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AMBASSADOR SERIES

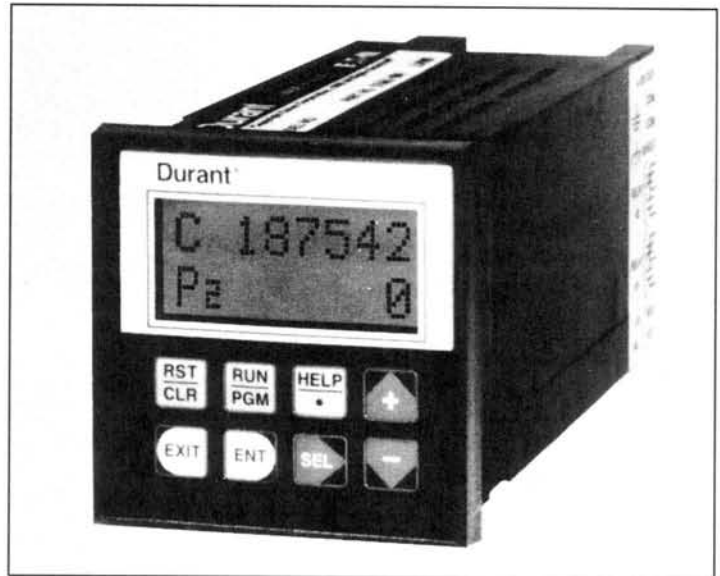
**COUNT CONTROLS
TOTALIZER W/ RATE**

**INTRODUCTION
SELECTION GUIDE
FEATURES & PROGRAMMING
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Flexibility for wide application...

Ideal machine components for high-speed totalizing, rate indication, and single level, dual level and batch control, these compact Ambassador™ Series units are perfect for many applications including:

- Simple production counting
- Length measurement
- Cut-to-length operations
- Batch quantity control
- Volumetric dispensing
- Fluid blending
- Form/fill/seal systems
- Coil winding
- Wire cutting
- Packaging
- Multiple control networks
- And many, many more...



Model 57601-404

The Ambassador™ series product family represents a significant addition to the Durant® count control product line. This count control includes a powerful set of features and performance specifications as compared to competitive units in a compact package size.

This product features an advanced, full alphanumeric dot matrix backlit LCD display. With two lines of eight characters each, the user can view count and rate, or count and preset displays simultaneously. The display also allows the user to select programming options and features from easy-to-read English language menus. Programming and operation of the control is both easy and friendly.

The control also features an RS-485 half duplex serial interface as standard. A host computer can be used to program preset values and operating functions, as well as to collect data from the control. Durant offers a broad range of communication products, including RS-232 to RS-485 converters, Ambassador™ Prolog data collection software and Ambassador™ Profile configuration software to program your control off-line on a personal computer. The host computer can also operate the control from remote locations. This is a powerful feature for the present and an even more powerful one for the future.

FEATURES & SELECTION GUIDE

Look At These Standard Key Features...

- EIGHT DECADE TOTALIZING COUNTER
- SIX DECADE 1/TAU RATE INDICATOR
- NINE PROGRAMMABLE COUNT INPUT MODES
- FOUR CONTROL INPUTS
with ten programmable functions
- PROGRAMMABLE COUNT SCALER
(range: 0.00001 to 9.99999)
- PROGRAMMABLE RATE SCALER
(range: 0.00001 to 99999)
- PROGRAMMABLE DECIMAL POINT
for count display
- PROGRAMMABLE DECIMAL POINT
for rate display
- TWO PROGRAMMABLE OPEN COLLECTOR
TRANSISTOR OUTPUTS
- PROGRAMMABLE RS-485 HALF DUPLEX
SERIAL INTERFACE

- SIXTEEN CHARACTER, 0.3" DOT MATRIX LCD
BACKLIT DISPLAY
- EIGHT POSITION SEALED TACTILE FEEL
KEYBOARD
- DEPLUGGABLE CONNECTORS
for all field wiring
- SEALED FRONT PANEL TO NEMA 4
SPECIFICATIONS
for complete environmental protection
- 68 x 68 mm DIN PACKAGE SIZE
for coordinated systems design
- UL LISTED AND CSA CERTIFIED

And Options on Selective Models...

- SIX DECADE MAIN COUNTER
with 1 or 2 preset levels
- SIX DECADE BATCH COUNTER
with 1 preset level
- TWO PROGRAMMABLE S.P.D.T. RELAY OUTPUTS

MODEL NUMBER	TOTALIZER	BATCH COUNTER	MAIN COUNTER	PRESETS	RATE	SCALER	CROP-CUT	DIGITS	Comments/Description
57600-400	•				•	•	•	8	Totalizer With Rate, 10 - 15 VDC
57601-400	•				•	•	•	8	Totalizer With Rate, 115 VAC
57602-400	•				•	•	•	8	Totalizer With Rate, 230 VAC
57600-401		1	1		•	•	•	6	Single Preset With Rate, 10 - 15 VDC
57601-401		1	1		•	•	•	6	Single Preset With Rate, 115 VAC
57602-401		1	1		•	•	•	6	Single Preset With Rate, 230 VAC
57600-402	•	1	1		•	•	•	6/8	Single Preset With Rate, Batch & Totalizer, 10 - 15 VDC
57601-402	•	•	1	1	•	•	•	6/8	Single Preset With Rate, Batch & Totalizer, 115 VAC
57602-402	•	•	1	1	•	•	•	6/8	Single Preset With Rate, Batch & Totalizer, 230 VAC
57600-403	•	1	2		•	•	•	6	Dual Preset With Rate, 10 - 15 VDC
57601-403		1	2		•	•	•	6	Dual Preset With Rate, 115 VAC
57602-403		1	2		•	•	•	6	Dual Preset With Rate, 230 VAC
57600-404	•	•	1	2	•	•	•	6/8	Dual Preset With Rate, Batch & Totalizer, 10 - 15 VDC
57601-404	•	•	1	2	•	•	•	6/8	Dual Preset With Rate, Batch & Totalizer, 115 VAC
57602-404	•	•	1	2	•	•	•	6/8	Dual Preset With Rate, Batch & Totalizer, 230 VAC
57601-405	•	•	1	4	•	•	•	6/8	4 Preset with Rate, Batch & Totalizer, 115 VAC

The crop-cut feature is implemented by programming one of the four general-purpose inputs to activate one or more of the output relays or transistors.

On models with presettable counter and totalizer, the main counter is six digits, while the totalizer is eight digits.

AMBASSADOR SERIES

TOTALIZERS

MODEL 5760X-400

- 8 Digit Totalizer
- Ratemeter
- Serial Communications
- Versatile Control Inputs
- Scaling



Model 57601-400

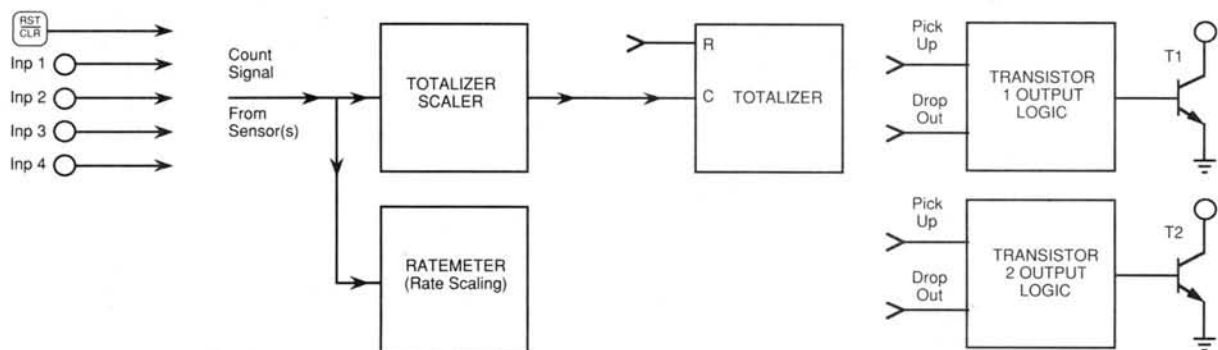
You get a full-feature counter with the Durant Ambassador™ Totalizer for your production monitoring needs. Count scaling, ratemeter and serial communications are standard features on this extremely cost-effective model.

The ratemeter adds production speed monitoring capability to your system. An independent count and rate scaler makes setting up the control extremely easy. You may scale counts to give meaningful units such as feet, gallons or parts, while you scale the ratemeter to show parts per hour, gallons per minute or other units.

