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

FDM: Frequency Deviation Monitor for 50/60Hz power line networks

The FDM module can be used in LANTIME M300 and M900 systems. The FDM-D option featuring an alphanumerical LED display is only available for LANTIME M900 systems. The FDM module is used to calculate the mains frequency and to monitor the frequency and time deviation in 50 / 60 Hz power grids.

Key Features

- Monitoring of Mains Frequency
- Pre-connected GNSS or PZF Receiver as Reference
- 2 analog outputs (time deviation and/or frequency deviation)
- Option: FDM-D with 5mm LED Display
- Serial RS-232 Interface
- Calculation of time based on the local frequency

Description

A preconnected reference is necessary that provides a serial time string and a PPS (pulse per second). The accuracy of the measurements is derived from these signals. The module calculates the frequency as well as the time, based on the mains frequency.

The time deviation (TD) is the difference of this calculated time (PLT) to the reference time (REF). This time deviation as well as the frequency itself is sent out via serial interface or is beeing converted to an analog voltage output provided by a DAC.

Functional Principle
The power line frequency to be monitored is applied via the rear panel mains socket of the LANTIME, then filtered and transformed. After that the sine-wave signal is fed into the microcontroller of the FDM module.

Calculation of the power line time PLT occurs by counting the periods of the mains frequency. Depending on the nominal frequency, the PLT seconds are incremented after counting 50 or 60 periods. To initialize the PLT, it is necessary to get the exact time via the serial interface (REF) and the pulse per second (PPS) from the preconnected reference. The time deviation TD is calculated once per second and is limited to ±1000 seconds.

Characteristics

Display	8-digit alphanumeric dot matrix display, digit size 5 mm
Input signal	10 MHz, serial time string (via COM 1), PPS or USB mains frequency, 70 - 270 V AC, 50Hz or 60Hz
Interface	Two asynchronous serial RS-232 ports, COM 0 and COM 1 Bau drate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 Baud Framing: 7N2, 7E1, 7E2, 8N1, 8N2, 8E1, 7O2 Output mode: per second, per minute oder on request Output string: The frequency, frequency deviation, reference time, power line time and the time deviation are send out in one of three available formats. The formats are: * STANDARD FDM String * SHORT FDM String * AREVA TTM1 FDM String * TPC-Siemens TTM2 FDM String * Computime Extended FDM String * Fingrid FDM String * FDM III String

Resolution of Measurement	frequency: accuracy of reference (10 MHz) ±100µHz time deviation: accuracy of reference (PPS) ±1 ms
Analog outputs	2 analog outputs for longtime-recording (time deviation and/or frequency deviation), range: -2.5 V ... +2.5 V, resolution: 16 Bit
Dimensions of the front panel	FDM180D with display: 12HP/3U (60mm x 128mm)
Electrical Connectors	96-pin VG-rail DIN 41612
Operating Voltage	+5 V DC
Current Draw	400 mA
Board Type	Eurocard
Board Dimensions	160 mm x 100 mm, 1,5 mm Epoxy
Supported Temperature	Operational: 0 - 50 °C (32 - 122 °F) Storage: -20 - 70 °C (-4 - 158 °F)
Supported Humidity	Max. 85 % (non-condensing) at 40 °C
Warranty	Three-year warranty
Options	Option: Eight character, 5 mm height, dot matrix LED display for showing the measurements and configuration external large display for showing the measurements of a FDM180: [1] DU35K/FDM (not included in delivery)
RoHS Status of Product	This product is fully RoHS-compliant.
WEEE Status of Product	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

There is no online manual available for this product.: [2]Contact us

Links:

[1] https://www.meinbergglobal.com/english/products/du35k.htm
[2] mailto:info@meinberg.de