

Amphenol®



Max-M12 Connector

Amphenol Industrial Products Group introduces our ruggedized M12 high speed data connector, the Max-M12. High speed data transmission connection systems have traditionally been implemented into commercial applications with little regard to high vibration, high temperature and overall harsh environment demands. With the increased implementation of these high speed Datalink connection systems into more heavy duty / harsh environment surroundings, the need for a more robust and ruggedized connection system has surfaced.

Based on the IEC 61076-2-101 and SAE J 2839 standards the Max-M12 connection system makes it the perfect solution for the ultra rugged applications that sometimes exist in markets dealing with Heavy Equipment, Rail & Mass Transit, Process Control, Factory Automation, etc.

Features:

- HDM 12 Versions Available
 - Plastic or Metal (for shielding)
 - 90° right angle and straight connector offerings
 - 3, 4, and 5 way circuit patterns
 - A, B, D & P polarity codes – based on IEC 61076-2-101
- Available as stand-alone connectors & cable assemblies (standard and overmolded)
- Terminals capable of being terminated to:
 - 0.8 mm² (18 AWG) or 0.5 mm² (20 AWG) conductors as defined by SAE J1128 and 0.75 mm² and 0.50 mm² conductors as defined by ISO 6722
- 444 N (100 LBF) pull force on cable
- Backward compatible with IEC 61076-2-101 (M12)
- More resistant to terminal damage
- Extreme environmental testing based on J2839 requirements
 - High pressure wash down

www.amphenol-industrial.com



Max-M12 Connector

Electrical & Environmental Characteristics:

- SAE J 2839 Compliant
- IP 67 or Above
- Backward compatible with IEC 61076-2-101 (M12)
- Provisions for overall cable shield or drain wire to the connector plug housing
- Connection resistance – maximum millivolt drop of 50 millivolts



SPECIFICATION

Operating Voltage	5 pin - 60V AC/DC 3 & 4 pin - 250V AC/DC	IEC 60664
Current Rating	4A MAX.	IEC 60512 TEST 5B
Tempature Rating	-55°C - +125°C -55°C - +150°C (with Viton Seals)	SAE J2839, 4 . 2 . 3 . 13
Dielectric Withstanding Voltage	1000V	IEC 60512, TEST 4A
Insulation Resistance	>20 Megohms	SAE J2839, 4 . 2 . 3 . 3
Rated Impulse Voltage	1500V	IEC 60664-1
Contact Resistance	<10 mΩ	IEC 60512
Vibration, Sine	10 - 2000 Hz, 20g, <1 us	SAE J2839, 4 . 2 . 3 . 15
Shock, Half Sine	10 CYCLES, 50g, 11ms, <1 us	SAE J2839, 4 . 2 . 3 . 16
Temperature Life	1000H AT 125°C ± 3°C	SAE J2839, 4 . 2 . 3 . 7
Durability	100 CYCLES MIN.	SAE J2839, 4 . 2 . 3 . 11
Salt Fog	240H	SAE J2839, 4 . 2 . 3 . 12
Protection Class	IP67 or Above	IEC 60529
Wire Gauge	0.5 mm ² (20AWG) or 0.8 mm ² (18AWG)/ 0.75 mm ²	SAE J1128 / ISO 6722
Cable OD.	ø 12.7 MAX.	
Recommended Torque	M12 THREAD, 0.8 - 1.0 Nm	
Connector Retention	444 N MIN	SAE J2839, 4 . 2 . 3 . 20
Contact Retention	110 N MIN	SAE J2839, 4 . 2 . 3 . 18
Panel Thickness	1 - 6 mm	
Shell Plating	Nickel	

Applications:

- Construction Machinery & Equipment
- Forestry Equipment
- Navigation, GPS and Telematics Applications
- Mining Machinery & Equipment
- Agricultural Machinery & Equipment
- Harsh Environment Sensors, Controllers, Actuators, Switches, etc.

