

Features and Selection Guide

**The PRESIDENT SERIES
Leads the Way With Features
Like These . . .**

- **COLOR-CODED KEYBOARD PANEL**
for dependable and simple selection, indication, control and programmability.
- **BRIGHT .56" SEVEN-SEGMENT LED DISPLAY**
for easy-to-read count and preset values.
- **SEALED FRONT PANEL TO NEMA 4 SPECIFICATIONS**
for complete environmental protection.
- **FAMILY APPEARANCE DESIGN**
for uniform, human-interfaced panels.
- **DIN PACKAGE SIZE**
for coordinated systems design.
- **TWO-WAY 20 MA LOOP COMMUNICATIONS**
1200 baud serial communications.
- **IDEAL POWER INPUT**
120/240 VAC and 11 to 28 VDC for versatility in application.
- **SYSTEM MATCHED AUXILIARY POWER**
for instant hook-up of low cost DC input devices at correct voltage and current levels.
- **FULL LINE OF TRANSDUCERS AND SENSORS**
for one-source systems design.
- **RELAY AND TRANSISTOR OUTPUTS**
to meet every control requirement.
- **NON-VOLATILE MEMORY**
for no loss of memory – no batteries required.

MODEL NUMBER	TOTALIZER	BATCH COUNTER	MAIN COUNTER	PRESETS	RATE	SCALER	CROP-CUT	DIGITS	Comments/Description
57810-400	•				•			7	120 Vac Only, No Communication
57810-401	•				•			7	240 Vac Only, No Communication
57820-400		1	1		•			5	120 Vac, No Comm. Rate Control Mode Available
57820-401		1	1		•			5	240 Vac, No Comm. Rate Control Mode Available
58691-4XX									Hazardous Environment Control
58810-400	•							8	May Be Reset To Zero or an Offset Value
58811-400	•				•			8	May Be Reset To Zero or an Offset Value
58815-400	•				•	•		8	May Be Reset To Zero or an Offset Value
58820-400		1	1					5	Single Preset
58821-400		1	1		•			5	Single Preset with Scaling
58825-400		1	1		•	•		5	Single Preset with Scaling and Rate
58831-400		1	2		•	•		5	Dual Preset with Scaling
58841-400	•	1	2		•	•		6	Dual Preset with Batch
58851-400	*	•	1 2		•	•		6	May Have Preset Batch Counter or Totalizer Counter
58861-400		1	3		•			6	Preset 1 & 2 May Be Used As Floating Prewarn
58868-400					•			6	Position Control
58827-400	Δ	Δ	3	1 each reg	•	•		6	Main Counter, Batch and Totalizer Presets
58827-410	√	√	3	1 each reg	•	•		6	2 Independent Count Registers
58867-400		•	1 2		•	•		6	High Speed Count Control - 30 KHz Max

* These models have, in addition to the main count register, a register that may be configured to be used as either a totalizer or single preset batch counter. These two functions are mutually exclusive.

Δ The Model 58827-400 has both a totalizer and a batch counter each with a single preset. In addition, the batch counter may be configured as an additional totalizer with control instead of batch counter.

√ The Model 58827-410 has two completely independent count input channels feeding two, independent, single preset count registers. In addition, a third single preset register may be used as either a totalizer or a batch counter for one or both of the two main counters.

PRESIDENT SERIES COUNT / CONTROL

Totalizers

MODELS

57810-400	7 Digit with Ratemeter
58810-400	8 Digit Totalizer
58811-400	8 Digit with Scaling
58815-400	8 Digit with Ratemeter and Scaling

- Serial Communications
- Reset to Offset Value
- Ratemeter Option
- Count Scaling Option



Model 58810-400



Model 58815-400

Your measuring system isn't complete without a dependable means of recording and verifying production totals. Durant's President Series offers several models to complement the other single and multiple preset controls. These totalizers offer the familiar President Family features and reliability. The non-volatile memory, easy to read .56 inch LED displays, simple programming, standard package size, and flexible configuration all add up to a totalizer with exceptional value.

The Models 58811-400 and 58815-400 both offer count input scaling to adjust the displayed count value to compensate for mechanical system wear or to display in useful units such as feet, inches or gallons.

Rate display is available in two totalizer models. This feature allows you to monitor production rate as well as production totals. The Model 57810-400 uses an adjustable time base method to measure rate while the 58815-400 uses our 1/tau method that measures the time between input pulses and calculates the rate. This model also lets you program a rate scale factor that allows you to show

production in meaningful units such as feet per minute, bottles per hour or gallons per minute.

The 58811-400 and 58815-400 use function code programming while the other models use rear panel mounted DIP switches.

An offset feature allowing you to reset a control to a value other than zero is available in several models.

All totalizers except the 57810-400 feature the powerful President Family communications capability. This 20 mA 1200 baud serial communications link allows you to combine your totalizer with our Star Network Controller and Datalog products to give you a complete production monitoring system. Total, rate and offset values may be remotely read from the unit. Offset and scale factors may be sent to the counter.

You will find the President line of totalizers to be solid performers for your production monitoring needs.

Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Power

57810-400	120VAC (+10%, -20%) 47 to 63 Hz. 8W.
57810-401	240VAC (+10%, -20%) 47 to 63 Hz. 8W.
58810-400	120/240VAC (+10%, -20%) 47 to 63 Hz. 22W.
58811-400	120/240VAC (+10%, -20%) 47 to 63 Hz. 18 W.
58815-400	120/240VAC (+10%, -20%) 47 to 63 Hz. 18 W.

DC Power

57810-400, 57810-401, and 58810-400 can be powered by 11 to 15VDC.
58811-400 and 58815-400 can be powered by 11 to 28VDC.

DC Power Output

57810-400, 57810-401	15VDC (+1, -2) at 85mA.
58810-400	15VDC (+1, -2) 100mA.
58811-400, 58815-400	15VDC (+1, -2).
	150mA if powered from AC or less than 24VDC.
	100mA if powered from more than 24VDC.

Control Inputs

Model 57810-400/401

Count/rate display select.
Reset, momentary or maintained.

Model 58810-400

Reset, momentary or maintained.
Print/display latch.

Models 58811-400, 58815-400

Reset, momentary or maintained.
Print/display latch.
Program inhibit.
Also has "rate display select."

All models have front panel reset (may be disabled).

Count Scaler Option

Models 58811-400, 58815-400

Scale Factor Range: 0.0001 to 9.9999.

Operating Modes

Model 57810-400/401

Reset to zero.

All Other Models

Reset to zero or reset to offset.

Count Input Modes (2 input signals)

Model 57810-400/410

Add/subtract, add/add, subtract/subtract, add/count inhibit, subtract/count inhibit, count/direction control, quadrature. All modes have count double function to count on both rising and falling edges of pulse.

Model 58810-400, 58811-400, 58815-400

Add/subtract, add/count inhibit, count/direction control, quadrature. All modes except count/inhibit have count double function to count on both rising and falling edges of pulse.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Maximum Count Speeds:

Model	SF=1	SF<1	SF>9	Low Speed
57810-400	12 kHz	N/A	N/A	150 Hz
58810-400	10 kHz	N/A	N/A	150 Hz
58811-400	7.5 kHz	6.25 kHz	3.40 kHz	150 Hz
58815-400	7.5 kHz	6.25 kHz	3.50 kHz	150 Hz

SF= User programmable scale factor on models with scaling. Maximum input frequency is reduced by approximately 50% when count input doubling or quadrature mode is used.

Ratemeter Option Specifications

Model 58815-400

Rate Source: Count input or scaled count input.
Accuracy: $\pm 1\%$.
Resolution: 4 digits with floating or fixed decimal point.
Maximum Time Between Rate Pulses: 1-90 seconds.

Models 57810-400/410

Rate Source: Count input.
Programmable Sample Time Range: 0.001-9.999.
Accuracy: +1.5%, -2.0%.
Programmable fixed decimal point.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.
(Not available on model 57810-400/401).

ORDERING INFORMATION

Model Number	Product Description
57810-400	7 Digit Totalizer with Ratemeter 120 VAC
57810-401	7 Digit Totalizer with Ratemeter 240 VAC
58810-400	8 Digit Totalizer 120/240 VAC
58811-400	8 Digit Totalizer with Scaling 120/240 VAC
58815-400	8 Digit Totalizer with Ratemeter and Scaling 120/240 VAC

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MODEL NUMBER	TOTALIZER	BATCH COUNTER	MAIN COUNTER	PRESETS	RATE	SCALER	CROP-CUT	DIGITS	Comments/Description
57810-400	•				•			7	120 Vac Only, No Communication
57810-401	•				•			7	240 Vac Only, No Communication
57820-400		1	1		•			5	120 Vac, No Comm. Rate Control Mode Available
57820-401		1	1		•			5	240 Vac, No Comm. Rate Control Mode Available
58691-4XX									Hazardous Environment Control
58810-400	•							8	May Be Reset To Zero or an Offset Value
58811-400	•				•			8	May Be Reset To Zero or an Offset Value
58815-400	•				•	•		8	May Be Reset To Zero or an Offset Value
58820-400		1	1					5	Single Preset
58821-400		1	1		•			5	Single Preset with Scaling
58825-400		1	1		•	•		5	Single Preset with Scaling and Rate
58831-400		1	2		•	•		5	Dual Preset with Scaling
58841-400	•	1	2		•	•		6	Dual Preset with Batch
58851-400	*	•	1	2	•	•		6	May Have Preset Batch Counter or Totalizer Counter
58861-400		1	3		•			6	Preset 1 & 2 May Be Used As Floating Prewarn
58868-400					•			6	Position Control
58827-400	Δ	Δ	3	1 each reg	•	•		6	Main Counter, Batch and Totalizer Presets
58827-410	√	√	3	1 each reg	•	•		6	2 Independent Count Registers
58867-400		•	1	2	•	•		6	High Speed Count Control - 30 KHz Max

* These models have, in addition to the main count register, a register that may be configured to be used as either a totalizer or single preset batch counter. These two functions are mutually exclusive.

Δ The Model 58827-400 has both a totalizer and a batch counter each with a single preset. In addition, the batch counter may be configured as an additional totalizer with control instead of batch counter.

√ The Model 58827-410 has two completely independent count input channels feeding two, independent, single preset count registers. In addition, a third single preset register may be used as either a totalizer or a batch counter for one or both of the two main counters.

PRESIDENT SERIES COUNT / CONTROL

5 Digit , Single - Preset Controls

MODELS

58820-400	Single-Preset
58821-400	Single-Preset with Scaling
58825-400	Single-Preset with Rate, Scaling
57820-400	Single-Preset with Rate Control

- Relay and Transistor Output
- Serial Communications
- NEMA 4 Front Panel
- DC Power Output for Sensors
- Optional Count Scaling and Rate Indication

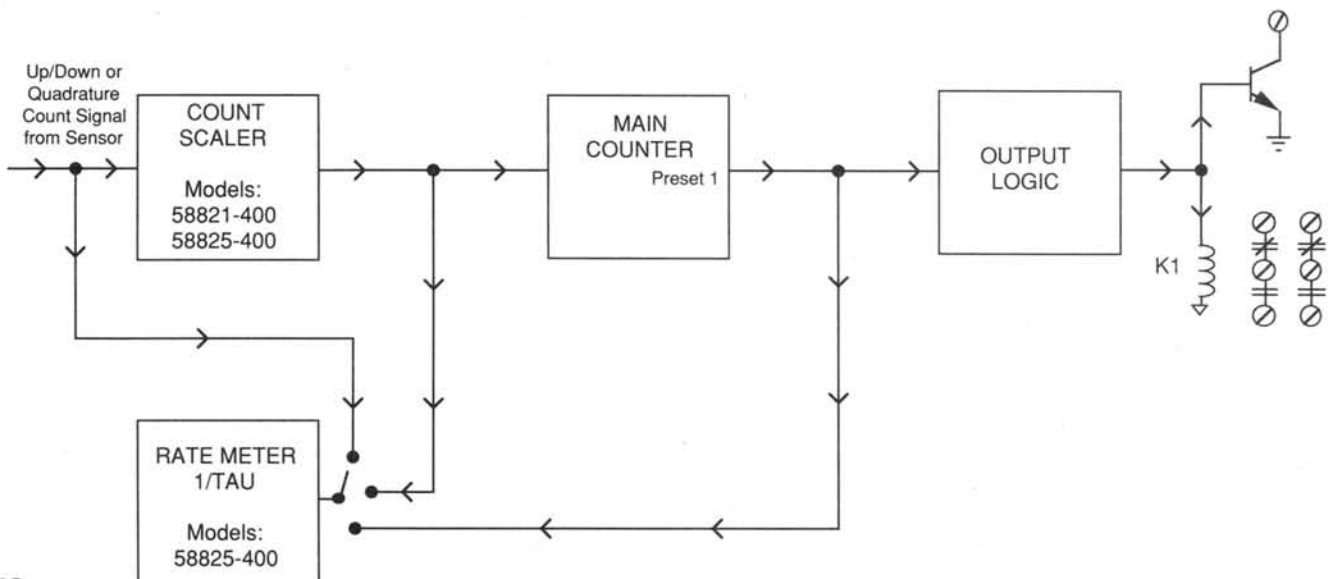


Model 58825-400

For most general applications, these versatile five-digit, single level controls offer all the predetermined count control capability your system may require. The innovations built into every President Series control provide the convenience you'll find in these economical models. They offer bidirectional counting and simple user programming, utilizing easy to use function codes. They can reset to zero and count up to provide a control relay or open collector transistor output at a preset number, or reset to a preset number and count down and provide an output at zero.

