

## DESIGNMATE SERIES

### A design-matched family of totalizers and controls for instrumentation applications

The first word for the Durant Design Mate Series is small! That is because this matched family of totalizers, count, time and rate controls were developed specifically to meet the demands of OEM instrumentation designers. To optimize panel space, the totalizer and elapsed timer are furnished in 24mm x 48mm DIN packages and the six controls are the smallest we have ever offered — 48mm x 48mm DIN packages. But there is more to Design Mate than size alone. LSI technology, LCD displays and long-life batteries for nonvolatile memory, now make it possible to achieve reliable performance in an electronic component with a price to match its size. For the first time, you can have the design flexibility of small components; matched in operation, response

and appearance. Designed to be used together, they will help you achieve reliable, accurate space-saving instrumentation. You can choose from reset or non-reset totalizers and single or dual level, pushbutton preset controls. All have easy-to-read 8mm high LCD displays — a full eight digits in the totalizers and six digits in the controls.

You will agree that everything about this series says "easy". Positive pushbutton operation and large displays make them easy to use — clip mounting and simple wiring terminations make them easy to install — low cost and distributor availability make them easy to buy — small size and the elimination of parts duplication make them easy to inventory, and their long life and reliable performance make them easy to live with.

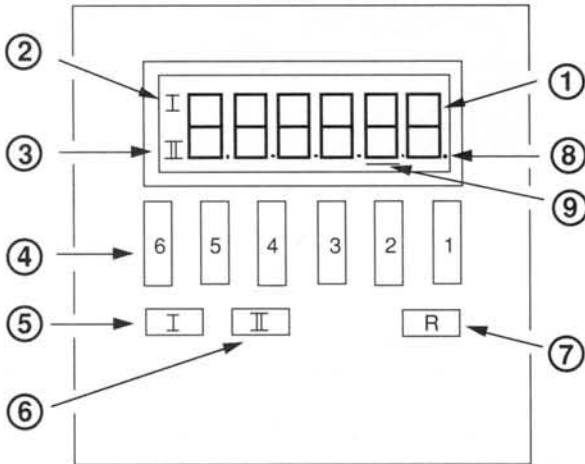


# DESIGNMATE SERIES

## FEATURES and SELECTION GUIDE

- **FAMILY APPEARANCE DESIGN**  
for coordinated human interfaced panels
- **CMOS-LSI CIRCUITRY**  
for reliable noise-immune performance
- **SEVEN SEGMENT LCD DISPLAY**  
8mm high digits for high visibility, leading zero blanking for convenience
- **WIDE CHOICE OF COMPONENTS**  
Reset or non-reset totalizers, single or dual level controls
- **NONVOLATILE MEMORY**  
Battery back-up insures data retention

## Easy programming of presets...



1. 6-digit, 7-segment LCD. Used to display count or preset values.
2. & 3. Preset I and II output indicators. Flashes when the preset is being interrogated or changed. Turns on when the output is on.
4. Digit Select Keys. Used in conjunction with the Preset I key to enter preset values. When pressed, the corresponding digit is incremented approximately twice per second.
5. & 6. Preset I & II Keys. Displays "next preset" for interrogation or modification.
7. Reset Key. Transfers "next preset" value into the "current preset" register. Also resets or presets the counter, depending on mode selected.
8. Transfer Indicator. Indicates that the new preset has been entered in the "next preset" register and has not been transferred to the "current preset" register.
9. Curser indicates which digit is currently being changed.

MODEL NUMBER	TOTALIZER	ELAPSED TIMER	MAIN COUNTER	PRESETS	RATE CONTROL	SELF POWERED	FRONT PANEL RESET	DIGITS	Comments/Description
44550-400	•	•						8	OEM Totalizer/Timer Module
44551-400	•	•				•		8	OEM Totalizer/Timer Module
44650-400	•				•	•		8	Totalizer
44660-400	•	•			•	•		8	Elapsed Time Indicator
45610-400	•	1	1			•		6	Count or Time Control
45620-400	•	1	2			•		6	Count or Time Control
45660-400			2	•		•		6	Dual Preset Rate Control (Tachometer)

