Over thirty years experience in electronics and motion control applications to provide the widest selection of Dynapar brand products for the industrial drive control market. These products bring unprecedented ease of use, increased flexibility and better performance into the mainstream of industrial control. A full line of Dynapar brand encoders and accessories complement the electronic controllers and allow one stop shopping for complete motion control solutions.

MOTION CONTROL FUNCTIONS

Closed loop speed controls use an electronic controller and a feedback device which is coupled to the system. By knowing the desired speed and measuring the actual speed, the controller can make adjustments continuously to provide better accuracy, load regulation and isolation from power line disturbances.

Master speed controls regulate a single motor or drive using an operator adjustable setpoint. The speed is usually entered numerically with a keyboard and display; some products also include a means of remote adjustment. Other functions may include the ability to start and stop at preprogrammed rates for smooth acceleration and deceleration. Applications that are ideal for closed loop speed control, such as extrusions pumps, are typical of processes that depend upon speed to maintain quality.

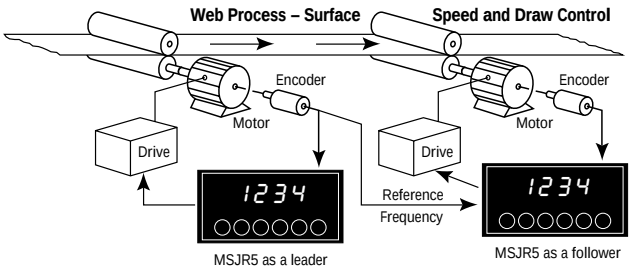
Speed follower controls are used to make one part of a system track another. Conveyor applications might require the takeaway line to go slightly faster than the feed line. Mixing applications often use speed followers to maintain a balance of materials even though the production rate of the system may vary.

SPECIFYING A MOTION CONTROLLER

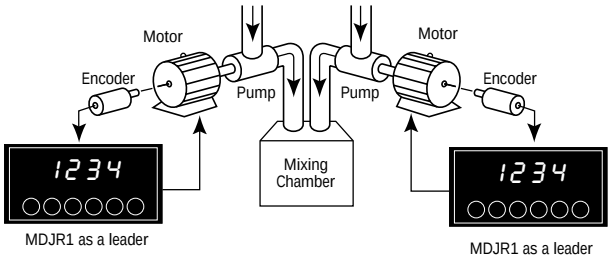
In choosing a master speed control, the primary consideration is given to the accuracy needed. This is usually a price/performance issue, with higher accuracy control costing more. Accuracies can range from 0.1% to 0.01%. Better performance will also enter into the feedback device selection, the drive/motor combination and even the mechanical design of the machinery. How the operator sets the speed is another requirement; it may be a keyboard entry, a knob adjustment, pushbuttons or a combination of these. The simplest products offer a single setpoint and method of adjustment while more complex products have multiple setpoints or means of adjustment. Added functionality such as ramping and open loop operation may be important.

For speed followers accuracy is also a factor in system performance. If the follower is at least as accurate as the signal it is following, performance will not be compromised. Our motion control products include features which make them very easy to setup and operate. Setpoints can be programmed in meaningful units such as length or a percentage of the master rate. Calibration for speed readout and ramp control are typical of the attention paid to user interface details.

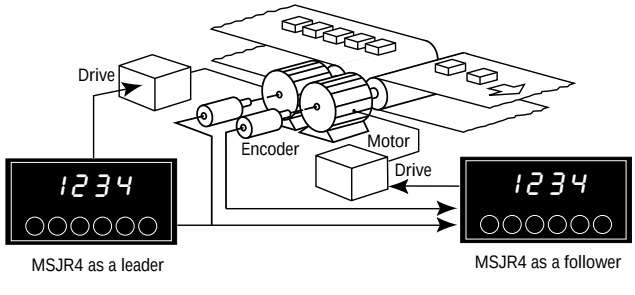
Web Speed & Draw Control



Precise Pump Control



Precise Conveyor Speed Control



SELECTOR GUIDE — Motion Controllers

This Selector Guide can assist you in determining the type of motion controller that best fits your application requirements. Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture. The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value.

Dynapar brand	***MSjr 4 & 5***	***MDjr 1***	***MDjr 2***	
Page Number: The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value. ***Description and Features:*** Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture.	**Page: 8.02, 8.03** ★  ■ **Cost effecient solution for applications that can benefit from closed loop PID speed control such as material handling conveyors, extruders, mixing pumps, etc.** ■ **Programmable to be a stand-alone controller or as a follower to coordinate with the speed or another motor** ■ **MSJR5 provides analog trim input for automated dancer control**	**Page: 8.04** ★  ■ **Digital front end PID control with built in DC drive simplifies wiring and installation** ■ **Chose MDJR1 for for 90 or 180 VDC fractional horsepower motors**	**Page: 8.05** ★  ■ **Digital front end PID control with built in DC drive simplifies wiring and installation** ■ **Chose MDJR2 for 90 or 180 VDC motors up to 2 HP**	
Dimensions	48mm x 96mm	48mm x 96mm	96mm x 96mm	
Display Type	LED	LED	LED	
Number of Digits	5	5	5	
Power Supply	85 - 265 VAC	85 - 265 VAC	85 - 265 VAC	
Control Outputs	0-10 VDC internal reference 0-15 VDC external reference	0 - 90 VDC at 115 VAC input; 0 - 180 VDC at 230 VAC input	0 - 90 VDC at 115 VAC input; 0 - 180 VDC at 230 VAC input	
Alarm Outputs	2 NPN transistors	2 NPN transistors	2 NPN transistors	
Signal Input Type	Sinking, Sourcing, Magnetic	Sinking, Sourcing, Magnetic	Sinking, Sourcing, Magnetic	
Control Inputs	Auto/Manual, Trim Reset/ Jog, Ramp Hold	Auto/Manual, Trim Reset/ Jog, Ramp Hold	Auto/Manual, Trim Reset/ Jog, Ramp Hold	
Max Frequency	20 kHz	20 kHz	20 kHz	
Sensor Power Supply	Selectable 5 or 12 VDC	Selectable 5 or 12 VDC	Selectable 5 or 12 VDC	
Front Panel Rating	NEMA 4	NEMA 4	NEMA 4	

MSJR4 Motion Controller

The most economical way to add digitally precise, PID speed regulation to stand-alone or multi-section systems

The Dynapar brand MSJR4 improves the speed regulation and adds new capabilities to variable speed drives. Regulating extruders, mixing pumps or material handling conveyors eliminates speed variations from temperature, power line voltage or motor load changes, and results in consistently higher quality production. The MSJR4 also operates in minutes and seconds, for food and beverage applications that need to control the cooking time of ovens and broilers.

In the follower mode, the MSJR4 will precisely match the speed of one motor, machine section or manufacturing process to another. With the assurance of zero cumulative error (drift) over time, it economically automates transfer lines, coating or draw of plastics film, and paper or plastics winding/unwinding.

Inherent in the MSJR4 is a large, LED display of actual process time or speed, which can be scaled into meaningful units (feet per minute, gallons per second, or RPM) for operator ease in monitoring and setting the desired speed.

General features include:

- Leader or follower operation
- Speed or Process Time (inverse speed) setpoints
- PID with velocity feedforward
- Programmable Accel/Decel ramp rate
- Speed display calibration in engineering units
- High and Low alarms in setpoint units or percentage of setpoint
- Three level security of setpoints, loop gains and program data
- NEMA4/IP66 front panel washdown rating
- Nonvolatile memory

Installation is simplified through the use of pluggable terminals and simple input and output diagnostics. The rugged metal enclosure and isolated drive output provide complete immunity from electrical noise and the universal power input is fully filtered for low emissions.

SPECIFICATIONS

Input Power: universal, 85 to 265 VAC, 50-60 Hz, 18 VA

Sensor Power: selectable, 5 or 12 VDC ± 10%, 0 to 125 mA max

Display: 5 digit, 0.56" bright red 7-segment LED; 9 program and status display annunciators

Setpoints: Speed: 4 digit, programmable decimal point; Ratio: 4 digit, fixed decimal point X.XXX; Process Time: 4 digit, fixed format MM:SS; Jog Speed: 4 digit

Alarms: high and low; programmable as actual value or percentage of sepoint

Security: 3 levels: Program (Disable/Enable); Setup (Off/On) and Setpoint Adjustment (Incremental/Digit by Digit/Both/None)

Signal Inputs: Feedback and Reference: squarewave (pulse) or sinewave (magnetic), 20 kHz max each

Control Inputs: Auto/Manual; Trim Reset/Jog; Ramp Hold

Analog Output: 0 to 10 VDC at 5 mA max using internal reference; or 0 to external Reference voltage, 15 VDC max

Alarm Outputs: open collector, 100 mA max. sink, 28 VDC max

Regulation: Leader (speed): 0.05%; Follower (ratio): 0.05% with zero long term drift; Process Time: 0.05%

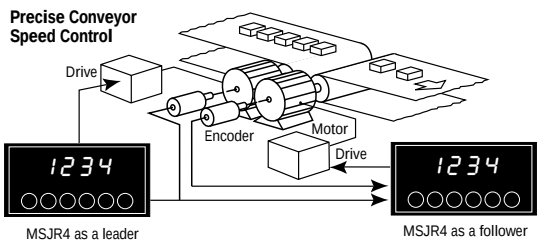
Loop Time: 16 milliseconds

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

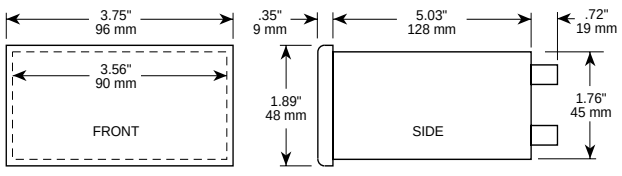
For trim input capability, see MSJR5
For integrated DC drive, see MDJR1

Model No.	Description
MSJR4U00	Digital Speed Controller

Typical Applications:



Dimensions:



Panel Dims: Cutout: 1.78" x 3.58" (45 x 92 mm). Thickness: 1/16" (1.6 mm) to 1/4" (6.4 mm). Depth behind panel: 5.75" (147 mm) min.

MSJR5 Motion Controller

A new standard for price and performance in full PID digital speed regulation, with analog input for control of dancer position or web tension

The Dynapar brand MSJR5 offers improved speed regulation and new capabilities for variable speed drives. It is similar in function to the MSJR4, with the addition of an analog input. In speed control of pumps or conveyors, an easy-to-use operator device for setting the speed is a simple potentiometer. The MSJR5 will adjust and display the setpoint directly from the pot.

