Amphenol LTD
MILITARY & AEROSPACE

STINGRAY | Magnetic Connector Series

STINGRAY
Magnetic Connector Series

This series offers low profile, compact, sealed connectors that withstand exposure to rain, dust, dirt and chemicals. Stingray connectors are intended for First Responders, Security and Military personnel.

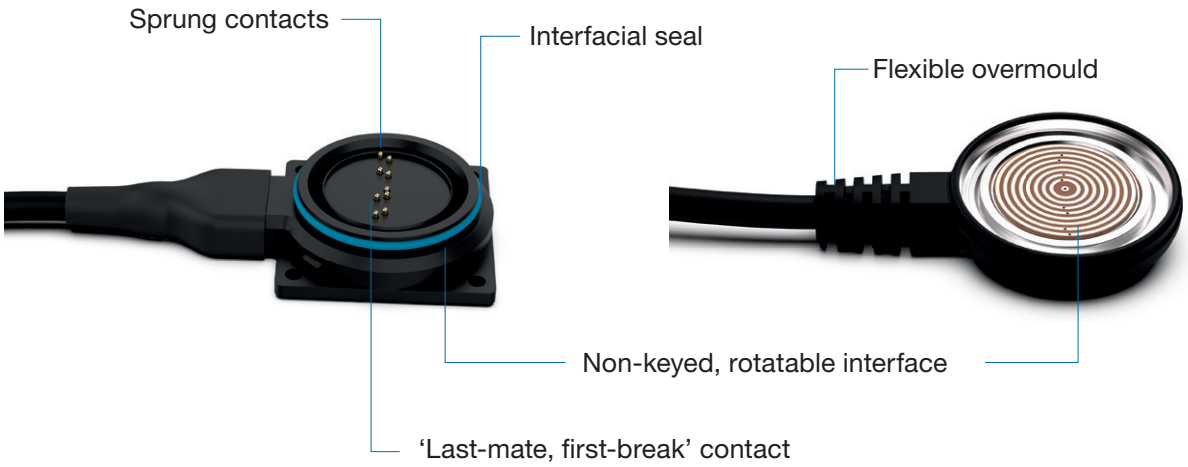
Stingray features a magnetic, non-keyed mating system which allows the connector to be easily mated without the need for pre-alignment and eliminates the need to operate any coupling mechanisms.

Stingray has been optimised for USB 2.0 & Ethernet protocols, and is an excellent solution for audio, power or data signals.

The low profile Stingray connector sits flat against the body to prevent snagging & damage. It is self-aligning due to the strong magnetic connection, and allows customisation and flexibility of cable routing as the cable can be rotated through 360° when the connector is mated.

Features	Benefits
Magnetic mating mechanism	Aids blind-mate performance and prevents inadvertent damage if the user forgets to unmate
Non-keyed rotatable mating	Does not require pre-alignment when mating. Cable exit angle is infinitely variable and can be set and adjusted by the user
Wipe clean interface featuring sprung-loaded contacts	Easy cleaning and decontamination
5000+ mating cycles	Increased connector life before replacement
Compatible with USB 2.0, Ethernet and Audio signal requirements	Allows interconnection of various equipment including computers, radios and headsets
Last mate contact	Allows hot-swapping of equipment and signals (i.e. interface is passive until the connector is fully mated)
90° Cable exit within the height of the connector	Cable runs parallel to the body eliminating loops and preventing snagging
IP68 sealed	High degree of sealing prevents ingress of dust and moisture

Stingray features and terminology



Views of the mated pair

Stingray performance information

Test parameter	Description
Electrical	
Current rating	3A per contact continuous, 5A per contact peak
Data rate	USB 2.0 compliant
Insulation resistance	5000 MΩ at 500 VDC
Contact resistance	<20 mΩ
Environmental	
Sealing	IP68, 1hr at 2 meters immersion
Operating temperature range	-55°C/+85°C
Storage temperature range	-55°C/+125°C
Salt spray	500 hours, 5% NaCl (mated)
RoHS compliant	Yes (dependent on solder used)
Mechanical	
Mating durability	5000 minimum
Shock and vibration	In accordance with DEF-STAN 00-35 Iss 4 Ch2 01 test M1 appendix A figs A22-High Level and A23-Low Level
Separation force, peel	4.0N typical
Rotations	1000 minimum
Rotational torque	0.7Nm typical

Stingray connector part numbering

WM-	XX	XX	XX-	XX-	XXX

Series identifier	Style:	Material and finish	Shell size	No. of contacts	Variant (omitted for standard item)
	00 = Wall mount receptacle 01 = In-line receptacle 02 = PCB mount receptacle 06 = Plug	AU - unplated black thermoplastic	03	09	Consult factory for more details

Please note:
The unplated wall mount receptacle in shell size 3 with 9 contacts is currently available.
The plug connector is only currently available as an overmoulded cable harness.
Further variants are available to order from December 2018.

