

IMS-PZF183

Product Highlights

- | Long-wave receiver and clock module for optimum reception of the DCF77 signal transmitted from Mainflingen, Germany
- | Supports pseudo-random code demodulation for more efficient and more reliable decoding of time signal
- | Ease of configuration through Web Interface of base IMS unit



A High-Accuracy Clock Module for DCF77 Reception

The IMS-PZF183 clock module for Meinberg's IMS family of modular time servers is a robust long-wave receiver and clock module capable of acquiring DCF77 time signal transmitted by the PTB in Mainflingen, Germany and using these to generate highly accurate 10 MHz frequency signals, 1PPS clock signals, and time strings for high-accuracy timekeeping.

The IMS-PZF183 supports both the original AM signal and the integrated pseudo-random keyed phase-shift code embedded in the same signal for greater reliability and synchronization speed.

The IMS-PZF183 features a dedicated 9-pin RS-232 D-Sub port for the output of specifically formatted time strings.

Meinberg Funkuhren GmbH & Co. KG
Lange Wand 9. 31812 Bad Pyrmont
Germany

sales@meinberg.de
www.meinbergglobal.com

Phone: +49 5281 9309-0

Meinberg USA Inc.
111 Santa Rosa Ave., Suite 401,
Santa Rosa, CA 95404, USA

info@meinberg-usa.com
www.meinbergglobal.com

Phone: +1-877-PTP-1588



Basic Specifications

Receiver Type	Long-wave 77.5 kHz receiver with AM and pseudo-random code demodulation
Compatible Antennas	Meinberg AW02 77 kHz outdoor antenna Meinberg AI01 77 kHz indoor antenna
Synchronization Time	At least 3 minutes with good reception

Oscillator Options

The IMS-PZF183 is shipped as standard with a “**OCXO SQ**” (oven-controlled crystal oscillator), which provides excellent holdover performance if your server loses synchronization with its upstream reference for any reason. The IMS-PZF183 may also be shipped on request with a more powerful holdover solution; the options available and their performance metrics are listed below:

Type	Time-of-Day Accuracy (1 Day Holdover)*	Time-of-Day Accuracy (1 Year Holdover)*	Phase Accuracy (Pulse-per-Second)	Frequency Stability (10 MHz, 1 Day Holdover)*	Frequency Stability (10 MHz, 1 Year Holdover)*	Frequency Stability (10 MHz, GPS Sync)
OCXO SQ	± 65 µs	± 4.7 s	< ± 50 ns	± 5 × 10 ⁻⁹ (50 mHz per day)	± 2 × 10 ⁻⁷ (2 Hz per year)	± 1 × 10 ⁻¹¹
OCXO HQ	± 10 µs	± 788 ms	< ± 50 ns	± 5 × 10 ⁻¹⁰ (5 mHz per day)	± 5 × 10 ⁻⁸ (0.5 Hz per year)	± 1 × 10 ⁻¹²
OCXO DHQ	± 4.5 µs	± 158 ms	< ± 50 ns	± 1 × 10 ⁻¹⁰ (1 mHz per day)	± 5 × 10 ⁻⁸ (0.5 Hz per year)	± 1 × 10 ⁻¹²

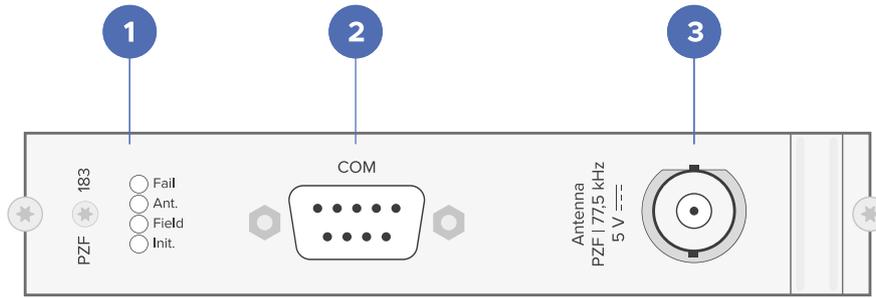
* Full holdover performance requires the system to have been synchronized for 24 hours previously.