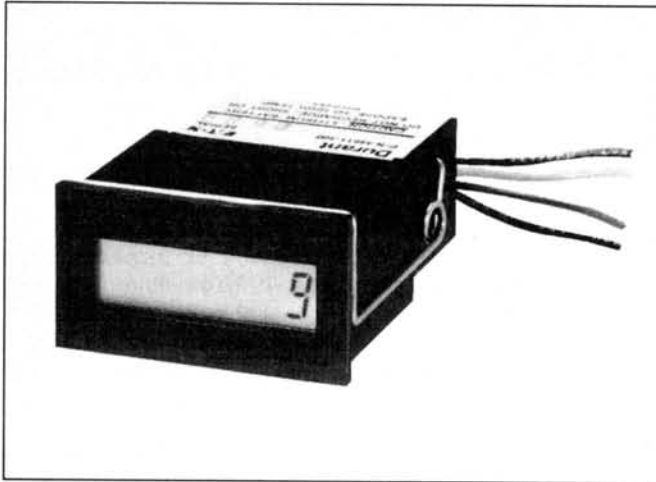
# DESIGNMATE SERIES

## 8 DIGIT SELF-POWERED TOTALIZER AND TIMER

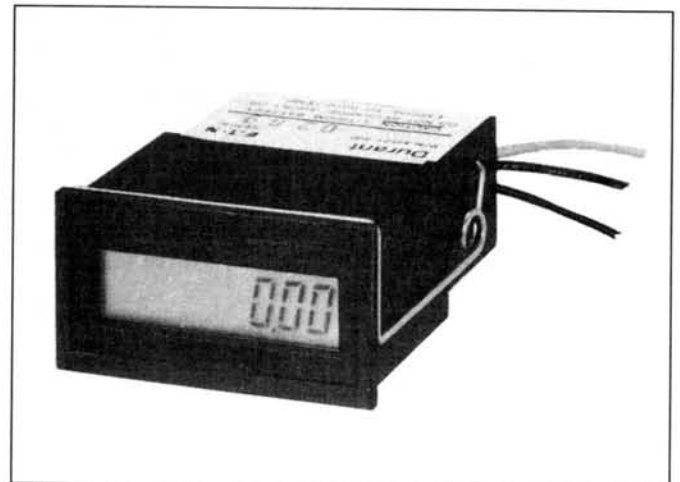
### MODELS

44610-400	Totalizer
44611-400	Totalizer with Front Panel Reset
44620-400	Elapsed Time Indicator
44621-400	Elapsed Time Indicator With Front Panel Reset

- Low Cost
- Extremely Compact Size
- Self Powered with Lithium Battery
- Optional Front Panel Reset Button
- Convenient Snap Mounting



44611-400



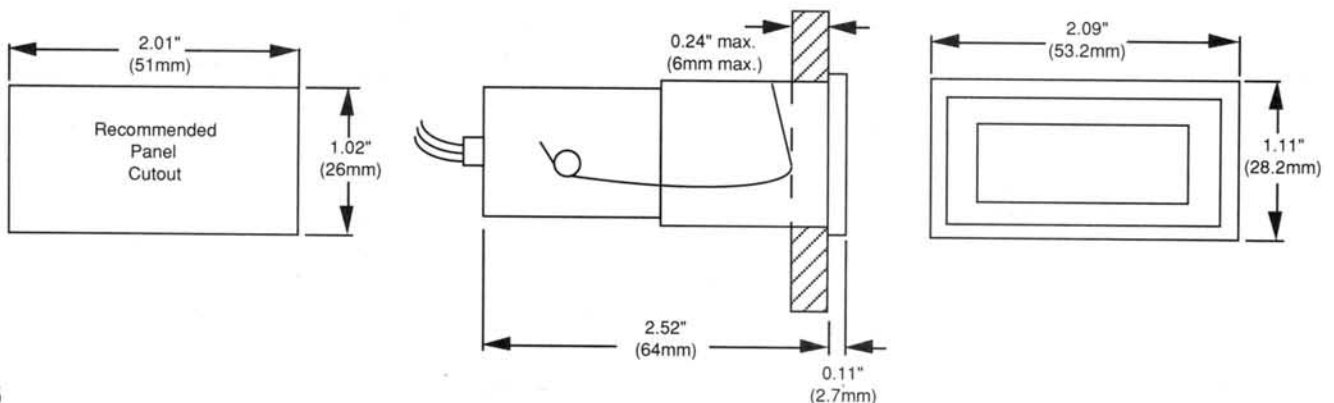
44621-400

The Design Mate totalizer is an 8 digit liquid crystal display (LCD) solid state counter which has an internal lithium battery for self-powered operation. The Design Mate totalizer may be used to indicate total parts produced, cycles run, or other accumulated count values.

