



**TELEDYNE INSTRUMENTS**  
*Advanced Pollution Instrumentation*  
A Teledyne Technologies Company

MODEL **700E**

# Mass Flow Calibrator



- ▶▶ **Standard two year warranty**
- ▶▶ **Advanced E Series electronics**
- ▶▶ **Lightweight for transportability**
- ▶▶ **Optional Ethernet connectivity**
- ▶▶ **Generates precise calibration gases for Ozone, NO, NO<sub>2</sub>, CO, H<sub>2</sub>S, SO<sub>2</sub> and others**
- ▶▶ **12 independent timers for sequences**
- ▶▶ **Nested sequences (up to 5 levels)**
- ▶▶ **Software linearization of Mass Flow controllers**
- ▶▶ **4 calibration gas ports configurable for single or multi-blend gases**
- ▶▶ **Glass GPT chamber (Gas Phase Titration)**
- ▶▶ **Ozone generator and photometer allows use as primary or transfer standard**
- ▶▶ **Inlets for external ozone reference sources**

The Model 700E is a microprocessor based calibrator for precision gas analyzers. Using a combination of highly accurate mass flow controllers and compressed sources of standard gases, calibration standards are provided for multipoint span and zero checks. Up to 4 gas sources may be used.

In addition, the Model 700E can be equipped with an optional built-in, programmable ozone generator for accurate, dependable ozone calibrations and to produce NO<sub>2</sub> when blended with NO gas in the internal GPT chamber. A multi-point linearization curve is used to control the generator to assure repeatable ozone concentrations, and the optional photometer allows for even more precise control of the ozone generator, for both calibrations and Gas Phase Titrations (GPT). To ensure even more accurate NO<sub>2</sub> output, the calibrator with photometer option measures the ozone concentration prior to doing a GPT.

As many as 50 independent calibration sequences may be programmed into the M700E, covering time periods of up to one year. The setup of sequences is simple and intuitive. These sequences may be actuated manually, automatically, or by a remote signal. The sequences may be uploaded remotely, including remote editing! All programs are maintained in non-volatile memory.

The M700E design emphasizes fast response, repeatability, overall accuracy and ease of operation. It may be combined with the Model 701 Zero Air Generator to provide the ultimate in easy to use, precise calibration for your gas analyzers.

***FREE Customer Support by telephone and email for the life of the instrument***



# MODEL 700E Mass Flow Calibrator

## Specifications

### Dilution System

Flow Measurement Accuracy:	± 1% full scale
Repeatability of Flow Control:	± 0.2% full scale
Linearity of Flow	
Measurements:	± 0.5% full scale
Flow Range of Dilution Air:	0 to 10 SLPM
Optional Ranges:	0 to 20 SLPM, 0 to 5 SLPM
Flow Range of Cylinder Gases:	0 to 100 cc/min.
Optional ranges:	0 to 50 cc/min., 0 to 200 cc/min.
Zero Air requirements:	10 SLPM @ 30 psi
Optional:	20 SLPM @ 30 psi
Calibration Gas Input Ports:	4 (configurable)
Diluent Gas Input Ports:	1
Response Time:	60 seconds (98%)

### Ozone Generator Module

Maximum Output:	6 ppm LPM
Minimum Output:	100 ppb LPM
Response Time:	180 sec. (98%)
Optical Feedback:	Standard
Stability (7 days):	1% with photometer option 3% without photometer option
Linearity:	1% with photometer option 3% without photometer option

### UV Photometer Option

Full Scale Range:	100 ppb to 10 ppm, user selectable
Precision:	1.0 ppb
Linearity:	1.0% of reading
Rise/Fall Time:	<20 seconds (Photometer response)
Response Time (95%):	180 seconds (System response)
Zero Drift:	<1.0 ppb/7 days
Span Drift:	<1.0%/day, <2%/7 days

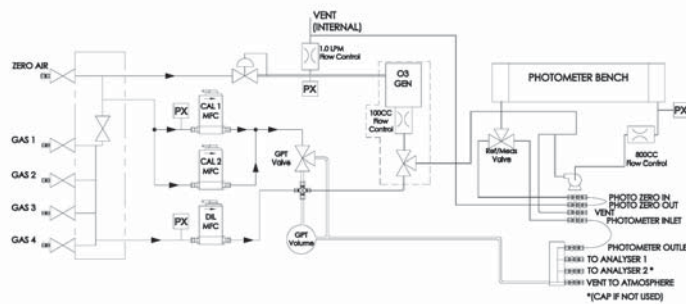
### Electrical Specifications

Power Requirements:	85 - 264 V, 47 - 63 Hz
Test Channel Analog:	± 100 mV 1, 5, 10 volts
Digital control outputs:	8 opto-isolated
Digital control inputs:	12 opto-isolated
Digital status outputs:	8 opto-isolated

### Physical Specifications

Temperature Range:	5-40°C
Input Pressure:	20-40 psig required
Weight:	31 lbs (14.06 kg); 39.2 lbs. (17.78 kg) including photometer, GPT, and O <sub>3</sub> generator
Dimensions (HxWxD):	7" (178 mm) x 17" (432 mm) x 24" (609 mm)
Operating Altitude:	10,000 ft Maximum
Approvals:	CE

## Schematic



## How to Order

### Model 700E Mass Flow Calibrator includes:

- Standard two year warranty
- 4 calibration gas inlet ports, 1 diluent gas inlet port
- Readout and control by front panel or RS-232 port
- Analog output
- Status output
- RS232 input/output

### Specify output DC voltage:

- 10V    5V    1V    0.1V

### Additional Options:

- UV Photometric Module
- Gas phase titration and O<sub>3</sub> generator with mixing chamber
- Source mass flow controller ranges (50 cm<sup>3</sup>/min or 200 cm<sup>3</sup>/min)
- Dilution mass flow controller ranges (5/20/LPM)
- Ethernet port (replaces one serial port)
- Test Channel Analog: 0.1V, 1V, 5V, 10V

- Serial Outputs: RS232 (DB9M)
- Multi-drop serial interface

### Accessories:

- Expendables Kit
- Spare Parts Kit
- RS-232 cable

Note: For an excellent source of diluent air, we recommend the Model 701 Zero Air Generator.

Specifications subject to change without notice. Printed documents are uncontrolled. SAL000023 A (DCN 5058) M700E/08/08/08.



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