DM8000 Series Field Programmable Digital Tachometer for Rate and Time

An economical microprocessor based digital tachometer system capable of measuring shaft speeds as low as 1 RPM. An on-board microcomputer coupled with sophisticated internal software, quartz crystal controlled reference frequency, and display up-dating on every pulse or every .5 seconds (whichever is longer), permits accuracy of ± 0.04%, even if the shaft is uneven.

The Dart DM8000 Series is field programmable for desired user measured units: RPM, FPM, GPM, Process Time, or other engineering units. Large 1/2 inch 4-digit LED display numbers allow viewing under the most adverse conditions.

Isolated high and low alarm output - separately setable, and optional RS 232 output for display data, permits local or remote annunciation or process monitoring.

Designed to use a variety of inputs, including the Dart patented Hall-Effect solid state PU-E pick-up, the system delivers trouble free operation at a low cost.

The DM8000 Series self-contained power supply uses 120 VAC, 50/60 Hz. power source, while the -5 option uses 240 VAC, 50/60 Hz. input. The attractive panel mount unit, with rugged aluminum housing, removable faceplate, and rear mounting screw terminals, is compact and easy to install.

(Specifications on page 33.)

DM4000 Series Field Programmable Digital Tachometer for Rate and Time

A compact, accurate and economical rate and time meter for the OEM and user market. The Dart DM4000 Series is field programmable for user desired units: RPM, FPM, GPM, Process Time, or other engineering units. Large 1/2 inch 4-digit LED display allows viewing under the most adverse conditions.

Designed to use a variety of speed inputs, including the Dart patented Hall effect PU-E pick-up. The unit's self-contained power supply uses 120 VAC, 50/60 Hz. power source, while the -5 option operates from 240 VAC, 50/60 Hz. input. The system delivers accurate (± one count) trouble free operation.

The attractive, panel mounted unit, with rugged aluminum housing, removable faceplate, and rear mounted barrier type terminal strip, allow for easy installation.

(Specifications on page 34.)

DM8000 STANDARD FEATURES

- Microprocessor based, field programmable to directly display RPM, FPM, GPM, Process Time, or other engineering units
- Uses a variety of Pick-up inputs:
  - -Dart PU-E
  - -Hall-Effect
  - -Photoelectric
  - -Magnetic (optional)
  - -Any TTL NPN open collector
- Capable of measuring shaft speeds as low as 1 RPM
- 1 to 30,000 input pulses per minute
- Resolution from .01 RPM
- Accuracy ± .04%
- Solid state relay output indicates when preset range is exceeded (normal open)
- Screw type barrier terminal strip
- Compact 1/8DIN sturdy aluminum housing for panel mount
- Large four digit 1/2″ LED displays
- GE Lexan membrane covers faceplate - NEMA 12
- Self-contained power supply for AC incoming line and transducer +5 VDC, 50mA output)
- Non-volatile memory retains programming instructions
- Programmable illuminated decimal points (rate) or colon (time)

DM8000 SELECTION GUIDE

MODEL	INPUT	DISPLAY UNITS	STD. SPEED RANGE
DM8000	120 VAC	Rate or Time	Field Programmable*
DM8000-5	240 VAC	Rate or Time	Field Programmable*

Requires Dart PU-E or other pick-up.
* Shipped set for 0 - 9999 RPM with one pulse per revolution.

DM8000 OPERATING SPECIFICATIONS

Temperature ..... -10° to +45° C.
AC Input Voltage ..... ±10% Rated Line Voltage
Input Frequency ..... 50/60 Hz.
Input pulse rate ..... 1 to 30,000 input pulses per minute
Resolution ..... from 0.01 RPM
Accuracy ..... ± 0.04% display up-date every pulse or 0.5 seconds, whichever is longer.
Isolated high/low alarm output ..... 5 Amp 240 VAC max. setable range: 0 to 9999
Transducer signal input ..... 0-5 to 0-24 VDC square wave

DM8000 OPTION DESCRIPTION

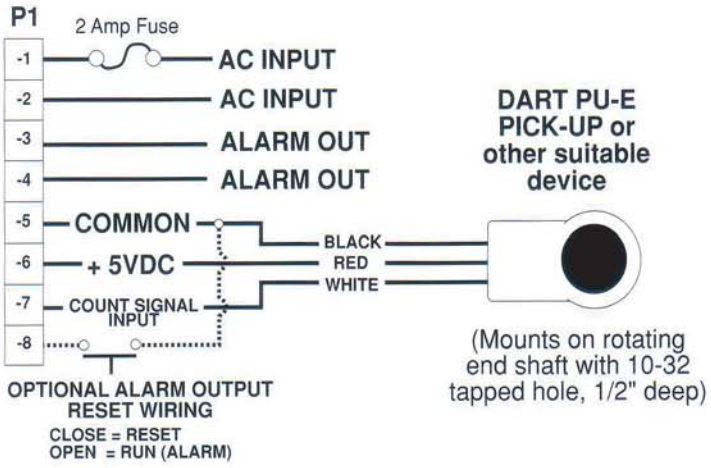
OPTION	SUFFIX
RS232 Serial Output for display data	-2*
Divide by 100 option board for magnetic pick-up	3*

Other options are available, please consult factory for your requirement.
* Field installable