Stingray part number example

WM-	00	AU	03-	09

Stingray Series
Wall mount receptacle
Unplated black thermoplastic
9 contacts
Shell size 03

Stingray cable harness part numbering

20GB-WM-	XX	XX	XX-	XX-	XXXX-	XXXX

Series identifier	Style:	Material and finish:	Shell size:	No. of contacts:	Length (mm):	Variant:
	00 = Wall mount receptacle 02 = In-line receptacle 06 = Plug	AU - Unplated Black Thermoplastic	03	09		0001 = Pig-tail assembly 0002 = Plug to Plug

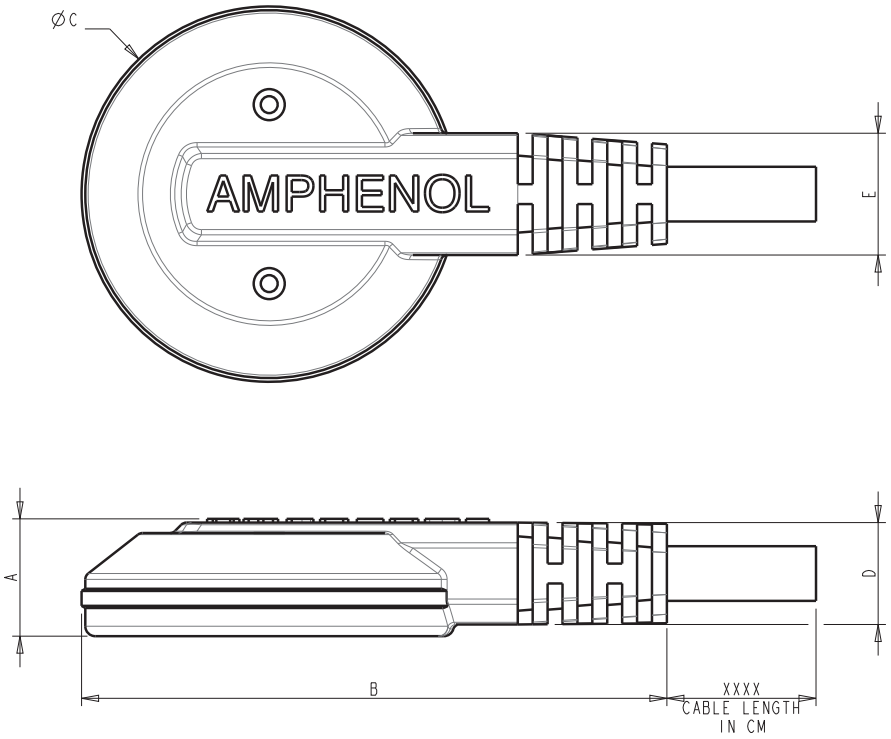
Please note:
Both the -0001 and -0002 variants use USB 3.0 SuperSpeed cable with high quality improved shielding.
The cable is UL20276, OD:5.5mm with black PVC jacket.

Stingray cable harness part number example

20GB-WM-	06	AU	03-	09-	1000-	0001

Stingray Series
Plug
Unplated black thermoplastic
Pig-tail assembly
Length: 1m
9 contacts
Shell size 03

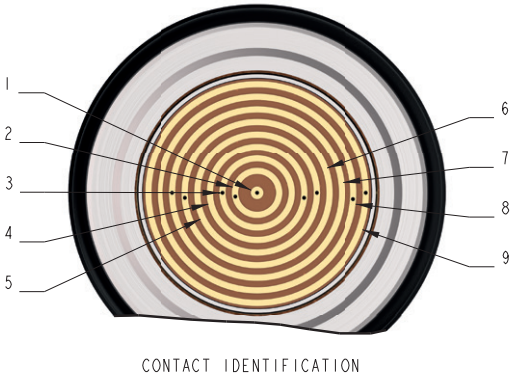
Stingray plug assembly



Shell size	A Nom		B Nom		øC Nom		D Nom		E Nom	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
3	11.99	0.472	59.82	2.355	38.35	1.510	10.41	0.410	12.45	0.490

