



Totalizer Counter

S660 Preset Totalizer Counter

- **Easily Programmed from the Front Panel**
- **Software Functions Include:**
 - Password* *Display Scaling*
 - Set Point Programming* *Decimal Point Selection*
- **Screw Terminal Connectors for Easy Installation**
- **Rugged, High-Impact Plastic Case Fits Standard 1/8 DIN Cutout**
- **3.24" (82mm) for Restricted Space Behind Panel**
- **NEMA4X/IP65-Rated Front Panel**
- **Remote Reset Capability**
- **Input Variety: Quadrature, Switch, TTL, CMOS, NAMUR, PNP, NPN**
- **Optional 5 Amp Relay Outputs**



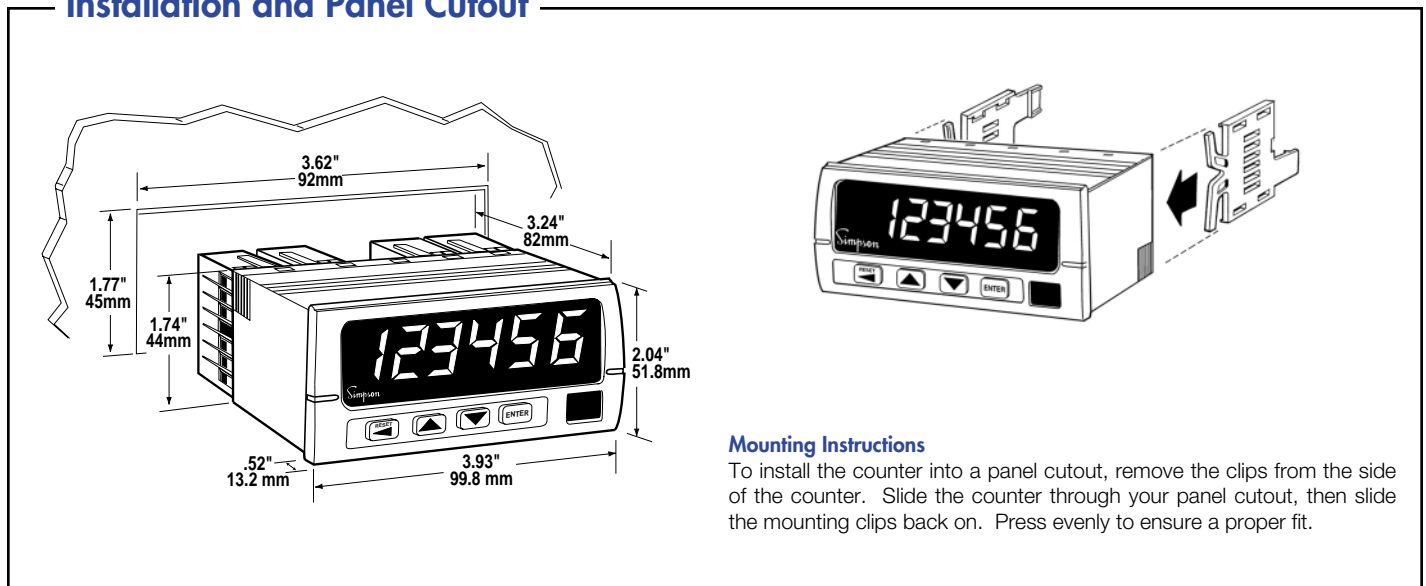
The S660 is a versatile totalizing counter that can be adapted to a wide variety of counting, measuring and controlling applications. The control inputs offer several counter operation modes: count/direction, add/add, add/subtract, subtract/subtract, quadrature, and reverse quadrature. Optional relay outputs enhance the counter from a passive device to an integral control element for your application.

The S660 is compactly designed and features a standard 1/8 DIN case made of PBT-ABS alloy. Screw terminals are standard for easy installation and removal of the meter.

The counter is powered from 120 or 240VAC and has a non-volatile EEPROM to retain all programming and count information when the power source is removed or interrupted. The S660 accepts pulses from Quadrature, CMOS or TTL circuits, and PNP or NPN devices. The optional 12VDC (100 mA) excitation output module can provide power for external sensors.

Other programmable software features include programmable decimal point and a password lockout feature. By using the password feature, the meter's programming functions and set points are protected from accidental reprogramming.

Installation and Panel Cutout



Mounting Instructions

To install the counter into a panel cutout, remove the clips from the side of the counter. Slide the counter through your panel cutout, then slide the mounting clips back on. Press evenly to ensure a proper fit.

