DATA SHEET

vibro-meter®

VM600^{Mk2}/ VM600 RPS6U rack power supplies

VM600^{Mk2} RPS6U **VM600 RPS6U**

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- Power supply for VM600^{Mk2}/VM600 ABE04x 19" system racks with a height of 6U
- Input: AC-input and DC-input versions
- Outputs: +5 V_{DC} and ±12 V_{DC}
- Output over-voltage, short-circuit and overload protection
- Status indicators
- High-power, high-performance, high-efficiency
- Minimal derating within the operating temperature range

APPLICATIONS

- VM600^{Mk2}/VM600 machinery protection and/or condition monitoring systems
- One RPS6U rack power supply powers a full rack of modules (cards)
- Two RPS6U rack power supplies enable rack power supply redundancy

DESCRIPTION

The VM600^{Mk2}/VM600 RPS6U rack power supplies are designed for use in the VM600^{Mk2}/VM600 series of machinery protection systems and condition and performance monitoring systems, from Meggitt's vibro-meter® product line.

A VM600^{Mk2}/VM600 RPS6U rack power supply is installed in the front of a VM600^{Mk2}/VM600 ABE04x system rack (19" system racks with a standard height of 6U) and connects via two high-current connectors to the VME bus of the rack's backplane. The RPS6U power supply provides +5 V_{DC} and ±12 V_{DC} to the rack itself and all installed modules (cards) in the rack via the rack's backplane.

DESCRIPTION *(continued)*

Either one or two VM600^{Mk2}/VM600 RPS6U rack power supplies can be installed in a VM600^{Mk2}/VM600 ABE04x system rack. A rack with one RPS6U power supply (330 W version) supports the power requirements for a full rack of modules (cards) in applications with operating temperatures up to 50°C (122°F).

Alternatively, a rack can have two RPS6U power supplies installed in order to either support rack power supply redundancy or in order to supply power to the modules (cards) non-redundantly over a wider range of environmental conditions.

A VM600^{Mk2}/VM600 ABE04x system rack with two RPS6U power supplies installed can operate redundantly (that is, with rack power supply redundancy) for a full rack of modules (cards). This means that if one RPS6U fails, the other will provide 100% of the rack's power requirement so that the rack will continue to operate, thereby increasing the availability of the machinery monitoring system.

Note: This is known as a redundant RPS6U rack power supply configuration.

A VM600^{Mk2}/VM600 ABE04x system rack with two RPS6U power supplies installed can also operate non-redundantly (that is, without rack power supply redundancy). Typically, this is only necessary for a full rack of modules (cards) in applications with operating temperatures above 50°C (122°F), where RPS6U output power derating is required.

Note: Even though two RPS6U rack power supplies are installed in the rack, this is not a redundant RPS6U rack power supply configuration.

The number and type of RPS6U power supplies installed in a VM600^{Mk2}/VM600 ABE04x system rack, together with the number of modules (cards) installed and the environmental conditions, helps determine the mode of operation of the RPS6U power supplies as either redundant or non-redundant. See also **Ordering information on page 16**.

Different versions of the RPS6U rack power supply enable a VM600^{Mk2}/VM600 ABE04x system rack to be powered using external AC and/or DC mains supplies. All RPS6U power supplies support a wide input voltage range.

A power supply check relay, available on the associated rear panel at the rear of a VM600^{Mk2}/VM600 ABE04x system rack, is used to indicate that the RPS6U power supplies are operating normally. Refer to the *VM600^{Mk2}/VM600 ABE04x system rack data sheet* for further information.

In applications where the VM600^{Mk2}/VM600 ABE04x system rack is powered by an AC mains supply, a VM600^{Mk2}/VM600 ASPS auxiliary sensor power supply can also be included in the rack. The ASPS provides +24 V_{DC} outputs which can be used by external sensor/measurement chain hardware such as front-end sensors, signal conditioners and galvanic separation units.

For further information, contact your local Meggitt representative.

SPECIFICATIONS

Electrical

(At 25°C (77°F) with nominal line input voltage and maximum combination power load, unless otherwise stated.)

