

**Product Facts**

- Best manufacturing practices and field proven materials for best value solution
- True coax cable construction for superior signal integrity and flex-life
- Crosstalk through entire assembly less than -30 dB at 10 MHz
- No NRE/NRT charges when selecting standard options
- Flexible to accommodate product mix and volume changes



A forward looking platform for ultrasound

High volume purchasing, global manufacturing efficiencies and field tested components make MODULUS3 cable assemblies the time and budget conscious alternative to custom cable assemblies for diagnostic ultrasound equipment. The platform has coax, cable and termination options to meet the needs for a majority of equipment specifications.

**Performance**

Forming the foundation of the platform are two true coax configurations, 50 and 75 ohm. True coax completely shields each signal line to provide better consistency and signal protection compared to other non-coaxial constructions. The entire interconnect system [2.5 meters (98 inches)] is designed to maintain crosstalk at less than -30dB at 10 MHz on the finished assembly (less than the inherent acoustic crosstalk found in most transducers).

For EMI/RFI containment, the cable assembly system is designed for continuous shielding end-to-end including connector actuation shaft. The enclosure also houses a nickel zinc ferrite to help suppress noise in the 20 to 300 MHz range.

From the tables below, make selections to fit your system's needs. Select from two conductor sizes, two capacitances and three cable sizes (number of elements). Standard inductor values and passive or active devices for probe identification are available.

**Coax and Cable Options**

For improved ergonomic performance, the MODULUS3 cable assemblies platform includes 42 AWG center conductors to reduce cable weight and size. OEMs can select either 50Ω coax or low capacitance, 75Ω coax to support 64, 96, 128 or 192 element transducers using either 40 or 42 AWG

center conductors. (Note: Each cable construction has a minimum of four extra coax for auxiliary functions.) All cables are concentric construction and have an overall braid shield and biocompatible PVC jacket. The cable jacket, flex reliefs and ZIF housing are all fabricated in Classic White, nominally corresponding to Munsell 5.84GY9.15/0.47.

**Transducer Interface**

The transducer end interconnect offers repeat plug-gability for ease of test, transducer installation and service. Surface mount board-to-board connectors provide a high density, low profile package with high reliability. Transducer PCBs and mating connectors have been designed for minimal crosstalk.

**For More Information**

For the latest additions to the product family, access to technical data or to contact a product specialist go to:

[www.tycoelectronics.com/pi](http://www.tycoelectronics.com/pi)

**Configurations and options**

**System Interface: DL260 and DL156**

The system interface mezzanine board system offers I/O flexibility in a compact termination package. Pluggable boards allow for easy replacement of a ZIF connector in the field, if ever required. The routing board is easily reconfigurable from standard pinout to a customer specific I/O wiring scheme.

Integral probe identification is also accommodated here. Standard passive identification can be done with jumpers or resistors. Alternately, active probe identification can be accomplished with an 8-pin DIP EEPROM. Optional series inductors are available from 1.0 to 10  $\mu$ H.

The CANNON DLSeries ZIF connectors are widely accepted and used on ultrasound diagnostic equipment. The ZIF molded plastic housing includes an EMI/RFI receptacle designed to mate with ITT CANNON EMI/RFI shield shell. For a complete shielding scheme, the DL actuation shaft is grounded to the EMI/RFI receptacle.

The low profile housings for the DL156 and DL260 ZIF connectors are molded from lightweight polymers with metal conductive coating for reduced weight, smaller footprint, consistent cosmetics and EMI containment. Each side includes a recessed area of 2.5 cm

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**MODULUS3 Concentric Cable Configurations for MODULUS3 Cable Assemblies**

Center Conductor AWG	DC Resistance		Transducer Elements $\Omega$ /ft	Nominal Values							
	$\Omega$ /m			Capacitance		Impedance	Cable O.D.		Weight		
	$\Omega$ /m	$\Omega$ /m		$\mu$ F/m	pF	ohms	mm	in	gr/m	oz/ft	
40	4.76	1.45	64	101	31	50	6.5	.255	70	.8	
				53	16	75	6.5	.255	66	.7	
	7.55	2.30	96	101	31	50	7.4	.290	93	1.0	
				53	16	75	7.4	.290	88	.9	
				128	101	315	50	8.5	.335	121	1.3
				53	16	75	8.5	.335	116	1.2	
42	7.55	2.30	64	101	31	50	6.1	.240	60	.7	
				53	16	75	6.0	.235	54	.6	
	10.0	3.0	128	101	31	50	7.0	.275	80	.9	
				53	16	75	7.0	.275	74	.8	
				192*	101	31	50	7.8	.305	96	1.0
				53	16	75	7.8	.305	85	.9	
10.0	3.0	192*	101	31	50	8.8	.345	130	1.4		
			53	16	75	8.8	.345	120	1.3		

\*Available only in DL 260 version

by 7.0 cm (1.0 in by 2.75 in) for customer labeling.

**Flex/Strain Relief Systems**

System and transducer end flex-reliefs are available for each cable diameter for maximum protection of terminations.

The transducer end flex-relief accommodates compact probe housings and can be installed in either one or two piece designs. For a lower profile, the transducer end flex-reliefs for the 64, 96 and 128 element assemblies have a smaller face (20.7 mm / .815 in). The transducer end flex-relief for the 192 is the same dimensions as the flex-reliefs used on the system end for all four versions. Flex-reliefs are molded in medical grade PVC Classic White to match cable jacket. Integral strength members and the strain-relief protects the cable core from pulling or crushing forces which may compromise cable life.

**Inductor Values**

Q Minimum is 30  
L, Q, Test Frequency for all values below except 10.0 $\mu$ H is 7.96 MHz  
L, Q, Test Frequency for 10.0  $\mu$ H is 2.52 MHz

L $\mu$ H	SRF Minimum MHz	RDC Maximum Ohms	IDC Maximum mA
1.0	120	0.7	400
1.5	85	0.85	370
1.8	80	0.9	350
2.2	75	1.0	320
2.7	70	1.1	290
3.3	60	1.2	260
4.7	50	1.5	220
5.6	45	1.6	200
8.2	35	2.0	170
10.0	30	2.1	150

**Transducer Interconnect Samtec 0.5 mm Socket BSH**

- 120 position surface mount board-to-board connector
- High density 0.5 mm pitch
- Low profile: 5 mm stacking height
- Gold plating on mating surfaces
- Minimum 25 mate/demate cycles
- 24 interspersed ground contacts
- Mating connector: Samtec BTH-060-01-L-D-A