The selection is detailed on page 11

LW-PAC

Universal Pressure Transmitter

Working principle

The waiting medium pressure is transmitted through the standard process connector and then affects the internal pressure sensor element. Internal electronics convert raw transmitter signals into filtered, amplified, temperature compensated and standardized signals such as 4... 20mA signal, etc. The output signal is transmitted to the next unit for signal processing via standardized connectors or cables.

Product description

Suitable for general industrial applications, it is not only compact, but also excellent quality and cost-effective. This type of transmitter is available in 1.0% and 0.5% nonlinear versions, and users can choose the appropriate version according to the specific application.

In addition, the product is shipped with the test data of the measurement point. cULus and EAC international certified for use around the world.

We can provide you with different pressure units and process connections in a short time to meet the requirements of your specific operational application.

Product application

Machine building

shipbuilding

Measurement and control technology

Hydraulic and pneumatic technology

Pumps and compressors

Functional characteristics

Measuring range: 0... 0.005 to 0... 100 MPa

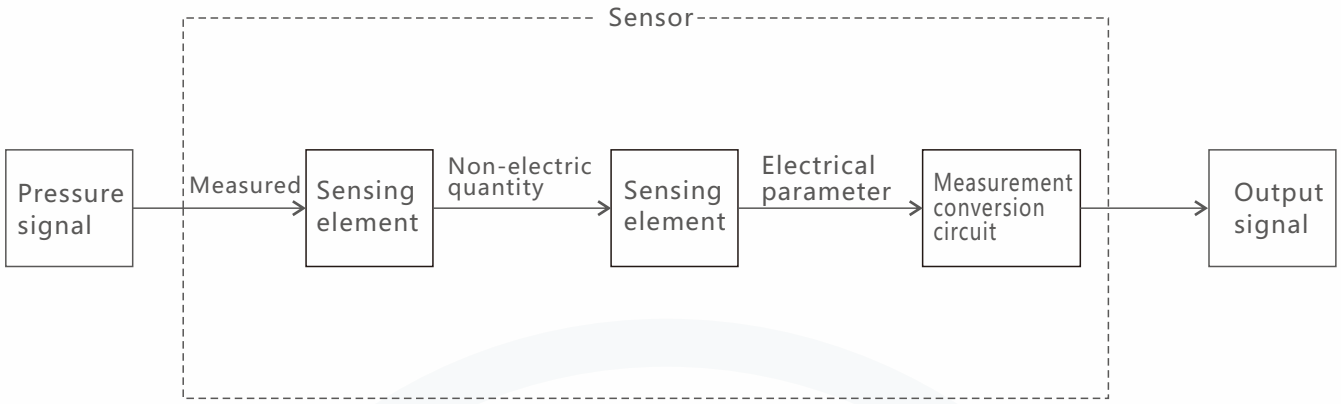
Accuracy: 1.0 %BFSL or 0.5 %BFSL

Output: 4... 20mA/DC0... 10V/DC0... 5V and others

Electrical connections: Hersman connectors type A and C, M12*1 round aviation connectors, 2 m long cable straight out

Process connectors: G ¼ A DIN 3852-E, ¼ NPT, etc

Working principle diagram



Technical parameter

Range range	See range table
Precision class	1.0%
	0.5%
Pressure limit	Not more than 1000bar
Allowable temperature	
▪ Medium temperature	-25...125℃
▪ Ambient temperature	-25...85℃
▪ Storage temperature	-40...85℃
Process connection	G1/4B
Output signal	4-20mA [Two-wire system]
Diaphragm seal ring	FPM/FKM
Material	
▪ Shell	304SS
▪ Pressure connection	304SS
Power supply	DC 8...32V [Two-wire system]
Current input	4...20mA < 25mA
Electronic protection	Short-circuit prevention
Degree of protection of electronic connections	Connectors and junction boxes comply with ISO 4400 (DIN 43650-A), IP65
Load	Rmax=[(U_B-$U_B$min) /0.02A]Ω[Two-wire system]
Dynamic response characteristic	
▪ Two-wire system	≤10ms
▪ Three-wire system	≤3ms
Temperature effect	When the temperature of the measuring system fluctuates around the reference temperature (+20 ° C), the maximum change is ± 0.5% /10K of the range