Accessories Included

- | A Meinberg AW02 antenna for outdoor installation, a mounting kit containing all the accessories required to mount the antenna, and a 10 m (32.8 ft) RG 58 coaxial cable with pre-fitted connectors as standard*.
- | Optional: A Meinberg AI01 antenna for indoor installation, with optional wall mounting bracket with 360° rotation capability for the antenna, and a 5 m (16.4 ft) RG 174 coaxial cable with pre-fitted connectors*.
- | Optional: MBG-S-PRO surge protector for in-line installation between the antenna and your IMS-PZF183 module.

* Meinberg also offers customized antenna cables to accommodate your specific installation requirements. Please reach out to your Meinberg Sales Representative for more information.

IMS-PZF183 Connectors

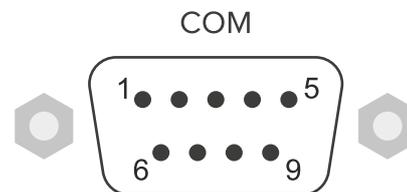


1 LED Status Indicators

“Fail” LED System Status	“Ant.” LED Reference Signal Status	“Field” LED Reference Signal Status	“Init.” LED Initialization Status
Indicates that the clock is running in free-run mode off the onboard oscillator	Indicates whether the antenna is correctly connected and functional and whether a signal is received	Indicates whether the antenna is correctly connected and functional and whether a signal has been received	Indicates initialization by the operating system and the warm-up state of the onboard oscillator

2 RS-232 COM Serial Time String Output

Pin	Function
1	PPS Input
2	RS-232 RxD (Receive)
3	RS-232 TxD (Transmit)
5	GND (Ground)



Connector Type	D-Sub 9-pin, male
Supported Time Strings (Output)	Meinberg Standard (Default), Meinberg Capture, Meinberg GPS, SAT, NMEA RMC, NMEA GGA, NMEA ZDA, NMEA RMC GGA (RMC followed by GGA), NMEA GGA ZDA (GGA followed by ZDA), Uni Erlangen, Computime, Sysplex 1, SPA, RACAL, ION, ION Blanked, IRIG-J-1, 6021, Freelance
Supported Time Strings (Input)	Meinberg Standard, NMEA RMC, NMEA ZDA, Uni Erlangen
Baud Rates	300, 600, 1200, 2400, 4800, 9600, 19200 (Default)
Framing Options	7N2, 7E1, 7E2, 8N1 (Default), 8N2, 8E1, 7O1, 7O2, 8O1, 8E2
Supported Cable Type	Standard RS-232 (female) for time string output Modified RS-232 cable (female) with PPS signal on Pin 5 for synchronization with external time string + PPS signal

3 PZF Antenna Input

Connector Type	Bayonet Neill-Concelman (BNC) connector for coaxial cable
Power Supply	5 V to antenna via antenna cable
Supported Cable Length	Max. 300 m (RG 58)

IMS System Compatibility

Compatible Base Chassis Types	M500, M1000, M1000S, M2000S, M3000, M3000S, M4000,
Compatible Slots	CLK (Clock),
LANTIME OS Requirements	Requires LANTIME OS Version 7.08.015 for full feature support

Integrated Signal Generators

The IMS-PZF183 is capable of directly generating frequency, time-of-day, and phase signals. These signals can be either used to synchronize the integrated NTP server of your IMS LANTIME system's CPU module, output directly via a suitable output module (such as an IMS-BPE or IMS-CPE module), or used as a reference for a secondary reference signal generator module or a IEEE1588 PTP module. Modules are available to generate secondary reference signals used in telecommunications, broadcasting, and power generation.

	Signal Type	Specifications	Details
Pulse per Second	Phase reference	Rise Time: Typically 2.6 ns Fall Time: Typically 2.6 ns	Primary phase reference for all secondary signals, NTP server, and PTP master. Can also be output directly via a separate output module.
10 MHz Frequency	Frequency reference	Rise Time: Typically 2.6 ns Fall Time: Typically 2.6 ns	Primary frequency reference for all secondary signals, NTP server, and PTP master. Can also be output directly via a separate output module.
Serial Time String	Time-of-day reference		Output via the serial interface integrated into the IMS-PZF183 module.
Timecode	Time-of-day reference	See "Timecode Support"	Output via a separate output module. Supports various AM and DCLS-based timecode format. See below for more information.
Frequency Synthesizer	Frequency reference	Min. Frequency 0.125 Hz Max. Frequency: 10 MHz	Output via a separate programmable pulse output module. Generates an arbitrary frequency with adjustable phase.
Programmable Pulses	Various	See "Programmable Pulse Signal Types"	A variety of TTL-based pulse types that can be used as frequency, phase, and time-of-day reference signals. See below for more information.

