

Fluke 725 Multifunction  
Calibrator



| Simultaneous Function Capability                                 | Channel A | Channel B   |
|------------------------------------------------------------------|-----------|-------------|
| 24.000 mA DC                                                     | M         | M or S      |
| 24.000 mA DC with 24V loop supply                                | M         |             |
| 100.00 mV DC                                                     |           | M or S      |
| 30.000V DC Measure                                               | M         |             |
| 20.000V DC Measure 10.000V DC Source                             |           | M or S      |
| 15 to 3200 Ohms                                                  |           | M or S      |
| Thermocouple J, K, T, E, R, S, B, L, U, N                        |           | M or S      |
| RTD Ni120; Pt100 (392); Pt100 (JIS); Pt100, 200, 500, 1000 (385) |           | M or S      |
| Pressure (requires Fluke 700PXX Modules)                         | M         | M used as S |
| Frequency; Squarewave, 1 CPM to 10 kHz; fixed amplitude 5V p-p   |           | M or S      |

M = Measure    S = Source/Simulate

Simply Powerful!

The new Fluke 725 Multifunction Process Calibrator is a powerful yet easy-to-use field calibrator. Use the measure and source functions to test and calibrate almost any process parameter.

- Small, streamlined shape makes it easy to carry
- Rugged, reliable design stands up to field use
- Easy to read measure/source screen lets you view input and output simultaneously
- Measure volts, mA, RTDs, thermocouples, frequency, and ohms to test sensors and transmitters
- Source/simulate volts, mA, thermocouples, RTDs, frequency, and ohms to calibrate transmitters
- Measure/source pressure using any of 28 Fluke 700Pxx Pressure Modules
- Source mA with simultaneous pressure measurement to conduct valve and I/P tests
- Support flow meter testing with frequency and CPM functions
- Perform fast linearity tests with auto step and auto ramp features
- Power transmitters during test using loop supply with simultaneous mA measurement
- Store frequently-used test setups for later use
- Backlight lets you work in poor light
- Remote interface allows benchtop automated operations
- Large battery capacity of four AA cells
- Battery door for easy changes

**Fluke.** *Keeping your world up and running.*

Ordering information

**Fluke 725 Multifunction Process Calibrator**  
Each calibrator includes: TL75 Test Leads, AC70A Test Clips, one pair of stackable test leads, Users Manuals appropriate to country of destination (English, plus three of: French, German, Spanish, Italian, Dutch, Norwegian, Danish, Swedish, Finnish, Portuguese, Korean, Chinese, and Japanese), Statement of Quality Assurance Practices; CE and CSA markings.

## Specifications

### Summary specifications (18°C to 28°C for one year)

| Function Measure or Source | Range                                                  | Resolution                 | Accuracy                | Notes                                                             |
|----------------------------|--------------------------------------------------------|----------------------------|-------------------------|-------------------------------------------------------------------|
| Voltage                    | 0 to 100 mV<br>0 to 10V (source)<br>0 to 30V (measure) | 0.01 mV<br>0.01V<br>0.01V  | .02% Rdg + 2 LSD        | Max load, 1 mA                                                    |
| mA                         | 0 to 24                                                | 0.001 mA                   | .02% Rdg + 2 LSD        | Max load, 1000Ω                                                   |
| mV (TC terminals)          | -10.00 mV to +75.00 mV                                 | .01 mV                     | .025% of range + 1 LSD  |                                                                   |
| Resistance                 | 15Ω to 3200Ω                                           | 0.01Ω to 0.1Ω              | 0.10Ω to 1.0Ω           |                                                                   |
| Frequency                  | 2.0 to 1000.0 CPM<br>1 to 1000 Hz<br>1.0 to 10.0 kHz   | 0.1 CPM<br>1 Hz<br>0.1 kHz | ±.05%<br>±.05%<br>±.25% | For frequency source, waveform is 5V p-p squarewave, -0.1V offset |
| Loop Supply                | 24V dc                                                 | N/A                        | 10%                     |                                                                   |

Temperature coefficient, -10°C to 18°C, 28°C to 55°C, ±.005% of range per °C.