Notice: Specifications are subject to change without notice. Contact your nearest Amphenol Corporation Sales Office for the latest specifications. All statements, information and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements of suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should assume that all safety measures are indicated or that other measures may not be required. Specifications are typical and may not apply to all connectors.

For further information on your individual application requirements, contact: Amphenol Corporation

North America:
Amphenol Industrial Products Group
180 N. Freeport Drive, Plant 4
Nogales, AZ 85621
Tel: (520) 285-5130
Fax: (520) 285-5134
Email: tech@amphenol-aio.com

Europe:
Amphenol Industrial Operations Europe
Via Barbaiana 5
1-20020 Lainate (MI) Italy
Tel: +39 02 93254.204
Fax: +39 02 93254.444
Email: info@amphenol-aio.com

Middle East:
Amphenol Middle East Enterprises FZE
Postal: PO Box 21107, Aiman Free Zone -UAE
Physical Warehouse: #C1-16, Ajman Free Zone, UAE
Phone: +9 716-7422494
Fax: +9 716-7422941
Email: ameeffe@eim.ae

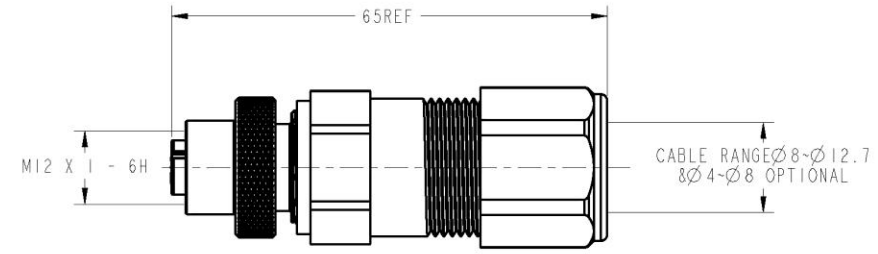
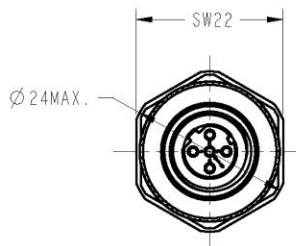
Asia:
Amphenol Technology Shenzhen Ltd
Block 5 Fuan 2nd Industrial Park
Dayang Rd, Fuyong Baoan
Baoan, Shenzhen, China 518103
Tel: +86 755 2881 8389
Fax: +86 755 2991 8310
Email: enquiry@amphenol-aio.com

CUSTOMER DRAWING

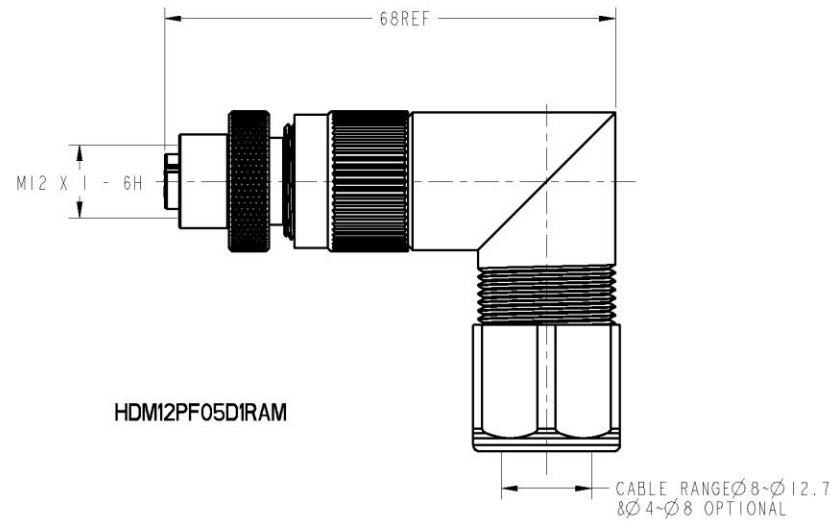
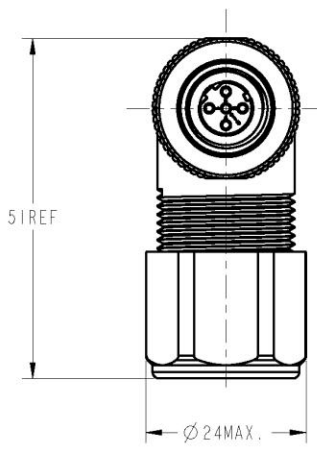
GENERAL TOLERANCE

