



HDQX Series





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# HDQX SERIES

## Introduction

Radiall introduces the new HDQX connector series, specially designed for the transmission of Ethernet and RF high speed signals required in harsh environment applications.

HDQX connectors combine both the compact and rugged qualities necessary for high reliability and signal integrity in aerospace and military environments.

The HDQX range offers Cable-to-Cable and Cable-to-PCB solutions. Offering twelve size 8 cavities in a high-density rectangular shell, the space saving HDQX accepts Quadrax and BMA RF contacts, as well as twinax and triaxial contacts.



## Applications

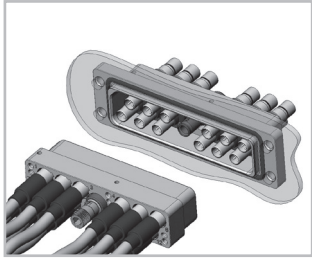
Typical applications for the HDQX connectors include data networks, in-flight entertainment systems, video control centers, and naval and military vehicle communications.



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Features

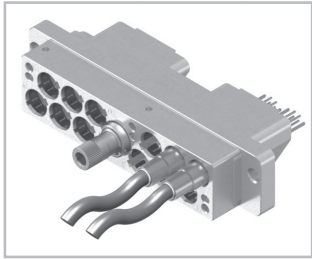
HDQX SERIES



Class P connector pair

**HDQX CONNECTOR BENEFITS:**

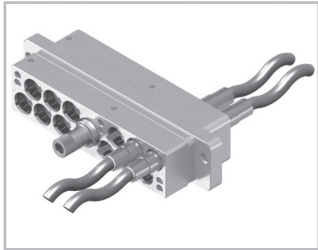
- High-density solution for size 8 cavities using standard ARINC 600 Quadrax contacts and size 8 BMA RF coax, triax, and twinax contacts
- Space-saving connector for limited space applications
- Rectangular connector is stackable
- Lightweight composite strain relief
- Simple and secure connection with a central locking device
- Contacts grounded to the shell with extremely high electrical continuity



Cable to PCB application

**AVAILABLE HDQX RANGE CONNECTORS:**

- Class N – Non-environmental plug and receptacle
- Class E – Environmental plug and receptacle (connector sealed on the electrical line)
- Class P – Panel sealed receptacle (feed-through sealed connector)



Cable to cable application

**MAIN FEATURES ARE:**

- 12 contacts cavities
- Grounded size 8 standard cavities (ARINC 600 type)
- Cable-to-cable and cable-to-PCB application
- RoHS compliant
- 12 keying formatting possibilities positions
- 1 central position jacknut / Jackscrew
- Uses standard insertion/extraction tool
- User Manual # MIIN1700002 is available

**Technical Characteristics of Shells**

**ELECTRICAL CHARACTERISTICS**

- Shell to shell conductivity: 2.5 mΩ (level reached during initial and after testing as per EN2591-205).
- Contact-to-shell conductivity: maximum of 10 mΩ (level reached during initial and after environmental testing)
- Lightning strike:
  - Pin injection: 1600V 320A as per RTCA DO160 (§22.5.1)
  - Current pulse: 3kA as per EN2591-214
- DWV at sea level:
  - 1000Vrms between outer body and signal contacts as per EN2591-207, Method C
  - 1000Vrms between signal contacts
- DWV altitude (70,000 feet): 125Vrms for the quadrax contacts as per ARINC 600

**MECHANICAL CHARACTERISTICS**

- Mating/Unmating: 100 cycles
- Impact test: 8 drops at 1.20m as per EN2591-613
- Bending moment (applied to accessories): 100N as per EN2591-404
- Mechanical axial strength (applied to accessories): 100N as per EN2591-420

**VIBRATION & SHOCKS**

Series	Material	Vibration	Shock
		For 8 hrs on each of the 3 axis/ interruption <1 μs EN2591-403 EIA 364-28	3 shocks on each axis EN2591-402 EIA 364-27
HDQX	Aluminium	Acceleration 16.9g (Method B figure 2 table 1 Level E)	Shock amplitude 50g /duration 11ms

