EN

PMK Probing Solutions. Made in Germany.

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MMCX Probe Series

with Universal BNC Interface

Up to 1 GHz, <4pF

±42V_{pk}, 60V DC

Datasheet

About MMCX Probes

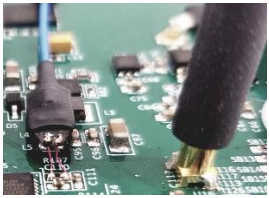
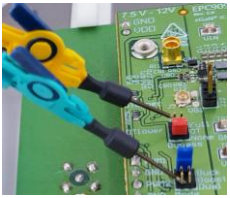
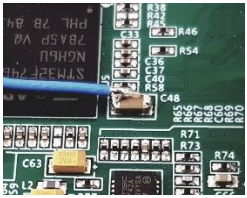
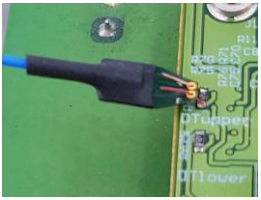
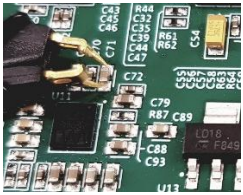
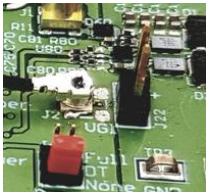
Over the last years MMCX has developed as the standard connectivity solution for repeatable measurements with highest signal fidelity, for example when measuring the gate voltage of switching devices.

Where traditional passive probes have long ground leads meaning a high inductance causing a ground loop, the compact MMCX design overcomes these traditional obstacles.

PMK's MMCX probe series provides models with a very low capacitive loading of less than 4pF for least capacitive loading and highest signal fidelity with their direct MMCX input.

Different models are available up to >1GHz bandwidth and ±42V input voltage making the MMCX probe series the modern and ideal solution for testing, debugging, and design validation.

Individual Connectivity Accessories for the Highest Signal Fidelity

Adapters to connect MMCX directly to square pin headers are available as well, with two or three inputs.

The MMCX probes series has a universal BNC output connector and is compatible with any oscilloscope in the lab. Active models MMCX-A require a 50Ω input impedance, or 1MΩ input impedance and a 50Ω feed-through termination. Passive models MMCX-P require 1MΩ input impedance.

The active probe models require a power supply, which is not included in the scope of delivery, and has to be ordered separately. Review the Ordering Information at the end of this document for more details.

Specifications

Read the Instruction Manual before first use and keep it for future reference. A digital copy of the latest Instruction Manual revision can be downloaded at www.pmk.de.

Do not exceed the specifications. Allow the probe to warm up for 20 minutes. This probe comes with 1 year warranty. Each specification is determined at +23 °C ambient temperature. This probe series is not rated for CAT II, III or IV.

Electrical Specifications

Specifications that are not marked with (*) as guaranteed are typical.

Model Number	Attenuation Ratio (± 2 % at DC)	Bandwidth (-3dB) [1]	Rise time (10%-90%) [1]	Input Impedance
MMCX-P0725	25:1	> 700 MHz	< 570 ps	14.9 MΩ || < 4 pF
MMCX-P0610	10:1	> 600 MHz	< 630 ps	10 MΩ || < 8 pF
MMCX-A1025	25:1	> 1 GHz	< 425 ps	19.5 MΩ || < 4 pF

Each input accessory is lowering the probe's bandwidth. Please review the "Ordering Information" section for the bandwidth limitations of each accessory.

Referring derating over frequency graphs are available in the MMCX Probe Series instruction manual.

Model Number	Noise [2, 3] (Input referred)	Propagation Delay	Compensation Range	Probe Type	Input Coupling of the Measuring Instrument
MMCX-P0725	n/a	< 5 ns	10 pF – 25 pF	passive	1 MΩ
MMCX-P0610(-RO)	n/a	< 5 ns	10 pF – 20 pF	passive	1 MΩ
MMCX-A1025 [4]	0.3 mV AC rms, 54.8 nV sqrt(Hz), (measured DC-30 MHz)	< 6 ns	n/a	active	50 Ω

The following specification is valid for all models:

Maximum Rated Input Voltage	± 42V peak, 30 V rms, ± 60 V DC
Pollution Degree	2

Mechanical Specifications

Parameter	Specification
Weight (Probe only)	45g (passive) / 110g (active)
Length	1.2 m
Probe Input	MMCX (Male)
Output Connector	BNC (Male) [5]

