MMCX PS-03-L Series Probe Universal BNC Interface Instruction Manual

Contents

MMCX

MMCX PS-03-L Series Probe Universal BNC Interface

Product Information

- **Specifications**
  - **Product Name:** MMCX Probe Series
  - **Interface:** Universal BNC
  - **Frequency Range:** Up to 1 GHz

Product Usage Instructions

- **Introduction**
  - The MMCX Probe Series with Universal BNC Interface is designed for high-frequency signal measurements up to 1 GHz. It offers a versatile solution for various applications requiring accurate and reliable probing.
- **Connecting the Probe**
  - To connect the MMCX Probe to your device, follow these steps:
  - Ensure your device is powered off.
  - Locate the Universal BNC Interface on your device.
  - Insert the MMCX Probe connector into the Universal BNC Interface, ensuring a secure connection.
- **Adjusting the Probe Tip**
  - Proper adjustment of the probe tip is crucial for accurate measurements. Follow these steps:
  - Gently hold the probe tip and rotate it clockwise or counterclockwise to adjust its length.
  - Ensure the probe tip is at an appropriate length for your measurement task.
- **Powering On and Calibrating**
  - Before using the MMCX Probe, ensure your device is powered on and calibrated according to your specific requirements. Please refer to your device's user manual for detailed instructions on powering on and calibration.
- **Taking Measurements**

    - To take accurate measurements using the MMCX Probe, follow these steps:
    - Power on your device and ensure it is properly calibrated.
    - Place the probe tip on the measurement point of interest.
    - Observe the measurement results on your device's display or connected software.
- **Maintenance and Care**
    - To ensure optimal performance and longevity of the MMCX Probe, follow these maintenance guidelines:
    - Regularly clean the probe tip using a soft, lint-free cloth.
    - Avoid exposing the probe to extreme temperatures or humidity.
    - Store the probe in a dry and dust-free environment when not in use.
- **Frequently Asked Questions (FAQ)**
    - **Q: Can I use the MMCX Probe Series with any device?**
        - A: The MMCX Probe Series is designed with a Universal BNC Interface, which allows it to be compatible with a wide range of devices. However, it is recommended to check the compatibility of your specific device before use.
    - **Q: What is the maximum frequency range supported by the MMCX Probe Series?**
        - **A:** The MMCX Probe Series supports signal measurements up to 1 GHz, providing accurate results within this frequency range.
    - **Q: How should I clean the probe tip?**
        - **A:** The probe tip can be cleaned using a soft, lint-free cloth. Avoid using abrasive materials or liquids that may damage the probe.
    - **Q: Can the probe be used in high-temperature environments?**
        - **A:** It is recommended to avoid exposing the probe to extreme temperatures or humidity, as it may affect its performance and longevity.

About MMCX Probes

- Over the last years MMCX has developed as the standard connectivity solution for repeatable measurements with the 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 because of 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.

Connectivity Accessories

Individual Connectivity Accessories for the Highest Signal Fidelity

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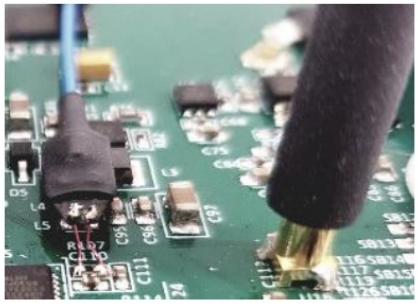
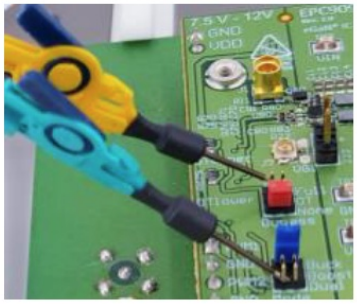
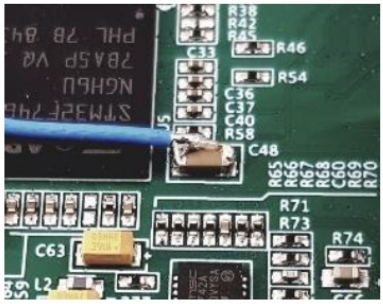
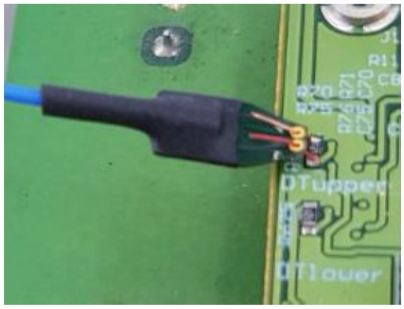
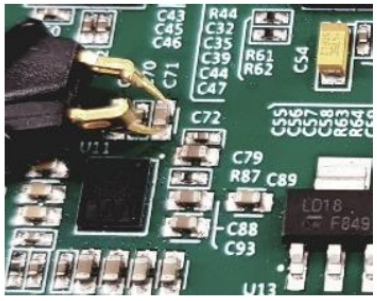
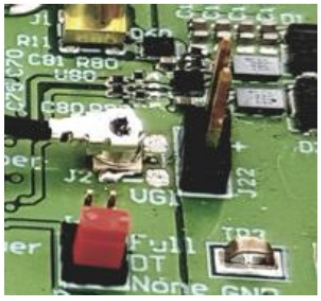