The Design Mate totalizer features high speed and low speed count inputs, allowing it to be used with solid state transducers or contact closure type input signals as well as to respond to voltage pulses. This latter capability allows it to replace existing electro-mechanical counters. Model 44611-400 has an input for an external electrical reset and a front panel reset button while Model 44610-400 has only the external electrical reset.

The Design Mate elapsed time indicator is an 8 digit liquid crystal display (LCD) solid state timer which has an internal lithium battery for self-powered operation. The Design Mate elapsed time indicator may be used to record usage time for scheduled maintenance, process downtime, or other accumulated time values.

The Design Mate elapsed time indicator features inputs which allow it to be used with solid state transducers or contact closure type input signals. Model 44621-400 has an input for an external electrical reset and a front panel reset button while Model 44620-400 has only the external electrical reset. Both units show elapsed time in 0.01 hour increments with lead zero blanking.



## SPECIFICATIONS

# DESIGNMATE SERIES

### Common Specifications

#### Display

8 digit, .3" (8mm) LCD with lead zero blanking.

#### Case Material

Noryl SE 1, Black 701.

#### Window Material

Polyacetate.

#### Connections

Wire Leads, 24 AWG, 10" (254 mm) length.

All connections are made to wire leads exiting from the rear of the counter. Panel mounting is accomplished by means of a spring clip retainer.

#### Operating Temperature

25 to 120°F.

#### Storage Temperature

10 to 155°F.

#### Operating Humidity

0 - 95% non-condensing.

#### Weight

2 oz. (55 grams).

#### Battery

Type: Lithium.

Life: 8 years

Voltage: 3V at 20°C, 3.2V at 60°C, 2.8V at 0°C.

#### High Speed Count Input (Voltage Source Input)

Models 44610-400 , 44611-400 only

High State Voltage: 3 to 30 VDC.

Low State Voltage: 0 to 0.7 VDC.

Current: 2 mA at 3 VDC, 5.7 mA at 30 VDC.

Minimum High Time: 100 microseconds

Minimum Low Time: 100 microseconds

Maximum Count Speed: 5000 CPS

#### Low Speed Count Input (Contact Closure Input) and Reset Input

Models 44610-400 , 44611-400 only

Open State Resistance: 200,000 ohms to common min. required from transducer.

Closed State Resistance: 40,000 ohms to common max. required from transducer.

Current: 10 to 70 microamps\*.

Maximum Count Speed: 40 Hz.

\* The low speed count and reset inputs are sampled with a 30 microsecond pulse every 4 milliseconds. The input current during this pulse ranges from 10 to 70 microamps, determined by the resistance of the path from the input to DC Common. High quality contacts, such as gold plated contacts, are recommended due to this minute current.

#### Timer Enable Input and Reset Input

Models 44620-400, 44621-400 only

Open State Resistance: 200,000 ohms to common min. required from transducer.

Closed State Resistance: 40,000 ohms to common max. required.

Current: 10 to 70 microamps\*.

Minimum Open Time: 12 milliseconds.

Minimum Closed Time: 12 milliseconds.

High State Voltage: 2.0 to 3.3 Vdc.

Low State Voltage: 0 to 1.0 Vdc.

#### Time Base Accuracy

±50 parts per million (.005%).

\* The timer enable and reset inputs are sampled with a 30 microsecond pulse every 4 milliseconds. The input current during this pulse ranges from 10 to 70 microamps, determined by the resistance of the path from the input to DC common. High quality contacts are recommended due to this minute current.

### VOLTAGE CONVERSION MODULES

Model Number	Product Description
46075-410	10 to 60 VAC or VDC
46075-400	60 to 160 VAC or VDC
46075-420	160 to 260 VAC or VDC

### ORDERING INFORMATION

Model Number	Product Description
44610-400	Totalizer
44611-400	Totalizer with Front Panel Reset
44620-400	Elapsed Time Indicator
44621-400	Elapsed Time Indicator With Front Panel Reset

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# DESIGNMATE SERIES

## NEMA 4 SERIES 8 DIGIT SELF-POWERED TOTALIZER AND TIMER

### MODELS

44650-400 Totalizer  
44660-400 Elapsed Timer

- NEMA 4
- Self Powered – Replaceable Batteries
- Front Panel Reset Button Standard
- Convenient Snap Mounting
- Easy Snap-On Voltage Conversion Module