With features like a sealed front panel, quadrature count inputs, communications capability, relay latching, optional five-digit prescaling and a 1/tau ratemeter, as well as a broad selection of other accessories, they are the obvious choice when your application demands a quality control for basic preset capability. The functional block diagram below will give you a good overview of the capabilities of each model in the series. Models 57820-400/401 are similar to the 5882X-400 series, but include a rate control function. They do not have serial communications.

OVERALL BLOCK DIAGRAM



PRESIDENT SERIES COUNT / CONTROL

Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 to 63 Hz.

DC Operation: 11 to 28 VDC.

Power: 18 Watts.

DC Power Output

15 VDC (+1, -2).

150 mA if powered from AC or less than 24 VDC.

100 mA if powered from 24 VDC or greater.

NOTE: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Reset to zero and count up.

Reset to preset and count down.

Auto recycle.

Control Inputs

Reset, output unlatch, program inhibit, print request/display latch.

All models have front panel reset (may be disabled).

Count Scaler Option

Models 58821-400, 58825-400

Scale Factor Range: 0.0001 to 9.9999.

Output Specifications

2 Relays with one set of Form C contacts.

Type: FORM-C (SPDT).

U.L./C.S.A. Contact Ratings:

10 amps, resistive, @ 24 VDC or 240 VAC.

1/3 HP @ 120 VAC or 240 VAC.

150 VDC maximum switched voltage.

Mechanical Life: 5,000,000 operations.

Electrical Life: 100,000 operations at resistive rating.

1 Transistor Output

Type: Open collector NPN transistor with Zener diode transient surge protection.

Load Voltage: 30 VDC maximum.

Load Current: 300 milliamps maximum per transistor.

480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.

Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete.

Timeout: .01 to 99.99 Sec, $\pm 1\%$ (± 0.01 Sec if < 1 Sec).

Count Input Modes (2 input signals)

Add/subtract, add/count inhibit, count/direction control, quadrature. All modes except count/inhibit have count double function to count on both rising and falling edges of pulse.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Maximum Count Speeds:

Model	SF=1	SF<1	SF>9	Low Speed
58820-400	10 kHz	N/A	N/A	150 Hz
58821-400	7.5 kHz	6.2 kHz	2.0 kHz	150 Hz
58825-400	7.5 kHz	4.2 kHz	1.8 kHz	150 Hz

SF= User programmable scale factor on models with scaling. Maximum input frequency is reduced by approximately 50% when count input doubling or quadrature mode is used.

Ratemeter Option Specifications

58825-400

Rate Source: Count input, scaled count input or output.

Accuracy: $\pm 1\%$.

Resolution: 4 digits with floating or fixed decimal point.

Maximum Time Between Rate Pulses: 1-90 Seconds.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

(Not available on models 57820-400/401.)

ORDERING INFORMATION

Model Number	Product Description
58820-400	5 Digit, Single-Preset Control
58821-400	5 Digit, Single-Preset Control with Scaling
58825-400	5 Digit, Single-Preset Control with Rate and Scaling
57820-400	5 Digit, Single-Preset Control with Rate, 120 VAC
57820-401	5 Digit, Single-Preset Control with Rate, 240 VAC

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PRESIDENT SERIES COUNT / CONTROL

5 Digit , Dual - Preset Controls

MODEL 58831-400

- All Standard President Features
- Relay and Transistor Output for Each Preset
- Serial Communications
- NEMA 4 Front Panel
- DC Power Output for Sensors
- Count Scaling



Model 58831-400

If your application demands a predetermined count control that's compatible with high-speed production line use, this dual level control has the capability you need.

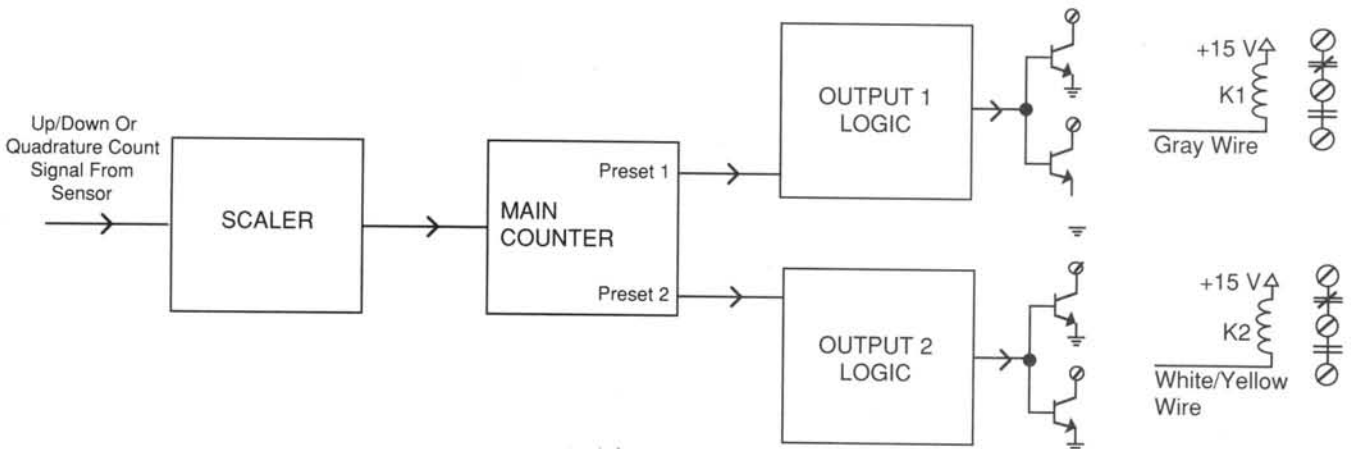
It has been specifically designed for all types of production counting and control where slowdown or pre-warn procedures are important operational requirements. The two levels of preset and complete programmability make it a versatile part of measuring systems for wire and cable processing, metal forming and cutting, paper and plastic

film processing as well as a host of other industrial applications.

The dual-preset feature also allows you to produce two different parts by using the bypass preset 1 input to select between the preset 1 and preset 2 as the control preset.

All the inherent features of the President Series combine to make this the control that puts the accent on ease of operation with precision and accuracy.

OVERALL BLOCK DIAGRAM



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 to 63 Hz.
DC Operation: 11 to 28 VDC.
Power: 18 Watts.

DC Power Output

15 VDC (+1, -2).
150 mA if powered from AC or less than 24 VDC.
100 mA if powered from 24 VDC or greater.

NOTE: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Reset to zero and count up.
Reset to preset and count down.
Auto recycle.
Bypass preset 1.

Control Inputs

Reset, output 1 and 2 unlatch, bypass preset 1, program in:
print request/display latch.
Front panel reset (may be disabled).

Count Scaler

Scale Factor Range: 0.0001 to 9.9999.

Output Specifications

2 Relays with two sets of Form C contacts.
Type: FORM-C (SPDT).
U.L./C.S.A. Contact Ratings:
10 amps, resistive, @ 24 VDC or 240 VAC.
1/3 HP @ 120 VAC or 240 VAC.
150 VDC maximum switched voltage.
Mechanical Life: 5,000,000 operations.
Electrical Life: 100,000 operations at resistive rating.
2 Transistor Outputs
Type: Open collector NPN transistor with Zener diode transient surge protection.
Load Voltage: 30 VDC maximum.
Load Current: 300 milliamps maximum per transistor.
480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.
Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete.
Timeout: .01 to 99.99 Sec, $\pm 1\%$ (± 0.01 Sec if <1 Sec).

Count Input Modes (2 input signals)

Add/subtract, add/count inhibit, count/direction control, quadrature. All modes except count/inhibit have count double function to count on both rising and falling edges of pulse.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Maximum Count Speeds:

Model	SF=1	SF<1	SF>9	Low Speed
58831-400	7.5 kHz	5.0 kHz	1.5 kHz	150 Hz

SF= User programmable scale factor on models with scaling. Maximum input frequency is reduced by approximately 50% when count input doubling or quadrature mode is used.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

When Do You Need Dual Presets ?

Dual presets increase the versatility of your machine control applications. This feature has many different uses. Two of the most common are: prewarn and two-part capability. When used for prewarn, preset 2 triggers an event such as firing a cut-to-length shear, closing a valve, etc. Preset 1 is set to cause a process slowdown to give more precision to the final action. The amount of prewarn is adjusted by setting preset 1. The two-part feature allows you to manufacture two different length parts without changing presets. You simply set preset 1 for the first part length and preset 2 for the second part length. Parts will normally be made to the preset 1 value, to make the second part, activate the bypass preset 1 input and parts will now automatically be made to the preset 2 value.

ORDERING INFORMATION

Model Number	Product Description
58831-400	5 Digit, Dual-Preset Control with Scaling

PRESIDENT SERIES COUNT / CONTROL

6 Digit , Dual - Preset Controls with Pre - Settable Batch / Totalizer

MODELS

58841-400 Dual Preset with Batch Counter
 58851-400 Dual Preset with Batch /Totalizer

- Presettable Batch/Totalizer
- Crop-Cut Input
- Count Scaling
- Two Configurable Relay Outputs
- 5 Transistor Outputs



Model 58851-400

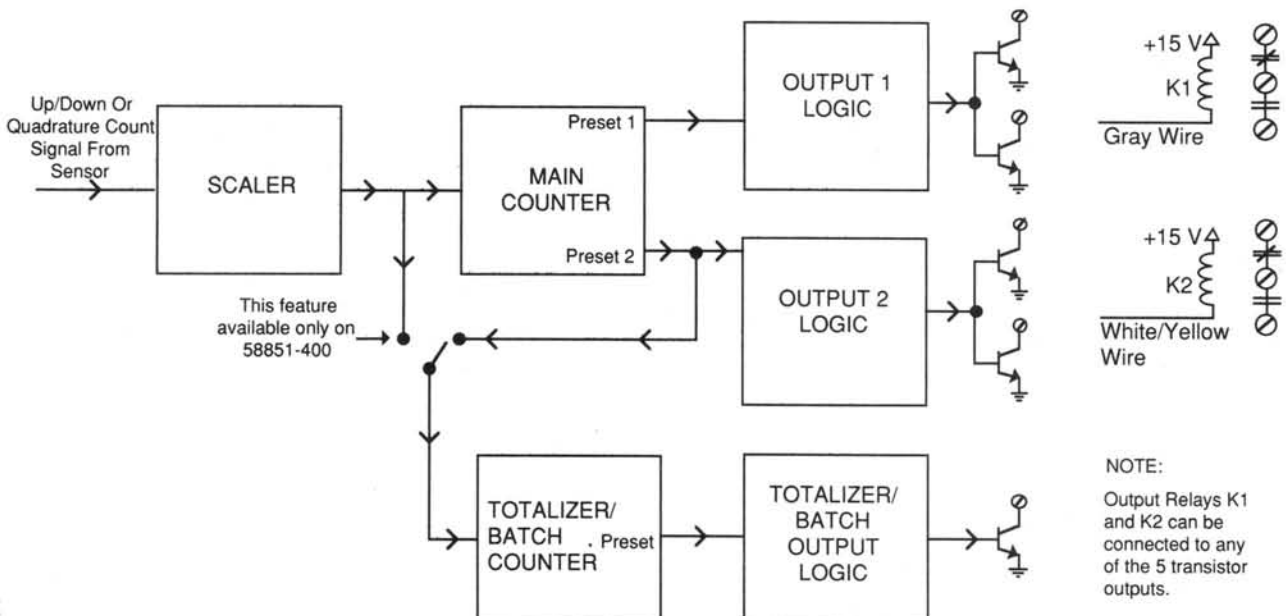
This President Series of dual-preset count controls brings several new functions that add versatility and value to your process. Of course the standard President features that you have come to expect like NEMA 4 rating, serial communications and easy programming are all included.