Four programmable inputs give you flexibility in programming the totalizer reset function, count inhibit as well as program inhibit. The counter may be programmed to have either an edge or level sensitive reset from either one of the four control inputs or the front panel reset key. The front panel reset key may be disabled.

Two general purpose transistor outputs that may be triggered by control inputs are available for use as one-shot timers.

OVERALL BLOCK DIAGRAM



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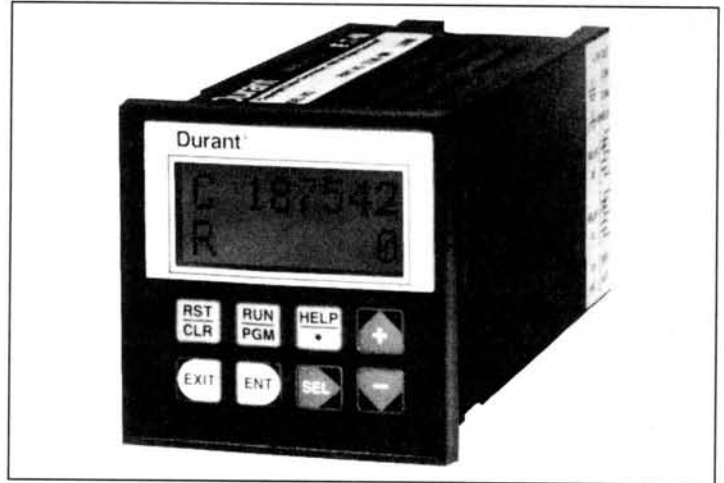
Model Number	Product Description
57600-400	Totalizer With Rate, 10 - 15 VDC
57601-400	Totalizer With Rate, 115 VAC
57602-400	Totalizer With Rate, 230 VAC

SINGLE PRESET COUNT / CONTROLS

MODELS

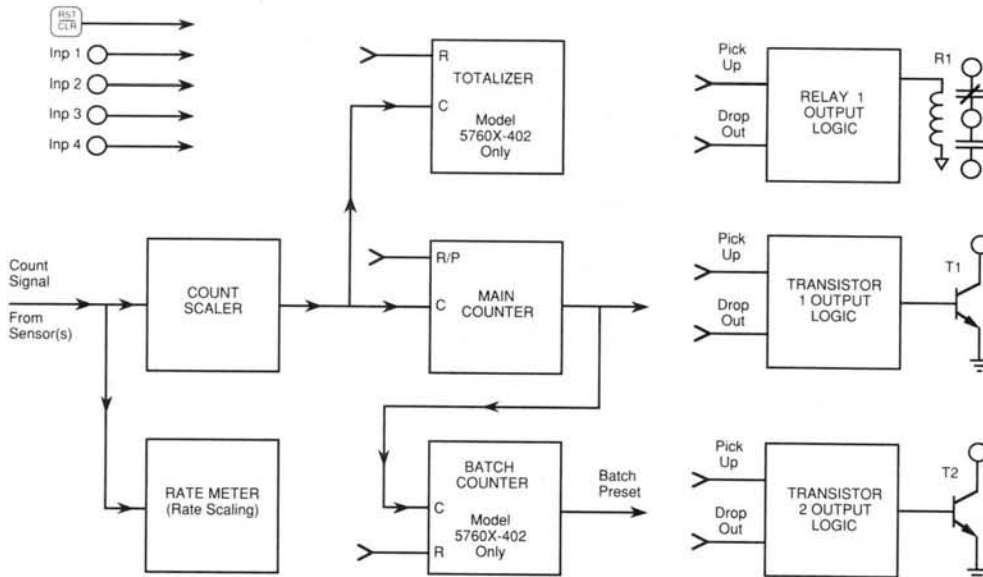
5760X-401 Single Preset with Rate
 5760X-402 Single Preset with Rate,
 Batch and Totalizer

- 1 Form C Relay
- Ratemeter
- Serial Communications
- Versatile Control Inputs
- Scaling



Model 57601-402

OVERALL BLOCK DIAGRAM



ORDERING INFORMATION

Model Number	Product Description
57600-401	Single Preset With Rate, 10 - 15 VDC
57601-401	Single Preset With Rate, 115 VAC
57602-401	Single Preset With Rate, 230 VAC
57600-402	Single Preset With Rate, Batch and Totalizer, 10 - 15 VDC
57601-402	Single Preset With Rate, Batch and Totalizer, 115 VAC
57602-402	Single Preset With Rate, Batch and Totalizer, 230 VAC

AMBASSADOR SERIES

DUAL PRESET COUNT / CONTROLS

MODELS

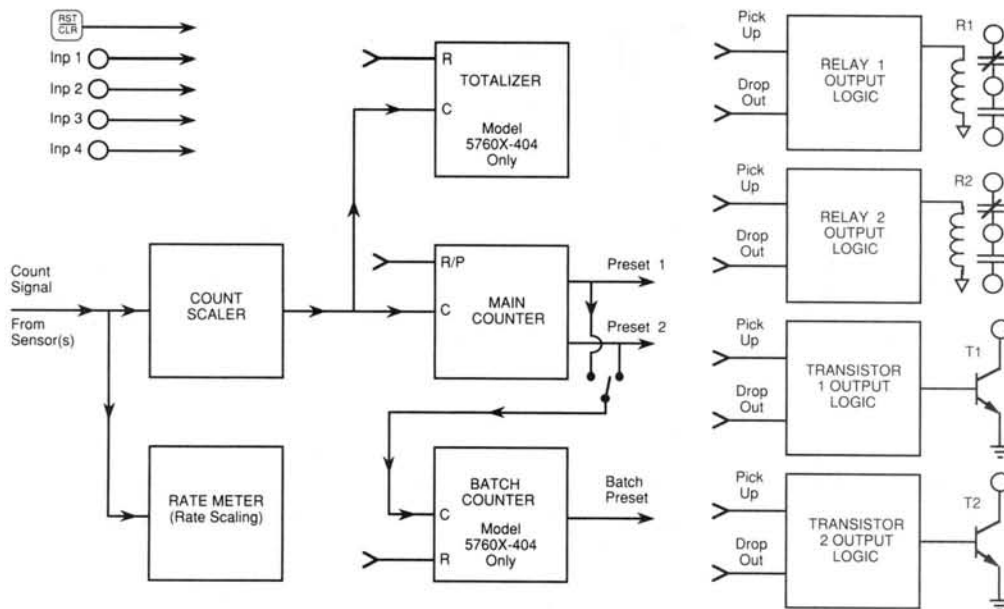
5760X-403 Dual Preset with Rate
 5760X-404 Dual Preset with Rate,
 Batch and Totalizer

- 2 Form C Relays
- Ratemeter
- Serial Communications
- Versatile Control Inputs
- Scaling



Model 57601-404

OVERALL BLOCK DIAGRAM



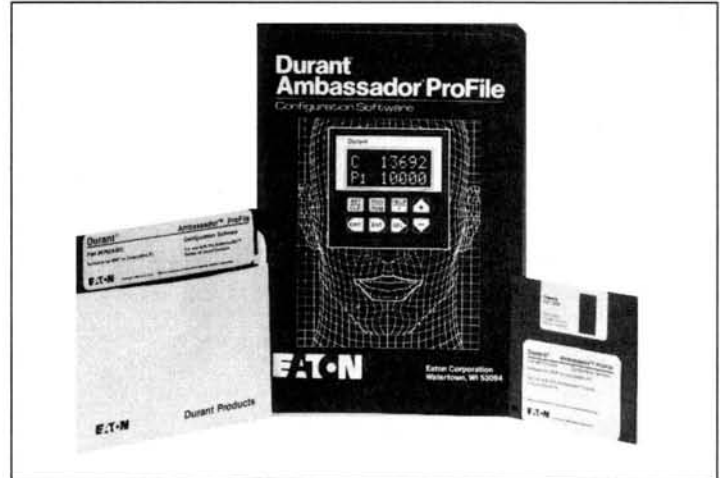
ORDERING INFORMATION

Model Number	Product Description
57600-403	Dual Preset With Rate, 10 - 15 VDC
57601-403	Dual Preset With Rate, 115 VAC
57602-403	Dual Preset With Rate, 230 VAC
57600-404	Dual Preset With Rate, Batch and Totalizer, 10 - 15 VDC
57601-404	Dual Preset With Rate, Batch and Totalizer, 115 VAC
57602-404	Dual Preset With Rate, Batch and Totalizer, 230 VAC

PROFILE SOFTWARE

MODEL 57624-002

- Provides Off-Line Ambassador™ Programming
- Runs on IBM PC and Compatibles
- Easy to Use, Menu-Driven Setup
- Upload Ambassador™ Configurations to PC
- Download Configuration to Ambassador™
- Edit, Print and Store Configuration on Disk



Model 57624-002

The Durant ProFile Version 1.1 program is a software package that lets you generate an entire Ambassador™ control configuration using your personal computer.

