

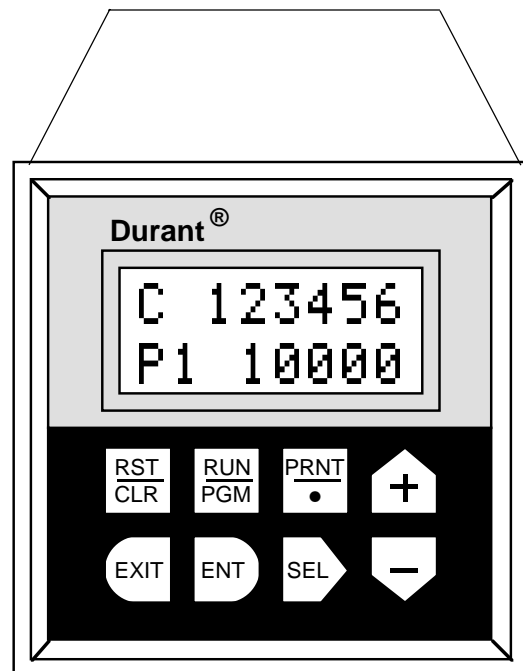
## AMBASSADOR SERIES COUNT CONTROL

MODELS:



57600-405 (10-15 VDC)  
57600-415 (10-15 VDC)  
57600-465 (10-15 VDC)  
57601-405 (115 VAC)  
57601-415 (115 VAC)  
57601-455 (115 VAC)  
57601-465 (115 VAC)  
57602-405 (230 VAC)  
57602-415 (230 VAC)  
57602-465 (230 VAC)

- Six Digit, Four Preset Main Counter
- Six Digit, Single Preset Batch Counter
- Red or Green Display
- Eight Digit Totalizer
- 1/Tau Rate Meter
- Four User-Configurable Control Inputs
- Two Output Relays
- Two Solid State Outputs
- RS-485 Serial Communications
- Feet/Inches Control, Red or Green Display



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# INTRODUCTION

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This manual describes the Ambassador 5760X-405 count control, and is intended to be a guide in the installation and operation of the control.

The control itself is like an electronic erector set, full of counter and ratemeter "parts" which the user must "assemble". The majority of this manual is concerned with installation, describing the parts of the counter, helping the user determine the wiring and programming necessary to "assemble" his counter into the tool he needs to do a specific job, and documenting those choices. The operation section, which describes the operator functions, follows in the section Run Mode. The following description of the control and the block diagram is recommended reading for those new with this device. Those installers who are familiar with controls and counter terminology are welcome to attack the Quick Start section after examining the block diagram. The Quick Start uses a logical inputs-to-outputs approach to decide how to wire and program this control to do the job. Detailed programming and wiring information follow the Quick Start section, providing guidance to the first time installer.

## MAIN COUNTER

The main counter is a six digit, bi-directional count register designated by the letter C on the display. The user can assign up to four presets to this counter. The main counter is the workhorse of this control. Note its central location in the block diagram and the number of "connections" to it. This register increments and decrements from scaled count input pulses. The "favored" count direction is up in reset to zero mode and down in reset to final preset mode. The favored count direction feature affects only the function of the count inputs, and the direction of the totalizer count, and the preset selected for the current preset display. The main count display screen can be customized to identify what type of units are being counted.

## TOTALIZER

The totalizer is an eight digit, bi-directional count register that counts in parallel with the main counter. The totalizer counts up when the main counter counts in the favored count direction, and down when the main counter counts in the non-favored direction. The totalizer display can be customized to show units of count. The totalizer does not have preset or output capability.

## BATCH COUNTER

The batch counter counts the number of "batches" of the main counter, incrementing every time the main counter autcycles or reaches the final preset. This register is six digits and counts up only. The batch counter has one preset, and always autcycles whenever it reaches the setpoint. The batch count display can be customized to show units of count.

## RATEMETER

The control uses the frequency of the count pulses at input A to calculate rate. The rate scaler accommodates the "weight" of each pulse and the time units in order to display rates such as revolutions per minute, barrels per hour, etc. The ratemeter average and zero times are programmable. Two alarm setpoints are assigned to the ratemeter. The rate display text can be customized.

## OUTPUTS

Two form C relay and two open collector NPN transistor outputs are available. Each output is individually assignable to rate or count. Count outputs can turn on or off at any combination of eight preset and control events. These outputs can be timed or latched, and each has a programmable on-delay timer. Rate based outputs turn on based upon comparison to one of two rate alarm setpoints. Rate outputs turn off after timeout (pulsed), external control signal (latched), or when the rate crosses the setpoint back to the non-alarm state (follows).

## COUNT INPUTS

Count inputs A and B are DIP switch settable to accept sinking or sourcing single ended DC or differential count signals. Input A is used by the ratemeter. Inputs A and B are programmable to affect the main counter and totalizer in eight count modes and three count/control modes.

## CONTROL INPUTS/RESET KEY

Four control inputs are available. These inputs are single ended DC, sink only and are programmable to one of 14 functions. The reset key may be programmed to reset one, all, or none of the count registers.

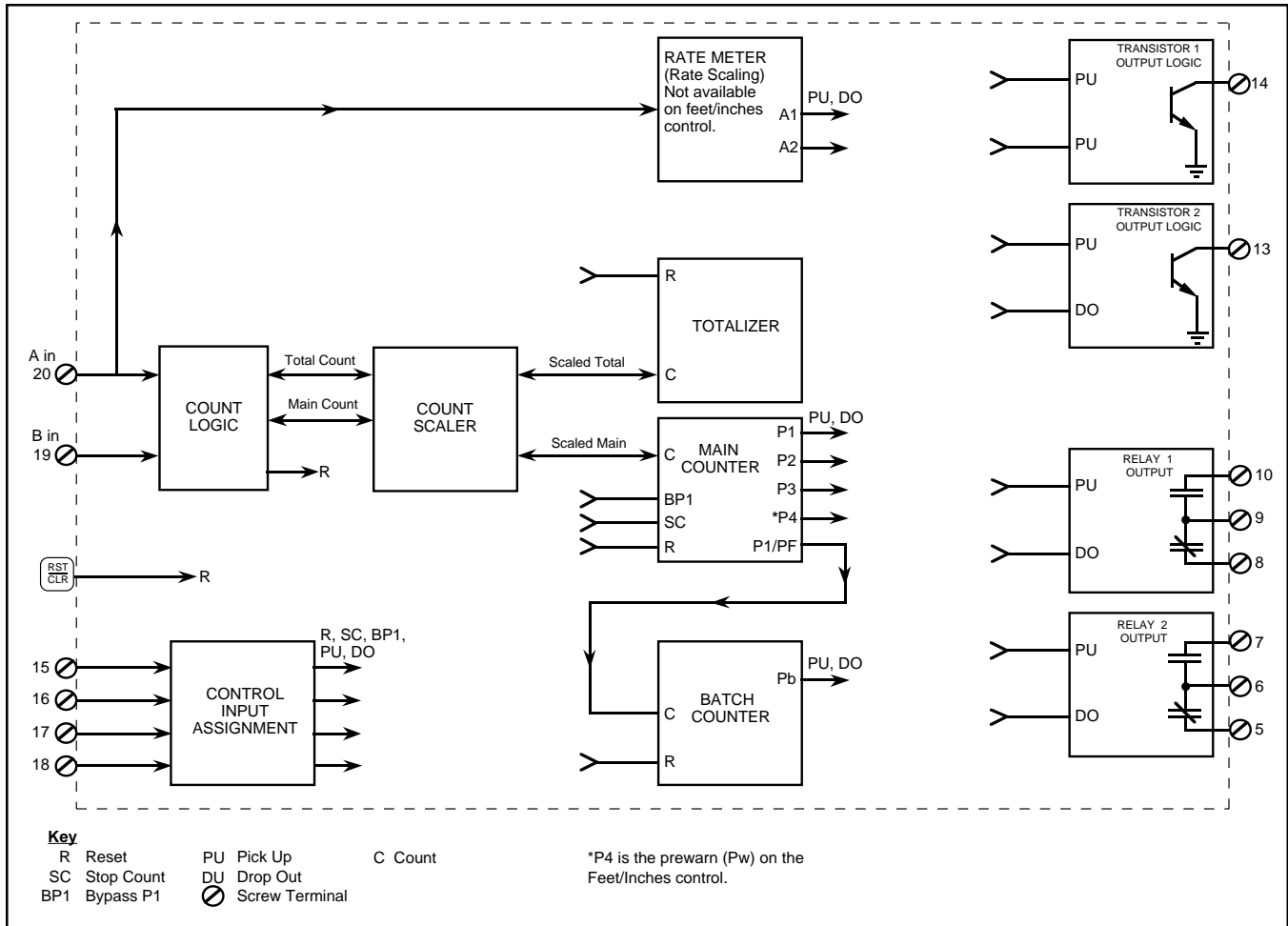
## RS 485 SERIAL COMMUNICATIONS

The control uses RS-485 serial communications in either host mode: to respond to a host computer, or printer mode: to dump selected values to a printer. The print transmission is initiated by either the Print key or a control input. The communication capability is described in a separate manual. If you need information on the serial communications, contact the Literature Department at 1-800-540-9242.

## FEET/INCHES CONTROL

Models 57601-415 (green display) and 57601-465 (red display) have a readout in feet and inches with a fixed decimal point separating them. These models also have a floating prewarn that adjusts itself to the final preset. See page 33 for more details.

# BLOCK DIAGRAM



The block diagram shows the major internal "parts" of the control. A general description of each block was given on the previous page. The block diagram shows how the parts relate to each other. The flow through the control is generally left to right; inputs are designated by screw terminal number on the left side of the block, and output terminals are shown on the right side. In between, arrows lead from block to block from the count inputs (19 and 20) to the count and rate registers. The open ended arrows indicate "connections" that can be made by programming.

The block diagram shows that the control will not respond to the control inputs; (15, 16, 17, 18 and RST key) until they are programmed to a specific function, and the outputs are also oblivious to the count and rate registers until a programming "connection" is made.

# INSTALLATION WIRING AND PROGRAMMING - QUICK START

This section is a step-by-step process for determining program selections and I/O wiring. If the installer has a basic knowledge of counter terminology and uses the block diagram for a reference, the configuration process should be straightforward. Detailed descriptions of programming choices are listed on pages 22 to 25. Detailed I/O wiring diagrams are shown on pages 26 to 28. Instructions on calculating scale factors are on page 29.

For each programming choice, a program item number is listed. A selection space is provided to record the desired selection. These numbers can be also recorded in the programming menu chart on pages 14 to 21, in order to document the application. D→ in the choice lists indicates default setting.

I/O terminals used in the application can be labeled in the space provided on page 10.

## Phase I - The Vital Ingredients

- Count Logic/Main Counter/Totalizer behavior determined by:

PROGRAM  
COUNT IN

- Count Mode  
Program Item 10 Selection \_\_\_\_\_

Consider: Type of count input sensor(s), main counter and totalizer functions, and input B as a count or control input.

Choices:

D→

CNT + TOT A-B	CNT + TOT A, B DIR	CNT + TOT QUAD X1	TOT A CNT B
CNT + TOT A+B	CNT + TOT 2A, B DIR	CNT + TOT QUAD X2	TOT B CNT B
CNT + TOT -A+B	CNT + TOT A, B RST	CNT + TOT QUAD X4	

Label the assignment of count inputs A + B (terminals 20 and 19) on the diagram on page 10.

- Input A Response  
Program Item 11 Selection \_\_\_\_\_

Consider: Input speed <40Hz? If yes, use contact. This item is forced to SOLID ST and is not visible if a QUAD count mode is selected.

Choices:

D→

INPUT A SOLID ST	INPUT A CONTACT
---------------------	--------------------

- Input B Response  
Program Item 12 Selection \_\_\_\_\_

Consider: Input speed <40Hz? If yes, use contact. This item is not visible if a QUAD count mode or B RST is selected (forced to SOLID ST) or if B DIR is selected (forced to CONTACT).

Choices:

D→

INPUT B SOLID ST	INPUT B CONTACT
---------------------	--------------------

- Input B Reset  
Program Item 13 Selection \_\_\_\_\_

Consider: Which count register(s) should input B reset? This item is only visible if B RST count mode is selected.

Choices:

D→

B RST CNT EDG	B RST TOT EDG
B RST BCH EDG	B RST ALL EDG

- Final Preset  
Program Item 14 Selection \_\_\_\_\_

Consider: How many setpoints will be needed on the main counter? Set Pf to that number.

Choices:

D→

FINAL P f P 4	FINAL P f P 2
FINAL P f P 3	FINAL P f P 1

- Reset to Zero/Preset  
Program Item 15 Selection \_\_\_\_\_

Consider: Reset to Preset is considered a down counting mode for the main counter.

Choices:

D→

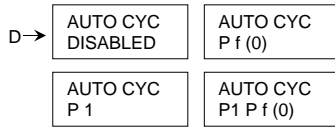
RESET TO ZERO	RESET TO P f
------------------	-----------------

- Main Counter Auto Cycle  
Program Item 16 Selection \_\_\_\_\_

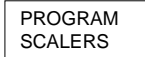
Consider: Batch counter increments each time the main counter auto cycles or Pf is reached.

# INSTALLATION WIRING AND PROGRAMMING - QUICK START

Choices:

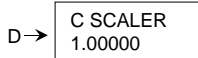


2. When appropriate, adjust the count scaler and set up the ratemeter in:

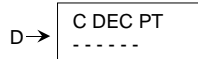


Note: Calculation of scalers and decimal point selection is explained on page 29.

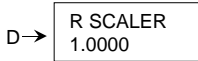
- A. Count Scaler  
Program Item 0 Selection \_\_\_\_\_



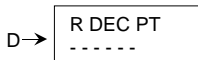
- B. Count Decimal Point  
Program Item 1 Selection \_\_\_\_\_



- C. Rate Scaler  
Program Item 2 Selection \_\_\_\_\_



- D. Rate Decimal Point  
Program Item 3 Selection \_\_\_\_\_



- E. Rate Zero Time  
Program Item 4 Selection \_\_\_\_\_

Consider: Maximum ratemeter response time to the process being considered "stopped".



- F. Rate Average Time  
Program Item 5 Selection \_\_\_\_\_



**\*\* AT THIS POINT**, refer to the block diagram. We are almost done with figuring out how the counters and ratemeter are going to behave. All that's left to getting an output to occur at the terminals on the right side when count pulses come in at the terminals on the left is to program some "connections" between the count/rate registers and the output blocks. This is done in step 3.

3. Educating the outputs:



Note: All four output blocks (Relay 1, Relay 2, Trans 1, and Trans 2) are included in PROGRAM OUT MODE. The choices for all outputs are exactly the same. Only Relay 1 choices will be shown here, but spaces for recording the selections for the other outputs are provided.



