

Technical Specifications

Specifications - Inputs

Input Ranges	Resolution	Accuracy	Remarks	
milivolt	-150 to 150 mV -500 to -150 mV 150 to 2450 mV	0.001 mV 0.01 mV 0.01 mV	$\pm 0.01\% \text{ FS}^{***}$ $\pm 0.02\% \text{ FS}$ $\pm 0.02\% \text{ FS}$	$R_{\text{input}} > 10 \text{ M}\Omega$ auto-ranging
volt	-10 to 45 V	0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{input}} > 1 \text{ M}\Omega$
mA	-5 to 24.5 mA	0.0001 mA	$\pm 0.02\% \text{ FS}$	$R_{\text{input}} < 120 \Omega$
resistance	0 to 400 Ω 400 to 2500 Ω	0.01 Ω 0.01 Ω	$\pm 0.01\% \text{ FS}$ $\pm 0.03\% \text{ FS}$	Excitation current 0.85 mA auto-ranging
frequency*	0 to 600 Hz 600 to 1300 Hz 1300 to 5000 Hz	0.01 Hz 0.1 Hz 1 Hz	$\pm 0.04\% \text{ FS}$ $\pm 0.1\% \text{ FS}$ $\pm 2\% \text{ FS}$	$R_{\text{input}} > 50 \text{ k}\Omega$ Voltage DC _{max} = 30 V AC Signal from 0.3 to 30 V auto-ranging
counter*	0 to $10^8 - 1$ count	1 count	—	The same remark as frequency Pulses Frequency < 3000 Hz
Pt-100	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	$\pm 0.1\% \text{ C} / \pm 0.2\% \text{ F}$	IEC-751
Pt-1000	-200 to 400 °C / -328 to 752 °F	0.1 °C / 0.1 °F	$\pm 0.1\% \text{ C} / \pm 0.2\% \text{ F}$	IEC-751
Cu-10	-200 to 260 °C / -328 to 500 °F	0.1 °C / 0.1 °F	$\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$	Minco 16-9
Ni-100	-60 to 250 °C / -76 to 482 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43760
probe**	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	$\pm 0.1\% \text{ C} / \pm 0.2\% \text{ F}$	IEC-751
TC-J	-210 to 1200 °C / -346 to 2192 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-584
TC-K	-270 to -150 °C / -454 to -238 °F -150 to 1370 °C / -238 to 2498 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.5\% \text{ C} / \pm 1.0\% \text{ F}$ $\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-584
TC-T	-260 to -200 °C / -436 to -328 °F -200 to -75 °C / -328 to -103 °F -75 to 400 °C / -103 to 752 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.6\% \text{ C} / \pm 1.2\% \text{ F}$ $\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$ $\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-584
TC-B	50 to 250 °C / 122 to 482 °F 250 to 500 °C / 482 to 932 °F 500 to 1200 °C / 932 to 2192 °F 1200 to 1820 °C / 2192 to 3308 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 2.5\% \text{ C} / \pm 5.0\% \text{ F}$ $\pm 1.5\% \text{ C} / \pm 3.0\% \text{ F}$ $\pm 1.0\% \text{ C} / \pm 2.0\% \text{ F}$ $\pm 0.7\% \text{ C} / \pm 1.4\% \text{ F}$	IEC-584
TC-R	-50 to 300 °C / -58 to 572 °F 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 1.0\% \text{ C} / \pm 2.0\% \text{ F}$ $\pm 0.7\% \text{ C} / \pm 1.4\% \text{ F}$	IEC-584
TC-S	-50 to 300 °C / -58 to 572 °F 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 1.0\% \text{ C} / \pm 2.0\% \text{ F}$ $\pm 0.7\% \text{ C} / \pm 1.4\% \text{ F}$	IEC-584
TC-E	-270 to -150 °C / -454 to -238 °F -150 to 1000 °C / -238 to 1832 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.3\% \text{ C} / \pm 0.6\% \text{ F}$ $\pm 0.1\% \text{ C} / \pm 0.2\% \text{ F}$	IEC-584
TC-N	-260 to -200 °C / -436 to -328 °F -200 to -20 °C / -328 to -4 °F -20 to 1300 °C / -4 to 2372 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 1.0\% \text{ C} / \pm 2.0\% \text{ F}$ $\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$ $\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-584
TC-L	-200 to 900 °C / -328 to 1652 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43710
TC-C	0 to 1500 °C / 32 to 2732 °F 1500 to 2320 °C / 2732 to 4208 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.5\% \text{ C} / \pm 1.0\% \text{ F}$ $\pm 0.7\% \text{ C} / \pm 1.4\% \text{ F}$	W5Re / W26Re

Special temperature sensor curve on request

(*) Accuracy valid since the frequency output is not configured.