### Thermocouple accuracy specifications

| Thermocouple                                                     | Measure or Source                               |                         |
|------------------------------------------------------------------|-------------------------------------------------|-------------------------|
| J                                                                | -200 to 0°C<br>0 to 1200°C                      | 1.0°C<br>0.7°C          |
| K                                                                | -200 to 0°C<br>0 to 1370°C                      | 1.2°C<br>0.8°C          |
| T                                                                | -200 to 0°C<br>0 to 400°C                       | 1.0°C<br>0.8°C          |
| E                                                                | -200 to 0°C<br>0 to 950°C                       | 0.9°C<br>0.7°C          |
| R                                                                | -20 to 0°C<br>0 to 500°C<br>500 to 1750°C       | 2.5°C<br>1.8°C<br>1.4°C |
| S                                                                | -20 to 0°C<br>0 to 500°C<br>500 to 1750°C       | 2.5°C<br>1.8°C<br>1.5°C |
| B                                                                | 600 to 800°C<br>800 to 1000°C<br>1000 to 1800°C | 2.2°C<br>1.8°C<br>1.4°C |
| L                                                                | -200 to 0°C<br>0 to 900°C                       | 0.85°C<br>0.7°C         |
| U                                                                | -200 to 0°C<br>0 to 400°C                       | 1.1°C<br>0.75°C         |
| N                                                                | -200 to 0°C<br>0 to 400°C                       | 1.5°C<br>0.9°C          |
| <b>Resolution</b>                                                |                                                 |                         |
| J, K, T, E, L, N, U                                              |                                                 | 0.1°C, 0.1°F            |
| B, R, S                                                          |                                                 | 1°C, 1°F                |
| <b>Notes</b>                                                     |                                                 |                         |
| Accuracy specifications include 0.2°C cold junction uncertainty. |                                                 |                         |

### RTD ranges and accuracy specifications

| RTD Types, Ranges and Accuracies |                                   |                  |                |
|----------------------------------|-----------------------------------|------------------|----------------|
|                                  |                                   | Measure (4 wire) | Source         |
| Ni 120                           | -80°C to 260°C                    | 0.2°C            | 0.2°C          |
| Pt 100 - 385                     | -200°C to 800°C                   | 0.33°C           | 0.33°C         |
| Pt 100 - 3926                    | -200°C to 630°C                   | 0.3°C            | 0.3°C          |
| Pt 100 - 3916 (JIS)              | -200°C to 630°C                   | 0.3°C            | 0.3°C          |
| Pt 200 - 385                     | -200°C to 250°C<br>250°C to 630°C | 0.2°C<br>0.8°C   | 0.2°C<br>0.8°C |
| Pt 500 - 385                     | -200°C to 500°C<br>500 to 630°C   | 0.3°C<br>0.4°C   | 0.3°C<br>0.4°C |
| Pt 1000 - 385                    | -200°C to 100°C<br>100°C to 630°C | 0.2°C<br>0.3°C   | 0.2°C<br>0.2°C |
| <b>Resolution</b>                |                                   |                  |                |
| RTD                              | 0.1°C, 0.1°F                      |                  |                |

### General specifications

**Maximum voltage:** 30V  
**Storage temperature:** -40°C to 71°C  
**Operating temperature:** 10°C to 55°C  
**Relative humidity:** 95% (10°C to 35°C); 75% (30°C to 40°C); 45% (40°C to 50°C); 35% (50°C to 55°C)  
**Shock:** 30g, 11ms, half-sine shock (or 1meter drop test)  
**Vibration:** Random, 2g, 5-500 Hz  
**Safety:** CSA C22.2 No. 1010.1:1992  
**EMC:** EN50082-1:1992 and EN55022:1994 Class B  
**Size/weight:** 96 x 200 x 47 mm (3.8 x 7.9 x 1.9 inches) 650g (23 oz)  
**Battery:** Four AA alkaline batteries. Battery life: 25 hours typical  
**Warranty:** Three years