	AC-input version	DC-input versions	
Parameter	**RPS6U AC**	**RPS6U 24 DC**	**RPS6U 110 DC**
Nominal input (line) voltage	115/230 V_{AC} *or* 220 V_{DC}	24 V_{DC}	110 V_{DC}
Input voltage range	90 to 132 V_{AC} and 180 to 264 V_{AC} (autoranging) *or* 178 to 264 V_{DC}	18 to 32 V_{DC}	80 to 145 V_{DC}
Input frequency	47 to 63 Hz	Not applicable	
Input current	6.4 A_{RMS} max. at 115 V_{AC}. 4 A_{RMS} max. at 230 V_{AC}.	30 A max.	6 A max.
Efficiency	84% typ.	83% typ.	85% typ.
Inrush current	<10 times the nominal input current	<10 times the nominal input current	<10 times the nominal input current
Nominal output (supply) voltages	+5 V_{DC} up to 50 A, +12 V_{DC} up to 8 A, −12 V_{DC} up to −4 A	+5 V_{DC} up to 50 A, +12 V_{DC} up to 8 A, −12 V_{DC} up to −4 A	+5 V_{DC} up to 50 A, +12 V_{DC} up to 8 A, −12 V_{DC} up to −4 A
Output power See note 1 below	330 W max.	330 W max.	330 W max.
Factory adjustment	+5.41 V_{DC} ±0.02 V, ±12.5 V_{DC} ±0.05 V (at 60% max. output power)	+5.41 V_{DC} ±0.02 V, ±12.5 V_{DC} ±0.05 V (at 60% max. output power)	+5.41 V_{DC} ±0.02 V, ±12.5 V_{DC} ±0.05 V (at 60% max. output power)
Load range	+5.35 V_{DC} nom. (5.35 to 5.45 V accuracy with a load of 3 to 50 A). +12.5 V_{DC} nom. (12.2 to 12.8 V accuracy with a load of 0 to 8 A). −12.5 V_{DC} nom. (−12.2 to −12.8 V accuracy with a load of 0 to 4 A).	+5.35 V_{DC} nom. (5.35 to 5.45 V accuracy with a load of 3 to 50 A). +12.5 V_{DC} nom. (12.2 to 12.8 V accuracy with a load of 0 to 8 A). −12.5 V_{DC} nom. (−12.2 to −12.8 V accuracy with a load of 0 to 4 A).	+5.35 V_{DC} nom. (5.35 to 5.45 V accuracy with a load of 3 to 50 A). +12.5 V_{DC} nom. (12.2 to 12.8 V accuracy with a load of 0 to 8 A). −12.5 V_{DC} nom. (−12.2 to −12.8 V accuracy with a load of 0 to 4 A).
Ripple and noise (20 MHz bandwidth)	<50 $mV_{PEAK-TO-PEAK}$ for all outputs	<50 $mV_{PEAK-TO-PEAK}$ for all outputs	<50 $mV_{PEAK-TO-PEAK}$ for all outputs
Line regulation (±10% change in nominal input)	<±1% for all outputs	<±1% for all outputs	<±1% for all outputs
Load regulation (±40% change from 60% max. output power)	<±1% for +5 V_{DC} output. <±2% for ±12 V_{DC} outputs.	<±1% for +5 V_{DC} output. <±2% for ±12 V_{DC} outputs.	<±1% for +5 V_{DC} output. <±2% for ±12 V_{DC} outputs.

(Continued on the next page ...)

SPECIFICATIONS *(continued)*

	AC-input version	DC-input versions	
Parameter	**RPS6U AC**	**RPS6U 24 DC**	**RPS6U 110 DC**
Output overvoltage protection	Yes, with automatic latch off	Yes, with automatic latch off	Yes, with automatic latch off
Output short-circuit and overload protection	Yes, with automatic recovery	Yes, with automatic recovery	Yes, with automatic recovery
Output power derating with convection cooling (natural ventilation)	2.5%/°C from 50 to 70°C for +5 V_{DC} output. 4%/°C from 55 to 70°C for ±12 V_{DC} outputs.	2%/°C from 50 to 70°C for +5 V_{DC} output. 3%/°C from 60 to 70°C for ±12 V_{DC} outputs.	2%/°C from 50 to 70°C for +5 V_{DC} output. 3%/°C from 60 to 70°C for ±12 V_{DC} outputs.
Output power derating with forced-air cooling	No derating required	2.5%/°C from 60 to 70°C for +5 V_{DC} output. No derating required for ±12 V_{DC} outputs.	2.5%/°C from 60 to 70°C for +5 V_{DC} output. No derating required for ±12 V_{DC} outputs.
Ordering number (PNR) See note 2 below	**200-582-500-12h** ($VM600^{Mk2}$) or **200-582-500-02h** (VM600)	**200-582-200-12h** ($VM600^{Mk2}$) or **200-582-200-02h** (VM600)	**200-582-600-12h** ($VM600^{Mk2}$) or **200-582-600-02h** (VM600)