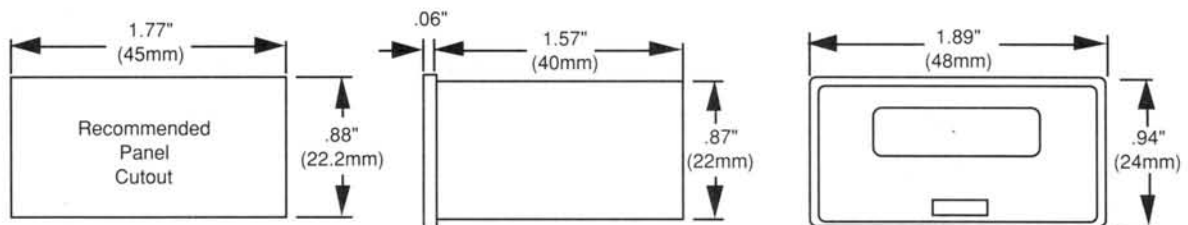
Model 44650-400



Model 44660-400

The Durant Design Mate self-powered electronic totalizer family features an 8-digit count/totalizer and an elapsed time indicator that displays in increments of 1/100th of an hour. The compact cost-effective counters are suitable for direct replacement of electromechanical counters. Count input can be by a switch closure, PNP or NPN transistors, or by two (2) or three (3) wire proximity switches. Both models feature panel mounting with remote reset and selectable front panel reset.

Capable of count speeds up to 5 kHz, the units have a liquid crystal display with 0.3" high figures and leading zero blanking. The counters are extremely compact and require less than 2" back panel depth and 1" H x 2" L front panel space. Units are supplied with two (2) each, size N, replaceable batteries that are rated to provide power for four (4) years. Simple installation and wiring are accomplished with easily accessible screw terminals and wiring instructions permanently printed on the counters.



**NEMA 4  
SPECIFICATIONS**

**DESIGNMATE SERIES**

**Common Specifications**

**Display**

8 digit, LCD lead zero blanking .291" (7mm) character height.

**Front Panel**

Meets NEMA 4.

**Case Material**

ABS (meets UL 94 V-0 flammability).

**Window Material**

PCV (meets UL 94 V-0 flammability).

**Weight**

1.76 oz. (50 grams).

**Terminations**

Screw Terminals 16 AWG max.

**Storage Temperature**

-13° to 155°F.

**Operating Temperature**

14° to 120°F.

**Power Source**

2 Replaceable Batteries.  
38109-200 Alkaline type LR1 (1.5 V) - 4 year life (Std.).

**Count**

**Model 44650-400 Only**

Low Speed: (Contact Closure Input).  
Maximum Count Speed: 40 Hz with 50% duty cycle.  
Current Drain: 10 to 70  $\mu$ A.  
Count advances on falling edge of count signals.

High Speed: (Voltage source Input).  
Maximum Count Speed: 5 KHz with 50% duty cycle.  
Low State: 0 to 0.7 VDC.  
High State: 3 to 24 VDC.  
Impedance: 33 K ohms.  
Input Current: 120  $\mu$ A min. @ 3 VDC.  
2 mA max. @ 24 VDC.  
Count advances on rising edge of count signal.

Reset (Contact Closure):  
Current Drain: 10 to 70  $\mu$ A.  
Minimum Pulse Time: 12 mS.  
Reset occurs on falling edge of reset signal and overrides count until released. Front panel reset is enabled by connecting terminal 6 to common (terminals 2 or 5). Rear terminal reset is always enabled.

**Enable and Reset Inputs: (Contact Closure)**

**Model 44660-400**

Minimum Open Time: 12 mS.  
Minimum Closed Time: 12 mS.  
Current Drain: 10 to 70  $\mu$ A.

Elapsed time is accumulated when the enable input is connected to common. Reset occurs when the reset button is pressed or the external reset input is connected to common. Reset overrides the enable input. Front panel reset is enabled by connecting terminal 6 to common (terminals 2 or 5). Rear terminal reset is always enabled.

**Model 44655-400**

The Voltage Conversion Module (VCM) provides a convenient means of using higher voltage AC or DC input signals with the Design Mate totalizers and timers (series 44650 and 44660.) The input voltage range is 6 to 48 volts AC or DC and 100 to 240 volts AC. The output of the VCM is an optically isolated open collector NPN transistor compatible with the low speed count or timer enable input and the reset input of the totalizer or timer. The VCM is designed to snap mount to the rear of a totalizer or timer (44650-400 or 44660-400) or another VCM.

**NOTE:** The VCM is compatible only with the Design Mate totalizer 44650-400 and 44660-400. It will not function properly with other Durant Products.

**ORDERING INFORMATION**

Model Number	Product Description
44650-400	Totalizer
44655-400	Voltage Conversion Module
44660-400	Elapsed Timer