- A. Count or Rate Activated Output  
Program Item 300 Selection \_\_\_\_\_

Consider: Should this output turn on or off based on a ratemeter setpoint? If yes, choose rate.

Choices:



**\*\*\* If RATE is selected, skip to N.**

- B. Output Operation  
Program Item 303 Selection \_\_\_\_\_

Consider: Reverse mode is also known as contrary mode. Pick Up events are really Drop Out events and vice versa.

Choices:



- C. Output Latch / Timeout  
Program Item 304 Selection \_\_\_\_\_

Consider: Latched will require both a Pick Up and Drop Out event.

Choices:



# INSTALLATION WIRING AND PROGRAMMING - QUICK START

\*\*\* If LATCHED is selected, skip to E.

D. Output "On" Time  
Program Item 305 Selection \_\_\_\_\_

D → 

RELAY 1 PUL 1.00
---------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

E. Output On Delay Time  
Program Item 306 Selection \_\_\_\_\_

Consider: How many seconds should elapse after a Pick Up event occurs before the output actually picks up?

D → 

RELAY 1 DEL 0.00
---------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

F. Preset 1 Action  
Program Item 307 Selection \_\_\_\_\_

Consider: Should the output Pick Up or Drop Out at Preset 1 or ignore Preset 1 (No Action)?

Choices:

D → 

RELAY 1 P1 NA	RELAY 1 P1 PU	RELAY 1 P1 DO
------------------	------------------	------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

G. Preset 2 Action  
Program Item 308 Selection \_\_\_\_\_

D → 

RELAY 1 P2 NA	RELAY 1 P2 PU	RELAY 1 P2 DO
------------------	------------------	------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

H. Preset 3 Action  
Program Item 309 Selection \_\_\_\_\_

D → 

RELAY 1 P3 NA	RELAY 1 P3 PU	RELAY 1 P3 DO
------------------	------------------	------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

I. Preset 4 Action  
Program Item 30A Selection \_\_\_\_\_

D → 

RELAY 1 P4 NA	RELAY 1 P4 PU	RELAY 1 P4 DO
------------------	------------------	------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

J. Batch Preset Action  
Program Item 30B Selection \_\_\_\_\_

D → 

RELAY 1 PB NA	RELAY 1 PB PU	RELAY 1 PB DO
------------------	------------------	------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

K. Output Control 1 Action  
Program Item 30C Selection \_\_\_\_\_

Consider: This signal comes from a control input programmed to Output Control 1 (OUT CTL 1).

Choices:

D → 

RELAY 1 OCTL1 NA	RELAY 1 OCTL1 PU	RELAY 1 OCTL1 DO
---------------------	---------------------	---------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

L. Output Control 2 Action  
Program Item 30D Selection \_\_\_\_\_

Consider: This signal comes from a control input programmed to Output Control 2 (OUT CTL 2).

Choices:

D → 

RELAY 1 OCTL2 NA	RELAY 1 OCTL2 PU	RELAY 1 OCTL2 DO
---------------------	---------------------	---------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

M. Counter Reset Action  
Program Item 30E Selection \_\_\_\_\_

Consider: This signal comes from a control input and/or the front panel reset key programmed to Reset Count (RSC EDG, or RSC LVL).

Choices:

D → 

RELAY 1 RSC NA	RELAY 1 RSC PU	RELAY 1 RSC DO
-------------------	-------------------	-------------------

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

\*\*\* This completes the programming for Relay 1 when it is programmed for count. Go back to choice A at the beginning of this step and repeat the process for each remaining output needed.

N. Output Setpoint Assignment  
Program Item 301 Selection \_\_\_\_\_

Consider: Which setpoint, A1 or A2, should this output respond to, and should it turn on above (hi) or below (lo) the setpoint?

Choices:

D → 

RELAY 1 A 1 HI	RELAY 1 A 2 HI
RELAY 1 A 1 LO	RELAY 1 A 2 LO

      RELAY 2 \_\_\_\_\_  
TRANS 1 \_\_\_\_\_  
TRANS 2 \_\_\_\_\_

# INSTALLATION WIRING AND PROGRAMMING - QUICK START

O. Output Duration  
 Program Item 302 Selection \_\_\_\_\_

Consider: Once the output turns on, by what means will it turn off?

Choices:

D →

RELAY 1 DISABLED	RELAY 1 LATCHED	RELAY 2 _____ TRANS 1 _____ TRANS 2 _____
RELAY 1 FOLLOWS	RELAY 1 PULSED	

\*\*\* If PULSED is selected, continue to choice P; if not, go back to choice A and repeat the process for each remaining output needed.

P. Output "On" Time  
 Program Item 305 Selection \_\_\_\_\_

D →

RELAY 1 PUL 1.00	RELAY 2 _____ TRANS 1 _____ TRANS 2 _____
---------------------	---

\*\*\* This completes the programming for Relay 1 when it is programmed for rate. Go back to choice A at the beginning of this step and repeat the process for each remaining output needed.

Record the assignments of the outputs (terminals 5, 6, 7, 8, 9, 10, 13, 14) on the diagram on page 10.

\*\*\* This completes the wiring and programming selections for a "bare bones" application. If you check the block diagram, you can see that count inputs are getting converted to relay and transistor outputs at this point. Most applications will need further dressing up before the control is ready for use by the operator. This is done in Phase 2.

## Phase 2 - Finishing Touches

1. Assigning the control inputs in:

PROGRAM INPUTS
-------------------

Input 1 Function  
 Program Item 20 Selection \_\_\_\_\_

Consider: Use control inputs wisely and save one for one of the lock functions.

Choices:

D →

INPUT 1 DISABLED	INPUT 1 RS C LVL	INPUT 1 PRINT	INPUT 2 _____ INPUT 3 _____ INPUT 4 _____
INPUT 1 BYP P 1	INPUT 1 RS B EDG	INPUT 1 LOCK PGM	
INPUT 1 OUT CTL 1	INPUT 1 RS T EDG	INPUT 1 LOCK ALL	
INPUT 1 OUT CTL 2	INPUT 1 RS A EDG	INPUT 1 UNL ALMS	
INPUT 1 RS C EDG	INPUT 1 STOP CNT		

Label the assignment of control inputs 1, 2, 3, and 4 (terminals 15, 16, 17 and 18) on the diagram on page 10.

2. Allow the operator to view what's important in:

PROGRAM DISPLAY
--------------------

A. Count with text  
 Program Item 40 Selection \_\_\_\_\_

Consider: If all items are set to hide, CNT and TXT will show.

Choices:

D →

CNT + TXT HIDE	CNT + TXT SHOW
-------------------	-------------------

B. Rate with text  
 Program Item 41 Selection \_\_\_\_\_

Choices:

D →

RATE + TXT HIDE	RATE + TXT SHOW
--------------------	--------------------

C. Batch count with text  
 Program Item 42 Selection \_\_\_\_\_

Choices:

D →

BCH + TXT HIDE	BCH + TXT SHOW
-------------------	-------------------

D. Totalizer count with text  
 Program Item 43 Selection \_\_\_\_\_

Choices:

D →

TOT + TXT HIDE	TOT + TXT SHOW
-------------------	-------------------



# INSTALLATION WIRING AND PROGRAMMING - QUICK START

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E. Count and current preset  
Program Item 44 Selection \_\_\_\_\_

Choices:

D→ 

CNT+ Pc HIDE
-----------------

CNT + Pc SHOW
------------------

F. Count and preset 1  
Program Item 45 Selection \_\_\_\_\_

Choices:

D→ 

CNT+ P1 HIDE
-----------------

CNT + P1 SHOW
------------------

G. Count and preset 2  
Program Item 46 Selection \_\_\_\_\_

Choices:

D→ 

CNT+ P2 HIDE
-----------------

CNT + P2 SHOW
------------------

H. Count and preset 3  
Program Item 47 Selection \_\_\_\_\_

Choices:

D→ 

CNT+ P3 HIDE
-----------------

CNT + P3 SHOW
------------------

I. Count and preset 4  
Program Item 48 Selection \_\_\_\_\_

Choices:

D→ 

CNT+ P4 HIDE
-----------------

CNT + P4 SHOW
------------------

J. Batch and batch preset  
Program Item 49 Selection \_\_\_\_\_

Choices:

D→ 

BCH + Pb HIDE
------------------

BCH + Pb SHOW
------------------

K. Count and rate  
Program Item 4A Selection \_\_\_\_\_

Choices:

D→ 

CNT + RATE HIDE
--------------------

CNT + RATE SHOW
--------------------

L. Rate and alarm setpoint A1  
Program Item 4B Selection \_\_\_\_\_

Choices:

D→ 

RATE + A1 HIDE
-------------------

RATE + A1 SHOW
-------------------

M. Rate and alarm setpoint A2  
Program Item 4C Selection \_\_\_\_\_

Choices:

D→ 

RATE + A2 HIDE
-------------------

RATE + A2 SHOW
-------------------

N. Count scaler  
Program Item 4D Selection \_\_\_\_\_

Choices:

D→ 

C SCALER HIDE
------------------

C SCALER SHOW
------------------

O. Count decimal point position select  
Program Item 4E Selection \_\_\_\_\_

Choices:

D→ 

C DEC PT HIDE
------------------

C DEC PT SHOW
------------------

3. If you intend to use the front panel reset and/or print keys, enable them in:

PROGRAM  
OPTIONS

A. Reset key function  
Program Item 80 Selection \_\_\_\_\_

Choices:

D→ 

RST KEY DISABLED
---------------------

RST KEY RS C LVL
---------------------

RST KEY RS T EDG
---------------------

RST KEY RS A EDG
---------------------

RST KEY RS C EDG
---------------------

RST KEY RS B EDG
---------------------

RST KEY RS D EDG
---------------------

B. Print key enable  
Program item 81 Selection \_\_\_\_\_

Consider: If you enable the print key, be sure to program the item(s) to be printed in PROGRAM SER OUT.

Choices:

D→ 

PRNT KEY DISABLED
----------------------

PRNT KEY ENABLED
---------------------

# INSTALLATION WIRING AND PROGRAMMING - QUICK START

4. Identify what you're counting in:

PROGRAM  
TEXT

You have up to eight characters; select each to be alpha A → Z, numeric 0 → 9, or space, comma, dash, decimal point, or slash.

A. Main counter text  
Program Item 50 Selection \_\_\_\_\_

D → CNT TXT  
COUNT

B. Ratemeter text  
Program Item 51 Selection \_\_\_\_\_

D → RATE TXT  
RATE

C. Batch counter text  
Program Item 52 Selection \_\_\_\_\_

D → BCH TXT  
BATCH

D. Totalizer text  
Program Item 53 Selection \_\_\_\_\_

D → TOT TXT  
TOTAL

5. Set up your print list in:

PROGRAM  
SER OUT

Remember to set the baud rate and parity and set the port to PRINTER in PROGRAM SER PORT if you are going to initiate a transmission from the counter.

PROGRAM ITEM	DEFAULT	CHOICE	SELECTION
70	COUNT SKIP	COUNT SEND	_____
71	BATCH SKIP	BATCH SEND	_____
72	TOTAL SKIP	TOTAL SEND	_____
73	RATE SKIP	RATE SEND	_____
74	P1 SKIP	P1 SEND	_____
75	P2 SKIP	P2 SEND	_____

Cont.

PROGRAM ITEM	DEFAULT	CHOICE	SELECTION
76	P3 SKIP	P3 SEND	_____
77	P4 SKIP	P4 SEND	_____
78	PB SKIP	PB SEND	_____
79	A1 SKIP	A1 SEND	_____
7A	A2 SKIP	A2 SEND	_____
7B	C SCALER SKIP	C SCALER SEND	_____
7C	C DEC PT SKIP	C DEC PT SEND	_____

6. Configure the serial communications for use with a host computer or a dumb printer in:

PROGRAM  
SER PORT

A. Counter ID number  
Program Item 60 Selection \_\_\_\_\_

Consider: When more than one counter is used in a system, assign a unique number from the range of 0 → 99 to each counter.

D → SER PORT  
ID 0

B. Baud rate  
Program Item 61 Selection \_\_\_\_\_

Consider: Choices are 19200, 9600, 4800, 2400, 1200 and 300.

D → BAUD  
19200

C. Parity  
Program Item 62 Selection \_\_\_\_\_

Choices:

D → PARITY  
NONE      PARITY  
ODD      PARITY  
EVEN

# INSTALLATION WIRING AND PROGRAMMING - QUICK START

---

- D. Transmission delay time  
Program Item 63 Selection \_\_\_\_\_

D→ 

Tx DELAY 0.002	Tx DELAY 0.100
-------------------	-------------------

- E. Host or printer port  
Program Item 64 Selection \_\_\_\_\_

Consider: Should the counter initiate the transmission (printer), or should the counter respond to a serial command (host)?

Choices:

D→ 

HOST PORT	PRINTER PORT
--------------	-----------------

Label the serial port (terminals 21 and 22) on the diagram on page 10.

**\*\*\*This completes Phase 2 wiring and programming selections.** All the necessary selections have been made. Record the selections you have made that are not the default value in the program menu chart on pages 14 to 21. After you wire the counter up according to the diagram on page 10, go into the program mode and give your counter the personality to do your application.

## Phase III - Above and Beyond

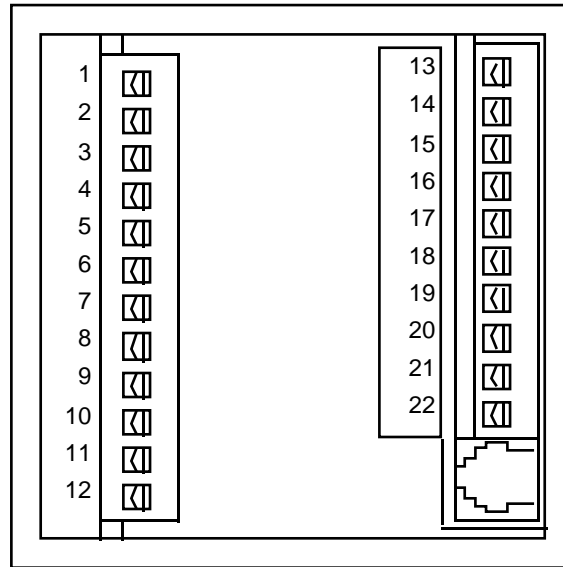
A phase 3 installation uses the serial communications port in the host mode. This capability allows a host computer to read all programming and run mode information and to write all programming selections. Furthermore, all of the control input functions are available through the serial port.

A separate manual describing the serial communications is available. If you would like a copy, call 1-800-540-9242.