Notes

1. In 2016, the RPS6U rack power supply was improved to provide a higher output power of 330 W with higher-performance and higher-efficiency, which required a redesign of the underlying power supply circuitry.
Accordingly, the different versions of the RPS6U rack power supply in use are:

- Later versions of the RPS6U (PNR 200-582-x00-02h or later) that define the power as a total maximum output power of 330 W, with nominal output (supply) voltages of +5 V_{DC} up to 50 A, +12 V_{DC} up to 8 A and −12 V_{DC} up to 4 A.
  Note: The total maximum output power of 330 W is a combination load for all outputs as the +5 V_{DC} and ±12 V_{DC} outputs are usually not simultaneously loaded to the maximum in practice. For example, if the +5 V_{DC} output is at its maximum rated load (5.35 V × 50 A = 267.5 W), then the combined loads on the +12 V_{DC} and −12 V_{DC} outputs must not exceed 62.5 W.
- Earlier versions of the RPS6U (PNR 200-582-x00-01h or earlier) that define the power as a rated power of 300 W, with nominal output (supply) voltages of +5 V_{DC} up to 35 A, +12 V_{DC} up to 6 A and −12 V_{DC} up to 2 A.

2. In 2021, $VM600^{Mk2}$ (second-generation) machinery monitoring systems were launched with improved rack modules, notably the $MPC4^{Mk2}$ + $IOC4^{Mk2}$, $RLC16^{Mk2}$ and $CPUM^{Mk2}$ + $IOCN^{Mk2}$. $VM600^{Mk2}$ systems use the same system infrastructure as first-generation VM600 systems, that is, $VM600^{Mk2}$ is backward compatible with existing VM600 ($VM600^{Mk1}$) racks and power supplies.
However, $VM600^{Mk2}$ versions of the ABE040 system rack (PNR 200-040-100-016) and RPS6U rack power supplies (PNRs 200-582-200-12h, 200-582-500-12h and 200-582-600-12h) are also available. The $VM600^{Mk2}$ versions are the same as the latest VM600 versions, except for the specific artwork/branding/finish. More specifically, the front panels of RPS6U rack power supplies are bare aluminium for the $VM600^{Mk2}$ versions (PNRs 200-582-200-12h, 200-582-500-12h and 200-582-600-12h) and painted for the VM600 versions (PNRs 200-582-200-02h, 200-582-500-02h and 200-582-600-02h).

Environmental

Temperature	
• Operating	: 0 to 70°C (32 to 158°F)
• Storage	: −40 to 85°C (−40 to 185°F)
Humidity (according to IEC 60068-2-30)	: 5 to 90%, non-condensing
Vibration (according to IEC 60068-2-6)	: 10 to 55 Hz, 0.35 mm peak below resonance and 2 g peak above, 6 hours/axis
Shock (according to IEC 60068-2-27)	: 6 g peak, 11 ms, half-sine pulse, 3 shocks/axis
Drop test (according to IEC 60068-2-31)	: 30° drop angle
MTBF (according to MIL-HDBK-217F)	: >40000 hours at 70°C (158°F)
Conformal coating	: Applied to the circuitry of the power supply for additional environmental protection against chemicals, dust, moisture and temperature extremes
Indoor use	: Limited to indoor use only