The menu-driven program is extremely easy to use. All programmable items such as count input modes, output modes, etc., are shown, making programming fast and accurate.

ProFile allows editing of Ambassador™ configurations without needing to be connected to the control. Connection is only required for uploading and downloading.

The ability to print your Ambassador™ configuration allows for good documentation and easy machine setup and debug.

The Ambassador™ configuration file may be stored on disk for future use or updating. By uploading a configuration from one control, and downloading to another, you can documentation "clone" a control. This makes programming large numbers of controls a snap. You may communicate with the Ambassador™ either connected individually or when connected to a network of up to 100 controls. Profile allows you to specify a target address to communicate with the desired control on the network.

ProFile will run on an IBM AT/XT/PC or compatible computer using DOS (Disk Operating System) Version 2.11 or higher.

ProFile is supplied on both a 3.5" and 5.25" disk for convenience.

The computer requires a serial RS-232 interface port assigned to either COM1 or COM2. A model 58801-403 RS-232 to RS-485 converter and associated cabling is required to connect the Ambassador™ to the PC.

If a printer is to be used to provide printed copies of programs, it must be connected to either a LPT1, LPT2 or LPT3 printer port that is properly configured and has the correct printer cable.

ProFile Version will operate with the following Ambassador™ Family count controls:

- 5760X-400 Totalizer with rate
- 5760X-401 Single preset counter with rate
- 5760X-402 Single preset counter with rate, batch counter
- 5760X-403 Dual preset counter with rate
- 5760X-404 Dual preset counter with rate, batch counter

ORDERING INFORMATION

Model Number	Product Description
57624-002	ProFile Software

AMBASSADOR SERIES

PROLOG SOFTWARE

MODEL 57624-001

- Economical Data Collection System
- Runs on IBM PC and Compatibles
- Easy to Use, Menu-Driven Setup
- Monitors up to 100 Ambassadors™



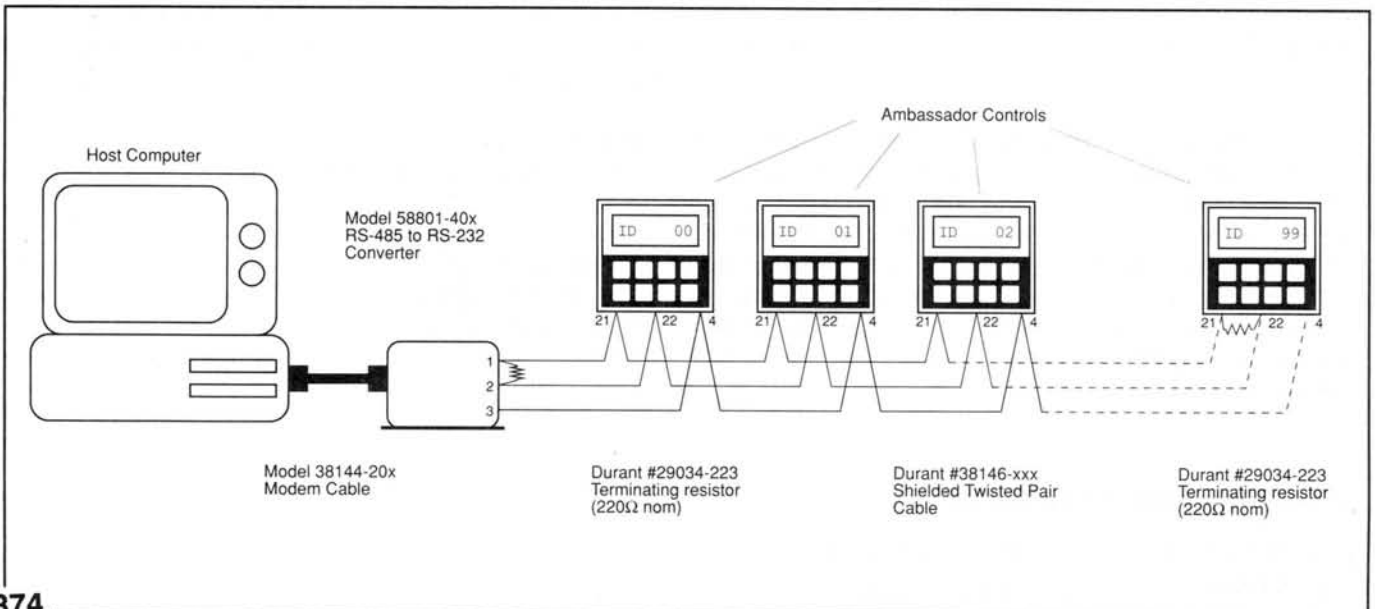
Model 57624-001

The Durant Ambassador™ ProLog program is a software package designed for use with all IBM and compatible computers. The program allows a dedicated computer to monitor and record production quantities and machine downtimes for up to 100 machines via a Durant Ambassador™ count control network.

The program determines run, idle, or down status on each machine by continuously requesting information from each machine's counter and checking the count value that it receives.

If the received count value has increased since the last time it was checked, the program determines that the particular machine is running. If the received count value has not changed within a user programmable time period, the program determines that the particular machine is down.

When a machine goes down, the program stores the time that the down condition first occurred. When the machine starts running again, the program stores the time that the run condition occurred as well as the duration of the downtime event. The program constantly updates the various displays to reflect the status of each machine.



PROLOG SOFTWARE**Counter Requirements**

Any Ambassador™ count control may be used in the network. While a count value is the only item required from each machine, the program can also utilize received preset values such as job numbers, employee numbers, and down reason codes. ProLog will also display any received rate value.

ProLog has a detail data screen which shows all data (main count, batch count, preset 1, etc.) being received from an individual counter. For maximum accuracy and scan speed, it is recommended that you program each Ambassador™ counter to send only the required item(s).

Reason, Job, and Employee Numbers

ProLog is able to record and print three different types of operator entered numbers. These are defined as reason, job, and employee numbers. You must assign one counter preset to each type of number used. The operator enters a number as the appropriate preset value to indicate a job change, employee change, or machine idle reason.

Reason numbers are pre-defined values that refer to a particular activity. When a machine goes down, the operator must enter the appropriate reason number for the activity (for example, reason number 123 might mean that the operator was changing a die). When ProLog detects that the down machine is running again, it stores the received reason number preset along with the time and duration of the event. This number is printed with the event time and duration on that machine's end shift report. ProLog also sets the counter's reason preset to zero when the machine starts running. This insures that the operator actually entered a reason number for each down period even if consecutive reasons are the same.

When ProLog detects a change in the job or employee number preset, it stores this change as an event. The shift report for that machine will then indicate J# CHANGE or E# CHANGE and the time at which the event occurred.

System Reason Codes

ProLog generates three other reason codes. These are COMM FAIL, SHIFT CNT, and NO COUNT. A COMM FAIL reason occurs when ProLog does not receive a response from the counter. This may be caused by a communication problem, incorrect address, or no power to the counter. A SHIFT COUNT is generated only on spreadsheet files to indicate the shift count and end of shift for a machine. A NO COUNT reason code will occur if ProLog does not receive the specified counter to be used for totals. Make sure that all counters are programmed to send the specified counter (main, batch, or totalizer). A NO COUNT reason code can also be caused by communication transients when ProLog is first started.

Other Features

Printed reports can be requested manually from the computer keyboard and/or programmed to occur automatically at the end of each shift. You can print current production data or data from previous days, months, or years. All information is periodically stored in disk files to help protect against data loss and reduce memory requirements of the computer.

ProLog includes the option of saving data in a spreadsheet format. This format is directly compatible with most spreadsheet programs and provides a convenient means of generating custom reports.

The program's menu format allows the user to access all program functions with a mouse or with the arrow and enter keys.

ORDERING INFORMATION

Model Number	Product Description
57624-001	ProLog Software

AMBASSADOR RATE / RATIO SERIES

OVERVIEW

Powerful Rate Capabilities...