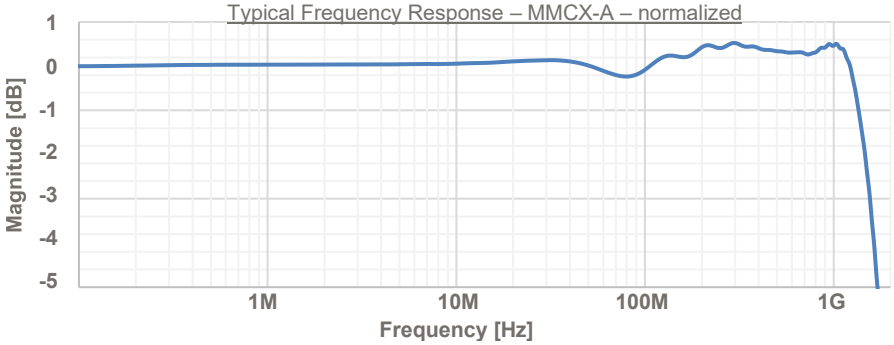
Notes
[1] Determined with a Tektronix 6GHz MSO6B series oscilloscope
[2] Only applicable for active probe models MMCX-A
[3] RMS noise [mV] at 500MHz bandwidth; noise in [nV/sqrt(Hz)] at 100MHz
[4] A power supply is required and needs to be ordered separately.
[5] Depending on model, available with or without read-out

Environmental Specifications

Parameter		Specification
Temperature Range	Operating	-40 °C to +60 °C
	Non-Operating	-40 °C to +71 °C
Maximum Relative Humidity	Operating	80 % relative humidity for temperatures up to +31 °C, decreasing linearly to 40 % at +45 °C, non-condensing humidity
	Non-Operating	95 % relative humidity for temperatures up to +40 °C
Altitude	Operating	up to 2000 m
	Non-Operating	up to 15000 m

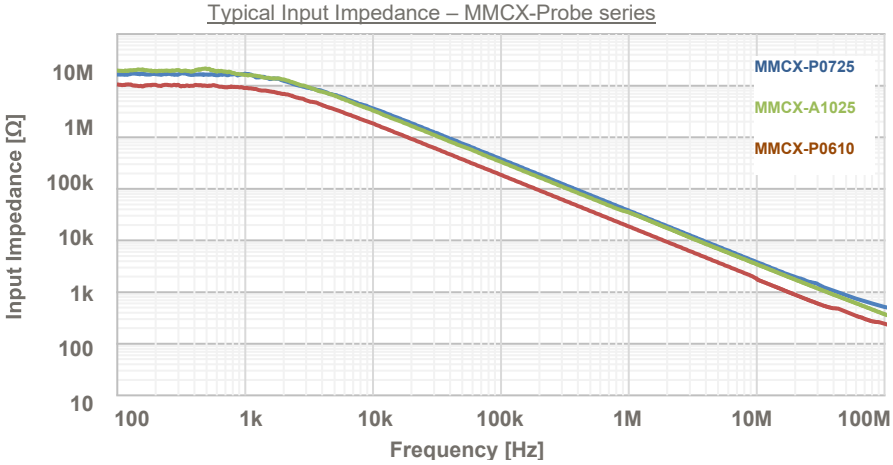
Typical Frequency Response

The frequency response plot shown here is for the active probe model, without any accessories. Frequency responses with specific accessories, or step responses are available on request.



Typical Input Impedance

The input impedance of the probe decreases as the frequency of the applied signal increases.



Dimensions

Please review dimensions of standard MMCX connectors.

Probe Accessory Ratings

MMCX Adapter to 3x square pin holes (-) (+) (-), 2.54mm pitch each (018-294-270)

For high-frequency voltage measurements

Maximum Rated Input Voltage	42V peak, 30 V rms, 60 V DC
Pollution Degree	2

MMCX Adapter to 2x square pin holes (+) (-), 2.54mm pitch (018-294-276)

For high-frequency voltage measurements

Maximum Rated Input Voltage	42V peak, 30 V rms, 60 V DC
Pollution Degree	2

Scope of Delivery

A power supply and referring connection cable are required for the active probe models only. See chapter “Ordering Information” to review the selection.

