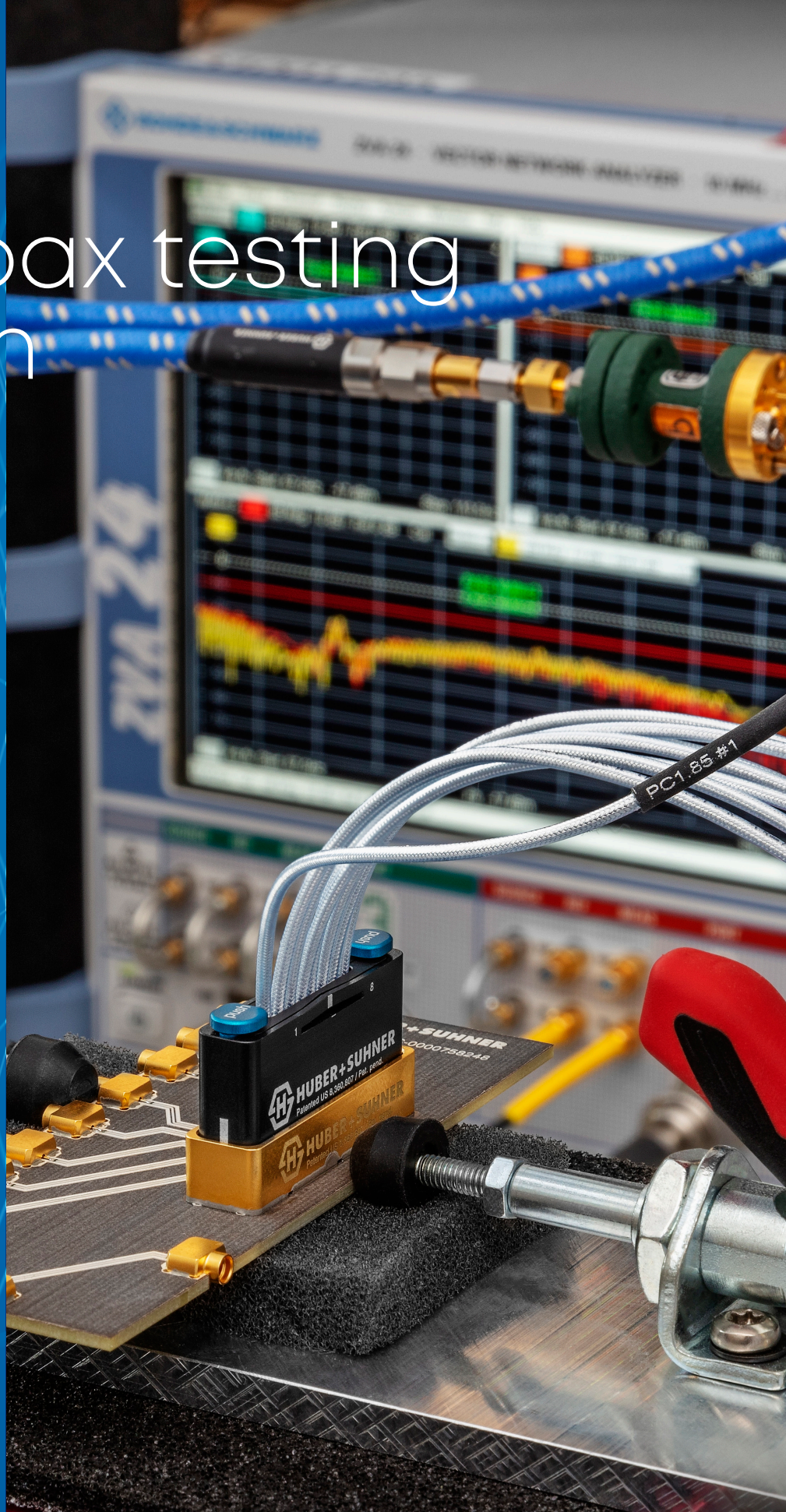


# MXPM

# Multicoax testing solution

Edition 2023/08









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# What high speed digital testing demands

## High speed digital chip verification – bench top testing

- Lowest loss from the device under test to the test equipment
- Best signal integrity performance
- Dense and space saving PCB connectivity solutions
- PCB connectivity closest to the DUT/chip
- Proven and tested solutions and components

## High speed digital hardware and system verification

- Multicoax edge-card and panel mount solutions
- Multicoax interconnectivity between systems and modules with customized solutions

## Automated test equipment

For internal and external interconnectivity of complex automated test equipment systems HUBER+SUHNER offers customer specific solutions based on

- Multicoax interfaces at up to 90 GHz
- Single snap-on interfaces at up to 90 GHz
- RF cabling solutions optimized for highest data rates and frequencies, lowest loss, tight phase matching as well as highest flexibility





# Service and support

## Customised and optimised PCB footprints

HUBER+SUHNER offers a professional design-in service for board connector footprints. By the use of three dimensional electromagnetic field simulation the optimal performance of the HUBER+SUHNER board connectors is provided to the customers.

## Comprehensive design data

### 3D simulation models

- In partnership with ANSYS Inc., HUBER+SUHNER offers encrypted HFSS 3D component models of our single and multicoax PCB socket/connector portfolio.

