

# PRESYS®

Dry Block  
Temperature  
Calibrators

Universal  
Process  
Calibrators

Automatic  
Pressure  
Calibrators

## SMART CALIBRATORS

Field Version



Desktop Version



Ready for Metrology 4.0

**HART**  
COMMUNICATION PROTOCOL



Rack Mounting Version  
For use in 19" rack

## MCS-XV Advanced Multifunction Process Calibrator

Integrating real advanced documenting  
and communication functions

[www.presys.com.br](http://www.presys.com.br)

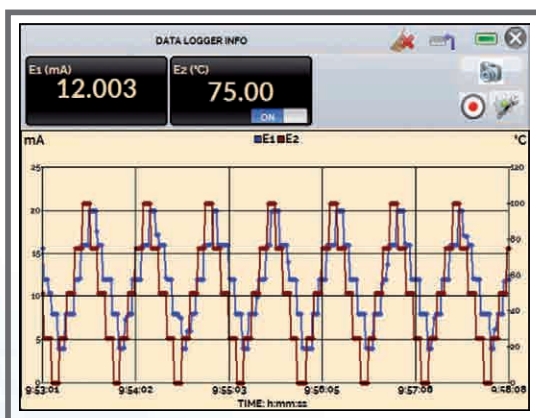
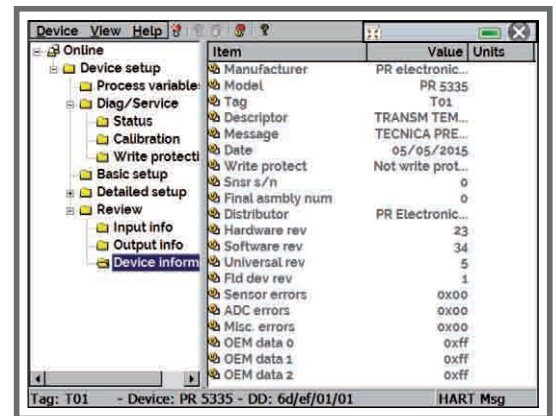
# Universal Process Calibrator MCS-XV

- ✓ Operates all instrumentation signals: electrical, temperature, frequency and pressure.
- ✓ Up to four pressure sensors from 250 mmH<sub>2</sub>O to 10,000 psi.
- ✓ Optional Barometric Reference.



- ✓ Touch Screen display provides easy-to-read data and showing 2 simultaneous variables.
- ✓ Intuitive menu navigation helps in identifying calibrator information for any operational mode.

- ✓ Full Hart configurator (optional), which configures all available HART<sup>®</sup> devices, with DD library from FieldComm Group.
- ✓ 24 Vdc power supply for 2-wire transmitters, 250 Ω internal resistor configurable.



- ✓ Data Logger function for data acquisition and graphical visualization.
- ✓ Ethernet, Wi-Fi, Pen drive, Hart, USB connection Host / Device.

- ✓ Automated calibrations and generation of calibration report on direct connected USB printer or generation of PDF file.

POINT	EXPECTED	OBTAINED	ABS. ERR.	SPAN ERR.
0.00 °C	4.0000 mA	3.9998 mA	-0.0002 mA	-0.001
25.00 °C	8.0000 mA	8.0007 mA	0.0007 mA	0.004
50.00 °C	12.0000 mA	12.0012 mA	0.0012 mA	0.007
75.00 °C	16.0000 mA	16.0003 mA	0.0003 mA	0.002
100.00 °C	20.0000 mA	20.0006 mA	0.0006 mA	0.004

CALIBRATION REPORT FOR TAG TT-0101 **PRESYS**

CUSTOMER: Presys Instruments

TAG: TT-0101      MODEL: Temperature Transmitter

SERIAL NUMBER: 100919      MANUFACTURER: Presys

OUTPUT RANGE: 4 to 20 mA      MAX ERROR = 1% SPAN (SPAN = 16 mA)

INPUT RANGE: 0 to 100 °C (RTD)

MANUFACTURER	SERIAL NUMBER	MODEL	NEXT CAL.	CERT. NUMBER
PRESYS	269.01.17	MCS-XV	08/01/21	RS555.01.19

As-td performed by: John      DATE: 18/9/2019

POINT	EXPECTED	OBTAINED	ERROR	SPAN ERR.	PASS/FAIL
0.00 °C	4.0000 mA	3.9998 mA	-0.0002 mA	-0.001%	Pass
25.00 °C	8.0000 mA	8.0007 mA	0.0007 mA	0.004%	Pass
50.00 °C	12.0000 mA	12.0012 mA	0.0012 mA	0.007%	Pass
75.00 °C	16.0000 mA	16.0003 mA	0.0003 mA	0.002%	Pass
100.00 °C	20.0000 mA	20.0006 mA	0.0006 mA	0.004%	Pass