DIM. RANGE	0.5 ~ 3	> 3 ~ 6	> 6 ~ 30	> 30 ~ 120	> 120 ~ 400
TOLERANCE	±0.1	±0.1	±0.2	±0.3	±0.5

HDM12 M		
REVISIONS		
LTR	DESCRIPTION	DATE
PA6	UPDATE DRAWING	2014-1-22



HDM12PF05D1STM



HDM12PF05D1RAM

NOTES:
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

N/A
NEXT ASSEMBLY
METRIC DOCUMENT

PRO/ENGINEER INFORMATION
Pro/e Model Used:
Drawing Name:
HDM12 METAL BACKSHELL

UNLESS OTHERWISE SPECIFIED		SPECIFICATIONS		POS	QTY	PART NUMBER	DESCRIPTION	NOTE
LINEAR DIMENSIONS ARE IN: MILLIMETERS TOLERANCES: ANGLES: ±2° DEFAULT LINEAR TOLERANCES SEE TABLE ----- DIM & TOL. PER ASME Y14.5M-1994; DRM PER MIL-DTL-31000; OTHER AMPHENOL STANDARDS: 9-9318		MATERIAL SPEC. N/A		APPROVALS PREPARED BY: Show Chen CHECKED BY: Sam Xu DESIGNER: Ran Xiao DESIGN REVIEW GROUP: C 3		DATE: 22-Jan-14	PARTS LIST AMPHENOL INDUSTRIAL OPERATIONS Amphenol Technology(Zhuhai)Co.,Ltd No.63, Xinghen Road, Sanzao Town, Jinwan, Zhuhai, PRC MAX M12 WITH METAL BACKSHELL NICKEL PLATING	
LEGENDS: △=FLAG NOTE CALL OUT REFERENCE ONLY		PROCESS SPEC. N/A		THIRD ANGLE PROJECTION 		SIZE: C CODE CODE: 77820	DOCUMENT NO: HDM12 M	REV: PA6
SCALE: 1:0						REF.	SHEET 1 OF 7	

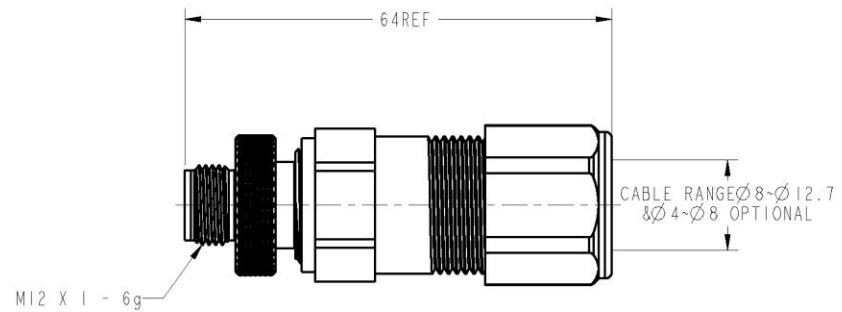
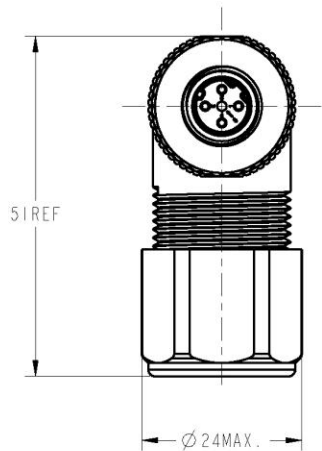
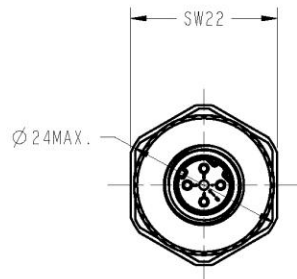
HDM12 M
SHEET 1 OF 7
PA6

