ELVA-1
Millimeter Wave Division

Mm-Wave High Sensitive Power Meters

- **0.01-220 GHz operating frequency**
- **High sensitivity**
- **Up to 50 dB dynamic range (0.3 µ W-30mW)**
- **Small measuring time (< 1 sec)**
- **RS-232, GPIB, SCPI**
- **USB, Ethernet**

Applications

- Measurements of power level of mm-wave signal
- Test equipment
- R&D projects in telecom, radar and scientific areas

Description

DPM-xx Power Meters display measured power in milliwatts, microwatts or dBm, and also display the user-entered signal frequency in GHz. Easy operation is ensured with automatic zeroing, automatic sensor recognition and a calculation factor table stored in the memory of each power sensor.

Their compact size, precise accuracy, reliability and inexpensive pricing make our DPM-xx Power Meters attractive assets for design engineering, equipment manufacturing, field engineering and research.

Measured average power is displayed on a 2-line LCD screen, at a measurement rate of 2 times per second or faster. For power measurements below 5-10mW (depending on frequency band) each waveguide sensor includes a full-band isolator, for 5-100mW (depending on frequency band) – a waveguide attenuator (it can include a full-band isolator on request). For power measurements above those levels (as high as 100mW-1Watt) optional directional couplers are available.

Each DPM-xx is equipped with USB and Ethernet ports (HTTP, web interface) for controlling and exchanging measurement data with a PC.
RS-232 and GPIB interfaces are available as options on request.

Since the control/display unit and power sensors are sold separately, customers only need one DPM control/display unit to interface with all 10 of our sensors. To obtain power measurements over a multi-waveguide frequency range, order one DPM control/display unit and several adjacent-band sensors. Because the standard ELVA-1 DPM control/display unit is a single-channel meter, only one power sensor can be used at one time.

Power Meter Sensor Heads

ELVA-1's ZBD-series Zero-Biased Detectors are used as the power sensors for our DPM Power Meters. To cover the range from 10 MHz to 220 GHz band, we offer one coaxial (10 MHz-26.5 GHz) and 9 waveguide power sensors (26.5-220 GHz in waveguide bands), which are **sold separately**.

Based on Schottky Barrier Diode technology, our ZBD power sensors provide high sensitivity, fast measurement speed and quick response to changes in input power. To extend the dynamic range of diode power sensors above their square law region, a correction factor is used. The amplitude and frequency curves for each individually calibrated power sensor are stored in the sensor's EEPROM. When a sensor is connected to a DPM control/display unit, the control/display unit automatically recognizes that sensor's characteristics.

DPM-XX Key Specifications:

- Display readings: milliwatt, microwatts or dBm
- Maximum measuring rate: up to 50 times per second, default 2 times per second (set at factory)
- Frequency Range: 10 MHz to 220 GHz
- Min. measured Power: 0.1 microwatts (depending on frequency band)
- Dynamic Measurement Range: 50 dB max. (depending on frequency band)
- Frequency step: 10 MHz
- SCPI command protocol
- Ethernet (HTTP, web interface) +USB (in the standard model), optional: GPIB+RS232
- Calibration accuracy ±0.04 dB (log) or ±1%
- Power Sensor Calibration: Individually calibrated, with amplitude and frequency curves in flash memory
- If a valid signal frequency is not entered before measuring power, the max measurement error will be ±1.5 dB for Ka, Q, U, and V bands, ±2.0 dB for E, W bands, and ±2.5 dB for F, and D bands, based on calibration curve flatness.
- Available power options: 100-240V 50/60Hz AC, or battery with USB Type-C 5V 3A output.

DPM Model	DPM-C	DPM - 28	DPM - 22	DPM - 19	DPM - 15	DPM - 12	DPM - 10	DPM - 08	DPM - 06	DPM - 05
Frequency Band	**—**	**Ka**	**Q**	**U**	**V**	**E**	**W**	**F**	**D**	**G**
Frequency Range, GHz	0.01-26.5	26.5-40	33-50	40-60	50-75	60-90	75-110	90-140	110-170	140-220
Input Waveguide/ Impedance	50 Ohm, Coaxial	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10	WR-08	WR-06	WR-05
Waveguide Flange/ Connector	SMA, male	UG-599/U	UG-383/U	UG-383/U-M	UG-385/U	UG-387/U	UG-387/U-M	UG-387/U-M	UG-387/U-M	UG-387/U-M
Max Input Power Level, dBm (*)	15	5	5	5	5	8	9	9	9	10
Max Measured Power Level, dBm	14	4	4	4	4	7	8	8	8	9
Dynamic Range, dB (max)	45	47	47	47	47	50	49	49	48	44
Min Measured Power Level, dBm	-31	-43	-43	-43	-43	-43	-41	-41	-40	-35
Measurement Rate (default), times per sec	2	2	2	2	2	2	2	2	2	2
VSWR (power sensor)	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.4:1	1.7:1

Note (*): Exceeded power level can burn a sensor. ELVA-1 can supply an attenuator to the input, then the dynamic range will move to a higher power range.

How to Order

Specify Model Number DPM-**XX /P/YZ**, where

- **XX** – number of waveguide standard (Example: 10 for WR-10 and 06 for WR-06)
- **P**- max input power (mW), mind that exceeded power level can burn a sensor, use ELVA-1 attenuator
- **YZ** – interfaces in alphabet order (G –GPIB, E – Ethernet, U – USB, R – RS-232)

Example

DPM-10/20/EU (W-band power meter, WR-10, operating frequency band 75-110 GHz, max power level 20 mW, Ethernet+USB)

DPM-15/10/GR (V-band power meter, WR-15, operating frequency band 50-75 GHz, max power level 10 mW, GPIB+RS-232)

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