

# KM70 Pressure Transmitter

**Liquid and Gas**  
With stainless diaphragm

## Overview

KM70 is a pressure transmitter using a "vapor deposition semiconductor strain gauge type sensor" which is widely used in various industrial applications. Since the pressure sensor is welded to the fitting, durability is excellent.

## Features

- Available over wide temperature ranges
- All-welded construction
- High EMI/RFI rating
- Applicable to a wide range of applications from low pressure to high pressure
- IP 65 Ingress rating



Available for lot production

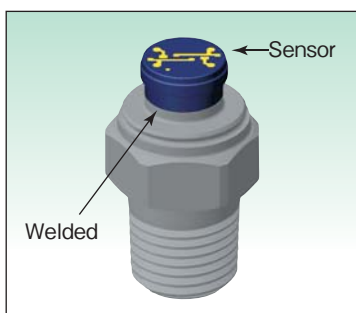
RoHS



(not applicable for high withstand voltage type)

## Features of sensor

Since the sensor is electron beam welded to stainless steel fitting, it can be used for a variety of applications in condition include oil, air, and water measurement. Excellent in shock and vibration resistance under condition where good proof pressure and durability are necessary.



Other KM series		
	KM31	KM17
External appearance		
Quantities	Small lot	Large lot
Total error band	±1.0%F.S. (-20 to 85°C)	±2.0%F.S. (-40 to 125°C)
Output	<ul style="list-style-type: none"> <li>• 0.5 to 4.5V DC Ratio metric</li> <li>• 0 to 5V DC</li> <li>• 1 to 5V DC</li> <li>• 1 to 6V DC</li> <li>• 1 to 10V DC</li> <li>• 4 to 20mA</li> </ul>	<ul style="list-style-type: none"> <li>• 0.5 to 4.5V DC Ratio metric</li> <li>• 0.5 to 4.5V DC</li> <li>• 0 to 5V DC</li> <li>• 1 to 5V DC</li> <li>• 4 to 20mA</li> </ul>
Waterproof property	IP65	IP67

# KM70

## Pressure Transmitter

### Specifications

	Pressure range*1 (MPa)	Accuracy*2	Scope of specifications		Allowable maximum pressure
			Direct connector type Lead type (Sealed pressure)	Shielded cable type (Gauge pressure)	
Measuring range	-0.1 to 0	Room temperature: ±2.0%F.S. (23±2°C)  Total Error Band: ±3.5%F.S.  within compensated temp. range	—	○	200% of pressure range
	-0.1 to 0.1		—	○	
	0 to 0.1		—	○	
	0 to 0.2		—	○	
	0 to 0.3		—	○	
	0 to 0.4		—	○	
	0 to 0.5	—	○		
	-0.1 to 1	Room temperature: ±1.0%F.S. (23±2°C)  Total Error Band: ±3.0%F.S.  within compensated temp. range (Atmospheric pressure: 1013 hPa)	○	○	
	-0.1 to 2		○	○	
	0 to 1		○	○	
	0 to 1.6		○	○	
	0 to 2		○	○	
	0 to 2.5		○	○	
	0 to 3.5		○	○	
	0 to 4		○	○	
	0 to 5		○	○	
	0 to 6		○	○	
	0 to 10		○	○	
	0 to 16		○	○	
	0 to 20		○	○	
0 to 25	○		○		
0 to 35	○	○			
0 to 40	○	○			
0 to 50	○	○	150% of pressure range		
Output signal	Output range	Supply voltage	Maximum supply voltage	Transmission method	
	0.5 to 4.5V DC Ratio metric	5.0±0.5V DC	16V DC max.	3 wire system	
	1 to 5V DC	10 to 30V DC	36V DC max.		
Environmental specifications	Withstand voltage	Standard: 150V AC (1 minutes between case and all terminals tied) Option: 500V AC (1 minutes between case and all terminals tied) * When no through capacitor (Pressure range: 1MPa and over)			
	Insulation resistance	Greater than 100MΩ (50V DC between case and all terminals tied)			
	Response time	1ms and under			
	Circuit protection	Reverse polarity protected. (Power supply +/—)			
		Pressure range 3.5 MPa and below		Pressure range 4 MPa and above	
	Compensated temp. range	-20 to 70°C		-30 to 120°C (Except cable type -30 to 105°C)	
	Operating temp. range	-20 to 70°C		-40 to 120°C (Except cable type -30 to 105°C)	
	Storage temp. range	-30 to 80°C		-40 to 140°C (Except cable type -40 to 120°C)	
	Shock resistance	Standard: 500m/s <sup>2</sup> (11ms or less, X, Y, Z 3 times for each at room temp.) Option: 1000m/s <sup>2</sup> (6ms or less, X, Y, Z 3 times for each at room temp.)			
	Vibration proof	Standard: 150m/s <sup>2</sup> (20 to 400Hz, X: 4h, Y: 2h, Z: 2h at room temp.) Option: 300m/s <sup>2</sup> (20 to 1000Hz, X: 4h, Y: 2h, Z: 2h at room temp.)			
Durability	More than 10,000,000 times. (10 to 100%F.S.)				
Protection rating	IP65 (Direct connector type must be mated to mating connector. Cable type and lead type excludes harness end, body only.)				
Material	Diaphragm	SUS630 (17-4PH) Welded to fitting			
	Fitting	SUS304*3			
	Case	SUS304			
Fittings	7/16-20UNF flared 37°, 7/16-20UNF flared 45°		Maximum working pressure 5MPa		
	R1/8, R1/4, R3/8, G1/4A*3, G3/8A, 1/8NPT, 1/4NPT, G1/4A DIN3852 Form A, G1/4A DIN3852 Form E, 3/8-24UNF-2A SAE J1926-2*3, 7/16-20UNF-2A SAE J1926-2*3, 9/16-18UNF-2A SAE J1926-2		Maximum working pressure 50MPa		
Electrical connections	Direct connector type	· HW090 · EJII (+) · METRI-PACK 150 · M12 (4 pin) · Deutsche DT04-3P			
	Lead type	Flying leads 0.3m (Standard) Econoseal J series (MARK II (+)) (Tyco Electronics Japan G.K.)			
	Shielded cable type	Shielded cable 1m (Standard) Econoseal J series (MARK II (+)) (Tyco Electronics Japan G.K.)			
Weight	Approx. 60g (Connector direct type, R1/4) Approx. 110g (Cable type, R1/4)				
CE marking	Applicable Directive: 2004/108/EC Applicable Standards: EN61326-2-3:2006 * Ensure wirings not to be influenced by excess voltage by lightning etc.				