For plastics converting or metal processing applications, the follower capability matches the speed of one section to another. The analog trim input allows direct control of dancer position in web processes, or tension sensing in winding or slitting operations.

The MSJR5 has a large, LED display, which can be scaled to show RPM, feet per minute, or sheets per hour, for easy monitoring and speed setting.

General features include:

- Leader or follower operation
- Speed or Process Time (inverse speed) setpoints
- Analog input for remote setpoint or trim adjustment
- PID with velocity feedforward
- Programmable Accel/Decel ramp rate
- Speed display calibration in engineering units
- High and Low alarms in setpoint units or percentage of setpoint
- Three level security of setpoints, loop gains and program data
- NEMA4/IP66 front panel washdown rating
- Nonvolatile memory

Installation is simplified through the use of pluggable terminals and simple input and output diagnostics. The rugged metal enclosure and isolated drive output provide complete immunity from electrical noise and the universal power input is fully filtered for low emissions.

SPECIFICATIONS

Input Power: universal, 85 to 265 VAC, 50-60 Hz, 18 VA

Sensor Power: selectable, 5 or 12 VDC ± 10%, 0 to 125 mA max

Display: 5 digit, 0.56" bright red 7-segment LED; 9 program and status display annunciators

Setpoints: Speed: 4 digit, programmable decimal point; Ratio: 4 digit, fixed decimal point X.XXX; Process Time: 4 digit, fixed format MM:SS; Jog Speed: 4 digit

Alarms: high and low; programmable as actual value or percentage of sepoint

Security: 3 levels: Program (Disable/Enable); Setup (Off/On) and Setpoint Adjustment (Incremental/Digit by Digit/Both/None)

Analog Trim Input: Range: 0 to 10 VDC max; Resolution 10 mV (0.1% of full scale); Scaling: Zero Reference and Gain Adjust

Signal Inputs: Feedback and Reference: squarewave (pulse) or sinewave (magnetic), 20 kHz max each

Control Inputs: Auto/Manual; Trim Reset/Jog; Ramp Hold

Analog Output: 0 to 10 VDC at 5 mA max using internal reference; or 0 to external Reference voltage, 15 VDC max

Alarm Outputs: open collector, 100 mA max. sink, 28 VDC max

Regulation: Leader (speed): 0.05%; Follower (ratio): 0.05% with zero long term drift; Process Time: 0.05%

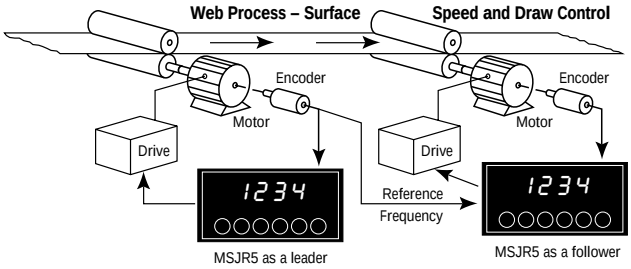
Loop Time: 16 milliseconds

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

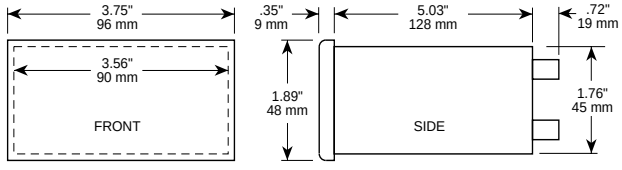
For no trim input capability, see MSJR4
For integrated DC drive, see MDJR1

Model No.	Description
MSJR5U00	Digital Speed Controller with Analog Trim Input

Typical Applications:



Dimensions:



Panel Dims: Cutout: 1.78" x 3.58" (45 x 92 mm). Thickness: 1/16" (1.6 mm) to 1/4" (6.4 mm). Depth behind panel: 5.75" (147 mm) min.

MDJR1 Motion Controller

The most economical and compact fractional horsepower digital DC drive, with full PID control, leader/follower and process time capabilities

The Dynapar brand MDJR1 provides superior speed regulation and unique capabilities for control of small DC motors. Extruders, mixing pumps and material handling conveyors benefit from the elimination of speed variations from temperature, power line voltage or motor load changes; the result is consistently higher quality production. The MDJR1 also operates in minutes and seconds, for food and beverage applications that need to control the cooking time of ovens and broilers.

The follower mode of the MDJR1 precisely matches its motor speed to another motor, machine section or manufacturing process. With the assurance of zero cumulative error (drift) over time, it economically automates transfer lines, coating or draw of plastics film, and paper or plastics winding/unwinding.

The MDJR1 has a large, LED display. Actual process time or speed can be scaled into meaningful units (feet per minute, gallons per second, or RPM) for operator ease in monitoring and setting the desired speed.

General features include:

- Leader or follower operation
- Speed or Process Time (inverse speed) setpoints
- Fractional horsepower DC drive
- PID with velocity feedforward
- Programmable Accel/Decel ramp rate
- Speed display calibration in engineering units
- High and Low alarms in setpoint units or percentage of setpoint
- Three level security of setpoints, loop gains and program data
- NEMA4/IP66 front panel washdown rating
- Nonvolatile memory

Installation is simplified through the use of pluggable terminals and simple input and output diagnostics. The rugged metal enclosure and isolated drive output provide complete immunity from electrical noise and the universal power input is fully filtered for low emissions.

For speed control without drive, see MSJR4, MSJR5
For higher HP rated DC drive, see MDJR2

SPECIFICATIONS

Input Power: universal, 85 to 265 VAC, 50-60 Hz, 18 VA

Output Power: 0 to 90 VDC typical at 115 VAC input (0 to 180 VDC typical at 230 VAC input)

Maximum HP Rating: 1/3 HP at 115 VAC input; 2/3 HP at 230 VAC input

Overload Capacity: 200 % for 1 minute

Sensor Power: selectable, 5 or 12 VDC ± 10%, 0 to 125 mA max

Display: 5 digit, 0.56" bright red 7-segment LED; 9 program and status display annunciators

Setpoints: Speed: 4 digit, programmable decimal point; Ratio: 4 digit, fixed decimal point X.XXX; Process Time: 4 digit, fixed format MM:SS; Jog Speed: 4 digit

Alarms: high and low; programmable as actual value or percentage of sepoint

Security: 3 levels: Program (Disable/Enable); Setup (Off/On) and Setpoint Adjustment (Incremental/Digit by Digit/Both/None)

Signal Inputs: Feedback and Reference: squarewave (pulse) or sinewave (magnetic), 20 kHz max each

Control Inputs: Auto/Manual; Trim Reset/Jog; Ramp Hold

Alarm Outputs: open collector, 100 mA max. sink, 28 VDC max

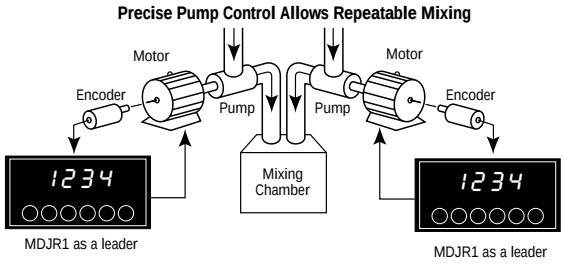
Regulation: Leader (speed): 0.05%; Follower (ratio): 0.05% with zero long term drift; Process Time: 0.05%

Loop Time: 16 milliseconds

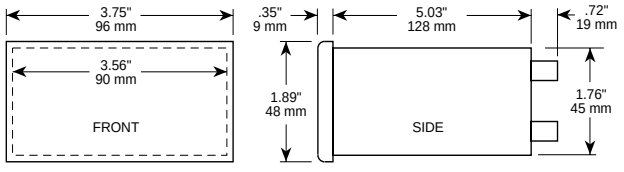
Operating Temperature: 32° to 122°F (0° to 50°C)

Model No.	Description
MDJR1U00	**MDjr1** 1/8 DIN Digital DC Drive

Typical Applications:



Dimensions:



Panel Dims: Cutout: 1.78" x 3.58" (45 x 92 mm). Thickness: 1/16" (1.6 mm) to 1/4" (6.4 mm). Depth behind panel: 5.75" (147 mm) min.

MDJR2 Motion Controller

A new standard for price and performance in compact digital DC drives, with full PID control, leader/follower and process time capabilities

The Dynapar brand MDJR2 provides superior speed regulation and unique capabilities for control of DC motors. Extruders, mixing pumps and material handling conveyors benefit from the elimination of speed variations from temperature, power line voltage or motor load changes; the result is consistently higher quality production. The MDJR2 also operates in minutes and seconds, for food and beverage applications that need to control the cooking time of ovens and broilers.

The follower mode of the MDJR2 precisely matches its motor speed to another motor, machine section or manufacturing process. With the assurance of zero cumulative error (drift) over time, it economically automates transfer lines, coating or draw of plastics film, and paper or plastics winding/unwinding.

The MDJR2 has a large, LED display. Actual process time or speed can be scaled into meaningful units (feet per minute, gallons per second, or RPM) for operator ease in monitoring and setting the desired speed.

General features include:

- Leader or follower operation
- Speed or Process Time (inverse speed) setpoints
- Integral horsepower DC drive
- PID with velocity feedforward
- Programmable Accel/Decel ramp rate
- Speed display calibration in engineering units
- High and Low alarms in setpoint units or percentage of setpoint
- Three level security of setpoints, loop gains and program data
- NEMA4/IP66 front panel washdown rating
- Nonvolatile memory

Installation is simplified through the use of pluggable terminals and simple input and output diagnostics. The rugged metal enclosure and isolated drive output provide complete immunity from electrical noise and the universal power input is fully filtered for low emissions.