## ACCURACY—PRESSURE MEASUREMENT

0 to 110% of Range:  $\pm(0.05\%$  of Reading + Floor Term)

Floor Term: **0.005% of FS or display resolution, whichever is greater**

Vacuum:  $\pm(0.25\%$  of Reading + Vacuum Floor Term)

Vacuum Floor Term: **0.004 psi for 16 and 36 psi  
0.01 psi for 300 psi**

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

*All models indicate vacuum, but vacuum specification applies to 16 psi, 36 psi, and 300 psi models only.*

*Not recommended for continuous use below -14.5 psi. Refer to [XP2i-DP data sheet](#) for gauges that are intended for continuous high vacuum use.*

## ACCURACY—MILLIAMPERES

Accuracy:  $\pm(0.025\%$  of Reading + 0.001 mA)

Range: **0 to 55 mA**

Resolution: **0.001 mA**

Connection: **4 mm jacks, 19 mm (0.75") spacing**

*Includes all effects of linearity, hysteresis, repeatability, temperature, and stability for one year.*

*mA can be displayed as a percentage, where 0 to 100% corresponds to either 4 to 20 mA or 10 to 50 mA.*

*Jacks are compatible with safety sheathed banana plugs.*

## OPERATING TEMPERATURE

Temperature Range: **0 to 50° C (32 to 122° F)**

*Non-condensing. No change in accuracy over operating temperature range. Gauge must be zeroed to achieve rated specification.*

## DISPLAY

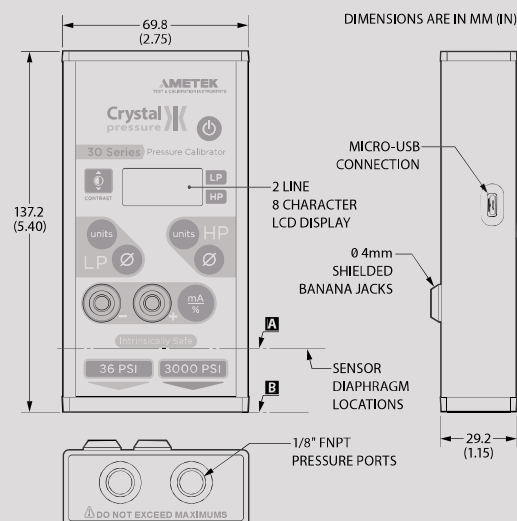
Screen: **2 lines of up to 6 digits,  
5 mm (0.2") high**

Display Rate: **2 readings/second (Adjustable to  
1, 3, or 3.7 readings/second)**

*LCD readable in sunlight.*

*Changes to reading rate requires software: ConfigM30 is a free download from [ametekcalibration.com](http://ametekcalibration.com).*

## 30 Series Calibrator psi



### PRESSURE PORT VOLUMETRIC DATA:

LP distance to diaphragm (A to B): 22.4 (0.88")

LP volume: 2 ml (0.13 cubic inches)

HP distance to diaphragm (A to B): 17.8 (0.70")

HP volume: 1 ml (0.06 cubic inches)

## POWER

The 30 Series is Intrinsically Safe only if powered by one of the following battery types.

| ATEX/IECEx: | Approved Battery Type               | Ta=        | Marking         |
|-------------|-------------------------------------|------------|-----------------|
|             | Duracell Alkaline 9V, MN 1604       | 0 to 50° C | Ex ia IIC T4 Gb |
|             | Energizer Alkaline 9V, 522          |            |                 |
|             | Energizer Lithium 9V, L522          |            |                 |
|             | Varta High Energy Alkaline 9V, 4922 | 0 to 45° C |                 |

| CSA: | Approved Battery Type               | Marking                             |
|------|-------------------------------------|-------------------------------------|
|      | Duracell Alkaline 9V, MN 1604       | Class I, Division 1, A, B, C, D T4  |
|      | Energizer Alkaline 9V, 522          |                                     |
|      | Energizer Lithium 9V, L522          |                                     |
|      | Varta High Energy Alkaline 9V, 4922 | Class I, Division 1, A, B, C, D T3C |

1 x 9V: **90 hours, typical**

Uses one alkaline 9V battery. Use of USB interface reduces operating time.