Model 58841-400 has a secondary count control register that has the ability to act as a batch counter. This counter receives a count pulse each time preset 2 is reached on the

main counter. This function is commonly used to count and control the number of machine cycles or parts made.

On the model 58851-400, the secondary register can be used as the aforementioned batch counter or as a totalizer. When programmed as a totalizer, it receives counts directly from the main count inputs. A typical application of this feature is to count material or parts used over longer periods of time such as shifts or days.

OVERALL BLOCK DIAGRAM



PRESIDENT SERIES COUNT / CONTROL

Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 - 63 Hz.

DC Operation: 11 - 28 VDC.

Power: 18 Watts.

DC Power Output

15 VDC (+1, -2).

150 mA if powered from AC or less than 24 VDC.

100 mA if powered from 28 VDC or greater.

Note: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Reset to zero and count up.

Reset to preset and count down.

Auto recycle.

Control Inputs

Reset, output 1 and 2 unlatch, bypass preset 1, program inhibit,

print request/display latch, crop cut.

Front panel reset (may be disabled).

Count Scaler

Scale Factor Range: 0.0001 to 9.9999.

Output Specifications

2 Relays with one set of Form C contacts.

Type: FORM-C (SPDT).

U.L./C.S.A. Contact Ratings:

10 amps, resistive, @ 24 VDC or 240 VAC.

1/3 HP @ 120 VAC or 240 VAC.

150 VDC maximum switched voltage.

Mechanical Life: 5,000,000 operations.

Electrical Life: 100,000 operations at resistive rating.

5 Transistor Outputs

Type: Open collector NPN transistor with Zener diode transient surge protection.

Load Voltage: 30 VDC maximum.

Load Current: 300 milliamps maximum per transistor.

480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.

Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete, crop-cut.

Timeout: .01 to 99.99 Sec, $\pm 1\%$ (± 0.01 Sec if < 1 Sec).

Count Input Modes (2 input signals)

Add/subtract, add/count inhibit, count/direction control, quadrature. All modes except count/inhibit have count double function to count on both rising and falling edges of pulse.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Maximum Count Speeds:

Model	SF=1	SF<1	SF>9	Low Speed
58841-400	7.5 kHz	6.2 kHz	2.0 kHz	150 Hz
58851-400	7.5 kHz	6.2 kHz	2.0 kHz	150 Hz

SF= User programmable scale factor on models with scaling. Maximum input frequency is reduced by approximately 50% when count input doubling or quadrature mode is used.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

What is the Crop-Cut Input ?

A useful feature in this series is the *crop-cut* input which allows any combination of outputs to be turned on by activating the crop input. The combination of outputs that responds to this crop input is configured by the function code programming. The counter can also be configured to reset when the crop input is activated. This feature allows a machine or process to be re-synchronized with an external contact closure. The crop input can also be used to allow the removal of an inspection sample from the process. Output unlatch signals override the crop input.

ORDERING INFORMATION

Model Number	Product Description
58841-400	6 Digit, Dual-Preset Control with Batch Control, Scaling and Crop-Cut Feature
58851-400	6 Digit, Dual-Preset Control with Presettable Batch Counter/Totalizer, Crop-Cut and Scaling

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for no loss of memory – no batteries required.

MODEL NUMBER	TOTALIZER	BATCH COUNTER	MAIN COUNTER	PRESETS	RATE	SCALER	CROP-CUT	DIGITS	Comments/Description
57810-400	•				•			7	120 Vac Only, No Communication
57810-401	•				•			7	240 Vac Only, No Communication
57820-400		1	1		•			5	120 Vac, No Comm. Rate Control Mode Available
57820-401		1	1		•			5	240 Vac, No Comm. Rate Control Mode Available
58691-4XX									Hazardous Environment Control
58810-400	•							8	May Be Reset To Zero or an Offset Value
58811-400	•				•			8	May Be Reset To Zero or an Offset Value
58815-400	•				•	•		8	May Be Reset To Zero or an Offset Value
58820-400		1	1					5	Single Preset
58821-400		1	1		•			5	Single Preset with Scaling
58825-400		1	1		•	•		5	Single Preset with Scaling and Rate
58831-400		1	2		•	•		5	Dual Preset with Scaling
58841-400	•	1	2		•	•		6	Dual Preset with Batch
58851-400	*	•	1	2	•	•		6	May Have Preset Batch Counter or Totalizer Counter
58861-400		1	3		•			6	Preset 1 & 2 May Be Used As Floating Prewarn
58868-400					•			6	Position Control
58827-400	Δ	Δ	3	1 each reg	•	•		6	Main Counter, Batch and Totalizer Presets
58827-410	√	√	3	1 each reg	•	•		6	2 Independent Count Registers
58867-400		•	1	2	•	•		6	High Speed Count Control - 30 KHz Max

* These models have, in addition to the main count register, a register that may be configured to be used as either a totalizer or single preset batch counter. These two functions are mutually exclusive.

Δ The Model 58827-400 has both a totalizer and a batch counter each with a single preset. In addition, the batch counter may be configured as an additional totalizer with control instead of batch counter.

√ The Model 58827-410 has two completely independent count input channels feeding two, independent, single preset count registers. In addition, a third single preset register may be used as either a totalizer or a batch counter for one or both of the two main counters.

PRESIDENT SERIES COUNT / CONTROL

6 Digit , Three - Preset Control

MODEL 58861-400

- Three Presets
- Presets 1 and 2 May Be Floating
- One Main Counter
- Count Scaling
- Two Configurable Relay Outputs
- 5 Transistor Outputs

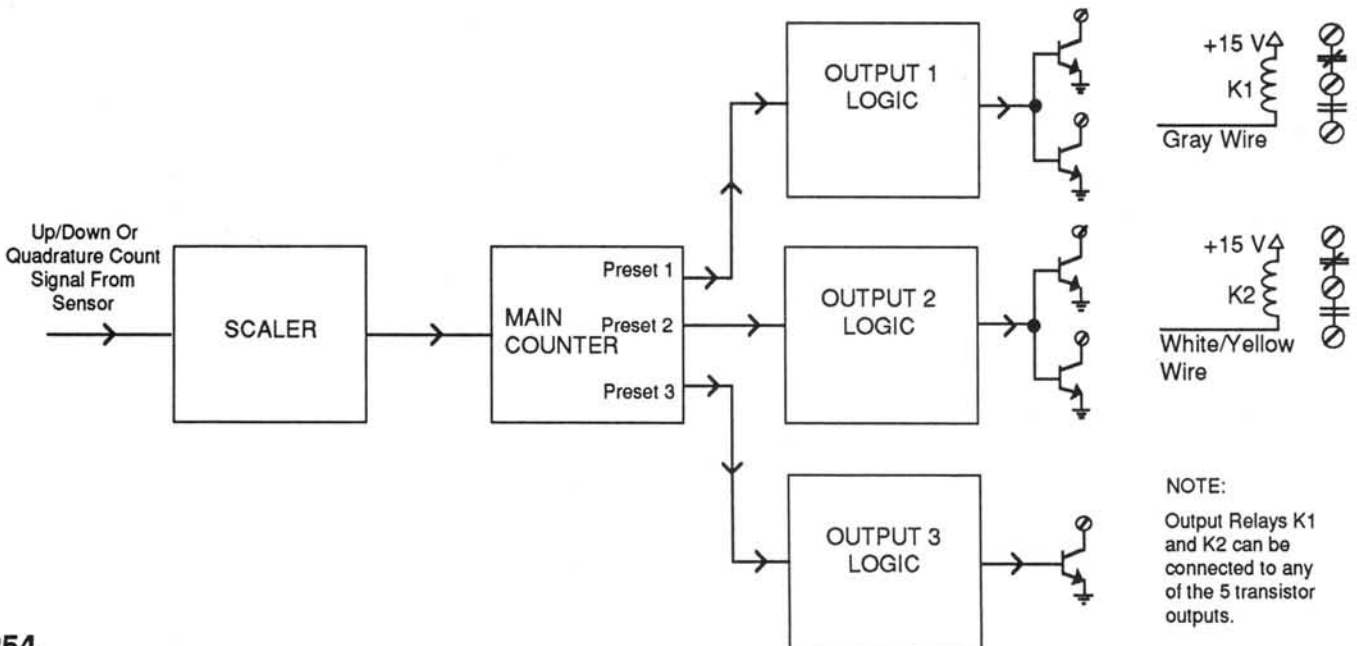


Model 58861-400

This model is a six-digit count control with one count register and three presets and outputs. The counter is bi-directional and may be programmed to reset to zero or reset to the preset 3 value (preset 3 output at zero). The counter may be programmed to automatically reset at any of the three presets. Each of the outputs may be individually timed, latched on or reversed. External inputs may be used to reset, inhibit the count or to unlatch each output individually.

The user may select one of several preset and output operation modes. In the independent mode, each output turns on whenever its corresponding preset is reached. In the sequential mode, the presets and outputs occur only in the sequence 1-2-3 or 3-2-1 depending on whether the control is in the reset or preset mode. The floating preset is also a powerful feature for frequently changed presets when used in the pre-warn mode. See side-bar on next page.

OVERALL BLOCK DIAGRAM



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 - 63 Hz.
 DC Operation: 11 - 28 VDC.
 Power: 18 Watts.

DC Power Output

15 VDC (+1, -2).
 150 mA if powered from AC or less than 24 VDC.
 100 mA if powered from 24 VDC or greater.

Note: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Reset to zero and count up.
 Reset to preset and count down.
 Auto recycle.

Control Inputs

Reset, output 1 and 2 unlatch, bypass preset 1, bypass preset 2, program inhibit, print request/display latch.

Count Scaler

Scale Factor Range: 0.0001 to 9.9999.

Output Specifications

2 Relays with one set of Form C contacts.
 Type: FORM-C (SPDT).
 U.L./C.S.A. Contact Ratings:
 10 amps, resistive, @ 24 VDC or 240 VAC.
 1/3 HP @ 120 VAC or 240 VAC.
 150 VDC maximum switched voltage.
 Mechanical Life: 5,000,000 operations.
 Electrical Life: 100,000 operations at resistive rating.
 5 Transistor Outputs
 Type: Open collector NPN transistor with Zener diode transient surge protection.
 Load Voltage: 30 VDC maximum.
 Load Current: 300 milliamps maximum per transistor.
 480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.
 Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete.
 Timeout: .01 to 99.99 Sec, $\pm 1\%$ (± 0.01 Sec if < 1 Sec.)

Count Input Modes (2 input signals)

Add/subtract, add/count inhibit, count/direction control, quadrature. All modes except count/inhibit have count double function to count on both rising and falling edges of pulse.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor; see input connection diagrams.

Maximum Count Speeds:

Model	SF=1	SF<1	SF>9	Low Speed
58861-400	7.5 kHz	5.0 kHz	2.0 kHz	150 Hz

SF= User programmable scale factor on models with scaling. Maximum input frequency is reduced by approximately 50% when count input doubling or quadrature mode is used.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

The Floating Preset Feature

A frequent use of a multiple preset counter is to use one or two presets for intermediate slowdown operation prior to a final action such as cutting or shutting a valve. This is normally done by setting preset 1 and/or 2 a number of counts before preset 3 to perform the slowdown functions, while preset 3 triggers the final action. This works well, but requires the operator to change all 3 presets each time the final value of preset 3 needs to be changed. When this counter is configured to use the *floating preset* feature, only preset 3 requires changing, preset 1 and 2 will "track" a fixed number of counts from preset 3. This is a feature you will appreciate when you need to frequently change the setup of your operation.

