



# INFORMATION & SPECIFICATIONS DATA SHEET

TEMPERATURE & PROCESS INSTRUMENTS INC

## Mp88710H HART® Protocol 2-wire 4 to 20mA Microprocessor Based Temperature Transmitter with Optional ATEX IS Approval

### 2-Wire Microprocessor Based DIN Rail Mount Transmitter with Thermocouple, RTD, mV and Ohms Input

The Mp88710H is an advanced DIN rail mounded microprocessor based 2-wire 4 to 20mA temperature transmitter with HART® Protocol. Less than 23 mm (1") wide and mounting on standard DIN rails, it is easily programmed in the field to your exact requirements via an optional "Point N Click" PC based software and provides a simultaneous analog and digital (HART® Protocol) outputs over a single twisted pair of wires.

The Mp88710H transmitter incorporates highly advanced mathematical functions to provide the highest accuracy in the industry - 0.1% of set span. It is scalable over the entire range of 9 RTDs and 12 Thermocouple Types; as well as accepting Millivolt and Resistance inputs. Features include: self-diagnostics, small minimum spans, complete isolation (500Vdc), selectable On/Off linearization; wide power supply capability (10 to 36Vdc); selectable upscale/downscale; total RFI-immunity (DC to 1 GHz.)

You no longer have to stock several different transmitters when a single high accuracy programmable transmitter can meet all of your requirements. The Mp88700H transmitter can be factory configured or can easily be programmed in the field with the optional IF700 programming module and PC based "Point 'n Click" software program in less than one minute, the Mp88710H can be used for all your different sensor and range requirements.



### Features

- ▶ Microprocessor-Based, HART® Protocol
- ▶ Optional ATEX Ex II 1 G Ex ia IIC T4...T6 Ga Approval Standard
- ▶ Universal Input Thermocouples, RTD, millivolts and Ohms
- ▶ Field Programmable with optional Programming Kit and PC Software
- ▶ Fully-Isolated and Linearized
- ▶ RFI/EMI-Immune
- ▶ High Accuracy 0.1%
- ▶ Small Size 0.89" x 2.92" x 3.9 (22.5 x 75 x 99mm)
- ▶ Fits on Standard DIN Rails
- ▶ Ideal for use in High Density Cabinet Applications



SPi-MP (IF700) Programming Interface and PC Based Software



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## Mp88710H HART® Protocol Microprocessor Based Temperature Transmitter Specifications

### Specifications

**RTD Input:** Pt100, Pt250, Pt500, Pt1000, Ni100, Ni500, Ni1000, Cu10, Cu100  
**Thermocouple Input Types:** K, J, L, T, U, E, R, S, B, C, D, N  
**Other Inputs:** mV and Ohms  
**Minimum Span:** See Table Below  
**Output:** 4 to 20mA or 20 to 4mA and HART Protocol  
**Linearization:** On/Off  
**Supply \*\*:** 10 to 40Vdc, Polarity Protected  
**Supply Effect:** 0.001%/V  
**Max. Ripple:** 10 V PP. Min. Vbat =10Vdc  
**Zero Drift:** ± 0.01%/°C or ±0.02°C/°C  
**Span Drift:** ± 0.005%/°C or ±0.01°C/°C  
**Long Term Drift:** ± 0.05%/Year  
**Cold Junction Drift:** ± 0.01°C/°C  
**Excitation Current RTD:** 0.1mA

**Sensor Lead Resistance RTD:** 500 Ohm max.  
**Sensor Lead Resistance Effect:** 0.001°C/Ohm  
**Sensor Lead Resistance T/C:** 10,000 Ohm max.  
**Open Circuit Detection:** Upscale/Downscale Programmable  
**Load Capability:** Vbat-10V/20mA  
**Response Time:** <3 sec.  
**Startup Time:** 20 sec.  
**Warmup Time:** 5 Min.  
**Isolation:** 500Vdc.1500Vac  
**Ambient Operating Temp.:** -40 to + 85°C.(-40 to 185°F)  
**Storage Temperature:** -40 to +100°C (-40 to 212°F)  
**Ingress Protection:** IP30  
**Housing Material:** Makrolon  
**Housing Dimension:** 0.89" x 2.92" x 3.9 (22.5 x 75 x 99mm)