DOCUMENT CREATED ON: 09/18/2019      RESPONSIBLE: *John*

# Technical Specifications

## Specifications - Inputs

Input Ranges	Resolution	Accuracy	Remarks	
<b>millivolt</b>	-150 to 150 mV -500 to -150 mV 150 to 2450 mV	0.001 mV 0.01mV 0.01mV	$\pm 0.01\% \text{ FS}^{***}$ $\pm 0.02\% \text{ FS}$ $\pm 0.02\% \text{ FS}$	$R_{\text{input}} > 10 \text{ M}\Omega$ auto-ranging
<b>volt</b>	-10 to 45 V	0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{input}} > 1 \text{ M}\Omega$
<b>mA</b>	-5 to 24.5 mA	0.0001 mA	$\pm 0.01\% \text{ FS}$	$R_{\text{input}} < 120 \Omega$
<b>resistance</b>	0 to 400 $\Omega$ 400 to 2500 $\Omega$	0.01 $\Omega$ 0.01 $\Omega$	$\pm 0.01\% \text{ FS}$ $\pm 0.03\% \text{ FS}$	Excitation current 0.85 mA auto-ranging
<b>frequency*</b>	0 to 600 Hz 600 to 1300 Hz 1300 to 5000 Hz	0.01 Hz 0.1 Hz 1 Hz	$\pm 0.04 \text{ Hz}$ $\pm 0.2 \text{ Hz}$ $\pm 2 \text{ Hz}$	$R_{\text{input}} > 50 \text{ k}\Omega$ Voltage DC <sub>max</sub> = 30 V AC Signal from 0.3 to 30 V auto-ranging
<b>counter*</b>	0 to 10 <sup>8</sup> - 1 count	1 count	—	The same remark as frequency Pulses Frequency < 3000 Hz
<b>Pt-100</b>	-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
<b>Pt-500</b>	-200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	$\pm 0.1\% \text{ C} / \pm 0.1\% \text{ F}$	IEC-751
<b>Pt-1000</b>	-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
<b>Cu-10</b>	-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
<b>Ni-100</b>	-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
<b>Ni-120</b>	-80 to 260 °C / -112 to 500 °F	0.1 °C / 0.1 °F	$\pm 0.01\% \text{ C} / \pm 0.1\% \text{ F}$	DIN-43760
<b>probe**</b>	-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
<b>TC-J</b>	-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
<b>TC-K</b>	-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
<b>TC-T</b>	-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
<b>TC-B</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
<b>TC-R</b>	-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
<b>TC-S</b>	-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
<b>TC-E</b>	-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
<b>TC-N</b>	-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
<b>TC-L</b>	-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
<b>TC-U</b>	-200 to 600 °C / -328 to 1112 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43710
<b>TC-C</b>	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.

(\*) Function available 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	
<b>millivolt</b>	-10 to 110 mV	0.001 mV	$\pm 0.02\% \text{ FS}^{**}$	$R_{\text{out}} < 0,3 \Omega$
<b>volt</b>	-0.5 to 12 V	0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{out}} < 0,3 \Omega$
<b>mA</b>	0 to 24 mA	0.0001 mA	$\pm 0.02\% \text{ FS}$	$R_{\text{max}} = 700 \Omega$
<b>2-wire transmitter (XTR)</b>	4 to 24 mA	0.0001 mA	$\pm 0.02\% \text{ FS}$	$V_{\text{max}} = 60 \text{ V}$
<b>resistance</b>	0 to 400 $\Omega$ 0 to 2500 $\Omega$	0.01 $\Omega$ 0.1 $\Omega$	$\pm 0.02\% \text{ FS}$ $\pm 0.03\% \text{ FS}$	For external excitation current of 1.0 mA
<b>frequency*</b>	0 to 100 Hz 0 to 10000 Hz	0.01 Hz 1 Hz	$\pm 0.02 \text{ Hz}$ $\pm 2 \text{ Hz}$	Peak value: 22 V / 25 mA max.
<b>pulse*</b>	0 to 10 <sup>8</sup> - 1 pulse	1 pulse	—	Peak value: 22 V / 25 mA max. Pulses frequency up to 10000 Hz
<b>Pt-100</b>	-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
<b>Pt-500</b>	-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
<b>Pt-1000</b>	-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
<b>Cu-10</b>	-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
<b>Ni-100</b>	-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
<b>Ni-120</b>	-80 to 260 °C / -112 to 500 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43760
<b>TC-J</b>	-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
<b>TC-K</b>	-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
<b>TC-T</b>	-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
<b>TC-B</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
<b>TC-R</b>	-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
<b>TC-S</b>	-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
<b>TC-E</b>	-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
<b>TC-N</b>	-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
<b>TC-L</b>	-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
<b>TC-U</b>	-200 to 600 °C / -328 to 1112 °F	0.1 °C / 0.1 °F	$\pm 0.2\% \text{ C} / \pm 0.4\% \text{ F}$	DIN-43710
<b>TC-C</b>	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

(\*) Function available since the frequency input is not configured. (\*\*) FS = Full Scale.

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  $\pm 0.4\% \text{ F}$ .



