

HDQX SERIES

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Introduction

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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Introduction

FEATURES

HDQX CONNECTOR BENEFITS

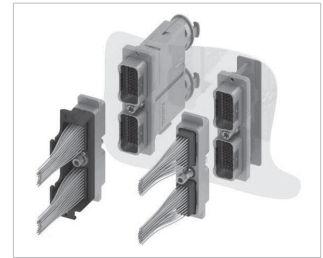
- High-density solution for size 8 cavities using standard ARINC 600 Quadrax contacts and size 8 BMA RF coax, triax and twinax contacts
- Space-saving connector for limited space applications
- Rectangular connector is stackable
- Lightweight composite strain relief
- Simple and secure connection with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

AVAILABLE HDQX RANGE CONNECTORS

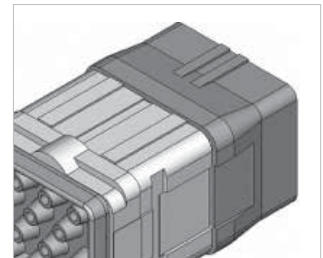
- Class N: Non-environmental plug and receptacle
- Class E: Environmental plug and receptacle (connector sealed on the electrical line)
- Class P: Panel sealed receptacle (feed-through sealed connector)

MAIN FEATURES

- 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



Class P Connector Pair



Cable-to-PCB Application



Cable-to-Cable Application

Introduction

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:**
 - 1,000 Vrms between outer body and signal contacts as per EN2591-207, Method C
 - 1,000 Vrms between signal contacts
 - DWV altitude (70,000 ft): 125 Vrms for the quadrax contacts as per ARINC 600

MECHANICAL CHARACTERISTICS

- **Mating/Unmating:** 100 cycles
- **Impact Test:** 8 drops at 1.20 m as per EN2591-613
- **Bending Moment (Applied to Accessories):** 100 N as per EN2591-404
- **Mechanical Axial Strength (Applied to Accessories):** 100 N as per EN2591-420

VIBRATION & SHOCKS

SERIES	MATERIAL	VIBRATION	SHOCK
		For 8 Hours 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 16.9 g (Method B Figure 2 Table 1 Level E)	Shock Amplitude 50 g/Duration 11 ms

OTHER CHARACTERISTICS

- **Temperature Range:** -65 °C/+150 °C (-85 °F/+302 °F), 5 cycles as per EN2591-305
- **Temperature Life:** 1,000 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 ft as per EN2591-314
- **Sand and 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:** 2 μ as per EN2591-513

Contacts

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 ^[1]	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	SHF2.4 M ^[1] /UT.085 Harbour SS405 Times Tflex405	Pin	617171030	DC-18 GHz	1.35	0.13 dB at Max Frequency (18 GHz)
8	SHF5 - SHF5M ^[1]	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 ^[1]	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