# REAR TERMINAL DESCRIPTION

## Assignment

- \_\_\_\_\_ +12 Volt DC
- \_\_\_\_\_ DC Common
- \_\_\_\_\_ DC Common
- \_\_\_\_\_ DC Common
- \_\_\_\_\_ Relay 2 N.C.
- \_\_\_\_\_ Relay 2 Com.
- \_\_\_\_\_ Relay 2 N.O.
- \_\_\_\_\_ Relay 1 N.C.
- \_\_\_\_\_ Relay 1 Com.
- \_\_\_\_\_ Relay 1 N.O.
- \_\_\_\_\_ AC Power Neut
- \_\_\_\_\_ AC Power Hot



## Assignment

- \_\_\_\_\_ Transistor 2 Output
- \_\_\_\_\_ Transistor 1 Output
- \_\_\_\_\_ Input 1
- \_\_\_\_\_ Input 2
- \_\_\_\_\_ Input 3
- \_\_\_\_\_ Input 4
- \_\_\_\_\_ Count Input B
- \_\_\_\_\_ Count Input A
- \_\_\_\_\_ Communication +
- \_\_\_\_\_ Communication -

RS-485 communication connector, RJ-11 modular telephone style.

## TERMINAL DESCRIPTIONS

**1** - On models 57601 and 57602 this terminal is the +12 VDC power output. It is used to supply 12 VDC (+/- 25% 100 mA max) for accessories. DC Common is the negative side of this supply.

On the model 57600 this terminal is used for the 10-15 VDC power input. Connect the positive lead of the power supply to terminal 1 and the negative lead to DC Common.

The DC POWER OUTPUT contains a series Positive Temperature Coefficient (PTC) resistor that undergoes a large and abrupt increase in resistance when an over-current condition occurs. This resistance change limits the fault current to several milliamps. The PTC device will reset when the unit power has been removed for a time sufficient to cool the device. The overload condition should be removed before unit power is reapplied.

**2, 3, and 4** - DC Common: These terminals are connected to the negative side of the counter's internal DC power supply. Count inputs must be referenced to DC Common. Control inputs are on when connected to DC Common. Transistor outputs conduct to DC Common when picked up.

**5, 6 and 7** - Relay 2 contacts

**8, 9 and 10** - Relay 1 contacts

Each relay output consists of one electrically isolated form C set of contacts. The user must supply power through a contact to the external load. The contacts remain in the

normal state until a pickup signal occurs. The relay remains picked up (on) until a dropout signal occurs (see output programming diagram page 16 and block diagram page 2).

**11 and 12** - AC Power Inputs:

Model 57601-405	115VAC
Model 57602-405	230VAC
Model 57600-405	Not used

**13, 14** - Transistor Outputs 2 and 1: These terminals are separate open collector NPN transistor outputs. Each output conducts to DC Common when picked up (see output programming diagram page 16 and block diagram page 2).

**15, 16, 17, and 18** - Inputs 1, 2, 3, and 4: Programmable inputs. The user can assign one of 14 functions to each individual input. The inputs require a current sinking signal (contact or solid state) to DC Common (see input programming diagram page 15 and block diagram page 2).

**19, 20** - Count Inputs B and A: Connect the count input signal(s) to these terminals. The count input can operate with either a current sinking signal (contact or solid state) to DC Common or a current sourcing signal. (See specifications, programming diagram page 14, and block diagram page 2.) Rate calculations are made from count pulses into Input A only.

**21, 22** - RS-485 serial I/O port: Connect terminal 21 to the positive lead of the communications bus. Connect terminal 22 to the negative lead of the communications bus.


## REAR TERMINAL DESCRIPTION continued

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### MODULAR COMMUNICATION JACK

The modular phone jack is an alternate connection to the RS-485 communications port. Pin 3 is positive and is the same as terminal 21. Pin 2 is negative and is the same as terminal 22. Pins 1 and 4 are connected to DC Common and should be used for any shield connections.

Note: This jack is intended only for connection to Ambassador and other RS-485 communication networks. **It should**


 **not be connected to any telephone system - damage or hazard may result.**

### TERMINAL BLOCKS

Connections to the Ambassador are made through depluggable, screw terminal blocks to allow for ease of wiring and removal of the counter. The terminals can accommodate stranded, solid or fused wire (preferred) from 14 to 22 gauge.

To remove the terminal block, remove AC power and pry gently underneath each end of the terminal block with small screwdriver. Press straight on to re-install.

### GENERAL WIRING PRACTICES

1.  Disconnect all power before wiring terminals. **A safety hazard exists if this precaution is not observed. Treat all control and count inputs as hazardous since they may carry line voltage.**
2. Use shielded cables for count signals, control input and communications signals. Connect shield to common (terminal 2, 3 or 4) of counter to terminate properly.
3. Keep all signal lines as short as possible.
4. Do NOT bundle or route signal lines with power or machine control wiring. Use separate conduit for power and signal wires.
5. Provide "clean" power to the counter. In severe cases, power may have to be filtered or a separate power source used. Do not use the same power source that is supplying the loads.
6. Use 18 ga. minimum (0.97mm<sup>2</sup>, 600V) and 14 ga. maximum (2.1mm<sup>2</sup>, 600V) wire for AC power wiring.
7. See page 26, top drawing, for the correct fuse to be used in the power input wiring.

### DIP SWITCH FUNCTIONS

Switch 1: Input A sink/source  
Off: input A requires a current sinking input signal.  
On: input A requires a current sourcing input signal.

Switch 2: Input B sink/source  
Off: input B requires a current sinking input signal.  
On: input B requires a current sourcing input signal.

Switch 3: Input A threshold level  
Off: high threshold level — use with DC sensors.  
On: low threshold level — use with mag pickups. Turn switch 1 on.

Switch 4: Input B threshold level  
Off: high threshold level — use with dc sensors.  
On: low threshold level — use with mag pickups. Turn switch 2 on.

Dip switches may be set through an opening on the bottom of the unit. It is located towards the rear of the control.

### PANEL MOUNTING

The panel mounting kit includes:  
(1) mounting gasket, (2) mounting clips and (4) screws.

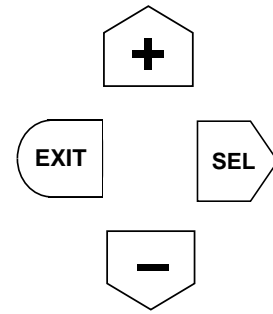
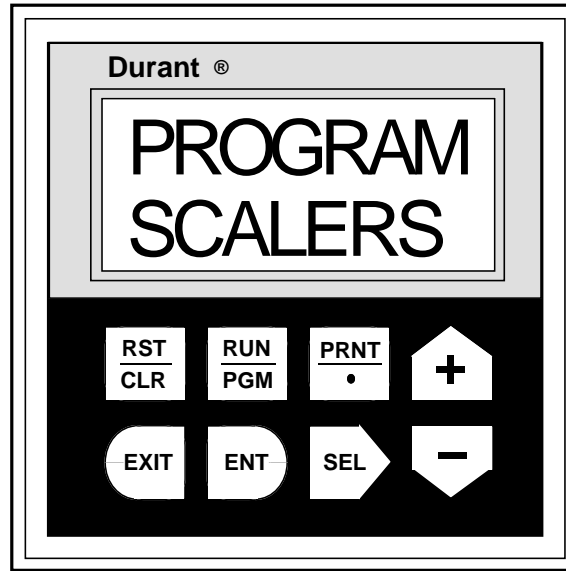
Refer to the dimension diagram on page 37 for a drawing of the correct installation of these parts.

The mounting gasket is coated on one side with a contact adhesive and a paper backing. Care should be taken during the gasket installation that the gasket be correctly positioned on the panel at the first attempt. Attempting to re-position the gasket once the adhesive has come in contact with the panel is likely to deform or tear the gasket. This may result in an improper seal. For best results, follow these directions:

1. Stand the Ambassador counter on a desk or table with its display down, screw terminals up.
2. Remove and discard the center square of the gasket at the scribe marks in the gasket and paper backing. Do not remove the backing from the remaining outer rim.
3. Slide the gasket down the unit until it is in position at the rear of the unit's front bezel. The paper backing side should be up.
4. Insert the tip of a knife between the paper and the gasket and, while holding the gasket down to the unit with the knife, peel off the paper backing.
5. Slide the unit through the panel cutout until the gasket firmly adheres to the panel.
6. Install the mounting clips and screws as shown in the diagram on page 37. Do not overtighten the mounting screws. The screws should be tight enough to firmly hold the unit in place, but not so tight as to squeeze the gasket out from behind the front bezel.
7. A switch shall be included in the building installation:
  - It shall be in close proximity to the equipment and within easy reach of the operator.
  - It shall be marked as the disconnecting device for the equipment.
  - Switches and circuit breakers in Europe must comply with IEC 947.

# PROGRAM MODE

All programming is done through the front panel keyboard. Each key has a specific function in the program mode.



Menu navigation keys. Keys point in the direction that they move you through the program menu.

## Program Mode Key Functions

	<p><b>Reset/Clear Key</b> - This key clears numeric data selected for editing.</p>		<p><b>Exit Key</b> - Steps left one level; i.e., edit level to sub menu.</p>
	<p><b>Run/Program Key</b> - From any point in program mode, goes to run mode.</p>		<p><b>Enter Key</b> - Enters program changes at the edit level</p>
	<p><b>Prnt Key</b> - Sets decimal point position for count and rate displays and for rate scaler.</p>		<p><b>Select Key</b> - Steps right one level; i.e., main menu to sub menu.</p>
	<p><b>Plus (+) Key</b> - Steps up through the level and increments the selected digit when changing numeric values.</p>		<p><b>Minus (-) Key</b> - Steps down through the level and decrements the selected digit when changing numeric values.</p>


**Auto Scroll** - holding the plus or minus key down during numeric editing will cause the selected digit to scroll up or down at a 2 Hz rate. Holding the select key down when setting the count or rate decimal point will advance the selected digit at a 2 Hz rate.

# PROGRAM MODE continued


All personality programming for this counter is done in the program mode. The program menu is laid out like an outline. Step up or down, left or right through the program mode by using the menu navigation keys + (up), - (down), SElect and EXIT.

Whenever you enter the program mode, you will always start out in the main menu item PROGRAM SCALERS. Notice how the up and down keys scroll you through the main menu.

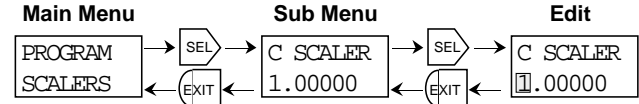
## Overview of Main Menus

press  
  
 to scroll  
 down


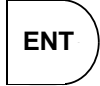
<b>PROGRAM SCALERS</b>	Count and rate scale factors, count and rate display decimal points, and rate zero and rate average times.
<b>PROGRAM COUNT IN</b>	Count mode, count input response, reset mode, final preset, and autcycle.
<b>PROGRAM INPUTS</b>	Select the input function to be performed by each of the four control inputs.
<b>PROGRAM OUT MODE</b>	Configure each of the four outputs.
<b>PROGRAM DISPLAY</b>	Determine which of the 15 run mode screens will be accessible to the operator.
<b>PROGRAM TEXT</b>	Determine the units of measure for the count, batch, totalizer, and rate screens.
<b>PROGRAM SER PORT</b>	Select unit I.D. number, baud rate, parity and transmission delay time, and host or printer mode.
<b>PROGRAM SER OUT</b>	Select the data items to be transmitted by the serial group, print command (host mode) or the print input (printer mode).
<b>PROGRAM OPTIONS</b>	Enable front panel reset and print keys. Restore factory programming.

press  
  
 to scroll  
 up


Each main menu item is made up of a sub menu level of items, and each sub menu item is made up of edit level items. Use the SElect and EXIT keys to move right and left respectively from one level to another.



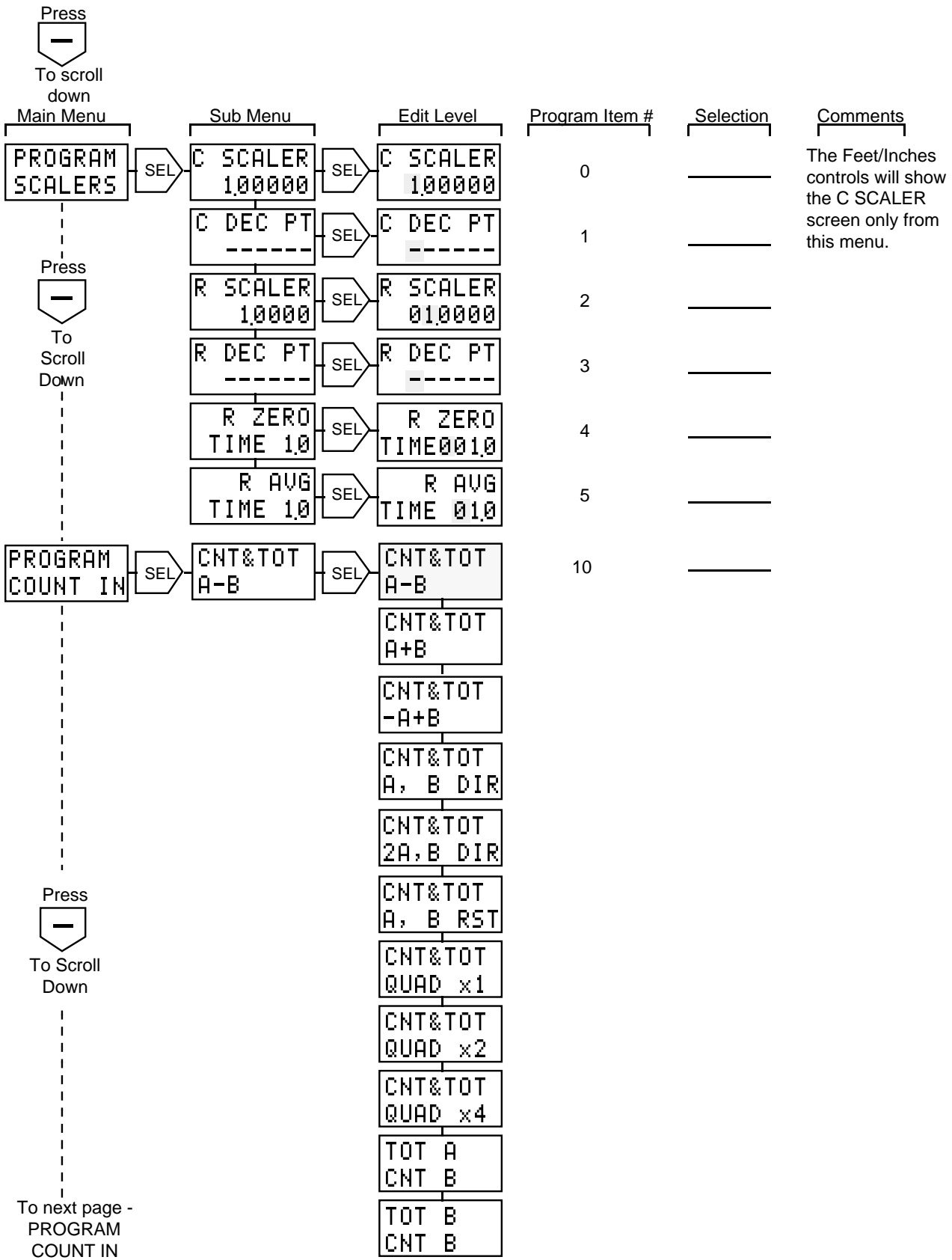
## ENTERING THE PROGRAM MODE

Press  Then  To enter program mode

The ENT key must be pressed within five seconds, otherwise the display will return to the last run mode screen.

