AV Sensors
AdVanced Sensor Design and Manufacture

MCT-5A SERIES

The MCT-5A Series Transmitter& Transducer for Industrial Low Pressure

4-20mA, Regulated, Ratiometric Outputs

DESCRIPTION

Advanced Sensors Multi Chip Technology (MCT) 5A Series incorporates the latest mixed signal ASIC (Application Specific Integrated Circuit) with a bonded silicon gage to provide the standard for Industrial Transducers & Transmitters. The MCT 5A Series offers current, regulated and ratiometric outputs types along with a wide range of process fittings. The rugged design is compatible with a wide range of harsh media including refrigerants, compressed air, and hydraulic fluids. The designs superior performance provides 1% Total Error across a wide temperature range of -20 to 85°C and overall error of less than 2.5% over -40 to 125C. The flexible design incorporates many connector types making it the ideal choice for OEM customers.

APPLICATIONS

- Hydraulic and Pneumatic
- Rooftop Chillers
- Pumps and Compressors
- Refrigeration Systems
- Energy and Water Management

FEATURES

- Flexible Electrical Outputs
- ASIC Compensation
- Wide Temperature Range
- Hash Media Compatible
- High Accuracy
- Low Overall Errors, 1%TEB
- All Welded Design
- Custom Outputs and Ranges Available

SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Performance Specifications						
Pressure Accuracy		-0.25		0.25	%FSS	2
Total Error Band	TEB	-1.0		1.0	%FSS	3
Long Term Stability			±0.4		%FSS	
Output DAC				12	bits	
Conversion Time			1.0		mS	4
Power On to Valid Data				<10	mS	5
Life		1kk			cycles	
Weight				120	grams	
Compensated Temperature		-20 to 85			˚C	6
Operating Temperature		-40 to 125			°C	

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SPECIFICATIONS	Symbol	Min	Typical	Max	Unit	Note
Absolute Maximum Conditions						
Supply Voltage		-16		35	V	
Storage Temperature		-50		150	˚C	
Burst Pressure				3x	Range	
Insulation Resistance		10			MΩ	500Vdc
Wetted Materials		316L, Epoxy, Silicon				

Reference Conditions: Vsupply: Table Below, Ta=25˚C.

1. All specification at reference conditions unless otherwise noted.
2. Maximum deviation from a Best Fit Straight Line through Pmin and Pmax measured at 25°C. Errors included Pressure Non Linearity, Pressure Hysteresis and Repeatability.
3. Maximum deviation from the Ideal Transfer Function expressed as a percentage of the %FSS over the compensated temperature range. Includes calibration errors (Offset & Span), temperature errors (Offset & Span), pressure non-linearity, pressure and thermal hysteresis.
4. The time for the output DAC to be updated with new data.
5. The time for the output DAC to have valid data after a power on reset.
6. Exceeding Absolute Maximum Specification may damage the device. Extended exposure beyond the operating conditions may affect device reliability.

	Current	Regulated				Ratiometric			
Electrical Output Type	4-20mA	0-5V	1-5V	1-6V	0-10V	.50-4.5 V 10-90% Vdd	.25-4.75V 5-95% Vdd	.30-3.00V 10-90% Vdd	.15-3.175V 5-95% Vdd
Supply Voltage (Vsupply)	24	15	15	15	15	5.0	5.0	3.3	3.3
Operating Voltage	10-28	10-28	10-28	10-28	15-30	2.7-5.5	2.7-5.5	2.7-5.5	2.7-5.5
Current Consumption	--	<10	<10	<10	<10	<5	<5	<5	mA
Span (FSS)	16.0	5.0	4.0	11.0	9.0	4.0	4.50	2.70	2.97
Output Load	-	5k	5k	5k	5k	5k	5k	5k	5k
Reverse/ Overvoltage Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

CONSTRUCTION	Material
Wetted	
Port	316L Stainless Steel
Die Adhesive	RTV/Epoxy
MEMS Sense Element	Glass, Silicon
External	
Housing Tube	303 Stainless Steel
Connector	PBT Glass Filled
Cable Jacket	TPE

