two fieldbuses: Ethernet and/or serial

KEY BENEFITS AND FEATURES *(continued)*

- Two output relays to signal system statuses and alarms
- CPUR2/IOCR2 diagnostic logs available via VibroSight® software
- Supports live insertion and removal of protection cards ("hot-swapping") with automatic configuration
- CPUR2 and IOCR2 are hot-swappable
- Gigabit (1 Gbps) system Ethernet communication
- Front-panel status indicators (LEDs)
- Compatible with later VM600 ABE04x system racks with I^2C interface (VME utility bus)

APPLICATIONS

- Rack controller for a VM600 system
- Communications gateway between VM600 and third-party systems, such as a DCS or PLC
- Enables sharing of measurement data from VM600 monitoring cards in machinery protection, condition monitoring and/or combustion monitoring applications

Meggitt SA, Route de Moncor 4, Case postale, 1701 Fribourg, Switzerland

Tel: +41 26 407 11 11
Fax: +41 26 407 13 01
energy@ch.meggitt.com
www.meggittsensing.com/energy
www.meggitt.com

DESCRIPTION

Introduction

The VM600 CPUR2 and IOCR2 rack controller and communications interface card pair is a central processing unit (CPU) card pair that acts as a system controller and data communications gateway for a VM600 rack-based machinery protection system (MPS) and/or condition monitoring system (CMS) from Meggitt's vibro-meter® product line.

Different versions of CPUx/IOCx card pair

Different versions of CPUx/IOCx rack controller and communications interface card pair are available, as follows:

- The CPUM/IOCN is the original version with a front-panel display and support for Modbus RTU/TCP and PROFINET (PNR 200-595-VVV-VVV).
- The CPUR/IOCR is a version with rack controller redundancy and support for Modbus RTU/TCP (PNR 600-007-VVV-VVV).
- The CPUR2/IOCR2 is a version with mathematical processing of fieldbus data and support for Modbus TCP and PROFIBUS DP (PNR 600-026-000-VVV).

VM600 rack-based monitoring systems

The vibro-meter® VM600 rack-based monitoring system is part of Meggitt's solution for the protection and monitoring of rotating machinery used in the power generation and oil & gas industries. The VM600 is recommended when a centralised monitoring system with a medium to large number of measurement points (channels) is required. It is typically used for the monitoring and/or protection of larger machinery such as gas, steam and hydro turbines, and generators, smaller machines such as compressors, fans, motors, pumps and propellers, as well as balance-of-plant (BOP) equipment.

A VM600 system consists of a 19" rack, a rack power supply and one or more monitoring card pairs. Optionally, relay cards and rack controller and communications interface cards can also be included.

Two types of VM600 rack are available: a VM600 ABE04x system rack (6U) that can house up to 12 monitoring card pairs, and a VM600 ABE056 slimline rack (1U) that can house 1 monitoring card pair. VM600 racks are typically mounted in standard 19" rack cabinets or enclosures installed in an equipment room.

Different VM600 monitoring cards are available for machinery protection, condition monitoring and/or combustion monitoring applications. For example, machinery protection cards such as the MPC4/IOC4T machinery protection card pair and AMC8/IOC8T analogue monitoring card pair, and condition monitoring cards such as the XMV16/XIO16T monitoring card pair for vibration and XMC16/XIO16T monitoring card pair for combustion.

The RLC16 relay card is an optional card used to provide additional relays when the four relays per MPC4/IOC4T or AMC8/IOC8T card pair are not enough.

The CPUx/IOCx rack controller and communications interface card pairs (CPUM/IOCN, CPUR/IOCR or CPUR2/IOCR2) are optional cards used to provide additional VM600 system functionality such as configuration management, "hot-swapping" with automatic reconfiguration, front-panel display, CPUx/IOCx card pair redundancy, fieldbus data processing, front-panel alarm reset (AR) button, MPS rack (CPUx) security, system event and measurement event logging, fieldbus communications (Modbus, PROFIBUS and/or PROFINET) and/or communications redundancy.