ORDERING INFORMATION

Model Number	Product Description
58861-400	6 Digit, Three-Preset Control with Scaling

PRESIDENT SERIES COUNT / CONTROL

6 Digit Control with Presetable Totalizer and Batch Counter

MODEL 58827-400

- Single Preset Main Counter
- Presetable Totalizer & Batch Counter
- Count Scaling
- 1/Tau Ratemeter
- Two Configurable Relay Outputs
- Five Transistor Outputs
- Output On and Off Delays



Model 58827-400

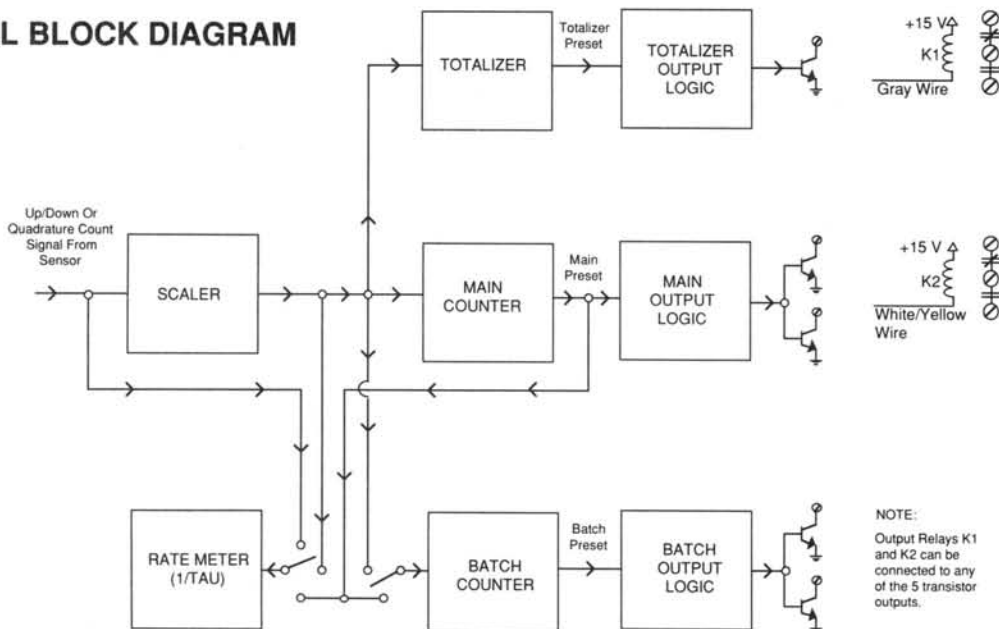
This model receives pulses from a single count source and simultaneously directs them to three separate count registers. Each count register has its own preset, output, reset, inhibit, recycle and unlatch capabilities. Each output has programmable on and off delays and can also be programmed to latch on and/or to operate in reverse. These functions can be performed by each counter and output independent of the other two counters and outputs.

The main count register receives its count pulses directly from the count input scaler. It is commonly used to control operation of the process which recycles or repeats most frequently. The main counter is bi-directional and can be programmed to reset to zero (output at preset value) or reset to preset (output at zero).

The totalizer also receives its count pulses directly from the count input scaler. It is most often used to record the number of counts received by the counter over some long period of time such as an hour, shift, or day. The totalizer is bi-directional and can be programmed to reset to zero (output at preset value) or reset to preset (output at zero). The totalizer can be programmed to count in the same or opposite direction as the main counter.

The batch count register may be used as a batch counter to receive a count pulse each time the main counter output turns on. The batch counter may alternately be programmed to act as another totalizer and receive pulses from the count scaler. It is often used to record the number of machine cycles or parts made. The batch counter can only count up and cannot be programmed to reset to its preset number.

OVERALL BLOCK DIAGRAM



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC 120/240 VAC +10%, -20%, 47 to 63 Hz.
DC 11 to 28 VDC.
18 Watts maximum input power.

DC Power Output

15 VDC (+1,-2 volts).
150 mA if powered from AC or less than 24 VDC.
100 mA if powered from 24 VDC or greater.

Note: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Counter 1 and 2:
Reset to zero.
Reset to preset.
Auto recycle.
Batch Counter counts up only.

Control Inputs

Reset—Can be programmed to reset any combination of counter 1, 2 or 3.
Program inhibit, print request/display latch.
Front panel reset (may be disabled).
Terminals 1 through 4 may be programmed to perform any of the following functions:
1 - Totalizer and/or batch counter reset.
2 - Unlatch or inhibit main counter.
3 - Unlatch or inhibit batch counter.
4 - Unlatch or inhibit totalizer.

Count Scaler

Two independent count scalers for each count channel.
Scale Factor Range: 0.0001 to 9.9999.
Counter 3 has a programmable input divider that can divide input counts by 1, 10 or 100.

Output Specifications

2 Relays with one set of Form C contacts.
Type: FORM-C (SPDT).
U.L./C.S.A. Contact Ratings:
10 amps, resistive, @ 24 VDC or 240 VAC.
1/3 HP @ 120 VAC or 240 VAC.
150 VDC maximum switched voltage.
Mechanical Life: 5,000,000 operations.
Electrical Life: 100,000 operations at resistive rating.

5 Transistor Outputs

Type: Open collector NPN transistor with Zener diode transient surge protection.
Load Voltage: 30 VDC maximum.
Load Current: 300 milliamps maximum per transistor.
480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.
Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete, external unlatch input.
Timeout: .01 to 99.99 Sec, ± 1% (±.01 Sec if <1 Sec).

Count Input Modes (2 input signals)

Two independent count input channels are provided. They direct counts to counter 1 and 2, and optionally counter 3. Each input channel may be programmed to count up or down with function codes.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Count Speeds:

The maximum count speed of this counter is determined by the combination of features being used and the values programmed into the Scale Factors. Listed below are the most typical combinations of features and the corresponding maximum count speeds.

Counting up in add/subtract mode.

S.F. < 1.0000: 4.0 kHz
S.F. = 1.0000: 5.0 kHz
S.F. = 2.0000: 4.5 kHz
S.F. = 9.9999: 1.25 kHz

Counting down in add/subtract mode.

S.F. < 1.0000: 2.25 kHz
S.F. = 1.0000: 3.5 kHz
S.F. = 2.0000: 3 kHz
S.F. = 9.9999: 1 kHz

Quadrature mode.

S.F. < 1.0000: 2 kHz
S.F. = 1.0000: 3.5 kHz
S.F. = 2.0000: 2.75 kHz
S.F. = 9.9999: 1 kHz

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

ORDERING INFORMATION

Model Number	Product Description
58827-400	6 Digit Control with Presettable Totalizer and Batch Control

PRESIDENT SERIES COUNT / CONTROL

Dual Count Control with Totalizer / Batch Counter

MODEL 58827-410

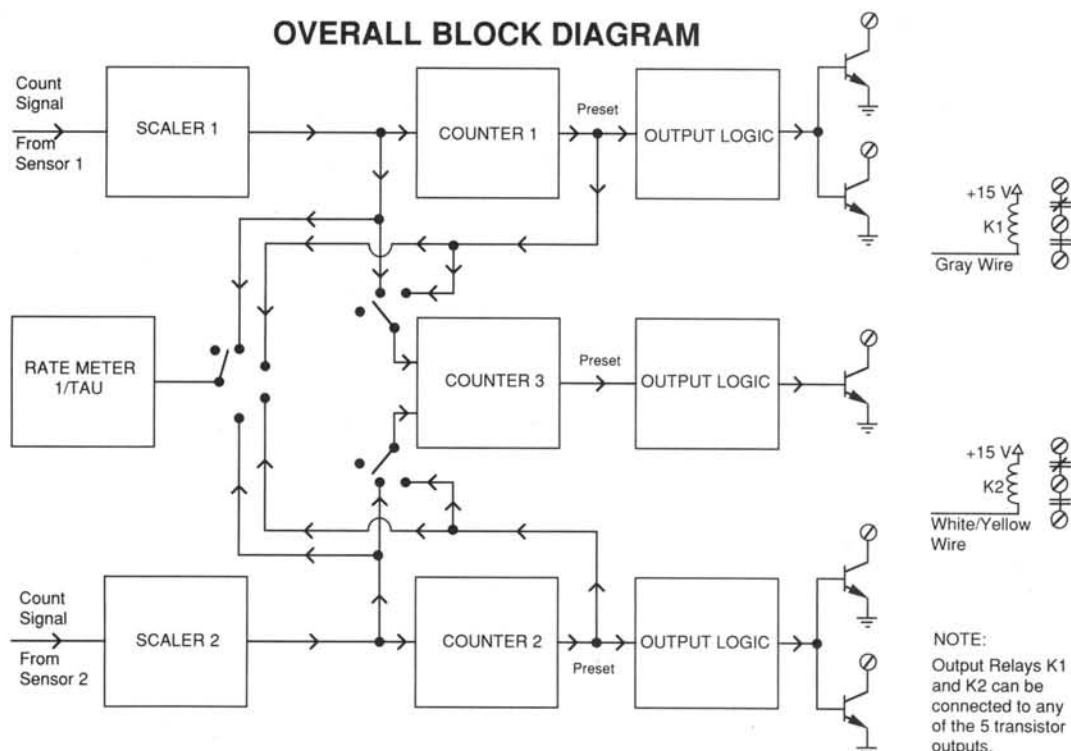
- Two Completely Independent Single Preset Counters with Independent Count Inputs
- Independent Count Scaler for each Input
- Ratemeter
- Two Configurable Relay Outputs
- Five Transistor Outputs
- Output On and Off Delays



Model 58827-410

Two counters in one! Talk about versatility and value in a single package. This counter can receive pulses from two separate sources and process them simultaneously in two separate count registers. A third single-preset counter may be configured to be used as either a totalizer or batch counter for either or both of the main counters. Each of the three count registers has its own Preset, Output, Reset, Inhibit, Recycle and Unlatch capabilities. These functions

can be performed independently for each count register. In addition to the three count registers, the 58827-410 also includes a ratemeter feature. The ratemeter can accurately display feed rates or production rates such as feet/minute, gallons/minute, pieces/hour, drums/day, etc. The rate feature operates simultaneously with the three count registers, and does not compromise count control functions.



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 - 63 Hz.
 DC Operation: 11 - 28 VDC.
 Power: 18 Watts.

DC Power Output

15 VDC (+1, -2).
 150 mA if powered from AC or less than 24 VDC.
 100 mA if powered from 24 VDC or greater.
 Note: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Counter 1 and 2:
 Reset to zero.
 Reset to preset.
 Auto recycle.
 Counter 3 resets to zero and counts up only.

Control Inputs

Reset—Can be programmed to reset any combination of counter 1, 2 or 3.
 Program inhibit, print request/display latch.
 Front panel reset (may be disabled).
 Terminals 1 through 4 may be programmed to perform any of the following functions:
 1 - Counter 1, 2 or 3 reset.
 2 - Unlatch or inhibit counter 1.
 3 - Unlatch or inhibit counter 2.
 4 - Unlatch or inhibit counter 3.

Count Scaler

Two independent count scalers for each count channel.
 Scale Factor Range: 0.0001 to 9.9999.
 Counter 3 has a programmable input divider that can divide input counts by 1, 10 or 100.

Output Specifications

2 Relays with one set of Form C contacts.
 Type: FORM-C (SPDT).
 U.L./C.S.A. Contact Ratings:
 10 amps, resistive, @ 24 VDC or 240 VAC.
 1/3 HP @ 120 VAC or 240 VAC.
 150 VDC maximum switched voltage.
 Mechanical Life: 5,000,000 operations.
 Electrical Life: 100,000 operations at resistive rating.
 5 Transistor Outputs
 Type: Open collector NPN transistor with Zener diode transient surge protection.
 Load Voltage: 30 VDC maximum.

Load Current: 300 milliamps maximum per transistor. 480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.

Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete.

Timeout: .01 to 99.99 Sec, ± 1% (±.01 Sec if <1 Sec).

Count Input Modes (2 input signals)

Two independent count input channels are provided. They direct counts to counter 1 and 2, and optionally counter 3. Counters 1 and 2 may be programmed to count up or down with function codes.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Count Speeds:

The maximum count speed of this counter is determined by the combination of features being used and the values programmed into the Scale Factors. Listed below are the most typical combinations of features and the corresponding maximum count speeds for several Scale Factor values.

Counter 1 On, Counter 2 Off, Counter 3 Off, Ratemeter Off.

S.F. < 1.0000: 6.0 kHz

S.F. = 1.0000: 9.0 kHz

S.F. = 5.0000: 4.5 kHz

S.F. = 9.9999: 1.5 kHz

Counter 1 On, Counter 2 On, Counter 3 Off, Ratemeter Off.

S.F. < 1.0000: 3.0 kHz

S.F. = 1.0000: 4.5 kHz

S.F. = 5.0000: 2.25 kHz

S.F. = 9.9999: 1.0 kHz

Counter 1 On, Counter 2 On, Counter 3 On, Ratemeter Off.