For speed control without drive, see MSJR4, MSJR5
For smaller DC drive, see MDJR1

SPECIFICATIONS

Input Power: universal, 85 to 265 VAC, 50-60 Hz, 18 VA

Output Power: 0 to 90 VDC typical at 115 VAC input (0 to 180 VDC typical at 230 VAC input)

Maximum HP Rating: 1 HP at 115 VAC input; 2 HP at 230 VAC input

Overload Capacity: 200 % for 1 minute

Sensor Power: selectable, 5 or 12 VDC ± 10%, 0 to 125 mA max

Display: 5 digit, 0.56" bright red 7-segment LED; 9 program and status display annunciators

Setpoints: Speed: 4 digit, programmable decimal point; Ratio: 4 digit, fixed decimal point X.XXX; Process Time: 4 digit, fixed format MM:SS; Jog Speed: 4 digit

Alarms: high and low; programmable as actual value or percentage of sepoint

Security: 3 levels: Program (Disable/Enable); Setup (Off/On) and Setpoint Adjustment (Incremental/Digit by Digit/Both/None)

Signal Inputs: Feedback and Reference: squarewave (pulse) or sinewave (magnetic), 20 kHz max each

Control Inputs: Auto/Manual; Trim Reset/Jog; Ramp Hold

Alarm Outputs: open collector, 100 mA max. sink, 28 VDC max

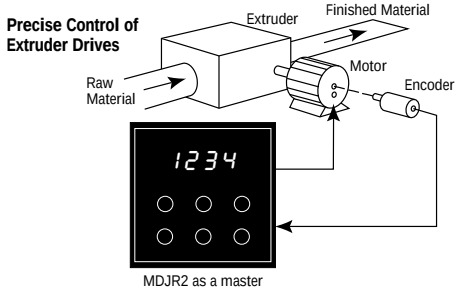
Regulation: Leader (speed): 0.05%; Follower (ratio): 0.05% with zero long term drift; Process Time: 0.05%

Loop Time: 16 milliseconds

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

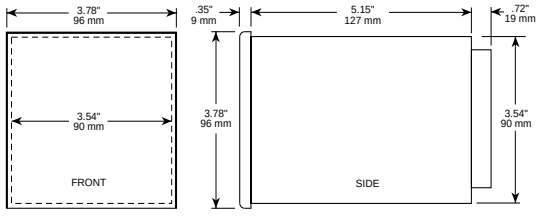
Model No.	Description
MDJR2U00	1/4 DIN Digital DC Drive

Typical Applications:



MDJR2 as a master

Dimensions:



Panel Dims: Cutout: 3.58" x 3.58" (92 x 92 mm). Thickness: 1/16" (1.6 mm) to 1/4" (6.4 mm). Depth behind panel: 5.75" (147 mm) min.

DANAHER INDUSTRIAL CONTROLS has representatives and distributors located in major cities within the United States and throughout the world. For information about the distributor or sales office nearest you, contact our customer service department:

Customer Service
call Toll Free 800.873.8731
or 847.662.2666

Internet Presence
E-Mail: dancon@dancon.com
Worldwide Web: http://www.dancon.com

Notes

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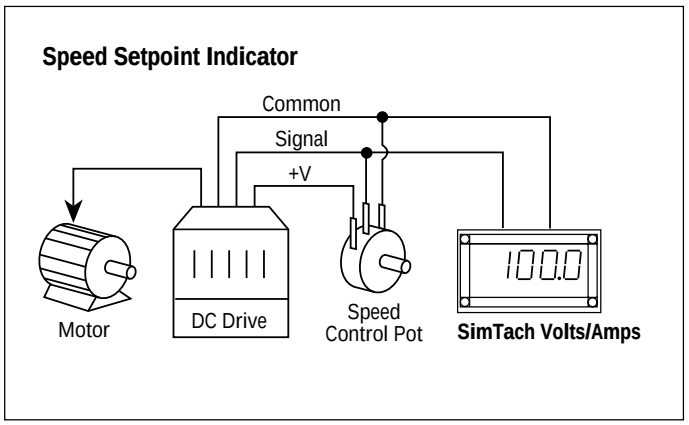
Internet Presence
E-Mail: dancon@dancon.com
Worldwide Web: http://www.dancon.com

Veeder-Root
Dynapar
Eagle Signal

Process indicators are used for display and/or control of process variables in applications that use analog signals representing pressure, temperature, weight, etc. Our Dynapar brand instruments are especially well suited for analog-input measurements in industrial environments. Danaher Controls' leadership in designing products suitable for severe industrial environments ensures the highest level of value and performance.

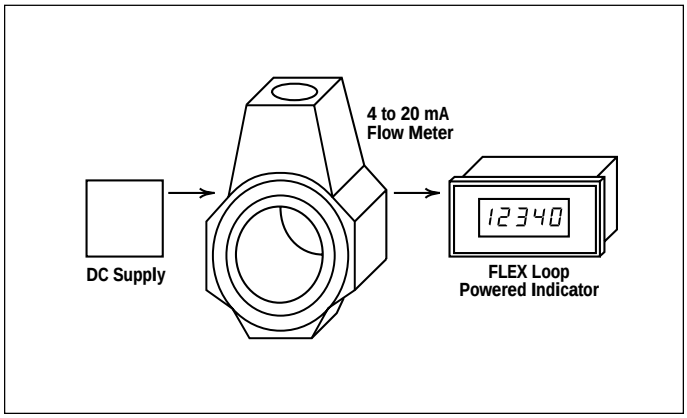
DIGITAL PANEL METER FUNCTIONS

DC Volt Meters will display in proportion to the voltage applied to the input. Several input ranges allow their use in a variety of applications. In the lowest range, DC volt meters can replace old analog meters and provide more resolution and accuracy. Through the use of a shunt (resistor), DC volt meters can also be used to display motor load currents. The middle ranges accommodate operator input devices or process control electronics. On the high range, these meters can readout power supply or DC motor voltages.



DC Current Meters are popular when noise interference can disrupt voltage levels and are common signals used to drive old analog meters. Reference outputs of 0 to 1 mA, 0 to 5 mA, and 0 to 10 mA which are proportional to motor speed are also available from some AC drives.

Process Volt Meters and Current Loop Indicators operate similar to DC voltage and current meters, but include more extensive span and zero adjustments. Some popular signal ranges include –10 to +10 VDC, 4 to 20 mA and 10 to 50 mA current loops. These sensors are popular in industrial environments when their signals must be reliably transmitted over large distances, or when the signal is needed by more than one device. The minimum and maximum signal levels require adjustments at both ends of the range in order to provide a meaningful display.



DISPLAY TYPES

Light emitting diode (LED) and liquid crystal displays (LCD) are two popular choices for digital display of numeric information. Our products are offered in a range of price and size selections, in addition to the display type.

LED's can be viewed in very dimly lit areas since they produce their own light. Their high contrast presentation makes them the preferred type when the display must be observed from a distance.

LCD's are best suited for installation in areas where there is reasonably good lighting. They are superior to most other display types when viewed in very bright ambient light, such as direct sunlight. Our S628 AWESOME Series feature an LED display that can change color when an alarm or limit is reached.

SPECIFYING A DIGITAL PANEL METER

The selection of an LED or LCD display is dictated by the amount of ambient light in the area. LCD's are better suited to sunlit environments while LED's work well in dimly lit areas. LCD displays usually come in smaller package sizes and are often chosen when space constraints are present.

Applications require a certain display range, which is determined by the number of digits. For example, a 3-1/2 digit panel meter can indicate value to ±1,999. A 7200 RPM motor speed indicator would require a 4-1/2 digit meter whose range is ±19,999. For process control signals, the minimum display may not be 0. Zero adjustments allow the minimum signal level to be set to indicate the value desired while Span adjustments handle the maximum level.

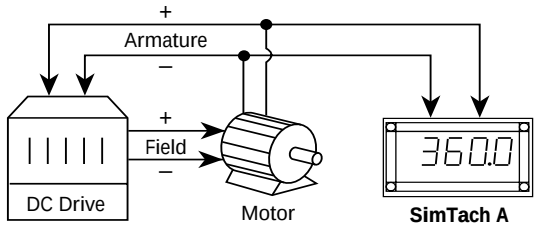
Finally, other convenience features should be considered. Setup and calibration methods can be potentiometer adjustments or switch settings. Accessory power may be needed to power sensing devices.

ELECTRONIC INPUT SIGNALS

Digital panel meters can be used with a variety of input sensors. DC voltage sources include pots, power supplies, motor drives and DC tachometers. DC current sources include instrumentation, speed references and process controllers. Current loop and process volts signals can originate with flow meters, pressure transducers, temperature sensors and signal transmitters.

Indicator Function	Input Type
Operator Setpoint, Power Supply Voltage	DC Voltage
Speed Reference	DC Current
Rate of Flow, Temperature	Current Loop
Pressure	Process Volts

Actual Speed Indicator Using Motor Armature Voltage



Process Indicators

This Selector Guide can assist you in determining the type of process indicator that best fits your application requirements. Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture. The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value.

Dynapar brand	*S628 DC Process*	*S628 Temp. Indicator*	*S628 DC Volts/Amps*	*S628 AC Volts/Amps*
Page Number: The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value. ***Description and Features:*** Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture.	**Page: 9.06** ★  ■ **DC Process meter with AWESOME, large display that changes color at alarm value** ■ **Programmable help function and secondary legend display** ■ **Field configurable alarm outputs** ■ **Maximum and minimum value capture**	**Page: 9.07** ★  ■ **Temperature indicator with AWESOME, large display that changes color at alarm value** ■ **Accepts most standard thermocouple types and 3 & 4 wire RTDs** ■ **Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)** ■ **Maximum and minimum value capture**	**Page: 9.08** ★  ■ **DC meter with AWESOME, large display that changes color at alarm value** ■ **Inputs from 0-100 mV to 0-600 VDC, 0-1 mA to 0-2 amps** ■ **Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)** ■ **Maximum and minimum value capture**	**Page: 9.09** ★  ■ **True RMS AC meter with AWESOME, large display that changes color at alarm value** ■ **Inputs from 0-1 VAC to 0-600 VAC, 0-1 mA to 0-1 amp** ■ **Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)** ■ **Maximum and minimum value capture**
Dimensions	48mm x 96mm	48mm x 96mm	48mm x 96mm	48mm x 96mm
Display Type	LED, Programmable Red or Green color	LED, Programmable Red or Green color	LED, Programmable Red or Green color	LED, Programmable Red or Green color
Number of Digits	5 (0.71" high)	5 (0.71" high)	5 (0.71" high)	5 (0.71" high)
Power Supply	90-240 VAC, 20-50 VAC/DC 50/60 Hz, 4 Watts	90-240 VAC, 20-50 VAC/DC 50/60 Hz, 4 Watts	90-240 VAC, 20-50 VAC/DC 50/60 Hz, 4 Watts	90-240 VAC, 20-50 VAC/DC 50/60 Hz, 4 Watts
Input Ranges	mA to 50mA, DCV to ±10 Volts and ±100 mV	B, J, K, N, S, and T thermocouples, 14 bits	From 0-100 mV to 0-600 VDC, 0-1 mA to 0-2 amps	From 0-1 VAC to 0-600 VAC, 0-1 mA to 0-1 amp
Input Scaling	Front panel coordinate input scaling	Front panel coordinate input scaling	Front panel coordinate input scaling	Front panel coordinate input scaling
Accuracy	±0.01% of span	±0.01% of span	±0.1% of span	±0.1% of span (20 Hz to 5kHz)
Outputs	NPN: 100 mA; Relay: SPDT, 2A; Linear Current & Voltage	NPN: 100 mA; Relay: SPDT, 2A; Linear Current & Voltage	NPN: 100 mA; Relay: SPDT, 2A; Linear Current & Voltage	NPN: 100 mA; Relay: SPDT, 2A; Linear Current & Voltage
Serial Communication	RS-485; Serial asynchronous	RS-485; Serial asynchronous	RS-485; Serial asynchronous	RS-485; Serial asynchronous
Front Panel Rating	NEMA 4X/IEC IP65	NEMA 4X/IEC IP65	NEMA 4X/IEC IP65	NEMA 4X/IEC IP65

For locating products which do not appear in this selector guide, refer to the table of contents or the product to page number index in Section 15.

