multimess D9-PQ: POWER QUALITY NETWORK ANALYZER FOR ALL NETWORK LEVELS.



Power Quality Analyzer and Fault Recorder

The **multimess D9-PQ** power quality analyzer and fault recorder is suitable for any measurement task required in electrical networks. You can use it as a power quality interface in accordance with network quality standard EN 50160 and as a measuring device for all physically defined measured values in alternating current networks. Additionally, it provides all consumption values required for energy data management.

In addition to standard evaluations, the **multimess D9-PQ** also features a high-speed fault recorder with a recording rate of 40.96 kHz/10.24 kHz as well as a 10 ms rms value recorder. This makes a detailed evaluation of network interferences possible. The network analyzer is primarily suitable for monitoring and recording quality agreements between energy providers and customers and making them available for evaluation or storage.

Voltage quality measuring devices operate according to the IEC 61000-4-30 standard. This standard defines measurement methods to create a comparable basis for the user. Devices of different manufacturers operating according to this standard necessarily have to obtain the same measuring results. The multimess D9-PQ helps you to analyze the causes of malfunctions in electrical systems and machines. By permanently monitoring and controlling network quality, you can detect possible malfunctions early on.







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When used as a power quality interface, the **multimess D9-PQ** provides comprehensive evaluations in accordance with the network quality standard DIN EN 50160, IEC 61000-2-2/-2-4

Technical Data

- 1.7 inch color display
- Class A measured data processing
- IEC 61000-4-30
- Recording of power quality events according to EN 50160; IEC 61000 -2-2; -2-12;-2-4
- Automatic EN 50160 network quality report
- 1 GB internal memory
- Input channel bandwidth 20 kHz
- 4 voltage inputs, measuring range end value: 480 V L-N, accuracy < 0.1 %
- 4 current inputs

- Simultaneous processing of scanned and calculated voltages and currents
- Voltage and current oscillograph sampling rate: 40.96 kHz / 10.24 kHz
- Half-cycle recorder: network frequency, RMS voltage and current, voltage and current pointer, power recording rate: 10 ms (50 Hz)/8.33 ms (60 Hz)
- Powerful triggering

Auswertung nach EN 50160

multimess F144-PQ: STATIONARY NETWORK POWER QUALITY ANALYZER AND FAULT RECORDER.



Power Quality Analyzer and Fault Recorder multimess F144-PQ

Detect possible malfunctions before they lead to a loss of production or defects in plant components. The **multimess F144-PQ** measures and monitors the network quality. It can be used as a power quality interface according to network quality standards, such as IEC 61000-2-2 / EN 50160 or to check technical connection guidelines, such as DIN VDE AR 4110 and DIN VDE 4120.

The network analyzer is designed primarily for measurements in industrial environments with up to 690 V (L-L) measurement voltage as well as for measurements in public networks.

The 5th current transformer input for measuring the residual current (RCM) as well as the frequency measurement of voltage and current harmonics in accor-

dance with IEC 61000-4-7 from 2 kHz to 20 kHz are available as options. Especially this measurement from 2 kHz to 20 kHz is important, since many pulse frequencies of converters and inverters, as well charging stations exist in this range.

Besides the possibility of standard evaluations, the **multimess F144-PQ** also has a high-speed disturbance recorder with a recording rate of 40.96 kHz/10.24 kHz as well as a 10ms RMS rms recorder. This makes an even more detailed evaluation of network interferences possible.

In addition, it is possible to freely program response thresholds for alarm messages or warnings. A device for increasing your operational safety. The power quality analyzer and fault recorder multimess F144-PQ for low, medium and high voltage networks is the central component of a system that can be used to solve all measurement tasks in electrical networks.





POWER QUALITY



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When used as a power quality interface, the **multimess F144-PQ** provides comprehensive evaluations in accordance with the network quality standard DIN EN 50160, IEC 61000-2-2/2-4.