**OTHER CHARACTERISTICS**

- Temperature range: -65°C / +150°C (-85°F / +302°F), 5 cycles as per EN2591-305
- Temperature life: 1000 hours at 150°C (+302°F) as per EN2591-301 Method B
- Salt spray: 96 hours as per EN2591-307
- Sealing: altitude immersion 50,000 feet as per EN2591-314
- Sand & dust: wind velocity 3.5 ±0.5 ms as per EN2591-308
- Mould growth: during 28 days, growth 0 as per EN2591-306 Method A
- Fluid immersion: kerosene, phosphate base, mineral base, polyolester, solvent, detergent, aircraft deicers, heptafluoropropane, pentafluoroethane, radar coolant as per EN3909
- Magnetic permeability: 2μ as per EN2591-513

**Crimp Contacts**

**QUADRAX CONTACTS**

Standardized ARINC 600 Quadrax contacts are available with HDQX series.

Contact size	Cable type	Type	Environmental Part number	Non-environmental Part number	Ins / ext tool in metal
8	Ethernet cable ABS0972 & ABS1503	Pin	Consult Radiall	620175010	282549001
		Socket		620075010	
	Tensolite NF24Q100	Pin		620175050	
		Socket		620075050	
	Tensolite NF26Q100 - JSF Y18	Pin		620175021	
		Socket		620075021	

**BMA CONTACTS**

Contact size	Cable type	Connector Type	Non-environmental Part number	Frequency range	Max VSWR	Insertion loss
8	SHF5 - SHF5M <sup>(See note 1)</sup>	Pin	617171010	DC-18 GHz	1.35	0.13 dB at max frequency (18 GHz)
8	RG142	Pin	617171020	DC-12,4 GHz	1.35	0.11 dB at max frequency (12.4 GHz)
8	SHF2.4M <sup>(See note 1)</sup> / UT.085 Harbour SS405 Times Tflex405	Pin	617171030	DC-18 GHz	1.35	0.13 dB at max frequency (18 GHz)
8	SHF5 - SHF5M <sup>(See note 1)</sup>	Socket	617071010	DC-18 GHz	1.35	0.13 dB at max frequency (18 GHz)
8	RG142	Socket	617071020	DC-12,4 GHz	1.35	0.11 dB at max frequency (12.4 GHz)
8	SHF3 <sup>(See note 1)</sup>	Socket	617071040	DC-18 GHz	1.35	0.13 dB at max frequency (18 GHz)

Extraction tool 282549001 is used for size 8 BMA contacts.

