



## Meinberg Radio Clocks

Lange Wand 9  
31812 Bad Pyrmont, Germany  
Phone: +49 (5281) 9309-0  
Fax: +49 (5281) 9309-30  
<https://www.meinbergglobal.com>  
[info@meinberg.de](mailto:info@meinberg.de)

## GPS180AMC: AdvancedMC Satellite Clock

### AdvancedMC

The AdvancedMC (AMC) standard defines the mechanical and electrical requirements of a board for integration onto a carrier board or an independent slot card for MicroTCA (Micro Telecommunications Computing Architecture) systems.

The satellite radio clock GPS180AMC is a module in the "Single, Mid-Size AMC Module" format, designed in the AdvancedMCTM (AMC) standard. It uses the information of the GPS system to obtain extremely accurate time information and to adjust the master oscillator to its set point. The module GPS180AMC has two possible areas of application: The use as time standard to synchronize the system time of a computer, inside a MicroTCA, and to generate reference clock pulses for the construction of hierarchical clock pulse structures.

In addition to the signals of the AMC bus the GPS180AMC provides different input and output signals via a connector in the front panel. The data transmission with the computer, for example of a MicroTCA system, can be made via a PCI Express connection of the AMC backplane.

### Important Note

This product is no longer available and may have been replaced by a newer product. We will, of course, continue to provide support for units that have already been purchased and are still in use. Please contact our [1][Sales Department](#) for further details.

### Key Features

- Single lane (x1) PCI Express (PCIe) interface, PCI Express r1.0a compatible, Fat Pipe Region, Port 4, Data format: binary, byte serial
- USB 1.1 / USB 2.0 full-speed, Micro USB connector
- Plug and Play
- Included GPSANTv2 antenna uses downconverter technology to enable long transmission routes of up to 1100 m (1200 yards)
- Programmable clock frequencies for TCLKA and TCLKC: 8kHz, 1.544MHz, 2.048MHz or 19.44MHz
- Driver software for all popular operating systems
- Including GPS antenna, 20m standard cable and manual on USB key

## Description

### Management

Complete units, as defined in the AMC standard, e.g. MicroTCA, are extremely flexible when it comes down to the data- and clock pulse interfaces used in-between the assembly groups. To ensure correct management of all resources, every system comes with a "Shelf Management Controller" (ShMC), or "MicroTCA Carrier Hub" (MCH), who ensures error-free functioning of the overall system, as well as of each assembly group. To do so the MCH communicates with a "Module Management Controller" (MMC) when the system is turned on or an AMC card is plugged into an operating system. The MMC is mandatory for every card, as specified in the AMC standard. In addition to providing the data- and/or clock pulse paths requested by the AMC card the Management Controller also ensures trouble-free plug and remove of modules in an operating system (Hot Swap).

To communicate with a system

## Characteristics

<b>Receiver Type</b>	12 channel GPS C/A-code receiver
<b>Status Indicators</b>	<p>The Status LEDs "LED1" (out of service, red) and "LED2" (Heartbeat/Healthy, green) as specified in the AMC standard are positioned on the upper side of the front panel. When the Management Controller of the GPS180AMC detects a failure, the red "out of service" LED is activated. For example, if the pay load supply voltage is too high/low or if one of the temperature sensors of the GPS180AMC detect a too high ambient temperature.</p> <p>As long as all cyclical hardware- and firmware audits of the MMC come out positive, the green "Heartbeat/Healthy" LED blinks. As soon as one of the tests shows a negative result, the LED2 is turned off and the red LED1 glows permanently.</p>
<b>Type of Antenna</b>	Included [2] <a href="#">GPSANTv2 antenna</a> with innovative downconverter technology that allows transmission routes of up to 300 m using RG58 cable, 700 m using RG213 cable, and 1100 m using H2010 Ultraflex cable
<b>Synchronization Time</b>	<p>Max. 1 minute in normal operating conditions</p> <p>Max. 25 minutes (average 12 minutes) upon first initialization or in the absence of saved satellite data</p>
<b>Frequency inputs</b>	1 x 10MHz, max 5 Vpp, AC coupling MMCX jack at the front panel
<b>Frequency Outputs</b>	1 x TTL into 50 Ohm female MMCX connector in the front panel default: 2.048MHz programmable: 8kHz, 1.544MHz, 2.048MHz, 10MHz, 19.44MHz
<b>Precision of timebase</b>	<p><b>Accuracy of time:</b></p> <p>better than +/- 100 nsec after synchronization and 20 minutes of operation</p> <p>better than +/- 2 µsec during the first 20 minutes of operation</p>

<b>Interface</b>	<p><b>Terminal Interface:</b> USB 1.1 / USB 2.0 full-speed, Micro USB connector</p> <p><b>Serial Interface:</b> Asynchronous serial interface (RS-232) COM1, I/O RJ45 jack Baud rate: 300 to 19200 Data format: 7N2, 7E1, 7E2, 8N1, 8N2, 8E1 Default: 19200, 8N1, Meinberg Standard Telegramm, per second</p>
<b>Electrical Connectors</b>	<p>Female SMA Antenna connector Clock input: female MMCX connector in the front panel Clock output: female MMCX connector in the front panel</p>
<b>Computer interface</b>	<p>Single lane (x1) PCI Express (PCIe) interface PCI Express r1.0a compatible Fat Pipe Region, Port 4 Data format: binary, byte serial</p>
<b>Backup Battery Type</b>	<p>When main power supply fails, hardware clock runs free on quartz basis, almanac data is stored in RAM Life time of lithium battery min. 10 years</p>
<b>Operating Voltage</b>	12V Payload Power, 3.3V Management Power, 8W typ.
<b>Board type</b>	Single, Mid-Size AMC Module, 181.5mm x 73.5mm x 18.96mm
<b>Supported Temperature</b>	0 to 55 °C
<b>Supported Humidity</b>	Max. 85 % (non-condensing) at 40 °C
<b>Warranty</b>	Three-year warranty
<b>Options</b>	<p><b>Oscillator upgrade:</b></p> <p>* OCXO-MQ, -HQ or -DHQ (instead of OCXO-SQ) for extended Holdover capabilities (see [3]<a href="#">oscillator table</a> for further details)</p>
<b>RoHS Status of Product</b>	This product is fully RoHS-compliant.
<b>WEEE Status of Product</b>	This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself.

#### Manual

The English manual is available as a PDF file: [4][Download \(PDF\)](#)

**Links:**

[1] <mailto:sales@meinberg.de>

[2] <https://www.meinbergglobal.com/english/products/gps-antenna-converter.htm>

[3] <https://www.meinbergglobal.com/english/specs/gpsopt.htm>

[4] <https://www.meinbergglobal.com/download/docs/manuals/english/gps180amc.pdf>