

PT5 Pressure Transmitters

Technical Data

The **PT5 Pressure Transmitters** convert a pressure into a linear electrical output signal. At the heart of the transmitter there is a piezo resistive chip enclosed in an oil capsule

With even greater enhancement to the performance characteristics and a new easy to install pre-fabricated M12 cable assembly; the PT5 is the designer's choice when selecting transmitters for refrigeration and air conditioning applications.

Features

- Sensitive pressure cells with strong primary output signals for the precise operation of superheat, compressor or fan controls systems
- Fully hermetic
- Output signal 4 to 20 mA
- Reduced Full Scale Error characteristics over the complete temperature range
- Calibrated for specific pressure and temperature ranges to fulfill application demands in air conditioning and refrigeration systems.
- Easy install M12 electrical connection with pre-assembled cable assemblies available in various lengths
- Vibration, shock and pulsation resistant
- Protection class IP 65 with plug
- Pressure connector 7/16-20 UNF with Schrader valve opener
- Standard pressure ranges compatible with former PT3 and PT4 Emerson pressure transmitters
- CE-mark under EC EMC-Directive
- UL listed. File Nr. E258370



PT5-xxM



PT4-Mxx
Cable Assembly

Options

- Other pressure ranges and calibrations upon request

Cross Reference

PT5 series offers a one for one replacement for Emerson transmitter series PT3 & PT4 series.

PT3 SERIES (6.5 FT. FIXED CABLE)	PT4 SERIES (CABLE AND PLUG ASSEMBLY)		PT5 SERIES (CABLE AND PLUG ASSEMBLY)
PT3-07A	PT4-07S and PT4-L30	PT4-07M and PT4-M60	PT5-07M and PT4-M60
PT3-18A	PT4-18S and PT4-L30	PT4-18M and PT4-M60	PT5-18M and PT4-M60
PT3-30A	PT4-30S and PT4-L30	PT4-30M and PT4-M60	PT5-30M and PT4-M60
n/a	n/a	PT4-50M and PT4-M60	PT5-50M and PT4-M60

Selection Chart: Pressure Transmitters

TYPE	EMERSON PCN	PART NO.	PRESSURE RANGE FOR SIGNAL OUTPUT (PSI*)	OUTPUT SIGNAL	FLUID TEMPERATURE RANGE	MAX. WORK. PRESSURE (PSI)	TEST PRESSURE (PSI)	BURST PRESSURE (PSI)	PRESSURE CONNECTION
PT5-07M	097748	802 350	-12 to 102	4 to 20 mA	-58 to + 275°F	391	435	2176	7/16" – 20 UNF (with Schrader valve opener)
PT5-18M	097749	802 351	0 to 261			797	913	3626	
PT5-30M	097753	802 352	0 to 435			870	1450	5802	
PT5-50M	097692	802 353	0 to 725			1450	2176	5802	

* Gauge/relative pressure

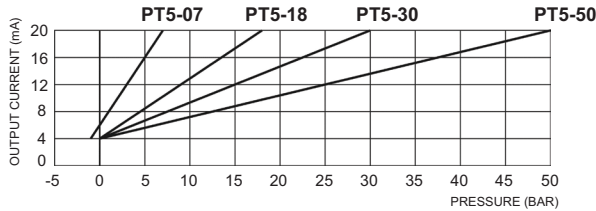
Selection Chart: Plug/Cable Assemblies

TYPE	EMERSON PCN	PART NO.	LENGTH	WEIGHT (OUNCES/PCS)	TEMPERATURE RANGE
PT4-M30	097781	804 804	3.0 m	2.8	-58 to +176°C static application; -13 to +176 mobile application
PT4-M60	097717	804 805	6.0 m	5.2	-58 to +176°C static application; -13 to +176 mobile application

Note: Longer length of the electrical connection cable beyond 6.0m must be verified by user in terms of output signal, as well as EMC within installed system.

Introduction

The Emerson pressure transmitters PT5 are designed for pressure sensing and to generate a linear electrical output signal. The products are specifically aimed at applications in refrigeration and air conditioning systems. Various pressure ranges are available to match the operating pressures commonly encountered in HVACR systems. The PT5 meet the requirements of the European EMC directive and are labelled with the CE-mark according to 2004/108/EEC, EN 61326.



Description

At the heart of the transmitter is a thin film pressure sensitive stainless steel diaphragm on which the strain gauges are directly bonded. The direct integration of the strain gauges means no additional errors are introduced between the location where the pressure acts and where it is measured; creating an inherently strong design with minimal hysteresis. The integrated electronic module conditions the output of the pressure cell to produce a temperature compensated signal of 4...20 mA.