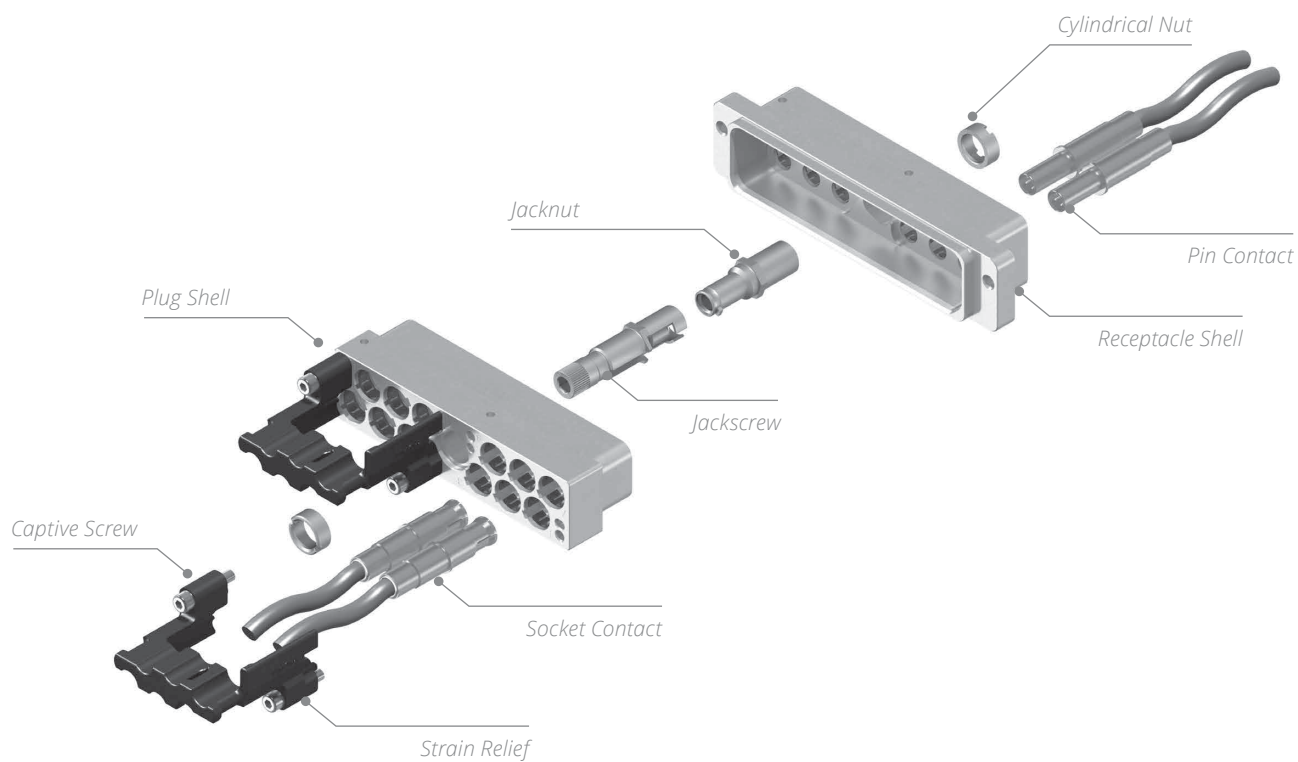
PART NUMBER	CONTACT TERMINATION	MINIMUM LENGTH IN MM (INCH) ^[2]
620176009	YA	2.80 (0.110)
620176016	ZA	
620176509	RA	
620176008	Y	5.65 (0.222)
620176010	Z	
620176508	R	
620176011	YB	8.50 (0.334)
620176012	ZB	
620176511	RB	
620176013	YC	11.90 (0.469)
620176014	ZC	
620176513	RC	

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

SERIES PREFIX

CONNECTOR SIZE

12: 12 size 8 cavities

SHELL STYLE

P: Plug for RR/RR (rear release/rear removal) contacts**R:** Receptacle for RR/RR (rear release/rear removal) contacts**F:** Receptacle for FR/FR (front release/front removal) 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 ^[2]**Cx:** Crimp BMA contacts ^{[1] [2]}**Yx:** Gold PC tail Quadrax contacts ^[3]**Zx:** Tin lead PC tail Quadrax contacts ^[3]**Rx:** Pure tin PC tail Quadrax contacts ^[3]

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 4-11 for codes

Notes

1. BMA contacts are not available with class E and P.

2. See Table 1 on page 4-8

3. See Table 2 on 4-8

CONTACTS TERMINATION

TABLE 1:
CRIMPED CONTACT TERMINATION
FOR RR/RR RECEPTACLE AND PLUG

CABLE	QUADRAX	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 (0.110)	YA	ZA	RA
5.65 (0.222)	Y	Z	R
8.50 (0.334)	YB	ZB	RB
11.90 (0.469)	YC	ZC	RC