Note: Different versions of CPUx/IOCx rack controller and communications interface card pair support different combinations of VM600 system functionality.

VM600 rack-based monitoring systems complement the VibroSmart® module-based distributed monitoring systems that are also available from Meggitt's vibro-meter® product line.

DESCRIPTION *(continued)*

CPUR2/IOCR2 card pair and VM600 racks

The CPUR2/IOCR2 card pair is used with a VM600 ABE04x system rack and a CPUR2 card is always used with an associated IOCR2 card as a card pair.

Both the CPUR2 and the IOCR2 are single-width cards that occupy a single VM600 rack slot (card position). The CPUR2 is installed in the front of the rack (typically slot 0) and the associated IOCR2 is installed in the rear of the rack in the slot directly behind the CPUR2 (typically slot 0). Each card connects directly to the rack's backplane using two connectors.

Note: The CPUR2/IOCR2 card pair is compatible with later VM600 ABE04x system racks with I2C interface (VME utility bus).

CPUR2 rack controller and communications interface functionality

As a rack controller for a VM600 monitoring system, the CPUR2 card manages the configuration of monitoring card pairs such as the MPC4/IOC4T and XMx16/XIO16T, which allows the hot-swapping of cards with automatic configuration. The CPUR2/IOCR2 card pair also allows the operation of XMx16/XIO16T card pairs without a VibroSight Server.

As a fieldbus communications interface for a VM600 monitoring system, the CPUR2/IOCR2 communicates with MPC4 cards via the VME bus and with XMx16/XIO16T card pairs via a system Ethernet link in order to obtain measurement data and then share this information with third-party systems such as a DCS or PLC.

The data shared via fieldbus can be the "raw" measurement data obtained from the MPC4 and XMx16 cards, and the status (health) data obtained from the CPUR2 card itself, or the data can be further processed as required. For example, the processing supported includes basic mathematical functions such as arithmetic and logical operations, and many other supporting functions.

Note: The CPUR2 can be used as a data communications gateway for XMx16 cards in low data-bandwidth applications. For example, handling hundreds of bytes of static data via Modbus TCP and/or PROFIBUS DP. However, the CPUR2 cannot be used as a gateway for XMx16 cards in high data-bandwidth applications as the dynamic data (waveforms and spectra) generated by XMx16 cards typically requires a direct connection to the VibroSight® software.

The ALARM RESET button on the front panel of the CPUR2 card can be used to clear the alarms latched by all protection cards (MPC4) in the rack. This is a rack-wide equivalent of resetting alarms individually for each card using discrete signal interface alarm reset (AR) inputs or VM600 MPSx software commands.

A security key lock, with a removable key, on the front panel of the CPUR2 card can be used to enable VM600 MPS rack (CPUR2) security.

LEDs on the front panel of the CPUR2 card indicate the mode of operation and status of the CPUR2 card, and the status of the system Ethernet and fieldbus communications.

IOCR2 card

The IOCR2 card acts as a signal and communications interface for the CPUR2 card. It also protects all inputs against electromagnetic interference (EMI) and signal surges to meet electromagnetic compatibility (EMC) standards.

LEDs on the front panel of the IOCR2 card (rear of VM600 rack) indicate the status of the system Ethernet and fieldbus communications.

Fieldbus communications

The CPUR2/IOCR2 card pair has two fieldbus interfaces (ports), FIELDBUS1 and FIELDBUS2, available on the IOCR2 card (rear of VM600 rack).

Both fieldbus ports allow the CPUR2 to act as a data communications gateway between a VM600 rack and external devices that use fieldbus networks. In order to do this, the CPUR2 acts as a fieldbus server (slave) device that obtains data from the cards in the VM600 rack (MPC4 and XMx16 cards, and the CPUR2 card itself) to share with fieldbus client (master) devices such as a DCS or PLC via one of the CPUR2/IOCR2 card pair's fieldbus interfaces: PROFIBUS DP (and/or Modbus TCP).

Each fieldbus port, FIELDBUS1 and FIELDBUS2, consists of two connectors, one for serial-based fieldbus standards and one for Ethernet-based.