**PC Tail Contacts**

**SIZE 8 QUADRAX PIN CONTACTS**

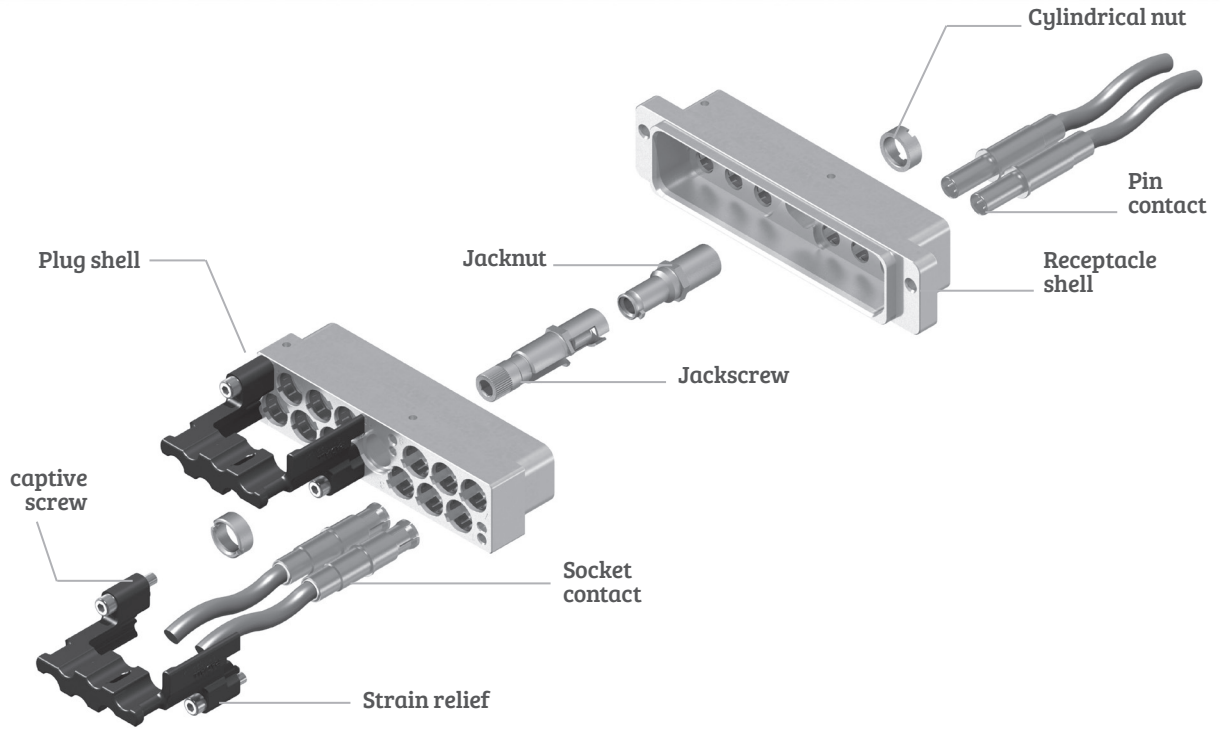
Part Number	Contact termination	Minimum length in mm (inch) <sup>(See note 2)</sup>
620176009	YA	2.80 (.110)
620176016	ZA	
620176509	RA	
620176008	Y	5.65 (.222)
620176010	Z	
620176508	R	
620176011	YB	8.50 (.334)
620176012	ZB	
620176511	RB	
620176013	YC	11.90 (.469)
620176014	ZC	
620176513	RC	

**NOTES:**

- (1) BMA which have to accommodate SHF cable requires a wiring done by Radiall, please, contact Radiall for information
- (2) Minimum length corresponds to straight PC tail length protruding from HDQX cavity

Product Overview

Detailed view of the various parts of HDQX connector:





## How to Order HDQX Connectors

HDQX	12	F	N	N	YA	00	12
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**Series**

**Connector size**

**12:** 12 size 8 cavities

**Shell style**

**P:** Plug for RR/RR (rear release / rear removable) contacts

**R:** Receptacle for RR/RR (rear release / rear removable) contacts

**F:** Receptacle for FR/FR (front release / front removable) contacts

**Class**

**E:** Environmental (upon request only)

**N:** Non-environmental

**P:** Panel sealing, receptacle only (upon request only)

**Shell plating**

**N:** Nickel

**Contact termination**

**X:** No contacts

**Qx:** Crimp Quadrax contacts ] see table 1 page 3-10

**Cx:** Crimp BMA contacts<sup>(1)</sup>

**Yx:** Gold PC tail Quadrax contacts

**Zx:** Tin lead PC tail Quadrax contacts ] see table 2 page 3-10

**Rx:** Pure tin PC tail Quadrax contacts

**Shell mounting**

**00:** Flangeless plug

**00:** 2 self-locking threads for 6-32 UNC 2A screws for receptacle

**01:** 4 self-locking threads for 6-32 UNC 2A screws for receptacle

**Polarization**

**Without:** No polarization system provided

**Polarization:** See page 3-13 for codes

HDQX SERIES

CONTACTS

CONNECTORS & ACCESSORIES

**NOTE:**

(1) BMA contacts are not available with class E and P

**Contacts Termination**

**TABLE 1:**  
Crimped contact termination  
for RR/RR receptacle and plug




Cable	Quadrx	BMA
ABS1503KD24	Q1	-
NF24Q100	Q2	-
JSFY18	Q3	-
RG142	-	C1
UT 0.085	-	C2