Series S428a	*Simtach Process*	*Simtach Volts/Amps*	*Simtach A*	
Page: 9.10 	**Page: 9.11** 	**Page: 9.12** 	**Page: 9.13** 	
■ Universal input and front panel scaling allows calibrated display of a variety of process signals **■ Unique, powerful alarm functions enhance application flexibility: latching operation; elapsed time display; and combinational logic** **■ Up to 3 outputs**	**■ Economically priced panel meter is configurable to accept most common process signals and display an engineering unit value** **■ Select STL for use with AC or DC voltage signals** **■ Select STP for applications that require an AC or DC current input**	**■ Economically priced panel meter accepts inputs up to 200 Volts or 2 amps** **■ Chose STB for DC signals** **■ Chose STC for AC signals**	**■ DC voltmeter with 4 1/2 digit LED display** **■ Input range up to 600 VDC** **■ Choice of Offset, Span adjustment scaling, or 3 digit BCD multiplier**	
48mm x 96mm Red or Green LED 4 (0.56" high)	50mm x 96mm LED 3 1/2 (0.56" high)	50mm x 96mm LED 3 1/2 (0.56" high)	50mm x 96mm LED 4 1/2 (0.56" high)	
90- 264 VAC Thermocouple, RTD, DC mA, DC V Auto for TC & RTD, front panel for DC mA & DC V	115, 230 VAC (switch selectable) VDC: ±5; ±10; ±20, Current Loop: 4 - 20, 10 - 50 mA Offset and Span adjustment with Internal reference	115, 230 VAC (switch selectable) 0 to .2, 2 20, 200 Volts, 0 to 2, 20, 200, 2000 mA, AC /DC Offset and Span adjustment	115, 230 VAC 0 to 20, 200, 600 VDC Span adjust or digital (BCD) calibrator	
0.05% Up to 3 Alarm Relays; 20 - 28 VDC Accessory Power RS-485 (Modbus or Open ASCII) NEMA 4X/IP65	0.1% None None NEMA 4	0.1% None None NEMA 4	0.1% None None NEMA 4	

Process Indicators

This Selector Guide can assist you in determining the type of process indicator that best fits your application requirements. Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture. The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value.

Dynapar *brand*	***FLEX LPI***	***FLEX DCV***	***FLEX DCI***	***MicroMITE 7999F3***
Page Number: The ★ symbol denotes our "Star Products" which we recommend be given first consideration. They offer maximum functionality, performance, and value. ***Description and Features:*** Condensed description and specification information is provided. Complete information is available by turning to the referenced page number that appears above each product's picture.	**Page: 9.14**  **■ Loop powered 3 1/2 digit LCD indicator for 4 -20 mA or 10 -50 mA current loops** **■ Compact 36mm x 72mm bezel size** **■ Rugged metal case**	**Page: 9.15**  **■ 3 1/2 digit LCD indicator for displaying DC voltage inputs up to 199.9 Volts** **■ Compact 36mm x 72mm bezel size** **■ Rugged metal case**	**Page: 9.16**  **■ 3 1/2 digit LCD indicator for displaying DC current inputs up to 199.9 mA** **■ Compact 36mm x 72mm bezel size** **■ Rugged metal case**	**Page: 9.17** ★  **■ 3 1/2 digit LCD with backlighting** **■ 200mV full scale can be externally ranged for popular DC measurements** **■ Compact 24mm x 48mm or 36mm x 72mm bezel size**
Dimensions	36mm x 72mm	36mm x 72mm	36mm x 72mm	24 x 48mm or 36 x 72mm
Display Type	LCD	LCD	LCD	LCD with backlight
Number of Digits	3 1/2 (0.5" high)	3 1/2 (0.5" high)	3 1/2 (0.5" high)	3 1/2 (10mm or 14mm high)
Power Supply	Loop powered	5 VDC	5 VDC	5 or 9 VDC
Input Ranges	4 - 20 mA, 10 - 50 mA	0 - 199.9 mVDC, 0 -1.999, 19.99, 199.9 VDC	0 to 199.9 µA, 0 to 1.999, 19.99, 199.9 mA	200 mV full scale
Input Scaling	Offset and Span adjustment	Offset and Span adjustment	Offset and Span adjustment	Offset and Span adjustment
Accuracy	0.1%	0.1%	0.1%	.05%, ±1 LSD
Outputs	None	None	None	None
Serial Communication	None	None	None	None
Front Panel Rating	NEMA 4	NEMA 4	Nema 4	–

Notes

DANAHER INDUSTRIAL CONTROLS has representatives and distributors located in major cities within the United States and throughout the world. For information about the distributor or sales office nearest you, contact our customer service department:

Customer Service
call Toll Free 800.873.8731
or 847.662.2666

Internet Presence
E-Mail: dancon@dancon.com
Worldwide Web: http://www.dancon.com

Veeder-Root
Dynapar
Eagle Signal

S628 AWESOME DC Process

DC Process analog unit with blazing bright, large, color-changing display… optional tare function

CE

The Veeder-Root brand S628 DC Process is a member of a family of 1/8 DIN instruments which offer breakthrough display technology as well as easy-to-program user setup. Its large LED display features the ability to change color based on process status such as exceeding an alarm value. Therefore, when monitoring process variables in applications using analog signals, the S628 provides operators with an instant visual alert to changes in the application's status.

- AWESOME 0.71" high digit LED display (27% larger than other 1/8 DIN units)
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- Field configurable alarm outputs
- Max. and min. value capture
- Plug in option cards include: 2nd relay, digital input, linear output, RS-485 communication
- Transmitter power simplifies wiring
- mA inputs to 50mA, DCV inputs to ±10 Volts and ±100 mV
- Tare function
- Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)
- 100 ms sample time with 0.03% accuracy
- CE approved

Process inputs are easily scaled into engineering units by programming two input values and their corresponding display values through the front panel. For nonlinear applications, up to 10 scale points can be entered. A teach function, which automatically inputs the current sensor reading as a scale point, further simplifies setup. The two alarms can be setup for high or low operation, reverse or direct acting, and can be latched. An integrating totalizer can be used to accumulate flow or other values where tracking a total may be useful.

SPECIFICATIONS

Process Input: To 50 mA, ±10 Volts DC, ±100 mV
Accuracy: ±0.01% of span
Sample Rate: 100 ms
Resolution: 14 bits
Sensor Break: Detected within 2 seconds

Control Inputs: Sourcing, Edge Sensitive
Logic Low ≤ 2.0 VDC, Logic High ≥ 3.0
Impedance: 4.7 KΩ to + voltage - Sourcing
Function: Programmable

Outputs: Solid State: NPN open collector, 30 VDC max., 100 mA max.
Relay: SPDT, 5A resistive@ 110 VAC
Latency: 75 µ seconds, plus 8 ms for relay pull-in

Linear Outputs: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ); degrades linearly to ±0.5%
Resolution: 8 bits in 250ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedance: mA ranges: 500Ω max.; V ranges: 500Ω min.

Communication: RS-485; Serial asynchronous, UART to UART;
Open ASCII: One start bit, even parity, seven data bits, one stop bit;
Baud Rate selectable from 9600, 4800, 2400, or 1200
Maximum Zones: 99

Supply Voltage: 90-264 VAC, 50/60 Hz, or 20-50 VAC/VDC; 4 Watts

Accessory Power Supply: Voltage: 20-28 VDC, 24 VDC nominal;
Min. Impedance: 910Ω (22 mA @ 20 VDC)

Display: Red/Green, 7 segment LED
Primary display: 5 digits, 0.71" (18mm) height
Secondary display: single digit, 0.3" (7mm) height
Annunciators: Output 1 & Output 2 status

Dimensions: 48mm x 96mm, 110mm deep

Mounting: Panel mount (mounting bracket supplied), 45mm x 92mm cutout

Connections: Screw type terminals - combination head

Front Panel Rating: NEMA 4X/IEC IP65

Case Material: GE Lexan 940

Weight: 0.56 lbs.

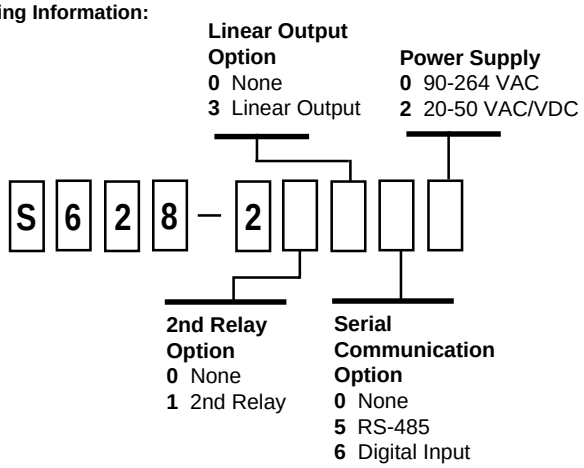
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit

Storage Temp.: -20° to 80° Celsius, -4° to 176° Fahrenheit

Relative Humidity: 20% to 95% non-condensing

Approvals: CE

Ordering Information:



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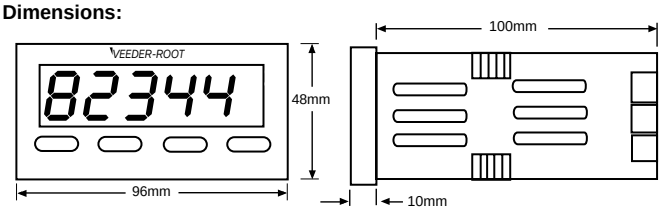


Panel Cutout: 45mm x 92mm (1.77" x 3.62")

S628 AWESOME Temp. Indicator

Temperature indicator with blazing bright, large display… changes color when reaches alarm value

CE

The Veeder-Root brand S628 Temperature Indicator is a member of a family of 1/8 DIN instruments which offer breakthrough display technology as well as easy-to-program user setup. Its large LED display features the ability to change color based on process status such as exceeding an alarm value. Therefore, when monitoring temperature as a critical value, the S628 provides operators with an instant visual alert to changes in the application's status.