For hazardous location product warnings, refer to the operation manual.

## DATA/COMMUNICATION

Digital Interface: **micro-USB**

Free Labview drivers available online.

For hazardous location product warnings, refer to the operation manual.

## ENCLOSURE

Model 31 ≤300 psi: **342 g (12.0 oz)**

Weight includes batteries.

\* Model 31 ≤300 psi: **428 g (15.0 oz)**

\*SPSS optional manifold.

Model 31 ≥1500 psi: **360 g (13.0 oz)**

Model 33: **400 g (14.0 oz)**

\* Model 33: **485 g (17.0 oz)**

Housing: **Extruded aluminum**

Keypad and Labels: **UV resistant polyester**

## CERTIFICATIONS



**II 2G Ex ia IIC T4**  
**FTZU 06 ATEX 0010X**



**II 2G Ex ia IIC T4 Gb**  
**IECEx FTZU 10.0018X**



Exia Intrinsically Safe and Non-incendive for Hazardous Locations: Class I, Division 1, Groups A, B, C and D, Temperature Code T4 or T3C. For hazardous location product warnings, refer to the operation manual.



30 Series complies with the Electromagnetic Compatibility and the Pressure Equipment Directives.



30 Series complies with the Australian Radiocommunications (Electromagnetic Compatibility) Standard 2008



30 Series is approved for use as a portable test instrument for Marine use and complies with Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Offshore Standards.

#### SENSOR ≥ 1500 psi

Wetted Materials: **316 stainless steel** *All welded with a permanently filled diaphragm seal.*  
 Diaphragm Seal Fluid: **Silicone Oil**  
 Connection: **Bottom, 1/8" female NPT**

#### SENSOR ≤ 300 psi

Wetted Materials: **316 stainless steel, Viton® (o-ring)** *Viton o-ring is internal.*  
**Anodized aluminum penetrated with PTFE (polytetrafluoroethylene)** *All welded with a permanently filled diaphragm seal.*  
 Diaphragm Seal Fluid: **Silicone Oil**  
 Connection: **Bottom, 1/8" female NPT**

#### STORAGE TEMPERATURE

Temperature Range: **-20 to 70° C (-4 to 158° F)** *Batteries should be removed if stored for more than one month.*

#### SPECIAL FEATURES

The following requires the use of [ConfigM30](#) software

- User Defined Unit: **Allows the user to define and display any pressure units not included, or to use the gauge to display force, level, or other pressure related parameters. Reduce or increase displayed resolution.**
- Remove: **Unwanted pressure units from Units button.**
- Password Protect: **Changes to configuration or userspan calibration factor(s).**
- Save: **Configuration to a file.**
- Copy: **Configuration to other calibrators.**

#### STANDARD DELIVERY

- 30 Series Calibrator
- CD Manual
- ISO 17025 Accredited Calibration Certificate, NIST Traceable

#### ACCESSORIES

**Magnetic Hanging Strap** [P/N 5203](#)

**Test Lead Kit** [P/N 1351](#)

**USB A to Micro USB Cable** [P/N 4431](#)

**Waterproof Carrying Case** [P/N 2888](#)

#### COMPLEMENTARY PRODUCTS

Crystal Engineering offers a wide range of products that work with the 30 Series:

- [Fittings that connect without tools, safely and without leaks](#)
- [Lightweight, super flexible high pressure hoses](#)
- [Pneumatic hand pumps](#)
- [Hydraulic hand pumps](#)
- [Portable pressure comparators](#)
- [Software, for the quickest way to calibrate pressure transmitters and gauges](#)

Viton is a registered trademark of DuPont Performance Elastomers.