Measuring range

Manometer pressure		
MPa	0...0.005	0...1[1)]
	0...0.01	0...1.6[1)]
	0...0.016	0...2.5[1)]
	0...0.025	0...4
	0...0.04	0...6
	0...0.06	0...10
	0...0.1	0...16
	0...0.16	0...25
	0...0.25	0...40
	0...0.4	0...60
	0...0.6	0...100
psi	0...1	0...300[1)]
	0...5	0...500
	0...15	0...1,000
	0...25	0...1,500
	0...30	0...2,000
	0...50	0...3,000
	0...100	0...5,000
	0...160[1)]	0...10,000
	0...200[1)]	0...15,000
inWC	0...20	0...120
	0...40	0...150
	0...60	0...200
	0...80	0...250
	0...100	0...400
Absolute pressure		
MPa	0...0.01	0...0.25
	0...0.016	0...0.4
	0...0.025	0...0.6
	0...0.04	0...1
	0...0.06	0...1.6
	0...0.1	0...2.5
	0...0.16	-
psi	0...5	0...100
	0...15	0...150
	0...25	0...200
	0...30	0...300
	0...50	-

1) If the measuring medium is water, a higher upper pressure limit is recommended.

Measuring range

Absolute pressure		
inWC	0...40	0...150
	0...60	0...200
	0...80	0...250
	0...100	0...400
	0...120	-
Vacuum and +/- measuring range		
MPa	-0.0025...+0.0025	-0.03...+0.03
	-0.005... 0	-0.04...0
	-0.005...+0.005	-0.05...+0.05
	-0.005...+0.015	-0.06...0
	-0.005...+0.02	-0.1...0
	-0.005...+0.025	-0.1...+0.06
	-0.01...0	-0.1...+0.15
	-0.01...+0.01	-0.1...+0.3
	-0.015...+0.015	-0.1...+0.5
	-0.016...0	-0.1...+0.9[1)]
	-0.02...+0.02	-0.1...+1.5[1)]
	-0.025...0	-0.1...+2.4[1)]
Vacuum and +/- measuring range		
MPa	-0.0025...+0.0025	-0.03...+0.03
	-0.005... 0	-0.04...0
	-0.005...+0.005	-0.05...+0.05
	-0.005...+0.015	-0.06...0
	-0.005...+0.02	-0.1...0
	-0.005...+0.025	-0.1...+0.06
	-0.01...0	-0.1...+0.15
	-0.01...+0.01	-0.1...+0.3
	-0.015...+0.015	-0.1...+0.5
	-0.016...0	-0.1...+0.9[1)]
	-0.02...+0.02	-0.1...+1.5[1)]
	-0.025...0	-0.1...+2.4[1)]
psi	-1...0	-30 inHg...+100
	-30 inHg...0	-30 inHg...+160[1)]
	-30 inHg...+15	-30 inHg...+200[1)]
	-30 inHg...+30	-30 inHg...+300[1)]
	-30 inHg...+60	-

1) If the measuring medium is water, a higher upper pressure limit is recommended.

Measuring range

Vacuum and +/- measuring range		
inWC	-10...+10	-80...0
	-20...0	-100...0
	-20...+20	-100...+100
	-40...0	-120...0
	-40...+40	-125...+125
	-50...+50	-150...0
	-60...0	-200...+200
	-75...+75	-250...0