### S-parameter files

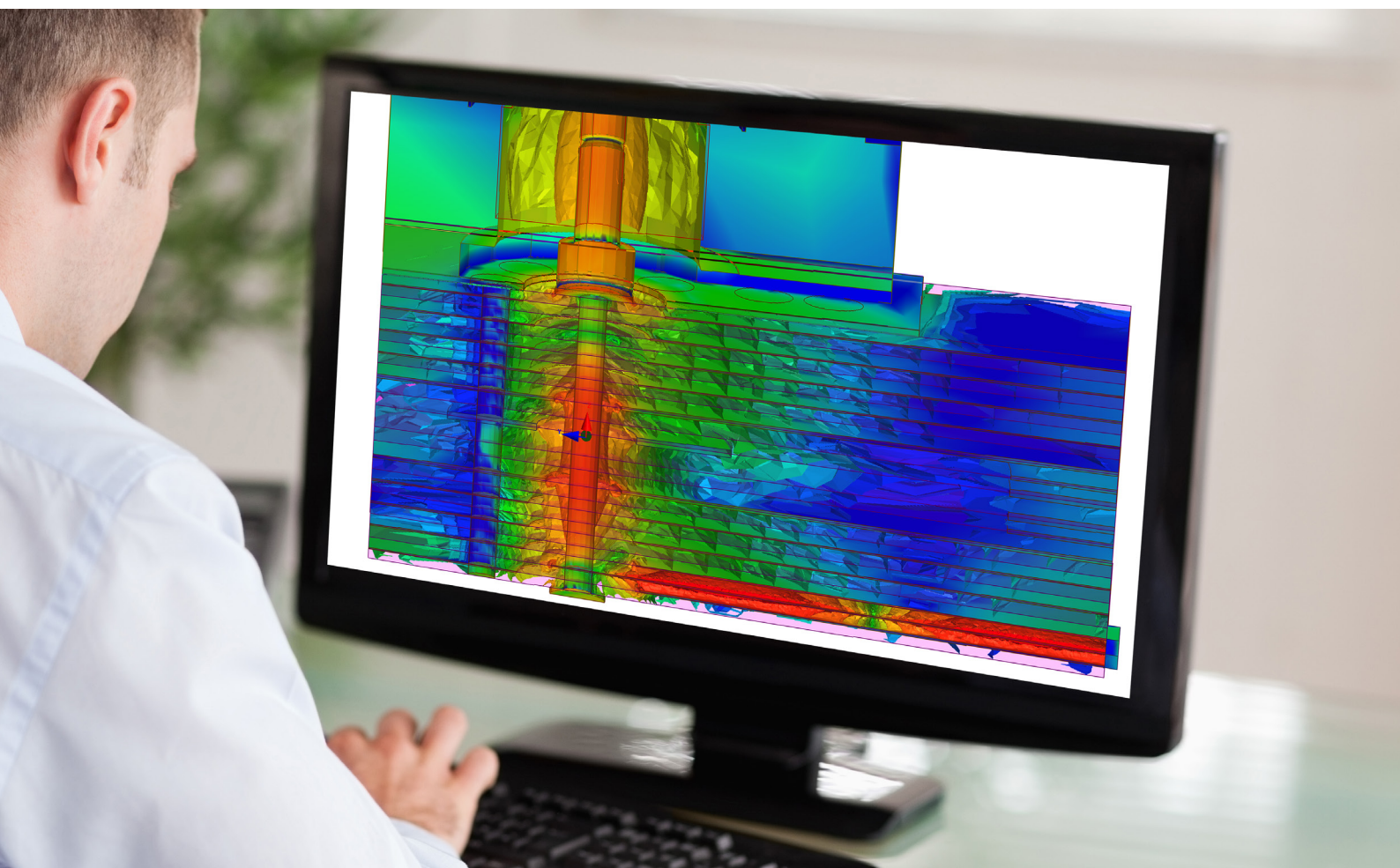
- Measured S-parameter files of the HUBER+SUHNER components are available on request, offering the customers the possibility to include these components into their electrical simulation.

### Application notes

- A bunch of application notes and technical design guidelines for the HUBER+SUHNER solutions are available on request.

### Non standard connectors

Although our standard connector assortment is broad and miscellaneous, there are customer requirements which need a special solution. Thanks to the capabilities and years of experience, HUBER+SUHNER is the ideal partner when customised solutions are demanded.



# MXPM

## Simply sticks to performance

### Features

- Operating range at up to 90 GHz
- Broadband characteristic
- 2.54 mm (0.1 in.) pitch centre-to-centre
- Standard phase matching down to +/- 1 ps
- Magnetic locking mechanism
- Automatic interface protection
- Cost efficient PCB sockets
- Highly flexible and ultra-stable Multiflex cable

### Benefits

- **Pioneering design**  
The pioneering and advantageous design allows ultra-precise and highly repeatable S-parameter measurements of up to 90 GHz with minimal impedance variation at the PCB transition
- **Data analysis of up to 112 Gbps and beyond**  
The broadband return loss and insertion loss characteristics over the entire bandwidth and the tight phase matching of the single assemblies guarantee best in class signal integrity for data analysis of up to 112 Gbps and beyond
- **Shortest traces on board**  
The ultra-compact design with its 2.54 mm (0.1 in.) pitch centre-to-centre makes MXPM as closely positioned as possible to the DUT/chip to keep traces short and losses low
- **Fail-safe connecting mechanism**  
The integrated magnetic locking mechanism prevents inappropriately mated counterparts and ensures that the electrical connecting reference is defined as exactly as possible at any time
- **Interface protection in disconnected condition**  
The automatic interface protection safeguards every single channel from mechanical damage when disconnected
- **Reduced expenses for PCB architecture**  
The cost-efficient PCB structure protects expensive and sensitive PCB material, eliminates imprecise and rough surfaces and greatly reduces architecture expenses, especially since there is no mandatory requirement for hard-gold plating

#### Range of standard products

- 1x8 and 2x8 breakout assemblies MXPM-to-PC1.0 (90 GHz) or MXPM-to-PC1.85 (70 GHz)
- 1x8 and 2x8 jumper assemblies MXPM-to-MXPM (90 GHz)
- 2x8 loopback assemblies
- 1x8 and 2x8 straight PCB sockets
- Customised assemblies on request





# MXPM90

## Technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 $\Omega$
Interface frequency max.		90 GHz
Return loss	Gated measurement: cable connector/ PCB transition PCB: Neltec NY9217ST/NX9240BP Cable: Multiflex 53-02	$\geq 20$ dB up to 50 GHz $\geq 15$ dB up to 90 GHz
Insertion loss		According Multiflex 53-02
Phase match single assemblies		+/- 1 ps

Mechanical data (typical)	Testing condition	Performance
Number of matings		$\geq 500$
Pitch centre-to-centre		2.54 mm (0.1 in.)

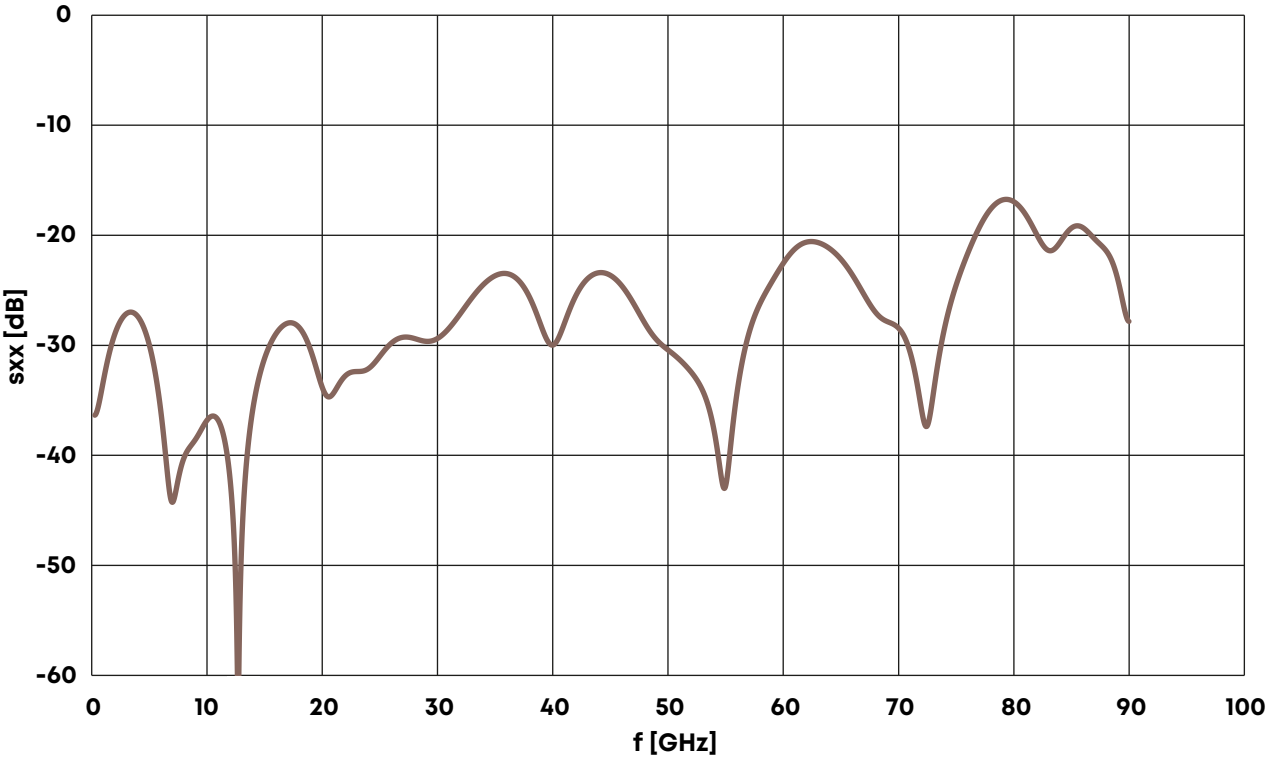
Environmental data (typical)	Testing condition	Performance
Temperature range		0°C ... +85 °C / 32 °F ... 185 °F
2011/65/EU (RoHS)		Compliant
2006/1907/EC (REACH)		Compliant

Material data cable connector	Material	Surface plating
Centre contact	Copper beryllium alloy	SUCOPRO gold plating
Outer contact	Copper beryllium alloy	SUCOPRO gold plating
Body	Aluminium	Black/gold anodised
Isolator	PEEK	N/A
Other parts	Neodym (magnets)	N/A

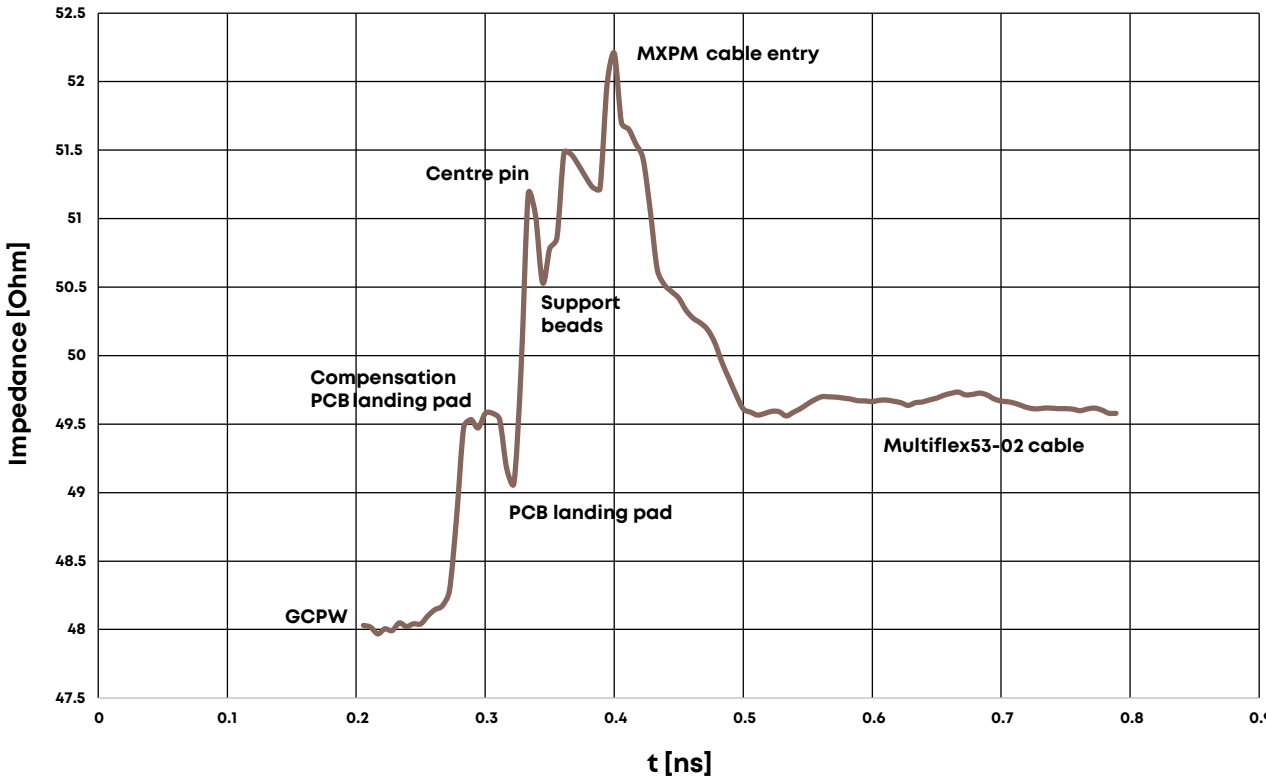
Material data PCB socket	Material	Surface plating
Body	Brass	SUCOPRO gold plating
Outer contact	Brass	SUCOPRO gold plating
Other parts	Stainless steel	N/A



Return loss, gated measurement: Cable connector/PCB transition (evaluation board V1.1, typical)



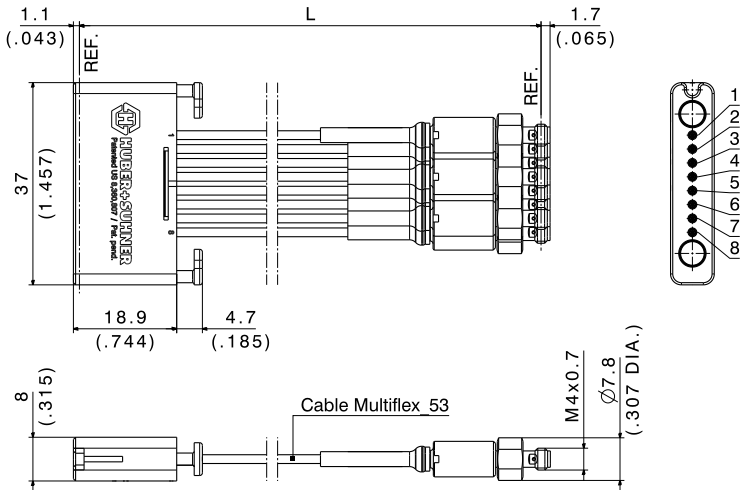
Time domain: Cable connector/PCB transition (evaluation board V1.1, typical)



# MXPM90

## Breakouts to PC 1.0

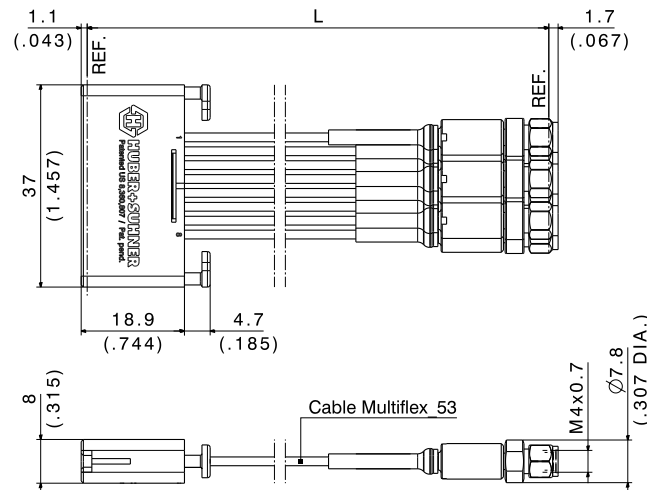
- 1x8 ganged versions
- Breakouts to female PC 1.0



### Ordering information

Type 1x8 ganged	Item number	Length	Notes
MF53/1x8A_11MXPM/21PC1/102	85147064	102 mm (4 in.)	Single channels numbered
MF53/1x8A_11MXPM/21PC1/152	85147065	152 mm (6 in.)	

- 1x8 ganged versions
- Breakouts to male PC 1.0

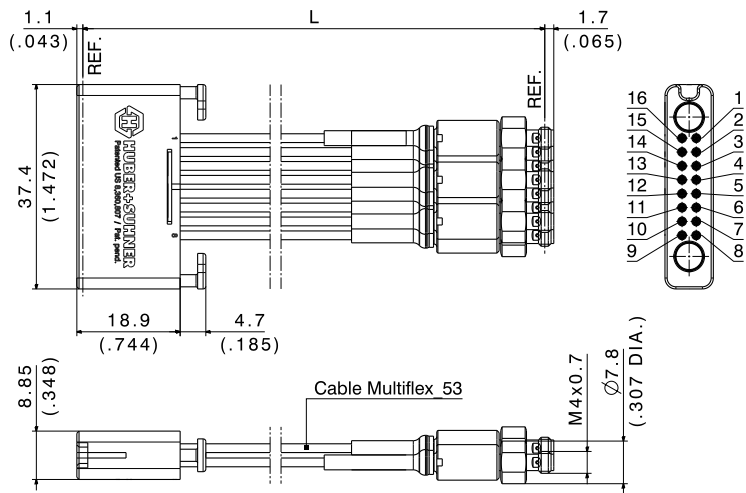


### Ordering information

Type 1x8 ganged	Item number	Length	Notes
MF53/1x8A_11MXPM/11PC1/102	85147056	102 mm (4 in.)	Single channels numbered
MF53/1x8A_11MXPM/11PC1/152	85147062	152 mm (6 in.)	



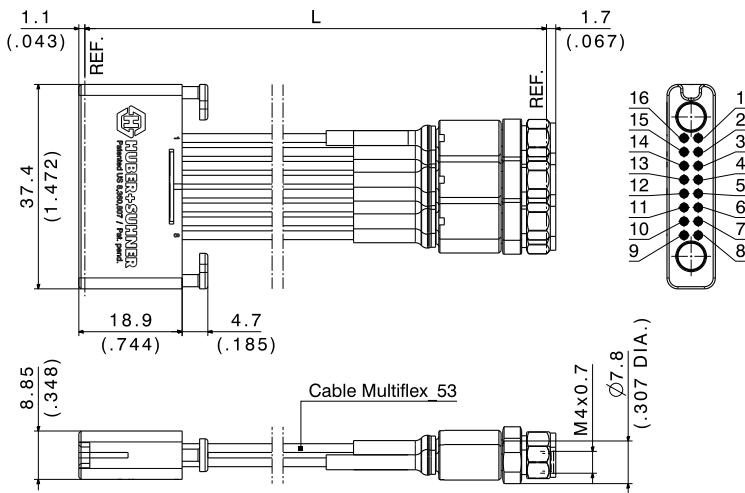
- 2x8 ganged versions
- Breakouts to female PC 1.0



# Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/21PC1/102	85147071	102 mm (4 in.)	Single channels numbered
MF53/2x8A_11MXPM/21PC1/152	85147072	152 mm (6 in.)	

- 2x8 ganged versions
- Breakouts to male PC 1.0



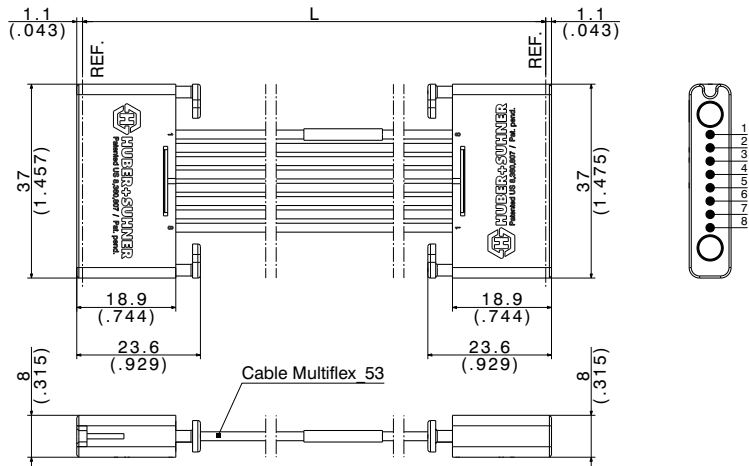
# Ordering information

Type 2x8 ganged	Item number	Length	Notes
MF53/2x8A_11MXPM/11PC1/102	85147067	102 mm (4 in.)	Single channels numbered
MF53/2x8A_11MXPM/11PC1/152	85147069	152 mm (6 in.)	