**TABLE 2:**  
PC-tail contact termination  
for FR/FR receptacle

Minimum length mm (inch)	Gold	Tin-lead	Pure tin
2.80 (.110)	YA	ZA	RA
5.65 (.222)	Y	Z	R
8.50 (.334)	YB	ZB	RB
11.90 (.469)	YC	ZC	RC

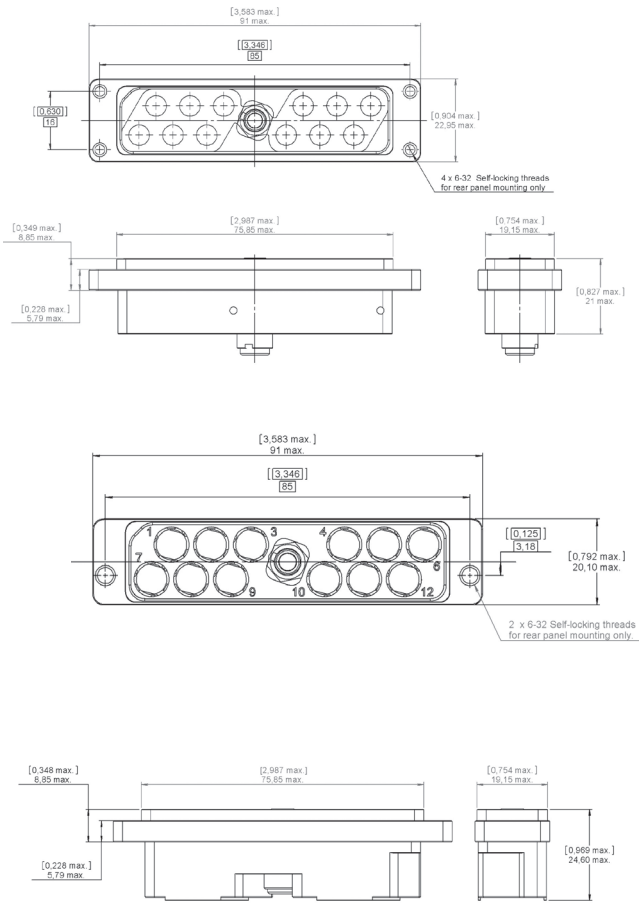
**Shell Mounting**

Both shell mounting 00 and 01 are available with RR/RR and FR/FR receptacle.

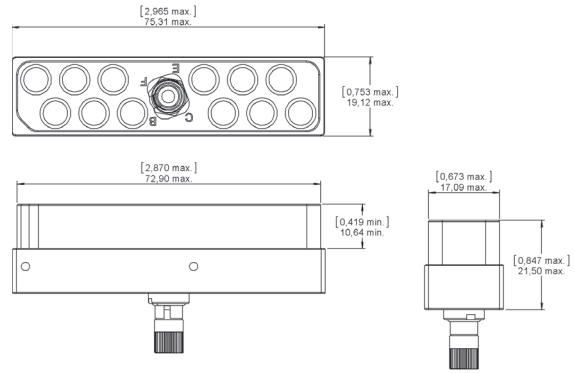
Code	Detail	
00	Flangeless plug (no fixing system)	
00	Rear panel mounting receptacle: 2 self-locking threads for 6-32 UNC 2A screws	
01	Rear panel mounting receptacle: 4 self-locking threads for 6-32 UNC 2A screws	