 **Caution:** entering the Program Mode will cause all outputs to turn off. Make sure process is stopped before entering the Program Mode.

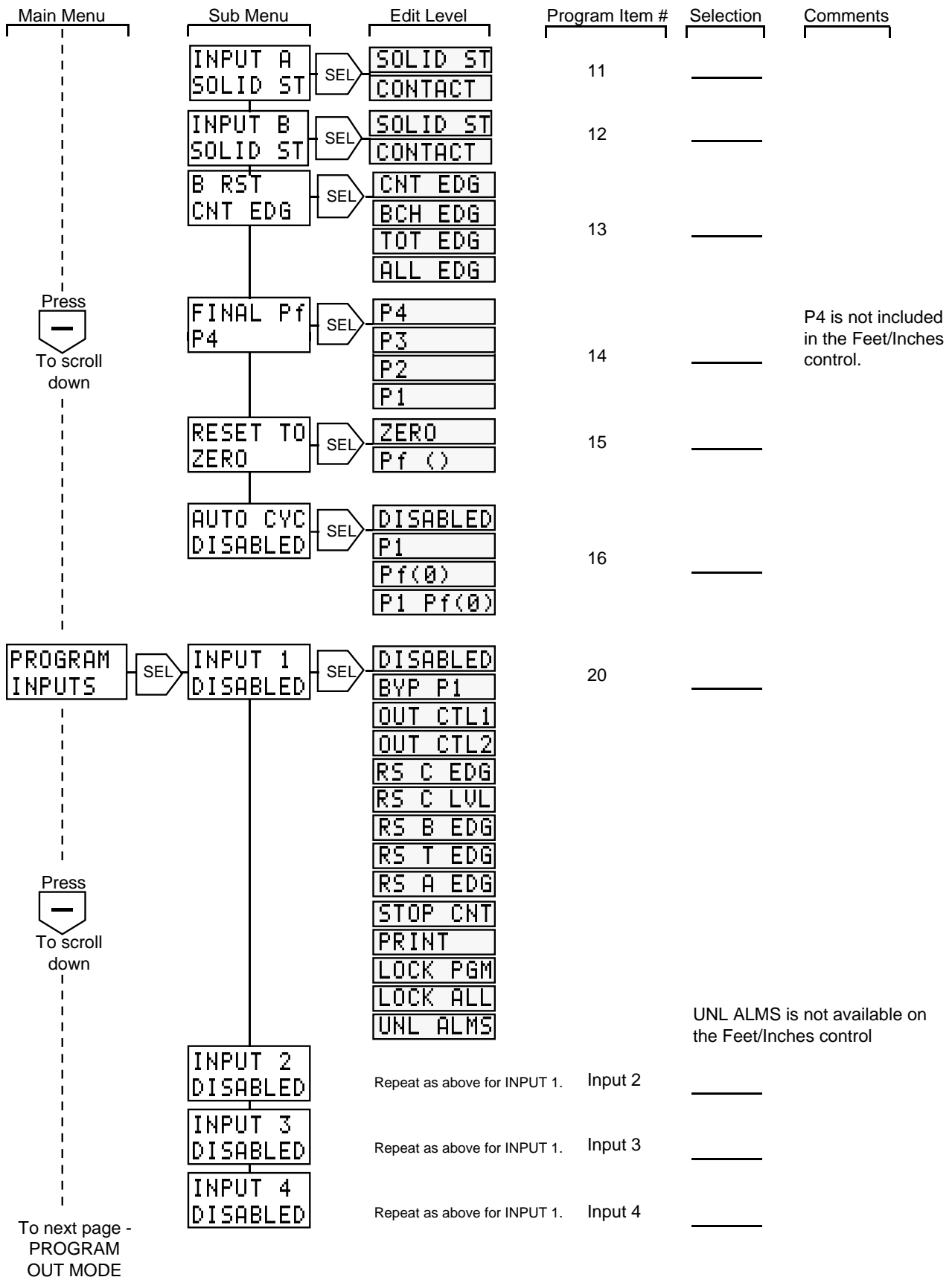
# PROGRAMMING SCALERS



To next page -  
PROGRAM  
COUNT IN  
(continued)

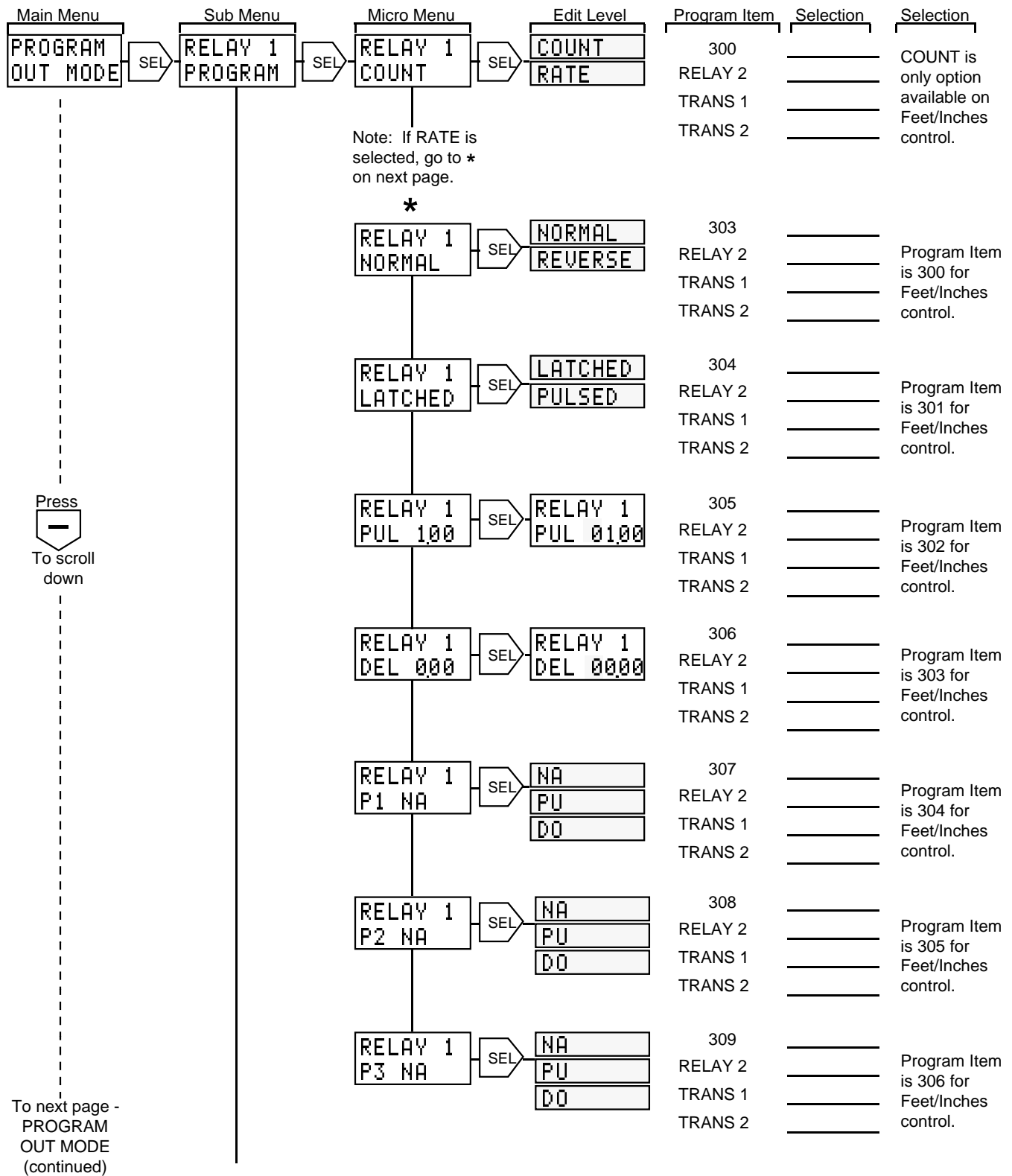


# PROGRAMMING COUNT INPUTS




To next page -  
PROGRAM  
OUT MODE

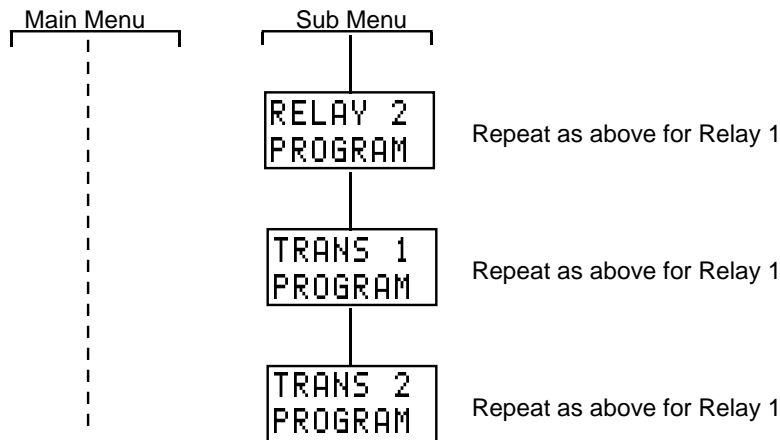
# PROGRAMMING OUTPUTS



# PROGRAMMING OUTPUTS continued

Main Menu	Sub Menu	Micro Menu	Edit Level	Program Item	Selection	Comments	
<p>Press  To scroll down</p> <p>To next page - PROGRAM OUT MODE (continued)</p>		RELAY 1 P4 NA	SEL → NA PU DO	30A RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Pw for Feet/Inches control. Program Item is 307 for Ft./In. control.	
		RELAY 1 PB NA	SEL → NA PU DO	30B RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Program Item is 308 for Feet/Inches control.	
		RELAY 1 OCTL1 NA	SEL → NA PU DO	30C RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Program Item is 309 for Feet/Inches control.	
		RELAY 1 OCTL2 NA	SEL → NA PU DO	30D RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Program Item is 30A for Feet/Inches control.	
		RELAY 1 RS C NA	SEL → NA PU DO	30E RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Program Item is 30B for Feet/Inches control.	
		*					
		RELAY 1 A1 HI	SEL → A1 HI A1 LO A2 HI A2 LO	301 RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Not available on Feet/Inches control.	
		RELAY 1 DISABLED	SEL → DISABLED FOLLOWS LATCHED PULSED	302 RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Not available on Feet/Inches control.	
RELAY 1 PUL 1.00	SEL → RELAY 1 PUL 1.00	305 RELAY 2 TRANS 1 TRANS 2	_____ _____ _____ _____	Not available on Feet/Inches control.			

# PROGRAMMING OUTPUTS AND DISPLAY

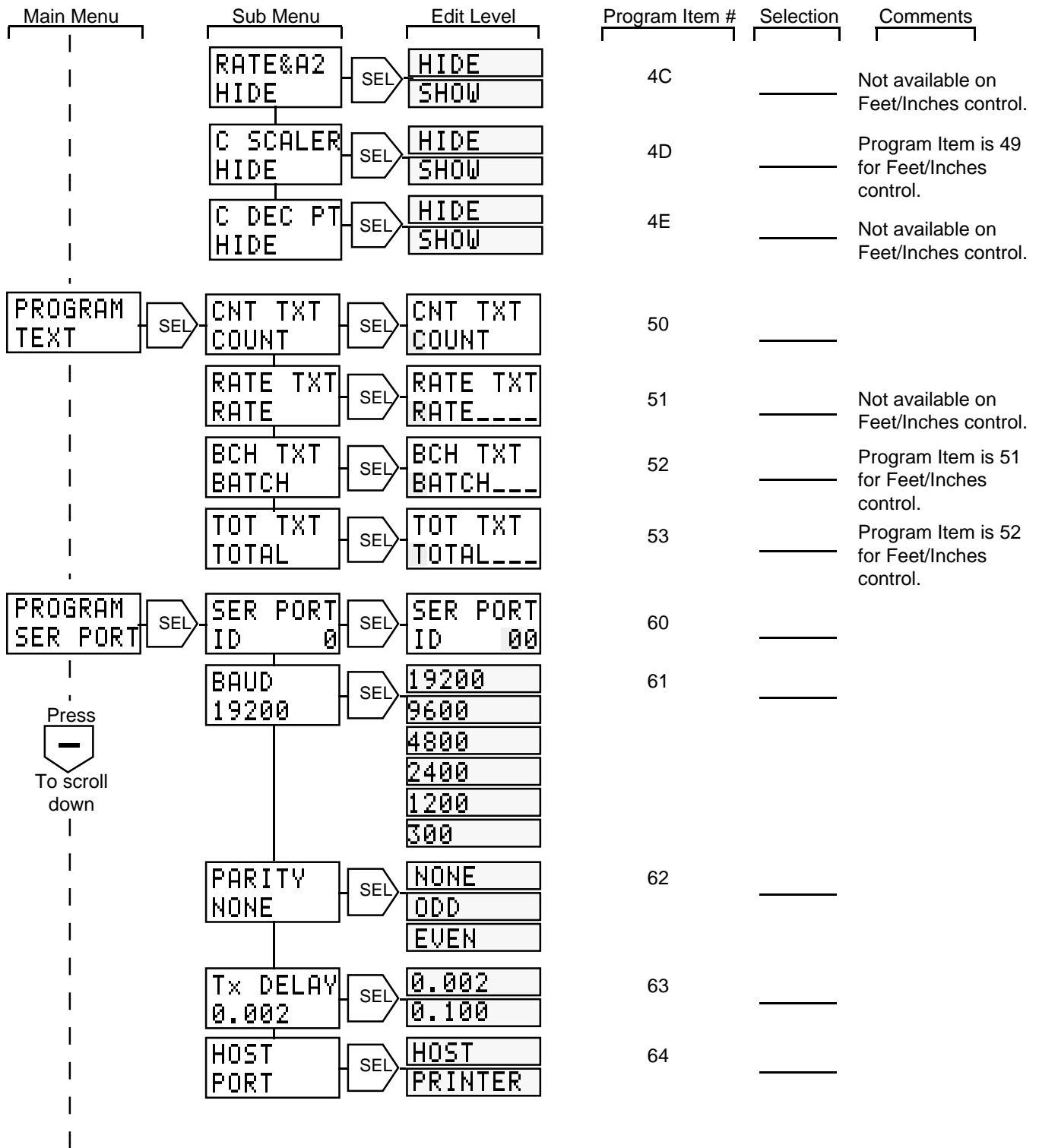


Main Menu	Sub Menu	Edit Level	Program Item #	Selection	Comments	
PROGRAM DISPLAY	CNT&TXT HIDE	HIDE SHOW	40	_____		
		RATE&TXT HIDE	HIDE SHOW	41	_____	Not available on Feet/Inches control.
		BCH&TXT HIDE	HIDE SHOW	42	_____	Program Item is 41 for Feet/Inches control.
		TOT&TXT HIDE	HIDE SHOW	43	_____	Program Item is 42 for Feet/Inches control.
		CNT&Pc HIDE	HIDE SHOW	44	_____	Program Item is 43 for Feet/Inches control.
		CNT&P1 HIDE	HIDE SHOW	45	_____	Program Item is 44 for Feet/Inches control.
		CNT&P2 HIDE	HIDE SHOW	46	_____	Program Item is 45 for Feet/Inches control.
		CNT&P3 HIDE	HIDE SHOW	47	_____	Program Item is 46 for Feet/Inches control.
		CNT&P4 HIDE	HIDE SHOW	48	_____	CNT & Pw for Feet/Inches control. Program Item is 47 for Ft./In. control.
		BCH&Pb HIDE	HIDE SHOW	49	_____	Program Item is 48 for Feet/Inches control.
		CNT&RATE HIDE	HIDE SHOW	4A	_____	Not available on Feet/Inches control.
		RATE&A1 HIDE	HIDE SHOW	4B	_____	Not available on Feet/Inches control.

