

PRESYS®

Universal Process Calibrator

MCS-XV

www.mcsxv.com

MCS-XV is the new Presys advanced multifunction field calibrator and HART® communicator combining multiple software and hardware resources as well as communication features to achieve productivity gains in day-to-day calibration operation.

MCS-XV-DT

Desktop Version

MCS-XV-RM

Rack Mounting Version
For use in 19" rack



MCS-XV

Portable Version

HART
COMMUNICATION PROTOCOL



Direct Printing of Calibration Report (pass / fail)
(PDF or connected USB printer)



PRESYS

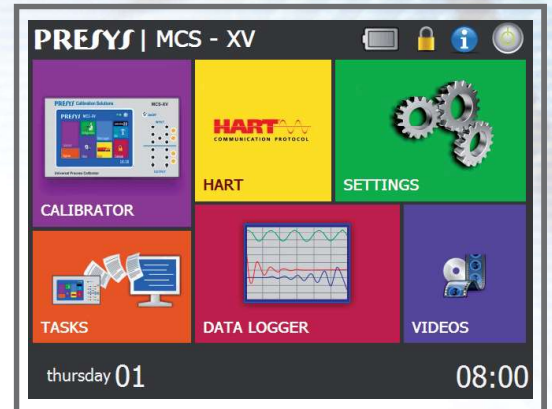
Instrumentos e Sistemas
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Universal Process Calibrator MCS-XV

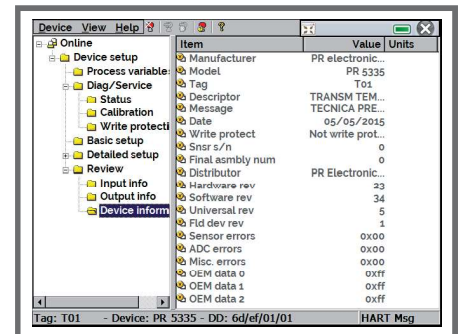
- ✓ Operates all instrumentation signals: electrical, temperature, frequency and pressure.
- ✓ Up to four pressure sensors from 250 mmH₂O to 10,000 psi.
- ✓ Optional Barometric Reference.



- ✓ 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® 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	3.9955 mA	-0.0045 mA	-0.028%
25.00 °C	8.0000 mA	7.9907 mA	-0.0093 mA	-0.058%
50.00 °C	12.0000 mA	11.9897 mA	-0.0103 mA	-0.064%
75.00 °C	16.0000 mA	15.9934 mA	-0.0066 mA	-0.041%
100.00 °C	20.0000 mA	19.9968 mA	-0.0032 mA	-0.020%

POINT	EXPECTED	OBTAINED	ABS. ERR.	SPAN ERR.
0.00 °C	4.0000 mA	4.0001 mA	0.0001 mA	0.001%
25.00 °C	8.0000 mA	7.9949 mA	-0.0051 mA	-0.032%
50.00 °C	12.0000 mA	11.9911 mA	-0.0089 mA	-0.056%
75.00 °C	16.0000 mA	15.9932 mA	-0.0068 mA	-0.042%
100.00 °C	20.0000 mA	19.9957 mA	-0.0043 mA	-0.027%
100.00 °C	20.0000 mA	19.9983 mA	-0.0017 mA	-0.011%
75.00 °C	16.0000 mA	15.9995 mA	-0.0005 mA	-0.003%
50.00 °C	12.0000 mA	11.9924 mA	-0.0076 mA	-0.047%
25.00 °C	8.0000 mA	7.9975 mA	-0.0025 mA	-0.016%
0.00 °C	4.0000 mA	3.9981 mA	-0.0019 mA	-0.012%

Calibration report for tag TT01

TASK DETAILS
 CREATED IN: 02/02/2016
 INSTRUMENT DETAILS:
 TAG: TT01
 SERIAL NUMBER: 001.01.15
 MODEL: ETC Transmitter
 MANUFACTURE: Presys
 INPUT RANGE: 0 TO 100 °C (RTD)
 OUTPUT RANGE: 4 TO 20 mA
 MAX ERROR: 0.04% SPAN SPAN = 16 mA
 LEAD TIME: 10 SECONDS

AS FOUND performed by John A.