DESCRIPTION *(continued)*

Both fieldbus ports can be active at the same time but only one connector can be used per interface/port (connector J1 or J2 for FIELDBUS1, and connector J4 or J5 for FIELDBUS2).

In addition, the system Ethernet ports support Modbus TCP, which also allow the CPUR2 to share data from the cards in the VM600 rack.

The data to be shared by fieldbus can be mathematically processed before it is shared and the results of "data freeze" detection can also be shared via fieldbus.

System communications

The CPUR2/IOCR2 card pair has two system Ethernet interfaces (ports), ETHERNET1 and ETHERNET2, available on the IOCR2 card (rear of VM600 rack).

Both system Ethernet ports provide the same functionality so one port is typically allocated for communications with the VM600 MPSx and/or VibroSight® software while the other port is allocated for communications with monitoring card pairs such as the XMx16/XIO16T.

VM600 MPS rack (CPUR2) security

The CPUR2 supports features that can be used to limit the functionality of a VM600 rack's machinery protection system (MPS) that is available via the system Ethernet connections of a CPUR2/IOCR2 card pair. Enabling VM600 MPS rack (CPUR2) security helps to reduce the possibility of interference in the machinery protection function of the rack itself and in the machinery being monitored. Accordingly, CPUR2 rack security makes it easier for operators to comply with international security/critical infrastructure regulations.

The security features consists of two specific levels of protection integrated in the CPUR2 card: CPUR2 access lock (a "hardware" security feature) and VM600 MPSx password validation (a "software" security feature). Refer to the *VM600 machinery protection system hardware manual* and the *VM600 MPS1 software manual* for further information.

Relays

The CPUR2/IOCR2 card pair includes two output relays to remotely indicate system status and alarm information. Each of the relays can be mapped to any Modbus bit variable and are typically used to signal a fault or a problem detected by a common alarm, such as communication status or rack status.

Software

The CPUR2/IOCR2 is fully software configurable using the VibroSight® software.

The VM600 MPSx software supports the configuration and operation of MPC4/IOC4T card pairs for machinery protection applications, including the processing and presentation of measurement data for analysis.

The VibroSight® software supports the configuration and operation of XMx16/XIO16T card pairs for condition monitoring and/or combustion monitoring applications, including the processing and presentation of measurement data for analysis. VibroSight® is also used to configure and manage CPUR2/IOCR2 card pairs.

Note: The VM600 MPSx software and VibroSight® software are from the vibro-meter® product line.

Applications information

The VM600 CPUR2/IOCR2 rack controller and communications interface card pair is recommended for applications using multiple monitoring cards in a VM600 rack.

The rack controller functionality makes it easier to work with a VM600 machinery monitoring system – for installation, configuration, management and general operation. The CPUR2/IOCR2 can manage the configuration of MPC4/IOC4T card pairs, including hot-swapping. It can also manage the configuration of XMx16/XIO16T card pairs, eliminating the need for a VibroSight Server in certain applications.

The communications interface functionality makes it easy to further process and share data from the monitoring cards (MPC4 and XMx16) in a VM600 machinery protection, condition monitoring and/or combustion monitoring system with third-party systems such as a DCS or PLC using industry standard fieldbuses.

For further information, contact your local Meggitt representative.