Press  
  
To scroll down

To next page -  
 PROGRAM  
 DISPLAY  
 (continued)

# PROGRAMMING DISPLAY continued

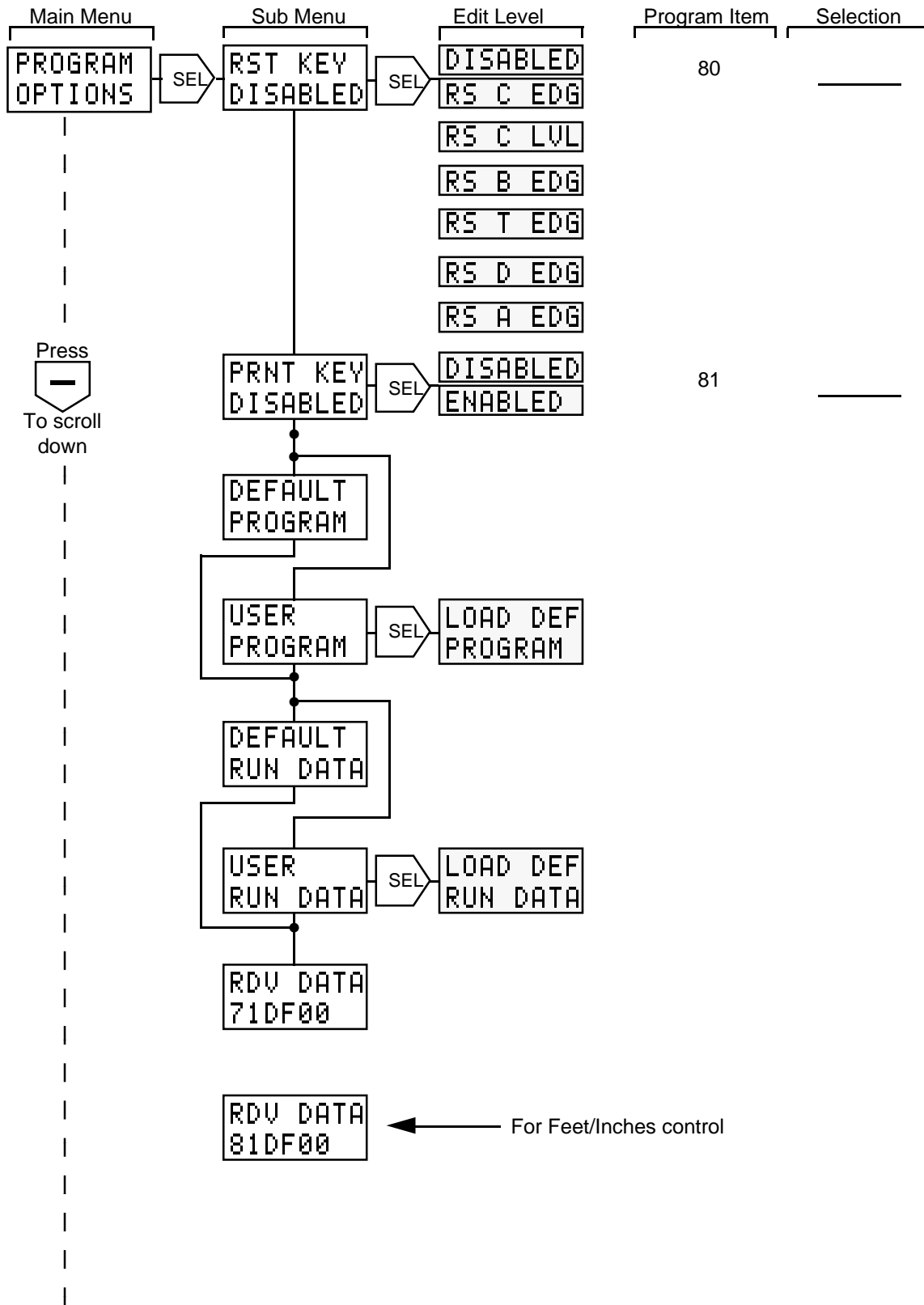


Press  
  
 To scroll down

To next page -  
 PROGRAM  
 SER OUT



# PROGRAMMING OPTIONS continued



To page 14  
PROGRAM  
SCALERS

# DESCRIPTION OF PROGRAM OPTIONS

---

## SCALERS

C SCALER — the count scaler determines the value of each input pulse. The counter displays whole numbers only. The count scale factor affects the main counter and totalizer but does not affect the rate meter. The count scaler's decimal point position is fixed.

**Note: next five (5) items not available on Feet/Inches control.**

C DEC PT — sets the decimal point position for the main counter and totalizer. The decimal point position and scale factor value are independent.

R SCALER — the rate scaler is used to adjust the rate meter reading and compensate for the number of input pulses per item. The rate scaler's decimal point is programmable. The rate scaler and count scaler are independent.

R DEC PT — sets the decimal point position for the rate display. The rate decimal point position and scale factor value are independent.

R ZERO TIME - forces the rate meter to a reading of zero if this amount of time elapses between pulses.

R AVG TIME - sets the minimum rate update time.

## COUNT IN

CNT & TOT A-B — input A adds counts to the main counter and totalizer; input B subtracts counts from the main counter and totalizer.

CNT & TOT A+B — input A and input B each add counts to the main counter and totalizer.

CNT & TOT -A+B —input A subtracts counts from the main counter and totalizer; input B adds counts to the main counter and totalizer.

CNT & TOT A, B DIR — input A adds counts to the main counter and totalizer when input B is open, and subtracts counts when input B is connected to common.

CNT & TOT 2A, B DIR — same as above, except counts occur on both edges of input A (count doubling).

CNT & TOT A, B RST — input A adds counts to the main counter and totalizer; input B is a high speed reset input.

CNT & TOT QUAD X1 — the main counter and totalizer each count up or down once per quadrature input cycle. A quadrature count source, typically an encoder, is required at inputs A and B.

CNT & TOT QUAD X2 — the main counter and totalizer each count up or down twice per quadrature input cycle.

CNT & TOT QUAD X4 — the main counter and totalizer each count up or down four times per quadrature input cycle.

TOT A CNT B — input A adds counts to the totalizer and input B adds counts to the main counter.

TOT B CNT B — input B adds counts to the totalizer and main counter.

INPUT A SOLID STate — input A is a high speed count input.

INPUT A CONTACT — count input A is limited to 40 Hz maximum.

INPUT B SOLID STate — input B is a high speed count input.

INPUT B CONTACT — count input B is limited to 40 Hz maximum.

B RST CNT EDG - input B is a high speed, momentary, main counter reset input.

B RST BCH EDG - input B is a high speed, momentary, batch counter reset input.

B RST TOT EDG - input B is a high speed, momentary, totalizer reset input.

B RST ALL EDG - input B is a high speed, momentary, reset for the main counter, batch counter, and totalizer.

FINAL Pf P4 - preset 4 is the final preset. Not available on Feet/Inches control.

FINAL Pf P3 - preset 3 is the final preset. The main counter uses three presets.

FINAL Pf P2 - preset 2 is the final preset. The main counter uses two presets.

FINAL Pf P1 - preset 1 is the final preset. The main counter uses one preset.

RESET TO ZERO - when reset, the main counter goes to zero.

RESET TO Pf - when reset, the main counter goes to the value of the final preset.

AUTO CYC DISABLED - the main counter does not automatically reset at a preset value.

AUTO CYC P1 - the main counter resets at preset 1.

AUTO CYC Pf(0) - the main counter resets at the final preset.

AUTO CYC P1 Pf(0) - the main counter resets at preset 1 and the final preset.



## DESCRIPTION OF PROGRAM OPTIONS continued

---

### INPUTS

INPUT 1 DISABLED — input 1 does not perform any function when turned on.

INPUT 1 BYP P1 — the counter ignores preset 1 when input 1 is on (level sensitive).

INPUT 1 OUT CTL1 — when input 1 is turned on (edge sensitive), any output programmed to pick up or drop out at the OCTL1 event does so.

INPUT 1 OUT CTL2 — when input 1 is turned on (edge sensitive), any output programmed to pick up or drop out at the OCTL2 event does so.

INPUT 1 RS C EDG — the main counter resets when input 1 is turned on (edge sensitive). If input 1 remains on, the main counter can still count.

INPUT 1 RS C LVL — the main counter is held at the reset value while input 1 is on (level sensitive).

INPUT 1 RS B EDG — the batch counter resets when input 1 is turned on (edge sensitive). If input 1 remains on, the batch counter can still count.

INPUT 1 RS T EDG — the totalizer resets when input 1 is turned on (edge sensitive). If input 1 remains on, the totalizer can still count.

INPUT 1 RS A EDG - the main counter, batch counter and totalizer all reset when input 1 is turned on (edge sensitive). If input 1 stays on, all counters can still count.

INPUT 1 STOP CNT — the main counter stops counting while input 1 is on (level sensitive).

INPUT 1 PRINT - the serial out list is transmitted when input 1 is turned on (edge sensitive).

INPUT 1 LOCK PGM — all program editing is disabled (keyboard and serial) while input 1 is on (level sensitive).

Preset values can still be changed serially or from the keyboard.

INPUT 1 LOCK ALL — all programming and preset editing functions (keyboard and serial) are disabled while input 1 is on (level sensitive). The user can still select different run mode displays from the keyboard.

INPUT 1 UNL ALMS - all outputs programmed to rate will turn off and remain off for as long as input 1 is on (level sensitive). Not available on Feet/Inches control.

Each of the above functions are repeated for inputs 2, 3, and 4 respectively.

### OUTPUTS

RELAY 1 COUNT - this output picks up at selected main counter and batch counter presets and/or selected reset count and output control input events. Not available on Feet/Inches control.

RELAY 1 RATE - the output picks up at selected rate alarm setpoints. Not available on Feet/Inches control.

RELAY 1 NORMAL — relay 1 turns on when it receives a pickup signal and turns off when it receives a dropout signal.

RELAY 1 REVERSE — relay 1 turns on when it receives a dropout signal and turns off when it receives a pickup signal. The relay always powers-up in the off state.

RELAY 1 LATCHED — relay 1 turns on (off if reversed) when it receives a pickup signal and stays on (off if reversed) until it receives a dropout signal.

RELAY 1 PULSED — relay 1 turns on (off if reversed) when it receives a pickup signal and automatically turns off (on if reversed) after the programmed pulse time .

RELAY 1 PUL — enter the desired time for relay 1 to stay on (00.01 to 99.99 seconds). This screen is not displayed unless pulsed is selected in the menu above.

RELAY 1 P1 — relay 1 can be programmed for no action, pickup or dropout when the main counter reaches preset 1 (NA, PU, or DO).

The same choices are available for preset 2 (P2), preset 3 (P3), preset 4 (P4), and batch preset (PB).

RELAY 1 OCTL 1 - relay 1 can be programmed for no action (NA), pick up (PU) or drop out (DO) at the output control 1 input event.

The same choices are available for output control 2 (OCTL2) and reset count (RS C) input events.

**Note: The next nine (9) items are not available on Feet/Inches control.**

RELAY 1 A1 HI - relay 1 energizes when the rate is greater than or equal to the A1 setpoint.

RELAY 1 A1 LO - relay 1 energizes when the rate is less than or equal to the A1 setpoint.

RELAY 1 A2 HI - relay 1 energizes when the rate is greater than or equal to the A2 setpoint.

RELAY 1 A2 LO - relay 1 energizes when the rate is less than or equal to the A2 setpoint.

RELAY 1 DISABLED - relay 1 will always be de-energized even if the alarm condition (setpoint) is met.

## DESCRIPTION OF PROGRAM OPTIONS continued

---

RELAY 1 FOLLOWS - relay 1 energizes when the alarm setpoint is met, and de-energizes when the alarm setpoint is not met.

RELAY 1 LATCHED - the relay energizes when the alarm setpoint is met, and de-energizes when an unlatch alarms input occurs.

RELAY 1 PULSED - relay 1 energizes when the alarm condition is met and times out. If the ratemeter updates before the timeout, and the alarm condition is still met, the timeout period starts over.

RELAY 1 PUL 1.00 - enter a time, from 0.01 to 99.99 seconds, for the relay 1 timeout.

Each of these functions is repeated for relay output 2, transistor output 1 and transistor output 2 sub-menus.

### DISPLAY

CNT & TXT HIDE - the run mode display screen showing the main counter and units text is not visible to the operator.

CNT & TXT SHOW - the run mode display screen showing the main counter and units text is visible to the operator.

These two choices - HIDE, and SHOW, are available for each of the remaining 14 run mode screens. If all screens are programmed to HIDE, CNT & TXT will automatically SHOW.

RATE & TXT - rate and units text. Not available on Feet/Inches control.

BCH & TXT - batch counter and units text.

TOT & TXT - totalizer and units text.

CNT & Pc - main counter and current preset.

CNT & P1 - main counter and preset 1.