HDM12 M
SHEET 1 OF 7
REV. PA6

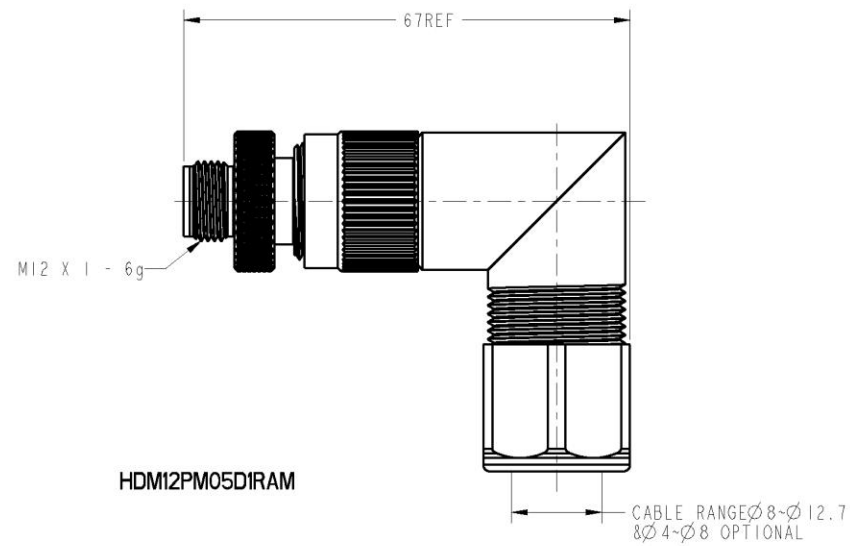
NOTES:

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

DOCUMENT NO.	SHEET 2 OF 7	REV.
HDM12.M	PA6	



HDM12PM05D1STM



HDM12PM05D1RAM

SIZE	C	CAGE CODE	77820	DOCUMENT NO.	HDM12.M	REV.	PA6
SCALE:	2.0	REF:		SHEET 2 OF 7			

NOTES:

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

HDM12.M

SHEET 3 OF 7

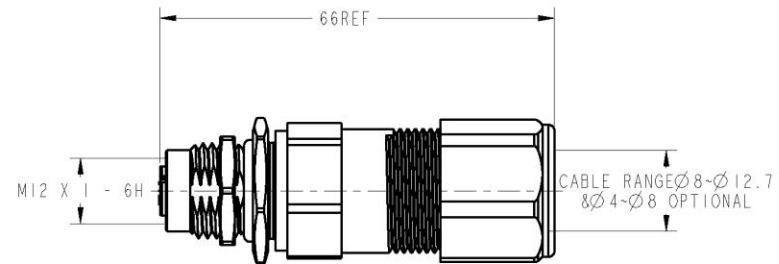
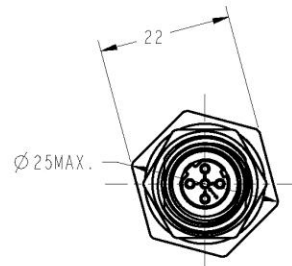
REV.
PA6

4

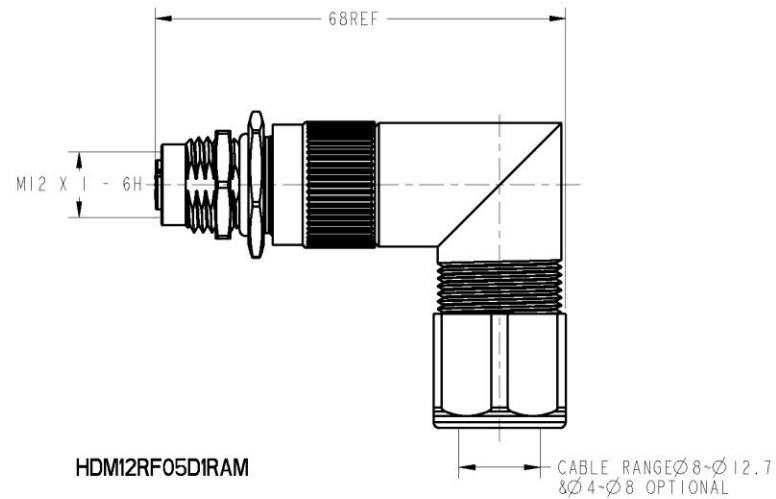
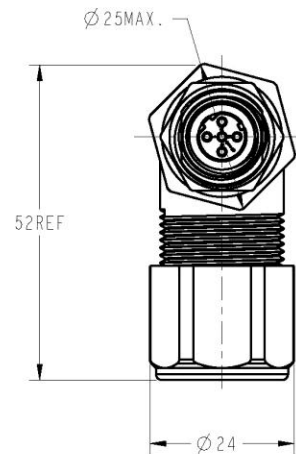
3

2

1



HDM12RF05D1STM



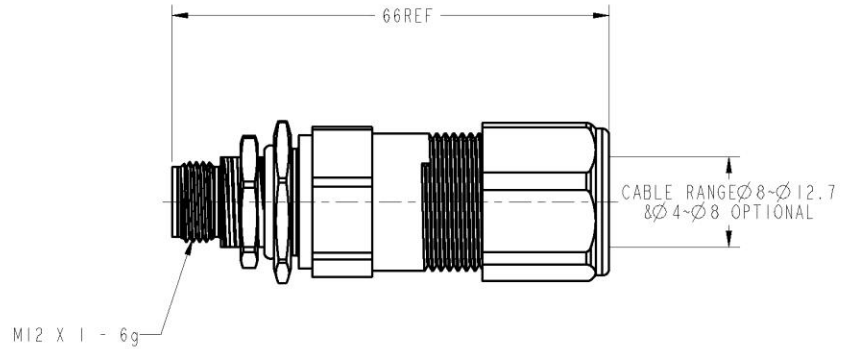
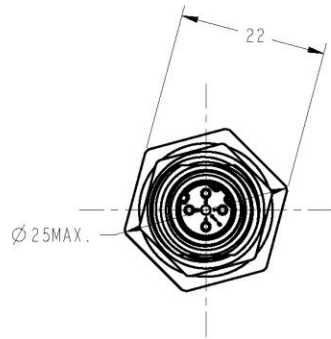
HDM12RF05D1RAM