\* 1 Units of psi and bar can also be manufactured. Note applications are limited to applications specified by Measurement Law. For more information, please contact us.

\* 2 Accuracy includes the effects of followings: ①Linearity ②Hysteresis ③Repeatability

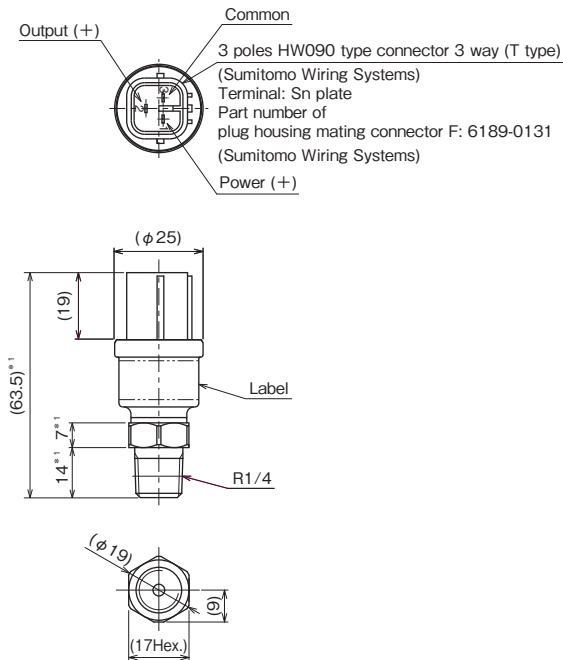
\* 3 G1/4A, 7/16-20UNF-2A SAE J1926-2 T threads are manufactured by SUS416 fitting with heat treatment for 10MPa range and above.

### Dimensions 1

Unit: mm

#### Direct connector type

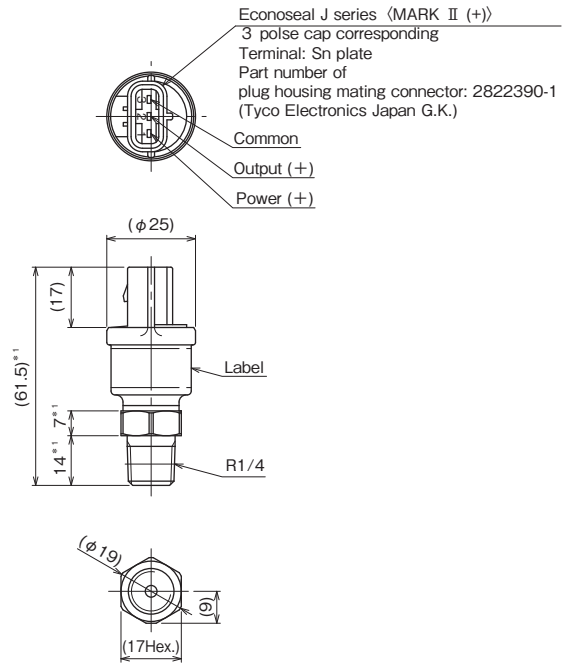
##### 3 poles HW090 type connector 3 way (T type) (Sumitomo Wiring Systems)



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other therads.