The MMCX probes series has a universal BNC output connector and, depending on the model, is compatible with any oscilloscope with a 50Ω input impedance or 1MΩ input impedance, allowing PMK's MMCX Probes to be used on any oscilloscope in the lab.

- The active probe models require a power supply, which is not included in the scope of delivery and has to be ordered separately.

Factory Calibration

- Annual re-calibration 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 2-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 (-3d B) [1]	Rise time (10%-90 %) [1]	Input Impedance
MMCX-P0725	25:1	> 700 MHz	< 570 ps	19.5 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

Review also the referring derating over frequency graphs 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	TBD
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. 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 Maximum Input Voltage**
  - Note that the maximum input voltage rating of the probe decreases as the frequency of the applied continuous waveform signal increases.
  - The maximum input voltage derating is coming soon.
- **Typical Frequency Response**
  - The typical frequency response is coming soon.
- **Typical Input Impedance**
  - The typical frequency response is coming soon.

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.

MMCX Probe	
Adaptor FF-SQ-MMCX5 MMCX to 2x 0.025" (0.635mm) socket, -40°C to +125°C	
P25-2 Pico Hook™ red, for use with FF-SQ-MMCX5	
P25-0 Pico Hook™ black, for use with FF-SQ-MMCX5	
MMCX Removal Tool *coming soon*	
Instruction Manual	

Factory Calibration Certificate (only with active probe models) 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

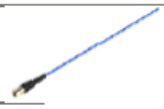
MMCX-P0725	Passive probe with MMCX input, 700MHz, 42V peak, 25:1, 1.2m cable length, calibration certificate not included
MMCX-P0610	Passive probe with MMCX input, 600MHz, 42V peak, 10:1, 1.2m cable length, calibration certificate not included
MMCX-P0610RO	Passive probe with MMCX input, 600MHz, 42V peak, 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 t o be ordered separately

Step 2: Select Additional Accessories

- Observe the frequency derating of each accessory.
- Observe the maximum input voltage of the probe's input. Do not use any other accessories.

Article	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	

Continued:

Article	Bandwidth (-3dB)	Picture
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 UF.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	
TBD MMCX Remover Tool (included in scope of delivery)	n/a	

Step 4: Select Power Supply (Active Probes only)

- A wall plug power supply or multi-channel power supply with a power supply cable is required for the models MMCX-A and is optional.
- The probe has no functionality for remote control.
- The power supply pin assignment is different from other power supplies.
- Use only original PMK power supplies with PMK probes.

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

Step 5: Select Accredited Calibration

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

- Information in this publication supersedes that in all previously published material.
- Specifications are subject to change without notice.
- Informationen in dieser Anleitung ersetzen die in allen bisher veröffentlichten Dokumenten.
- Änderungen der Spezifikationen vorbehalten
- **Revision** 03A, 2023

Documents / Resources

	MMCX PS-03-L Series Probe Universal BNC Interface [pdf] Instruction Manual PS-03-L Series Probe Universal BNC Interface, PS-03-L Series, Probe Universal BNC Interface , Universal BNC Interface, BNC Interface, Interface

References

- PMK - Home
- User Manual