- AWESOME 0.71" high digit LED display (27% larger than other 1/8 DIN units)
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- Field configurable alarm outputs
- Max. and min. value capture
- Plug in option cards include: 2nd relay, digital input, linear output, and RS-485 communication
- Accepts most standard thermocouple types and 3 & 4 wire RTDs
- Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)
- 250 ms sample time with 0.1% accuracy
- CE approved

Selection of input type is done easily from the front panel. Programmable filtering is used to ensure an accurate display even in electrically noisy environments, while a programmable offset value can be used to correct for known errors in the process. The two alarms can be setup for high or low operation, reverse or direct acting, and can be latched.

SPECIFICATIONS

Sensor Input: B, J, K, N, S, and T thermocouples
Accuracy: ±0.1% of span
Sample Rate: 250 ms
Resolution: 14 bits
Sensor Break: Detected within 2 seconds

Control Inputs: Sourcing, Edge Sensitive
Logic Low ≤ 2.0 VDC, Logic High ≥ 3.0
Impedance: 4.7 KΩ to + voltage - Sourcing
Response Time: 25 ms
Function: Programmable

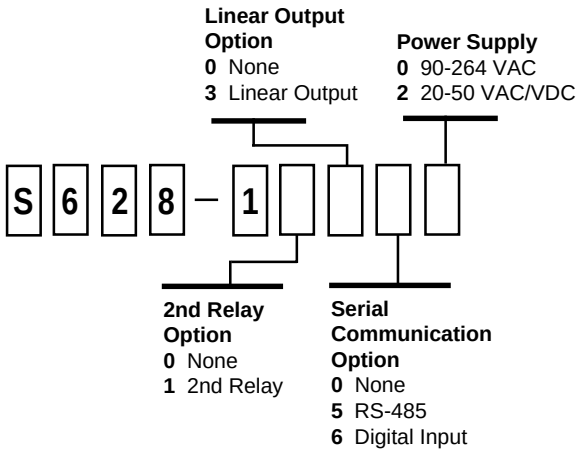
Outputs: Solid State: NPN open collector, 30 VDC max., 100 mA max.
Relay: SPDT, 5A resistive@ 110 VAC
Latency: 75 μ seconds, plus 8 ms for relay pull-in

Linear Outputs: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ); degrades linearly to ±0.5%
Resolution: 8 bits in 250ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedance: mA ranges: 500Ω max.; V ranges: 500Ω min.

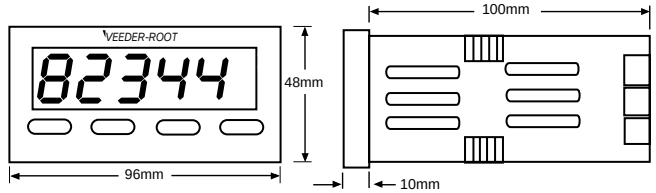
Communication: RS-485; Serial asynchronous, UART to UART;
Open ASCII: One start bit, even parity seven data bits, one stop bit;
Baud Rate selectable from 9600, 4800, 2400, or 1200
Maximum Zones: 99

Supply Voltage: 90-264 VAC, 50/60 Hz, or 20-50 VAC/VDC; 4 Watts
Accessory Power Supply: 24 VDC @ 30 mA
Display: Red/Green, 7 segment LED
Primary display: 5 digits, 0.71" (18mm) height
Secondary display: single digit, 0.3" (7mm) height
Annunciators: Output 1 & Output 2 status
Dimensions: 48mm x 96mm, 110mm deep
Mounting: Panel mount (mounting bracket supplied), 45mm x 92mm cutout
Connections: Screw type terminals - combination head
Front Panel Rating: NEMA 4X/IEC IP65
Case Material: GE Lexan 940
Weight: 0.56 lbs.
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit
Storage Temp.: -20° to 80° Celsius, -4° to 176° Fahrenheit
Relative Humidity: 20% to 95% non-condensing
Approvals: CE

Ordering Information:



Dimensions:



Panel Cutout: 45mm x 92mm (1.77" x 3.62")

9 PROCESS INDICATORS

S628 AWESOME DC Volts/Amps

DC Volts/Amps analog unit with blazing bright, large, color-changing display

CE

The Veeder-Root brand S628 DC Volts/Amps is a member of a family of 1/8 DIN instruments which offer breakthrough display technology as well as easy-to-program user setup. Its large LED display features the ability to change color based on process status such as exceeding an alarm value. Therefore, when monitoring process variables in applications using analog signals, the S628 provides operators with an instant visual alert to changes in the application's status.

- AWESOME 0.71" high digit LED display (27% larger than other 1/8 DIN units)
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- Field configurable alarm outputs
- Max. and min. value capture
- Plug in option cards include: 2nd relay, digital input, linear output, RS-485 communication
- Transmitter power simplifies wiring
- Inputs from 0-100 mV to 0-600 VDC, 0-1 mA to 0-2 amps
- Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)
- 250 ms sample time with 0.1% accuracy
- CE approved

Process inputs are easily scaled into engineering units by programming two input values and their corresponding display values through the front panel. A teach function, which automatically inputs the current sensor reading as a scale point, further simplifies setup. The two alarms can be setup for high or low operation, reverse or direct acting, and can be latched.

SPECIFICATIONS

Process Input: From 0-100 mV to 0-600 VDC, 0-1 mA to 0-2 amps
Accuracy: ±0.1% of span
Sample Rate: 250 ms
Resolution: 14 bits

Control Inputs: Sourcing, Edge Sensitive
Logic Low ≤ 2.0 VDC, Logic High ≥ 3.0
Impedance: 4.7 KΩ to + voltage - Sourcing
Response Time: 25 ms
Function: Programmable

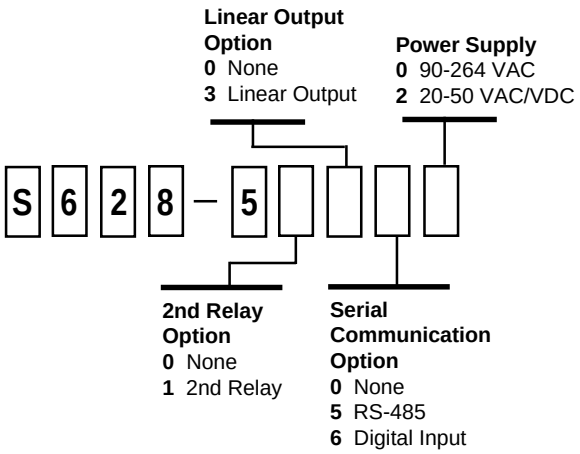
Outputs: Solid State: NPN open collector, 30 VDC max., 100 mA max.
Relay: SPDT, 5A resistive@ 110 VAC
Latency: 75 µ seconds, plus 8 ms for relay pull-in

Linear Outputs: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ); degrades linearly to ±0.5%
Resolution: 8 bits in 250ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedance: mA ranges: 500Ω max.; V ranges: 500Ω min.

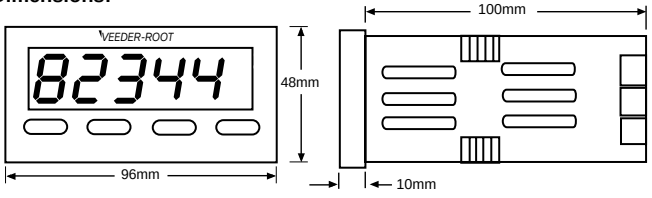
Communication: RS-485; Serial asynchronous, UART to UART;
Open ASCII: One start bit, even parity seven data bits, one stop bit;
Baud Rate selectable from 9600, 4800, 2400, or 1200
Maximum Zones: 99

Supply Voltage: 90-264 VAC, 50/60 Hz, or 20-50 VAC/VDC; 4 Watts
Accessory Power Supply: Voltage: 20-28 VDC, 24 VDC nominal;
Min. Impedance: 910Ω (22 mA @ 20 VDC)
Display: Red/Green, 7 segment LED
Primary display: 5 digits, 0.71" (18mm) height
Secondary display: single digit, 0.3" (7mm) height
Annunciators: Output 1 & Output 2 status
Dimensions: 48mm x 96mm, 110mm deep
Mounting: Panel mount (mounting bracket supplied), 45mm x 92mm cutout
Connections: Screw type terminals - combination head
Front Panel Rating: NEMA 4X/IEC IP65
Case Material: GE Lexan 940
Weight: 0.56 lbs.
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit
Storage Temp.: -20° to 80° Celsius, -4° to 176° Fahrenheit
Relative Humidity: 20% to 95% non-condensing
Approvals: CE

Ordering Information:



Dimensions:



Panel Cutout: 45mm x 92mm (1.77" x 3.62")

S628 AWESOME AC Volts/Amps

AC Volts/Amps analog unit with blazing bright, large, color-changing display… true RMS measurement

CE

The Veeder-Root brand S628 AC Volts/Amps is a member of a family of 1/8 DIN instruments which offer breakthrough display technology as well as easy-to-program user setup. Its large LED display features the ability to change color based on process status such as exceeding an alarm value. Therefore, when monitoring process variables in applications using analog signals, the S628 provides operators with an instant visual alert to changes in the application's status.

- AWESOME 0.71" high digit LED display (27% larger than other 1/8 DIN units)
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- Field configurable alarm outputs
- Max. and min. value capture
- Plug in option cards include: 2nd relay, digital input, linear output, RS-485 communication
- Transmitter power simplifies wiring
- Inputs from 0-1 VAC to 0-600 VAC, 0-1 mA to 0-1 amp
- True RMS measurement
- Standard outputs: 2 NPN transistors & 1 relay (optional 2nd relay)
- 250 ms sample time with 0.1% accuracy
- CE approved

Process inputs are easily scaled into engineering units by programming two input values and their corresponding display values through the front panel. A teach function, which automatically inputs the current sensor reading as a scale point, further simplifies setup. The two alarms can be setup for high or low operation, reverse or direct acting, and can be latched.

SPECIFICATIONS

Process Input: From 0-1 VAC to 0-600 VAC, 0-1 mA to 0-1 amp
Frequency: 20 Hz to 5kHz - degrades at higher frequencies
Accuracy: ±0.1% of span
Sample Rate: 250 ms
Resolution: 14 bits

Control Inputs: Sourcing, Edge Sensitive
Logic Low ≤ 2.0 VDC, Logic High ≥ 3.0
Impedance: 4.7 KΩ to + voltage - Sourcing
Response Time: 25 ms
Function: Programmable

Outputs: Solid State: NPN open collector, 30 VDC max., 100 mA max.
Relay: SPDT, 5A resistive@ 110 VAC
Latency: 75 μ seconds, plus 8 ms for relay pull-in

Linear Outputs: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ); degrades linearly to ±0.5%
Resolution: 8 bits in 250ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedance: mA ranges: 500Ω max.; V ranges: 500Ω min.