— KM70-17□ —

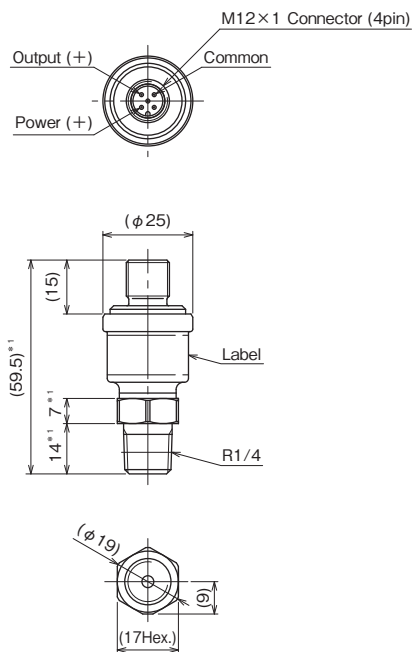
##### Econoseal J series (MARK II (+)) 3 pole cap corresponding



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other therads.

— KM70-57□ —

#### M12×1 Connector (4pin)



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other therads.

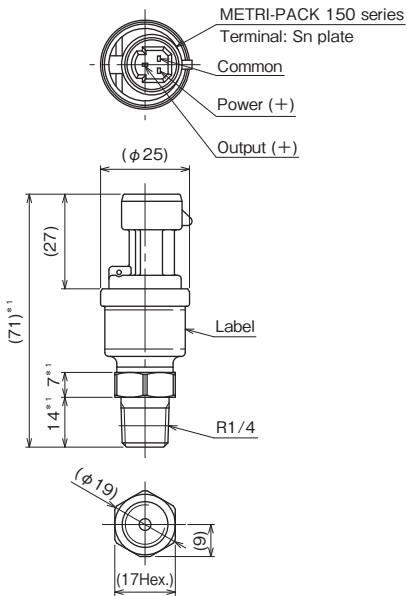
— KM70-M7□ —

### Dimensions 2

Unit: mm

#### Direct connector type

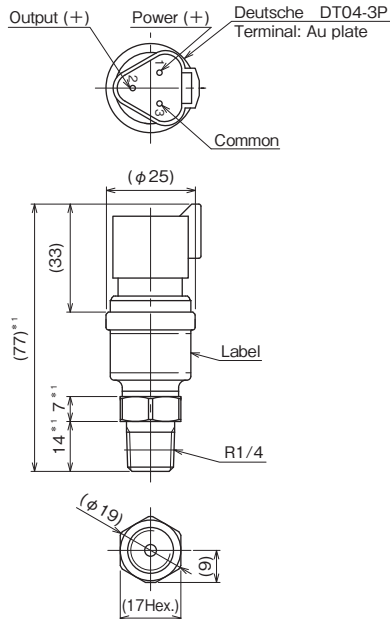
##### METRI-PACK 150 series



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other threads.

**KM70-87**

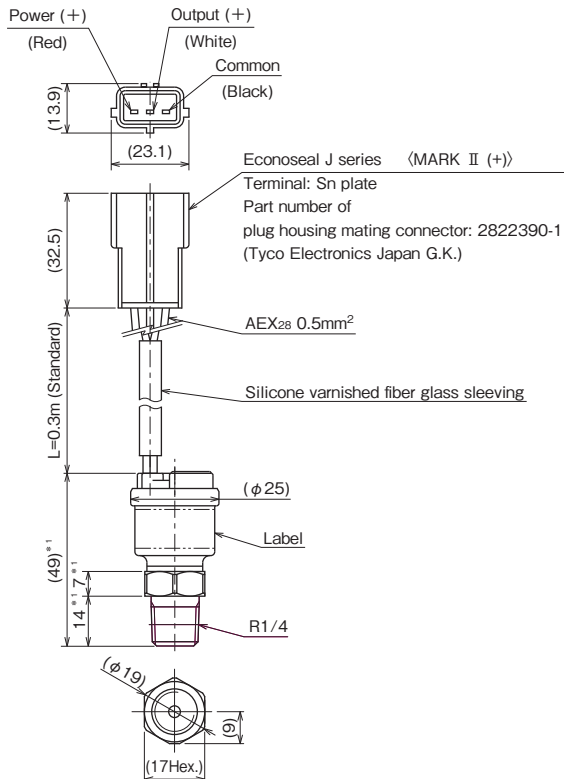
##### Deutsche DT04-3P



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other threads.