RANGE & RESOLUTION TABLE

|      |             |               | Display Resolution |                     |       |       |                     |                     |                    |       |      |      |       |
|------|-------------|---------------|--------------------|---------------------|-------|-------|---------------------|---------------------|--------------------|-------|------|------|-------|
| P/N  | Range (psi) | Over-pressure | psi                | in H <sub>2</sub> O | in Hg | mm Hg | mm H <sub>2</sub> O | cm H <sub>2</sub> O | kg/cm <sup>2</sup> | bar   | mbar | kPa  | MPa   |
| 16   | 16          | 6.5 x         | 0.001              | 0.01                | 0.001 | 0.01  | 1                   |                     | 0.0001             |       | 0.1  | 0.01 |       |
| 36   | 36          | 3.0 x         | 0.001              | 0.01                | 0.001 | 0.01  | 1                   |                     | 0.0001             |       | 0.1  | 0.01 |       |
| 300  | 300         | 2.0 x         | 0.01               | 0.1                 | 0.01  | 0.1   |                     | 1                   | 0.001              | 0.001 |      | 0.1  |       |
| 1500 | 1500        | 2.0 x         | 0.1                |                     |       |       |                     |                     | 0.01               | 0.01  |      | 1    | 0.001 |
| 3000 | 3000        | 1.5 x         | 0.1                |                     |       |       |                     |                     | 0.01               | 0.01  |      | 1    | 0.001 |
| 5000 | ● 5000      | 1.5 x         | 0.1                |                     |       |       |                     |                     | 0.01               | 0.01  |      | 1    | 0.001 |

Model 31 calibrators are not available in this range.

DUAL PRESSURE SENSORS

Model 33 calibrators have dual pressure sensors. This chart shows all of the available sensor combinations.

| First Pressure Ranges | Second Pressure Ranges |          |          |          |
|-----------------------|------------------------|----------|----------|----------|
|                       | 300 psi                | 1500 psi | 3000 psi | 5000 psi |
|                       | 16 psi                 |          |          |          |
| 36 psi                |                        |          |          |          |

ORDERING INFORMATION

| Intrinsic Safety | Model              | 1st Pressure Range P/N | 2nd Pressure Range P/N | Pressure Unit | Pressure Manifold      |
|------------------|--------------------|------------------------|------------------------|---------------|------------------------|
| IS               |                    |                        |                        | PSI           |                        |
|                  | Single Sensor...31 |                        |                        |               | Standard.....(omit)    |
|                  | Dual Sensor...33   |                        |                        |               | Stainless Steel...SPSS |

SAMPLE PART NUMBERS

IS31-36PSI ..... Calibrator with one sensor (36 psi).  
IS33-16/1500PSI-SPSS ..... Calibrator with two sensors (16 psi and 1500 psi) with two stainless steel manifolds.  
IS33-36/3000PSI-SPSS-HOX-W ..... Calibrator with two sensors (36 psi and 3000 psi) and two stainless steel manifolds with a System H pump system and a waterproof carrying case.

Ordering a Pump System Only

Any pump system, carrying case, and connection fittings for a 30 Series calibrator may be ordered separately from the calibrator. Enter IS30-NONE followed by the Pump System part number and the Carrying Case option code.