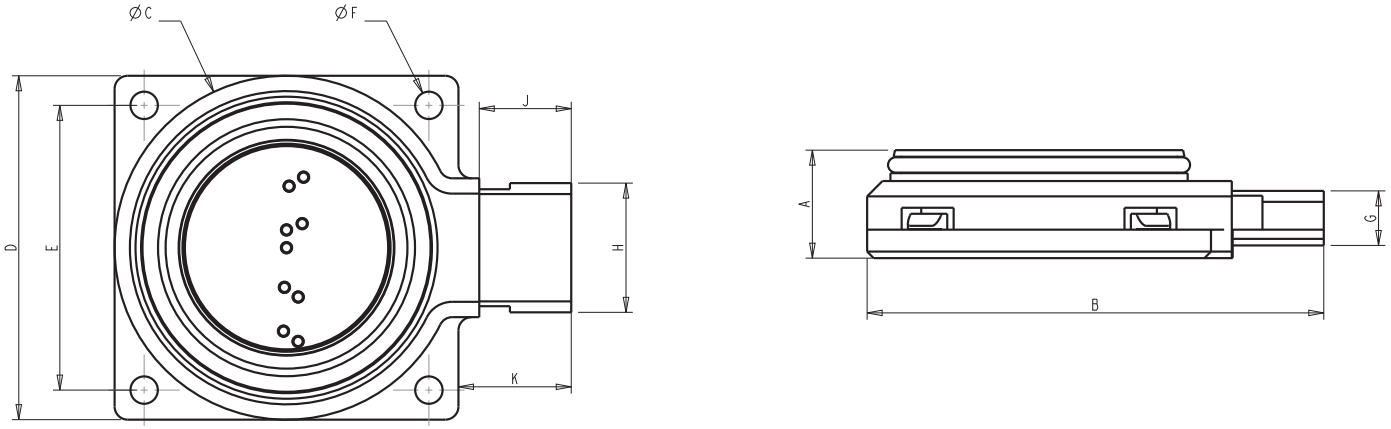
Please note:
The plug is currently only available as an overmoulded cable harness.
A customer terminated plug is available to order from December 2018.

Stingray plug wiring schematic



Contact number	USB identification	USB 2.0 connection	Cable colour
1	Power	Yes	Red
2	D-	Yes	White
3	D+	Yes	Green
4	SDP1-	No	Blue
5	SDP1+	No	Yellow
6	SDP2-	No	Purple
7	SDP2+	No	Orange
8	Power GND	Yes	Black
9	GND drain	Yes	Drain

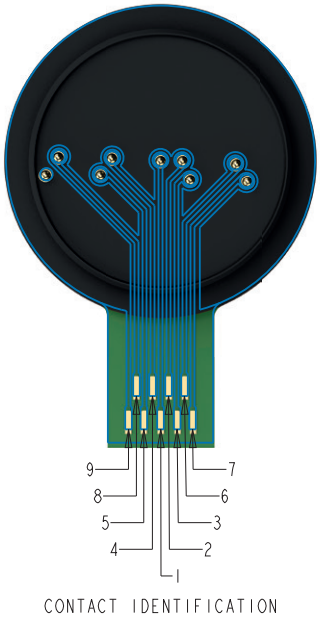
Stingray receptacle



Shell size	A Nom		B Nom		øC Nom		D Nom		E Nom	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
3	12.52	0.493	52.96	2.085	39.88	1.570	39.88	1.570	33.02	1.300
	øF Nom		G Nom		H Nom		J Nom		K Nom	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
	3.18	0.125	6.32	0.249	14.99	0.590	10.67	0.420	13.08	0.515

Please note:
An alternative PCB mount receptacle (WM-02) is available to order from December 2018