(**) The Probe is a separate input used as reference thermometer. The related accuracy is relative only to the MCS-XV.

(***) FS = Full Scale.

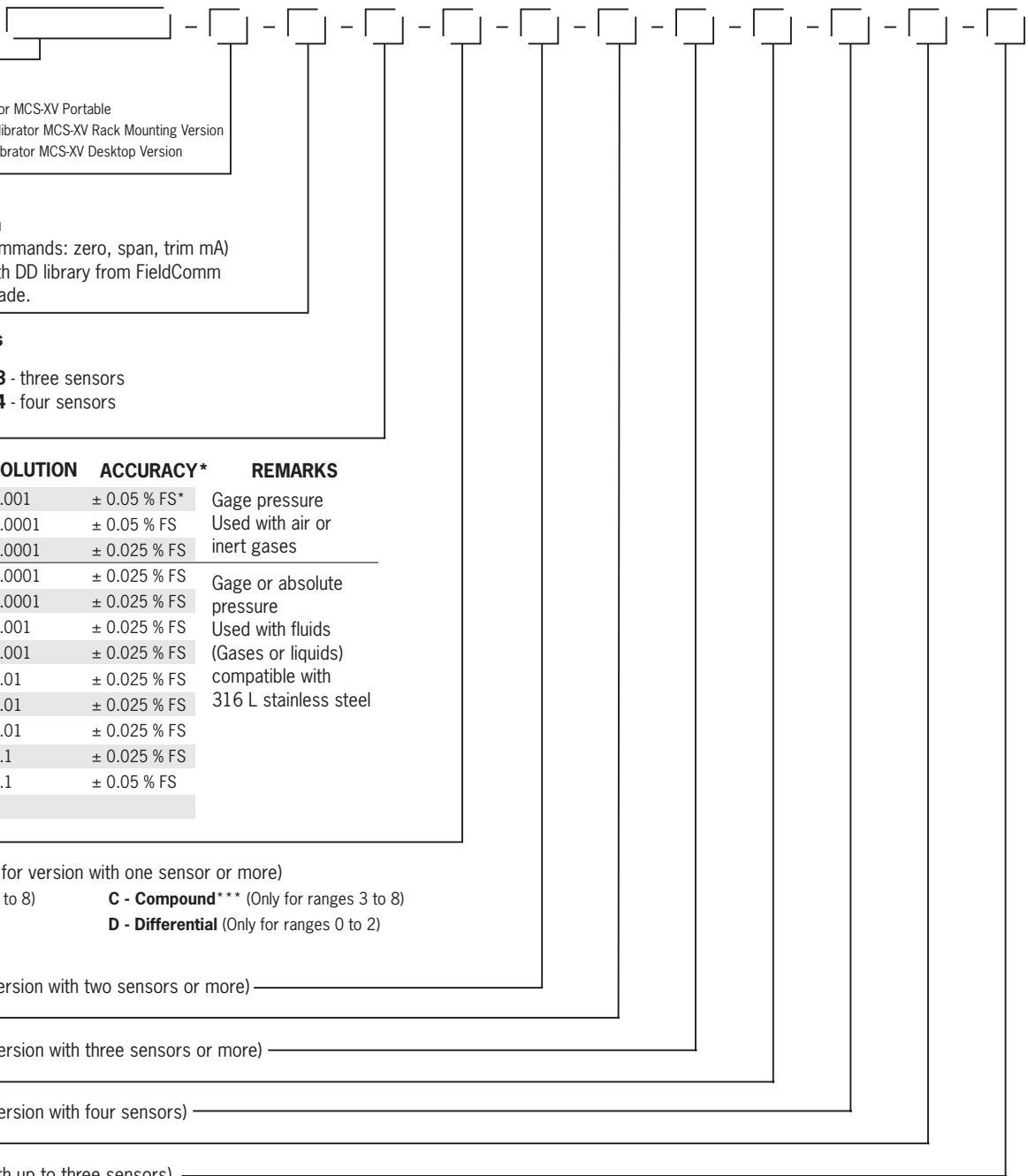
Specifications - Outputs

Outputs Ranges	Resolution	Accuracy	Remarks	
milivolt	-10 to 110 mV	0.001 mV	$\pm 0.02\% \text{ FS}$	$R_{\text{out}} < 0,3 \Omega$
volt	-0.5 to 12 V	0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{out}} < 0,3 \Omega$
mA	0 to 24 mA	0.0001 mA	$\pm 0.02\% \text{ FS}$	$R_{\text{max}} = 700 \Omega$
2-wire transmitter (XTR)	4 to 24 mA	0.0001 mA	$\pm 0.02\% \text{ FS}$	$V_{\text{max}} = 60 \text{ V}$
resistance	0 to 400 Ω 0 to 2500 Ω	0.01 Ω 0.1 Ω	$\pm 0.02\% \text{ FS}$ $\pm 0.03\% \text{ FS}$	For external excitation current of 1.0 mA
frequency	0 to 100 Hz 0 to 10000 Hz	0.01 Hz 1 Hz	$\pm 0.02\% \text{ FS}$ $\pm 2\% \text{ FS}$	Peak value: 22 V / 25 mA max.
pulse	0 to $10^8 - 1$ pulse	1 pulse	—	Peak value: 22 V / 25 mA max. Pulses frequency up to 10000 Hz
Pt-100	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-751
Pt-1000	-200 to 400 °C / -328 to 752 °F	0.1 °C / 0.1 °F	$\pm 0.1\% \text{ C} / \pm 0.2\% \text{ F}$	IEC-751
Cu-10	-200 to 260 °C / -328 to 500 °F	0.1 °C / 0.1 °F	$\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$	Minco 16-9
Ni-100	-60 to 250 °C / -76 to 482 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43760
TC-J	-210 to 1200 °C / -346 to 2192 °F	0.1 °C / 0.1 °F	$\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$	IEC-584
TC-K	-270 to -150 °C / -454 to -238 °F -150 to 1370 °C / -238 to 2498 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 1.0\% \text{ C} / \pm 2.0\% \text{ F}$ $\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$	IEC-584
TC-T	-260 to -200 °C / -436 to -328 °F -200 to -75 °C / -328 to -103 °F -75 to 400 °C / -103 to 752 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 1.2\% \text{ C} / \pm 2.4\% \text{ F}$ $\pm 0.8\% \text{ C} / \pm 1.6\% \text{ F}$ $\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$	IEC-584
