Fiber Optic Modem VCH-608

Fiber-optic modem VCH-608 is designed for receiving and transmitting signals of atomic clocks through a fiber optic communication line (FOCL).
The signals are:
− 1 PPS with delay compensation;
− sine 100 MHz with phase instability compensation.

Also, the VCH-608 generates sine signals with nominal frequencies of 5 and 10 MHz – coherent to the input signal.
Reception/transmission of high precision signals via the FOCL is provided using a pair of modems: one is configured as a Transmitter and installed at the end of the FOCL where the signal source is located, the second – as a Receiver and installed at the opposite end of the FOCL.

Key applications:
− metrology;
− time scale comparison systems;
− production and testing of high precision oscillators and devices based on them;
− scientific research.

Specifications

The optical characteristics of the modem correspond to Class 1 of laser safety, according to IEC 60825-2-2013. The permissible loss of optical power in the FOCL between modems is 15 dB (corresponds to the length of the optical fiber 50 – 70 km).
The type of optical connectors is FC/APC.

Input electrical signals:
− sinusoidal: 100 MHz, root mean square (RMS) voltage value — (1 ± 0.2) V at a load of 50 Ω;
− pulse: 1 PPS, amplitude ≥ 2.5 V at a load of 50 Ω, pulse duration — (15 ± 5) microseconds, front duration < 3 ns, polarity – positive.
Output electrical signals:
− sinusoidal: 5 MHz, 10 MHz, 100 MHz, RMS voltage value — (1 ± 0.2) V at a load of 50 Ω;
− pulse: frequency of 1 Hz (time scale), amplitude ≥ 2.5 V at a load of 50 Ω, pulse duration — (15 ± 5) microseconds, front duration < 3 ns, polarity – positive.

Metrological characteristics

Averaging time, τ	Allan deviation noise floor
1 s	$8.0 \cdot 10^{-14}$
10 s	$1.0 \cdot 10^{-14}$
100 s	$2.0 \cdot 10^{-15}$
1 hour	$1.0 \cdot 10^{-16}$

The error of synchronization when transmitting 1 PPS time signal is no more than 200 ps.
Dimensions (H×W×D) – 132.5×482.6×327.5 mm.