Dimensions

RECEPTACLE



PLUG



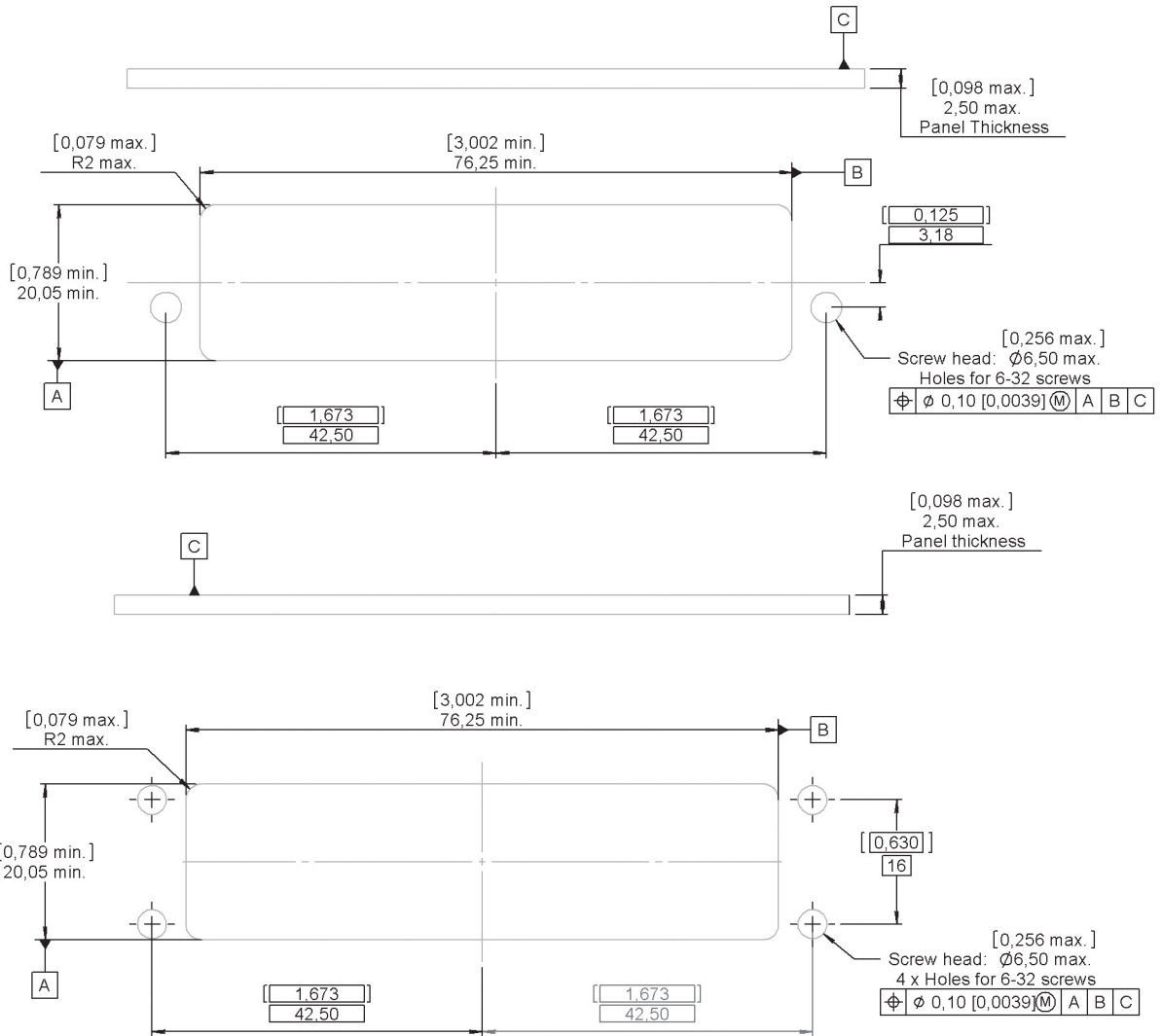
not applicable

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Panel Cut Out  
RECEPTACLE



**Polarization Code**

Code	Device	Device delivered
12	Jackscrew, A to F	Unassembled
13	Jackscrew, N to Z	Unassembled
22	Jacknut, A to F	Unassembled
23	Jacknut, N to Z	Unassembled
1A	Jackscrew, position A to Z	Assembled
2A	Jacknut, position A to Z	Assembled