DM8000 DIMENSIONAL SPECIFICATIONS

MODEL	WIDTH	HEIGHT	DEPTH
English (inches)			
Housing	3.62	1.66	4.13
Lens	4.42	2.25	0.25
Metric (centimeters)			
Housing	9.19	4.22	10.48
Lens	11.27	5.71	00.64

DM8000 HOOK-UP

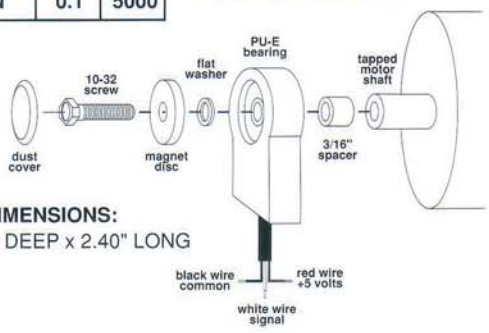


DART PU-E SELECTION AND MOUNTING

MODEL	PULSES PER REV	MIN. RPM	MAX. RPM
PU-2E	ONE	1.0	5000
PU-20E	TEN	0.1	5000

MOUNTING PROCEDURE

1. Tap motor shaft 10-32 x 1/2" deep.
2. Remove red cap on pick-up screw.
3. Remove black dust cover from PU.
4. See illustration below.



PICK-UP DIMENSIONS:
1.60" WIDE x 0.93" DEEP x 2.40" LONG

DM4000 STANDARD FEATURES

- Field programmable to directly display RPM, FPM, GPM, Process Time, or other engineering units
- Uses a variety of Pick-up inputs;
  - -Dart PU-E
  - -Hall-Effect
  - -Photoelectric
  - -Magnetic
  - -Any TTL NPN open collector
- Input pulse rate: 125 minimum; 600,000 maximum pulses per minute
- Display accuracy ± one count
- Illuminated decimal points
- Screw type barrier terminal strip
- Compact 1/8DIN sturdy aluminum housing for panel mount
- Large four digit 1/2″ LED displays
- Self-contained power supply for transducer (+5 VDC, 75mA output)

DM4000 SELECTION GUIDE

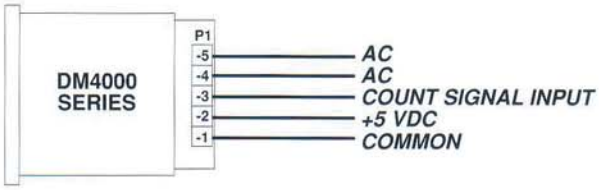
MODEL	INPUT	DISPLAY UNITS
DM4004	120 VAC	Rate
DM4004-5	240 VAC	Rate
DM4005	120 VAC	Time (in-process)

Requires Dart PU-E or other suitable pick-up.

DM4000 OPERATING CONDITIONS

Temperature ..... -10° to +45° C.
AC Input Voltage ..... ±10% Rated Line Voltage
Input Frequency ..... 50/60 Hz.
Transducer Signal Input ..... 0-5 VDC to 0-24 VDC or a magnetic sine wave not to exceed 24V peak-peak

DM4000 HOOK-UP



DM4000 DIMENSIONAL SPECIFICATIONS

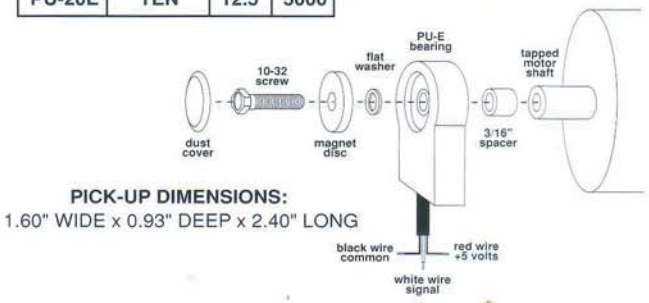
MODEL	WIDTH	HEIGHT	DEPTH
English (inches)			
Housing	3.62	1.66	4.13
Lens	4.42	2.25	0.25
Metric (centimeters)			
Housing	9.19	4.22	10.48
Lens	11.27	5.71	00.64

DART PU-E SELECTION AND MOUNTING

MODEL	PULSES PER REV	MIN. RPM	MAX. RPM
PU-2E	ONE	125	5000
PU-20E	TEN	12.5	5000

MOUNTING PROCEDURE

1. Tap motor shaft 10-32 x 1/2" deep.
2. Remove red cap on pick-up screw.
3. Remove black dust cover from PU.
4. See illustration below.



PICK-UP DIMENSIONS:
1.60" WIDE x 0.93" DEEP x 2.40" LONG

DM4004 PROGRAMMING PROCEDURE

REMOVE THE RED LENS. USE THE FORMULA BELOW:

$$MS = \frac{R \times 3600}{Ip}$$

Where:

M = Input Count Multiplier
S = Count time in one cycle per second increments
R = Ratio of: desired display reading at known RPM / known RPM
Ip = Input pulses per revolution

Notes: When 50 Hz. is used, substitute 3000 for 3600 in programming formula.
Up-date time range = .0167 to 4.25 seconds, "S" value dependant.
DM4004 up-date time = .0167 x S (in seconds).

Example: To read 400 ft/min at 1600RPM with Ip = 1

MS = 900
R = 400/1600 = .25
Let M = 10, then S = 90 (S2, S4, S5, S7 activated)