SIZE	CAGE CODE	DOCUMENT NO.	REV.
C	77820	HDM12.M	PA6
SCALE: 2.0		REF:	SHEET 3 OF 7

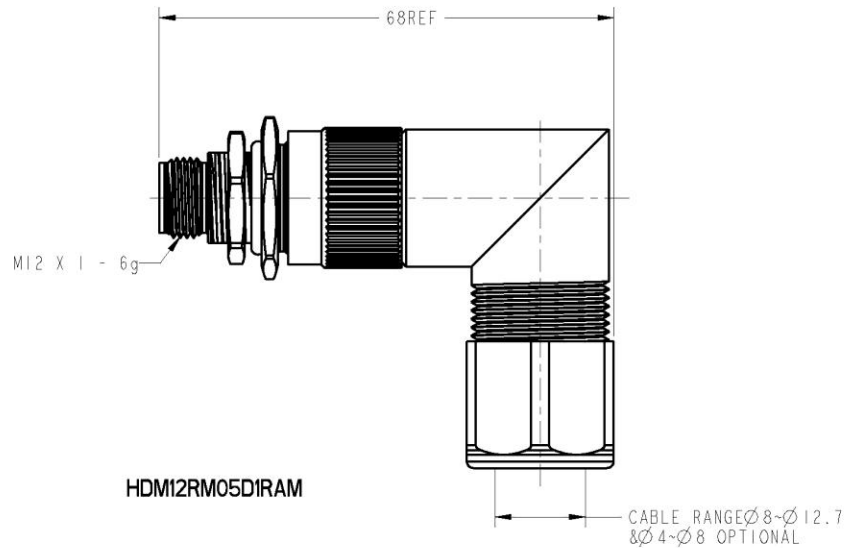
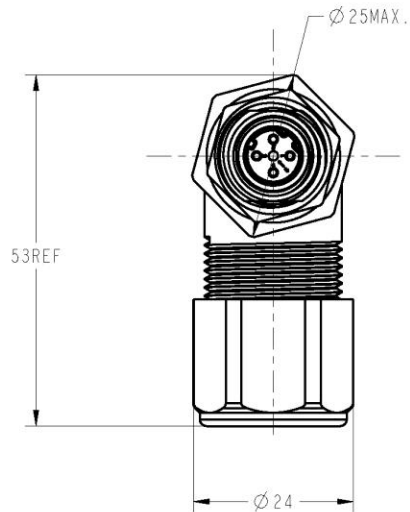
NOTES:

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

DOCUMENT NO.	SHEET 4 OF 7	REV.
HDM12.M	PA6	



HDM12RM05D1STM



HDM12RM05D1RAM

SIZE	CAGE CODE	DOCUMENT NO.	REV.
C	77820	HDM12.M	PA6
SCALE: 2.0	REF:	SHEET 4 OF 7	

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

DOCUMENT NO.
HDM12.M

SHEET 5 OF 7
PA6

INSERT ARRANGEMENT AND CODING

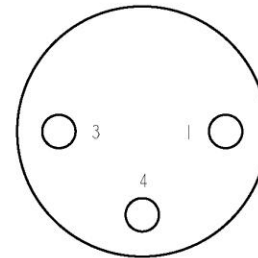
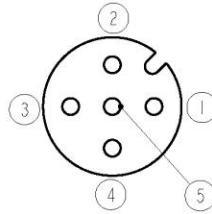
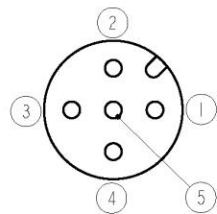
CODING

Male

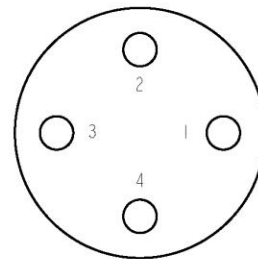
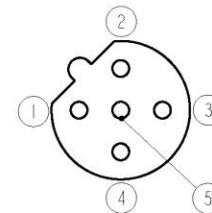
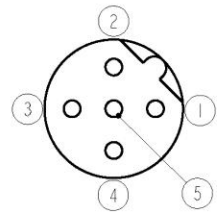
Female

INSERT ARRANGEMENT

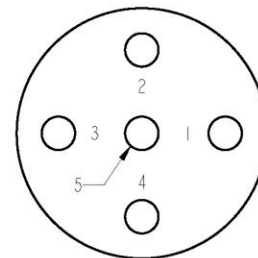
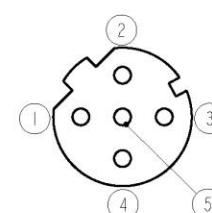
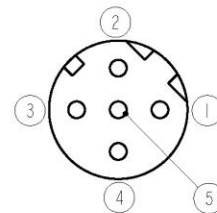
A - CODING
(5 POLE)



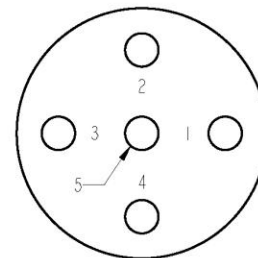
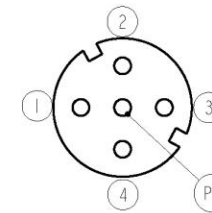
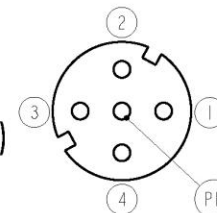
B - coding
(5 POLE)