1x MMCX Probe	
1x Adaptor FF-SQ-MMCX MMCX to 2x 0.025" (0.635mm) socket, -40°C to +125°C	
1x **P25-2** Pico Hook™ red, for use with FF-SQ-MMCX5	
1x **P25-0** Pico Hook™ black, for use with FF-SQ-MMCX5	
1x Instruction Manual	n/a
1x Factory Calibration Certificate (only with active probe model MMCX-A1025)	n/a
1x 890-520-900 Power supply cable (0.6 m), (only with active probe model MMCX-A1025)	

The accessories for this probe series have been safety tested.
Do not use any other accessories or power supplies than what is recommended.

Ordering Information

Step 1: Select Base Probe

MMCX-P0725	Passive probe with MMCX input, 700MHz, 42V peak, 25:1, 1.2m cable length, calibration certificate not included
MMCX-P0610	Passive probe with MMCX input, 600MHz, 42V peak, 10:1, 1.2m cable length, calibration certificate not included
MMCX-P0610-RO	Passive probe with MMCX input, 600MHz, 42V peak, 10:1, 1.2m cable length, calibration certificate not included, dividing factor read-out function
MMCX-A1025	Active probe with MMCX input, 1GHz, 42V peak, 25:1, 1.2m cable length, calibration certificate included, power supply and connection cable required and need to be ordered separately

Step 2: Select Additional Accessories

The specific frequency derating of each accessory is coming soon.

Note that any additional accessory degrades the probe's performance. Always observe the Maximum Input Voltage of the probe's input. Do not use any other accessories.

018-294-270
Adapter MMCX to 3x square pin holes with 2.54mm pitch each (-) (+) (-) for high-frequency voltage measurements

018-294-276
Adapter MMCX to 2x square pin holes with 2.54mm pitch each (-) (+) for high-frequency voltage measurements

FF-SQ-MMCX5
5x MMCX to 2x 0.025" (0.635mm) socket, -40°C to +125°C (One adaptor included in scope of delivery)

FF-HTSPAD-MMCX3
3x MMCX solder-in cable adapter HT, 50Ω RF micro coax to flex solder-in pad, -40°C to +155°C

FF-HTS-MMCX2
2x MMCX solder-in cable adapter HT, MMCX socket with 50Ω RF micro coax cable and open end, -40°C to +155°C

FF-UFL-MMCX2
2x MMCX cable adapter, MMCX socket with 50Ω RF micro coax cable to UF.L socket, -40°C to +125°C

FF-2XR-MMCX
MMCX to 2x XR Mini-Hook

972416100
2-pole test clip SMD for use with FF-SQ-MMCX5

P25-2
Pico Hook™ red for use with FF-SQ-MMCX5 (included in scope of delivery)

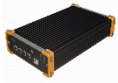
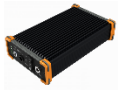
P25-0
Pico Hook™ black for use with FF-SQ-MMCX5 (included in scope of delivery)

890-502-130
SMD test grabber, 1 Pair, blue/red

D010031
50Ω BNC feed-through for 1MΩ input oscilloscopes

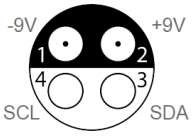
Step 3: Select Power Supply (Active Models only)

A wall plug power supply or multi-channel power supply with power supply cable are required for the models MMCX-A only, and available separately. The probe series has no functionality for remote control.

889-09V-PS2	2ch power supply PS-02 with USB for remote and offset control	
889-09V-PS2-L	2ch power supply PS-02-L with LAN and USB for remote and offset control	
889-09V-PS3	4ch power supply PS-03 with USB for remote and offset control	
889-09V-PS3-L	4ch power supply PS-03-L with LAN and USB for remote and offset control	
889-09V-PS6	8ch power supply PS-06 with USB for remote and offset control	
889-09V-PS6-L	8ch power supply PS-06-L with LAN and USB for remote and offset control	
889-09V-AP01	1ch Battery pack AP-01, no remote or offset control capabilities	
889-09V-PS5	International wall plug power supply PS-05, no remote or offset control capabilities, primary adapters for EU, UK und USA	
890-520-900	Power supply cable 0.6m *Included with MMCX-A probes*	
890-520-915	Power supply cable 1.5m	

The power supply pin assignment is different from other power supplies. Use only original PMK power supplies with PMK probes.

Observe Connector Pin-Out
for PMK power supply cables



Step 4: Select Accredited Calibration

on request	ISO 17025 (re-)calibration

Notes

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