PU5 – 3U 12HP wide-range PSU for 19" systems, 110 VDC nom.

- **3U, 12 HP, 19" rack mountable**
- **Input 110 VDC nom. (77..137.5 V)**
- **Max. input voltage range 66..154 V (according to EN 50155)**
- **Output 3.3 V, 5 V, 12 V**
- **Power 100 W**
- **H15 DIN41612 plug connector (front and rear)**
- **SMBus**
- **External I/Os for key input function**
- **Standby mode (< 1 W)**
- **-40 to +85°C screened**
- **Conformal coating**
- **EN 50155 compliant (holdup time according to Class S2) (railways)**

The PU5 is a plug-in power supply unit for 19" systems (e.g. VMEbus, CompactPCI®) and is especially designed for computer systems in public transport vehicles, being fully compliant with EN 50155.

The PU5 has a nominal input voltage of 110 VDC with a wide input range of 77..137.5 V and a max. input voltage range of 66..154 V (according to EN50155). The otherwise identical PSU models PU6 and PU8 are available for the nominal input voltages of 24 VDC and 36 VDC respectively.

It is controlled by a microprocessor which supervises the voltage and the temperature as well as one external input (for its key input function) and one output.

Thanks to the onboard intelligence the PSU can also act as an SMBus slave and communicate with the CPU board via the backplane. This allows the PSU to power on the system at a programmed date and enables the CPU to make status polls with regard to, e.g., error messages, time-out or on/off.

The PSU provides a DC/DC converter to generate the isolated 12 V from the input voltage. Two regulators generate 5 V and 3.3 V from the 12 V isolated side. The maximum power at full load is 100 W, minimum power is 5 W. The microprocessor is supplied with power independently and can turn off the main DC/DC converter to switch the unit into standby mode (power consumption less than 6 W).

The subassembly is conformally coated, and components are secured against vibration. The PSU operates in -40 to +85°C environmental temperature. The thermal stress is extremely low due to integrated heat sinks and diversion of dissipated heat over the mounting surface.

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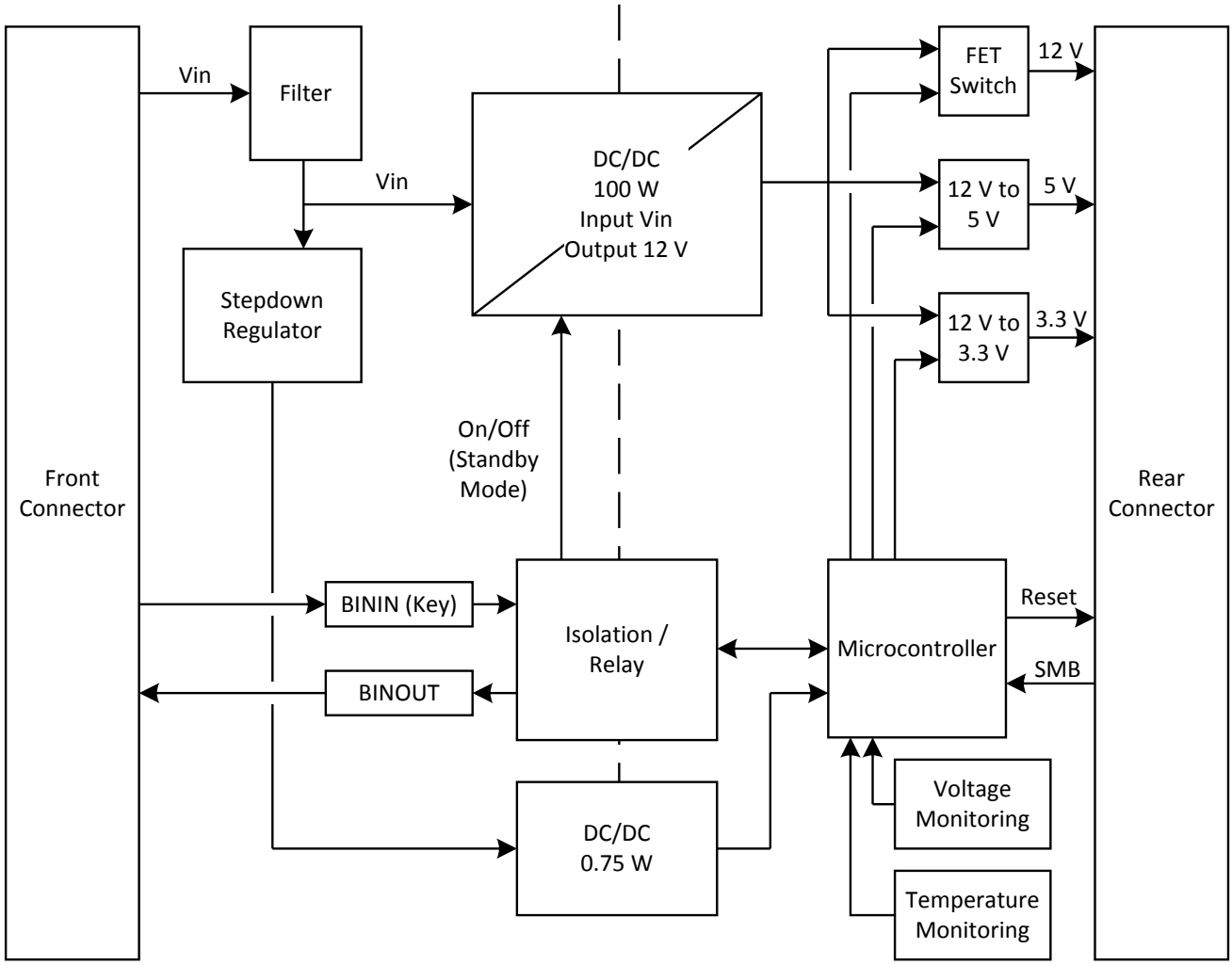
Diagram


Front Connector
Vin
Filter
Vin
Stepdown Regulator
DC/DC 100 W Input Vin Output 12 V
On/Off (Standby Mode)
FET Switch
12 V
12 V to 5 V
5 V
12 V to 3.3 V
3.3 V
Rear Connector
BININ (Key)
BINOUT
Isolation / Relay
Microcontroller
Reset
SMB
DC/DC 0.75 W
Voltage Monitoring
Temperature Monitoring

Technical Data

Microcontroller	■ Output voltage and temperature supervision (readable via SMBus) ■ Overtemperature and overvoltage shutdown ■ Communication with CPU ■ Watchdog functionality ■ Independent power supply for operation during standby mode (power consumption less than 1 W)
SMBus	■ Signals on back connector ■ Voltage level 3.3V ■ Controlled by CPU ■ Communication between the power supply unit and the CPU
Binary I/O	■ 1 binary input □ Voltage level according to external power supply input voltage (max. 154 VDC) □ Electrically isolated □ External switch (key) with binary input □ Switch-on by key input or wake on time □ Switch-off by key input or software □ Status of binary inputs readable via SMBus ■ 1 binary output □ Voltage level according to external power supply input voltage □ Isolated by relays □ User-specific functionality (controllable via SMBus) □ Maximum switching power: 60W (example 110V/0.5A)
Miscellaneous	■ DC/DC Converter □ Fuse-protected ■ Two status LEDs on front panel □ Green LED indicates correct input voltage □ Yellow LED indicates correct output voltage ■ Alternative power supply at the backplane for use as redundant PSU ■ Short circuit protection ■ Reverse polarity protection by internal protector
Input Characteristics	■ Nominal voltage input: 110 VDC ■ Wide input range: 0.7 x nominal voltage < nominal voltage < 1.25 x nominal voltage (according to EN50155) □ 77..137.5 VDC ■ Max. input voltage range: 0.6 x nominal voltage < nominal voltage < 1.4 x nominal voltage with full functionality for 0.1 s, no damage for 1 s (according to EN50155) □ 66..154 VDC ■ No load input power: < 5.8 W in standby mode
Output Characteristics	■ Output power (max.): 100W ■ Output power (min.): 5W ■ 12V tolerance/overvoltage protection: ±5% ■ 5V tolerance/overvoltage protection: +5%/-3% ■ 3.3V tolerance/overvoltage protection: ±3% ■ Overtemperature shutdown: 50°..90°(adjustable by SMBus command) ■ Holdup time according to EN50155 Class S2
Connection	■ Input and output via DIN 41612 plug connector, type H15
Electrical Specifications	■ Isolation (according to EN50155) □ Input/output: 1500VDC/1000V eff □ Input/shield: 1500VDC/1000V eff □ Output/shield: 1500VDC/1000V eff □ Ground/shield: 1500VDC/1000V eff

