

FLOW RATE & PROCESS DIGITAL PANEL METER

Model 275 | Liquid Crystal Display



APPLICATION IDEAS

Display Real-Time Output from Flow Sensor

Verify Setpoint For Flow Controller

Show Battery Voltage

Provide Visual Indication of Pressure Transducer Output

Product Description

McMillan's Model 275 is a Liquid Crystal Display that can be utilized in a variety of applications where a simple, easy to use, and versatile digital readout is required. The display accepts 0-5 VDC signals (0-50 VDC optional) and can be factory-programmed to read in various engineering units.

There are two mounting options that function in a variety of applications and panel setups. Various digit, display and unit configurations are available to ensure clear readouts for almost any application. It is an excellent complement to the line of McMillan flow sensors and controllers, and can be wired using the same power source and 0-5 VDC output of most McMillan products. Consult with the factory or an authorized representative for the best configuration of flow sensor and display.

Principle of Operation

LIQUID CRYSTAL (LCD) TECHNOLOGY

To fully appreciate how the Model 275 Display works, it is important to know how it is made. To start, LCDs are composed of two pieces of polarized glass. On the non-polarized side of the glass, a special polymer is added to create grooves that run in the same direction as the polarizing film. Once this is done, a liquid crystal material is added to the grooved side of one of the polarized glasses. These grooves align the liquid crystal with the glass. The second piece of glass is placed on top with the grooved side in, aligned perpendicular to the first pieces of glass creating a row and column arrangement.

HOW AN LCD WORKS

Where the grooves of the two pieces of polarized glass intersect is a pixel. By blocking the light from passing through the top piece of glass, it creates an area that is darker than its surrounding. This gives the appearance of pixels being turned on or off.

In order to block the light from passing through, the orientation of the liquid crystal has to be changed. To do this, an electric charge is needed. Without an electric charge, the liquid crystal is twisted which changes the angle of the light to match the angle of the top polarized glass. This allows the backlight to pass through that pixel.

When an electric charge is applied, the liquid crystal untwists leaving the angle of the light unchanged. This causes the light to be blocked by the top perpendicular piece of polarized glass. The controllers on the display will determine which pixels turn on and off. These controllers are programmed to translate the input signal and display the value by activating appropriate pixels.

Features and Options

MOUNTING

The Model 275 Display comes in two versions. The 275-A is designed to snap into a rectangular panel opening with small tabs on the top and bottom of the bezel. This is recommended for applications where access is easiest from the front of the panel and the panel will not be moved, vibrating, or otherwise manipulated.

The 275-B utilizes a locking ring that is installed from the rear of the panel. This provides more security than the 275-A and should be used where rear access is possible. A larger range of panel thicknesses are also accommodated with this design. Either unit can be removed from the panel and reinstalled as needed.

DISPLAY SETUPS

The factory can program the 275 Display to show a large variety of digits, decimals, and units. Units can be configured to show a maximum number of digits, or time dividers can also be added (i.e. unit/time). These settings cannot be changed in the field. If programming changes are needed, please contact the factory for available options.

WIRING

A small 4-pin connector is provided on the back of the 275 display. Each display includes a 12 inch [30 cm] mating cable terminated in pigtail leads for easy connection.

POWER

The 275 can be powered with a DC supply as low as 5 VDC or as high as 26 VDC. It utilizes very little power and can even be run on a standard 9 VDC alkaline battery up to 110 hours.

SIGNAL

Two signal configurations are available: 0-5 VDC or 0-50 VDC. For either range, the display will be set to read zero at 0 VDC and full scale at 5 VDC or 50 VDC, respectively.