SPECIFICATIONS

Processing functions

Rack controller

- VM600 monitoring card configuration management : Acts as a rack controller that manages the configuration of MPC4/IOC4T card pairs, including support for "hot-swapping" with automatic configuration.
  Can also manage the configuration of XMx16/XIO16T card pairs, for applications that do not require a VibroSight Server.
- Fieldbus data processing (mathematical processing) : Further processing of system data (measurement data and status information) before being shared by fieldbus.
  The further processing supported includes basic mathematical functions such as arithmetic and logical operations, data selection, comparison, min/max and scaling functions, bit manipulation and packing/unpacking functions, and many supporting functions.
  There is also a data freeze detection function that can be used to help detect if a data value has stopped being updated.
  Note: Mathematical processing is defined by a CPUR2 card fieldbus configuration file that is uploaded to the CPUR2 card using the VibroSight® software (VibroSight Configurator).
- Alarm reset : CPUR2 front-panel button used to manually clear the alarms (and relays) latched by MPC4/IOC4T card pairs in the rack
- VM600 MPS rack (CPUR2) security : Used to limit the functionality of a machinery protection system (MPS) that is available via the system Ethernet connections of a CPUR2/IOCR2 card pair, helping to reduce the possibility of interference in the machinery protection function of the rack itself and/or in the machinery being monitored.
  Includes a CPUR2 front-panel security key that can be removed.
- Status indication : CPUR2 front-panel LEDs (front of VM600 rack) indicate the mode of operation and status of the CPUR2 card, and the status of the Ethernet and fieldbus communications.
  IOCR2 front-panel LEDs (rear of VM600 rack) indicate the status of the Ethernet and fieldbus communications.
- Status monitoring : Diagnostic log files record status (health) information for a CPUR2/IOCR2 card pair.
  Note: Diagnostic logs are downloaded from a CPUR2 using VibroSight System Manager.
  This information for a CPUR2/IOCR2 card pair is also available via fieldbus (Modbus TCP and/or PROFIBUS DP).
- Relays : Two user-configurable relays for the remote indication of system statuses and alarms.
  Note: Relays can be mapped to any Modbus bit variable.

SPECIFICATIONS *(continued)*

Communications interface

- VM600 rack (system) communications : Uses a VME communications link for communications with MPC4/IOC4T card pairs (via the VME bus on the VM600 rack's backplane).
  Uses a system Ethernet connection for communications with a computer running software such as VM600 MPSx and VibroSight®.
  Uses another system Ethernet connection for communications with XMx16 cards (via an Ethernet cable external to the VM600 rack).
- Fieldbus communications (data gateway) : Acts as a fieldbus server (slave) device that obtains data from the cards in the VM600 rack (that is, from MPC4/IOC4T card pairs, and XMx16/XIO16T card pairs, and the CPUR2 card itself) to share with fieldbus client (master) devices such as a DCS or PLC:
  • The CPUR2 can act as a PROFIBUS server and use the serial fieldbus interfaces to share data via PROFIBUS DP.
  • The CPUR2 can act as a Modbus server and use the Ethernet fieldbus interfaces to share data via Modbus TCP.
  Note: The configuration of the fieldbus interfaces and the definition of the data to be shared via fieldbus is defined by a CPUR2 card fieldbus configuration file that is uploaded to the CPUR2 card using the VibroSight® software (VibroSight Configurator).

Fieldbus interfaces

Number of channels : Up to 2 fieldbus interfaces (ports).
Ethernet and/or serial: Modbus TCP and/or PROFIBUS DP.

Data transfer

- Modbus : Up to 131072 registers/words and 131072 coils/bits total.
  That is, up to 2 × 65536 registers/words and 2 × 65536 coils/bits (holding and discrete).
- PROFIBUS DP : Up to 244 input bytes and 244 output bytes per fieldbus interface

Communication interfaces

System communication interfaces – Ethernet

Number : 2
Network interface : 10/100/1000BASE-T(X) – Ethernet / Fast Ethernet / Gigabit Ethernet
Data transfer rate : Up to 1000 Mbps (1 Gbps)
Distance between devices : Up to 100 m at 1000 Mbps.
For distances greater than the specified maximum (100 m), the interface will operate at reduced data transfer rates.
Protocols : Meggitt TCP/IP proprietary protocol for communication with the VM600 MPSx software, VibroSight® software and VM600 XMx16 card pairs
Function : VM600 rack configuration and communications using the VM600 MPSx software, CPUR2 card configuration using the VibroSight® software and/or VM600 XMx16 card pair configuration and communications
Connectors : J6 (ETHERNET1) and J7 (ETHERNET2) on IOCR2 card
(see **Connectors on page 11**)