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking). EAC marking, Eurasian Customs Union (EACU) certificate/ declaration of conformity.
Electromagnetic compatibility	: EN 55022 class "B". FCC Docket 20780 curve "B". IEC 61000-4-2: Performance criteria B, 4 kV contact discharge and 8 kV air discharge. IEC 61000-4-3: Performance criteria A, 10V/m. IEC 61000-4-4: Performance criteria A, 2 kV 5/50 ns, 5 kHz, direct IEC 61000-4-6: Performance criteria A, level 3 IEC 61000-4-8: Performance criteria A, 50 Hz/30 A/m TR CU 020/2011.
Electrical safety	: IEC/EN/UL/CSA 60950-1, 2nd edition. TR CU 004/2011.
Overvoltage category	: OVC II
Vibration	: IEC 60255-21-1 (Class 2)
Environmental management	: RoHS compliant (2011/65/UE)
Russian federal agency for technical regulation and metrology (Rosstandart)	: Pattern approval certificate OC.C.28.004.A N° 60224

SPECIFICATIONS *(continued)*

Status indicators (LEDs)

IN	: Green indicates that the external mains supply is present and is within the normal range. See **Mechanical drawings – VM600Mk2 versions on page 7** and **Mechanical drawings – VM600 versions on page 8**.
+5V	: Yellow indicates that the +5 V_{DC} supply is being generated and is within the normal range
+12V	: Yellow indicates that the +12 V_{DC} supply is being generated and is within the normal range
−12V	: Yellow indicates that the −12 V_{DC} supply is being generated and is within the normal range

Connectors

Rear	: Two high-current DIN 41612 type H15 connectors. Sharing of power supply voltages and signals via the VM600^{Mk2}/ VM600 rack backplane (ABE04x).

Physical

Dimensions	: See **Mechanical drawings – VM600Mk2 versions on page 7** and **Mechanical drawings – VM600 versions on page 8**
Weight	: 2.4 kg (5.3 lb) approx.

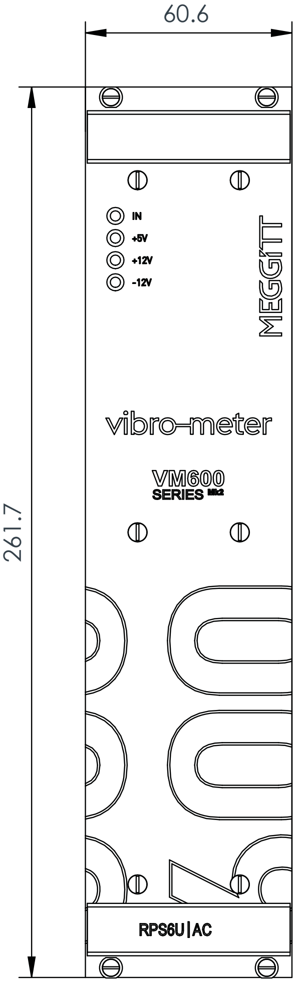
TOLERANCE TO INTERRUPTIONS IN THE MAINS SUPPLY

The table below shows the maximum permissible duration of an interruption (cut) to the external AC or DC mains supply used as the input voltage to an RPS6U rack power supply.
The maximum duration values depend on the maximum combination load for the RPS6U rack power supply, the number of RPS6U rack power supplies installed in the rack and the number of modules (cards) installed in the VM600^{Mk2}/VM600 rack (the actual load). If an interruption lasts longer than the maximum permissible duration, then the VM600^{Mk2}/VM600 modules (cards) installed in the rack may reset.