CNT & P2 - main counter and preset 2.

CNT & P3 - main counter and preset 3.

CNT & P4 - main counter and preset 4; CNT & Pw for Feet/Inches control.

BCH & Pb - batch counter and batch preset.

CNT & RATE - main counter and rate. Not available on Feet/Inches control.

RATE & A1 - rate and setpoint A1. Not available on Feet/Inches control.

RATE & A2 - rate and setpoint A2. Not available on Feet/Inches control.

C SCALER - count scale factor.

C DEC PT - count decimal point adjustment. Not available on Feet/Inches control.

### TEXT

CNT TXT COUNT - main counter units text. Up to eight characters, including letters A → Z, numbers 0 → 9, and -, /, ., comma, or blank space can be entered.

RATE TXT RATE - rate meter units text. Same selection field as for count shown above.

BCH TXT BATCH - batch counter units text. Same selection field as for count, above.

TOT TXT TOTAL - totalizer units text. Same selection field as for count shown above.

### SERIAL PORT

SER PORT ID — enter the desired two digit serial ID number (00-99 decimal). All communications to the control must contain this number (in hexadecimal). Each unit must have a unique ID#.

BAUD — selects the serial port transmit and receive baud rate. Allowable rates are 19200, 9600, 4800, 2400, 1200, and 300.

PARITY — the user may select none, odd, or even parity. If none (no parity) is selected, the counter transmits space parity and does not check received parity.

Tx DELAY — the user may select a transmission delay of either 2 or 100 milliseconds. The counter waits for this time period before responding to any serial commands. This delay is provided to allow a host computer time to switch from the transmit to receive mode.

HOST PORT - the counter's serial port will only respond to a command issued by a host device.

PRINTER PORT - the counter's serial port will transmit the serial out list when a print input occurs.

### SERIAL OUT

COUNT SKIP - the main count value is not transmitted when a print input occurs or when a group serial out print command is received from the host.

COUNT SEND - the main count value is transmitted when a print input occurs or when a group serial out print command is received from the host.

These two choices - SKIP, and SEND, are available for each of the 12 remaining run mode items that can be printed.

## DESCRIPTION OF PROGRAM OPTIONS continued

---

BATCH

TOTAL

RATE - Not available on Feet/Inches control.

P1 - preset 1.

P2 - preset 2.

P3 - preset 3.

P4 - preset 4- Pw for Feet/Inches control.

PB - batch preset

A1 - alarm setpoint 1. Not available on Feet/Inches control.

A2 - alarm setpoint 2. Not available on Feet/Inches control.

C SCALER - count scale factor.

C DEC PT - count decimal point. Not available on Feet/Inches control.

### OPTIONS

RST KEY DISABLED — the RST/CLR key does not perform any function.

RST KEY RS C EDG — the main counter resets when the RST/KEY is pressed (edge sensitive). If the RST/KEY is held on, the main counter can still count.

RST KEY RS C LVL — the main counter is held at the reset value while the RST/KEY is pressed (level sensitive).

RST KEY RS B EDG — the batch counter resets when the RST/CLR key is pressed (edge sensitive). If the RST/CLR key is held on, the batch counter can still count.

RST KEY RS T EDG — the totalizer resets when the RST/CLR key is pressed (edge sensitive). If the RST/CLR key is held on, the totalizer can still count.

RST KEY D EDG — any counter value being displayed is reset when the RST/CLR key is pressed (edge sensitive). If the RST/CLR key is held on, the displayed counter can still count.

RST KEY RS A EDG - the main counter, batch counter, and totalizer will all be reset when the RST/CLR key is pressed (edge sensitive). This occurs no matter which run mode screen is displayed.

PRINT KEY DISABLED - the print key will not cause the serial out list to be transmitted.

PRINT KEY ENABLED - the print key will cause the serial out list to be transmitted.

USER/DEFAULT PROGRAM - if any program item is changed from the default value, this display will show USER PROGRAM. Pressing the select key at this time will cause the display to go to LOAD DEF PROGRAM. If this choice is entered, the program mode goes to all default values and the display reads DEFAULT PROGRAM.

USER/DEFAULT RUN DATA - if any preset or alarm setpoint is set to a value other than zero, or if there are counts in any of the count registers, this display will show USER RUN DATA. Pressing the select key at this time will cause the display to go to LOAD DEF RUN DATA. If this choice is entered, all counters, presets, and alarm setpoints are set to zero and the display reads DEFAULT RUN DATA.

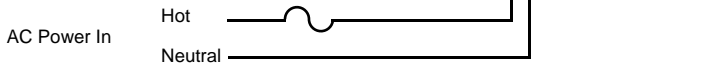
# AC WIRING/CONTACT INPUT WIRING

## AC Power Input

(AC Models Only)

Check part number on counter label to verify correct voltage rating.

57601-40X: 115 VAC  
57602-40X: 230 VAC



Terminal 4 (Ground) and Terminals 2 and 3 (Com) are internally connected.

AC Power In	U.S.	Fuse Size	European
115 V, 60 Hz	1/8 amp		T125 mA, 250 V
115 V, 50 Hz	1/4 amp		T250 mA, 250 V
230 V, 60 Hz	1/16 amp		T 60 mA, 250 V
230 V, 50 Hz	1/8 amp		T125 mA, 250 V

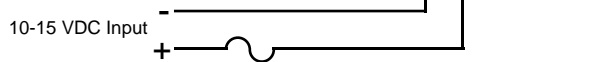
Use slow blow fuses for all voltages.

## DC Power Input

(DC Models Only)

Check part number on counter label to verify correct voltage rating.

57600-40X: 10-15 VDC

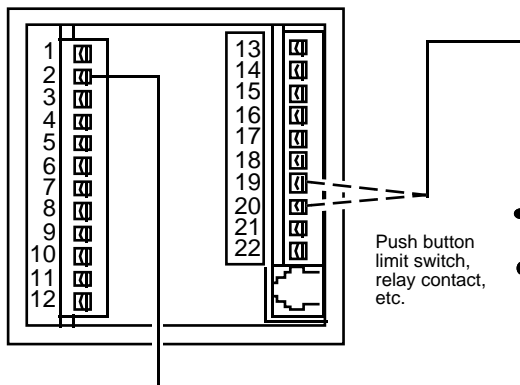


Use 1/2 amp slow blow fuse.  
(Does not include external transducer load.)

## Contact Count Input

To prevent multiple counts, use one of the contact count modes. See programming diagram.

All dip switches OFF.



Dotted lines indicate which inputs may be wired in this manner. Typically a separate sensor is used for each input.

Control inputs (terminals 15-18) may be wired in the same manner.

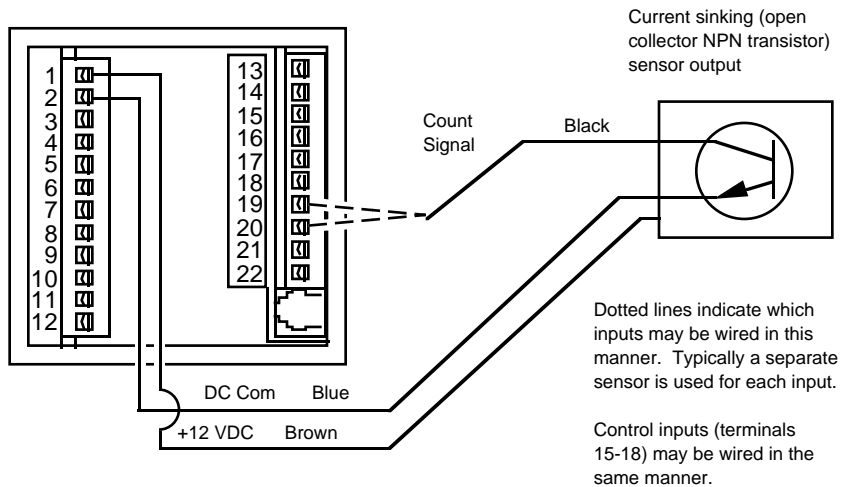
# COUNT INPUT WIRING

## Current Sinking Sensor Count Input

Do not connect Term 1 if sensor is powered from another power supply.

Wire colors shown correspond to Cutler-Hammer inductive proximity sensors.

All dip switches OFF.

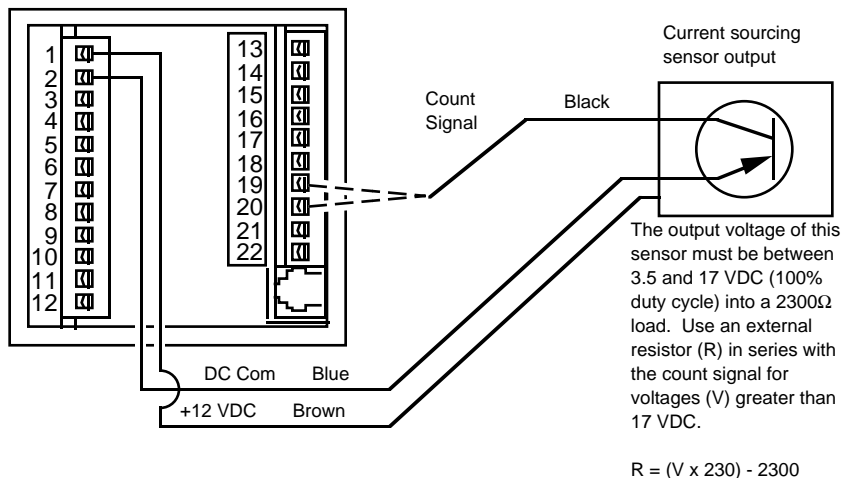


## Current Sourcing Sensor Count Input

Do not connect Term 1 if sensor is powered from another power supply.

Wire colors shown correspond to Cutler-Hammer inductive proximity sensors.

Dip switches 1 and/or 2 ON to select current source mode, switches 3 and 4 OFF.



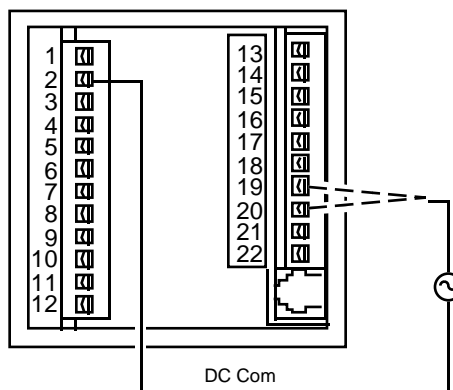
## AC Signal Count Input

17 VAC RMS 48 V Peak-to-Peak maximum into 2.3 KΩ load impedance. Use an external resistor (R) in series with the count input signal for input voltages (V) greater than 17 VAC.

$$R = (V \times 230) - 2300$$

Dip switches 3 and/or 4 ON (AC mode).

Dip switches 1 and 2 ON.



### Caution:

The unit requires 1.2 V P-to-P minimum signal amplitude to count. Magnetic pickups produce an output voltage directly proportional to the speed of the ferrous material passing the pickup. At low speeds, or at starting or stopping, the output voltage from the pickup may not be great enough to cause the counter to count. For magnetic pickup signals in the range of 50 mV to 400 V P-to-P, a signal conditioner (Durant part no. 48160-400) is recommended.

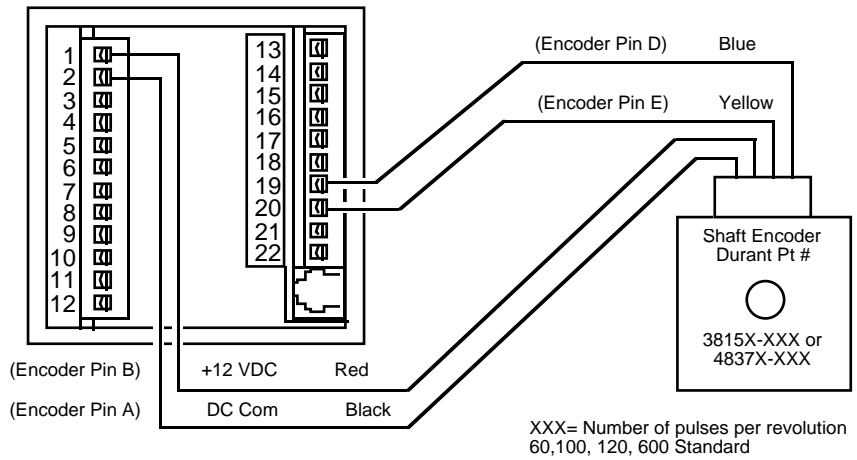
# ENCODER WIRING/OUTPUT WIRING

## Shaft Encoder Wiring

Do not connect Term 1 if sensor is powered from another power supply.

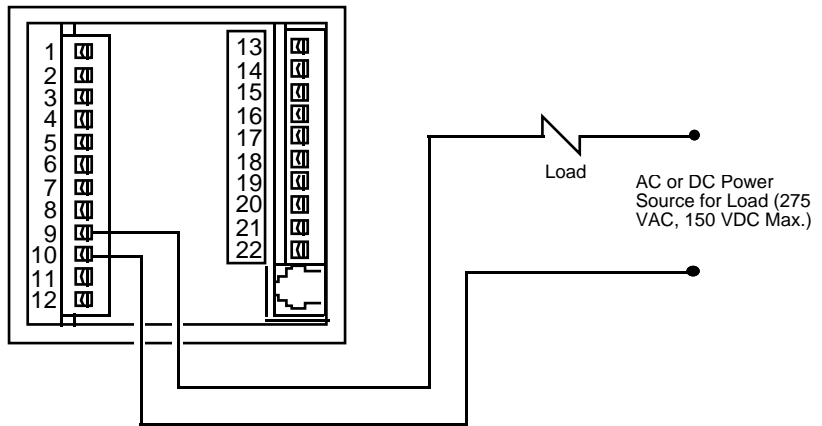
Wire colors shown are for quadrature encoder, do not connect the yellow wire for a single channel encoder.

All dip switches OFF.



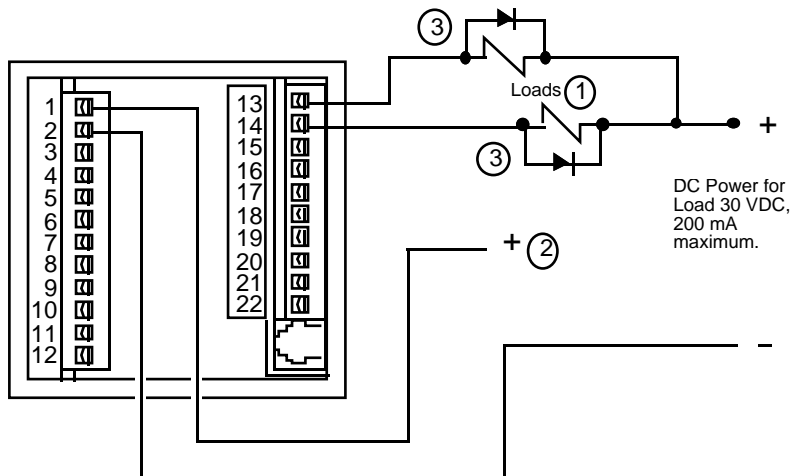
## Relay Contact Output Wiring

This wiring example shows the load being controlled from the normally open contacts of Relay 1. Wiring for the normally closed contacts (8,9) would be done in the same manner. Wiring for the Relay 2 contacts (5,6,7) is also done in the same manner.