SPECIFICATIONS *(continued)*

Fieldbus communication interfaces – Ethernet

Number	: 2
Network interface	: 10/100BASE-TX – Fast Ethernet
Data transfer rate	: Up to 100 Mbps
Distance between devices	: Up to 100 m
Protocols	: Meggitt TCP/IP proprietary protocol for communication with the VM600 MPSx software and Modbus TCP
Function	: VM600 rack configuration and communications using the VM600 MPSx software and/or fieldbus Modbus TCP communications
Connectors	: J2 (FIELDBUS1) and J5 (FIELDBUS2) on IOCR2 card (see **Connectors on page 11**)
Ethernet (fieldbus) isolation	: 1 500 V_{RMS}

Fieldbus communication interfaces – serial

Number	: 2
Network interface	: RS-485 (half-duplex (2-wire)). RS-485 (full-duplex (4-wire)) subject to demand.
Data transfer rate	: Up to 12 Mbps, with automatic baud-rate detection
Distance between devices	: According to the relevant standard
Network topologies	: Point-to-point or linear (daisy-chained) for RS-485 networks
Protocols	: PROFIBUS DP-V0 server (slave)
Function	: Fieldbus PROFIBUS communications
Connectors	: J1 (FIELDBUS1) and J4 (FIELDBUS2) on IOCR2 card (see **Connectors on page 11**)
RS-485 (fieldbus) isolation	: 700 V_{RMS}

Note: One fieldbus protocol (PROFIBUS DP) and up to two fieldbus interfaces are currently supported by a CPUR2/IOCR2 card pair at any one time.

System communications

Internal	: VME bus interface (A24 / D16 master mode) for communication with protection cards (MPC4) via VM600 rack backplane
External	: System communication interfaces (Ethernet) for communication with VM600 MPSx software and VibroSight® software running on an external computer(s) and/or VM600 XMx16 card pairs via external Ethernet cabling. See **System communication interfaces – Ethernet on page 6**.

SPECIFICATIONS *(continued)*

External communication links/connections

- Connection to a computer/network : Either system communication interface (J6 or J7 on IOCR2 card) can be used for connections/communications between a CPUR2/IOCR2 card pair and a computer/network, using standard Ethernet cabling.
  See **System communication interfaces – Ethernet on page 6** and **Connectors on page 11**.
- Connection to a VM600 card pair : Either system communication interface (J6 or J7 on IOCR2 card) can be used for connections/communications between a CPUR2/IOCR2 card pair and an XMx16 card pair, using standard Ethernet cabling.
  See **System communication interfaces – Ethernet on page 6** and **Connectors on page 11**.

Notes
If both system communication interfaces of a CPUR2/IOCR2 card pair are required by an application, that is, both J6 and J7 are used, then one should be allocated for communications with a computer/network and the other should be allocated for communications with an XMx16 card pair. Accordingly, a different subnet mask must be used for each interface/port in order to partition the networks used and ensure that the communications on each are kept separate from one another.

- Connection to a fieldbus (third-party system) : Either Ethernet fieldbus communication interface (J2 or J5 on IOCR2 card) can be used for connections/communications between a CPUR2/IOCR2 card pair and Ethernet-based fieldbuses (Modbus TCP), using standard Ethernet cabling.
  See **Fieldbus communication interfaces – Ethernet on page 7** and **Connectors on page 11**.
  Note: Either system communication interface (J6 or J7 on IOCR2 card) can also be used for connections/communications between a CPUR2/IOCR2 card pair and Ethernet-based fieldbuses (Modbus TCP), using standard Ethernet cabling.

  Either serial fieldbus communication interface (J1 or J4 on IOCR2 card) can be used for connections/communications between a CPUR2/IOCR2 card pair and serial-based fieldbuses (PROFIBUS DP), using serial cabling.
  See **Fieldbus communication interfaces – serial on page 7** and **Connectors on page 11**.
- VM600 MPSx software : Used for the configuration and operation of MPC4/IOC4T card pairs (using the CPUR2/IOCR2 card pair as a communications gateway)
- VibroSight® software : Used for the configuration of CPUR2/IOCR2 card pairs.
  Used for the configuration of XMx16 cards (using the CPUR2/IOCR2 card pair as a communications gateway).