TC-B	50 to 250 °C / 122 to 482 °F 250 to 500 °C / 482 to 932 °F 500 to 1200 °C / 932 to 2192 °F 1200 to 1820 °C / 2192 to 3308 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 5.0\% \text{ C} / \pm 10.0\% \text{ F}$ $\pm 3.0\% \text{ C} / \pm 6.0\% \text{ F}$ $\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$ $\pm 1.4\% \text{ C} / \pm 2.8\% \text{ F}$	IEC-584
TC-R	-50 to 300 °C / -58 to 572 °F 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$ $\pm 1.4\% \text{ C} / \pm 2.8\% \text{ F}$	IEC-584
TC-S	-50 to 300 °C / -58 to 572 °F 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$ $\pm 1.4\% \text{ C} / \pm 2.8\% \text{ F}$	IEC-584
TC-E	-270 to -150 °C / -454 to -238 °F -150 to 1000 °C / -238 to 1832 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.6\% \text{ C} / \pm 1.2\% \text{ F}$ $\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	IEC-584
TC-N	-260 to -200 °C / -436 to -328 °F -200 to -20 °C / -328 to -4 °F -20 to 1300 °C / -4 to 2372 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 2.0\% \text{ C} / \pm 4.0\% \text{ F}$ $\pm 0.8\% \text{ C} / \pm 1.6\% \text{ F}$ $\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$	IEC-584
TC-L	-200 to 900 °C / -328 to 1652 °F	0.1 °C / 0.1 °F	$\pm 0.4\% \text{ C} / \pm 0.8\% \text{ F}$	DIN-43710
TC-C	0 to 1500 °C / 32 to 2732 °F 1500 to 2320 °C / 2732 to 4208 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	$\pm 0.5\% \text{ C} / \pm 1.0\% \text{ F}$ $\pm 0.7\% \text{ C} / \pm 1.4\% \text{ F}$	W5Re / W26Re

Special temperature sensor curve on request

The values of accuracy cover one year period and for a temperature range between 20 and 26 °C. Outside this range, the thermal stability is 0.001% FS / °C with reference to 23 °C. Thermocouple with internal cold junction compensation, one must consider the error of this cold junction compensation of up to $\pm 0.2\% \text{ C}$ or $\pm 0.4\% \text{ F}$.