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MECHANICAL DIMENSIONS in [mm]

M12x1
IEC 61076-2-101, Binder 09 0439 387 04
Protection Class (IEC 60529): IP67

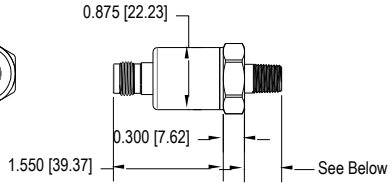
Mating M12x1 Connector
4 Position Femal,e Type D

Voltage
Regulated, Ratiometric

Pin 1: Supply +
Pin 4: Output+
Pin 3: Common

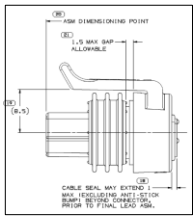
4-20mA
Transmitter

Pin 1: Supply+
Pin 4: Not Connected
Pin 3: Supply-



PACKARD CONNECTOR
Type A
Protection Class (IEC 60529): IP66

Mating Packard Connector
Housing Part Number: 12078090
Socket Part Number: 12103881

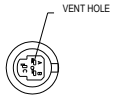


Voltage
Regulated, Ratiometric

Pin A: Supply +
Pin B: Common
Pin C: Output +

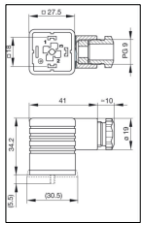
4-20mA
Transmitter

Pin A: Supply-
Pin B: Supply+
Pin C: Not Connected



HIRSCHMANN CONNECTOR
DIN 43650 FORM A, Part Number 933 376-100
Protection Class (IEC 60529): IP65

Mating Hirschmann Connector
Part Number: 931 969-100
Gasket (NBR) Part Number: 730 801-002
Knurled Screw Part Number: 732 574-001

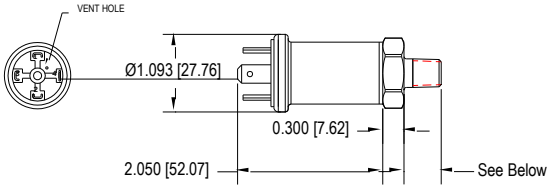


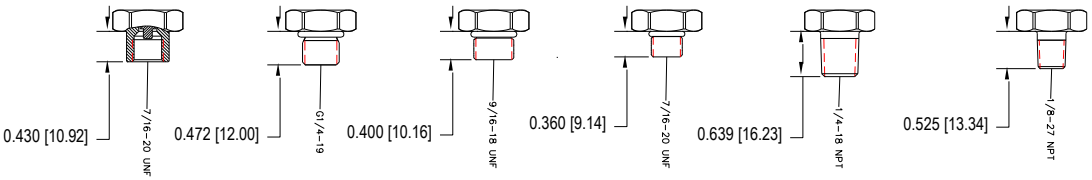
Voltage
Regulated, Ratiometric

Pin 1: Supply+
Pin 2: Common
Pin 3: Output+
Pin 4: Case

4-20mA
Transmitter

Pin 1: +Supply
Pin 2: -Supply
Pin 3: Not Connected
Pin 4: Case





7/16-20 UNF SAE J1926-3
Female
Seal: Conical
Mating Standard: SAE J514
Installation: 18 N m [12.3 ft lb]

G1/4-19 ISO 1179-3
Seal: O-Ring
Mating Standard: ISO 1179-1
Installation: 50 N m [38.9 ft lb]

9/16-18 UNF SAE J1926-3
Seal: O-Ring
Mating Standard: SAE J1926-1
Installation: 30 N m [22.1 ft lb]

7/16-20 UNF SAE J1926-3
Seal: O-Ring
Mating Standard: SAE J1926-1
Installation: 18 N m [12.3 ft lb]

1/4 -18 NPT ANSI B1.20.1
Seal: Pipe Threads
Mating Standard: ANSI B1.20.1
Installation: 2-3 Turns Past Finger Tight