S.F. < 1.0000: 2.3 kHz

S.F. = 1.0000: 3.5 kHz

S.F. = 5.0000: 1.0 kHz

S.F. = 9.9999: 500 Hz

Counter 1 On, Counter 2 On, Counter 3 Off, Ratemeter On.

S.F. < 1.0000: 2.6 kHz

S.F. = 1.0000: 4.0 kHz

S.F. = 5.0000: 2.0 kHz

S.F. = 9.9999: 750 Hz

Counter 1 On, Counter 2 On, Counter 3 On, Ratemeter On.

S.F. < 1.0000: 2.0 kHz

S.F. = 1.0000: 3.0 kHz

S.F. = 5.0000: 750 Hz

S.F. = 9.9999: 550 Hz

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.
 Additional communication function allows control to transmit a serial reset to another 58827-400 to selectively reset any or all three count registers.

ORDERING INFORMATION

Model Number	Product Description
58827-410	Dual Count Control with Totalizer/Batch Counter

Features and Selection Guide

**The PRESIDENT SERIES
Leads the Way With Features
Like These . . .**

- **COLOR-CODED KEYBOARD PANEL**
for dependable and simple selection, indication, control and programmability.
- **BRIGHT .56" SEVEN-SEGMENT LED DISPLAY**
for easy-to-read count and preset values.
- **SEALED FRONT PANEL TO NEMA 4 SPECIFICATIONS**
for complete environmental protection.
- **FAMILY APPEARANCE DESIGN**
for uniform, human-interfaced panels.
- **DIN PACKAGE SIZE**
for coordinated systems design.
- **TWO-WAY 20 MA LOOP COMMUNICATIONS**
1200 baud serial communications.
- **IDEAL POWER INPUT**
120/240 VAC and 11 to 28 VDC for versatility in application.
- **SYSTEM MATCHED AUXILIARY POWER**
for instant hook-up of low cost DC input devices at correct voltage and current levels.
- **FULL LINE OF TRANSDUCERS AND SENSORS**
for one-source systems design.
- **RELAY AND TRANSISTOR OUTPUTS**
to meet every control requirement.
- **NON-VOLATILE MEMORY**
for no loss of memory – no batteries required.

MODEL NUMBER	TOTALIZER	BATCH COUNTER	MAIN COUNTER	PRESETS	RATE	SCALER	CROP-CUT	DIGITS	Comments/Description
57810-400	•				•			7	120 Vac Only, No Communication
57810-401	•				•			7	240 Vac Only, No Communication
57820-400		1	1		•			5	120 Vac, No Comm. Rate Control Mode Available
57820-401		1	1		•			5	240 Vac, No Comm. Rate Control Mode Available
58691-4XX									Hazardous Environment Control
58810-400	•							8	May Be Reset To Zero or an Offset Value
58811-400	•				•			8	May Be Reset To Zero or an Offset Value
58815-400	•				•	•		8	May Be Reset To Zero or an Offset Value
58820-400		1	1					5	Single Preset
58821-400		1	1		•			5	Single Preset with Scaling
58825-400		1	1		•	•		5	Single Preset with Scaling and Rate
58831-400		1	2		•	•		5	Dual Preset with Scaling
58841-400	•	1	2		•	•		6	Dual Preset with Batch
58851-400	*	•	1 2		•	•		6	May Have Preset Batch Counter or Totalizer Counter
58861-400		1	3		•			6	Preset 1 & 2 May Be Used As Floating Prewarn
58868-400					•			6	Position Control
58827-400	Δ	Δ	3	1 each reg	•	•		6	Main Counter, Batch and Totalizer Presets
58827-410	√	√	3	1 each reg	•	•		6	2 Independent Count Registers
58867-400		•	1 2		•	•		6	High Speed Count Control - 30 KHz Max

* These models have, in addition to the main count register, a register that may be configured to be used as either a totalizer or single preset batch counter. These two functions are mutually exclusive.

Δ The Model 58827-400 has both a totalizer and a batch counter each with a single preset. In addition, the batch counter may be configured as an additional totalizer with control instead of batch counter.

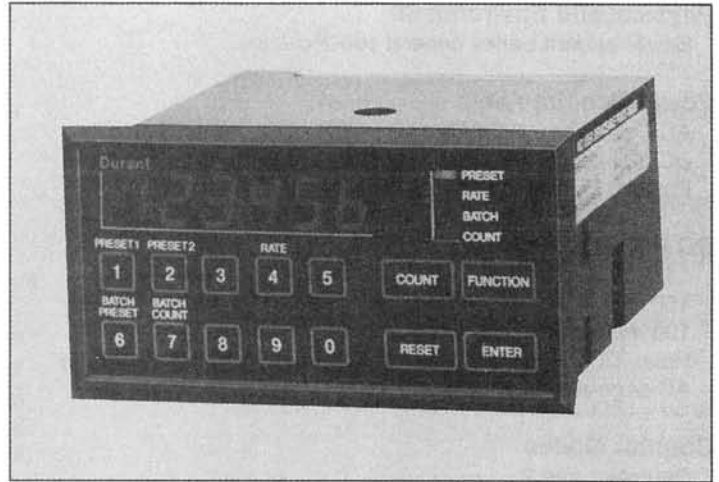
√ The Model 58827-410 has two completely independent count input channels feeding two, independent, single preset count registers. In addition, a third single preset register may be used as either a totalizer or a batch counter for one or both of the two main counters.

PRESIDENT SERIES COUNT / CONTROL

High - Speed Control with Batch counter and Rate

MODEL 58867-400

- 30 kHz Count Speed
- Enhanced Serial Communications
- Dual-Preset Main Counter
- Single Preset Batch Counter
- Count Scaling
- Ratemeter
- Fast Output Response



Model 58867-400

The Durant High Speed President is a micro-processor based count control device with three times the count speed and twice the positional resolution capability of other President series controls. The maximum count input speed is 30 kHz. Programmable count input modes include quadrature X1, X2, and X4 resolution selections.

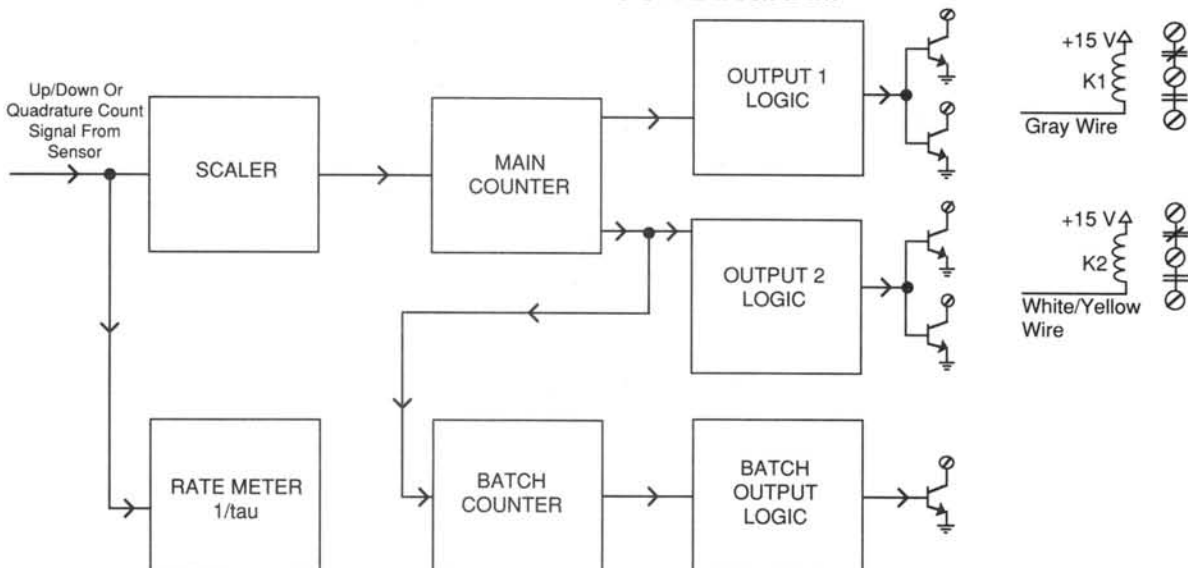
The device has a six-digit, dual preset main counter with scaling, a six-digit, single-preset batch counter, and a six-digit, 1/tau rate meter with scaling. The two main counter presets can be configured to operate as a standard dual-preset control or as a single preset control with prewarn. The unit includes an option for entering presets "on the fly" to prevent counting beyond a new preset.

There are three sets of transistor outputs (one for each preset) and two form "C" relay outputs. The transistor outputs have the fast response time required for accurate high speed control. The control also features four programmable inputs each of which may be used for one of eight functions.

The High Speed President includes two communication modes. The standard mode is compatible with existing President series products. The enhanced mode has additional features that allow a host computer to change function codes and control outputs directly.

The High Speed President is ideal for roll forming, cut-to-length, positioning, and other applications requiring high resolution-high speed measurement.

OVERALL BLOCK DIAGRAM



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC Operation: 120/240 VAC (+10%, -20%) 47 - 63 Hz.

DC Operation: 11 - 28 VDC.

Power: 18 Watts

DC Power Output

15 VDC (+1, -2).

150 mA if powered from AC or less than 24 VDC.

100 mA if powered from 24 VDC or greater.

Note: DC power output is only regulated if unit is powered by AC or greater than 18.5 VDC.

Counter Modes

Reset to zero only.

Auto recycle at Preset 2.

Control Inputs

Reset.

Front panel reset (may be disabled).

Terminals 1 through 4 can each be programmed to perform any one of the following functions:

No function.

Unlatch output 1.

Unlatch output 2.

Unlatch outputs 1 and 2.

Unlatch output 3.

Latch outputs/and optionally reset counter.

Reset batch counter.

Initiate serial transmission.

Decrement batch counter.

Program inhibit.

Count Scaler

Scale Factor Range: 0.00100 to 9.99999.

Output Specifications

2 Relays with one set of Form C contacts.

Type: FORM-C (SPDT).

U.L./C.S.A. Contact Ratings:

10 amps, resistive, @ 24 VDC or 240 VAC.

1/3 HP @ 120 VAC or 240 VAC.

150 VDC maximum switched voltage.

Mechanical Life: 5,000,000 operations.

Electrical Life: 100,000 operations at resistive rating.

5 Transistor Outputs

Type: Open collector NPN transistor with Zener diode transient surge protection.

Load Voltage: 30 VDC maximum.

Load Current: 300 milliamps maximum per transistor. 480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.

Programmable Output Modes: Reverse, timeout, unlatch at reset, latch until reset complete, crop-cut.

Timeout: .01 to 99.99 Sec, ± 1%(±.01 Sec if <1 Sec).

Count Input Modes (2 input signals)

Add/subtract, quadrature, quadrature X2, quadrature X4.

Count Input Signal Requirements

Current sinking signal, must conduct to DC common. Must block 15 VDC in high state and sink 2.2 mA in low state. Current sourcing signals may be used with external resistor.

Count Input Frequency

The maximum count input frequency depends only on the selected count mode (doubled or quadrature X4). The maximum input frequencies shown are with square wave (50% duty cycle) input.

	x1	x2	x4
High Speed Mode:	30 kHz	15 kHz	7.5 kHz
Low Speed Mode:	200 Hz	200 Hz	200 Hz
(Low speed jumpers installed.)			

Note: Only count input mode and the double jumper affect the maximum count input speed. The scale factor does not affect the input speed. If the scale factor is set to 9.99999 (10) the unit will count at a maximum rate of 300 kHz.

Rate Indicator

Type: 6 digit, 1/tau (time interval).

Scaler Range: 0.0001 to 99999.

Decimal Point: 5 positions, programmable.

Accuracy: 0.1% of reading.

Update Time: 0.75 seconds (approximate).

Zero Time: 10 seconds, fixed.

Serial Communication Interface

20 mA current loop, 110, 300 or 1200 Baud.