## Wiring DC Loads to Transistor Outputs

- ① The load must not draw more than 200 mA of current.
- ② The counter's internal DC supply can be used to power DC loads. The total current drawn from terminal 1 cannot exceed 100 mA.
- ③ Use external diode suppression in parallel with inductive loads.



# CALCULATING SCALE FACTORS

## COUNT SCALING

The count scaler is a user programmable number which determines the count value of each input pulse. It is used to correct for a known amount of error (wheel wear, viscosity, etc.) or to convert the incoming count signal into the desired units of measure on the display (feet, gallons, yards, etc.). The main counter and totalizer show whole (integer) counts; the scaler retains fractional counts. See page 33 for count scaling for Feet/Inches control.

Count Scaler Range: 0.00001 to 9.99999

Default Count Scaler: 1.00000

Count Scaler (CS) Formula:

$$CS = \frac{DPF}{PPI}$$

where:

**DPF** is the decimal point factor determined by the desired decimal point position on the main counter and totalizer display:

DISPLAY	DPF	DISPLAY	DPF
XXXXXX	= 1	XXX.XXX	= 1,000
XXXXX.X	= 10	XX.XXXX	= 10,000
XXXX.XX	= 100	X.XXXXX	= 100,000

(Use the counter decimal point menu to select the desired decimal point position for the main counter and totalizer.)

**PPI** is the number of pulses per item from the sensor (times 2 if doubled count mode).

Example 1: A sensor produces 20 pulses per inch of material travel. Calculate the count scaler required to indicate material used in whole inches (XXXXXX).

$$CS = \frac{1}{20} = 0.05000$$

Example 2: An encoder produces 120 pulses per foot. Calculate the count scaler required to indicate material usage in 1/100's of feet (XXXX.XX).

$$CS = \frac{100}{120} = 0.83333$$

(Select the XXXX.XX position on the counter decimal point menu).

## RATE SCALING

The 1/Tau rate meter calculates rate by measuring the time interval between input pulses, converting to frequency, and multiplying by the rate scaler. The rate scaler is user programmed to convert the count input pulse frequency into the desired units for display (feet/minute, inches/second, boxes/hour, etc.).

**Note: Rate scaling is not available on Feet/Inches control.**

Rate Scaler Range: 0.00001 to 99999

Default Rate Scaler: 1.0000

Rate Scaler (RS) formula:

$$RS = \frac{SEC \times DPF}{PPI}$$

where:

**SEC** is the number of seconds in the rate time unit (items/minute = 60, items/hour = 3600, etc.).

**DPF** is the decimal point factor determined by the desired decimal point position on the rate meter display:

DISPLAY	DPF	DISPLAY	DPF
XXXXXX	= 1	XXX.XXX	= 1,000
XXXXX.X	= 10	XX.XXXX	= 10,000
XXXX.XX	= 100	X.XXXXX	= 100,000

(Use the rate decimal point menu to select the desired decimal point position for the rate meter.)

**PPI** is the number of pulses per item from the sensor (times 2 if doubled count mode).

Example 1: A sensor produces 1 pulse per foot of material travel. Display rate in whole feet per minute (XXXXXX).

$$RS = \frac{60 \times 1}{1} = 60.000$$

Example 2: A flow sensor produces 400 pulses per gallon. Display flow rate in tenths of a gallon per minute (XXXX.X).

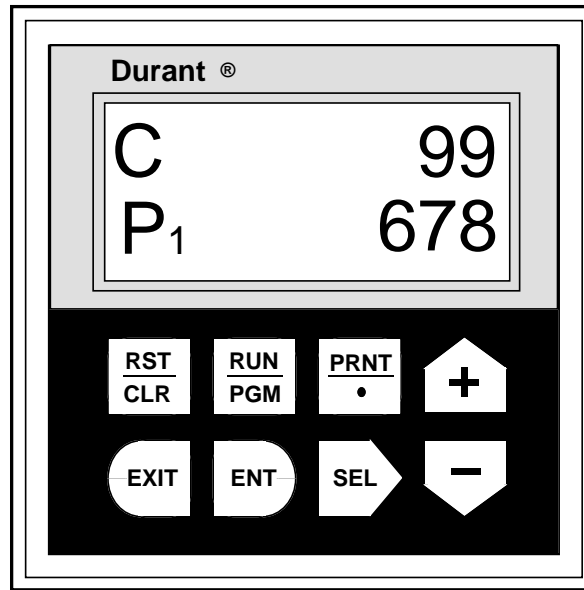
$$RS = \frac{60 \times 10}{400} = 1.5000$$

(Select the XXXXX.X position on the rate decimal point menu.)

# RUN MODE

Two line LCD display shows values of counters and rate meter. Shows presets. Up to 15 different screens are available.

The Feet/Inches model will not show any rate screens. Ten screens are available.



Eight front panel keys allow the operator to scroll up and down to different screens, change presets, and reset counters if appropriate.

## Key Functions

**RST  
CLR**

**Reset/Clear Key** - This key can be programmed to reset count values.

**EXIT**

**Exit Key** - In the preset editing mode this key allows the preset editing process to be exited without altering the previous preset value.

**RUN  
PGM**

**Run/Program Key** - Press this key followed by the Enter key (ENT) to enter the program mode.

**ENT**

**Enter Key** - This key causes preset changes to take effect.

**PRNT  
.**

**Print/Decimal Key** - This key can be programmed to cause a printer port transmission.

**SEL**

**Select Key** - This key allows the editing of presets and selects individual digits of the preset.

**+**

**Up Arrow/Plus (+) Key** - This key is used to scroll up through the different display screens. In the preset editing mode this key adds 1 (increments) to the value of the selected digit each time it is pressed.

**-**

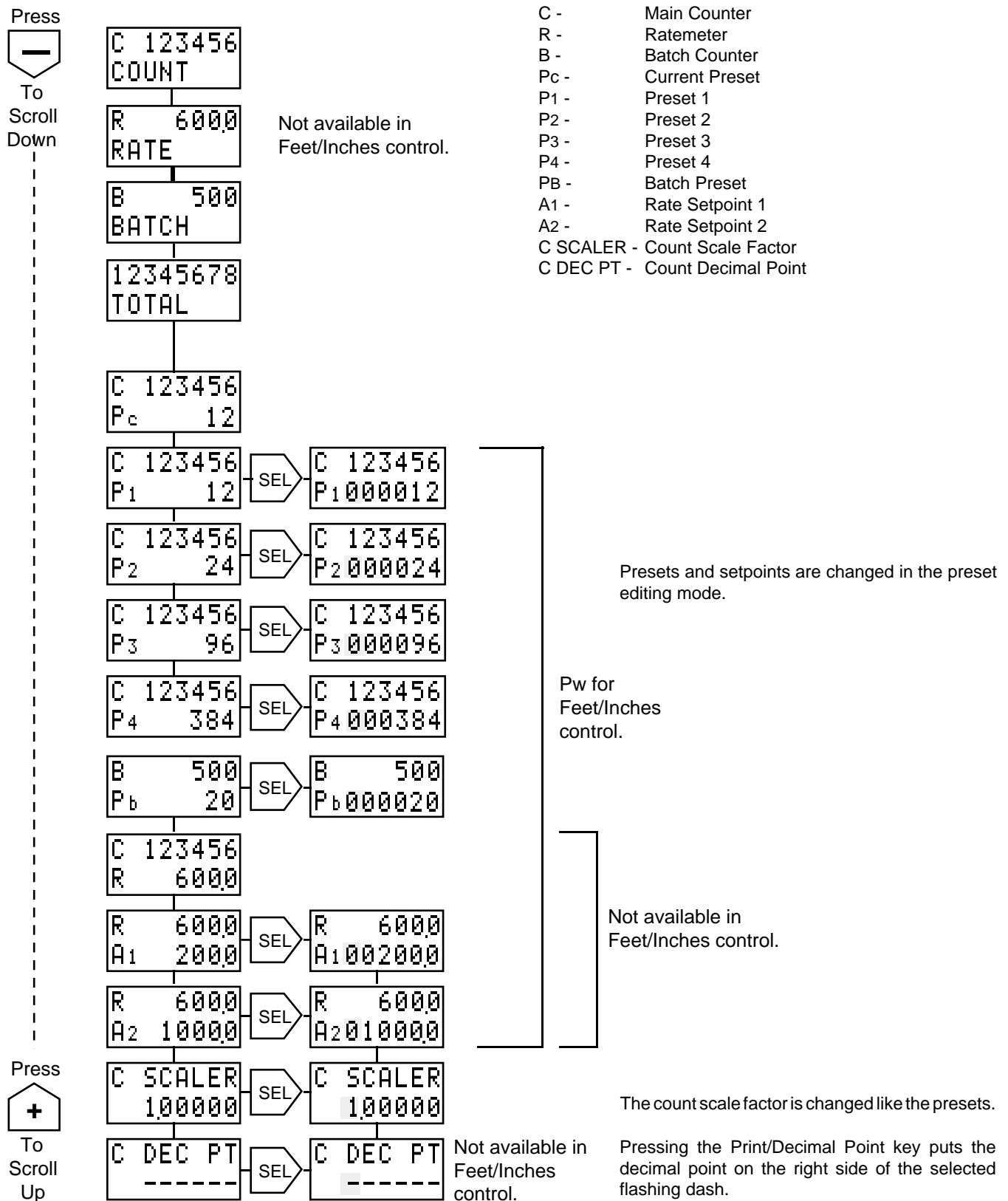
**Down Arrow/Minus (-) Key** - In the run mode this key is used to scroll down through the six different display screens. In the preset editing mode this key subtracts 1 (decrements) from the value of the selected digit each time it is pressed.

**Auto Scroll** - holding the plus or minus key down during numeric editing will cause the selected digit to scroll up or down at a 2 Hz rate. Holding the select key down will advance the selected digit at a 2 Hz rate.



# RUN MODE continued

This is the entire list of run mode screens, in the order in which they appear. Any screens which are programmed to "HIDE" in the program mode will not be shown:



## RUN MODE continued

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### Preset Editing Mode



1. Scroll up or down until the preset that needs to be changed appears on the display.
2. Press the SElect key. The preset appears as a six digit number, with the left-most digit flashing. Each time the SElect key is pressed, the flashing moves to the next digit to the right.
3. Use the up and down arrow keys to change the flashing digit:



4. When all digits are changed to the new preset value, press the ENTer key.

# FEET/INCHES

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There are two versions of the Ambassador Plus Feet and Inches Control with only one difference between them. Model 5760X-415 has the traditional green LCD display. Model 5760X-465 has a negative-image red LCD display.

All features are the same as all other Ambassador Plus models except for those listed below.

## MAIN COUNTER

The display resolution of the main counter is six (6) digits; the first four (4) digits display feet and the last two (2) digits display inches. A fixed decimal point separates the feet from the inches.

Internally, the control maintains the count in inches. The count is converted to feet and inches for the display. The counter overflows to zero (0) at 120,000 counts. The counter underflows to 119,999 counts.

## COUNT PRESETS

Count presets will also be entered in feet and inches. A fixed decimal point will separate the two. Presets are entered in whole integers only. The programmable presets are P1, P2, P3, and prewarn. The preset range is 0000-9999 feet and 00-11 inches. There is also a fixed zero (0) preset necessary as a control preset for reset to preset count mode and a reload value in reset to zero mode. This preset cannot be changed.

Prewarn has to be a value no greater than the final preset (Pf). The final preset may be P1, P2, or P3. The presets do not have to be numerical in order of value; i.e. P3 does not have to be a higher value than P2 and P2 does not have to be a greater value than P1. Different presets can be programmed to the same value.

## RATEMETER

The feet/inches models do not have a ratemeter feature. In turn, there are no rate alarms.

## COUNT SCALER

The count scaler is used to calibrate the control. The scaler value entered must be the number of inches to be represented by each count. For example: if using a 300 pulse per revolution (PPR) encoder with a 12 inch circumference measuring wheel, the count scaler will be 12/300 or 0.0400. Any other scale factor would make the displayed value inaccurate.

## COUNT AND PRESET RANGES

All presets and the main count have a range of 0.00 to 9999.11.

The batch count range is 0 to 999999.

The totalizer range is 0.00 to 999999.11.

## ERROR MESSAGES

The error message 'ERROR Pw>Pf' is displayed in the following conditions:

1. If you try to program a prewarn (Pw) value that is greater than the final preset (Pf) value.
2. If you try to program a final preset (Pf) value that is less than the prewarn (Pw) value.
3. If, in Program Mode, you change the final preset (Pf) and the change would result in the prewarn (Pw) value being greater than the newly programmed final preset (Pf) value.

## Prewarn

The programmed prewarn value will track the final preset value. When a new final preset is entered, the prewarn value will be changed to the same interval.

Example: Prewarn = 10.00  
Final Preset = 250.00  
The prewarn will happen at a count of 240.00.  
If the final preset is changed to 300.00, the prewarn will happen at 290.00.

The prewarn value is entered in the run mode using the same procedure as entering other preset values.

# TROUBLESHOOTING

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## SELF-TEST ROUTINES

The 5760X-405 counter has several built in self-test routines. The counter performs these tests each time power is applied. If questionable operation ever occurs, run the self-test routines by removing and re-applying power to the unit.

If one of the internal test routines discovers a problem, the counter displays the message "ERROR X" where X is a single digit test number. The counter will not operate when displaying an error code. All outputs will remain in the off (dropped-out) state. In the error mode, the counter responds to all serial commands with a "N" followed by the failed test number.

### Description of tests

- #0 - ROM (Read Only Memory) Test: This routine checks that the ROM that holds the counter's operating program is not corrupted.
- #1 - Internal RAM (Random Access Memory) Test: Checks the read/write memory internal to the micro-processor.
- #2 - Non-Volatile RAM Test #1: This routine checks the integrity of the data stored in NOVRAM that is not run data or program data.
- #3 - Non-Volatile RAM Test #2: This routine checks the run data section of NOVRAM. This NOVRAM section retains all count and preset values while power is removed.
- #4 - Non-Volatile RAM Test #3: This routine checks the user program section of the NOVRAM. This section retains all programmable options and parameters while power is removed.
- #5 - External RAM Test: Checks the read/write memory external of the microprocessor that is used for normal operation and communication.