Communication: RS-485; Serial asynchronous, UART to UART;
Open ASCII: One start bit, even parity, seven data bits, one stop bit;
Baud Rate selectable from 9600, 4800, 2400, or 1200
Maximum Zones: 99

Supply Voltage: 90-264 VAC, 50/60 Hz, or 20-50 VAC/VDC; 4 Watts

Accessory Power Supply: Voltage: 20-28 VDC, 24 VDC nominal;
Min. Impedance: 910Ω (22 mA @ 20 VDC)

Display: Red/Green, 7 segment LED
Primary display: 5 digits, 0.71" (18mm) height
Secondary display: single digit, 0.3" (7mm) height
Annunciators: Output 1 & Output 2 status

Dimensions: 48mm x 96mm, 110mm deep

Mounting: Panel mount (mounting bracket supplied), 45mm x 92mm cutout

Connections: Screw type terminals - combination head

Front Panel Rating: NEMA 4X/IEC IP65

Case Material: GE Lexan 940

Weight: 0.56 lbs.

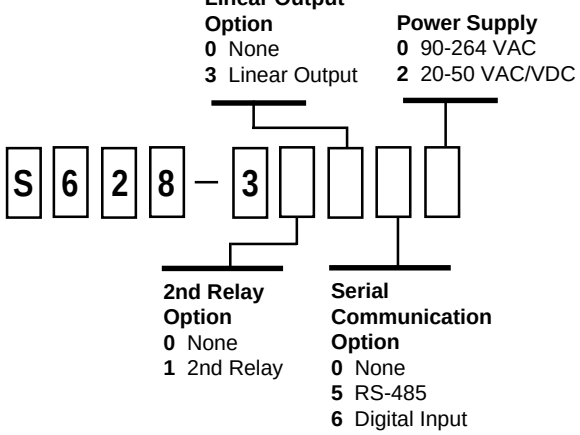
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit

Storage Temp.: -20° to 80° Celsius, -4° to 176° Fahrenheit

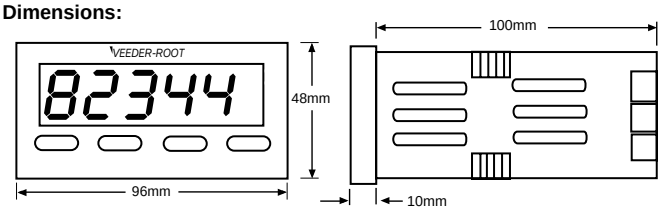
Relative Humidity: 20% to 95% non-condensing

Approvals: CE

Ordering Information:



Dimensions:



Panel Cutout: 45mm x 92mm (1.77" x 3.62")

S428a Process Indicator with Alarm

Volts, Current, Thermocouple, or RTD Process Measurements with Intelligent Features… available with red, green or color changing LED display

File No.: 67237

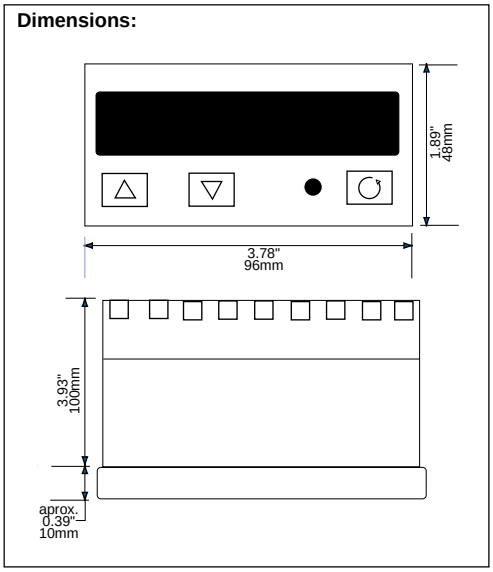
RECOGNIZED RECOGNIZED

The Dynapar S428A is a new digital panel indicator providing a high contrast, high visibility display, designed for optimal ease of use in a wide variety of process measurement applications. Fast, and accurate, the new generation S428A features a user-selectable dual color display option with fixed red or green displays or a green to red color change when an alarm condition occurs. Plug-in modules allow PV retransmission or transmitter power supply and up to 5 alarm relays (latching or non-latching).

The S428a ike its predecessor, the S428, is an easy to use low cost solution for process display applications including temperature, pressure and force - providing excellent visibility and high accuracy all within an affordable and ultra compact housing.

- **S428A is a highly improved direct replacement for previous S428 models**
- **10V SSR driver output allows drive of up to 3 typical SSR/ SCR inputs**
- **Plug-in Output Modules for SSR driver, Triac, Relay and linear outputs – easily field changeable**
- **Latching Alarms - Included as standard**
- **Jumperless configuration with self-recognition of optionboards – promotes simple, error free set-up**
- **Multi-point Scaling and Tare features included as standard**
- **NEMA 4X/IP66 rated front panel for use in washdown environments**
- **Available Transmitter Power Supply simplifies wiring**
- **Universal AC power supply**

Dimensions:



Optional RS-485 serial communications supports Modbus or West ASCII protocol.

Alarm outputs can be field configured for operation that best suits the application.

SPECIFICATIONS

Inputs:

Sample Rate: 4 per second

T/C's: J, T, K, L, N, B, R, S, C; Pt Rh20% vs. Pt 40% Rh

RTD: 3-wire, PT100

DC Linear (Scalable –1999 to +9999):

Volts: 0-5V, 1-5V, 0-10V, 2-10V

DC milliamps: 0-20mA or 4-20mA

DC millivolts: 0-50mV, 10-50mV

Outputs: (see "Models" for available output Configurations)

Relay: SPDT (Form C); 2A resistive at 120/240 VAC

DC: 0-20mA, 4-20mA; 0-10V, 1-5V, 2-10V, 0-5V

Transmitter Power: Optional 24 VDC

General:

Power Supply: 100-240V, 50/60Hz, Optional 20-48VAC 50/60Hz / 22-65VDC; Power Consumption: 5W / 7.5 VA Maximum

Display: Red or Green, or color changing 7 segment LED; 4 digit primary display, single digit secondary display; Height: 0.53" (13mm) primary display, 0.39" (10mm) secondary display; Annunciators: LED indicators for output and status

Weight: 0.46 lbs (0.21 kg)

Conformance: CE, UR, cUR UL File # 67237; Safety: EN61010, EMC: EN61326

Environmental:

Operating Temp: 32° to 131°F (0° to 55°C)

Storage Temp: -4° to 176°F (-20° to 80°C)

Humidity: 20% to 95% non-condensing RH

Front Panel Rating: NEMA 4X/IEC IP66

Models

Code 1: Model #	Code 2: Input Type	Code 3: Option Slot 1	Code 4: Option Slot 2	Code 5: Option Slot 3	Code 6: Option Slot A	Code 7: Power Supply	Code 8: Display Color
S428A	☐	☐	☐	☐	☐	☐	☐
I/8 DIN Indicator with Alarm Function	**1** 3 Wire RTD or DC mV **2** Thermo-couple **3** DC mA **4** DC Voltage	**0** Not Fitted **1** Relay **2** DC for SSR **3** DC 0-10V **4** DC 0-20mA **5** DC 0-5V **6** DC 2-10V **7** DC 4-20mA **8** Triac*	**0** Not Fitted **1** Relay **2** DC for SSR **3** DC 0-10V **4** DC 0-20mA **5** DC 0-5V **6** DC 2-10V **7** DC 4-20mA **8** Triac* **9** Dual Relay	**0** Not Fitted **1** Relay **2** DC for SSR **3** DC 0-10V **4** DC 0-20mA **5** DC 0-5V **6** DC 2-10V **7** DC 4-20mA **8** Transmitter Power Supply **9** Dual Relay	**0** Not fitted **1** RS-485 Serial Communication **3** Remote Setpoint Input (digital)	**0** 100-240 AC **2** 24-48 AC or DC	**0** Red Display **1** Green Display **4** Color Change Display (Red/Green)

SimTach Process Volts/Current

Economical indicators in a compact package with convenience features and "off-line" calibration mode

The Dynapar brand SimTach Process Volts/Amps Panel Meters offer a unique combination of convenience and functionality in a compact, economical package suitable for industrial applications. Standard convenience features include pluggable terminal strips and rear access to setup jumpers. The unique Calibration Mode allows quick and easy setup of the display to indicate process or engineering units, without the use of signal generators and additional reference meters.

- Calibration Mode for easy "off-line" display setup
- Large, bright 0.56" high red LED display
- Full ±3-1/2 digit range with selectable "dummy zero"
- Selectable input voltage or current range
- Sealed NEMA4/IP65 front panel
- Programmable decimal point position
- Selectable fast or slow input response filter

The SimTach panel meters are packaged in a 1/8 DIN cutout, aluminum enclosure for NEMA4/IP65 protection, offering the superior noise immunity and ruggedness required in tough industrial environments.

SPECIFICATIONS

Panel Mounting: 1/8 DIN cutout 45x92mm (1.78" x 3.56"); 100mm (4.0") depth behind panel

Accuracy: ± 0.1% of full scale ±1 digit; stability: ±100 ppm per °C

Input Ranges
Process Volts: ±5, ±10 or ±20 VDC selectable
Process Current: 4 – 20 mA or 10 – 50 mA selectable

Display: ± 3-1/2 digit plus "dummy zero", 14mm (0.56") high LED

Decimal Points: None, .X, .XX, .XXX, or .XXXX

Calibration
Offset Range: >1000 counts
Span Range: 0 to full scale display
Calibration Mode: internal 4.3V or 15mA reference

Power Requirements: 95 to 130, or 190 to 260 VAC, 50/60 Hz, 6 VA

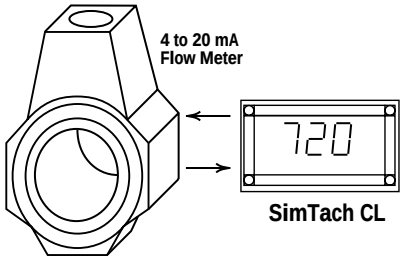
Optional Excitation Power Output: 24VDC, unregulated; 50 mA max.

Operating Temperature: 4° to +140 °F (–20° to +60°C)

For AC or DC applications, see SimTach Volts/Amps Digital Panel Meters.
For 600VDC applications, see SimTach A.