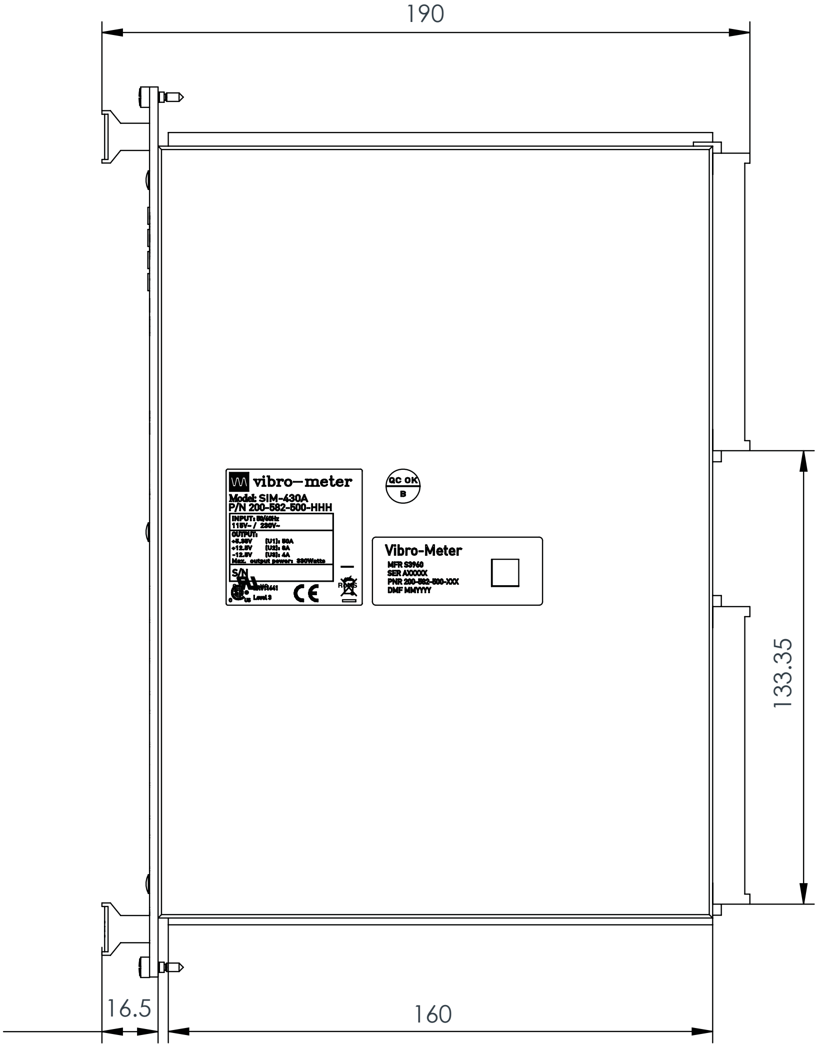
	Maximum duration of interruption to the supply input (ms)	
	At 10% of combination load	**At 100% of combination load**
One RPS6U AC rack power supply in the rack	190	10
Two RPS6U AC rack power supplies in the rack	250	20
One RPS6U 24 DC rack power supply in the rack	75	7
Two RPS6U 24 DC rack power supplies in the rack	150	14
One RPS6U 110 DC rack power supply in the rack	190	10
Two RPS6U 110 DC rack power supplies in the rack	250	20

MECHANICAL DRAWINGS – VM600^{Mk2} VERSIONS

Front view

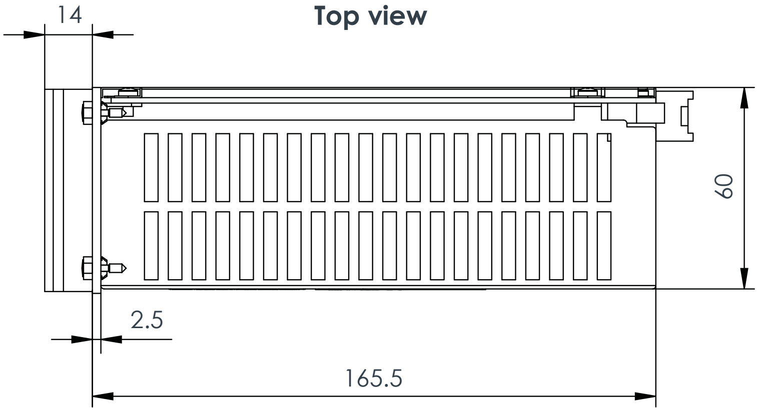


Side view



Note: The lower handle on the front panel indicates the VM600^{Mk2} RPS6U version: AC, 24VDC or 110VDC.

Top view



Note: All dimensions are in mm unless otherwise stated.

Notes

The versions of VM600^{Mk2} RPS6U rack power supplies (PNRs 200-582-x00-12h or later) use the same front panel for both AC-input and DC-input versions:

- For both versions, the LED (top) used to indicate the status of the external mains supply is labelled “IN”.

For the VM600^{Mk2} versions of the RPS6U rack power supplies (PNRs 200-582-x00-12h or later), the lower handle on the front panel indicates the VM600^{Mk2} RPS6U version: AC, 24VDC or 110VDC.