ORDERING INFORMATION

Model Number	Product Description
58867-400	6 Digit, Dual Preset, High-Speed Control with Batch Counter and Rate

PRESIDENT SERIES COUNT / CONTROL

Position Control

MODEL 58868-400

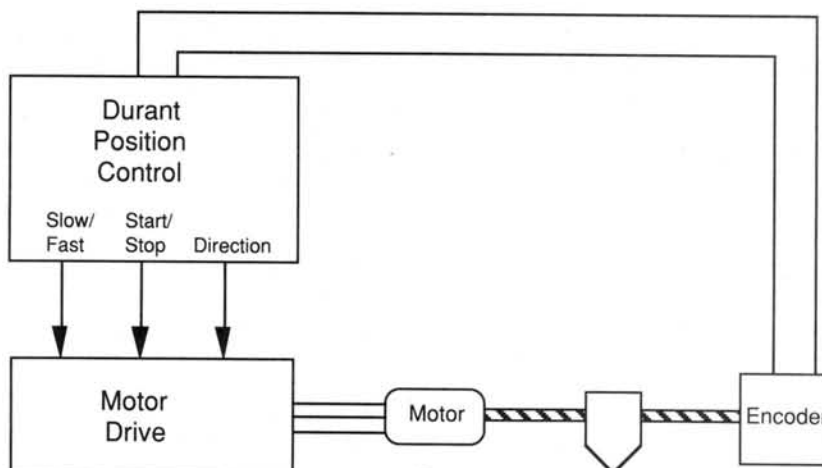
- Four move registers plus home
- Five dwell time settings
- 28 kHz count speed
- Count scaling
- Programmable decimal point
- 100% accuracy
- 20 mA loop serial communications
- Up to 9600 baud rate
- NEMA 4 front panel seal
- Manual or automatic operation
- Backlash operating modes
- Programmable offset, prewarn, and tool kerf values



Model 58868-400

- Optional password protection
- Add/subtract or quadrature x1, x2, or x4 input count
- Four run mode display options
- Programmable high and low position limits
- Remote operation, query or programming capability

OVERALL BLOCK DIAGRAM



Specifications and Operation

Physical and Environment

See President Series general specifications.

Power Requirements

AC 120/240 VAC +10%, -20%, 47 to 63 Hz.
 DC 11 to 28 VDC (.7 Amp max.).
 18 watts maximum input power.

DC Power Output

15 VDC +1, -2, 100 mA maximum, with AC input operation.

Control Input Response

Function	Response Time
Start/Stop	1 msec.
Go Home Input	5 msec.
Load Position	5 msec.
Reference Input	1.7 msec.

Input Voltage

Count Inputs: High 10.5 to 24.5 VDC, low 0 to 4.5 VDC.
 Control Inputs: High 3.8 to 15.0 VDC, low 0 to 1.2 VDC.

Input Impedances

Count Inputs: 6.8 kΩ to +15 VDC (2.2 mA at 0 VDC).
 Control Inputs: 2.2 kΩ to +5 VDC (2.3 mA at 0 VDC).

Relay Outputs (2)

Type: FORM C (SPDT).
 U.L./C.S.A. Contact Ratings:
 10 amps, resistive, @ 24 VDC or 240 VAC.
 1/3 HP @ 120 VAC or 240 VAC.
 150 VDC maximum switched voltage.
 Mechanical Life: 5,000,000 operations.
 Electrical Life: 100,000 operations at resistive rating.
 5 Transistor outputs
 Type: Open collector NPN transistor with Zener diode transient surge protection.
 Load Voltage: 30 VDC maximum.
 Load Current: 300 milliamps maximum per transistor.
 480 milliamps total for all transistors. Use 90 milliamps per relay coil when calculating total transistor current.

Communication

Type: 20 mA loop (active transmit, passive receive).
 Load Voltage: 30 VDC maximum.
 Load Current: 300 mA maximum.

Saturation: 1.5 V max. @ 300 mA.
 Speed: 110, 300, 1200, 2400, 4800, 9600 Baud.
 Parity: Odd, even, space.
 Format: 1 start bit, 7 data bits (ASCII), 1 parity bit, 1 stop bit (100 baud uses 2 stop bits).

Input Frequency

The maximum input frequency only on the selected quadrature operation.

Quadrature Selection

	x1	x2	x4
High Speed	28 kHz	14 kHz	7 kHz
Low Speed	150 Hz	150 Hz	150 Hz

(low speed jumper installed)

Note: Only function 60 and the double jumper affect the maximum input speed. The scale factor does not affect the input speed.

Position Control Features

Setpoints: Four move setpoints plus one Home setpoint.
 Range for all setpoints is -99999 to 999999.

Decimal Point: Four positions, programmable.

Dwell Times: Five, one for each setpoint. Dwell time range is 00.01 to 99.98 seconds.

Scale Factor: Scale factor range is 0.00100 to 9.999999.

Count Accuracy: 100% when the position control is operated within the specified speeds and input voltages.

ORDERING INFORMATION

Model Number	Product Description
58868-400	Position Control

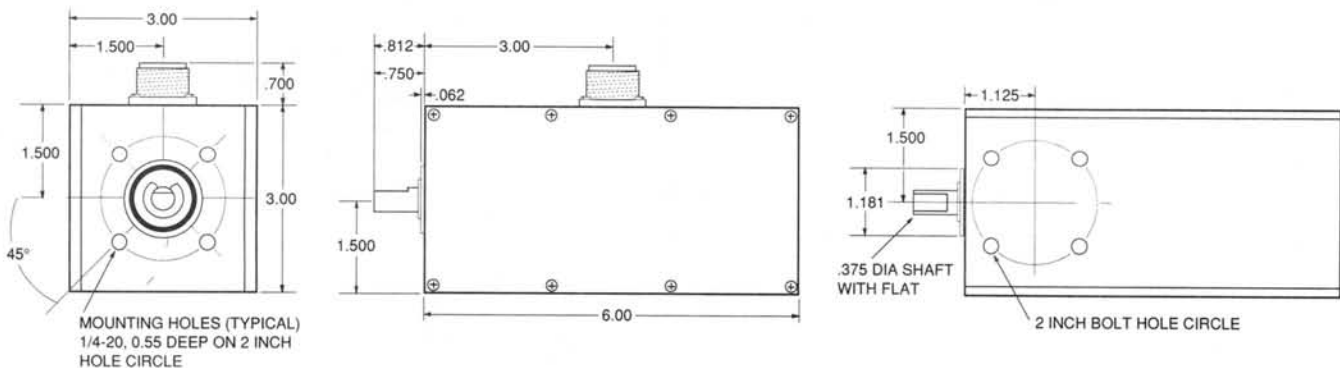
Heavy Duty Rotary Shaft Encoders

- Heavy Duty Housing
- Single Channel and Quadrature Models
- Easy Plug Connection of Outputs



The two models of this Durant heavy duty encoder are offered in standard ratios of 60, 100, 120 and 600 pulses per revolution. Other ratios up to 1270 PPR are also available. Both the single channel model and the quadrature models are rated for radial loads of 50 pounds, axial loads of 25 pounds. Either can be bottom or front face mounted externally on industrial machinery. Their solid aluminum housing provides protection against fluid con-

tamination and isolates them from potentially damaging axial, radial and body impact forces. The outer casing carries a separate sealed 3/8" working shaft which is connected, internally, to the shaft of the rotary pulse generator through a flexible coupling. Electrical connection can be made with standard MS connectors, cable and grommet or conduit.



Transducer - Specifications

ELECTRICAL SPECIFICATIONS

INPUT

Voltage9 to 16Vdc
 Current60 mA. max. @ 16Vdc
 Ripple $\leq 2\%$

OUTPUT

TypeCurrent sinking transistor with
 1.5k Ω pullup
Sinking current: 100 mA. max.
Max. voltage @ 100 mA: 1.3 Vdc
Blocking voltage: 40Vdc max.
 PolarityPositive
 Wave ShapeSquare wave
 Pulse Rate0 to 20,000 pulses per second
 (0 to 10,000 quadrature models)
 Rise Time $< 1\mu$ sec.
 Pulses Per Rev.1 to 1270
 Accuracywithin $\pm 0.1^\circ$

ENVIRONMENTAL SPECIFICATIONS

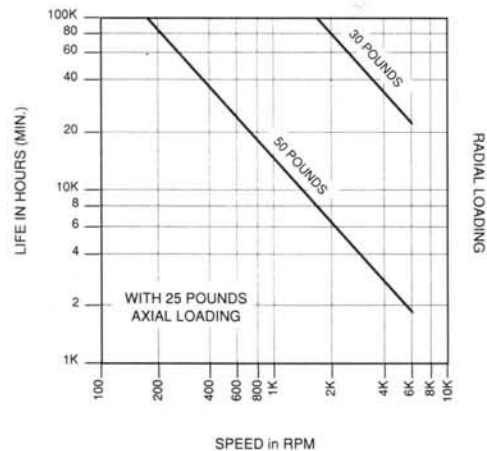
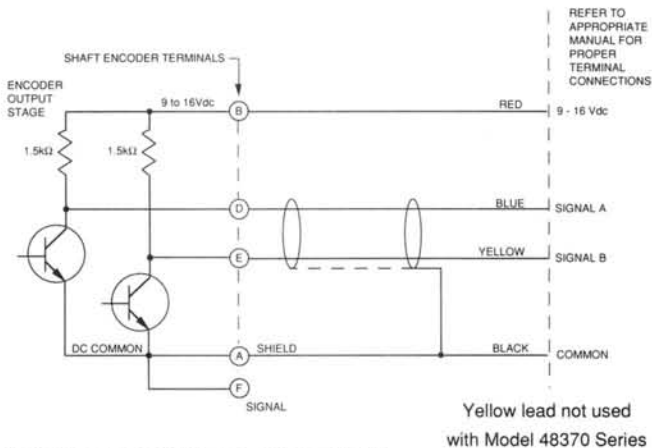
Operating Temperature0°C to 75°C
 Vibration3 g's at 5 to 1000 cps
 Shock20 g's, 10millisec.

MECHANICAL SPECIFICATIONS

Shaft Speed6000 RPM max.
 Shaft RotationCW or CCW
 BearingsSealed ball bearings
 Starting Torque1.0 ounce-inch
 Radial Loading50 pounds operating
 Axial Loading25 pounds operating
 Shaft3/8" dia.
 Operating LifeSee Life vs. Speed table
 HousingAluminum with black anodized
 finish. Sealed against dust, oil
 vapor and moisture
 MountingProvisions for bottom or front
 face mount
 Weight3.75 lbs. max.
 ConnectorMS-3102E-14S-6P (Connector
 mounted on encoder)
 Mating ConnectorMS-3106A-14S-6S with 10'
 shielded cable and termination
 for electronic controls is Durant
 Part No. 29665-300
 MS-3106A-14S-6S with clamp
 and bushing only is Durant Part
 No. 29729-300

ACCESSORIES

Part Number	Product Description
29665-300	Connector assembly with clamp, bushing, and 10' of shielded cable
29729-300	Connector, clamp and bushing only
XXXXX-XXX	Measuring wheels - see page 122



ORDERING INFORMATION

Model Number	Product Description
48370-060	Encoder 60 PPR, Single Channel
48370-100	Encoder 100 PPR, Single Channel
48370-120	Encoder 120 PPR, Single Channel
48370-600	Encoder 600 PPR, Single Channel
48371-060	Encoder 60 PPR, Quadrature
48371-100	Encoder 100 PPR, Quadrature
48371-120	Encoder 120 PPR, Quadrature
48371-600	Encoder 600 PPR, Quadrature