The Ambassador Rate/Ratio/Draw Indicators feature 1/ Tau Rate capabilities designed to meet a wide range of application requirements.

- A selectable Rate Averaging Time with rate updates between .1 and 99.9 seconds for wide process speed ranges.
- Selectable Rate Zero Time lets the user "freeze" a display reading for a certain time after receiving the final input pulse.
- Alarm Outputs designed for over / under speed indication and even creating a speed window for High Limit / Low Limit monitoring.
- The optional Analog Output may be used to report to a chart recorder, analog indicator, analog control.
- UL listed / CSA certified



Model 57151-405

Flexibility for Wide Application...

The Rate/Ratio/Draw units are ideal for production and process rate applications, enabling monitoring based on Rate, Rate Difference (Rate A-B), Rate Ratio (Rate A/B), or Rate Draw (Rate A-B/B or Rate B-A/B) depending on the model selected.

Typical Applications Include:

- General High / Low Motor Speed
- Wire and Cable Drawing and Cable Lay Monitoring
- Process Time Monitoring
- Percent Draw (Stretch) Indication for Film and Paper Converting
- Batch Fluid or Material Blending
- Line Speed
- Flow Rate

Advanced Features...

The Ambassador Series of Rate/Ratio/Draw indicators represents a significant addition to the growing family of Ambassador products. These monitors include a powerful set of features designed to offer easy user interface in a compact package size.

This product features an alphanumeric, dot matrix, backlit Liquid Crystal Display (LCD) with remarkable contrast. With two lines of eight characters each, the user can view two production parameters simultaneously. The display also allows selection of programmable options from easy-to-read English language menus.

A host computer can be used with data collection software to monitor critical events in your production process. This is a powerful feature today and for the future.

FEATURES AND SELECTION GUIDE

Look at These Key Features...

Rate Indicator Models

- 1/Tau Rate Indicator
- Two Programmable Rate Alarms
- 0 - 10V Analog Output Optional
- RS - 485 Serial Communications

Rate / Ratio Models

- Two Independent 1/Tau Rate Indicators
- Ratio or Rate Difference Indication
- Two Programmable Rate Alarms
- HI and LO Ratio Alarms
- 0 - 10V Analog Output Optional
- RS - 485 Serial Communications

Rate / Ratio / Draw Models

- Two Independent 1/Tau Rate Indicators
- Ratio, Rate Difference or Draw Indication
- Two Programmable Rate Alarms
- HI and LO Ratio Alarms
- 0 - 10V Analog Output Optional
- RS - 485 Serial Communication

What is 1/Tau?

The 1/Tau method of rate calculation is based on accurately measuring the time period between consecutive input pulses. This time period is called Tau, and Durant measures Tau in microseconds. Since the frequency of the pulse and the time period of the pulse are inversely proportional, inverting time (1/Tau) yields a natural rate in frequency (pulses per second). The rate scaler feature is a multiplier which converts the pulse per second rate into almost any familiar rate unit such as revolutions per minute, feet per minute, barrels per hour, or buggywhips per fortnight. In applications where the pulses come in at a fast rate or are unevenly spaced in time, the rate average timer delays the rate calculation until a group of pulse periods can be averaged for a smooth, readable rate display.

MODEL NUMBER	OPERATING POWER	RATE METERS	RATE ALARMS	RATIO A/B	RATE DIFFERENCE	DRAW	RATIO ALARMS	ANALOG OUTPUT	Rate/Ratio Selection Chart	SEE PAGE NO.
									Comments/Description	
57150-400	10 - 15 VDC									64
57151-400	115 VAC	1	2							64
57152-400	230 VAC									64
57150-401	10 - 15 VDC									64
57151-401	115 VAC	1	2					•		64
57152-401	230 VAC									64
57150-402	10 - 15 VDC									65
57151-402	115 VAC	2	2	•	•		2		Ratio Indicator is programmable to either Ratio A/B or Rate Difference	65
57152-402	230 VAC									65
57150-403	10 - 15 VDC									65
57151-403	115 VAC	2	2	•	•		2	•		65
57152-403	230 VAC									65
57150-404	10 - 15 VDC									65
57151-404	115 VAC	2	2	•	•	•	2		Ratio Indicator is programmable to either Ratio A/B, or Rate Difference, or Draw	65
57152-404	230 VAC									65
57150-405	10 - 15 VDC									65
57151-405	115 VAC	2	2	•	•	•	2	•		65
57152-405	230 VAC									65

AMBASSADOR RATE / RATIO SERIES

SINGLE RATE INDICATORS

MODEL

5715X-400	Single Rate
5715X-401	Single Rate with Analog Output

- Five Digit, 1/Tau Ratemeter
- Two Programmable Rate Alarm Outputs
- RS 485 Serial Communications
- 0 - 10V Analog Output (Model 5715X-401)



Model 57151-401

The Ambassador single rate indicator is a versatile instrument with a feature set that makes it the ideal choice in a wide variety of dedicated rate applications. It is capable of calculating an accurate rate from sensor input frequencies in the range of 0.01 Hz to 60 kHz, depending upon the characteristics of the sensor. A programmable average timer allows the unit to update the display and outputs — as many as seven times per second, if the input frequency allows, or to smooth slow, erratic inputs out over a 99.9 second average. The programmable rate zero timer can latch the rate display for up to 99.9 seconds after input pulses stop.

Two transistor alarm outputs are standard in the Ambassador rate family. Each may be assigned as a high alarm or as a low alarm. Alarm setpoints are programmable and may be locked out from operator editing. The alarm setpoints are compared each time the rate is calculated and the display is updated. When an alarm condition is met, the output will either pulse (on for a preset amount of time), or

latch (on until manually acknowledged), or follow (on until the alarm condition ends, then turn off).

All Ambassadors feature extensive serial communication capabilities. Through its RS-485 port, programming and setpoints can be edited, and rate data can be read. When combined with a data acquisition program, a computer can create rate profiles and log alarm conditions from as many as 100 Ambassadors on a single network.

The analog output available with model 5715X-401 is 0 - 10 VDC with 12 bit resolution (0.00244V steps). The analog output full scale value is presettable and the output is updated on each rate display update. In some applications, the analog output may be used as the feedback input to a speed control. Other likely uses of this signal are as an analog input to a PLC, chart recorder, or gauge.

A block diagram of the Ambassador ratemeter is on page 62.

ORDERING INFORMATION

Model Number	Product Description
57150-400	Single Rate Indicator with Two Alarm Outputs, 10 - 15 VDC
57150-401	Single Rate Indicator with Two Alarms and Analog Output, 10 - 15 VDC
57151-400	Single Rate Indicator with Two Alarm Outputs, 115 VAC
57151-401	Single Rate Indicator with Two Alarms and Analog Output, 115 VAC
57152-400	Single Rate Indicator with Two Alarm Outputs, 230 VAC
57152-401	Single Rate Indicator with Two Alarms and Analog Output, 230 VAC

AMBASSADOR RATE / RATIO SERIES

DUAL RATE W / RATIO INDICATORS

MODELS

5715X-402	Dual Rate with Ratio
5715X-403	Dual Rate with Ratio and Analog Output
5715X-404	Dual Rate with Ratio or Draw
5715X-405	Dual Rate with Ratio/Draw and Analog Output

- Two Independent 1/Tau Rate Indicators
- Ratio, Rate Difference, or Draw Indication
- Two Programmable Rate Alarms
- Ratio High and Low Alarms
- RS-485 Serial Communications
- 0 - 10V Analog Output Optional



Model 57151-405

Rate A and Rate B are accurately calculated and displayed based upon sensor input frequencies in the range of 0.01 Hz to 30kHz per input, depending upon the characteristics of the sensor. Two alarm transistor outputs are independently assignable to either Rate A or Rate B and either as high or low alarms. Programmable rate average timers allow the unit to update the display and outputs as many as seven times per second, if the input frequency allows, or to smooth slow erratic inputs out over a 99.9 second average.

The ratio calculation is user selected as one of two or four arithmetic comparisons of the two rates. Models -402 and -403 offer ratio as ratio (A/B) or rate difference (A-B). Models -404 and -405 allow selection of the ratio calculation as either ratio, rate difference, draw in percent A (A-B/A), or draw in percent B (A-B/B). The ratio calculation is scalable to allow for units conversion and/or increased resolution. Two alarm transistor outputs (high and low) are dedicated to the ratio indicator.