Process connection

Standard	Thread specification	Maximum measuring range	Upper endurance voltage limit	Sealing element
EN 837	G1/8B	40 MPa [5,800 psi]	57.2 MPa [8,290 psi]	copper
	G1/4B	100 MPa [15,000 psi]	148 MPa [21,400 psi]	copper
				Stainless steel
	G1/4 Internal thread	100 MPa [15,000 psi]	148 MPa [21,400 psi]	There is no
	G3/8B	100 MPa [15,000 psi]	148 MPa [21,400 psi]	copper
				Stainless steel
	G1/2B	100 MPa [15,000 psi	148 MPa [21,400 psi]	copper
				Stainless steel
DIN EN ISO 1179-2	G1/4A	60 MPa [8,700 psi]	85.8 MPa [12,440 psi]	NBR
				EPDM
		100 MPa [15,000 psi]	148 MPa [21,400 psi]	FPM/FKM
	G1/2A	60 MPa [8,700 psi]	85.8 MPa [12,440 psi]	NBR
				FPM/FKM
DIN EN ISO 9974-2	M14 x 1.5	60 MPa [8,700 psi]	85.8 MPa [12,440 psi]	NBR
				FPM/FKM
				EPDM
ANSI/ASME B1.20.1	1/8NPT	40 MPa [5,800 psi]	57.2 MPa [8,290 psi]	-
	1/4NPT	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
	1/4NPT Internal thread	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
	1/2NPT	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
DIN 16288	M20 x 1.5	100 MPa [15,000 psi]	148 MPa [21,400 psi]	copper
				Stainless steel-
ISO 7	R1/4	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
	R3/8	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
	R1/2	100 MPa [15,000 psi]	148 MPa [21,400 psi]	

Process connection

Standard	Thread specification	Maximum measuring range	Upper endurance voltage limit	Sealing element
KS	PT1/4	100 MPa [15,000 psi]	148 MPa [21,400 psi]	-
	PT1/2	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
	PT3/8	100 MPa [15,000 psi]	148 MPa [21,400 psi]	
SAE J514 E	7/16-20 UNF O-shape BOSS	60 MPa [8,700 psi]	85.8 MPa [12,440 psi]	FPM/FKM
-	Flanged joint	10 MPa [1,450 psi]	14.3 MPa [2,070 psi]	There is no

More about: Process Connection	
Maximum measuring range	See table above
Upper endurance voltage limit	See table above
Sealing element	See table above
Pressure connection diameter	3.5mm (for all process connections)
	0.6mm (compatible with all external threads)
	0.3mm (compatible with all external threads)
	6 mm (compatible with G1/4A and 1/4NPT)
	T-limiter available (for G1/4B, G3/8B, G1/2B and M20 x 1.5 process connections)
Restrictive	Depending on the selection of process connection seals, there may be limits to the allowable temperature range
▪ NBR	-30…+100°C [-22…+212°F]
▪ FPM/FKM	-20…+100°C [-4…+212°F]
▪ EPDM	-40…+100°C [-40…+212°F]
▪ Copper	-40…+100°C [-40…+212°F]
▪ Stainless steel	-40…+100°C [-40…+212°F]

Output signal

Signal type		
▪ Current (2-wire system)	4…20 mA	
▪ Voltage (3-wire system)	DC 0…10 V	
	DC 0…5 V	
	DC 1…5 V	
	DC 0.5…4.5 V	
▪ Proportional voltage (3-wire system)	DC 0.5…4.5 V	
load Ω		
▪ Current (2-wire system)	≤ (Supply voltage -8 V) / 0.02 A	
▪ Voltage (3-wire system)	> Maximum output signal / 1 mA	
▪ Proportional voltage (3-wire system)	> 10k	
Supply voltage		
▪ Supply voltage	Output signal 4…20 mA	DC 8 … 30 V
		DC 8 … 35 V[1)2)]