Programmable Pulse Signal Types

The “programmable pulses” are generated by the clock and output via four discrete signal channels on the IMS-PZF183 module. The integrated frequency synthesizer is also output via the programmable pulse channels.

	Signal Type	Details
Timer	Trigger signal	Allows a receiver to receive a TTL voltage that is enabled and disabled at up three fixed times during the day.
Single Shot	Trigger signal	Generates a single TTL pulse of configurable duration (between 10 ms and 10 s) at a defined time during each day.
Cyclic Pulse	Trigger signal	Generates a recurring TTL pulse at regular intervals, at most every once per second.
Pulse-per-Second	Phase reference	Generates a recurring TTL pulse (of between 10 ms and 990 ms) once a second as a phase reference. Can also be output directly via a separate output module.
PTTI Pulse-per-Second	Phase reference	Generates a recurring TTL pulse of 20 μ s once a second.
Pulse-per-Minute	Phase reference, trigger signal	Generates a recurring TTL pulse once a minute at the start of the minute.
Pulse-per-Hour	Phase reference, trigger signal	Generates a recurring TTL pulse once an hour at the start of the hour.
DCF77 Marks	Time-of-day reference	Simulates the signal generated by the German DCF77 time signal service. The absence of the pulse-per-second at the 59-second mark denotes the turn of the minute.
DCF77-Like M59	Time-of-day reference	Simulates the signal generated by the German DCF77 time signal service. A 500 ms pulse is transmitted at the 59-second mark to denote the turn of the minute.
Time Sync	Trigger signal	Signals to receivers with a continuous voltage that the clock’s time base is synchronized with its reference (or, conversely, with the absence of voltage that it is not synchronized).
DCLS Timecode	Time-of-day reference	Outputs any supported DCLS-based timecode. Note that AM timecodes cannot be generated or output via the programmable pulse generator.
1 MHz Frequency	Frequency reference	Generates a 1 MHz frequency reference.
5 MHz Frequency	Frequency reference	Generates a 5 MHz frequency reference.
10 MHz Frequency	Frequency reference	Generates a 10 MHz frequency reference.
Time Slots per Minute	Trigger signal	Generates a configurable one-minute sequence of pulses whose individual duration is measured in tens of seconds.

Miscellaneous Technical Information

Card Type	Eurocard format
Power Consumption (Maximum)	4.5 W to 8.5 W (dependent on oscillator)
Current Draw (Maximum)	0.9 A to 1.7 A (dependent on oscillator)
Operating Voltage	5 V
Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Storage Temperature	-20 °C to 70 °C (-4 °F to 158 °F)
Relative Humidity	Max. 85 % at 30 °C (86 °F), non-condensing
Surge Immunity	IEC 61000-4-5 Level 4 (test voltage: 4000 V; max. peak current given 2 Ω load: 2000 A)
Other Surge Protection	Integrated surge protector to protect connected antenna from voltage surges

Support Information

Technical Support	Free lifetime support via telephone and email, including firmware updates
Warranty	Three-year warranty, extendable upon request
Firmware Updates	Firmware is field-upgradeable; updates can be installed directly from the unit or via a remote network connection. Software updates are provided free of charge for the lifetime of your Meinberg product.
RoHS Compliance	The product is fully RoHS-compliant.
WEEE Status	The purchase of this product is considered to be a “B2B” transaction (non-household product) for the purposes of the European Union Waste of Electrical and Electronic Equipment Directive; the product falls under Category 6, “Small IT and Telecommunications Equipment”. For disposal, it must be returned to the manufacturer to ensure WEEE compliance. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will cover the costs for the waste disposal itself.