All Ambassadors feature extensive serial communication capabilities. Through its RS-485 port, programming and setpoints can be edited, and rate/ratio data can be read. When combined with a data acquisition program, a computer can create rate and ratio profiles and log alarm condition from as many as 100 Ambassadors on a single network.

The analog output available with models -403 and -405 is 0 - 10 VDC with 12 bit resolution (0.00244V steps). The output is user assignable to either Rate A, Rate B, or the Ratio calculation. The analog output full scale value is presettable and the output is updated on each display update of the selected parameter. Zero offset (output at a display of zero for the selected parameter) is selectable as 0 VDC or 5 VDC. Possible uses for the analog output signal include PLC analog inputs, speed control feedback inputs, chart recorders and gauges.

ORDERING INFORMATION

Model Number	Product Description
57150-402	Dual Rate Indicator with Ratio/Rate Difference and Four Alarm Outputs 10 - 15 VDC
57150-403	Dual Rate Indicator with Ratio/Rate Difference, Four Alarms and Analog Output, 10 - 15 VDC
57150-404	Dual Rate Indicator with Ratio/Rate Difference/Draw, and Four Alarm Outputs, 10 - 15 VDC
57150-405	Dual Rate Indicator with Ratio/Rate Diff/Draw, Four Alarms and Analog Output, 10 - 15 VDC
57151-402	Dual Rate Indicator with Ratio/Rate Difference and Four Alarm Outputs 115 VAC
57151-403	Dual Rate Indicator with Ratio/Rate Difference, Four Alarms and Analog Output, 115 VAC
57151-404	Dual Rate Indicator with Ratio/Rate Difference/Draw, and Four Alarm Outputs, 115 VAC
57151-405	Dual Rate Indicator with Ratio/Rate Diff/Draw, Four Alarms and Analog Output, 115 VAC
57152-402	Dual Rate Indicator with Ratio/Rate Difference and Four Alarm Outputs 230 VAC
57152-403	Dual Rate Indicator with Ratio/Rate Difference, Four Alarms and Analog Output, 230 VAC
57152-404	Dual Rate Indicator with Ratio/Rate Difference/Draw, and Four Alarm Outputs, 230 VAC
57152-405	Dual Rate Indicator with Ratio/Rate Diff/Draw, Four Alarms and Analog Output, 230 VAC

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TOTALIZER W/ RATE**

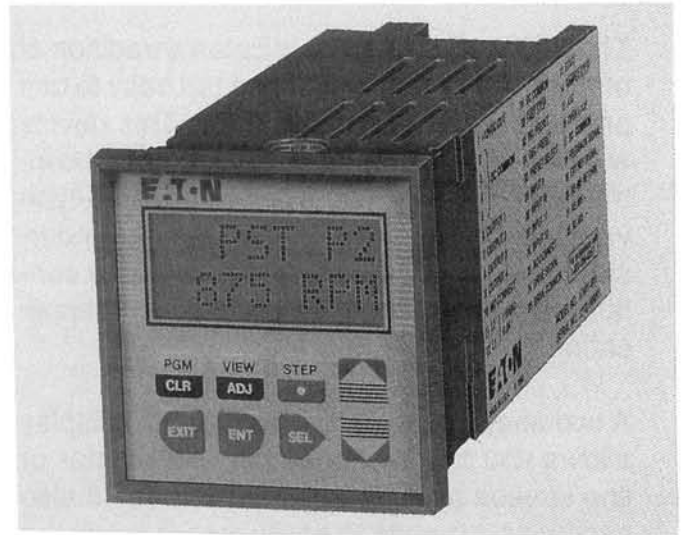
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STRIDER SERIES™

Flexibility for Wide Applications

The Strider is a versatile, digital device, that when used with an AC, DC or servo-type variable speed drive and a sensor in a closed-loop system, can precisely control the speed of a motor. Numerous advanced features make the Strider an excellent choice for controlling speed in such applications as,

- Cable Lay
- Spooling
- Traversing
- Extruding
- Annealing
- and many others



Model 57401-401

The Strider speed control represents a significant extension to the long line of Durant rate products. More than just speed indication with alarm outputs, the Strider adjusts its 0 - 10 volt analog output to a drive to maintain motor speed at an operator-entered preset speed. The Strider may operate in either master or follower modes. Jog mode capability is a standard feature as well. Separate scaling allows the operator to monitor presets, feedback motor speed and master motor speed in a wide variety of units. For instance, in a follower application, the master motor speed could read in RPM, the presets could be entered in, and checked in percent. If the follower motor is driving a conveyor, its speed could read in feet per minute.

The Strider accepts pulse signals from commonly available sensors such as encoders, C-flange kits, magnetic pickups

and tach generators. The control can process these signals at up to 35kHz and update every five milliseconds. In the event of the loss of the feedback signal, the Strider can be programmed to stop the motor.

This control is designed to be panel mounted in a DIN standard 68mm cutout. Wiring connections are made to de-pluggable screw terminals. The Strider is equipped with a backlit, two-line by eight-character, dot matrix LCD display, and its RS-485 communications port allows extensive serial programming and control capabilities. All these features are consistent with Ambassador series count controls, rate/ratio indicators, and production monitors, lending a family appearance to multi-function control panels.

Dimensions and Selection Guide

Look at These Standard Features...

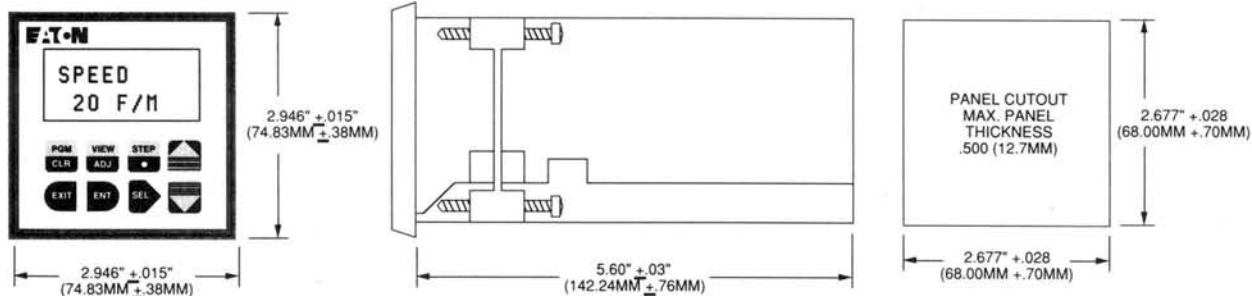
- 5 milliseconds rate calculation
- ± 0.015% speed regulation
- 35 kHz frequency inputs
- Master/follower/jog selectable
- Isolated 0 - 10 VDC analog output
- 12 bit DAC resolution
- Proportional - integral (PI) error correction
- RS-485 serial communications
- Tach loss safety feature
- Four digital outputs
- 12VDC @ 125 mA power output
- Extensive self-test capability

- UL listed
- 16 character alphanumeric display
- Four control inputs
- Preset step increment/decrement

And Options on Selected Models...

- Two speed presets
- 12 control inputs
- Reversing capability
- Alarm output latching capability
- Drive Signal span adjustable from 0 - ±3 VDC to 0 - ±10 VDC

DIMENSIONS



MODEL NUMBER	PRESETS	MASTER/FOLLOWER/JOG MODES	CONTROL INPUTS	DIGITAL OUTPUTS	ALARM OUTPUT LATCHING	REVERSING	ANALOG OUTPUT SPAN	Strider Selection Chart
								Comments/Description
57401-400	1	•	4	4			0 - 10 VDC	Single Preset 115 VAC
57402-400	1	•	4	4				Single Preset 230 VAC
57401-401	2	•	12	4	•	•	0 to ± 10 VDC adjustable to 0 to ± 3 VDC	Dual Preset 115 VAC
57402-401	2	•	12	4	•	•		Dual Preset 230 VAC

STRIDER SERIES™

Single Preset Speed Control

MODEL 5740X-401

- Master/Follower/Jog Modes
- One Speed Preset
- One Jog Preset
- 0 to 10Vdc Drive Signal Output
- Four Control Inputs
Two Dedicated - Start, Ramped Stop
Two Programmable - Jog, Lock Program, Lock All, Fast Stop, Open Loop
- Four Transistor Outputs
- UL Listed



The Strider Series follows Eaton's tradition of offering technically advanced but easy-to-use products at an affordable cost. This device will give precise, closed-loop speed control when used with an AC, DC, or servo-type variable speed drive. The Strider features a two-line, backlit alphanumeric display that allows simultaneous viewing of two parameters such as motor speed and speed preset. The display and front panel keypad also allow for scrolling through programming and setup menus to configure the speed control to the specific application.