Output signal

Supply voltage		
▪ Supply voltage	Output signal DC 0...5 V[1)3)]	DC 8 ... 30 V
		DC 8 ... 35 V
	Output signal DC 1...5 V	DC 8 ... 30 V
		DC 8 ... 35 V
	Output signal DC 0.5...4.5 V	DC 8 ... 30 V
		DC 8 ... 35 V
	Output signal DC 0...10 V	DC 14 ... 30 V
		DC 14 ... 35 V
	Output signal DC 0.5...4.5 V, Proportional voltage	DC 5 V ±10 %
▪ Supply current	Current (2-wire system)	Signal current, Max. 25 mA
	Voltage (3-wire system)	8 mA
	Proportional voltage (3-wire system)	8 mA
Dynamic performance		
▪ Stable time, in line with IEC 61298-2 standards	Measuring range≥0.04 MPa [≥ 5.8 psi]	< 1 ms
	Measuring range<0.04 MPa [< 5.8 psi]	< 1 min
▪ Turn-on time	Measuring range≥0.04 MPa [≥ 5.8 psi]	< 15 ms
	Measuring range<0.04 MPa [< 5.8 psi]	< 1 min

1) Not applicable to products with a nonlinear error of 0.25% BFSL.
2) Only for products with operating temperature ≤80℃ [176℉].
3) Not applicable to products with measuring range ≤ 0.01MPa [≤ 1.45psi] (or equivalent pressure).

Electrical connection

Connection type	IP level	Traverse area	Cable diameter	Cable material
DIN 175301-803 A Hersman joint				
▪ With fitting, PG9 (standard)	IP65	Max. 1.5 mm²	6 ... 8 mm	-
▪ With fitting fitting, PG11	IP65	Max. 1.5 mm²	8 ... 10 mm	-
▪ With fit fitting, PG13.5	IP65	Max. 1.5 mm²	10 ... 14 mm	-
▪ Cable with mold	IP65	3 x 0.75 mm²	6 mm	PUR
DIN 175301-803 C Hersman joint				
▪ Tape fitting joint	IP65	Max. 0.75 mm²	4.5 ... 6 mm	-
▪ Cable with mold	IP65	4 x 0.5 mm²	6.2 mm	PUR
M12 x 1 (4 pin) round aviation joint				
▪ Unfit joint	IP67	-	-	-
▪ Straight joint and integrated package with cable	IP67	3 x 0.34 mm²	4.3 mm	PUR
▪ Angular joint and integrated package with cable	IP67	3 x 0.34 mm²	4.3 mm	PUR
The cable runs straight out				
▪ Unshielded line	IP67	3 x 0.34 mm²	4 mm	PUR
▪ OEM version, unshielded cable	IP67	3 x 0.14 mm²	2.85 mm	TPU

Pin assignment

All cable-encapsulated connectors are assigned the same color as non-screen cable straight-out electrical connections.

DIN 175301-803 A Hersman joint			
		2wire system	3wire system
	U_B	1	1
	0V	2	2
	S+	-	3

The cable is straight out, not shielded			
		2wire system	3wire system
	U_B	brown	brown
	0V	blue-	blue
	S+		black

DIN 175301-803 C Hersman joint			
		2wire system	3wire system
	U_B	1	1
	0V	2	2
	S+	-	3

Cable straight out, OEM version, unshielded cable			
		2wire system	3wire system
	U_B	brown	brown
	0V	blue-	blue
	S+		black

M12 x 1 (4 pin) round aviation joint			
		2wire system	3wire system
	U_B	1	1
	0V	2	2
	S+	-	3

Emote	
U_B	Power supply positive
0V	Negative terminal
S+	Analog output

Material

Material (liquid)	
▪ <1 MPa [150 psi]	316L stainless steel
▪ ≥1 MPa [150 psi]	Stainless steel and PH grade steel
▪ ≤2.5 MPa Absolute pressure [400 psi]	316L stainless steel
Material (contact environment)	316L stainless steel
	HNBR
	PA and PBT
Pressure transfer medium	
▪ <1 MPa [150 psi]	Synthetic oil
▪ ≥1 MPa [150 psi]	Dry measuring unit
▪ ≤2.5 MPa Absolute pressure [400 psi]	Synthetic oil