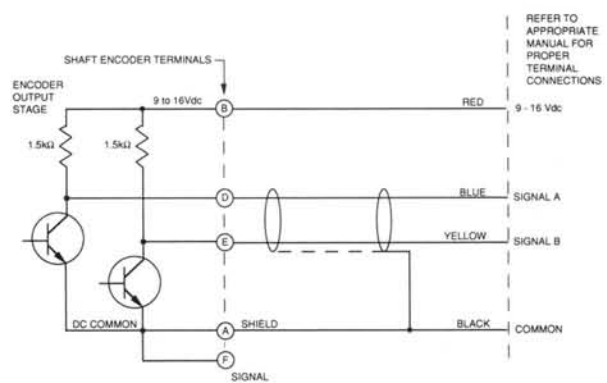
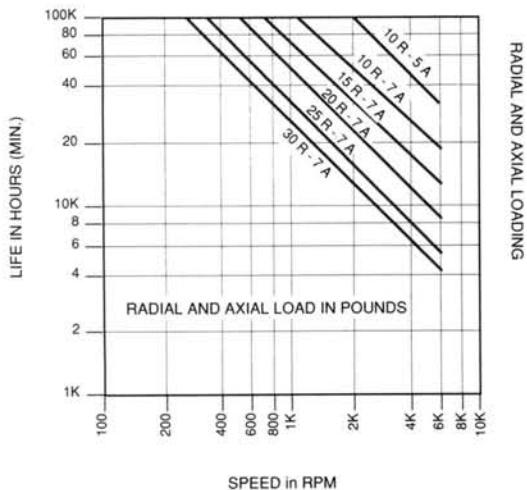
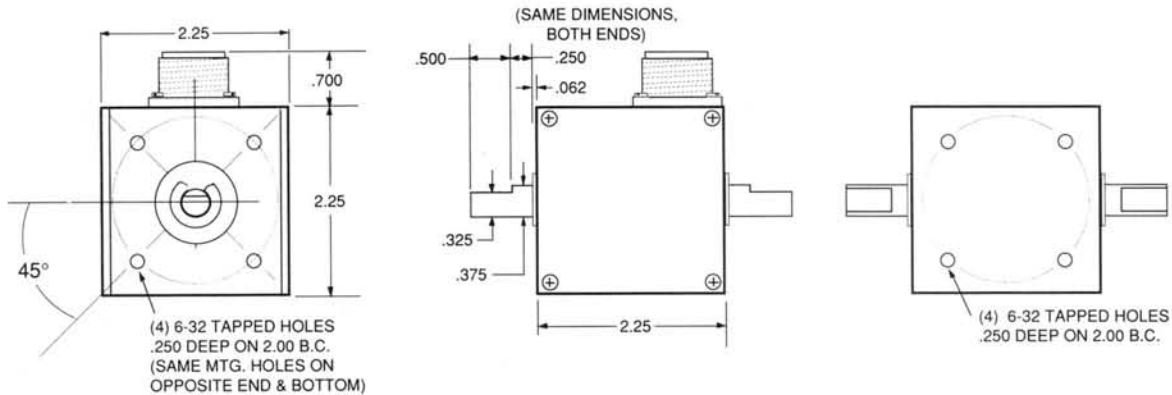
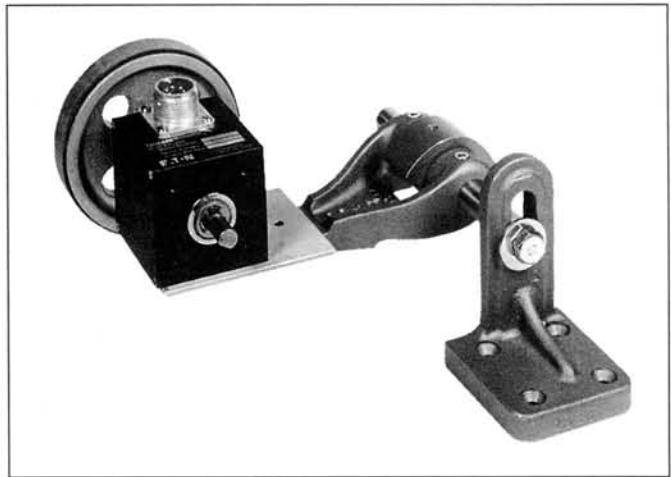
PRESIDENT SERIES / ACCESSORIES

Standard Duty Rotary Shaft Encoders

These general purpose standard duty encoders meet a wide variety of needs. They are available in several different output pulse ratios. The 38150 series has a single channel output, while the 38151 series has quadrature outputs. They are available in ratios of up to 1270 PPR. The four standard models are listed.

The 38152 series has different output ratios for each channel as listed on the ordering chart.

The 38155 series are quadrature encoders, with a third channel providing a 1 PPR marker pulse.

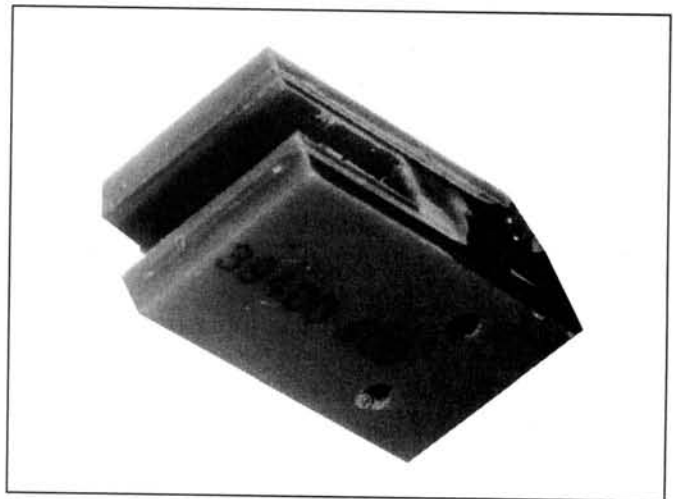


Zero Speed Vane Pick-up

MODEL 39400-400 Zero Speed Vane Pickup

The Zero Speed Vane pick-up is an environmentally sealed transducer, ideal for applications where moisture, vapors, dust or other extremes are encountered. Counts are sensed when a metallic (magnetic or non-magnetic) device such as a vane, passes through the slot in the pick-up. The transducer can be mounted horizontally or vertically and is therefore suitable for coil winding, footage measurement and most linear or rotary motion sensing applications.

- Power Requirements:** 10-15 VDC.
- Operating Temperature:** 0 to 140°F.
- Current:** 35 mA.
- Weight:** 22 grams.
- Interruption Time:** 0.1 M Sec.
- Cable:** 10 foot shielded cable.
- Speed:** Up to 3000 Hz.
- Actuator (Vane):** Supplied by user.



ORDERING INFORMATION

Model Number	Product Description
39400-400	Zero Speed Vane Pickup

Rotary Contactor

Rotary Contactor ES 9513 RS

The rotary contactor is designed for length and revolution measurement input. The contactor can measure shaft revolutions at speeds to 2400 RPM @ 1:1 Ratio – 2400 CPM max. The rotary contactor is ideal for lineal paper, veneer, textile, tin, and steel measurement applications. Standard accessories include 12 inch measuring wheels with aluminum knurled, rubber, or urethane rims, and a mounting bracket for the contactor and measuring wheel.

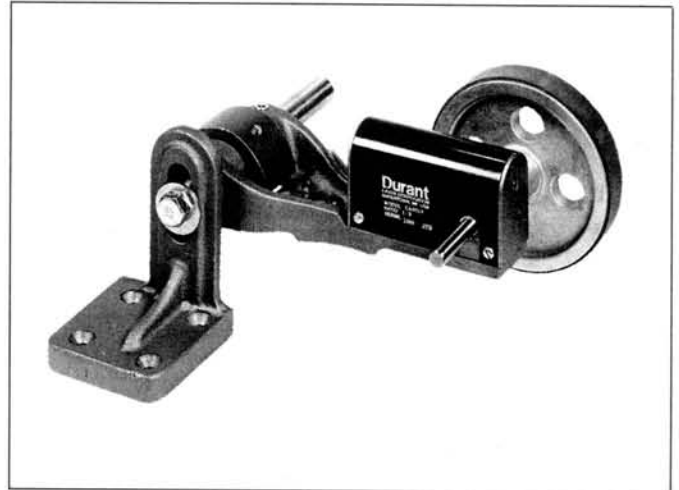
Power Requirements: None Required, Contact Closure output.

Wire Leads: (2) 12 inches long. #20 AWG.

Rotation: Either direction.

Standard Ratios: 1:1, 1:3, 1:10, 10:1, 12:1, 1:3.28

Shaft Size: 5/16"



ACCESSORIES

Part Number	Product Description
XXXXX-XXX	Measuring Wheels - see page 122

ORDERING INFORMATION

Model Number	Product Description
39400-400	Zero Speed Vane Pickup
41100-403	Rotary Contactor, 1:10 Ratio
41100-402	Rotary Contactor, 1:3.28 Ratio
41100-401	Rotary Contactor, 1:3 Ratio
41100-400	Rotary Contactor, 1:1 Ratio
39100-401	Rotary Contactor, 10:1 Ratio
39100-400	Rotary Contactor, 12:1 Ratio
40460-400	Mounting Bracket

MEASURING WHEELS

- Ideal Companion to Rotary Shaft Encoders and Rotary Contactors
- Wide Variety of Surface Material



Durant offers a selection of measuring wheels for use with the shaft encoders for dependable and accurate measurement. A wide variety of aluminum and steel wheels are available in three different types — knurled, rubber rim and urethane rim. Each type is available in 5/16" and 3/8" bore diameters to help you precisely meet your systems needs.

The selection of the proper wheel for your measurement system depends on the material to be measured. For cable measurement, paper and cardboard, cloth, wood, plastics, grease-free metals and other smooth finished materials rubber rim wheels prevent tearing, damage or marking. For threads and yarns, rubber, soft plastics, rough-surfaced wood and coarse heavy material, knurled aluminum rim wheels are recommended. Urethane rims are the correct choice when high speed and extremely abrasive conditions

require a high degree of wear resistance or where oil resistance is necessary. Typical applications include such materials as wire, steel sections and greased metals.

The following measuring wheels are for use with encoders and rotary contactors. The 3/8" diameter bore is recommended for use with a shaft encoder, the 5/16" diameter with rotary contactors.

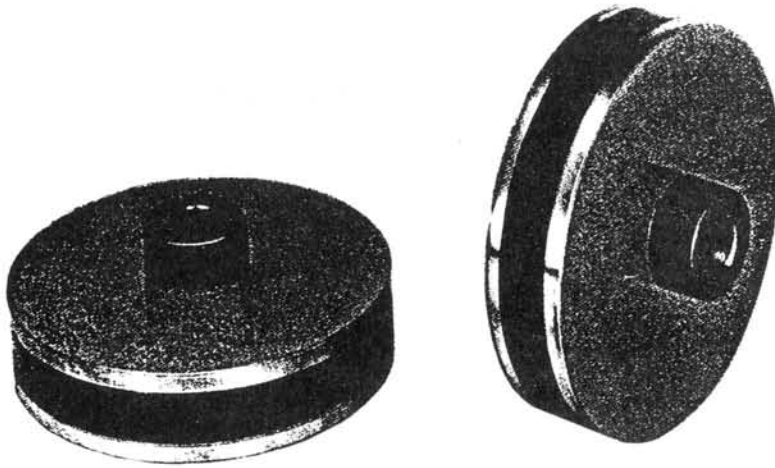
The 12" wheels measure:
 12" in circumference
 3.8197" in diameter

The 1/3 meter wheels measure:
 13.123" in circumference
 4.1772" in diameter

ORDERING INFORMATION

Model Number	Product Description
20144-300	12" Urethane Rim, 5/16" Bore
20144-303	12" Urethane Rim, 3/8" Bore
20154-300	12" Rubber Rim, 5/16" Bore
20154-301	12" Rubber Rim, 3/8" Bore
20156-300	12" Aluminum Knurled, 5/16" Bore
20156-301	12" Aluminum Knurled, 3/8" Bore
34758-300	12" Precision Hardened Steel, 5/16" Bore
34758-301	12" Precision Hardened Steel, 3/8" Bore
36074-301	1/3 Meter Rubber Rim, 5/16" Bore
36075-301	1/3 Meter Urethane Rim, 5/16" Bore

MAGNETIC MEASURING WHEEL



Model 5C962 Magnetic Counter Wheel

NOTE: Counter Wheels have an approximate magnetic loss of one-half of one percent per 100 years. The diameter is accurately ground to 3.8197 ± 0.0005 inches to measure exactly one lineal foot per revolution. The magnetic face width is 0.813 inch with a 0.500 inch long hub containing a 1/4-20 set screw. The inside diameter has a bronze bushing reamed for a 0.312 inch shaft.

Proximity Sensors

MODELS

48770-400	8mm Proximity Sensor
48770-401	12mm Proximity Sensor
48770-402	18mm Proximity Sensor
48770-403	30mm Proximity Sensor



These Inductive Proximity Sensors are self-contained, solid-state devices. They are available in models with four sizes of sensing surfaces - 8 mm, 12 mm, 18 mm and 30 mm diameter. All four sensors are shielded, feature a NO output configuration, and have a two-meter-long cable connected. The Proximity Sensors are compatible with all Durant Electronic Series totalizers and controls. The housings are made of stainless steel. All tubular proximity sensors feature NPN output transistors and a three wire connection to draw power from controls and totalizers or from a DC line.

Sensors are protected against voltage transients and exceed NEMA 1500 V showering arc specifications. The devices are also protected against accidental reverse polarity connection. An LED indicator is standard on all models except 8 mm. Protective caps are optionally available and recommended where the sensor face is subject to physical abuse. Protective caps are threaded over the face of the sensor. No cap is available for the 8 mm sensor. A mounting bracket is also optionally available. The bracket permits flexible location of sensor with simple lateral adjustment of the sensor via slotted mounting holes on the bracket.