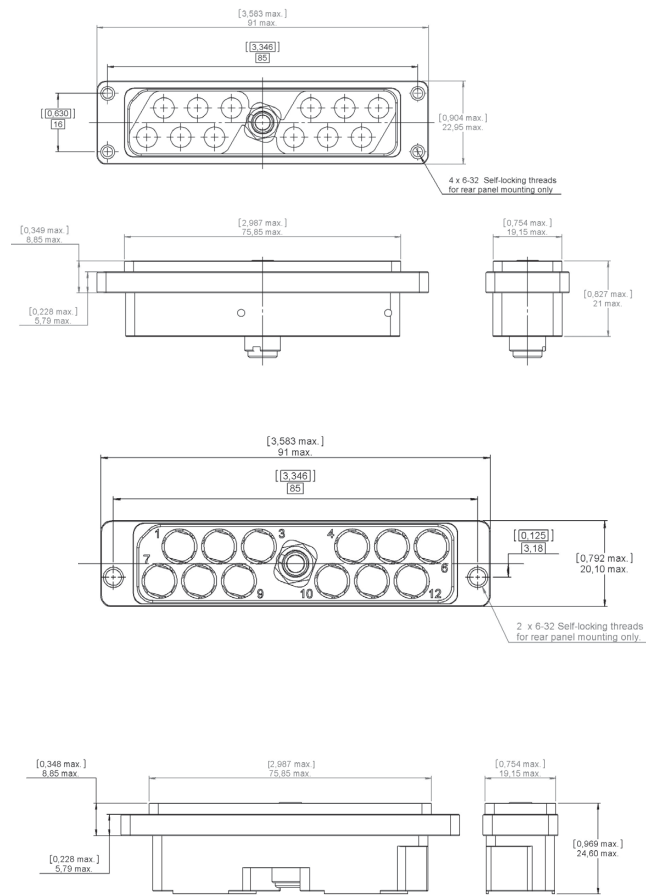
SHELL MOUNTING

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

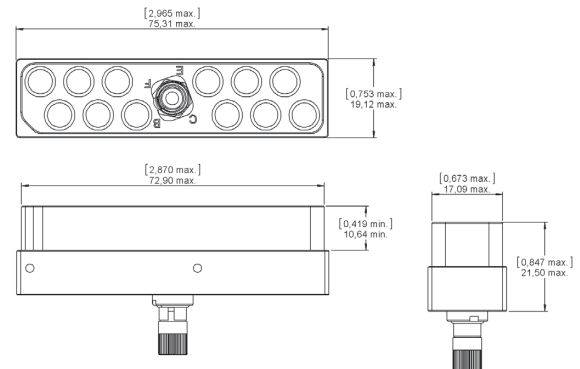
CODE	DETAIL	
00	Flangeless Plug (No Fixing System)	
00	Rear Panel Mounting Receptacle: 2 Self-Locking Threads for 6-32 UNC 2A Screws	
01	Rear Panel Mounting Receptacle: 4 Self-Locking Threads for 6-32 UNC 2A Screws	