Specifications

DISPLAY

Type: 6-digit, 7-segment, red LED
Height: 0.56" (14.2mm)
Decimal Point: User-programmable
Count Direction: "+" indication implied, "-" indication displayed
Display Range: -99,999 to +999,999
Output Indicators: 1 and 2

POWER REQUIREMENTS

AC Voltages: 120, 240VAC, $\pm 10\%$
Power Consumption: 3VA

INPUT RATINGS

Current Sinking: 10K Ω 5% Resistor Pull-up to (9.0 - 16 VDC) $\pm 10\%$
Current Sourcing: 5.1K Ω 5% Resistor Pull-down to common
Minimum Pulse Width: $\sim 5\mu s$

Low Pass Filter: <200Hz
Low Bias: VLT = $1.6V \pm 10\%$ VUT = $3.6V \pm 10\%$
High Bias: VLT = $5.0V \pm 10\%$ VUT = $7.0V \pm 10\%$
Count Rate: 20KHz (Pulse Max)
 5KHz (Quadrature X4 Max)
Maximum Voltage Input A, B, and User: 30VDC (Max)

INPUT

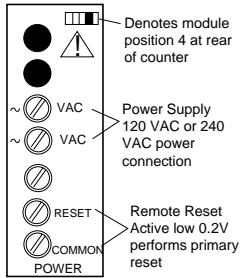
User Input: (Display Hold) Display is frozen when the User Input is pulled low.
Standard Input: VLT $\leq 0.2VDC$ guaranteed low, VUT = 3.0VDC (max)
Quadrature Input: VLT $\leq 0.9VDC$ VUT = 3.15VDC (max)
ENVIRONMENTAL
Operating Temp.: 0°C to +55 °C

Storage Temp.: -10 °C to +60 °C
Relative Humidity: 0-85% non-condensing
Ambient Temperature: 25°C
Temp. Coefficient (per °C): $\pm 100PPM/^\circ C$
Warmup Time: 15 minutes

MECHANICAL

Bezel: 3.93" x 2.04" x .52" (99.8mm x 51.8mm x 13.2mm)
Depth: 3.24" (82mm)
Panel Cutout: 3.62" x 1.77" (92mm x 45mm)
Case Material: PBT-ABS
Weight: 9oz (255.1g)

Wiring Diagram

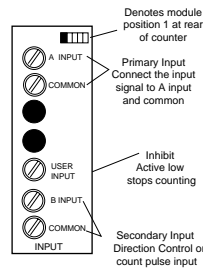


AC Power Module

Power Module: The AC power module allows the S660 to be operated from standard 50/60 Hz line power. The power module will be configured as 120 or 240VAC per markings on the back panel. Ensure the input rating of the supply matches your line voltage. The power supply module has provisions for a hard-wire Count Reset. This control can be a switch, relay contact, or solid state device. The reset circuit is independent of the power circuit.

Input Module: The DIP switch SW1 is used to set up the counter to conform to the electrical characteristics of the sensor or signal being detected. Switch positions 1-3 configure channel B, while switches 4-6 configure channel A. These switches select bias (threshold voltages), low pass filter (enable/disable), and sensor type (Sink or Source). Refer to the sensor's documentation for related information.

Note: The input boards are designed so that selecting sourcing or sink-



Standard Input Module

ing is based on the type of sensor that is being used. If a PNP (sinking) sensor is being used, set the input board for sinking also (switches 3 and 6 = OFF). If channel B is not used, default settings for switch positions 1 through 3 should be selected.

The Input module also provides for a User input signal. On the S660, this input serves as a count enable / disable control. Connecting User to Common will disable counting.

Programming

Menu Category	Parameter Name	Choices/Format	Description
	Pass	000 *	Password Entry and Verification
	Access <—	—> denied	Password Fail <i>Appears if incorrect password entered</i>
	ChPass	000	Password Change <i>Appears if correct password entered.</i> 000 = password protection disabled. 001-099 = secures all parameters. 100-999 = enable SPs/ Res Pos access in display mode.
Input Setup	A Chan	UP * Down Quad r quad	Chan A Mode Select count mode of A channel.
	B Chan	Dir * UP Down	Chan B Mode Select count mode for B channel. Note: If A channel set to Quad or R quad, this item is not accessible.
CountSetup	prescl	1.0 * 0.1 0.01 0.001	Pre-scale Set pre-scaling multiplier.
	scale	01.0000 *	Scale Set Display Value scaling multiplier. Values: -9.9999 to 99.9999.