Technical Data

- 5 inch color display
- IEC 61000-4-30, Class A measurement data processing
- Acquisition of power quality events according to EN 50160; IEC 61000-2-2; -2-12;-2-4
- 1 GB internal memory (expandable to 32 GB)
- Bandwidth 20 kHz
- Residual current measurement RCM
- 4 voltage inputs, accuracy < 0.1 %

- 5 Current inputs
- Simultaneous processing of sampled and calculated voltages and currents
- Voltage and current oscillograph
 Sampling rate: 40.96 kHz / 10.24 kHz
- Half-cycle recorder: Network frequency, rms voltages and currents (RMS), pointer for voltage and current, power recording rate: ~10 ms (50 Hz) / ~8.33 ms (60 Hz)
- Powerful triggering

Auswertung nach EN 50160

Detailed Overview Stationary Network Analyzers

Technical details multimess D9-PQ and F144-PQ	multimess D9-PQ	multimess F144-PQ		
Color display	1.7 inch	5 inch		
Keypad for basic configuration on the device	\checkmark	\checkmark		
Memory 1GB internal, up to 32GB SD card	\checkmark	\checkmark		
Protection type	IP 20	IP 54 (when installed)		
4 voltage inputs, accuracy < 0.1 %	~	\checkmark		
4 current inputs 1/5 A rated current	\checkmark	\checkmark		
Measuring channel bandwidth 20 kHz (voltage and current)	\checkmark	\checkmark		
ICE61000-4-30 Edition 3 Class A	~	\checkmark		
Residual current input RCM	\checkmark	optional		
Temperature input PT100/PT1000	-	\checkmark		
Digital inputs	2	8		
Digital outputs	2	4		
Voltage and current oscillograph 10.24 kHz (40.96 kHz option)	~	\checkmark		
Online streaming of voltages and currents	\checkmark	\checkmark		
Voltage and current harmonics 2. – 50. Harmonic	\checkmark	\checkmark		
Voltage and current harmonics 51. – 400. Harmonic	optional	optional		
Interfaces Ethernet / RS 485	\checkmark	\checkmark		
Communication protocol Modbus RTU TCP	✓ ✓	✓ ✓		
Assembly	DIN rail, 9 horizontal pitch	Switchboard installation, 144 x 144 mm		
Dimensions $H \times W \times D$ (without terminals)	-	144 x 144 x 90 mm		
Dimensions $H \times W \times D$ (with terminals)	160 x 90 x 58 mm	144 x 180 x 110 mm		
Dimensions breakout dimension (+0.8 mm)	-	138 x 138 mm		
Weight	502 g	1220 g		
Free evaluation software WinPQ Lite	\checkmark	\checkmark		





Measurements and functions of multimess D9-PQ and multimess F144-PQ

multimess D9-PQ and multimess F144-PQ automatic event detection and measurement standards:

EN 50160 (2013) / IEC 61000-2-2 / IEC 61000-2-12 / IEC 61000-2-4 (class 1; 2; 3) / NRS048 / IEEE519 / IEC 61000-4-30 Class A / IEC 6:1000-4-7 / IEC 61000-4-15

Permanent recording:

Five fixed and two variable measuring time intervals are available for permanent recording: 10/12 T (200 ms), 1 sec, n*sec, 150/180 T (3 sec), n*min, 10 min, 2 h

Time interval voltage	10/12 T	150/180 T	10 min	2 h	1 s	n* s	n* min
Network frequency, 10-s value (IEC61000-4-30)	\checkmark						
Extreme, standard deviation of the network frequency (10 s)	-	-	\checkmark	-	-	_	-
RMS values (IEC61000-4-30)	\checkmark						
Extremes, standard deviation of T/2 values	-	-	\checkmark	-	-	_	_
Breakdown [%], Overvoltage [%] (IEC61000-4-30)	\checkmark	\checkmark	\checkmark	\checkmark	_	_	-
Harmonic subgroups $n = 050$ (IEC61000-4-7)	~	\checkmark	\checkmark	\checkmark	_	_	_
Maximum values of $10/12$ T harmonic subgroups n = 250	_	-	\checkmark	_	_	_	_
Interharmonics subgroups n = 049 (IEC61000-4-7)	~	\checkmark	\checkmark	\checkmark	_	_	_
Total distortion factor (THDS) (IEC61000-4-7)	~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Partially weighted distortion factor (PWHD)	~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	~
Asymmetry, negative/positive sequence, sequence characters	\checkmark						
Asymmetry, zero/positive sequence	~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	~
Positive/Negative/Null Sequence Pointer	\checkmark						
Phase angle (fundamental wave)	~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	~
Flicker (IEC61000-4-15)	-	-	\checkmark	\checkmark	_	_	_
Instantaneous value flicker (IEC61000-4-15)	~	-	\checkmark	-	_	_	_
Ripple-control voltage [%] (IEC61000-4-30)	\checkmark	\checkmark	-	_	_	_	_
Phase angle (zero crossings) of the phase voltage harmonic n=2 50. to the fundamental of the reference voltage	~	~	~	~	_	_	_
Frequency bands 1 35. 2 kHz - 9 kHz, RMS (IEC61000-4-7)	-	-	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark