

Mini Cool Edge IO (MCIO) Cable Assemblies

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Mini Cool Edge IO (MCIO) Cable Assemblies

Introduction

Description

Amphenol Mini Cool Edge IO(MCIO) is a flexible, robust and high performance connector and cable assembly solution that helps server and networking equipment design flexibility, reduces overall space, and extends the reach for high data rate signals.

MCIO cable assemblies are provided with both discrete and ribbon raw cable 34AWG to 30AWG. The MCIO connector design is scalable to 24 channels and is available in straight, right angle, right side-exit and left side-exit plug configurations to mate with right angle and vertical board mount connectors.

MCIO cables are designed for data center, networking and telecommunications markets that use SAS, PCIe, Ethernet and other signal protocols. The solution can support cable to board and card to board applications in system, which include chip to chip, chip to module, chip to board and card edge option.

Features and Benefits

- Support cable to board and board to board application: 1.57mm PCB card thickness compatible with PCIe riser card
- Multiple channels are optional: 4X/6X(38pos.), 8X(50pos.), 8X/12X(74pos.), 16X(100pos.), 16X/20X(124pos.) and 24X(148pos.)
- Small size design with great robustness : pitch 0.6mm connector and max 25N wrenching test
- Excellent SI performance: signal rates up to PCIe5 32GT/s, 56 GT/s NRZ today and scalable to 112 GT/s PAM-4 in the future
- Compatible with many different industry standards and protocols including Ethernet, 56GT/s NRZ, 112 GT/s PAM-4, SAS and PCIe
- Straight, right angle, side exit and customization cable plug are optional
- Supports 85 ohm impedance applications, 100 ohm will be available in the future
- 30-34AWG are available for both discrete and ribbon cable
- RoHS compliant. Halogen free is available on request

Product Applications

- Servers and storage devices
- High performance computing
- Data center and networking equipment
- Wireless base stations and radios

Industry Standards

- 25G Ethernet
- 56 GT/s NRZ and 112G PAM4 (simulation data)
- PCIe Gen 3 / Gen 4 / Gen 5
- SAS 3.0 / 4.0 / 5.0

Technical Documents

Product Specification: PS-AST-1355 Mini Cool Edge IO Cable Assembly

Mini Cool Edge IO (MCIO) Cable Assemblies

Part Numbers

Table 1. Cable Connector Part Number Selection Guide

	38 position (4X+sidebands/6X)		74 position (8X+sidebands/12X)		124 position (16X+sidebands/20X)
Part Description	Without side alignment guide feature	With side alignment guide feature	Without side alignment guide feature	With side alignment guide feature	With side alignment guide feature
Straight Cable Plug	MCIO-38ST-01 (2018 Q2)	MCIO-38ST-02 (2018 Q2)	MCIO-74ST-01	MCIO-74ST-02	MCIO-124ST-01 (2018 Q2)
Right Angle Cable Plug	MCIO-38RA-01 (2018 Q2)	MCIO-38RA-02 (2018 Q2)	MCIO-74RA-01	MCIO-74RA-02	MCIO-124RA-01 (2018 Q2)
Left Side-exit Plug	MCIO-38LS-01 (2018 Q2)	MCIO-38LS-02 (2018 Q2)	MCIO-74LS-01	MCIO-74LS-02	MCIO-124LS-01 (2018 Q2)
Right Side-exit Plug	MCIO-38RS-01 (2018 Q2)	MCIO-38RS-02 (2018 Q2)	MCIO-74RS-01	MCIO-74RS-02	MCIO-124RS-01 (2018 Q2)

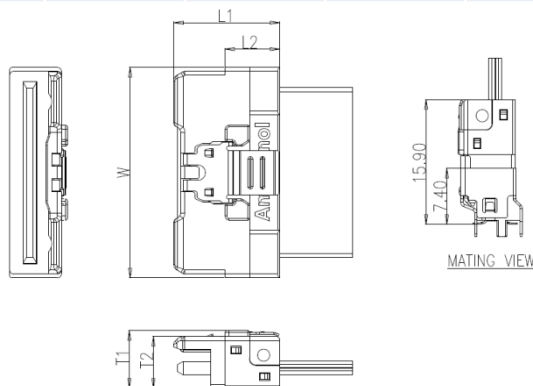
Estimated available dates are marked in the above brackets.

Other 50 pos., 100 pos. and 148 pos. plugs will be provided once they are available.

Contact Amphenol for customized cable assembly lengths

Straight

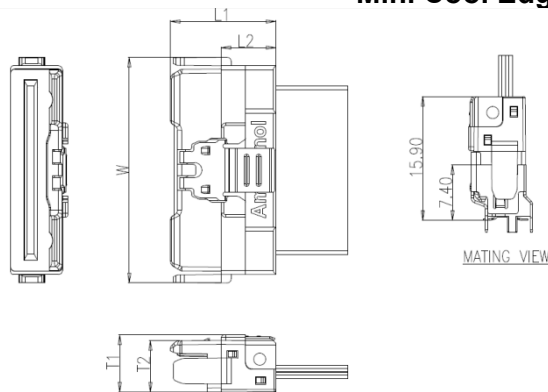
Position	PN	L1	L2	W	T1	T2	Mating height
38	MCIO-38ST-01	13.10	6.80	15.15	7.58	6.86	15.90
74	MCIO-74ST-01	13.10	6.80	25.95	7.10	6.38	15.90



Straight with side alignment guide feature

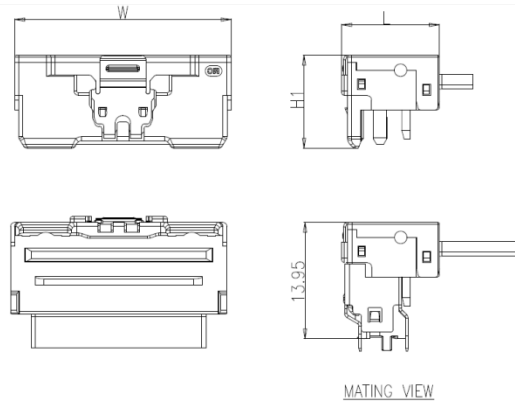
Position	PN	L1	L2	W	T1	T2	Mating height
38	MCIO-38ST-01	13.10	6.80	17.20	7.58	6.86	15.90
74	MCIO-74ST-01	13.10	6.80	28.00	7.10	6.38	15.90
124	MCIO-124ST-01	13.10	6.80	44.75	8.68	7.86	15.90

Mini Cool Edge IO (MCIO) Cable Assemblies



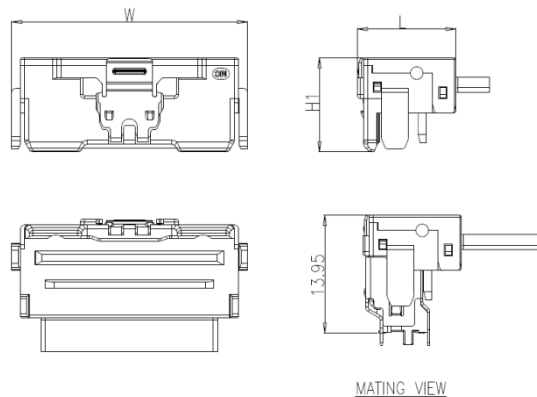
Right angle

Position	PN	L	W	H1	Mating height
38	MCIO-38RA-01	11.72	15.15	11.15	13.95
74	MCIO-74RA-01	11.70	25.95	11.15	13.95



Right angle with side alignment guide feature

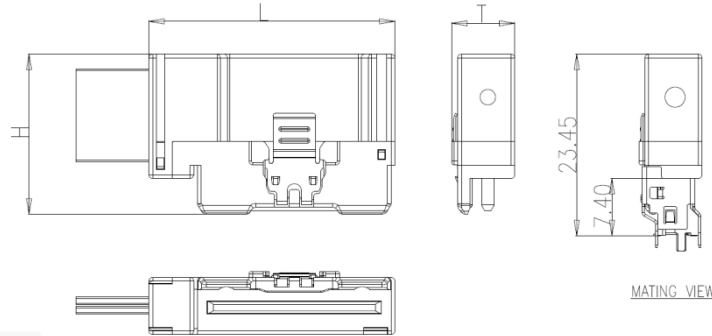
Position	PN	L	W	H1	Mating height
38	MCIO-38RA-02	11.72	17.20	11.15	13.95
74	MCIO-74RA-02	11.70	28.00	11.15	13.95
124	MCIO-124RA-01	12.82	44.75	11.15	13.95



Mini Cool Edge IO (MCIO) Cable Assemblies

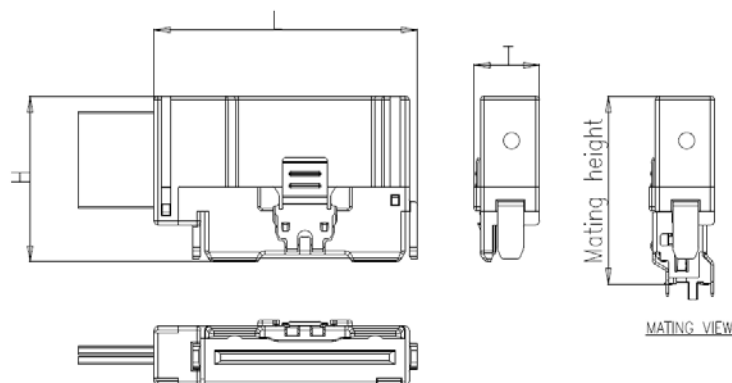
Left side-exit

Position	PN	L	H	T	Mating height
74	MCIO-74LS-01	31.75	20.65	8.15	23.45



Left side-exit with side alignment guide feature

Position	PN	L	H	T	Mating height
74	MCIO-74LS-02	32.78	20.65	8.15	23.45
124	MCIO-124LS-01	49.30	22.90	10.30	25.70

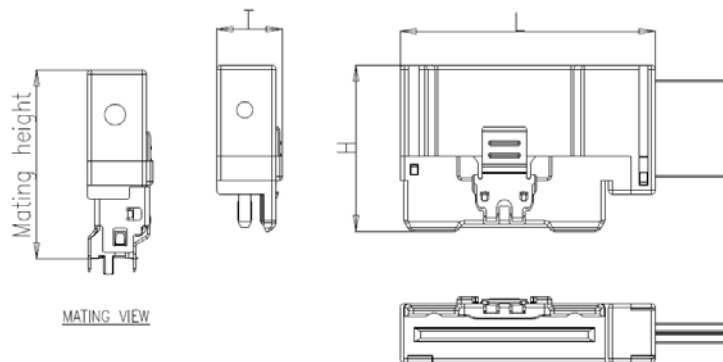


Right side-exit

Position	PN	L	H	T	Mating height
74	MCIO-74RS-01	31.75	20.65	8.15	23.45

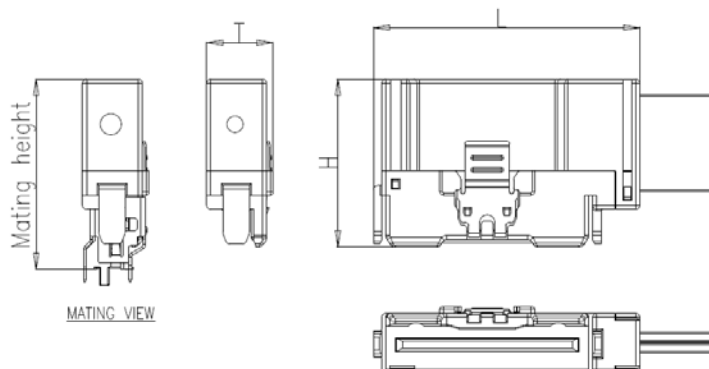
Note: unit is mm. The above dimensions proportion is off.

Mini Cool Edge IO (MCIO) Cable Assemblies



Right side-exit with side alignment guide feature

Position	PN	L	H	T	Mating height
74	MCIO-74LS-02	32.78	20.65	8.15	23.45
124	MCIO-124LS-01	49.30	22.90	10.30	25.70



Note: Unit is mm. The above dimensions proportion is off.

Mini Cool Edge IO (MCIO) Cable Assemblies

Product Specifications

Table 2. Material Specifications

PCB	Halogen Free laminate
Contact	30µin min hard Gold plated contact pads
Connector housing	Thermoplastic UL94V-0
Active latch	Stainless steel
Raw Cable (30-34AWG)	Silver plated copper conductor
	Fluoropolymer dielectric
	Tinned copper drain wire
	Metallic tape pair shield
	Polyester tape jacket

Table 3. Electrical/Mechanical Specifications

Impedance	85Ω, optional 100Ω for future
Data Rate	56GT/s per channel
Within Pair Skew	Max. 10 ps/m
Rated Voltage	30V
Rated Current	1A per pin
Durability	250 mating cycles
Mating force	38pos, 50pos and 74 pos: 15N max, 100pos, 124pos and 148pos: 30N max
Wrenching test	Max 25N for each axis direction

Table 4. Environmental Specifications

Storage Temperature	-20° to 80°C
Operating Temperature	0° to 80°C
Flammability Rating	VW-1
Safety Certificates	RoHS compliant, HF optional

Table 5. Discrete Cable Typical Specifications



Bend Radius (for 1 layer)	30AWG: 3.9mm 31AWG: 3.6mm 32AWG: 3.25mm 34AWG: 2.75mm
Cable Dimensions 85Ω	30AWG thickness = 0.78 mm
	31AWG thickness = 0.72 mm
	32AWG thickness = 0.65 mm
	34AWG thickness = 0.55mm
	30AWG width / pair = 1.80 mm 31AWG width / pair = 1.70 mm 32AWG width / pair = 1.56 mm 34AWG width / pair = 1.25 mm

Table 6. Ribbon Cable Typical Specifications



Bend Radius (for 1 layer)	30AWG: 4.25mm 31AWG: 3.9mm 32AWG: 3.55mm 34AWG: 3.00mm
Cable Dimensions 85Ω	30AWG thickness = 0.85 mm
	31AWG thickness = 0.78 mm
	32AWG thickness = 0.71 mm
	34AWG thickness = 0.60mm
	30AWG width/12pair = 27.30mm 31AWG width/12pair = 25.90mm 32AWG width/6pair = 13.80 mm 34AWG width/6pair = 12.0 mm

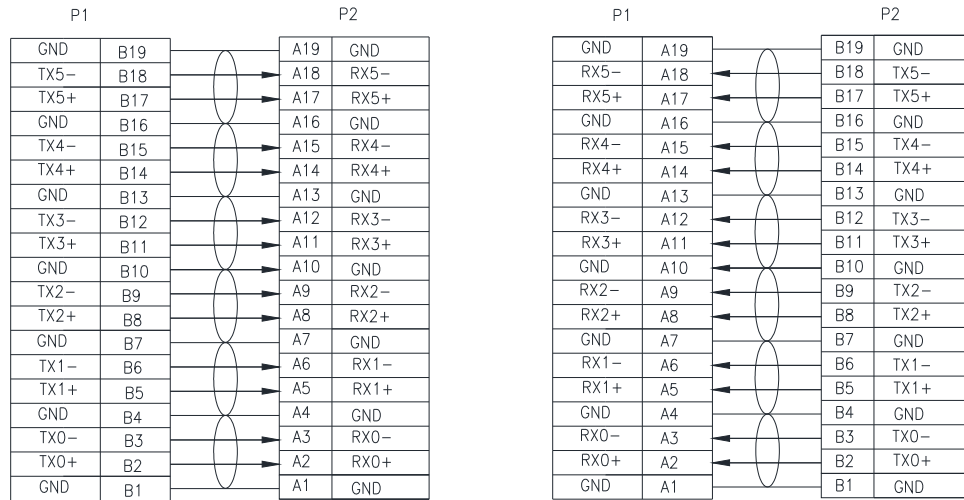
Note:

Conductor is solid copper for discrete and ribbon cable.

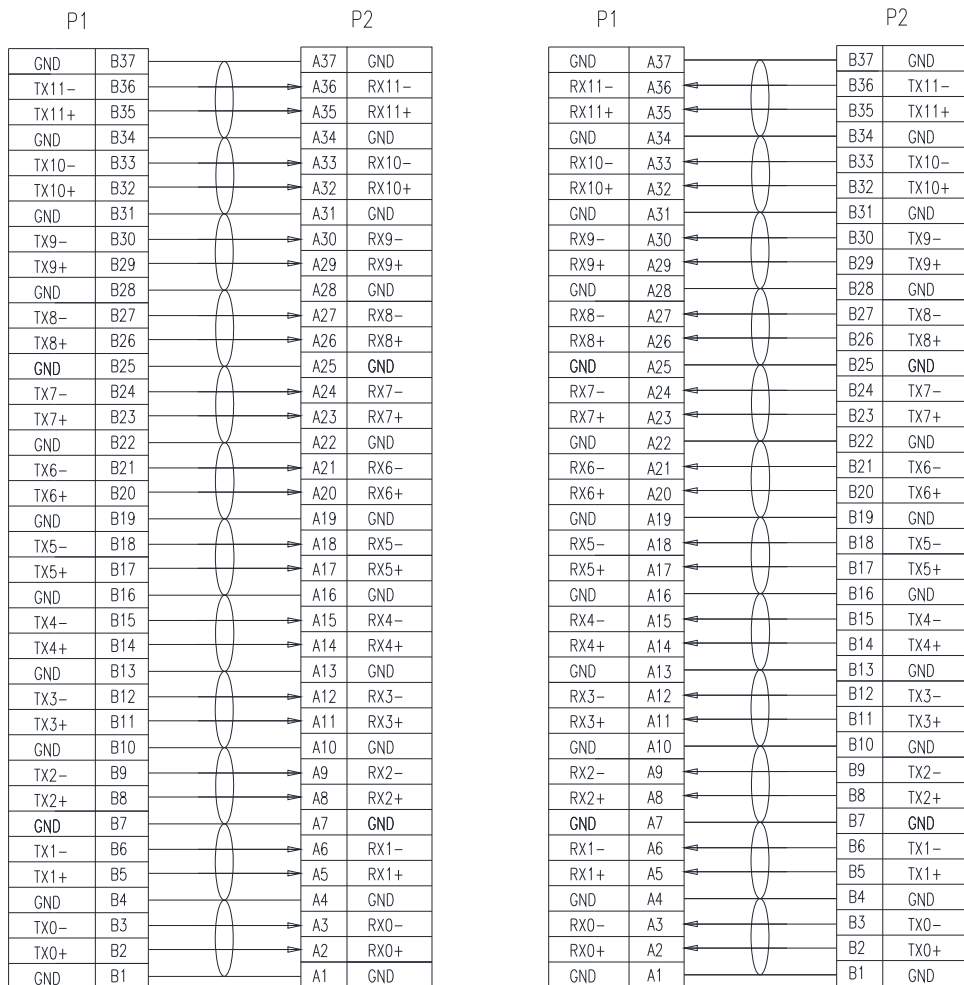
For more details, please contact local Amphenol sales person or visit www.amphenol-ast.com.

Mini Cool Edge IO (MCIO) Cable Assemblies

Pin Configuration MCIO 4X/6X 38 Position



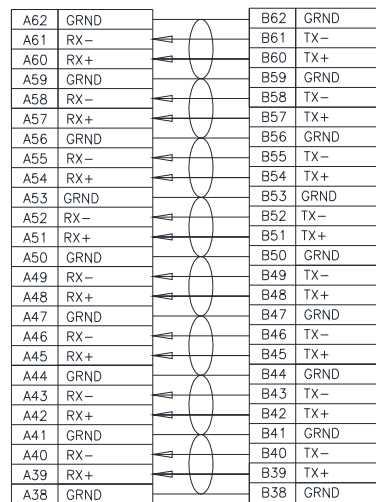
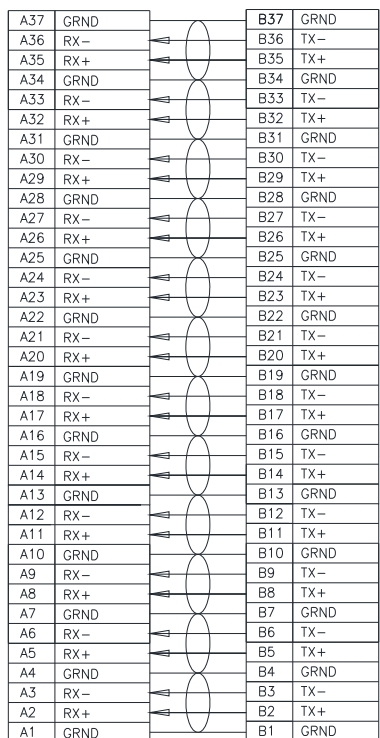
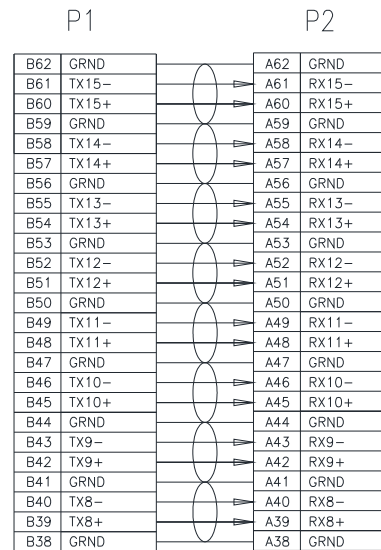
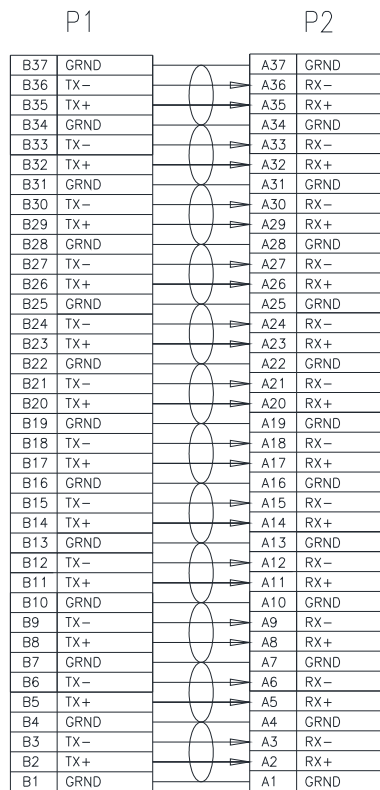
Pin Configuration MCIO 8X/12X 74 Position



Note: P1 and P2 are connectors on both ends of cable assembly.

Mini Cool Edge IO (MCIO) Cable Assemblies

Pin Configuration MCIO 16X/20X 124Position

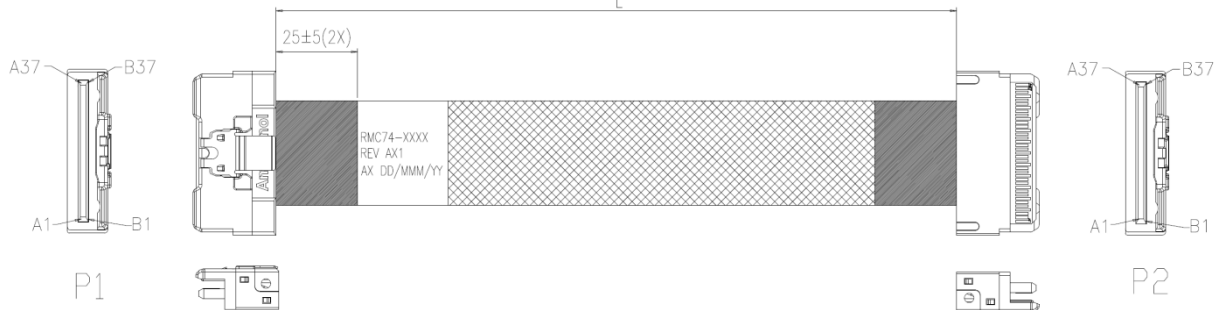


Note: P1 and P2 are connectors on both ends of cable assembly.
Other 50 pos., 100 pos. and 148 pos. configuration will be provided once they are available.

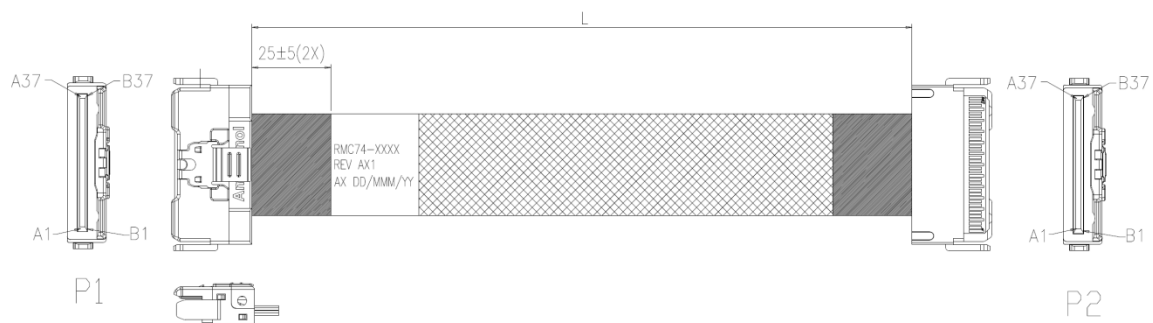
Mini Cool Edge IO (MCIO) Cable Assemblies

MCIO Cable Assembly Typical Configuration

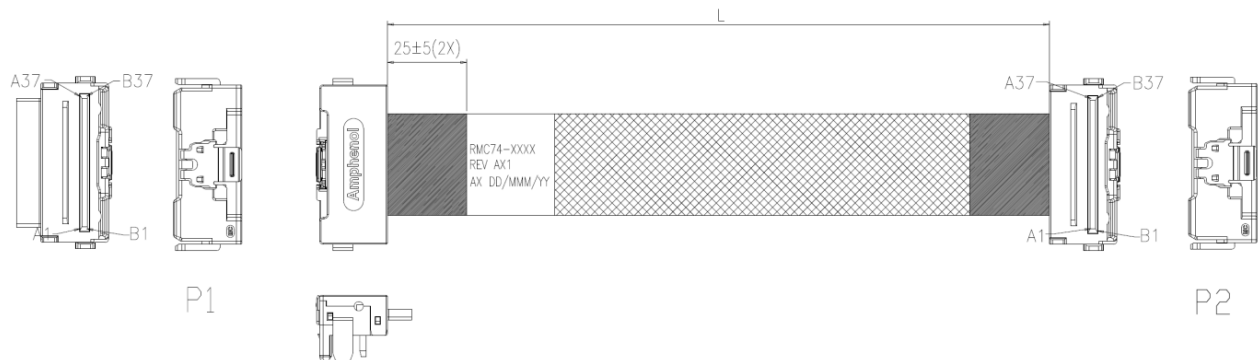
MCIO 74 Position Straight to Straight Cable Assembly



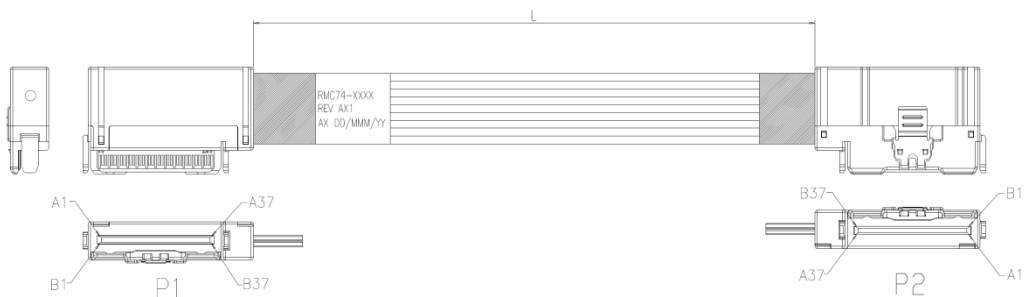
MCIO 74 Position Straight to Straight Cable Assembly with side alignment guide feature



MCIO 74 Position Right Angle to Right Angle Cable Assembly with side alignment guide feature



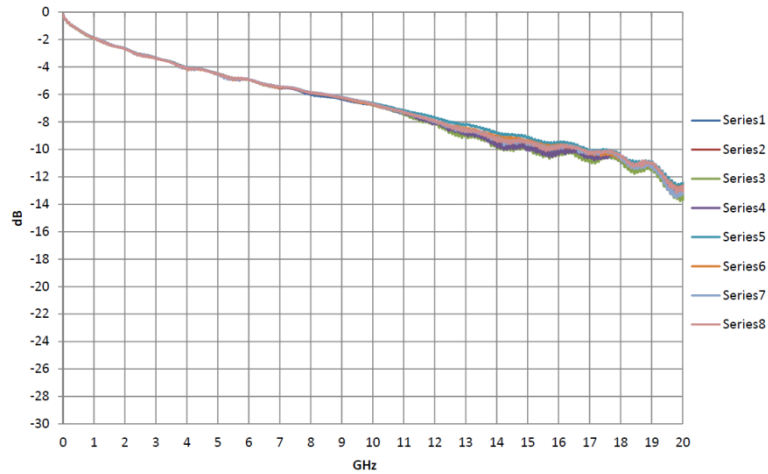
MCIO 74 Position Left Side-exit to Left Side-exit Cable Assembly with side alignment guide feature



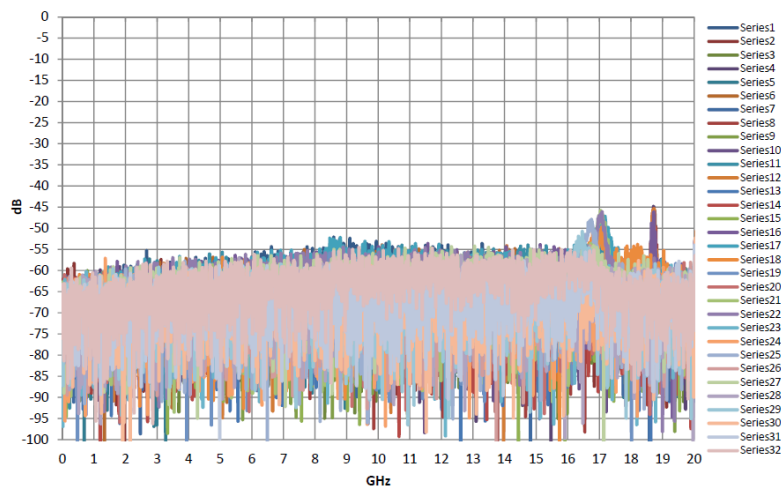
Mini Cool Edge IO (MCIO) Cable Assemblies

Signal Integrity Performance

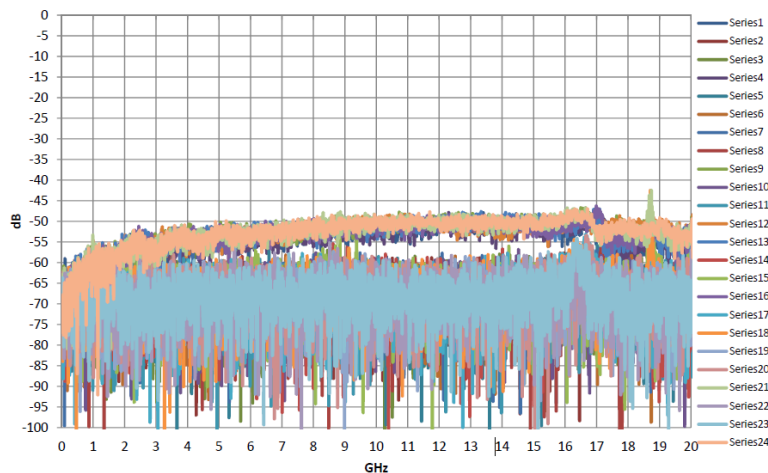
Insertion Loss (SDD21) of 1m 30AWG 85 Ohm MCIO



NEXT of 1m 30AWG 85 Ohm MCIO

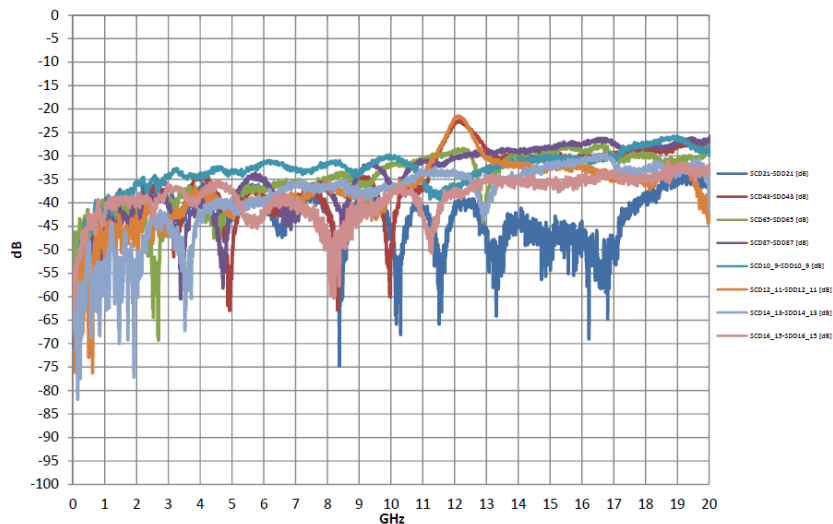


FEXT of 1m 30AWG 85 Ohm MCIO

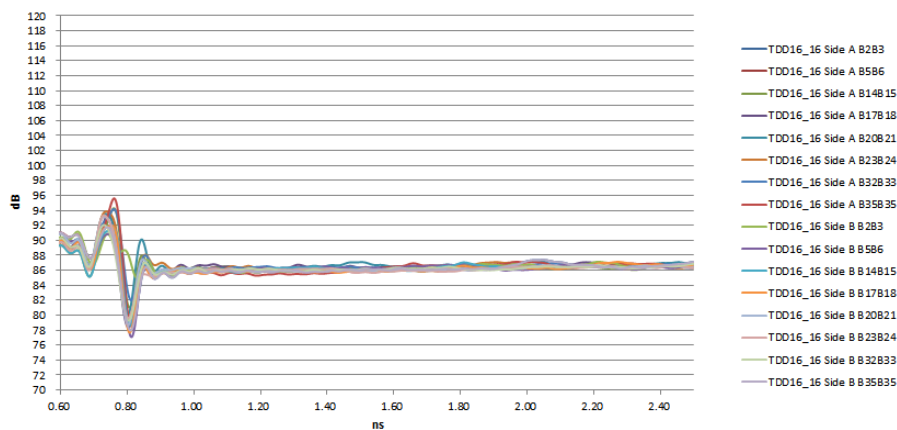


Mini Cool Edge IO (MCIO) Cable Assemblies

SCD21-SDD21 of 1m 30AWG 85 Ohm MCIO



Differential Impedance @ Tr=25ps(20%-80%) of 1m 30AWG 85 Ohm MCIO



Note:

1. Please visit our website <http://www.amphenol-ast.com/V3/en/product.aspx?classId=231> to find specific product information.
2. Any requirement, please send email to sales@amphenol-ast.com or inquire our local sales.