Order Code



Model
MCS-XV - Universal Process Calibrator MCS-XV Portable
MCS-XV-RM - Universal Process Calibrator MCS-XV Rack Mounting Version
MCS-XV-DT - Universal Process Calibrator MCS-XV Desktop Version

Hart® Communication
NH - No Hart® Communication
CH - Hart Calibrator (basic commands: zero, span, trim mA)
FH - Full-Hart Configurator, with DD library from FieldComm Group and one-year upgrade.

Number of Pressure Inputs
0 - no pressure sensors **3** - three sensors
1 - one sensor **4** - four sensors
2 - two sensors

RANGE	Input 1	RESOLUTION	ACCURACY*	REMARKS
(0)	0 – 250 mmH ₂ O	0.001	± 0.05 % FS*	Gage pressure
(1)	0 – 1 psi	0.0001	± 0.05 % FS	Used with air or inert gases
(2)	0 – 5 psi	0.0001	± 0.025 % FS	
(3)	0 – 15 psi	0.0001	± 0.025 % FS	Gage or absolute pressure
(4)	0 – 30 psi	0.0001	± 0.025 % FS	Used with fluids (Gases or liquids) compatible with 316 L stainless steel
(5)	0 – 100 psi	0.001	± 0.025 % FS	
(6)	0 – 250 psi	0.001	± 0.025 % FS	
(7)	0 – 500 psi	0.01	± 0.025 % FS	
(8)	0 – 1000 psi	0.01	± 0.025 % FS	
(9)	0 – 3000 psi	0.01	± 0.025 % FS	
(10)	0 – 5000 psi	0.1	± 0.025 % FS	
(11)	0 – 10000 psi	0.1	± 0.05 % FS	
(12)	Others on request			

Pressure Type Input 1 (Only for version with one sensor or more)
A - Absolute (Only for ranges 3 to 8) **C - Compound***** (Only for ranges 3 to 8)
G - Gage (Ranges 0 to 11) **D - Differential** (Only for ranges 0 to 2)
V - Vacuum (Only for range 3)

RANGE Input 2** (Only for version with two sensors or more) _____
Pressure Type Input 2** _____
RANGE Input 3** (Only for version with three sensors or more) _____
Pressure Type Input 3** _____
RANGE Input 4** (Only for version with four sensors) _____
Pressure Type Input 4** _____
Optional (Only for version with up to three sensors) _____

BR - Barometric Reference (15 psia)
 Sensor for ambient pressure measurement. Can be used for simulated indication of absolute pressure on the other sensors.

(*) Percentage of full scale (***) Same code as input 1
 (***) From -15 psi to full scale of range

Accuracy values are valid within a year and for a temperature range between 20 and 26 °C. Outside these limits add 0.005 % FS / °C, taking 23 °C as the reference temperature.

Engineering units: Temperature: °C, °F, K, °R; Pressure: psi, bar, mbar, MPa, kPa, Pa, atm, at, mmH₂O@4°C, cmH₂O@4°C, ftH₂O@4°C, inH₂O@4°C, inH₂O@60°F, torr, mmHg@0°C, cmHg@0°C, inHg@0°C, inHg@60°F, gf/cm², kgf/cm², kgf/m².
Pneumatic Connection: 1/4" NPTF (Note: 1/8" NPTF only for range 0 - 10000 psi).
Overpressure: up to twice the sensor full scale pressure (for capsules to 5000 psi).
Operating ambient: 0 to 50 °C and 90 % maximum relative humidity.
Dimensions: Portable: 140 mm x 250 mm x 80 mm (HxWxD) / Desktop: 132 mm x 308 mm x 275 mm (HxWxD) / Rack Mounting: 132 mm x 483 mm x 105 mm (HxWxD).
Weight: Portable: 2.6 kg approx. / Desktop: 3.0 kg approx / Rack Mounting: 2.0 kg approx.
Warranty: 1 year, except for battery.

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| Included accessories: | Optional accessories: |
| - Technical manual; | - Temperature Sensor: Probe 1/5 DIN R - Order code: 04.06.0101-21; |
| - Carrying bag (only for portable version); | - Probe 1/5 DIN A - Order code: 04.06.0107-21; |
| - Set of test leads; | - Probe 1/5 DIN A-L - Order code: 04.06.0102-21. |
| - Fuse; | |
| - Charger 100 - 240 VAC 50/60Hz (only for portable version). | |