# prosense® Digital Panel Meters - DPM3-P Series 1/8 DIN

The ProSense DPM3-P series offers a simple, feature packed digital display for counter, chronometer, frequency, tachometer, rate, and pulse width modulated (PWM) applications. The DPM3-P has a 5-digit, 14mm character height, tri-color red, green or amber LED, accepts input from AC voltage, magnetic sensors, NPN/PNP sensors, NAMUR sensors, TTL/24V encoders, or switched contacts, and provides selectable sensor excitation voltages. Models are available with two SPDT relay outputs that can be set to activate on an increasing or decreasing input signal with hysteresis or time delay operation in tachometer, rate, and frequency modes as well as pulsed or latched operation in counter and chronometer modes. Additionally the display color can be set to change on relay operation. Models are also available with a 4-20mA analog output. The meter is powered from an external AC or DC power supply. The 1/8 DIN housing is easy to install in a panel and the meter face has an IP65 rating. Configuration parameters can be totally or selectively locked out to prevent unauthorized or accidental changes to the meter's operation. Other features include memory and reset of minimum (valley) and maximum (peak) display values, start/stop in chronometer mode or stop in counter mode, and display brightness adjustment. ProSense digital panel meters are backed by a 3 year warranty.

## Features:

- 96 x 48mm 1/8 DIN
- 5 digit (-99999 to 99999) tri-color (red, green, amber) LED display
- Selectable decimal point
- Counter/Chronometer/Frequency/Tachometer (RPM/Rate/PWM) modes
  - AC voltage
  - Magnetic sensor
  - NAMUR sensor
  - NPN/PNP sensor
  - TTL/24V encoder
  - Switched contact
- AC or DC powered
- Selectable sensor excitation voltage
- Optional 4-20mA analog output

- Optional (2) Form C SPDT
  - Activation on increasing or decreasing input signal
  - Hysteresis or time delay operation (frequency and tach modes)
  - Pulsed or latch operation (counter and chronometer modes)
  - Display color change on relay operation
- Total or selective configuration lock out
- Programmable functions include:
  - Minimum (valley) and maximum (peak) value memory
  - Minimum (valley) and maximum (peak) value reset
  - Start/Stop in chronometer mode or Stop in counter mode
- Display brightness adjustment
- 3 year warranty

| DPM3-P Series Panel Meters | | | |
|---|---|---|---|
| Model | Description | Weight (lbs) | Price |
| DPM3-P-H | ProSense digital panel meter, panel mount, 1/8 DIN, 14mm 5-digit tri-color (red, green, amber) LED, pulse or frequency input, 85-265 VAC/100-300 VDC operating voltage. | 0.6 | $173.00 |
| DPM3-P-A2R-H | ProSense digital panel meter, panel mount, 1/8 DIN, 14mm 5-digit tri-color (red, green, amber) LED, pulse or frequency input, 4-20 mA, (2) 8A SPDT relays output, 85-265 VAC/100-300 VDC operating voltage. | 0.71 | $217.00 |
| DPM3-P-L | ProSense digital panel meter, panel mount, 1/8 DIN, 14mm 5-digit tri-color (red, green, amber) LED, pulse or frequency input, 22-53 VAC/10.5-70 VDC operating voltage. | 0.59 | $173.00 |