POINT	EXPECTED	OBTAINED	ERROR	SPAN ERR.	PASS/FAIL
0.00 °C	4.0000 mA	3.9955 mA	-0.0045 mA	-0.028%	Pass
25.00 °C	8.0000 mA	7.9907 mA	-0.0093 mA	-0.058%	Pass
50.00 °C	12.0000 mA	11.9897 mA	-0.0103 mA	-0.064%	Pass
75.00 °C	16.0000 mA	15.9934 mA	-0.0066 mA	-0.041%	Pass
100.00 °C	20.0000 mA	19.9968 mA	-0.0032 mA	-0.020%	Pass

AS LEFT performed by John A.

POINT	EXPECTED	OBTAINED	ERROR	SPAN ERR.	PASS/FAIL
0.00 °C	4.0000 mA	4.0001 mA	0.0001 mA	0.001%	Pass
25.00 °C	8.0000 mA	7.9949 mA	-0.0051 mA	-0.032%	Pass
50.00 °C	12.0000 mA	11.9911 mA	-0.0089 mA	-0.056%	Pass
75.00 °C	16.0000 mA	15.9932 mA	-0.0068 mA	-0.042%	Pass
100.00 °C	20.0000 mA	19.9957 mA	-0.0043 mA	-0.027%	Pass
100.00 °C	20.0000 mA	19.9983 mA	-0.0017 mA	-0.011%	Pass
75.00 °C	16.0000 mA	15.9995 mA	-0.0005 mA	-0.003%	Pass
50.00 °C	12.0000 mA	11.9924 mA	-0.0076 mA	-0.047%	Pass
25.00 °C	8.0000 mA	7.9975 mA	-0.0025 mA	-0.016%	Pass
0.00 °C	4.0000 mA	3.9981 mA	-0.0019 mA	-0.012%	Pass

Standard serial number: 133.13.15
 Operator last calibration: 23/12/2015
 Operator signature: _____