In a closed-loop system, frequency inputs from a sensor provide the feedback signal to the control. The Strider accepts either three-wire DC pulses from such sensors as encoders or C-flange kits, or two-wire AC pulses from magnetic pickups or tach generators. Proportional-Integral (PI) error correction is used to maintain a tight $\pm 0.015\%$

speed regulation. The 0-10Vdc drive signal output is isolated. Using the tach loss safety feature, the drive signal can be forced to 0V if the feedback signal is lost. Consistent with all other Ambassador Series indicators and controls, the Strider is equipped with an RS-485 serial communication port and extensive communication capabilities. Software is available from Eaton to allow a computer to monitor, log, or adjust run parameters on up to 100 Striders and/or Ambassador series devices on a single network.

The Strider features a front panel step key to "bump" the preset speed up or down by a predetermined amount each time the up or down arrow key is pressed. Additionally, if the up or down arrow key is held, the preset will scroll up or down automatically until the operator releases the key. The preset may be locked, in which case the operator cannot change it.

ORDERING INFORMATION

Model Number	Product Description
57401-400	Single Preset Speed Control, 115VAC
57402-400	Single Preset Speed Control, 230VAC

Dual Preset Speed Control

MODELS 5740X-401

- Master/Follower/Jog Modes
- Two Speed Presets
- Two Jog Presets
- Reverse Capable
- Adjustable 0 to ± 3 VDC to 0 to ± 10 VDC Drive Signal Output
- 12 Control Inputs
 Eight Dedicated - Start, Ramped Stop, Jog, Open Loop, Fast Stop, Increment Preset, Decrement Preset, Preset Select
 Four Programmable - Hold Speed, Reverse, Lock Program, Lock All, Unlatch Alarms, Inhibit Low Alarms
- Four Transistor Outputs
- UL Listed



Model 57401-401

The dual preset Strider contains all the features of the single preset version and then some. The second preset allows the drive to ramp to a different speed based upon a contact closure or NPN transistor input to the Strider. This input may be a manual selector switch, or, in more automated systems, a sensor or PLC output. The front panel step increment/decrement feature is joined by rear terminal step increment preset/decrement preset inputs for additional speed adjustment flexibility.

The drive signal output has enhanced capabilities as well. If a control input is programmed to be reverse, and is active,

the dual preset unit will reverse the polarity of the drive signal, providing 0 to -10Vdc to drives with reverse capability. Furthermore, the drive signal is potentiometer adjustable over a range of 0 ± 3 Vdc to 0 ± 10 Vdc. The digital-to-analog converter (DAC) retains 12 bit resolution regardless of the span. As is the case with the single preset unit, the drive signal is isolated.

Finally, the digital "bells and whistles" outputs of the dual preset model are more flexible. Alarm outputs may be programmed to latch once the alarm condition is met. Inputs may be programmed to additional functions such as Unlatch Alarms, Inhibit Low Alarms, and Hold Speed.

ORDERING INFORMATION

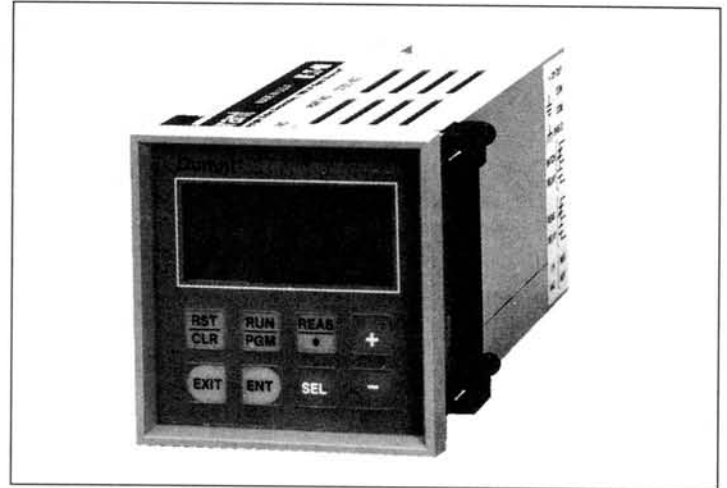
Model Number	Product Description
57401-401	Dual Preset Speed Control, 115VAC
57402-401	Dual Preset Speed Control, 230VAC

**AMBASSADOR
PRODUCTIVITY MONITORS
AND SYSTEMS**

AMBASSADOR PRODUCTIVITY MONITOR

Ideal for:

- Metal Stamping
- Injection Molding
- Packaging
- Form/Fill/Seal
- Printing
- Envelope Manufacture



The full-featured Productivity Monitor/Control (PMC) is designed to provide an extremely cost effective solution to meet your production monitoring needs. The PMC includes a powerful set of features that has but one goal: To make your process more productive. The five run-mode menus (Count Data, ID Data, Rate Data, Time Data, Time Efficiency) provide you with the information you need to make production decisions that will increase process efficiency.

Count and Control:

- Two eight decade totalizers with 20 kHz count speed.
- Totalizer #2 / Totalizer #1 calculation will display efficiency. Track scrap parts produced to get a handle on losses. Display % scrap or yield directly.
- Six decade, single preset batch counter with relay output. Batch counter can be used to turn production machinery off when required number of parts are produced. Time Until Batch Complete function tells you when the current batch will be done based on parts produced, parts remaining and current rate.
- Independent programmable count scalers for each count input. Allows compensation for multiple parts per die, items per case, etc.

Rate Monitoring:

Six decade 1/Tau rate indicator includes:

- Programmable rate scaler (range: 0.00001 to 99999).
- Frequency range down to 0.001 Hz.
- Ideal Rate function displays production rate as a % of ideal. Operators can view performance against standard rates.
- Zero-Rate output turns on when production speed drops below setpoint. Allows detection of machine jams, low rates or may be used to activate the Machine Down timer.

I.D. Features:

- Alpha-numeric entry of Operator Name, Part Number, and Job Number. Capture and log this critical information to allow accurate analysis of production reports. May be entered via keypad or optional bar-code interface.

APPLICATION EXAMPLE

Time and Time Efficiency Tracking:

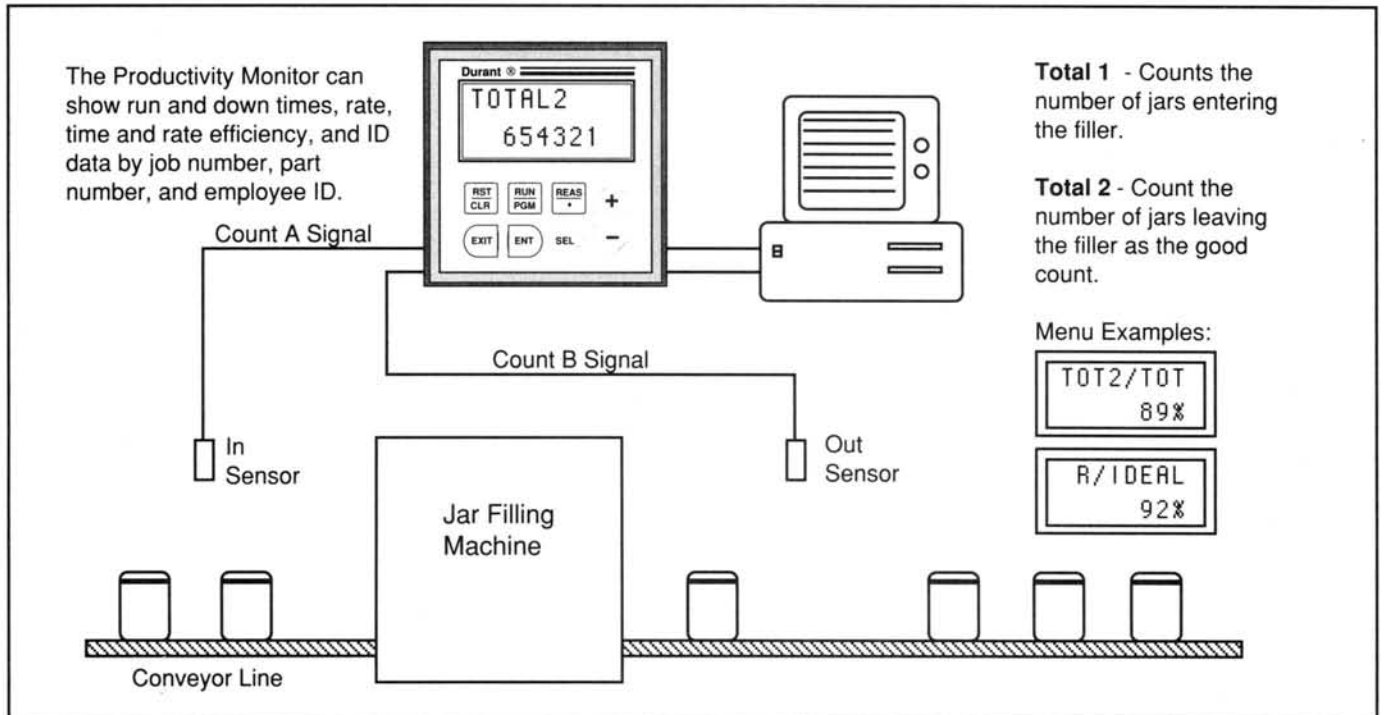
- Monitoring of process Run and Downtime. Allows tracking of Machine Utilization. Is there capacity remaining on third shift? Is it time to add more machines to the line? Find out with the PMC.
- Reason Codes document why, when and for how long a machine is down. Allows optimization of your process to eliminate downtime and waste. Reason Code is either entered manually into the keypad, or automatically through eight dedicated reason code inputs on model 57201-421.
- True process Productivity is measured!