Specifications

Power Requirements:

50 VDC.

Operating Temperature:

-25°C (-13°F) to 70°C (158°F).

Solid-State Design:

No moving parts.

Construction:

All four proximities are made of stainless steel. The 12mm, 18mm and 30mm sensors have a strain relief feature designed for hose clamp connection of watertight conduit.

Continuous Duty Cycle:

Rated for continuous operation.

One-Hole Mounting:

Sensor is threaded from sensor face to shank and supplied with two mounting nuts for simple mounting.

Maximum Variation of Nominal Switching Distance:

±10%.

Ripple on DC Supply:

Maximum 10%.

Switching Rate:

All models: 1000 counts/sec.

Burden Current:

17 mA.

Output Resistance:

4.7 kΩ.

Residual Value at a Load Resistance of 10 kΩ (Switch Closed):

0.8 V.

Voltage Drop (Switch Open):

1 V.

Hysteresis:

≤15% Maximum.

Maximum Output Load Current:

Between 100 mA and 400 mA depending on switch type.

Maximum Duty Cycle:

100%.

Shock:

48770 Series sensors have successfully withstood the following shocks per IEC 68-2-76: 30 g sine wave for 11 mS, three shocks in both directions along each of three planes.

Vibration:

48770 Series sensors have successfully withstood the following vibrations per IEC 68-2-6: 10 to 55 Hz, 2 in. total amplitude sine wave, 30 minutes in each of three planes.

Enclosure Ratings:

8mm: NEMA 3, 3S, 4, 4X, 6, 6P, 12 & 13.
12, 18 & 30mm: NEMA 3, 3S, 4, 4X, 6, 6P, 11, 12 & 13.

Approvals:

UL Listed, File #1230
CSA Certified, LR 353

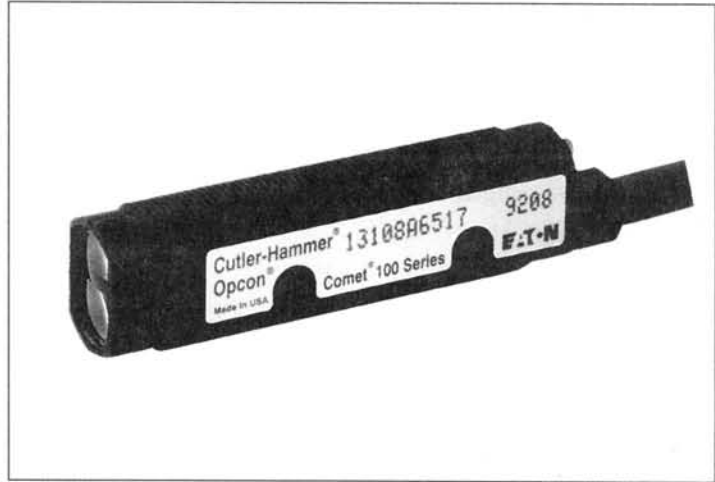
ORDERING INFORMATION

Model Number	Product Description
48770-400	Proximity Sensor, 8mm
48770-401	Proximity Sensor, 12mm
48770-402	Proximity Sensor, 18mm
48770-403	Proximity Sensor, 30mm
48770-450	Mounting Bracket, 8mm
48770-451	Mounting Bracket, 12mm
48770-452	Mounting Bracket, 18mm
48770-453	Mounting Bracket, 30mm
48770-460	Conduit Adapter, 8mm
48770-461	Conduit Adapter, 12mm
48770-462	Conduit Adapter, 18mm
48770-463	Conduit Adapter, 30mm
48770-471	Cap, 12mm
48770-472	Cap, 18mm
48770-473	Cap, 30mm

Photo Sensors

MODELS

37360-400	Thru-Beam, Source
37360-401	Thru-Beam, Detector
37360-402	Proximity (Diffuse Reflective) 24"
37360-403	Proximity (Diffuse Reflective) Perfect Prox.
37360-404	Visible Beam Reflex, Polarized
37360-405	Visible Beam Reflex
37360-406	Fiber Optic Sensor



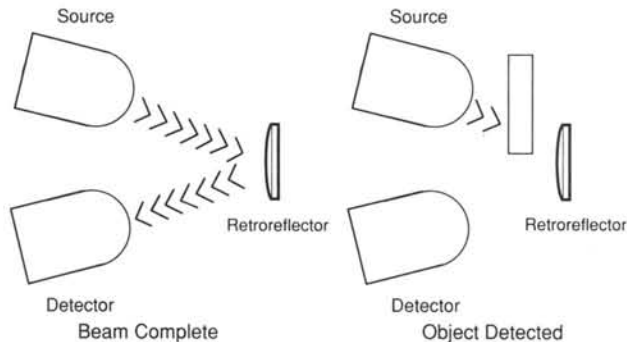
These highly efficient sensors contain both the light source and detector in an 18 mm tubular housing. The light source is an LED that produces a modulated beam of infrared light. The detector responds only to the modulated light source. All of the electronics necessary to produce and detect the modulated beam are contained in one housing.

Three Modes of Detection

Photoelectric sensors operate in one of three modes: thru-beam, reflex, or proximity. An understanding of these modes is essential in choosing the correct sensor.

Reflex

The source and detector are installed in the same housing on one side of the object to be detected. The light beam is transmitted from the source to a retroreflector that returns the light to the detector. When an object breaks this reflected beam, the object is detected.



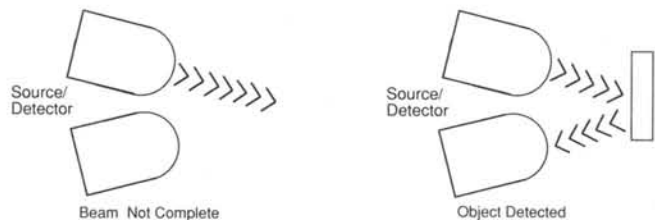
Reflex Detection

Most photoelectric sensors use the reflex mode because it is flexible, easy to install, and offers the best cost/performance ratio. The object to be detected must be less reflective than the retroreflector.

Polarized reflex sensors use a polarizing filter over the source and detector that "conditions" the light from the source such that the photoelectric sensor only sees light returned from the retroreflector. A polarized reflex sensor is used in applications where shiny surfaces such as metal or shrink wrapped boxes may falsely trigger the sensor.

Proximity (Diffuse Reflective)

The source and detector are installed in the same housing on one side of the object to be detected and are aimed at a point in front of the sensor. When an object passes in front of the source and detector, light from the source is reflected from the object's surface back to the detector, and the object is detected.



Proximity Detection

Photo Sensors

Proximity sensors are the easiest to install, but are affected by many variables. For example, the reflectivity of the object affects operation, and the sensor must be set to reject objects in the background. Special proximity sensors that focus on a point are good for detecting small objects, and allow detection of changes in surface reflectivity. Proximity sensors are the least expensive to install and maintain, since they do not require a retroreflector.

A Perfect Prox is a diffuse reflective sensor that features a special optical configuration providing high gain with very sharp cutoff. The Perfect Prox provides improved background rejection and detects light and dark objects at very similar ranges.

Thru-Beam

The source and detector are positioned opposite each other and the light beam is sent directly from source to detector. When an object passes between the source and detector, the beam is broken, signaling detection of the object.

Thru-beam detection generally provides the longest range of the three operating modes and provides high power at shorter ranges to penetrate steam, dirt, or other contami-

nants between the source and detector. Alignment of the source and detector must be accurate.

Fiber Optics

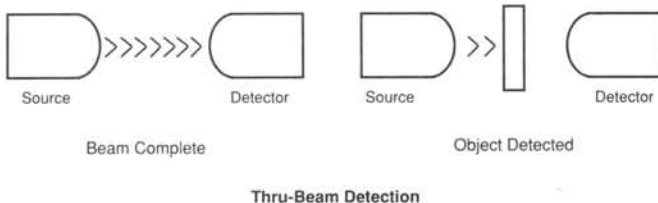
The addition of fiber optics to photoelectric sensing has greatly expanded the application of these devices. Because they are small in diameter and flexible, fiber optics can bend and twist into tiny places formerly inaccessible to bulky electronic devices.

Fiber optics operate in the same sensing modes as standard photoelectric controls: thru-beam, proximity, and reflex. Two pre-cut fiber optic cables are offered: one designed for thru-beam and one for proximity-style sensing (see ordering information).

Application

In most cases, the demands of your application will immediately narrow the field. Questions to be answered are:

- What range is required? How far is the sensor from the object to be detected?
- How dirty is the environment?
- What access do you have to both sides of the object to be detected? Is wiring possible on one or both sides of the object?
- What size is the object?
- Is the object consistent in size, shape and reflectivity?
- What are the mechanical and electrical requirements?



TECHNICAL INFORMATION

Model	Maximum Count Speed	Field of View	Cutoff Range	Optimum Range	Maximum Range	
Thru-Beam (Source and detector)	60 Hz.	13 in. at 10 ft.	N/A	0-15 ft.	20 ft.	
Reflex-Visible Beam/Red	400 Hz.	1 in. at 50 in.	N/A	0-15 ft.	25 ft.	
Reflex-Polarized Visible Beam/Red	400 Hz.	1 in. at 50 in.	N/A	0-10 ft.	15 ft.	
Diffuse-Reflective (6 in.) Perfect Prox.	60 Hz.	0.6 in. at 50 in.	9 in. and beyond	N/A	6 in.	
Diffuse-Reflective (24 in.)	60 Hz.	5 in. at 15 in.	N/A	0-15 in.	24 in.	
Fiber Optic	400 Hz.	N/A	N/A	50% of max.	Thru Beam Mode 5 in.	Prox Mode 1.5 in.

President Family Accessories

58801-403	RS-232/RS-485 Converter-120 VAC
58801-404	RS-232/RS-485 Converter-240 VAC
58801-410	20 mA to Parallel BCD Converter
58801-411	Parallel BCD to 20 mA Converter
58801-432	Star Network Controller
58804-400	Remote Display/Entry Terminal
38810-400	Front Panel Spacer - 57810-4X0, 58810-4XX
38820-400	Front Panel Spacer - All Controls

General Accessories

48160-400	Input Signal Conditioner
48160-440	Timer Module (selectable time base oscillator)
48160-45X	Analog to Frequency Converter
49990-4XX	Simultaneous Input Processor (anti-coincidence counting from multiple input devices)
38091-400	RC Surge Suppressor
36059-45X	Solid State I/O Modules (AC Input and Output, DC Input and Output)
38144-202	RS-232 Modem Cable (9F to 9M)
38144-203	RS-232 Modem Cable (25F to 9M)
38146-XX0	Shielded Twisted Pair Communication Cable (XX is length in tens of feet)
36480-200	Actuator Magnet for Hazard Environ. Control
48720-202	Programming Aid

Mounting Kits

28720-301
Includes:

(1) 28720-215 Gasket
(2) 28720-900 Screws
(2) 38720-200 Mounting Clips

For use with the following model numbers:

57810-400	57810-401	58810-400
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28720-302

Includes:

(1) 28720-216 Gasket
(2) 29801-187 Screws
(2) 48433-200 Mounting Clips

For use with the following model numbers:

57820-400	58825-400	58860-400
57820-401	58830-400	58861-400
58811-400	58831-400	58827-400
58815-400	58840-400	58827-410
58820-400	58841-400	58867-400
58821-400	58850-400	58872-400
58824-400	58851-400	

Replacement Labels for President Series

President Model Number	Replacement Part Number
57810-400	48720-220
57820-400	48720-219
58810-400	48720-410
58811-400	48720-411
58815-400	48720-241
58815-403	48720-241
58820-400	48720-420
58825-400	48720-224
58827-400	48720-242
58827-410	48720-260
58830-400	48720-430
58840-400	48720-440
58850-400	48720-450
58860-400	48720-460
58867-400	48720-610

Replacement Relays

Rev. 1 - 49
Eaton 36264-203
Aromat K2F-12V-9
Rev. 50 - 59
Eaton 37043-202
Potter & Brumfield RKA-5DG-06
Rev. 60 and Higher
Eaton 38133-202
Aromat JW1FEN-B-DC5V

Revision Number

To check the revision, locate the label on the outside of your unit. Circled in the diagram is the revision number.

Durant	MADE IN U.S.A.	EATON
MODEL NO. 5885-1	PART NO. 58851-400	(040) 0491(60)