# MXPM90

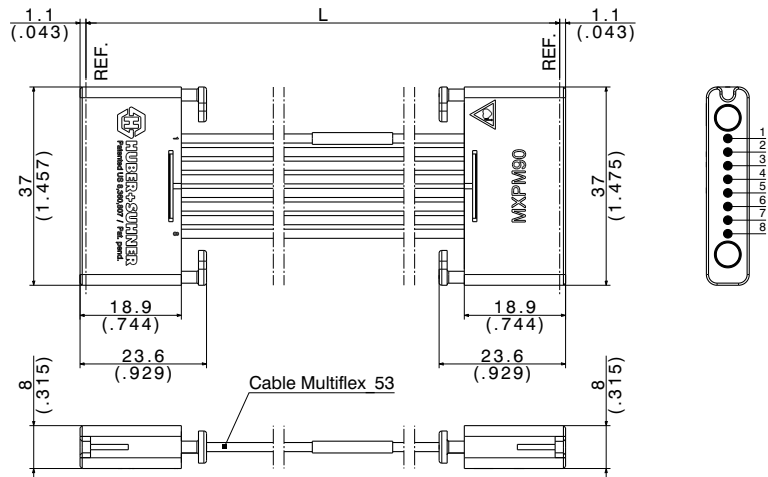
## Jumpers

- 1x8 ganged versions
- Pin map: 1-to-8 or 1-to-1



### Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11MXPM/152	85101230	152 mm (6 in.)	Pin map: 1-to-8
MF53/1x8A_11MXPM/11MXPM/305	85107418	305 mm (12 in.)	

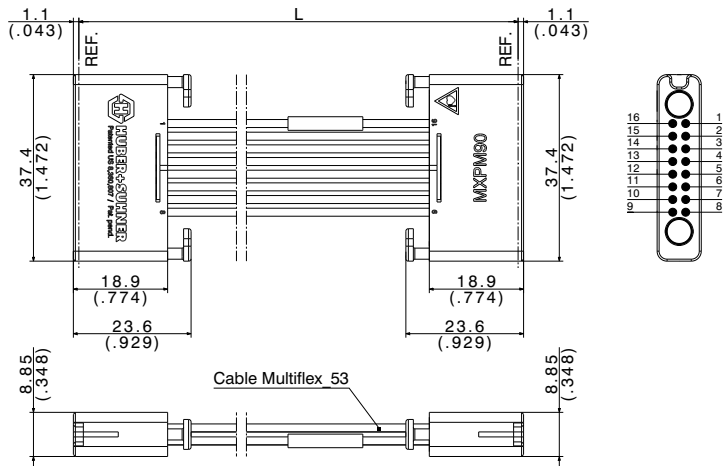


### Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11MXPM/152_1	on request, 85107423	152 mm (6 in.)	Pin map: 1-to-1
MF53/1x8A_11MXPM/11MXPM/305_1	on request, 85107424	305 mm (12 in.)	

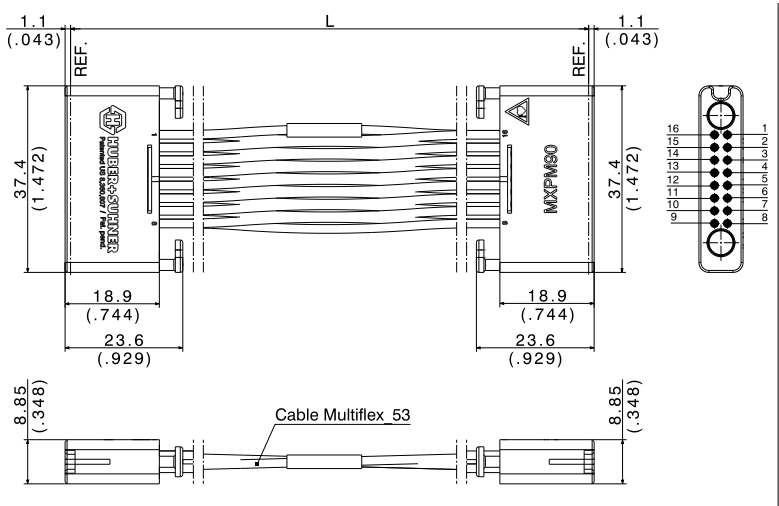


- 2x8 ganged versions
- Pin map: 1-to-16 or 1-to-1



### Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/11MXPM/152	on request, 85107419	152 mm (6 in.)	Pin map: 1-to-16
MF53/2x8A_11MXPM/11MXPM/305	on request, 85107420	305 mm (12 in.)	



### Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/11MXPM/152_1	on request, 85107421	152 mm (6 in.)	Pin map: 1-to-1
MF53/2x8A_11MXPM/11MXPM/305_1	on request, 85107422	305 mm (12 in.)	

# MXPM70

## Technical data

Electrical data (typical)	Testing condition	Performance
Impedance		50 $\Omega$
Interface frequency max.		70 GHz
Return loss	Gated measurement: cable connector/ PCB transition PCB: Rogers RO3003 Cable: Multiflex 53-02	$\geq 20$ dB up to 50 GHz $\geq 17$ dB up to 70 GHz
Insertion loss		According Multiflex 53-02
Phase match single assemblies		+/- 1 ps

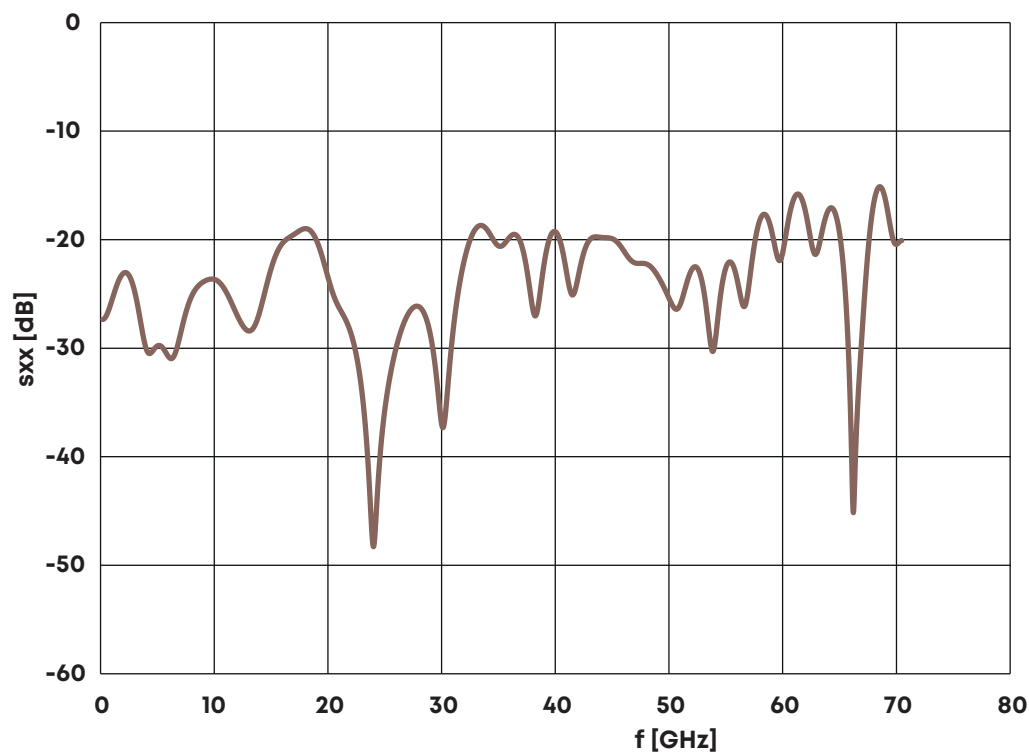
Mechanical data (typical)	Testing condition	Performance
Number of matings		$\geq 500$
Pitch centre-to-centre		2.54 mm (0.1 in.)

Environmental data (typical)	Testing condition	Performance
Temperature range		0°C ... +85 °C / 32 °F ... 185 °F
2011/65/EU (RoHS)		Compliant
2006/1907/EC (REACH)		Compliant

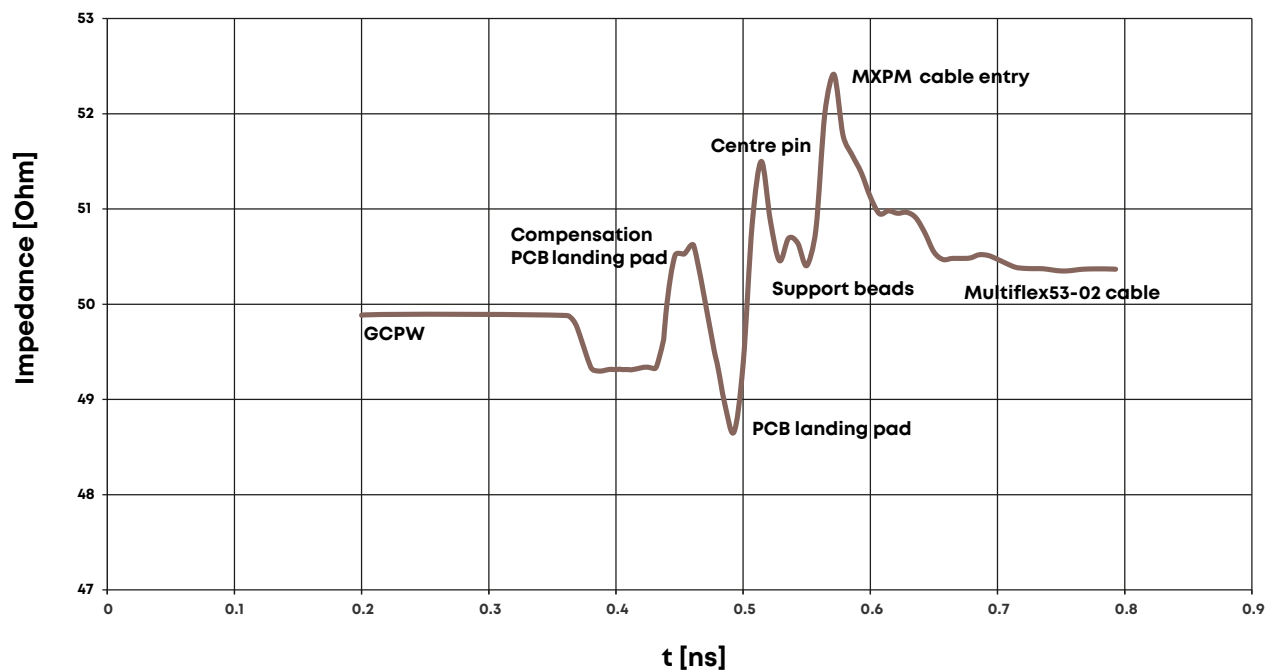
Material data cable connector	Material	Surface plating
Centre contact	Copper beryllium alloy	SUCOPRO gold plating
Outer contact	Copper beryllium alloy	SUCOPRO gold plating
Body	Aluminium	Black/blue anodised
Isolator	PEEK	N/A
Other parts	Neodym (magnets)	N/A

Material data PCB socket	Material	Surface plating
Body	Brass	SUCOPRO gold plating
Outer contact	Brass	SUCOPRO gold plating
Other parts	Stainless steel	N/A

Return loss, gated measurement: Cable connector/PCB transition (evaluation board V2.1, typical)



Time domain: Cable connector/PCB transition (evaluation board V2.1, typical)

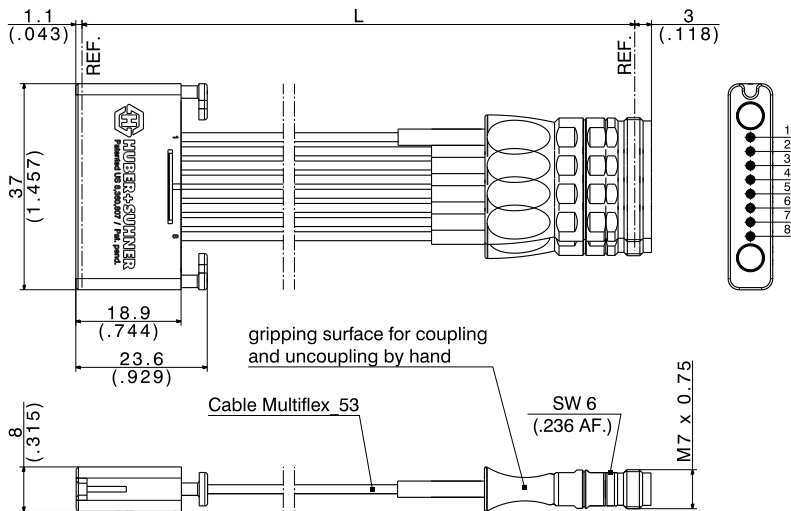




# MXPM70

## Breakouts to PC 1.85

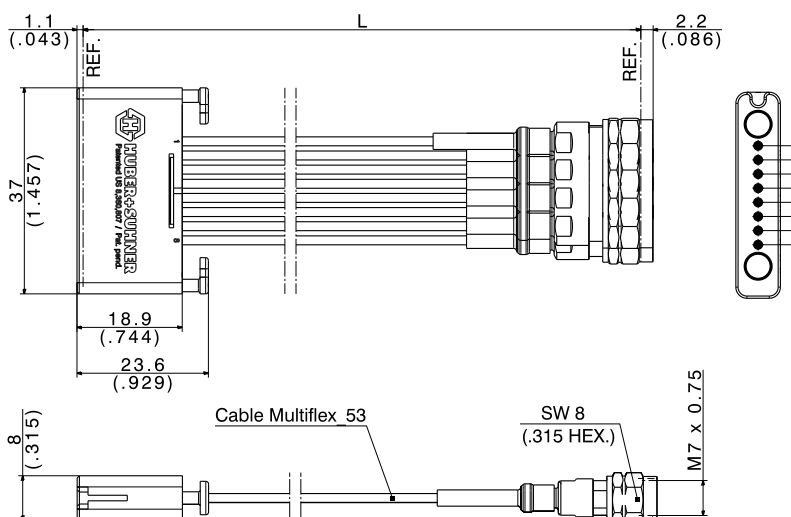
- 1x8 ganged versions
- Breakouts to female PC 1.85



### Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/21PC185_e/152	85098172	152 mm (6 in.)	Single channels numbered with ergo grip on PC 1.85
MF53/1x8A_11MXPM/21PC185_e/305	85113861	305 mm (12 in.)	

- 1x8 ganged versions
- Breakouts to male PC 1.85



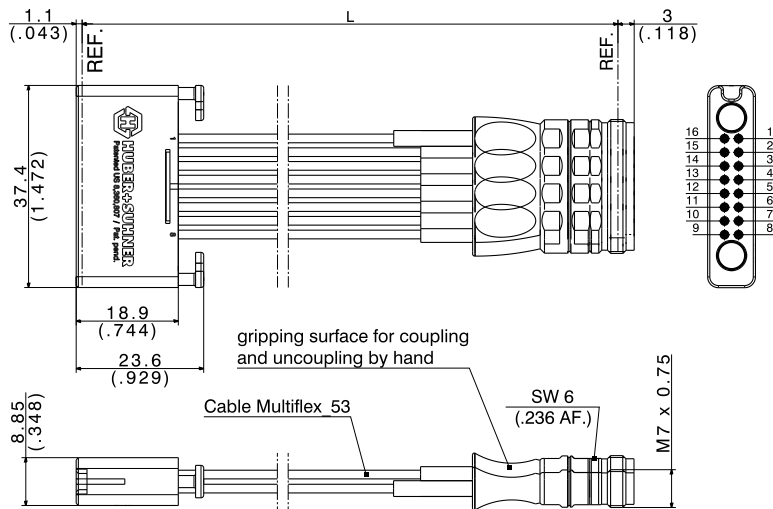
### Ordering information

Type 1x8 ganged	Item number	Length	Characteristics
MF53/1x8A_11MXPM/11PC185/152	85085482	152 mm (6 in.)	Single channels numbered
MF53/1x8A_11MXPM/11PC185/305	85120286	305 mm (12 in.)	

# MXPM70

## Breakouts to PC 1.85

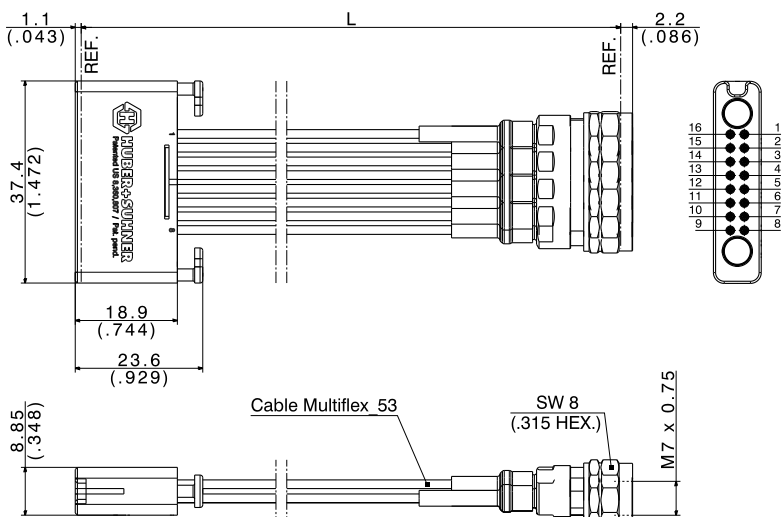
- 2x8 ganged versions
- Breakouts to female PC 1.85



### Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/21PC185_e/152	85096261	152 mm (6 in.)	Single channels numbered with ergo grip on PC 1.85
MF53/2x8A_11MXPM/21PC185_e/305	85111452	305 mm (12 in.)	

- 2x8 ganged versions
- Breakouts to male PC 1.85



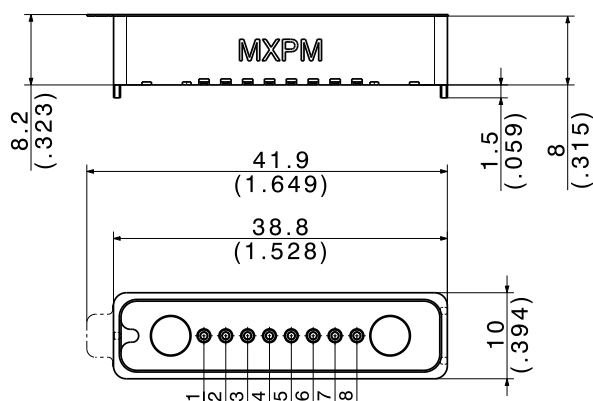
### Ordering information

Type 2x8 ganged	Item number	Length	Characteristics
MF53/2x8A_11MXPM/11PC185/152	85091160	152 mm (6 in.)	Single channels numbered
MF53/2x8A_11MXPM/11PC185/305	85102802	305 mm (12 in.)	

# MXPM

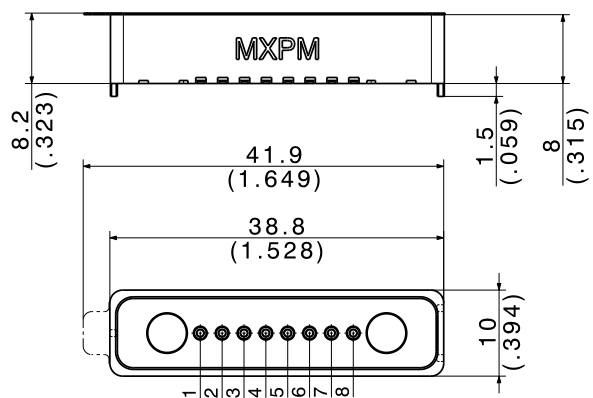
## PCB sockets

- 1x8 ganged versions
- Compatible with MXPM70 and MXPM90 assemblies
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint



### Ordering information

Type 1x8 ganged	Item number	Packaging	Characteristics
1x8A_82_MXPM-S50-0-1/-11_NE	85091041	Single	Asymmetric design (keyed)
1x8A_82_MXPM-S50-0-1/-11_NM	85104380	Tape + Reel 100	

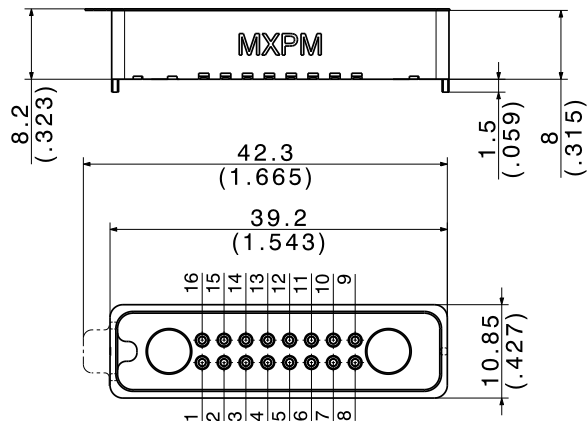


### Ordering information

Type 1x8 ganged	Item number	Packaging	Characteristics
1x8A_82_MXPM-S50-0-2/-11_NE	85085226	Single	Symmetric design (unkeyed)
1x8A_82_MXPM-S50-0-2/-11_NM	85104409	Tape + Reel 100	



- 2x8 ganged versions
- Compatible with MXPM70 and MXPM90 assemblies
- Via-in-pad capable
- Semi-SMD technology – guide pins for better mechanical stability of solder joint

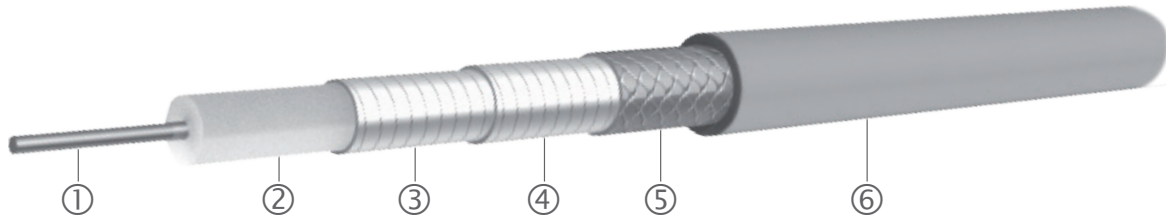


### Ordering information

Type 2x8 ganged	Item number	Packaging	Characteristics
2x8A_82_MXPM-S50-0-1/-11_NE	85091060	Single	Asymmetric design (keyed)
2x8A_82_MXPM-S50-0-1/-11_NM	85104412	Tape + Reel 100	

# MULTIFLEX 53-02

## Technical data



	Description	Diameter
1. Centre conductor	solid silver-plated copper wire	
2. Dielectric	solid PTFE	
3. 1 <sup>st</sup> outer conductor	silver-plated copper tape	
4. 2 <sup>nd</sup> outer conductor	silver-plated copper tape	
5. 3 <sup>rd</sup> outer conductor	silver-plated copper braid	
6. Jacket	fluoroethylenepropylene, sky blue	1.74 mm

Electrical cable data					
Impedance					50 Ohm
Operating frequency					100 GHz
Capacitance					95.5 pF/m (29.1 pF/ft)
Velocity of propagation					70 %
Time delay					4.8 ns/m (1.46 ns/ft)
Nom. attenuation*	coefficient a	1.089	coefficient b	0.032	
Max. attenuation*	coefficient a	1.143	coefficient b	0.035	
Max. operating voltage					750 Vrms
Min. screening effectiveness up to 18 GHz					90 dB
*Attenuation calculation $a_{25} = a \cdot \sqrt{f} \text{ (GHz)} + b \cdot f \text{ (GHz)} \text{ (dB/m)}$					

General cable data	
Temperature range	-65 to +165 °C
Weight	0.85 kg/100 m
Min. bending radius dynamic	10 mm

# Find out more about MXPM

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**RADIO FREQUENCY**ANTENNAS | CABLES & CABLE ASSEMBLIES | **CONNECTORS / ADAPTERS** | LIGHTNING & EMP PROTECTORS | RF COMPONENTS | RF-OVER-FIBER SERIES | EX CERTIFIED

PRODUCTS ← RADIO FREQUENCY ← CONNECTORS / ADAPTERS ← PRECISION MULTICOAX CONNECTOR LINES (MXPM, MXP)

## PRECISION MULTICOAX CONNECTOR LINES (MXPM, MXP)


The HUBER+SUHNER MXPM and MXP connector lines are the perfect fit in a world where performance, speed and density matter.

Both lines are excellent solutions for bench-top testing, system testing as well as for internal cabling in automated test equipment.


The entire MXPM and MXP assembly assortment comes with the highly flexible and ultra-stable Multiflex cable as a standard.

### RELATED DOCUMENTS


- Catalogue
- > [RF Connectors](#)
- Catalogue
- > [High speed digital testing](#)

**MXPM90** →


MXPM is a pioneering multicoax solution that supports up to 90 GHz. By offering a high density pitch (2.54 mm, 0.1 inch), the MXPM line guarantees a satisfying experience with its user-friendly magnet mount connection, making performance and reliability affordable. MXPM90 is mechanically compatible with MXPM70.

**MXPM70** →


MXPM is a pioneering multicoax solution that supports up to 70 GHz. By offering a high density pitch (2.54 mm, 0.1 inch), the MXPM line guarantees a satisfying experience with its user-friendly magnet mount connection, making performance and reliability affordable. MXPM70 is mechanically compatible with MXPM90.

**MXP50** →

MXP50 is the perfect multicoax solution for high-level testing up to 50 GHz. MXP50 is mechanically compatible with MXP18 and MXP40.

**MXP40** →

MXP40 is the state-of-the-art multicoax solution for testing up to 40 GHz. MXP40 is mechanically compatible with MXP18 and MXP50.

**MXP18** →

MXP18 is the best value for money. MXP18 is mechanically compatible with MXP40 and MXP50.



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HUBER+SUHNER is certified to ISO 9001, ISO 14001, ISO 45001, EN/AS 9100, IATF 16949 and ISO/TS 22163-IRIS.

**Waiver**

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