Specifications

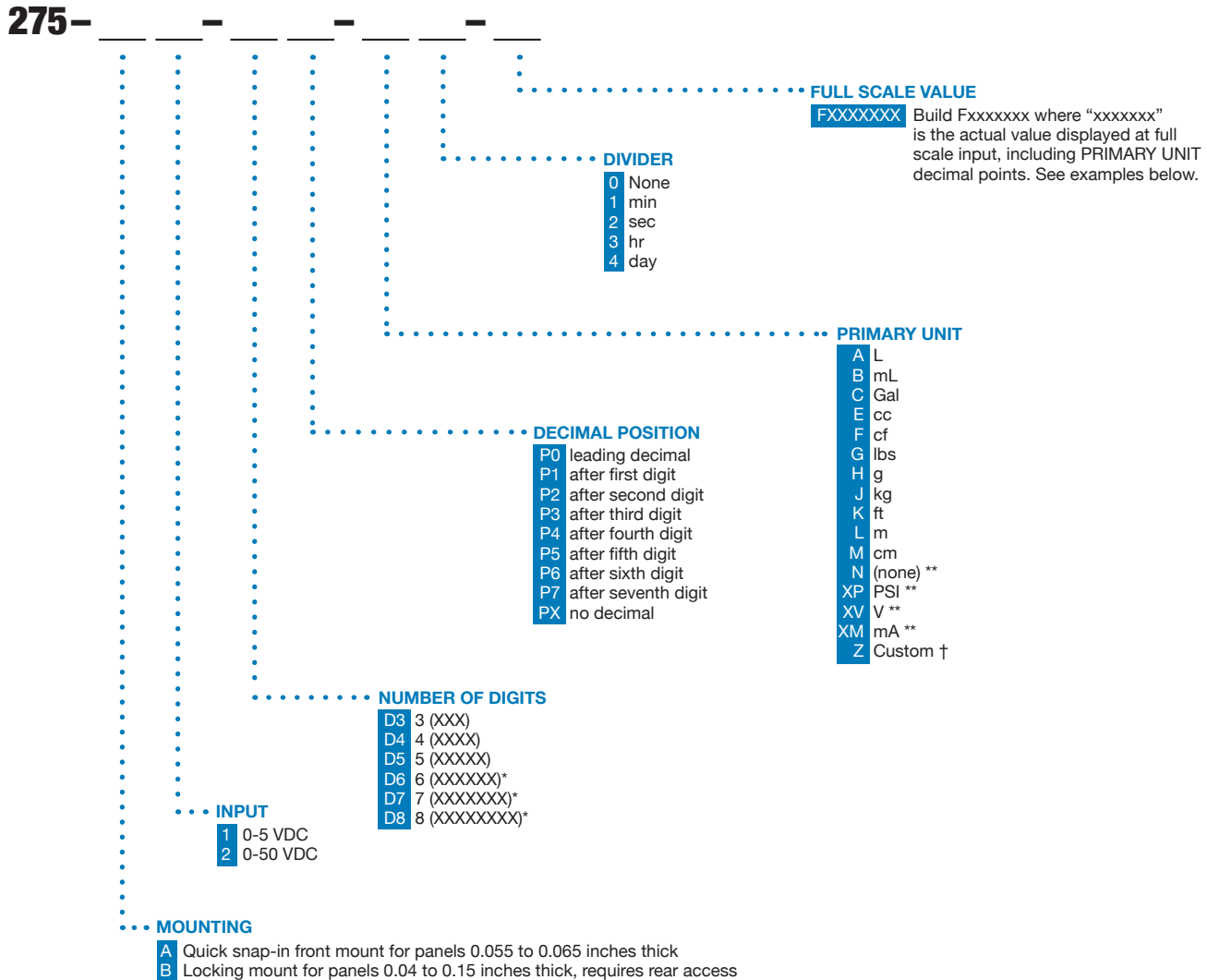
Except where noted all specifications apply to operation at +25°C

	MODEL 275 DISPLAY
Accuracy	15-bit, +/- 0.02 %
Viewable Area	1.25" x 0.31" [32 x 8mm]
Resolution	128 x 32 pixels
Front Panel	NEMA 2, IP50
Backlight	White LED
Operating Temperature	-4 to 140 °F [-20 to 60 °C]
Storage Temperature	-30 to 80°C (-22 to 176°F)
Relative Humidity	0 to 90% non-condensing
0-5 VDC Input (Standard)	Approximately 20 Kohm impedance 0 VDC represents 0 5 VDC represents full scale
0-50 VDC Input (Optional, replaces 0-5 VDC input)	Approximately 250 Kohm impedance 0 VDC represents 0 50 VDC represents full scale
Power	5 - 26 VDC, reverse polarity protected, 60 - 90 milliwatts
Overrange	Displays "OVR" at 5% beyond rated input voltage
Response Time	200 - 250 mS
Sample Rate	5 samples per second
Warranty	1 year limited
Ratings	CE approved, RoHS-compliant, NEMA 2/IP50 rated when installed in a panel

Ordering Information

Form part number as follows:

275 - (Mounting) (Input) - (Number of Digits) (Decimal Position) - (Primary Unit) (Divider) - (FS Value)



EXAMPLES

275-A1-D4P2-A1-F50.00 would provide a snap-in digital display that accepts a 0-5 VDC input signal. The display would read “50.00 L/min” with a 5 VDC input signal, and “20.00 L/min” with a 2 VDC input signal.

275-B2-D3P2-XV0-F50.0 would provide a rear-locking digital display that accepts a 0-50 VDC signal input. It would read “50.0 V” with a 50 VDC input signal, and “12.0 V” with a 12 VDC input signal.

275-B1-D5P3-XP0-F300.00 would provide a rear-locking digital display that accepts a 0-5 VDC signal input. It would read “300.00 PSI” with a 5 VDC input signal, and “120.00 PSI” with a 2 VDC input signal.

* No units can be displayed with this selection. Must choose “N” (None) for Primary Unit code and “0” (None) for Divider code.