The PMC is designed to accept a wide range of sensor inputs for both the count and control inputs. Count inputs may be either sinking or sourcing. A +12VDC output is provided for sensor power.

• Communications network and software package required to take full advantage of these features.

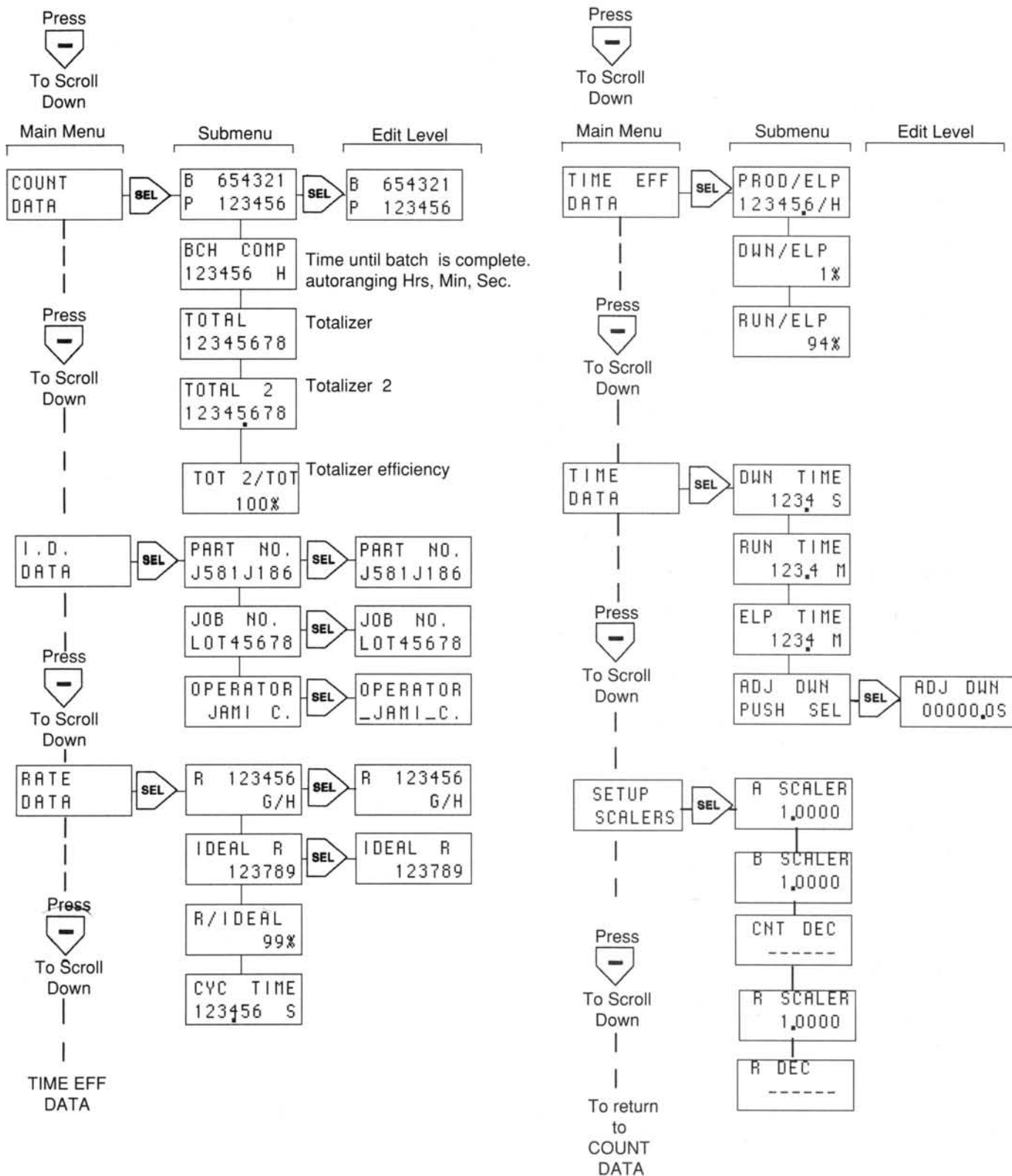
A full line communication networking and software products available to form a complete Productivity Monitoring System. Please contact factory for information.

Application Example



AMBASSADOR PRODUCTIVITY MONITOR

RUN MODE MENUS



AMBASSADOR PRODUCTIVITY MONITOR

SPECIFICATIONS

Power Input:

57201-4XX: 115 VAC (+/-15%) std., 50 to 60 Hz, 7 W.
57202-4XX: 230 VAC (+/-15%) opt., 50 to 60 Hz, 7 W.

Sensor 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).
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.

Serial Interface Specifications (all models)

Type: RS-485.
Protocol: Conforms to Opto 22™.
Wiring: Single twisted pair shielded cable
baud rate: Programmable: 300 - 19200.
Parity: Programmable: None, Odd, Even.
Addressing: Two digit (0-99) user programmed unit I.D. number.
Functions: Operating functions include:
• Remote Programming
• Remote Data Collection
• Remote Control

Connections:

Type: Unpluggable screw terminal strips.
Conductor Size: #14 - 22 AWG solid, stranded, or fused (preferred).

Batch Counter:

Type: Bi-directional.
Input: Selectable, Input A, Input B or A minus B.
Digits: 6
Presets: 1 with relay and transistor outputs.
Reset Modes: Auto or manual, reset to zero or preset.
Decimal Point: 6 positions, programmable.

Totalizers (2):

Type: Bi-directional.
Input: Selectable, Input A, Input B or A minus B.
Digits: 8
Decimal Point: 8 positions, programmable.

Count Inputs (2): Channels A and B

Maximum Speed:

Input A and B mode independently selectable. Speeds are shown with square wave (50% duty cycle).

Solid State Mode (Hi-Speed): 20 kHz*
Contact Mode (Lo-Speed): 40 Hz

* 7.3 kHz with open collector type sensor.

Count Scalers (2):

Independent Input A and B scalers.
Range: 0.0001 to 99.9999.
Accessible from RUN mode, may be locked out to limit access.

Count Accuracy:

100% when counter is operated within specifications.

Threshold (VDC):

	High	Low
Sinking mode	3.5 to 34.0	0 to 1.9
Sourcing mode	3.5 to 17.0	0 to 1.9
Low level sourcing	0.63 to 17.0	-17.0 to -0.6

Control Inputs (4):

Assignable Functions (13):

Unlatch Output	Reset Batch	Reset Totalizer
Reset Totalizer 2	Reset Reason	Reset Totalizer 1 & 2
Reset Times	Reset All	Down Level
Down Edge	Lock Program	Lock Program/Scalers
		Lock All

Mode: Sinking.

Thresholds: High +3.5 to +24 VDC, Low 0.0 to 1.0 VDC.
Response: 40 Hz.

AMBASSADOR PRODUCTIVITY MONITOR

SPECIFICATIONS

Reason Inputs (8), Model 57201-421 only:

Mode: Sinking, Selectable high or low active.
 Thresholds: High +3.5 to +24 VDC, Low 0.0 to 1.0 VDC.
 Response: 40 Hz.