Stingray receptacle wiring schematic

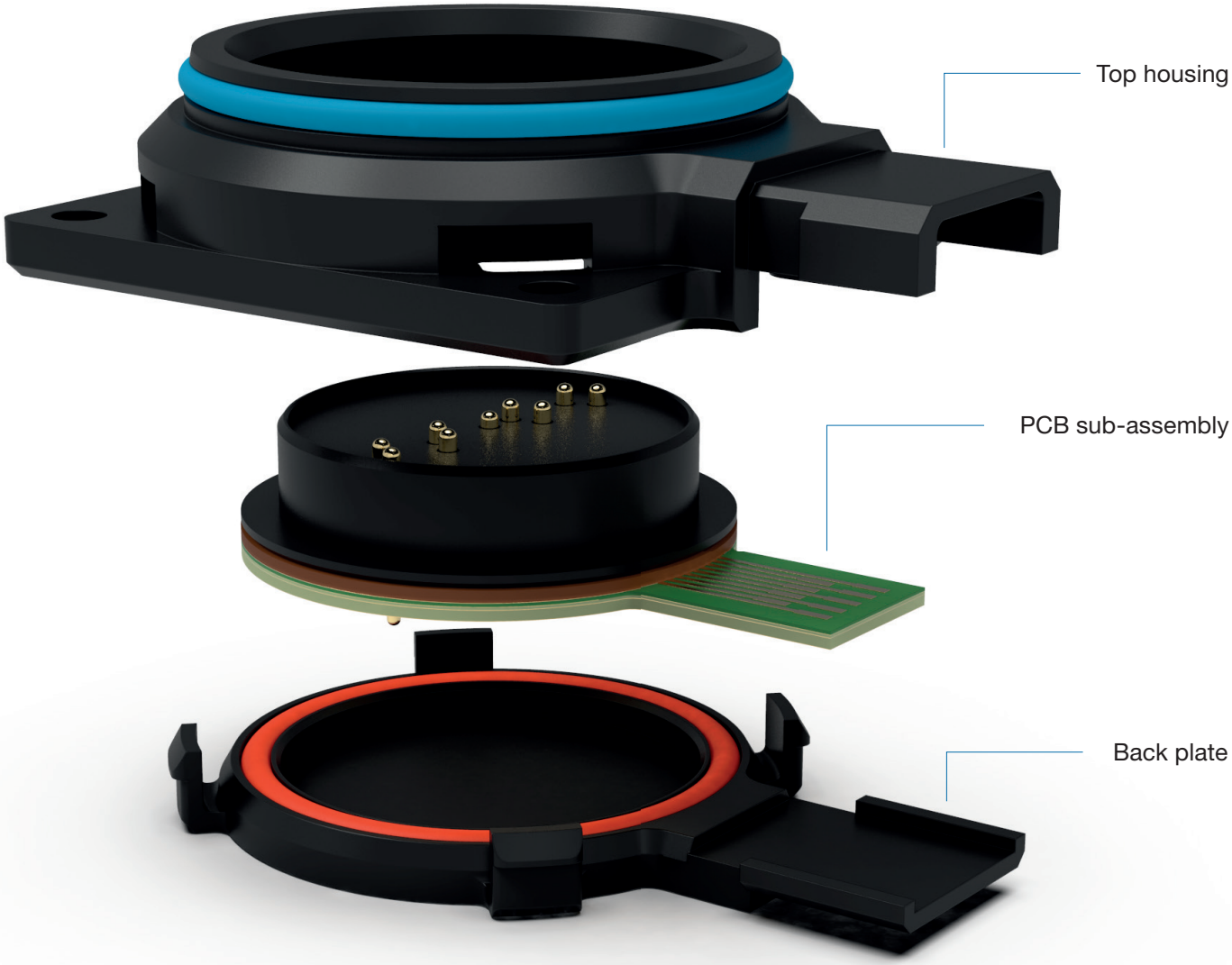


Contact number
1
2
3
4
5
6
7
8
9

USB identification	USB 2.0 connection
Power	Yes
D-	Yes
D+	Yes
SDP1-	No
SDP1+	No
SDP2-	No
SDP2+	No
Power GND	Yes
GND drain	Yes

Stingray receptacle assembly instructions

General assembly instructions are shown below for the Stingray receptacle connector.
The receptacle is supplied as three components ready for termination as shown below:



1. Terminate the cable to the PCB sub-assembly in accordance with Amphenol document 123GB-0879.
2. Lightly press the terminated PCB sub-assembly into the top housing.
3. Locate the back plate into the top housing (trapping the terminated PCB sub-assembly) and evenly apply pressure from the rear so that the clips fully engage and ‘snap’ into position.

Please note that ancillary components have been deleted from the above image for clarity.

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