



**Probing Solutions.
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EN



MMCX Probe Series with Universal BNC Interface

Up to 1 GHz, <4pF
 $\pm 42V_{pk}$, 60V DC

Preliminary

Datasheet



About MMCX Probes

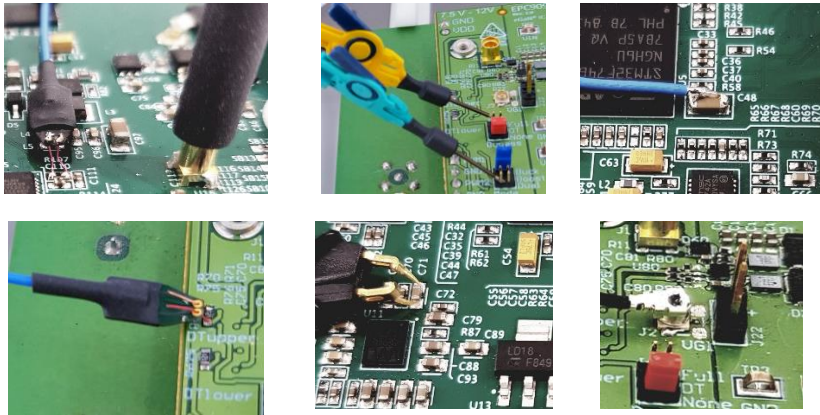
Over the last years MMCX has developed as the standard connectivity solution for repeatable measurements with highest signal fidelity.

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 $\pm 42V$ 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



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 $1M\Omega$ input impedance and a 50Ω feed-through termination. Passive models MMCX-P require $1M\Omega$ 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.

Factory Calibration

The active probe models are shipped with calibration certificate. For the passive probe models, the certificate is optional.

Annual re-calibration of the active probes is recommended. ISO17025 calibration upon delivery or as re-calibration will be possible on request.

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	7 pF – 20 pF	passive	1 MΩ
MMCX-P0610	n/a	< 5 ns	7 pF – 20 pF	passive	1 MΩ
MMCX-A1025	TBD	< 6 ns	n/a	active ⁴	50 Ω

The following specification is valid for all models:

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

Mechanical Specifications

Parameter	Specification
Weight (Probe only)	45g (passive) / TBD (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

Dimensions

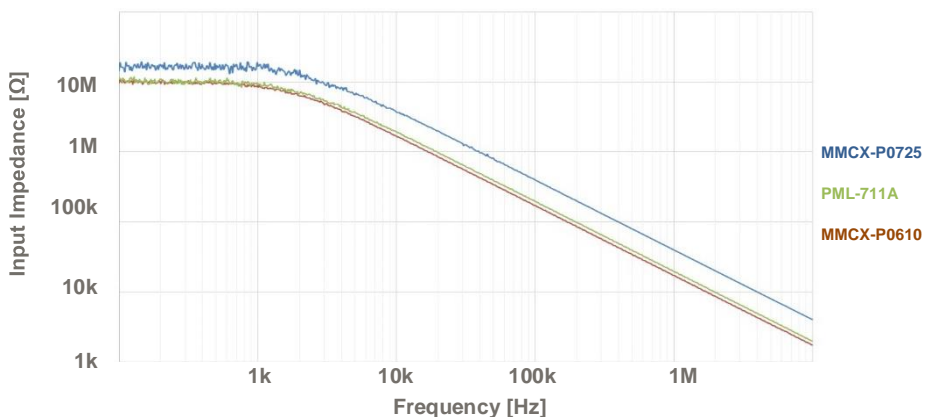
The dimensional drawing is coming soon.

Typical Input Impedance



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

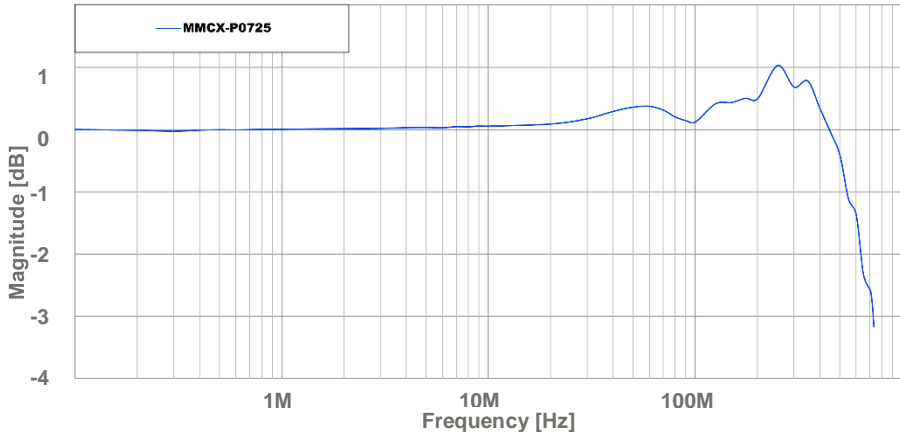
Typical Differential Input Impedance – MMCX-P0725, MMCX-P0610(RO)