Technical Specifications

Specifications - Inputs

Input Ranges	Resolution	Accuracy	Remarks
millivolt	-150 to 150 mV 0.001 mV	$\pm 0.01\% \text{ FS}^{***}$	$R_{\text{ref}} > 10 \text{ M}\Omega$ auto-ranging
	-500 to -150 mV 0.01 mV	$\pm 0.02\% \text{ FS}$	
	150 to 2450 mV 0.01 mV	$\pm 0.02\% \text{ FS}$	
volt	-10 to 45 V 0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{ref}} > 1 \text{ M}\Omega$
mA	-5 to 24,5 mA 0.0001 mA	$\pm 0.01\% \text{ FS}$	$R_{\text{ref}} < 120 \Omega$
resistance	0 to 400 Ω 0.01 Ω	$\pm 0.01\% \text{ FS}$	Excitation current 0,85 mA
	400 to 2500 Ω 0.01 Ω	$\pm 0.03\% \text{ FS}$	auto-ranging
frequency*	0 to 600 Hz 0.01 Hz	$\pm 0.04 \text{ Hz}$	$R_{\text{ref}} > 50 \text{ k}\Omega$
	600 to 1300 Hz 0.1 Hz	$\pm 0.2 \text{ Hz}$	Voltage DC _{max} = 30 V
	1300 to 5000 Hz 1 Hz	$\pm 2 \text{ Hz}$	AC Signal from 0,3 to 30 V auto-ranging
counter*	0 to $10^3 - 1$ 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	0.1 °C / 0.1 °F	$\pm 0.5 \text{ °C} / \pm 1.0 \text{ °F}$ IEC-584
	-150 to 1370 °C / -238 to 2498 °F	0.1 °C / 0.1 °F	$\pm 0.2 \text{ °C} / \pm 0.4 \text{ °F}$
TC-T	-260 to -200 °C / -436 to -328 °F	0.1 °C / 0.1 °F	$\pm 0.6 \text{ °C} / \pm 1.2 \text{ °F}$ IEC-584
	-200 to -75 °C / -328 to -103 °F	0.1 °C / 0.1 °F	$\pm 0.4 \text{ °C} / \pm 0.8 \text{ °F}$
	-75 to 400 °C / -103 to 752 °F	0.1 °C / 0.1 °F	$\pm 0.2 \text{ °C} / \pm 0.4 \text{ °F}$
TC-B	50 to 250 °C / 122 to 482 °F	0.1 °C / 0.1 °F	$\pm 2.5 \text{ °C} / \pm 5.0 \text{ °F}$ IEC-584
	250 to 500 °C / 482 to 932 °F	0.1 °C / 0.1 °F	$\pm 1.5 \text{ °C} / \pm 3.0 \text{ °F}$
	500 to 1200 °C / 932 to 2192 °F	0.1 °C / 0.1 °F	$\pm 1.0 \text{ °C} / \pm 2.0 \text{ °F}$
	1200 to 1820 °C / 2192 to 3308 °F	0.1 °C / 0.1 °F	$\pm 0.7 \text{ °C} / \pm 1.4 \text{ °F}$
TC-R	-50 to 300 °C / -58 to 572 °F	0.1 °C / 0.1 °F	$\pm 1.0 \text{ °C} / \pm 2.0 \text{ °F}$ IEC-584
	300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F	$\pm 0.7 \text{ °C} / \pm 1.4 \text{ °F}$
TC-S	-50 to 300 °C / -58 to 572 °F	0.1 °C / 0.1 °F	$\pm 1.0 \text{ °C} / \pm 2.0 \text{ °F}$ IEC-584
	300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F	$\pm 0.7 \text{ °C} / \pm 1.4 \text{ °F}$
TC-E	-270 to -150 °C / -454 to -238 °F	0.1 °C / 0.1 °F	$\pm 0.3 \text{ °C} / \pm 0.6 \text{ °F}$ IEC-584
	-150 to 1000 °C / -238 to 1832 °F	0.1 °C / 0.1 °F	$\pm 0.1 \text{ °C} / \pm 0.2 \text{ °F}$
TC-N	-260 to -200 °C / -436 to -328 °F	0.1 °C / 0.1 °F	$\pm 1.0 \text{ °C} / \pm 2.0 \text{ °F}$ IEC-584
	-200 to -20 °C / -328 to -4 °F	0.1 °C / 0.1 °F	$\pm 0.4 \text{ °C} / \pm 0.8 \text{ °F}$
	-20 to 1300 °C / -4 to 2372 °F	0.1 °C / 0.1 °F	$\pm 0.2 \text{ °C} / \pm 0.4 \text{ °F}$
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	0.1 °C / 0.1 °F	$\pm 0.5 \text{ °C} / \pm 1.0 \text{ °F}$ W5Re / W26Re
	1500 to 2320 °C / 2732 to 4208 °F	0.1 °C / 0.1 °F	$\pm 0.7 \text{ °C} / \pm 1.4 \text{ °F}$