Model No.	Description
STLS0	SimTach Current Loop Meter, 115/230VAC
STLS1	STLS0 (above) with excitation supply
STPS0	SimTach Process Volts Meter, 115/230VAC
STPS1	STPS0 (above) with excitation supply

Typical Applications:



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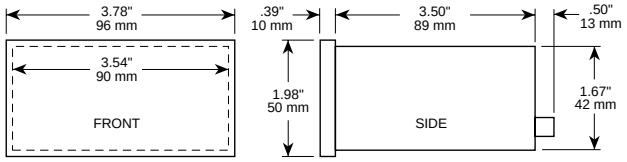


SimTach Volts/Amps

Economical indicators in a compact package with convenience features

The Dynapar brand SimTach Volts/Amps Digital Panel Meters offer a unique combination of convenience and functionality in a compact, economical package suitable for industrial applications. By combining both voltage and current capabilities and a wide input range selection, a single model serves almost any simple monitoring need. Standard convenience features include: pluggable terminal strips; Offset and Span adjustments; and rear access to setup jumpers. The Scaling feature allows these meters to indicate in engineering or process units.

- Selectable scaling for display in engineering units
- Large, bright 0.56" high red LED display
- Full ±3-1/2 digit range with selectable "dummy zero"
- Selectable input voltage or current range
- Sealed NEMA 4 front panel
- Programmable decimal point position
- Selectable fast or slow input response filter

The SimTach panel meters are packaged in a 1/8 DIN cutout, aluminum enclosure for NEMA4/IP65 protection, offering the superior noise immunity and ruggedness required in tough industrial environments.

SPECIFICATIONS

Panel Mounting: 1/8 DIN cutout, 45x92mm (1.77" x 3.62"); 100mm (4.0") depth behind panel

Accuracy: ± 0.1% of full scale ±1 digit; stability: ±100 ppm per °C

Input Ranges: 0 to .2, 2, 20 or 200 V; 0 to 2, 20, 200 or 2000 mA selectable

Display: ± 3-1/2 digit plus "dummy zero", 14mm (0.56") high LEDs

Decimal Points: None, .X, .XX, .XXX, or .XXXX

Calibration: Zero and Full Scale Span adjustable; selectable Scaling allows continuous full scale adjustment

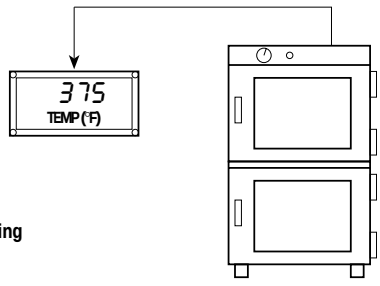
Power Requirements: 95 to 130, or 190 to 260 VAC, 50/60 Hz, 6 VA

Operating Temperature: 4° to +140 °F (–20° to +60°C)

For Process Volts or Current Loop applications, see SimTach Process Panel Meters.
For 600VDC applications, see SimTach A.

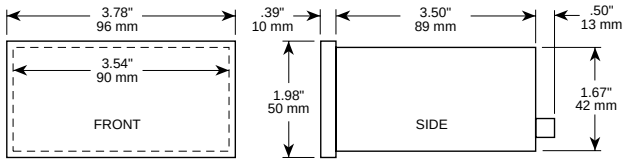
Model No.	Description
STBS0	SimTach DC Volts/Amps Meter, 115/230VAC
STCS0	SimTach AC Volts/Amps Meter, 115/230VAC
108226-0001	Measured Units Labels for SimTach Panel Meters
605498-0001	10 Amp Shunt, produces 100mV at full scale
605498-0002	100 Amp Shunt, produces 100mV at full scale

Typical Applications:



Oven Temperature Setting

Dimensions:



SimTach A

DC voltmeter with a full complement of easy-to-use features makes it a best value

The SimTach A breaks new ground for industrial panel meters. It combines high performance and wide range operation with convenient, switch selectable features such as decimal point position, display update rate and input range selection, making installation and configuration amazingly simple. Its unique "off line" Digital Calibrator option allows the input scale factor to be calculated and set on the BCD switches while the unit is being installed. It is no longer necessary to obtain a precise process speed measurement with another device and "twiddle" potentiometers until the correct readout is obtained.

- Large, bright 0.56" high red LED display
- Full ±4-1/2 digit display
- Selectable input voltage range
- Sealed NEMA 4 front panel
- Programmable decimal point position
- Switchable fast or slow display update rate

The SimTach A DC Volts Panel Meter is a perfect indicator for a variety of applications: speed setting potentiometers and analog output instrumentation; DC tachometer feedback; field or armature voltage to DC motors.

For digital (pulsed) inputs, see SimTach D
For readout with alarm capability , use a MAXjr Tach 1 with a PM64S Analog to Frequency Converter

SPECIFICATIONS

Panel Mounting: 1.78" x 3.56" cutout; 5.68" depth

Accuracy: ± .0.1%; stability: ≤ 75 ppm per °C

Input Ranges: 0 to ±20, 0 to ±200, or 0 to ±600 VDC selectable

Display: ± 4-1/2 digit, 0.56" LED; update rate selectable 1/2 second or 2 seconds

Decimal Points: None, .X, .XX, .XXX, or .XXXX

Calibration: Multi-turn potentiometer range: 5 to 200%; optional digital calibrator (STAx1 models): 3 digit BCD multiplier 0.XXX range: 0.001 to 0.999 (0.000 setting equals 1.000)

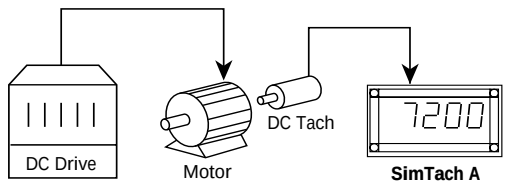
Power Requirements: 95 to 130, or 190 to 260 VAC, 50/60 Hz, 6 VA

Operating Temperature: 32° to +122 °F (0° to +50°C)

Model No.	Description
STA00	115 VAC, DC Volts Panel Meter
STAE0	230 VAC, DC Volts Panel Meter
STAS0	115 or 230 VAC, DC Volts Panel Meter
STA01	115 VAC, DC Volts Panel Meter with Digital Calibration
STAE1	230 VAC, DC Volts Panel Meter with Digital Calibration
STAS1	115 or 230 VAC, DC Volts Panel Meter with Digital Calibration

Typical Applications:

Actual Speed Indicator Using DC Tach Feedback



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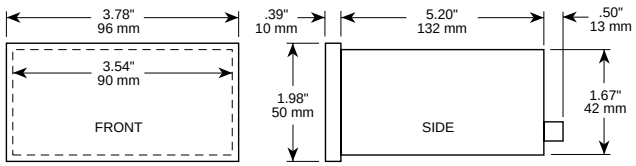


FLEX LPI

For low cost display of analog data – temperature; pressure; flow; position; etc.

The **FLEX** LPI is ideal for calibrated current loop indication in new system designs or in adding display to existing control loops. Its rugged die-cast enclosure is NEMA-4/IP65 rated, allowing installation in demanding industrial environments including wash-down applications.

- Requires no power connections – operates from loop current
- Large, high-contrast LCD with 3-1/2 active digits
- Minus sign and overflow indicators
- Selectable right-hand "Dummy Zero"
- Programmable decimal point – tenths, hundredths, or thousandths
- Operates in 4-20mA or 10-50mA current loops
- Coarse and fine potentiometer adjustments for zero and span
- Reading rate of 2.5 updates per second
- Wide operating temperature range, -20° to +60° C
- Meets NEMA-4 requirements for water- and dust-tight seal

The **FLEX** LPI features coarse and fine adjustments for zero (offset) and span, for quick and easy calibration. A quick-disconnect plug-in connector and panel mounting hardware and gasket is provided.

For Process Current Meter, see FLEX DCI
For Process Volt Meter, see FLEX DCV

SPECIFICATIONS

Display: 0.5" high LCD. 3-1/2 digit with minus sign (-1999 to 1999); Selectable decimal point (X.X.X.X) or right-hand dummy zero

Overrange: Indicated by display of "1" in the most significant digit and the blanking of the lower order digits

Operating Power: Derived from loop current; Input signal: 4-20mA, 10-50mA, 100mA maximum.

Forward Voltage Drop: 3 volts, typical

Span Scaling Range: Approx. 100 to 1999 (4-20mA); approx. 300 to 1999 (10-50mA)

Offset Scaling Range: Approx. -500 to +1500

Reading Rate: 2.5 per second, nominal

Linearity: ±0.1% of reading, ±1 counts, at 25° C

Operating Temperature: -20° C to +60° C

Zero Stability: ±0.1 count per ° C, typical; ±0.3 count per ° C, maximum

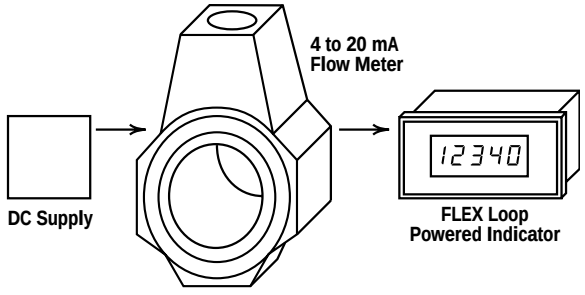
Span Stability: ±0.005% of span per ° C, typical; ±0.015% maximum

Materials: Diecast bezel, high impact plastic lens and insert; Front surface meets NEMA-4 requirements when panel mounted with gasket provided

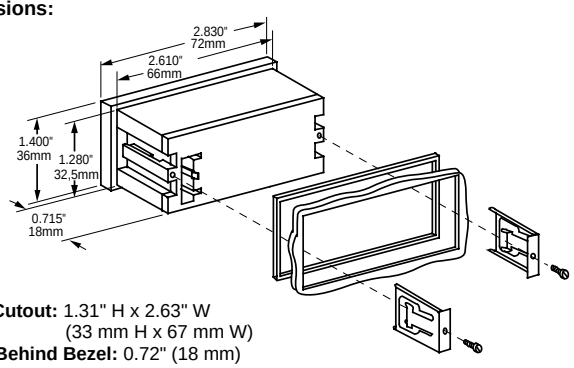
Weight: 5.5 oz. (156 g)

Model No.	Description
FLPI00	**FLEX** LPI digital panel meter

Typical Applications:



Dimensions:



Panel Cutout: 1.31" H x 2.63" W
(33 mm H x 67 mm W)
Depth Behind Bezel: 0.72" (18 mm)

FLEX DCV

A compact, rugged industrial process volt meter . . . includes calibration for zero and range.

The **FLEX** DCV is ideal for calibrated indication of voltage related units. It's ideal for use in new system designs or for adding display to existing voltage controlled processes. Its rugged die-cast enclosure is NEMA-4/ IP65 rated, allowing installation in demanding industrial environments including wash-down applications.