**HDQX JACKSCREW & JACKNUT**

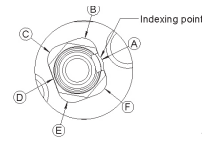
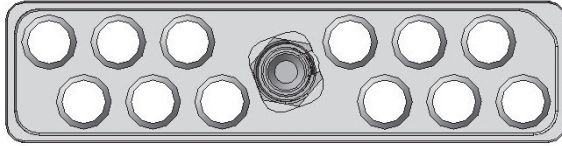
In the standard version, the jackscrew is mounted on the plug shell and the jack nut is mounted on the receptacle shell.

There are 2 sets of jackscrews and jacknuts. Each set provides 6 polarizing positions A, B, C, D, E, and F and the second set provides polarizing positions N, R, W, X, Y and Z. The difference between the 2 sets is accomplished using an indexing point shown below in the drawings:

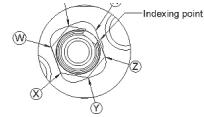
Designation	Polarizing positions	Coding device	Part number	
Jackscrew	A to F		617612801	
	N to Z		617612803	
	Universal		617612806	
Jacknut for front release receptacle	A to F		617612805	
	N to Z		617612804	
Jacknut for rear release receptacle	A to F		617612800	
	N to Z		617612802	
Jacknut	Universal		617612807	

Polarization Code

PLUG SHELL



A to F

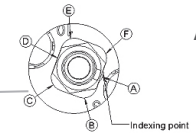
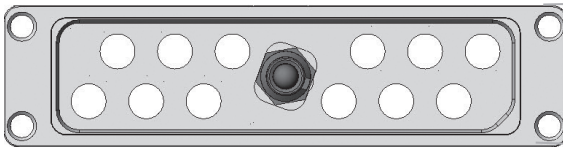


N to Z

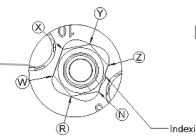
MATING FACE SHOWN

A	B	C	D	E	F
N	R	W	X	V	Z

RECEPTACLE SHELL



A to F

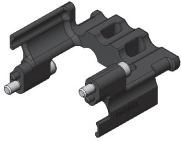
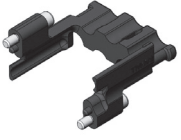

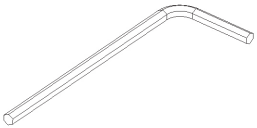


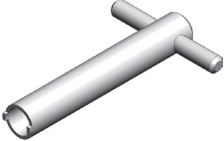


N to Z

MATING FACE SHOWN

A	B	C	D	E	F
N	R	W	X	V	Z

Accessories and Tools

	Part number	Description
	617922024	Strain relief for plug assembly torque 0.55 ±0.05 Nm
	617922026	Strain relief for receptacle assembly torque 0.55 ±0.05 Nm
	282666001	Connector locking: Allen wrench (9/64 inch)
	282666002	Strain relief locking: Allen wrench (5/64 inch)
	282549001	Extraction tool (for Quadrax and BMA contacts)
	282664	1/4 inch hex. screwdriver bit to affix the nut of the jackscrew or the jacknut
	282665	Spigot wrench to affix the nut of the jackscrew or the jacknut

HDQX SERIES

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# HDQX SERIES

Notes

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Our most  
important  
connection  
is with you.™

It's not just a slogan. It's a statement of our earnest desire to put you at the forefront of all our business practices. As part of Radiall's mission to be available and accessible, we make it a priority to have local offices around the globe ready and able to assist you – wherever you are, whenever you need us.

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