DIMENSIONS

RECEPTACLE



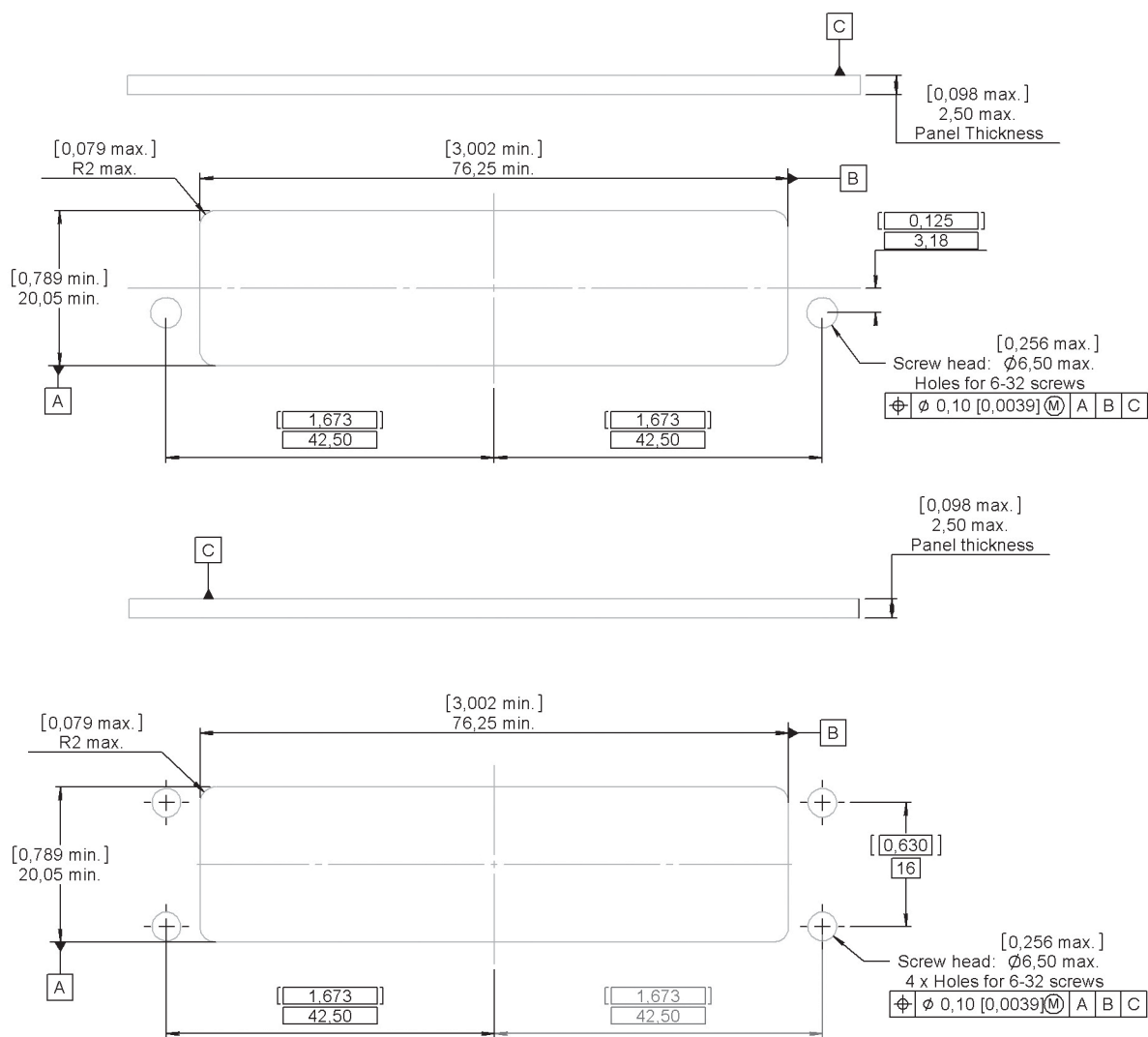
PLUG



Not Applicable

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

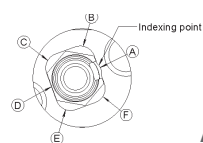
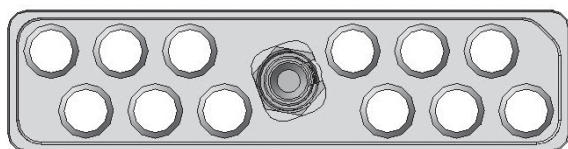
In the standard version, the jackscrew is mounted on the plug shell and the jack nut is mounted on the receptacle shell.

There are two 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 two sets is accomplished using an indexing point shown below in the drawings:

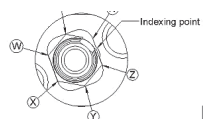
DESIGNATION	POLARIZING POSITIONS	CODING DEVICE	PART NUMBER	
Jackscrew	A to F		617612801	
	N to Z		617612803	
	Universal		617612806	
Jacknut for Front Release Receptacle	A to F		617612805	
	N to Z		617612804	
Jacknut for Rear Release Receptacle	A to F		617612800	
	N to Z		617612802	
Jacknut	Universal		617612807	

Connectors & Accessories

PLUG SHELL



A TO F

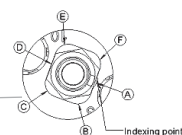
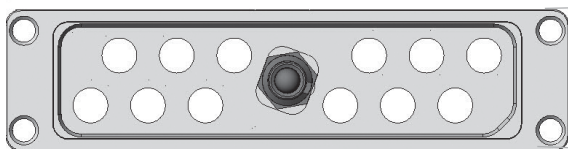


N TO Z

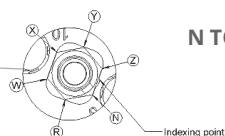
MATING FACE SHOWN

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

RECEPTACLE SHELL



A TO F

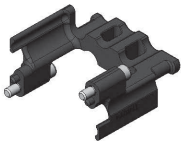
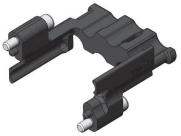

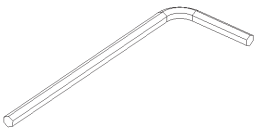


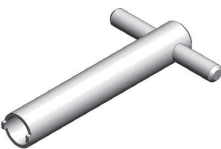


N TO Z

MATING FACE SHOWN

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

ACCESSORIES & 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 in.)
	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

Notes