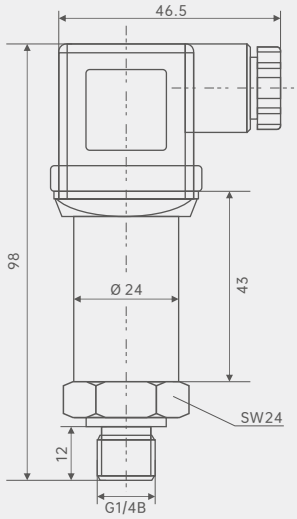
Working condition

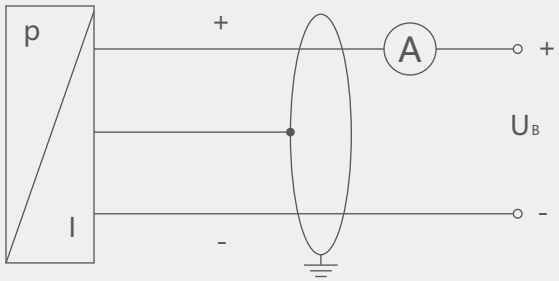
Working condition			
Allowable temperature range	Depending on the selected medium temperature range, the parameters are shown below		
	Standard configuration	Band voltage signal	Carry current signal
Medium temperature range	0 ... 80°C [32 ... 176°F]	-30 ... +100°C [-22 ... +212°F]	-40 ... +100°C [-40 ... +212°F]
Ambient temperature range	0 ... 80°C [32 ... 176°F]	-30 ... +100°C [-22 ... +212°F]	-40 ... +100°C [-40 ... +212°F]
Storage temperature range	-40 ... +70°C [-40 ... +158°F]	-40 ... +70°C [-40 ... +158°F]	-40 ... +70°C [-40 ... +158°F]

Working condition

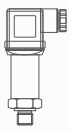
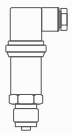
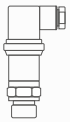
More about: Working conditions	
Vibration resistance, in line with IEC 60068-2-6 standards	10 g
	20 g (≥-30℃ [-22℉]) Available on request
Impact resistance, according to IEC 60068-2-27 standard	≥-30℃ [-22℉] (500g)
	<-30℃ [-22℉] (100g)
Protection level (IP level) in accordance with IEC 60529 standards	→See "Electrical Connections"
Service life	
▪ Measuring range≥60 MPa [≥8,700 psi]	10 million load cycles
▪ Measuring range>0.01 MPa [>1.45 psi]	10,000 million load cycles
▪ Measuring range≤0.01 MPa [≤1.45 psi]	10 million load cycles

Size mm





Wiring diagram

Product shape			
precision	1% FSO	0.5% FSO (-1/0bar 1% FSO)	0.5% FSO
Sealing element	Fluororubber/copper	Fluororubber/copper	Fluororubber/copper
Connection specification	G1/4B (DIN 3852)	G1/4B (EN 837)	G1/2 (DIN 3852)
Power source	DC 8...32V	DC 8...32V	DC 8...32V
exportation	4-20mA	4-20mA	4-20mA
Wire system	Two-wire system	Two-wire system	Two-wire system