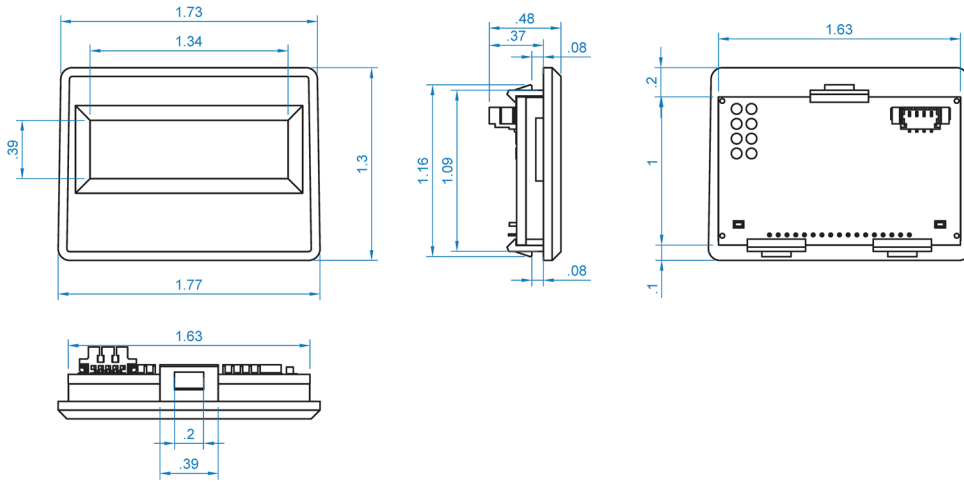
** Must choose Divider code “0” (None) with this option.

† Contact the factory or an authorized representative for more information.

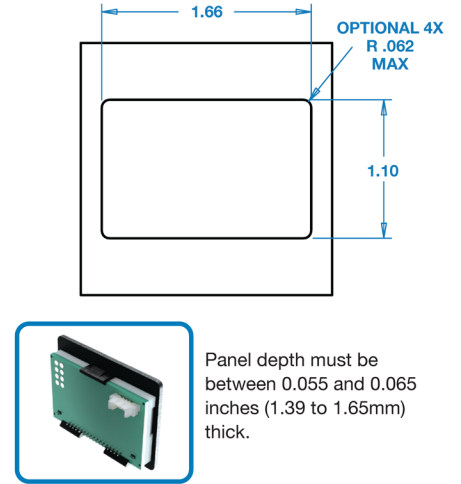
Dimensions

All dimensions shown in inches [mm] unless otherwise noted. These are suggested dimensions for panel cutout. Please verify specific unit dimensions and tolerances for your actual unit.

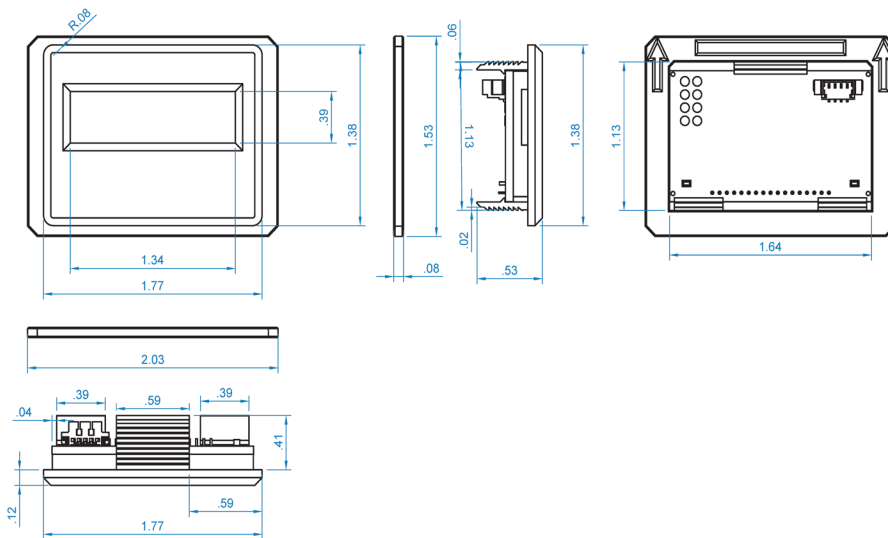
MODEL 275-A (SNAP-IN)



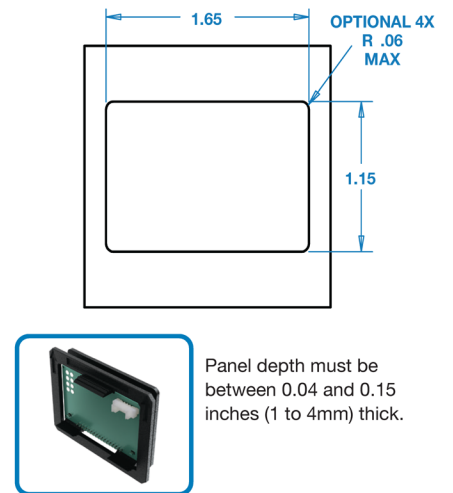
PANEL CUTOUT



MODEL 275-B (LOCKING REAR MOUNT)



PANEL CUTOUT



Related Products



RHODIUM Series Flow Controllers

MEMS-based flow controller
for gas applications



U80X Series Flow Controllers

Integrated microturbine
Liquid Flow Controllers



10X Series Flow Sensors

Microturbine flow sensors
for liquids and gases