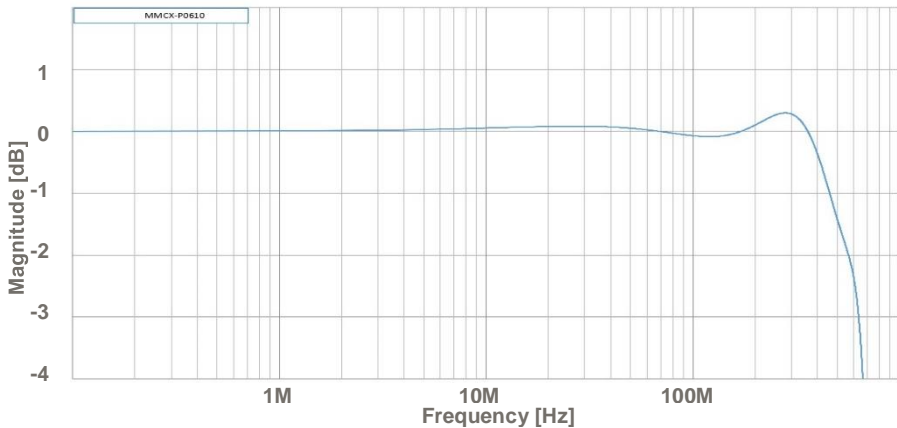
Typical Frequency Response

The frequency response plot shown here is for the probe series without any accessories. Frequency responses with specific accessories are available on request.

Typical Frequency Response – MMCX-P0725 - normalized



Typical Frequency Response – MMCX-P0610 - normalized



Cleaning

To clean the exterior of the probe, use a soft cloth moistened with either distilled water or isopropyl alcohol. Before use allow the probe to dry completely.

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 models)*

n/a



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-P0610RO	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.

	Bandwidth (-3dB)	Picture
FF-SQ-MMCX5 5x MMCX to 2x 0.025" (0.635mm) socket, -40°C to +125°C (One adaptor included in scope of delivery)	TBD	
FF-HTSPAD-MMCX3 3x MMCX solder-in cable adapter HT, 50Ω RF micro coax to flex solder-in pad, -40°C to +155°C	TBD	
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	TBD	
FF-UFL-MMCX2 2x MMCX cable adapter, MMCX socket with 50Ω RF micro coax cable to U.F.L plug, -40°C to +125°C	TBD	
FF-2XR-MMCX MMCX to 2x XR Mini-Hook	TBD	
972416100 2-pole test clip SMD for use with FF-SQ-MMCX5	TBD	
P25-2 Pico Hook™ red for use with FF-SQ-MMCX5 (included in scope of delivery)	TBD	
P25-0 Pico Hook™ black for use with FF-SQ-MMCX5 (included in scope of delivery)	TBD	
890-502-130 SMD test grabber, 1 Pair, green/yellow	> 600 MHz	
D010031 50Ω BNC feed-through for 1MΩ input oscilloscopes	> 500 MHz	

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.

889-24V-INT	Wall plug power supply PS-01, no remote-control capabilities	
889-09V-PS2	PS-02 (2 channels, with USB interface for remote control) *	
889-09V-PS2-L	PS-02-L (2 channels, with LAN and USB interface for remote control) *	
889-09V-PS3	PS-03 (4 channels, with USB interface for remote control) *	
889-09V-PS3-L	PS-03-L (4 channels, with LAN and USB interface for remote control) *	
889-09V-AP01	AP-01 (battery pack, 1 channel, no remote-control capabilities) *	
890-520-800	MMCX probe power supply cable (0.5 m), * for PS02/PS03/AP01 only	
890-520-815	MMCX probe power supply cable (1.5 m), * for PS02/PS03/AP01 only	



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

TBD	ISO 17025 (re-)calibration
TBD	Factory (re)calibration (Certificate included in scope of delivery of the active probe models)

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Änderungen der Spezifikationen vorbehalten.