Configuration

CPUR2/IOCR2 card pair : Fully software configurable via Ethernet, using a computer running the VibroSight® software

SPECIFICATIONS *(continued)*

Time synchronisation

Time reference for CPUR2	: Network time protocol (NTP) server or CPUR2 card's internal real-time clock (RTC) with battery backup
Protocol used between VM600 cards and computer	: Network time protocol (NTP)

Environmental

Temperature	
• Operating	: 0 to 65°C (32 to 149°F). Note: The maximum ambient temperature depends on the load on the IOCR2 card's relays, as follows: • 65°C (149°F) max. for RL1 and RL2 contacts loaded with 2 A. • 45°C (113°F) max. for RL1 and RL2 contacts loaded with 5 A.
• Storage	: −20 to 85°C (−4 to 185°F)
Humidity	
• Operating	: 0 to 90% relative humidity (RH), non-condensing
• Storage	: 0 to 95% relative humidity (RH), non-condensing
Power supply overvoltage category (installation category)	: OVC II
Pollution degree	: 2
Indoor use	: Limited to indoor use only. Note: The CPUR2/IOCR2 card pair is designed for use in a VM600 ABE04x system rack and is suitable for indoor use only unless it is installed in an industrial housing or enclosure that ensures a higher level of environmental protection.
Altitude	: 2000 m (6560 ft) max. Note: Reduced air density affects cooling ability.

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking)
Electromagnetic compatibility (EMC)	: EN 61000-6-2:2005. EN 61000-6-4:2007 + A1:2011. EN 61326-3-1:2013.
Electrical safety	: EN 61010-1:2010
Environmental management	: RoHS compliant (2011/65/EU)

Power supply (to CPUR2/IOCR2)

Power source	: VM600 RPS6U rack power supply
Supply voltage	: 5 V_{DC}
Consumption	
• CPUR2	: 6.5 W
• IOCR2	: 1 W
Total power consumption (CPUR2/IOCR2 card pair)	: 7.5 W max. Note: ≤6 W typ.

SPECIFICATIONS *(continued)*

Control inputs (buttons)

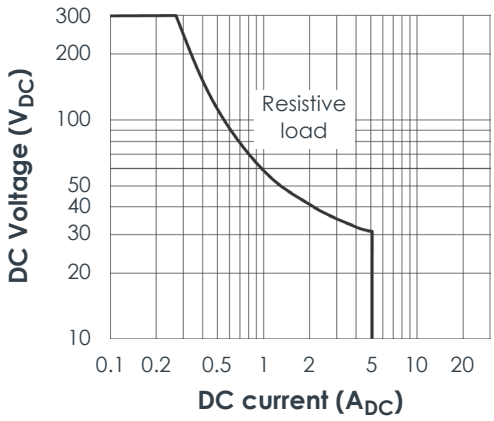
CPUR2

ALARM RESET	: Used to reset all latched alarms (and associated relays) for all protection cards in a VM600 rack (MPC4/IOC4T and AMC8/IOC8T)
Security key lock	: Used to enable or disable VM600 rack (CPUR2) security, that is, limit the VM600 MPSx software to "read only" operations. Note: Each CPUR2 card is supplied with two keys for the lock.
ADMIN	: Used to reset the VM600 rack (CPUR2) security password used by the CPUR2 card for VM600 MPSx password validation

Relay characteristics

Number	: 2 × user-configurable relays (RL1 and RL2)
Type	: Single-pole double-throw (SPDT) / 1 Form C
Contact arrangement	: 1 × COM, 1 × NC and 1 × NO contact per relay. J3 (RL1 and RL2) on IOCR2 card (see **Connectors on page 11**).
Rated voltage	: 240 V_{AC}
Rated current	: 5 A
Maximum breaking capacity (without contact protection)	: 1250 VA

Maximum DC load breaking capacity curve:



Operate / release time	: 5 / 2 ms typ.
Dielectric strength test voltages	
• Between open contacts	: 1000 $V_{AC\ (RMS)}$
• Between contact and coil	: 4000 $V_{AC\ (RMS)}$
Mechanical life	: 15 x 10^6 operations
Electrical life	: 10^4 operations

Note: In general, CPUR2 and IOCR2 card pair relays are limited to 240 V_{AC} max. in accordance with the EN 61010 electrical safety standard.