*Default Setting

Programming (Cont'd)

Menu Category	Parameter Name	Choices/Format	Description
count SETUP	dp	000000 * 000000. 00000.0 0000.00 000.000 00.0000 0.00000	DP Display Value 1 (Count) Decimal Point location. Affects appearance of RstPos and any associated Set Point parameters.
OPUT 1 SETUP	Mmode1	Disabl timmed Latch * bound	Output 1 Mode Set the mode of operation for Output 1. Can be disabled, timed, latched or boundary mode.
	Timmed <— Latched <— SP1=Lo <—	—> At SP1 —> At SP1 * —> SP2=hi	Output 1 Bindings Reminder message indicates which and how the set points are used for comparison. Which message is displayed is determined by the Output 1 Mode selected.
	Delay1	010.00 *	Delay 1 Output 1 delay time. <i>Appears only if Output 1 mode set to timed.</i>
	Until1	Reset * SP1 SP2 SP3 SP4 RstPos	Until 1 Output 1 latched until parameter. <i>Appears only if Mmode1 = latch and SRC1 = Count.</i>
OPUT 2 SETUP	MMode2	Disabl timmed Latch * bound	Output 2 Mode Set the mode of operation for Output 2. Can be disabled, timed, latched or boundary mode.
	Timmed <— Latched <— SP3=Lo <—	—> At SP3 —> At SP3 * —> SP4=Hi	Output 2 Reminder message indicates which and how the set points are used for comparison. Which message is displayed is determined by the Output 2 mode selected.
	Delay2	010.00 *	Delay 2 Output 2 delay time. <i>Appears only if Output 2 mode set to timed.</i>
	Until2	Reset * SP1 SP2 SP3 SP4 RstPos	Until 2 Output 2 latched until parameter. <i>Appears only if MMode2 = latch.</i>
SetPnt SETUP	SP1	000010 *	SP1 Set point #1 Low. Values: -99999 to 999999. Decimal point will appear according to the current DP setting.
	SP2	000020 *	SP2 Set point #1 High. Values: -99999 to 999999. Decimal point will appear according to the current DP setting.
	SP3	000030 *	SP3 Set point #2 Low. Values: -99999 to 999999. Decimal point will appear according to the current DP setting.
	SP4	000040 *	SP4 Set point #2 High. Values: -99999 to 999999. Decimal point will appear according to the current DP setting.
	RSTPOS	000000 *	Reset Position Count value is set to this when an Auto or Manual Reset event occurs. Values: -99999 to 999999. Decimal point will appear according to the user-programmed DP position.
Reset SETUP	Areset	Disabl * At SP1 At SP2 At SP3 at SP4 AftOP1 AftOP2	Auto Reset Mode Selects when an auto reset function is to occur Disabled at a set point or after output times out. See also the RSTPOS parameter in the Setpnt Setup category.

*Default Setting

Programming (Cont'd)

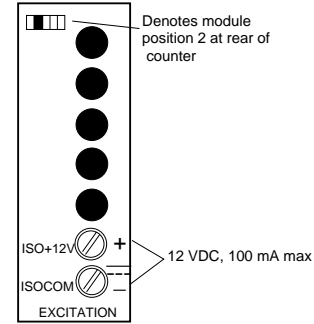
Menu Category	Parameter Name	Choices/Format	Description
Reset SETUP	RstBtn	enable * disabl	Reset Button Enable or disable front panel reset button.
	PonRst	No *	Power On Select whether count reset event will occur at power-up.
End			Exit Programming Menu

*Default Setting

Excitation Output

The Excitation Module can supply 12VDC at up to 100mA for external sensors or encoders. This excitation is isolated from the counter internal logic supply.

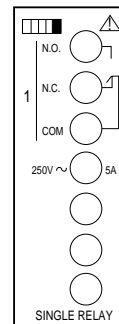
When using sensors or encoders that do not have a signal return or imply a signal return that is in common with the supply voltage, a common attachment which ties the excitation supply to the logic input common may be required.



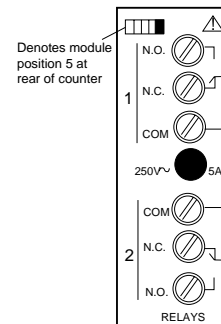
Single and Dual Relay Modules

The Single and Dual Relay modules can activate circuit loads of up to 5 amps at 250VAC. A Form C configuration allows use of normally-open (NO) and normally-closed (NC) circuit action.

Only the output 1 channel is implemented in the single relay module.



Single Relay Module



Dual Relay Module

Application Example

A Simpson Encoder and Counter are to be used to measure and cut raw material to length. A dual speed motor is used to allow selection of high speed, low speed and stop. A pneumatic shear allows the material to be cut.

Material is to be initially fed at high speed. In the final six inches, low speed will be used. When the desired length is reached, the motor will be temporarily stopped and the shear activated for two seconds. The feed and cut cycle then resumes for a new piece.

Process:

Minimum and maximum piece length will be 12 inches and 6000 inches (500 feet) respectively. Material is a light colored textile, so skidding by measuring device is to be avoided.

Display:

Desired display and entry of lengths is in inches with two decimal places (1/100 inch resolution). i.e. The customer would like to enter 0.25 inch increments.

Machine Specifications

Motor and Control: Motor runs in low speed when 120VAC applied to Run-Lo terminal. Hi Speed selected with 120VAC to Run-Hi Terminal. Maximum control current is 3 amps at either terminal. Hi speed = 1725 RPM, Lo speed = 430 RPM.