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
millivolt	-10 to 110 mV 0.001 mV	$\pm 0.02\% \text{ FS}$	$R_{\text{ref}} < 0,3 \Omega$
volt	-0,5 to 12 V 0.0001 V	$\pm 0.02\% \text{ FS}$	$R_{\text{ref}} < 0,3 \Omega$
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 0.01 Ω	$\pm 0.02\% \text{ FS}$	For external excitation current
	0 to 2500 Ω 0.1 Ω	$\pm 0.03\% \text{ FS}$	of 1,0 mA
frequency	0 to 100 Hz 0.01 Hz	$\pm 0.02 \text{ Hz}$	Peak value: 22 V / 25 mA max.
	0 to 10000 Hz 1 Hz	$\pm 2 \text{ Hz}$	Peak value: 22 V / 25 mA max.
pulse	0 to $10^3 - 1$ pulse 1 pulse	_____	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	0.1 °C / 0.1 °F	$\pm 1.0 \text{ °C} / \pm 2.0 \text{ °F}$ IEC-584
	-150 to 1370 °C / -238 to 2498 °F	0.1 °C / 0.1 °F	$\pm 0.4 \text{ °C} / \pm 0.8 \text{ °F}$
TC-T	-260 to -200 °C / -436 to -328 °F	0.1 °C / 0.1 °F	$\pm 1.2 \text{ °C} / \pm 2.4 \text{ °F}$ IEC-584
	-200 to -75 °C / -328 to -103 °F	0.1 °C / 0.1 °F	$\pm 0.8 \text{ °C} / \pm 1.6 \text{ °F}$
	-75 to 400 °C / -103 to 752 °F	0.1 °C / 0.1 °F	$\pm 0.4 \text{ °C} / \pm 0.8 \text{ °F}$
TC-B	50 to 250 °C / 122 to 482 °F	0.1 °C / 0.1 °F	$\pm 5.0 \text{ °C} / \pm 10.0 \text{ °F}$ IEC-584
	250 to 500 °C / 482 to 932 °F	0.1 °C / 0.1 °F	$\pm 3.0 \text{ °C} / \pm 6.0 \text{ °F}$
	500 to 1200 °C / 932 to 2192 °F	0.1 °C / 0.1 °F	$\pm 2.0 \text{ °C} / \pm 4.0 \text{ °F}$
	1200 to 1820 °C / 2192 to 3308 °F	0.1 °C / 0.1 °F	$\pm 1.4 \text{ °C} / \pm 2.8 \text{ °F}$
TC-R	-50 to 300 °C / -58 to 572 °F	0.1 °C / 0.1 °F	$\pm 2.0 \text{ °C} / \pm 4.0 \text{ °F}$ IEC-584
	300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F	$\pm 1.4 \text{ °C} / \pm 2.8 \text{ °F}$
TC-S	-50 to 300 °C / -58 to 572 °F	0.1 °C / 0.1 °F	$\pm 2.0 \text{ °C} / \pm 4.0 \text{ °F}$ IEC-584
	300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F	$\pm 1.4 \text{ °C} / \pm 2.8 \text{ °F}$
TC-E	-270 to -150 °C / -454 to -238 °F	0.1 °C / 0.1 °F	$\pm 0.6 \text{ °C} / \pm 1.2 \text{ °F}$ IEC-584
	-150 to 1000 °C / -238 to 1832 °F	0.1 °C / 0.1 °F	$\pm 0.2 \text{ °C} / \pm 0.4 \text{ °F}$
TC-N	-260 to -200 °C / -436 to -328 °F	0.1 °C / 0.1 °F	$\pm 2.0 \text{ °C} / \pm 4.0 \text{ °F}$ IEC-584
	-200 to -20 °C / -328 to -4 °F	0.1 °C / 0.1 °F	$\pm 0.8 \text{ °C} / \pm 1.6 \text{ °F}$
	-20 to 1300 °C / -4 to 2372 °F	0.1 °C / 0.1 °F	$\pm 0.4 \text{ °C} / \pm 0.8 \text{ °F}$
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	0.1 °C / 0.1 °F	$\pm 0.5 \text{ °C} / \pm 1.0 \text{ °F}$ W5Re / W26Re
	1500 to 2320 °C / 2732 to 4208 °F	0.1 °C / 0.1 °F	$\pm 0.7 \text{ °C} / \pm 1.4 \text{ °F}$

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.

Number of Pressure Inputs

- 0** - no pressure sensors
- 1** - one sensor
- 2** - two sensors
- 3** - three sensors
- 4** - four 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)
(5)	0 – 100 psi	0.001	± 0.025 % FS	
(6)	0 – 250 psi	0.001	± 0.025 % FS	compatible with 316 L stainless steel
(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)
- G - Gage** (Ranges 0 to 11)
- V - Vacuum** (Only for range 3)
- C - Compound***** (Only for ranges 3 to 8)
- D - Differential** (Only for ranges 0 to 2)

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 160 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.

Included accessories:

- Technical manual;
- Carrying bag (only for portable version);
- Set of test leads;
- Fuse;
- Charger 100 - 240 VAC 50/60Hz (only for portable version).

Optional accessories:

- Temperature Sensor: Probe 1/5 DIN R - Order code: 04.06.0101-21;
- Probe 1/5 DIN A - Order code: 04.06.0107-21;
- Probe 1/5 DIN A-L - Order code: 04.06.0102-21.