⚠ **The CPUR2/IOCR2 card pair's relays are not protective relays and must not be used for critical functions in machinery protection applications, such as initiating the shutdown (trip) of a machine.**

SPECIFICATIONS *(continued)*

Status indicators (LEDs)

CPUR2

- DIAG MODE1 and MODE2 : Indicates the mode of operation of the CPUR2 card
- DIAG STATUS1 and STATUS2 : Indicates the status of the CPUR2 card
- ETHERNET LINK/ACT1 and LINK/ACT2 : Indicates the status of the system Ethernet ports
- FIELDBUS LINK/ACT1 and LINK/ACT2 : Indicates the status of the fieldbus Ethernet ports
- FIELDBUS STATUS A1 and STATUS A2 : Helps to indicate the status of the fieldbus interfaces
- FIELDBUS STATUS B1 and STATUS B2 : Helps to indicate the status of the fieldbus interfaces

IOCR2

- FIELDBUS1 – J2 : Separate Link and Activity LEDs to indicate the status of the fieldbus Ethernet link (FIELDBUS1)
- FIELDBUS2 – J5 : Separate Link and Activity LEDs to indicate the status of the fieldbus Ethernet link (FIELDBUS2)
- ETHERNET1 – J6 : Combined Link /Activity LED to indicate the status of the system Ethernet link (ETHERNET1)
- ETHERNET2 – J7 : Combined Link /Activity LED used to indicate the status of the system Ethernet link (ETHERNET2)

Connectors

IOCR2

- J1 (FIELDBUS1) : 9-pin D-sub connector (DCE), female.
  Serial-based fieldbus 1 for communication between the CPUR2/IOCR2 card pair (fieldbus server) and a fieldbus client (master).
  Note: The J1 connection has functional insulation with a rated insulation voltage of 700 V_{RMS}.
- J2 (FIELDBUS1) : 8P8C (RJ45) modular jack, female.
  Ethernet-based fieldbus 1 for communication between the CPUR2/IOCR2 card pair (fieldbus server) and a fieldbus client (master).
  Note: The J2 connection is IEEE 802.3 Ethernet compatible and has functional insulation with a rated insulation voltage of 1500 V_{RMS}.
  Note: Reserved for future use.
- J3 (RL1 and RL2) : 6-pin connector (male), compatible with 6-pin MC/STF plug-in connectors (female) with screw-terminal connections.
  Outputs (contacts) for relays RL1 and RL2.
  Note: Relays are configurable via Modbus using the fieldbus configuration.
- J4 (FIELDBUS2) : 9-pin D-sub connector (DCE), female.
  Serial-based fieldbus 2 for communication between the CPUR2/IOCR2 card pair (fieldbus server) and a fieldbus client (master).
  Note: The J4 connection has functional insulation with a rated insulation voltage of 700 V_{RMS}.
- J5 (FIELDBUS2) : 8P8C (RJ45) modular jack, female.
  Ethernet-based fieldbus 2 for communication between the CPUR2/IOCR2 card pair (fieldbus server) and a fieldbus client.
  Note: The J5 connection is IEEE 802.3 Ethernet compatible and has functional insulation with a rated insulation voltage of 1500 V_{RMS}.
  Note: Reserved for future use.

SPECIFICATIONS *(continued)*

- J6 (ETHERNET1) : 8P8C (RJ45) modular jack, female.
  System Ethernet 1 for communication between the CPUR2/IOCR2 card pair and either a computer or XMx16 + XIO16T modules.
  Note: The J6 connection is IEEE 802.3 Ethernet compatible and has functional insulation with a rated insulation voltage of 1500 V_{RMS}.
- J7 (ETHERNET2) : 8P8C (RJ45) modular jack, female.
  System Ethernet 2 for communication between the CPUR2/IOCR2 card pair and either a computer or XMx16 + XIO16T modules.
  Note: The J7 connection is IEEE 802.3 Ethernet compatible and has functional insulation with a rated insulation voltage of 1500 V_{RMS}.