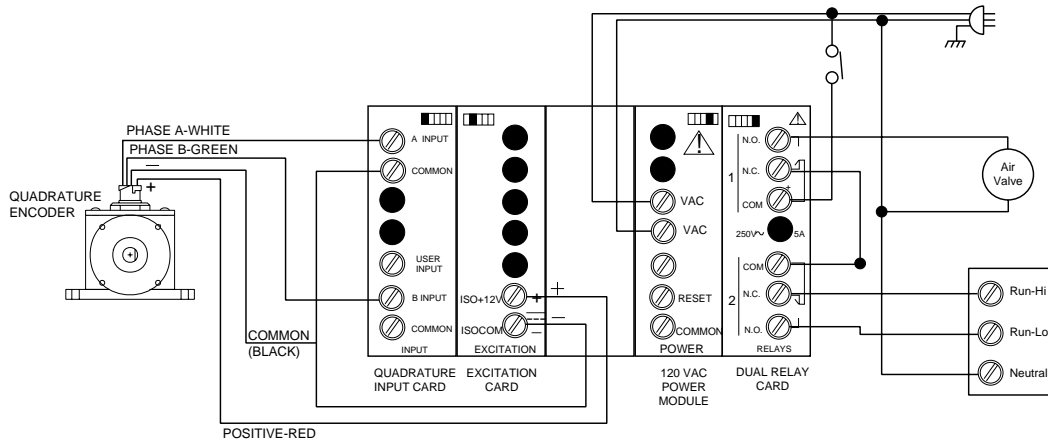
Shear Specifications: The pneumatic cutting blade is activated by applying 120VAC (0.5 amp maximum) to a control valve.

Mechanical: A motor reducer and drive pulley result in 1" of linear travel for every five motor revolutions.

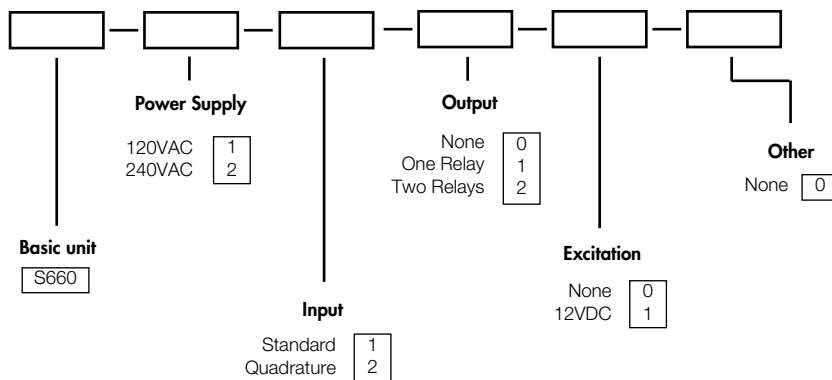
Product Ordering Information

In the application example, a Simpson S660 Preset Totalizing Counter with a 120VAC power supply, Quadrature Input, Dual Relay Output, and 12VDC excitation is used (catalog no. S660-1-2-2-1-0). The encoder used is the SE Quadrature Encoder with 600 pulses-per-revolution (SE-600). An encoder chariot (46012) and 12" measuring wheel with 83A durameter non-marking tires (46005) are also required.

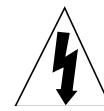
Application Example (Cont'd)



Ordering Information



Safety Symbols



The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which if not correctly performed or adhered to, could result in personal injury.



The CAUTION sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly adhered to could result in damage to or destruction of part or all of the instrument.

Accessories



SE Quadrature Encoder

The cube-style, dual-shaft SE Encoder is available with a choice of five different resolutions (pulses/revolution) to handle a broad range of measuring jobs. When the encoder is affixed to a chariot with measuring wheels and wired to one of the S660 series counters, cut-to-length measurement applications are assured an accurate and reliable reading.



12" Circumference Measuring Wheels with Tires

These 12-inch wheels are precision-machined anodized aluminum with a printed alignment scale. Replaceable tires are available in four different durometers, for use on a wide range of materials including non-marking tires to prevent tearing, damaging, or marking up delicate materials.

Chariot

The Chariot is used to mount most cube-style quadrature encoders and measuring wheels. Made of anodized aluminum, the chariot includes mounting hardware and selectable pivotal points. Wheels, tires, and flexible shaft couplings are sold separately.

Pulses Per Revolution

60
100
120
360
600

Catalog Number

SE-060
SE-100
SE-120
SE-360
SE-600

Tire Durometer

80A, black tire; longer service life for plastics, metals
83A, non-marking tire for textiles medium textures
92A, non-marking tire for plastics, metals, coarse wood
70A, non-marking tire for soft textiles

Catalog No.

46004
46005
46006
46007