**KM70-47**

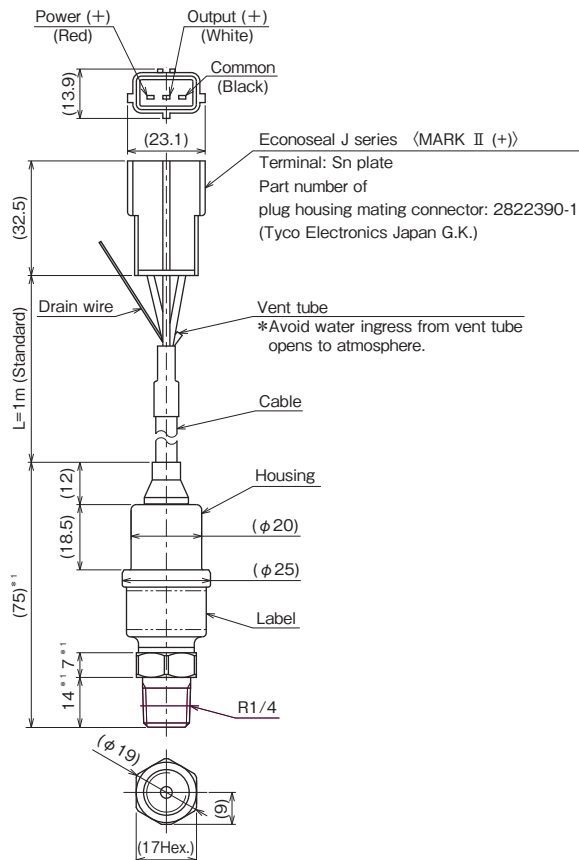
#### Lead type



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other threads.

**KM70-27**

#### Shielded cable type



\*1 Picture shown for 1/4.  
Refer to Dimensions 3 for other threads.

**KM70-37**

\* The drain wire in the cable is not connected to the transducer body.

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## Pressure Transmitter

### Dimensions 3

Unit: mm

Fitting						
KM70-□4□	KM70-□5□	KM70-□6□	KM70-□7□		KM70-□8□	
Maximum working pressure: 5MPa (50bar, 750psi)			Maximum working pressure: 50MPa (500bar, 7500psi)			

KM70-□B□	KM70-□C□	KM70-□J□	KM70-□K□			
*1 JIS B 2401 Class 1 B NBR		*2 JIS B 2401 Class 1 B NBR				
Maximum working pressure: 50MPa (500bar, 7500psi)						

KM70-□P□	KM70-□T□	KM70-□V□	KM70-□W□		
Maximum working pressure: 50MPa (500bar, 7500psi)					

KM70-□X□	
Maximum working pressure: 50MPa (500bar, 7500psi)	

Units of psi and bar can also be manufactured.  
Note applications are limited to applications specified by Measurement Law.

### Options

#### Protection from surge pressure: Throttle installed restricting orifice

Throttling effect is obtained by installing a restricting orifice into socket to be protected from surge pressure.

#### Improved vibration proof type

The sensor element section is covered with potting, and vibration proof is improved.

Shock proof: 1000m/s<sup>2</sup> (6ms and under, X, Y, Z 3 times for each at room temp.)

Vibration proof: 300m/s<sup>2</sup> (20 to 1000Hz, X: 4h, Y: 2h, Z: 2h at room temp.)

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## Pressure Transmitter

### Model number configuration

Please specify the model number, each specs and the range for ordering.