Range table

Negative pressure	Code	MPa	Code	Bar	Code	kPa	Code	kg/cm²	Code	Psi/-inHg
	MV001	-0.1/0	BV001	-1/0	KV001	-100/0	GV001	-1/0	RV030	-30"/0 Hg
Positive and negative pressure	code	MPa	code	Bar	code	kPa	code	kg/cm²	code	Psi/-inHg
	MC006	-0.1/0.06	BC006	-1/0.6	KC006	-100/60	GC006	-1/0.6	PC015	-30"/0/15
	MC015	-0.1/0.15	BC015	-1/1.5	KC015	-100/150	GC015	-1/1.5	PC030	-30"/0/30
	MC030	-0.1/0.3	BC030	-1/3	KC030	-100/300	GC030	-1/3	PC060	-30"/0/60
	MC050	-0.1/0.5	BC050	-1/5	KC050	-100/500	GC050	-1/5	PC100	-30"/0/100
	MC090	-0.1/0.9	BC090	-1/9	KC090	-100/900	GC090	-1/9	PC160	-30"/0/160
	MC150	-0.1/1.5	BC150	-1/15	KC150	-100/1500	GC150	-1/15	PC200	-30"/0/200
	MC240	-0.1/2.4	BC240	-1/24	KC240	-100/2400	GC240	-1/24	PC300	-30"/0/300
Positive pressure	code	MPa	code	Bar	code	kPa	code	kg/cm²	code	Psi
	MP001	0/0.1	BP001	0/1	KP001	0/100	GP001	0/1	PP1E5	0/15
	MP1E6	0/0.16	BP1E6	0/1.6	KP1E6	0/160	GP1E6	0/1.6	PP003	0/30
	MP2E5	0/0.25	BP2E5	0/2.5	KP2E5	0/250	GP2E5	0/2.5	PP006	0/60
	MP004	0/0.4	BP004	0/4	KP004	0/400	GP004	0/4	PP010	0/100
	MP006	0/0.6	BP006	0/6	KP006	0/600	GP006	0/6	PP016	0/160
	MP010	0/1	BP010	0/10	KP010	0/1000	GP010	0/10	PP020	0/200
	MP016	0/1.6	BP016	0/16	KP016	0/1600	GP016	0/16	PP030	0/300
	MP025	0/2.5	BP025	0/25	KP025	0/2500	GP025	0/25	PP040	0/400
	MP040	0/4	BP040	0/40	KP040	0/4000	GP040	0/40	PP060	0/600
	MP060	0/6	BP060	0/60	KP060	0/6000	GP060	0/60	PP100	0/1000
	MP100	0/10	BP100	0/100	KP100	0/10000	GP100	0/100	PP150	0/1500
	MP160	0/16	BP160	0/160	KP160	0/16000	GP160	0/160	PP200	0/2000
	MP250	0/25	BP250	0/250	KP250	0/25000	GP250	0/250	PP300	0/3000
	MP400	0/40	BP400	0/400	KP400	0/40000	GP400	0/400	PP400	0/4000
	MP600	0/60	BP600	0/600	KP600	0/60000	GP600	0/600	PP600	0/6000
	MP1000	0/100	BP1000	0/1000	KP1000	0/100000	GP1000	0/1000	PP1000	0/10000

LW-PAC-Selection composition

Selection example **LW-PAC** MP001 / A / B / E / G / S / U / Y (1 2 3 4 5 6 7 8)

1.Measuring range	R( )	See range table (page 10)	
2.Output signal	A	4-20mA	
3.Power supply	B	DC 8-32V	
4.Temperature range	E	0...80℃	
	F	-30...100℃	
5.Precision class	G	0.5%	
	H	1.0%	
6.Process connection	N	1/2NPT	
	O	1/4NPT	
	P	M14*1.5	
	Q	M20*1.5	
	R	M27*2	
	S	G1/2B	
	Z	G1/4B	
	T( )	Other connection specifications	
7.Seal material	U	fluororubber	
	V	Red copper	
	T( )	Other materials	
8.Electrical connection	X	M12*1 (Circular aviation joint)	
	Y	Hersman joint	
	Z	Head outlet (2-5m)	

Instructions:

LW-PAC general purpose pressure transmitter, measuring range: 0~0.1MPa, output signal 4-20mA, 24V power supply, temperature range is 0... 80℃, accuracy class 0.5%, process connection G1/2B, sealing material is fluoro rubber, electrical connection is Hersman joint.

Product certification

Compliance and approval; Ludwig pressure gauges meet key standards and certifications for process measurement technology; Thus guaranteeing the highest reliability in such Settings;

Ludwig China Representative Office
Ludwig Automation Instrument (Guangzhou) Co., Ltd | Ludwig International Trade (Shanghai) Co., Ltd
LUDWIG More product information is available www.ludwig-schneider.com.cn
✆ 400-860-9760 ✉ lw@ludwig-schneider.com.cn
LUDWIG INSTRUMENT