Technical Data

Mechanical Specifications	■ Dimensions: 3U, 12HP, 128.4mm height ■ Integrated heat sink ■ Weight: 1.1 kg
Environmental Specifications	■ Temperature range (operation): -40..+85°C (no derating) ■ Temperature range (storage): -40..+85°C ■ Airflow: min. 10m³/h ■ Shock: according to EN60068-2-27 ■ Continuous shock: according to EN60068-2-29 ■ Vibration: according to EN60068-2-6 ■ Protection □ Class of protection: Class II, EN 60950 □ Degree of protection: IP20 (insert in rack), EN60529
MTBF	■ 190,000+ h @ 40°C according to IEC/TR 62380 (RDF 2000)
EMC	■ Tested according to EN55022 (radio disturbance), EN61000-4-2 (ESD), EN61000-4-4 (burst) and EN61000-4-5 (surge)
Software Support	■ Driver software for SMB communication for Windows®, Linux, VxWorks® ■ For more information on supported operating system versions and drivers see Downloads.

Configuration & Options

Standard Configurations

Article No.	Vin nominal	Vin	Vin max.	Vout	Power	Width	Operation Temperature	Coating
17PU05-00	110 VDC	77..137.5 V	66..154 V	3.3 V, 5 V, 12 V	100 W	12 HP	-40..+85°C screened	Yes
17PU06-00	24 VDC	16.8..30 V	14.4..33.6 V	3.3 V, 5 V, 12 V	100 W	12 HP	-40..+85°C screened	Yes
17PU08-00	36 VDC	25.2..45 V	21.6..50.4 V	3.3 V, 5 V, 12 V	100 W	12 HP	-40..+85°C screened	Yes

Options

Mechanical Specifications	■ 8HP model with smaller heat sink and derating tbd.

Ordering Information

Standard PU5 Models	**17PU05-00**	12HP, 77..137.5 VDC (110 V nom.), 100 W, coated, -40..+85°C screened
Related Hardware	**17PU06-00**	12HP, 100W, wide range input 24 VDC (16.8..30.0 VDC typ. and 14.4..33.6 VDC for 0.1sec), 12V, 5V and 3.3V output, -40..+85°C screened, conformal coating
Software: Linux	This product is designed to work under Linux. See below for potentially available separate software packages from MEN.	
	13AD78-06	MDIS5™ low-level driver sources (MEN) for PU2, PU3, PU4, PU5, PU6 and CCA Rack PSU controller on SMBus
Software: Windows®	This product is designed to work under Windows®. See below for potentially available separate software packages from MEN.	
	13AD78-70	MDIS4™/2004 / MDIS5™ Windows® driver (MEN) for PU2, PU3, PU4, PU5, PU6 and CCA Rack PSU controller on SMBus
Software: VxWorks®	This product is designed to work under VxWorks®. For details regarding supported/unsupported board functions please refer to the corresponding software data sheets.	
	13AD78-06	MDIS5™ low-level driver sources (MEN) for PU2, PU3, PU4, PU5, PU6 and CCA Rack PSU controller on SMBus

For operating systems not mentioned here contact MEN sales.

Documentation	**20PU05-00**	PU5/PU6/PU8 User Manual

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