Notes

The IOCR2 card's connectors are removable to simplify installation and mounting.

For the J3 connector:
- Clamping range (min. to max.): 0.14 to 1.5 mm^2 (28 to 16 AWG).
- Tightening torques (min. to max.): 0.2 to 0.25 N•m (0.15 to 0.18 lb-ft) for conductor screws,
  0.2 to 0.3 N•m (0.15 to 0.22 lb-ft) for mounting-flange screws.

The J3 connector provides 1 × COM, 1 × NC and 1 × NO contact per relay (RL1 and RL2).

Physical

CPUR2
- Height : 6U (262 mm, 10.3 in)
- Width : 20 mm (0.8 in)
- Depth : 187 mm (7.4 in)
- Weight : 0.40 kg (0.88 lb) approx.

IOCR2
- Height : 6U (262 mm, 10.3 in)
- Width : 20 mm (0.8 in)
- Depth : 125 mm (4.9 in)
- Weight : 0.25 kg (0.55lb) approx.

ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number (PNR)
CPUR2	VM600 rack controller and communications interface card	601-026 / Code*
IOCR2	Input/output card for the CPUR2	620-022-000-VVV

Notes
"VVV" represents the different firmware (embedded software) versions and/or hardware versions that can be used by a finished product.

***Ordering option code**
To order a CPUR2 card, the ordering number (PNR) and the following ordering option code is used to specify the exact type/version of card required:
A0 – specifies a CPUR2 card without a configuration.
A1 – specifies a CPUR2 card with a configuration.

For example, a complete ordering number for a CPUR2 card that is not configured is 601-026 / A0.
As such cards are not required to be configured (ordering option code A0), no additional information is required.
Such unconfigured versions of the cards are the standard options for replacement cards / spare parts.

For example, a complete ordering number for a CPUR2 card that is configured is 601-026 / A1.
As such cards are required to be configured (ordering option code A1), the following additional information must be provided: IP address, Subnet mask and Default gateway (or DHCP), NTP server address (or Disabled), Modbus server configuration file, as required.

RELATED PRODUCTS

ABE04x	VM600^{Mk2}/VM600 system racks	: Refer to corresponding data sheet
CPUM and IOCN	VM600 modular CPU card and input/output card Note: With a front-panel display and support for Modbus RTU/TCP or PROFINET	: Refer to corresponding data sheet
CPUR and IOCR	VM600 rack controller and communications interface card pair Note: With rack controller redundancy and support for Modbus RTU/TCP	: Refer to corresponding data sheet
AMC8 and IOC8T	VM600 analog monitoring card and input/output card	: Refer to corresponding data sheet
MPC4 and IOC4T	VM600 machinery protection card and input/output card	: Refer to corresponding data sheets
RLC16	VM600 relay card	: Refer to corresponding data sheet
XMx16 + XIO16T	VM600^{Mk2}/VM600 condition monitoring modules	: Refer to corresponding data sheet
CPUM^{Mk2} + IOCN^{Mk2}	VM600^{Mk2} rack controller and communications interface module	: Refer to corresponding data sheet

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The Energy & Equipment division includes the Energy Sensing and Controls product group that specialises in sensing and monitoring solutions for a broad range of energy infrastructure, and control valves for industrial gas turbines, primarily for the Power Generation, Oil & Gas and Services markets. Energy & Equipment is headquartered in Switzerland (Meggitt SA) and incorporates the vibro-meter® product line, which has over 65 years of sensor and systems expertise and is trusted by original equipment manufacturers (OEMs) globally.

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

Sales offices

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

Local representative

Head office

Meggitt SA
Route de Moncor 4
Case postale
1701 Fribourg
Switzerland

Tel: +41 26 407 11 11
Fax: +41 26 407 13 01
energy@ch.meggitt.com
www.meggittsensing.com/energy
www.meggitt.com