D - coding
(5 POLE)



P - coding
(4 + PE POLE)



NOTES:

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

DOCUMENT NO.
HDM12.M

SHEET 5 OF 7
PA6

4		3		2		HDM12.M DOCUMENT NO.		SHEET 6 OF 7 REV.		PA6	
SPECIFICATION											
OPERATING VOLTAGE		5 PIN -60V AC/DC 3&4 PIN-250V AC/DC				IEC 60664					
CURRENT RATING		4A MAX.				IEC 60512 TEST 5B					
TEMPERATURE RATING		-55°C - +125°C -55°C - +150°C(WITH VITON SEALS)				SAE J2839,4.2.3.13					
DIELECTRIC WITHSTANDING VOLTAGE		1000V				IEC 60512, TEST 4A					
INSULATION RESISTANCE		>20 Megohms				SAE J2839, 4.2.3.3					
RATED IMPULSE VOLTAGE		1500V				IEC 60664-1					
CONTACT RESISTANCE		<10 mΩ				IEC 60512 TEST 2A					
CONTACT RESISTANCE		EMI PROTECTION									
VIBRATION, SINE		10 - 2000 Hz, 20g, <1 us				SAE J2839, 4.2.3.15					
SHOCK, HALF SINE		10 CYCLES, 50g, 11ms, <1 us				SAE J2839, 4.2.3.16					
TEMPERATURE LIFE		1000H AT 125°C ± 3°C				SAE J2839, 4.2.3.7					
DURABILITY		100 CYCLES MIN.				SAE J2839, 4.2.3.11					
SALT FOG		240H				SAE J2839, 4.2.3.12					
PROTECTION CLASS		IP67 OR ABOVE				IEC 60529					
WIRE GAUGE		0.5 mm ² (20AWG) OR 0.8 mm ² (18AWG) / 0.75 mm ²				SAE J1128 / ISO 6722					
CABLE OD.		Ø12.7 MAX.									
RECOMMENDED TORQUE		M12 THREAD, 0.8 - 1.0 Nm									
CONNECTOR RETENTION		444N MIN				SAE J2839,4.2.3.20					
CONTACT RETENTION		110 N MIN				SAE J2839,4.2.3.18					
PANEL THICKNESS		1-6 mm FOR HDM12RF									
		1-6 mm FOR HDM12RF									
SHELL PLATING		NICKEL PLATED									
NOTES: THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.											
FORM: C-LE-Rev.B											
HDM12.M DOCUMENT NO.											
SHEET 6 OF 7 REV.											
PA6											
3											
2											
1											
SIZE C		CASE CODE 77820		DOCUMENT NO. HDM12.M		REV. PA6		SCALE: 1.0 SHEET 6 OF 7			

NOTES:

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED FOR MANUFACTURING PURPOSES WITHOUT WRITTEN PERMISSION FROM THE AMPHENOL CORP.

DOCUMENT NO.	SHEET 7 OF 7	REV.
HDM12.M	PA6	

HDM12 P M 05 D 1 ST M (V)

LETTER DENOTING THE
TYPE OF CONNECTOR

PLUG
RECEPTACLE

P
R

MALE
FEMALE

M
F

INSERT ARRANGEMENT

03: 3 POLE
04: 4 POLE
05: 5 POLE

VITON RUBBER SEALS
OMIT FOR STANDARD
RUBBER SEALS

METAL BACK SHELL M

STRAIGHT ST
RIGHT ANGLE RA
NO BACKSHELL XX

CONTACT FINISH:
GOLD 1
SILVER 2
NICKEL 4

CODING:
A-CODING A
B-CODING B
D-CODING D
P-CODING P

SIZE	CASE CODE	DOCUMENT NO.	REV.
C	77820	HDM12.M	PA6
SCALE: 1.0	REF:	SHEET 7 OF 7	