Model										X	X	X	X			
Pressure transmitter		①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Model number				Product specifications				Additional specifications (Optional)								
① Type	1	Direct connector type HW090	Sealed pressure type (Pressure range: 1MPa and above)													
	2	Lead type (0.3m Standard)	Sealed pressure type (Pressure range: 1MPa and above)													
	3	Shielded cable type (1m Standard)	Gauge pressure type													
	4	Direct connector type Deutsche DT04-3P	Sealed pressure type (Pressure range: 1MPa and above)													
	5	Direct connector type EJ II (+)	Sealed pressure type (Pressure range: 1MPa and above)													
	8	Direct connector type METRI-PACK 150	Sealed pressure type (Pressure range: 1MPa and above)													
M	Direct connector type M12×1 (4pin)	Sealed pressure type (Pressure range: 1MPa and above)														
② Fitting		Fitting standard	Maximum pressure range													
	4	7/16-20UNF flared37°	(Throttle option is not available)											5MPa		
	5	7/16-20UNF flared45°	(Throttle option is not available)											50MPa		
	6	R1/8	(Throttle option is not available)													
	7	R1/4														
	8	R3/8														
	B	G1/4A	*SUS416 fitting for ranges 10MPa and above													
	C	G3/8A														
	J	1/8NPT	(Throttle option is not available)													
	K	1/4NPT														
	P	G1/4A DIN3852 Form A														
	T	G1/4A DIN3852 Form E														
	V	3/8-24UNF-2A SAE J1926-2	(Throttle option is not available) *SUS416 fitting for ranges 10MPa and above													
W	7/16-20UNF-2A SAE J1926-2	(Throttle option is not available) *SUS416 fitting for ranges 10MPa and above														
X	9/16-18UNF-2A SAE J1926-2															
③ Specification	A	Standard (Withstand voltage type 500V AC for 1 minute)														
	B	High withstand voltage type (Without through capacitor) 500V AC for 1 minute (Pressure range: 1MPa and over)														
	C	Improved vibration proof type														

Please specify pressure range and unit of measure along with corresponding ordering code.

④ Pressure range	⑤ Accuracy at room temp. (23±2°C)	④	⑤	④ Pressure range (MPa)	⑥ Accuracy at room temp.	Scope of specifications	
		0	8	-0.1 to 0	±2.0%F.S.	Direct connector type, Lead type	Shielded cable type
		1	8	-0.1 to 0.1	±2.0%F.S.	—	○
		A	8	0 to 0.1	±2.0%F.S.	—	○
		B	8	0 to 0.2	±2.0%F.S.	—	○
		C	8	0 to 0.3	±2.0%F.S.	—	○
		D	8	0 to 0.4	±2.0%F.S.	—	○
		E	8	0 to 0.5	±2.0%F.S.	—	○
		6	7	-0.1 to 1	±1.0%F.S.	○	○
		7	7	-0.1 to 2	±1.0%F.S.	○	○
		G	7	0 to 1	±1.0%F.S.	○	○
		H	7	0 to 1.6	±1.0%F.S.	○	○
		J	7	0 to 2	±1.0%F.S.	○	○
		V	7	0 to 2.5	±1.0%F.S.	○	○
		K	7	0 to 3.5	±1.0%F.S.	○	○
W	7	0 to 4	±1.0%F.S.	○	○		
L	7	0 to 5	±1.0%F.S.	○	○		
M	7	0 to 6	±1.0%F.S.	○	○		
N	7	0 to 10	±1.0%F.S.	○	○		
X	7	0 to 16	±1.0%F.S.	○	○		
Q	7	0 to 20	±1.0%F.S.	○	○		
P	7	0 to 25	±1.0%F.S.	○	○		
R	7	0 to 35	±1.0%F.S.	○	○		
Y	7	0 to 40	±1.0%F.S.	○	○		
S	7	0 to 50	±1.0%F.S.	○	○		

⑥ Supply voltage ⑦ Output signal	⑥	⑦	⑥ Supply voltage	⑦ Output signal (3 wire)
	D	Y	5.0±0.5V DC	0.5~4.5V DC Ratio metric
	M	8	10~30V DC	1~5V DC

⑧ Leads / Cable length	0	Direct connector type/Lead type Leads 0.3m (Standard) Shielded cable type cable 1m (Standard)
	9	Lead type Specify leads length. Shielded cable type Specify cable length.

⑨ Protection from surge pressure (Throttle)	0	Not required
	F	S45C
	G	SUSXM7 (Water application)

⑩ Treatment	0	Not required
	A	Use no oil
	B	Use no water
	4	Use no oil & water

⑮ Documents	0	Not required
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Calibration test report (One-part one sheet)

\* Cable lengths attached to lead type are available in 0.3 to 1m. Order by 0.1m.

\* Cable lengths attached to shielded cable type are available in 1 to 5m. Order by 0.5m.

#### Treatment against wetted parts

■ Use no oil

Oil used in manufacturing the gauges had been flushed out & no oil residue remained inside its wetted parts.

■ Use no water

Water used in manufacturing the gauges had been flushed out & no water residue remained inside its wetted parts.

■ Use no oil & water

Oil/Water used in manufacturing the gauges had been flushed out & no oil/water residue remained inside its wetted parts.

\* Specify code "X" to refer N/A