### What to do when a test fails

1. Immediately halt the machine or process being controlled by the counter. Record the displayed error number.
2. If the counter shows ERROR 0, 1, 2, or 5, run the self-tests again by removing and re-applying power to the counter.

If the counter shows ERROR 3, press the front panel reset key. This will set all counters and preset values to zero and rerun all tests.

If the counter shows ERROR 4, press the front panel reset key. This will reset all user programmable options to the factory default settings and rerun all tests.


3. If the same error occurs again there is a malfunction within the counter — return it to the factory for repair.

If the counter does not display an error, the unit is OK and can be put back in service. Before starting the machine again, check all preset values and user programmable options to insure that these parameters have not changed. A serious safety hazard could result if the operating characteristics of the counter have changed.

If you have recovered from ERROR 3, all presets will have to be reprogrammed. If you have recovered from ERROR 4, all program mode choices will have to be reprogrammed.

## TROUBLESHOOTING

Some of the troubleshooting steps which follow require the user to change the programming of the unit.

 **Be sure to restore all programmable options to their required settings before running any machinery with the counter.**

### I. Display is Blank:

- A. Check that incoming power is wired correctly. Connect a voltmeter to the power input terminals and verify that the correct voltage is being supplied to the counter.
- B. Remove and restore power to the counter. If this corrects the problem, investigate the following causes:
  1. Electrical noise spike from inductive loads - install R-C suppressors in parallel with any external solenoid or relay coils that the counter controls.
  2. Electrical noise spikes in power supplied to the counter - run power to counter from another source or install a power line filter.

### II. Counter Will Not Count:

- A. Check the count scale factor and verify that it is set to the correct value. Set the scale factor to 1.00000 and try counting again before proceeding any further with troubleshooting.
- B. Test Counter using a manual count source.
  1. Remove any wires connected to terminals 19 and 20.
  2. Turn all dip switches off.
  3. Reset all program parameters to the factory default settings (enter the program mode and select the PROGRAM OPTIONS menu, select the USER PROGRAM sub-menu, select the LOAD DEF PROGRAM selection and press ENT).

## TROUBLESHOOTING continued

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4. Make and break a connection between terminals 4 and 20 using a jumper wire. The main counter and totalizer should count up each time the connection makes. If the counters do not count, send the unit to the factory for repair.
  5. Make and break a connection between terminals 4 and 19 using a jumper wire. The main counter and totalizer should count down each time the connection makes. If the counters do not count, send the unit to the factory for repair.
- C. If the counter counted from the manual count source in step B above, reconnect the sensor and select the correct dip switch setting. For sensors with a DC pulse output, perform steps 1 and 2. For magnetic pickup sensors, proceed to step 3 below.
1. With the sensor output in the high state, measure the voltage between DC Common and the count input. The voltage must be greater than 3.5 VDC. If it is lower, the sensor is defective, leaky, or is not compatible with the counter. With current sinking sensors, try adding a pull-up resistor (470 ohms to 4700 ohms) from terminal 1 to the count input.  
Note: for AC powered counters, the maximum current out of terminal 1 must not exceed 100 mA.
  2. With the sensor output in the low state, measure the voltage between DC Common and the count input. The voltage must be less than 1.9 VDC. If it is higher, the sensor is defective, leaky, or is not compatible with the counter. With current sourcing sensors, try adding a pull-down resistor (220 to 2200 ohms) from the count input to DC Common.  
  
Note: for AC powered counters, the maximum current out of terminal 1 must not exceed 100 mA.
  3. For magnetic pickup sensors, measure the AC voltage output of the sensor with the machine running. The output voltage should be greater than 0.45 volts RMS (1.2 volts peak to peak). If it is less, the sensor is defective, or the target is too far from the sensor, or the target is not moving fast enough.

### III. Error Message On Display:

The message "ERROR" followed by a single digit number on the display indicates that the counter's internal self-tests have detected a problem. See the self-test section of this manual (page 33) to determine what caused the problem and how to solve it.

### IV. Other Problems:

Other problems are usually caused by programming and/or wiring errors. Because of the versatility of this counter, it is impossible to include troubleshooting instructions for every situation that could arise. However, the following general troubleshooting steps should help in resolving specific problems:

1. Define, in detail, exactly what the problem is and when it occurs.
2. Use the block diagram and/or the menu programming diagram to determine which program options or parameters are related to the problem. Check their setting.
3. Determine which I/O circuits are related to the problem and check their operation with a voltmeter at the counter's terminal strips.

If going through the above 3 steps did not lead you to a solution, call the Durant application help line (800-334-4357) and ask for an application engineer to assist you with troubleshooting.

# SPECIFICATIONS

## POWER INPUT:

AC Operation: 115 VAC (+/-15%) std., 50 to 60 Hz, 7 W  
 230 VAC (+/-15%) opt., 50 to 60 Hz, 7 W  
 DC Operation: 10-15 VDC opt., 300 mA maximum

## DC POWER OUTPUT:

12 VDC (+/-25%), 100 mA maximum (includes all line and load variations)

## ENVIRONMENT:

Operating Temperature: 32 to 131°F (0 to 55°C) for 60 Hz power.  
 32 to 122°F (0 to 50°C) for 50 Hz power.  
 Storage Temperature: -4 to 158°F (-20 to 70°C)  
 Operating Humidity: 85% Relative, non-condensing  
 NEMA 4 rating when mounted with gasket provided

## PHYSICAL:

Case Dimensions: 2.64" (67mm) W x 2.64" (67mm) H x 5.60" (142mm) D  
 Bezel Dimensions: 2.95" (75mm) W x 2.95" (75mm) H  
 Panel Cut-out: 2.68" (68mm) W x 2.68" (68mm) H  
 Weight: 1.2 lbs. (0.54 kg.)  
 Display Size: 2 x 8 characters, 0.30" high  
 Display Color: Green backlit LCD and reverse-image red LCD.

## MAIN COUNTER:

Type: Bi-directional  
 Digits: 6  
 Presets: 4 (3 plus prewarn on Feet/Inches control)  
 Reset modes: Auto or manual reset to zero or preset  
 Scaler Range: 0.00001 to 9.99999  
 Decimal Point: 6 positions, programmable  
 Output Latency: < 1 msec

## BATCH COUNTER:

Type: Increment with main counter recycle or final preset signal  
 Digits: 6  
 Presets: 1  
 Output Latency: < 1 msec

## TOTALIZER:

Type: Bi-directional, same or opposite of main counter  
 Digits: 8  
 Scaler: Shared with main counter  
 Decimal Point: Tracks main counter

## COUNT INPUT SPEEDS:

Contact Inputs 40 Hz  
 B Direction Input 40 Hz  
 B Reset Input 10 µsec min. low

Solid State	A or B	A and B
A - B	8250/8250	3000/3000
A + B	8250/8250	4000/4000
-A + B	8000/8000	3000/3000
A, B Dir	8000/40	
2A, B Dir	4500/40	
A, B Rst	8250	
Quad x 1		3250
Quad x 2		3250
Quad x 4		2000
Tot A / Cnt B	14000/9000	6500/6500
Tot + Cnt B	16000/8500	6500/6500 -

**Note: Input A not active on Feet/Inches control.**

## COUNT INPUTS:

Sink:	Impedance:	4.6k ohms to +5 VDC
	Voltage:	high 3.5 to 34.0, low 0.0 to 1.9 VDC
Source (high):	Impedance:	2.3k ohms to common
	Voltage:	high 3.5 to 17.0 VDC (100% duty cycle), low 0.0 to 1.9 VDC
Source (low):	Impedance:	2.3k ohms to common
	DC Voltage:	high 0.6 to 17.0 VDC, low -17.0 to -0.6 VDC
	AC Voltage:	17 VAC (48 V Peak-Peak) maximum

## CONTROL INPUTS:

Impedance: 4.7k ohms to +5 VDC  
 Voltage: High +3.7 to +24 VDC, Low 0.0 to .9 VDC  
 Response: Minimum low 15 ms, minimum high 15 ms.

## RELAY OUTPUTS (2):

Type: SPDT contacts  
 U.L Ratings: 250 VAC, 360 VA Pilot Duty.

## TRANSISTOR OUTPUTS (2):

Type: NPN open collector with transient protection  
 Maximum Voltage (off state): 30 VDC  
 Maximum Current (on state): 200 mA @ 1.3 VDC

## COMMUNICATION:

Type: RS-485  
 Format: 1 start bit, 7 data bits (ASCII), 1 parity bit, 1 stop bit  
 Protocol: Opto-22 compatible  
 Speed: 300, 1200, 2400, 4800, 9600 and 19200 baud  
 Parity: Odd, Even, None (space transmitted, ignore received)

## RATE INDICATOR (not available on models 57601-415 and 57601-465):

Type: 1/Tau  
 Digits: 6  
 Presets: 2  
 Scaler range: 0.00001 to 99999  
 Decimal point: 5 positions, programmable  
 Accuracy: +/-0.015% of reading  
 Update Time: 0.1 to 99.9 seconds, programmable  
 Zero Time: 0.1 to 999.9 seconds, programmable

## CONNECTIONS:

Type: Dual depluggable screw terminal strips  
 Conductor Size: 14 - 22 AWG (2.1mm<sup>2</sup> - 0.38mm<sup>2</sup>), 600V, solid, stranded, or fused (preferred)

## **PARTS / ACCESSORIES**

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### **Spare Parts**

36172-202	Front Panel Gasket
48369-200	Mounting Clip
28748-200	Screw for Mounting Clip
48355-110	Terminal Strip - 10 Position
48355-112	Terminal Strip - 12 Position

### **Ambassador Family Accessories**

48183-401	Desk Mount Kit (enclosure for flat surface mounting)
58801-460	RS-485 to RS-232 Communications Converter
58801-461	RS-485 to RS-232 Communications Converter (Europe)
38145-400	RS-485 Interconnect Kit
38146-xxxx	RS-485 Cable - xxxx is length in feet; specify with 4 digits (0500 = 500 ft)
57624-450	ProFile Configuration Software

### **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)

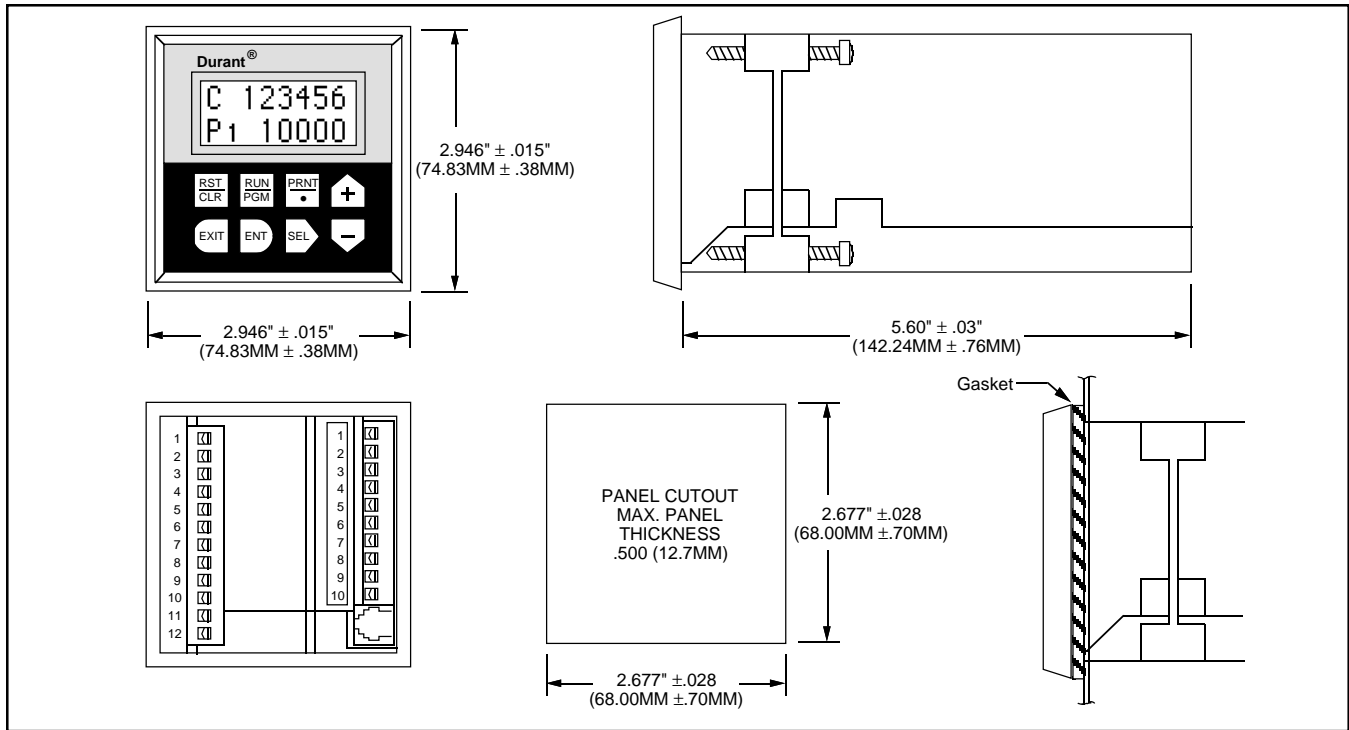
### **Transducers**

38150-xxxx	Medium Duty, single channel Shaft Encoder
38151-xxxx	Medium Duty, quadrature Shaft Encoder
48370-xxxx	Heavy Duty, single channel Shaft Encoder
48371-xxxx	Heavy Duty, quadrature Shaft Encoder
ES9513-RS	Rotary Contactors
39400-400	Zero Speed Vane Pickup
47004-400	Magnetic Pickup
28433-400	30 Tooth Gear for Magnetic Pickup

### **Ambassador Family Count/Controls**

5760x-400	Totalizer with Rate - green display
5760x-401	Single Preset with Rate - green display
5760x-402	Single Preset with Rate, Batch & Totalizer - green display
5760x-403	Dual Preset with Rate - green display
5760x-404	Dual Preset with Rate, Batch & Totalizer - green display
5760x-405	Four Preset with Rate, Batch & Totalizer - green display
5760x-415	Feet/Inches Control - green display
5760x-450	Totalizer with Rate - red display
5760x-451	Single Preset with Rate - red display
5760x-452	Single Preset with Rate, Batch & Totalizer - red display
5760x-453	Dual Preset with Rate - red display
5760x-454	Dual Preset with Rate, Batch & Totalizer - red display
5760x-455	Four Preset with Rate, Batch & Totalizer - red display
5760x-465	Feet/Inches Control - red display

# OVERALL DIMENSIONS



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This equipment is capable of generating radio frequency energy. If not installed and used in accordance with the instructions, this unit may interfere with radio communications.





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