- Large, high-contrast LCD with 3-1/2 active digits
- Four selectable input ranges from 199.9mVDC to 199.9VDC
- Minus sign and overflow indicators
- Accuracy to ±0.1%
- Selectable right-hand "Dummy Zero"
- Programmable decimal point – tenths, hundredths, or thousandths
- Overrange protection and indication
- Potentiometer adjustments for zero, zero-offset, and scale
- Reading rate of 2.5 updates per second
- Wide operating temperature range, -20° to +60°C
- Meets NEMA-4 requirements for water- and dust-tight seal

For Loop Powered Current Indicator, see FLEX LPI
For Process Current Meter, see FLEX DCI

The **FLEX** DCV features auto-zero circuitry and scaling provision to display in engineering units other than range voltage, allowing quick and easy calibration. A quick-disconnect plug-in connector and panel mounting hardware and gasket is provided.

SPECIFICATIONS

Display: 0.5" high LCD, 3-1/2 digit with minus sign (-1999 to 1999); Selectable decimal point (X.X.X.X) or right-hand dummy zero

Operating Power: 5VDC @ 2mA nominal; Absolute Minimum & Maximum: 4VDC & 7VDC

Input Ranges: Selectable 0-199.9mVDC, 0-1.999VDC, 0-19.99VDC, 0-199.9VDC

Overrange: Indicated by display of "1" in the most significant digit and the blanking of the lower order digits

Maximum Voltage: 0-199.9mVDC Range: 30VDC; All Other Ranges: 300VDC

Input Impedance: 1 Megohm

Accuracy: ±0.1%, ±1 digit

Reading Rate: 2.5 per second, nominal

Settling Time: 1.5 seconds

Scaling Adjustment: Adjustable from approx. 200 to 1999 counts using scale (coarse) and span (fine) adjustment potentiometers

Offset Adjustment (selectable): approx. -100 to +300 counts; Auto zero is disabled if offset feature is selected

Operating Temperature: -20°C to +60°C

Span Temperature Coefficient: With Scaling Adjustment Disabled: ±0.005% of span/°C; With Scaling Adjustment Enabled: 0.015% of span/°C

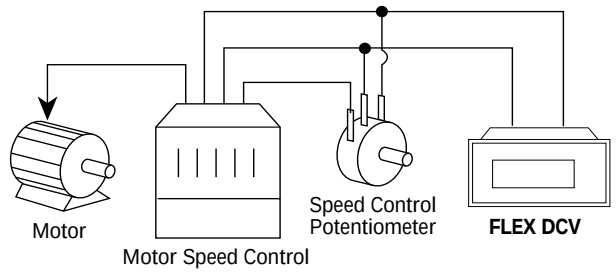
Zero Temperature Coefficient: ±0.03% of span/°C with offset adjustment enabled

Materials: Diecast bezel, high impact plastic lens and insert; front surface meets NEMA-4 requirements when panel mounted with gasket provided

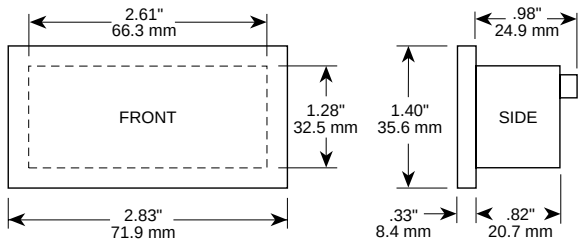
Weight: 5.5 oz. (156 g)

Model No.	Description
FDCV00	**FLEX** DCV, digital panel meter, DC voltage
0328992-120	PANEL OPENING ADAPTOR; lets FLEX fit in 3.78" x 1.75" cutouts.

Typical Applications:



Dimensions:



Panel Dims: Cutout: 2.63" x 1.31". Thickness: 0.08" to 0.25". Depth: 0.70" min.

FLEX DCI

A compact, rugged industrial process current meter . . . includes calibration for zero and range.

The **FLEX** DCI is ideal for DC current, or calibrated indication of current related units. It's ideal for use in new system designs or for adding display to existing current controlled processes. Its rugged die-cast enclosure is NEMA-4/IP65 rated, allowing installation in demanding industrial environments including wash-down applications.

- Large, high-contrast LCD with 3-1/2 active digits
- Four selectable input ranges from 199.9µADC to 199.9mADC
- Minus sign and overflow indicators
- Accuracy to ±0.1%
- Selectable right-hand "Dummy Zero"
- Programmable decimal point – tenths, hundredths, or thousandths
- Overrange protection and indication
- Potentiometer adjustments for zero, zero-offset, and scale
- Reading rate of 2.5 updates per second
- Wide operating temperature range, -20° to +60° C
- Meets NEMA-4 requirements for water- and dust-tight seal

For Loop Powered Current Indicator, see FLEX LPI
For Process Volt Meter, see FLEX DCV

SPECIFICATIONS

Display: 0.5" high LCD, 3-1/2 digit with minus sign (-1999 to 1999); Selectable decimal point (X.X.X.X) or right-hand dummy zero

Operating Power: 5 VDC @ 2 mA nominal; 4 VDC min., 7 VDC max.

Input Ranges: Selectable 0-199.9µADC, 0-1.999mADC, 0-19.99mADC, 0-199.9mADC

Overrange: Indicated by display of "1" in the most significant digit and the blanking of the lower order digits

Maximum Current: 0-199.9mADC Range: 1 Amp; All Other Ranges: Maximum range current x 10

Input Impedance: 1 Ohm to 909 Ohm, dependent on selected range

Accuracy: 199.9mA range: ±0.15%, ±1 digit; All Other Ranges: ±0.1%, ±1 digit

Reading Rate: 2.5 per second, nominal

Settling Time: 1.5 seconds

Scaling Adjustment: Adjustable from approx. 200 to 1999 counts using scale (coarse) and span (fine) adjustment potentiometers

Offset Adjustment (selectable): Approx. -100 to +300 counts; Auto zero is disabled if offset feature is selected

Operating Temperature: -20°C to +60°C

Span Temperature Coefficient: With Scaling Adjustment Disabled: ±0.005% of span/°C; With Scaling Adjustment Enabled: 0.015% of span/°C

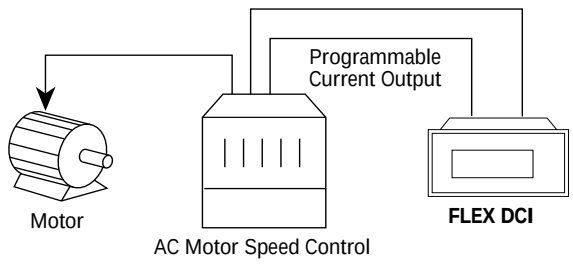
Zero Temperature Coefficient: ±0.005% of span/°C with offset adjustment enabled

Materials: Diecast bezel, high impact plastic lens and insert; front surface meets NEMA-4 requirements when panel mounted with gasket provided

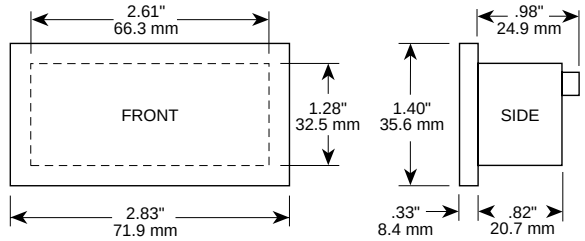
Weight: 5.5 oz. (156 g)

Model No.	Description
FDCI00	**FLEX** DCI, digital panel meter, DC current
0328992-120	PANEL OPENING ADAPTOR; lets FLEX fit in 3.78" x 1.75" cutouts.

Typical Applications:



Dimensions:



Panel Dims: Cutout: 2.63" x 1.31". Thickness: 0.08" to 0.25". Depth: 0.70" min.

MicroMITE 7999F3-003/004

Compact digital multimeters available in 24 x 48mm and 36 x 72mm packages… high contrast backlighted LCD

A compact panel meter module for printed circuit board mounting features a 3-1/2 digit, LCD display with backlight capability. Available in two package sizes: 24 x 48mm (10mm high display) and 36 x 72mm (14mm high display). It may be powered by an external 5 or 9 volt DC battery or power supply (not included).

LED backlighting provides crisp, clear display under every lighting condition,

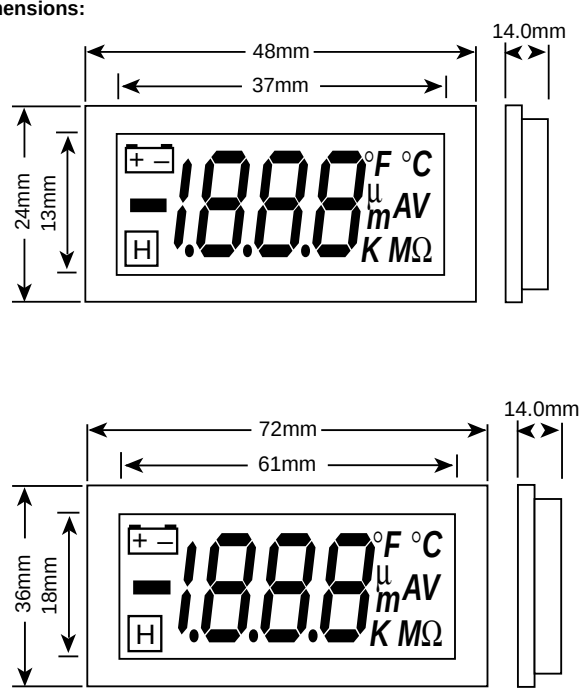
PCB solder-pins are provided for electrical connections and integral bezel allows convienient panel mounting.

Using external resistor networks or other components, the panel meter's 200mV full-scale reading may be calibrated for measurement of voltage and multirange voltage, voltage ratio, current and multirange current, resistance and resistance ratio and temperature. Easy to use annunciators and programmable decimal point produce a friendly user interface.

- 3-1/2 digit backlighted LCD
- 5 or 9 volt dc operation
- Low battery indication
- Display on-hold function
- 200 mV full scale sensitivity
- Easy to use annunciators
- Automatic polarity and zero

Ideal applications are: test equipment, process instrumentation, medical equipment, environmental monitors and many more. Low current consumption and low battery indicator (9 volt operation only) allow use in portable equipment.

Dimensions:



Specifications

	Min	Typ	Max	Units
Accuracy (±1 LSD)		0.05	0.1	%
Linearity			±1	LSD
Sample Rate		3		per sec
Temperature Stability		30		ppm/°C
Operating temperature range	0		50	°C
Supply voltage (5v mode)	3	5	7	Vdc
Supply voltage (9v mode)	7	9	12	Vdc
Supply current		2		mA
Backlight current (24 x 48mm)		80		mA
Backlight current (36 x 72mm)		160		mA
Input impedance	100			MΩ

Model Number	Description
07999F3-003	Panel Meter 36 x 72mm, 14mm LCD
07999F3-004	Panel Meter 24 x 48mm, 8mm LCD