1/8-27 NPT ANSI B1.20.1
Seal: Pipe Threads
Mating Standard: ANSI B1.20.1
Installation: 2-3 Turns Past Finger Tight

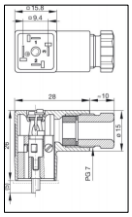
HIRSCHMANN CONNECTOR

DIN 43650 FORM C, Part Number 933 114-100

Protection Class (IEC 60529): IP65

Mating Hirschmann Connector

Part Number: 933 024-100
Gasket (NBR) Part Number: Supplied

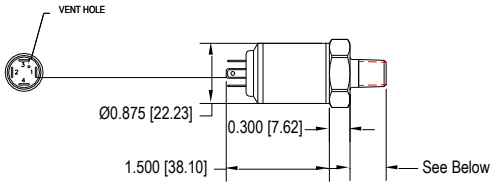


Voltage
Regulated, Ratiometric

Pin 1: Supply+
Pin 2: Common
Pin 3: Output+
Pin 4: Case

4-20mA
Transmitter

Pin 1: +Supply
Pin 2: -Supply
Pin 3: Not Connected
Pin 4: Case



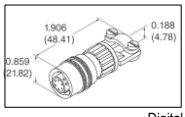
BENDIX CONNECTOR

MIL-C-26482, Part Number PT02A-10

Protection Class (IEC 60529): IP65

Mating Bendix Connector

Part Number: PT06A-10-6S



Digital
I2C / SPI

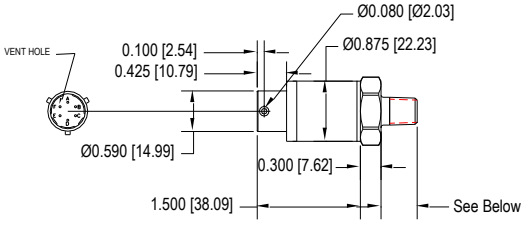
Pin A: Supply+
Pin B: SDA/MISO
Pin C: Supply-
Pin D: SCK/SCLK
Pin E: SS/INT
Pin F: Vent

Voltage
Regulated, Ratiometric

Pin A: Supply+
Pin B: Output+
Pin C: Common
Pin D: Common
Pin E: Not Connected
Pin F: Vent

4-20mA
Transmitter

Pin A, B: Supply+
Pin C, D: Supply-
Pin E: Not Connected
Pin F: Vent



FLYING LEADS

300 V Overall Foil Shield
Multiconductor, PVC, PVC

Protection Class (IEC 60529): IP65

Digital
I2C / SPI

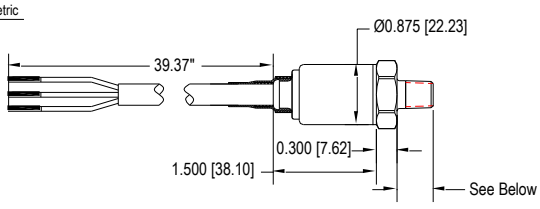
RED: Supply+
WHITE: SDA/MISO
BLACK: Supply-
BLUE: SCK/SCLK
GREEN: SS/INT

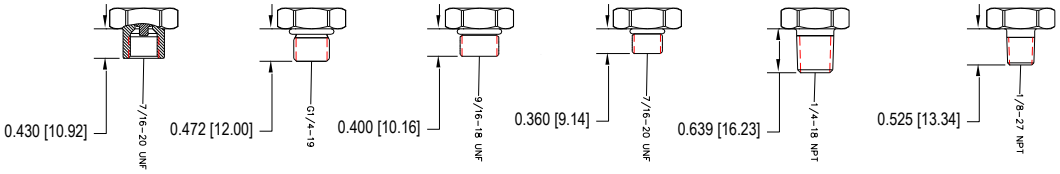
Voltage
Regulated, Ratiometric

RED: Supply+
GRN: Output+
WHT: No Connection
BLK: Common

4-20mA
Transmitter

RED: Supply+
BLK: Supply-





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Seal: Conical
Mating Standard: SAE J514
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G1/4-19 ISO 1179-3