SAMPLE PART NUMBER

IS30-NONE-HOX-W ..... System H pump system with a waterproof carrying case.

| Pump System*       | Carrying Case~      |
|--------------------|---------------------|
| No Pump.... (omit) |                     |
| System A.... -AXX  | Aluminum ... (omit) |
| System A.... -AHX  | Waterproof..... -W  |
| System B.... -BXX  |                     |
| System B.... -BHX  |                     |
| System C.... -CXX  |                     |
| System C.... -CHX  |                     |
| System D.... -DOX  |                     |
| System D.... -DWX  |                     |
| System E.... -EOX  |                     |
| System F.... -FOV  |                     |
| System F.... -FWV  |                     |
| System G.... -GOX  |                     |
| System G.... -GWX  |                     |
| System H.... -HOX  |                     |

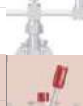
The Waterproof Case is an option for Systems A, B, and C only.  
The Waterproof Case is the only option for Systems G and H.

AMETEK offers a variety of solutions for pressure generation and measurement. Our line of products for pressure generation includes everything from small pneumatic hand pumps to a precision, hydraulic pressure comparator capable of generating up to 15 000 psi/ 1000 bar/ 100 MPa.

All of our pumps may be ordered as part of a Pump System, complete with a 30 Series and delivered in a sturdy carrying case with custom insert.

\* Refer to the following page for a more detailed description of each pump system.

**PUMP SYSTEMS OVERVIEW**

| Pump System | Part Number | Pressure Range                        | Pneumatic | Hydraulic | Hand Pump | Bench Top | Included Pump                                                                                   | Case Options |                           |
|-------------|-------------|---------------------------------------|-----------|-----------|-----------|-----------|-------------------------------------------------------------------------------------------------|--------------|---------------------------|
|             |             |                                       |           |           |           |           |                                                                                                 | Aluminum     | Waterproof (Pelican Case) |
| System A    | AXX         | 0 to 30psi / 2 bar                    | ■         |           | ■         |           |  T-960-CPF    | ■            | ■                         |
|             | AHX         | 0 to 580 psi / 40 bar                 | ■         |           | ■         |           |  T-970-CPF    | ■            | ■                         |
| System B    | BXX         | -25 inHg to 30 psi / -0.85 to 2 bar   | ■         |           | ■         |           |  T-965-CPF    | ■            | ■                         |
|             | BHX         | -27 inHg to 580 psi / -0.91 to 40 bar | ■         |           | ■         |           |  T-975-CPF    | ■            | ■                         |
| System C    | CXX         | 0 to 3000 psi / 200 bar               |           | ■ (Oil)   | ■         |           |  T-620-CPF   | ■            | ■                         |
|             | CHX         | 0 to 5000 psi / 350 bar               |           | ■ (Oil)   | ■         |           |  T-620H-CPF  | ■            | ■                         |
| System D    | DOX         | 0 to 5000 psi / 350 bar               |           | ■ (Oil)   |           | ■         |  P-018-CPF  | ■            |                           |
|             | DWX         | 0 to 5000 psi / 350 bar               |           | ■ (Water) |           | ■         |  P-014-CPF  | ■            |                           |
| System E    | EOX         | 0 to 10 000 psi / 700 bar             |           | ■ (Oil)   |           | ■         |  P-014-CPF  | ■            |                           |
| System F    | FOV         | 0 to 15 000 psi / 1000 bar            |           | ■ (Oil)   |           | ■         |  T-1-CPF    | ■            |                           |
|             | FWV         | 0 to 15 000 psi / 1000 bar            |           | ■ (Water) |           | ■         |  T-1-CPF    | ■            |                           |
| System G    | GOX         | 0 to 15 000 psi / 1000 bar            |           | ■ (Oil)   |           | ■         |  GaugeCalHP |              | ■                         |
|             | GWX         | 0 to 15 000 psi / 1000 bar            |           | ■ (Water) |           | ■         |  GaugeCalHP |              | ■                         |
| System H    | HOX         | -27 inHg to 580 psi / -0.91 to 40 bar | ■         |           | ■         |           |  T-975-CPF  |              | ■                         |
|             |             | 0 to 5000 psi / 350 bar               |           | ■ (Oil)   | ■         |           |  T-620H-CPF |              | ■                         |