Relay Outputs (2):

Functions: Batch Preset, Reason Code Interlock.
 Type: SPDT contacts with transient protection.
 Max. Switched Power: 170 W and 1650 VA.
 Max. Switched Voltage: 150 VDC or 275 VAC.
 Max. Switched Current: 6 amps.
 U.L. Ratings: 6 A @ 28 VDC or 120/275 VAC
 1/8 HP @ 120/240 VAC (100,000 cycles).
 1.5/0.8 A @ 120/240 VAC (30,000 cycles).

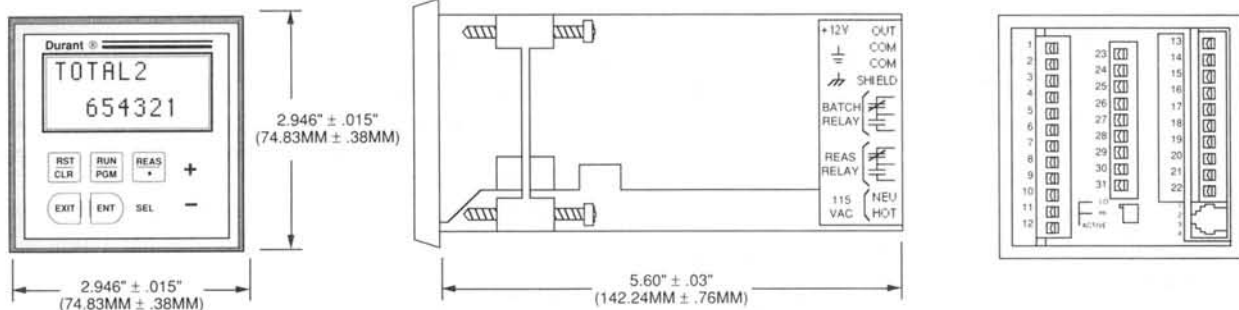
Transistor Outputs (2):

Functions: Batch Preset, Zero (low) Rate.
 Type: NPN open collector with transient protection.
 Maximum Voltage: 30 VDC (off state).
 Maximum Current: 200 mA @ 1.3 VDC (on state).

Rate Indicator:

Type: 1/Tau.
 Digits: 6
 Scaler Range: 0.00001 to 99999.
 Decimal Point: 6 positions, programmable.
 Accuracy: $\pm 0.012\%$ of reading.
 Average Time: 0.1 to 999.9 seconds, programmable.
 Zero Time: 0.1 to 999.9 seconds, programmable.

Dimensions



Panel Cutout Openings:
 2.68" x 2.68" (68 x 68mm)
 per DIN 43700

Spare Parts

36172-202	Front Panel Gasket
48369-200	Mounting Clip
28748-200	Screw for Mounting Clip
48355-002	Terminal Strip - 2 Position
48355-110	Terminal Strip - 10 Position
48355-112	Terminal Strip - 12 Position

Ambassador Family Accessories

57609-400	Desk Mount Kit (enclosure for flat surface mounting)
58801-403	RS-485 to RS-232 Communications Converter
58801-404	RS-485 to RS-485 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)

General Accessories

48160-400	Input Signal Conditioner
48160-440	Timer Module
48160-45X	Analog to Frequency Converter
49990-4XX	Simultaneous Input Processor (anti-coincidence counting from multiple input devices)
38091-400	RC Surge Suppressor
36059-20X	I/O Modules (AC Input and Output, DC Input and Output)
58490-445	Plug in Board for four 36059-20X modules
51611-40X	Dual Relay Module (two sets of Form C contacts for each relay)

Transducers

48770-40X	Inductive Proximity Sensor (8mm, 12mm and 18mm sizes available)
37360-402	Photo-Electric Sensor 24" range
37360-403	Photo-Electric Sensor 6" range
38150-XXXX	Medium Duty, Single Channel Shaft Encoder
48370-XXXX	Heavy Duty, Single Channel Shaft Encoder
ES9513-RS	Rotary Contactor
39400-400	Zero Speed Vane Pickup
47004-400	Magnetic Pickup
28433-400	30 Tooth Gear for magnetic pickup

AMBASSADOR SERIES PRODUCTIVITY MONITOR AND CONTROL

INSTALLATION AND OPERATION MANUAL 57201-920-02

AMBASSADOR SERIES PRODUCTIVITY MONITOR AND CONTROL

BATCH/TOTALIZER MODELS:

5720X-420

5720X-421

- Machine I.D. Data
- Reason Interlock
- Six-Digit, Single-Preset Batch Counter
- Two Eight-Digit Totalizers
- Two Independent Count Scalars
- Batch Relay and Transistor Outputs
- Four User Configurable Control Inputs
- 1/Tau Ratemeter
- Rate Zero Transistor Output
- Time and Time Efficiency Displays
- Reason Inputs
(Available only on 5720X-421)

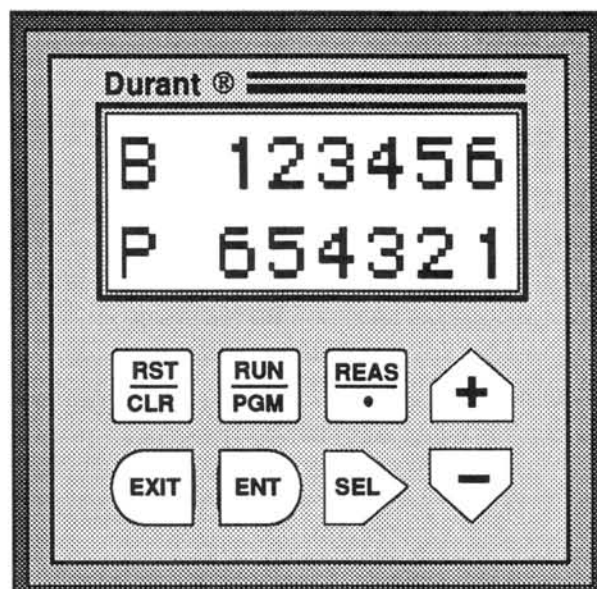


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AMBASSADOR SERIES PRODUCTIVITY MONITOR AND CONTROL

SPECIFICATIONS

POWER INPUT:

57202-42X: 115 VAC ($\pm 15\%$) std., 50 to 60 Hz, 7 W.
57202-42X: 230 VAC ($\pm 15\%$) opt., 50 to 60 Hz, 7 W.

DC POWER OUTPUT:

12 VDC ($\pm 25\%$), 100 mA maximum (includes all line and load variations).

ENVIRONMENT:

Operating Temperature: 32 to 131°F (0 to 55°C).
Storage Temperature: -4 to 158°F (-20 to 70°C).
Operating Humidity: 85% Relative, non-condensing.
NEMA 4 and NEMA 12 rated 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.

BATCH COUNTER:

Type: Bi-directional.
Digits: 6
Presets: 1
Reset modes: Auto or manual, reset to zero or preset.
Scalers: Shared with totalizers.
Decimal point: 6 positions, programmable.

TOTALIZERS: (2)

Type: Bi-directional, same as or opposite of batch counter.
Digits: 8
Scalers: Independent A and B. Range 0.0001 to 99.9999.
Scalers are 100% accurate.
Decimal Point: 8 positions, programmable.

COUNT SPEEDS:

The maximum count speed depends on the selected count mode. All maximum speeds are shown with square wave (50% duty cycle) input.

Mode	Maximum Speed
Solid State	20 kHz
Contact	40 Hz

Note: True for both Input A and Input B
(*When using an open collector type sensor, the maximum count speed will be 7.3 kHz)

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 0.63 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 0.9 VDC.
Response: 40 Hz.

DEDICATED REASON INPUTS (only on 5720X-421)

Impedance: Sinking 4.7K ohm to +5V (active low).
Sourcing 4.7K ohm to DC Com (active high).
Voltage: High +3.7 to 24 VDC, low 0.0 to 0.9 VDC.
Response: 40 Hz.

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).

COUNT ACCURACY:

100% when counter is operated within the specified count speeds and count signal high and low times.

RATE INDICATOR:

Type: 1/Tau.
Digits: 6
Scaler range: 0.00001 to 99999.
Decimal point: 6 positions, programmable.
Accuracy: $\pm 0.012\%$ of reading.
Average Time: 0.1 to 999.9 seconds, programmable.
Zero Time: 0.1 to 999.9 seconds, programmable.

CONNECTIONS:

Type: Two or three unpluggable screw terminal strips.
Conductor Size: #14 - 22 AWG solid, stranded, or fused (preferred).