Seal: O-Ring
Mating Standard: ISO 1179-1
Installation: 50 N m [38.9 ft lb]

9/16-18 UNF SAE J1926-3

Seal: O-Ring
Mating Standard: SAE J1926-1
Installation: 30 N m [22.1 ft lb]

7/16-20 UNF SAE J1926-3

Seal: O-Ring
Mating Standard: SAE J1926-1
Installation: 18 N m [12.3 ft lb]

1/4 -18 NPT ANSI B1.20.1

Seal: Pipe Threads
Mating Standard: ANSI B1.20.1
Installation: 2-3 Turns Past Finger Tight

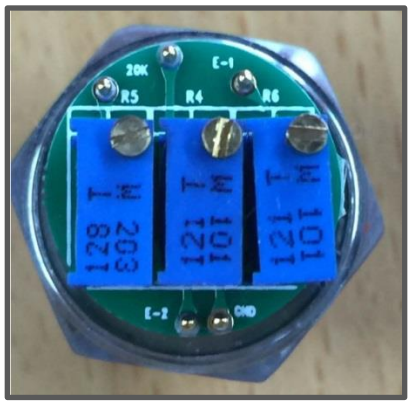
1/8-27 NPT ANSI B1.20.1

Seal: Pipe Threads
Mating Standard: ANSI B1.20.1
Installation: 2-3 Turns Past Finger Tight

Options

-ZSP Zero & Span Potentiometer

R5= Span Adjustment
R4= Zero Adjustment
R6= Factory (Do Not Adjust)



-MHC Mating Hirschman Connector

Product is shipped with GDM 3009 Mating Connector

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MCT-5A SERIES

PART NUMBERING FOR ORDERS

Series	Port Type	Pressure range	Pressure Units	Pressure Type (Range Availability) [Package Availability]	Output Type	Electrical Connection	Options
MCT-5A	N1 = 1/8 -27 NPT N2 = 1/4-18NPT S1 = 7/16-20UNF S2 = 9/16-18UNF G1 = G1/8 F1 =Female, 7/16-20UNF B1=1/8 BSP B2=1/4 BSP	0050 0100 0200 0300 0400 0500	L=millibar	G= Gage (All Ranges) [All Port Types] A=Absolute (0015,0030,0050,0100, 0150,0300,0500) [All Port Types]	1=0-5 Vdc 2=1-5 Vdc 3=1-6 Vdc 4=1-10 Vdc 5=4-20 mA 6=10-90%, 3.3 Vdc 7= 5-95%, 3.3 Vdc 8=10-90%, 5.0 Vdc 9= 5-95%, 5.0 Vdc	M1=Micro M12 P2=Packard, Power B HA=Hirschmann Form A HC=Hirschmann Form C B1=Bendix F1=Flying leads, 1 Meter Fx=Flying leads, x=#of Meter	-L Low Power Option -CL Output Clipping -ZSP Zero & Span Potentiometer (4-20mA only) -MHC Mating Hirschman Connector
		0002 0005 0010 0015 0030 0050 0100 0150 0300 0500	P=PSI				
		01.0 02.0 03.0 05.0 10.0 16.0 25.0 40.0	B=Bar				
		0.50 1.00 1.60 2.50 4.00	M=mPa				

Part Number Example: MCT-5A N150.0BG4F10 **1/8NPT, 0-50Bar , Gage, 1-10Vdc,10M Flying Leads Pmin=0, Pmax=50Bar**

WARRANTY

Pressure sensors have a limited one-year warranty to the original purchaser. AVSensors will repair or replace, at its option, without charge those items it finds defective. This is the buyer s sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall AVSensors be liable for consequential, special, or indirect damages. This warranty does not apply to units that have been modified, misused, neglected or installed where the application exceeds published ratings. Specifications may change without notice. The information supplied is believed to be accurate and reliable as of this printing, however, we assume no responsibility for its use.