The fully welded monolithic construction creates a fully hermetic product which ensures reliable operation and a long life-time expectation even under severe operating conditions. With the high operating and burst pressures, the PT5 can be applied to all requirements of today's HVAC systems but is particularly suitable for refrigeration applications.

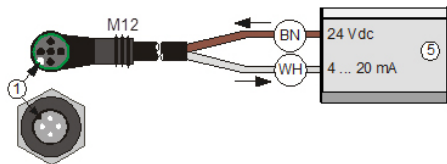
The protective stainless steel diaphragm ensures compatibility with the media frequently encountered in refrigeration systems while the stainless steel housing provides excellent corrosion resistance. The electrical circuit is sealed to the housing which together with the pre-fabricated cable assemblies provide an IP65 solution for the harshest environment.

PT5 transmitters produce a relative output signal after being calibrated at atmospheric pressure and then sealed during production. When using PT5 in heights significantly above sea level the output signal deviation must be taken into account; i.e. at a height of 1000m, the signal reads approximately 0.1 bar lower than the actual pressure.

Pressure transmitters PT5 with current output (two wire connection) offer the following advantages:

- More suitable for signal transmission over long distance
- Higher immunity to electro-magnetic interference
- Open circuit detection enables fail-safe operation

Mechanical Connection



The PT4-Mxx cable assembly can only be fitted onto the PT5 Pressure Transmitters one way. Locate the corresponding lug shown as (1) opposite.

BN = brown, WH = white

(5) = Electronic Controller e.g. EC2 & EC3 Series

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Technical Data

Supply voltage
Nominal 24 Vdc
Range (polarity protected) 8 to 30 Vdc
Permissible noise & ripple < 1 Vp-p
Influence of supply voltage < 0.02 %FS/V
Operating current 4 to 20 mA output
Maximum ≤ 24 mA

Load resistance $RL = \frac{U_b - 7.0V}{0.02A}$

Mounting position Non position sensitive

Response time ≤ 5 ms

Temperatures

Operating ambient housing -40.....+176°F

Medium -58.....+275°F

Transport and storage -40.....+185°F

Sensor lifetime 30.000.000 cycles

With 1.3 nominal pressure

Burst pressure refer to Table on page 1

Electrical connection M12 connection to EN61076-2-101 part 2
all versions Transmitters
Pre-fabricated with various cable lengths

PT4-Mxx Cable Assemblies

Approvals 97/23/EC

CE conformity PED 2004/108/EEC, EN 61326

CE marking according to EMC Emission (Group 1; Class B) and immunity
(industrial locations)

Medium compatibility HFC, HCFC, CFC

Not suitable for ammonia and inflammable refrigerants!

Vibration at 10 to 2000Hz 5 g according to IEC 68-2-6

Protection class IP65 with plug

Materials

Housing, pressure connector and Stainless steel

diaphragm with medium contact 1.4434 / 1.4571

Weight approx. 1.31 ounces

(without plug and cable assembly)

Marking CE, UL, cRUus
(UL File Nr. E258370)

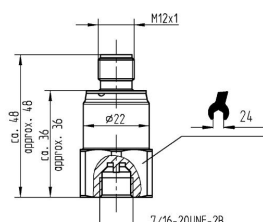
Accuracy Performance

TYPE	TOTAL ERROR ¹	TEMPERATURE RANGE
PT5-07M	≤ ±1% FS	-40 +20 °C
PT5-18M	≤ ±1% FS	-40 +20 °C
PT5-30M	≤ ±1% FS ≤ ±2% FS Typically ≤ ±2% FS	0 +40 °C -20 +60 °C -40 +80 °C
PT5-50M	≤ ±1% FS ≤ ±2% FS Typically ≤ ±2% FS	0 +40 °C -20 +60 °C -30 +80 °C

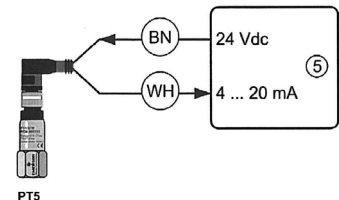
¹ Total error includes non-linearity, hysteresis, repeatability as well as offset and span drift due to the temperature changes.

NOTE: %FS is related to Percentage of Full sensor Scale.

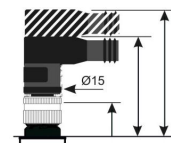
Dimensions (in mm)



PT5-xxM Series
Overall Dimensions



(5) = Electronic Controller e.g. EC2 & EC3 Series



Plug assembly with
Removal Dimensions