Sensor Type	Temp. Min. °C	Temp. Max. °C	Span Min. °C	Temp. Min. °F	Temp. Max. °F	Span Min. °F
<b>Thermocouple Type</b>						
J (Fe-CuNi)	-200	1200	50	-328	2192	90
K (NiCr-NiAl)	-270	1370	50	-454	2498	90
T (Cu-CuNi)	-270	400	50	-454	752	90
E (NiCr-CuNi)	-270	1000	50	-454	1832	90
N (Nicrosil-NiSil)	-270	1300	50	-454	2372	90
S (Pt10%Rh-Pt)	-60	1760	250	-76	3200	450
R (Pt13%Rh-Pt)	-60	1760	250	-76	3200	450
B (Pt30%Rh-Pt6%Rh)	0	1820	600	32	3308	1080
C (W5%Re-W26%Re)	0	2300	150	32	4172	270
D (W3%Re-W25%Re)	0	2300	150	32	4172	270
U (DIN Cu-CuNi)	-200	600	50	-328	1112	90
L (DIN Fe-CuNi)	-200	900	50	-328	1652	90
<b>RTD Types</b>						
Pt100 IEC751	-200	850	25	-328	1562	45
Pt250 IEC751	-200	850	25	-328	1562	45
Pt500 IEC751	-200	850	25	-328	1562	45
Pt1000 IEC751	-200	850	25	-328	1562	45
Ni100 IEC751	-60	250	25	-76	482	45
Ni500 IEC751	-60	250	25	-76	482	45
Ni1000 IEC751	-60	250	25	-76	482	45
Cu10	-200	250	25	-328	482	45
Cu100	-200	250	25	-328	482	45
<b>Process Signals Types</b>						
mV	0	1000	10			
Ohm	0	10000	100			

The Mp88700H can be programmed in the field with the optional PC based software and IF-700 Configuration Interface, or can be supplied factory configured. For factory configuration please provide Sensor type, Minimum temperature, Maximum temperature and temperature scale.

## Mp82710H HART® Protocol Microprocessor Based Temperature Transmitter

### HART® Protocol Commands

Universal Commands	
0	Read unique identifier
1	Read primary variable (PV)
2	Read Current and Percent of Range
3	Read Current and 4 dynamic variables 2 used: input val, CJ
6	Write polling address
11	Read unique identifier associated with tag
12	Read message
13	Read tag, descriptor, date
14	Read PV sensor information
15	Read output information
16	Read final assembly number
17	Write message
18	Write tag, descriptor, date
19	Write final assembly number
Common-Practice Commands	
34	Write damping value
35	Write range values
40	Enter/exit fixed current mode
49	Write PV sensor serial number
59	Write number of response preambles
Device-Specific Commands	
none	

Order Information	
Part Number	Description
MP88700H	Microprocessor Based Universal transmitter Un-calibrated.
Accessories	Description
	Factory Configuration provide Sensor Type, Min.Max Temperature and temperature Scale
SPI-MP (IF700)	PC Based Interface and Software for field programming

\* Price Subject to change without notice, please visit our web site for the latest pricing and specifications. All prices Shown in US Dollars.

### Companion Mp82710H HART® Protocol Microprocessor Based Head Mounted Temperature Transmitter



Mp82700H Shown with optional DANW connection head and 'D' display.

#### Features

- ▶ Microprocessor-Based, HART® Protocol
- ▶ Universal Input Thermocouples, RTD, millivolts and Ohms
- ▶ Field Programmable with optional Programming Kit and PC Software
- ▶ Fully-Isolated and Linearized
- ▶ RFI/EMI-Immune
- ▶ High Accuracy 0.1%
- ▶ Small Size (1.7" dia. x 1.1"H)
- ▶ Optional FM or ATEX Approvals
- ▶ Optional Plug-In Display and Protection Head

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