**proSense®** ~~Digital Panel Meters -~~
~~DPM3-P Series 1/8 DIN~~

| Technical Specifications | | |
|---|---|---|
| **Tachometer/Frequency Mode** | Maximum Frequency | 20kHz (without totalizer)<br>8kHz (with totalizer)<br>1kHz (duty) |
| | Minimum Frequency | 0.01 Hz |
| **Counter Mode** | Without totalizer | 11kHz |
| | With totalizer | 9kHz |
| **AC voltage Input** | Range | 10 to 300 VAC |
| **Magnetic Sensor Input** | Sensitivity | Vin (AC) > 60mVpp for f < 1kHz<br>> 120 mVpp for f > 1kHz |
| **NAMUR* Sensor Input** | $R_C$ | 3.3 kΩ |
| | $I_{ON}$ | < 1mA DC |
| | $I_{OFF}$ | > 3mA DC |
| **NPN/PNP Sensors Input** | $R_C$ | 3.3 kΩ |
| | Logic level "0" | < 2.4 VDC |
| | Logic level "1" | > 2.6 VDC |
| **TTL/24V Encoder Input** | Logic level "0" | < 2.4 VDC |
| | Logic level "1" | > 2.6 VDC |
| **Switched Contact Input** | $V_C$ | 5V (internal) |
| | $R_C$ | 3.9 kΩ |
| | $F_C$ (auto selection of input type prog.) | 20Hz with duty cycle 50%<br>10Hz with duty cycle 30% |
| **Accuracy at 23ºC ±5ºC** | Frequency / Tachometer | 0.005% |
| | Chronometer | 0.01% |
| | Temperature coefficient | 50ppm / ºC |
| | Warm-up time | 5 minutes |
| **Power Supply and Fuses** | -H High Voltage: | 85-265 VAC 50/60 Hz or 100-300 VDC,<br>(recommended fusing 0.5A/250V, 5mm x 20mm glass miniature or DIN 41661 equivalent) |
| | -L Low Voltage: | 22-53 VAC 50/60 Hz or 10.5 - 70 VDC,<br>(recommended fusing 2A/250V, 5mm x 20mm glass miniature or DIN 41661 equivalent) |
| **Power Consumption** | | 5W, 8W for -A2R |
| **Sensor Excitations** | | 8.2 VDC @ 30mA ; 20VDC (not stabilized) @ 100mA |
| **Display** | Type | 5 LED digits 14mm (0.55") (Programmable color Red, Green, Amber) |
| | LEDs | 8, functions and outputs status |
| | Decimal Point | Programmable |
| | Positive overflow indication | OvEr |
| | Negative overflow indication | -OvEr |
| | Counter display limits | Process -99999 to 99999 |
| | Totalizer | -9999999 to 99999999 |
| | Chronometer ranges | 4, from 999.99s to 99999h |
| | Frequency ranges | 0.01 Hz to 20kHz/10kHz(totalizer) |
| | Tachometer range | 0 to 99999(rpm), programmable (rate) |
| | Scale factor | Counter/Tach, programmable from 0.0001 to 99999 |
| | Display update rate | Counter/Chronometer, 100ms<br>Frequency/Tachometer, programmable 0.1 to 9.9 s |
| **Relays -A2R Only** | Maximum switching current (resistive load) | 8A |
| | Maximum switching power | 2000VA / 192W |
| | Maximum switching voltage | 400VAC / 125VDC |
| | Contact rating | 8A @ 250VAC / 24VDC |
| | Contact resistance | ≤ 100mΩ at 6 VDC @ 1A |
| | Contact type | SPDT |
| | Operate time | ≤ 10ms |

* For more information about NAMUR sensors see www.namur.net.

# prosense® Digital Panel Meters - DPM3-P Series 1/8 DIN

## Technical Specifications Continued

| | | |
|---|---|---|
| **Analog Output -A2R Only** | Type | 4-20 mA Sourcing |
| | Maximum load | ≤ 500Ω |
| | Resolution | 13 bits |
| | Accuracy | 0.1%FS ±1 bit |
| | Response time | 50ms |
| | Thermal drift | 0.5µA / ℃ |
| **Environmental Conditions** | Operating temperature | -10℃ to +60℃ (14℉ to 140℉) |
| | Storage temperature | -25℃ to +80℃ (-13℉ to 176℉) |
| | Relative humidity (non-condensing) | < 95% @ 40℃ (104℉) |
| | Maximum altitude | 2000m |
| | Frontal protection degree | IP65 |
| **Environmental Air** | | No corrosive gases permitted |
| **Agency Certifications** | | CE |

## Wiring

*Note: For additional wiring information download complete manual from www.AutomationDirect.com*

**CN1**
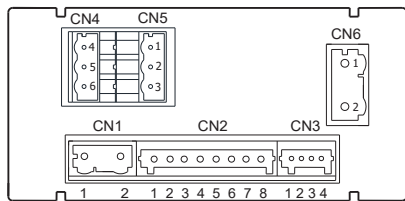
| | AC Supply | | DC Supply |
|---|---|---|---|
| 1 | Line | 1 | VDC |
| 2 | Neutral | 2 | VDC |

*Polarity insensitive for DC power*

**CN3 Logic Functions**

| 1 | Common |
|---|---|
| 2 | Input 1 |
| 3 | Input 2 |
| 4 | Input 3 |

**CN2 Electrical Inputs**

| 1 | Not used |
|---|---|
| 2 | (+) 20V Excitation |
| 3 | (+) 8.2 V Excitation for NAMUR sensors |
| 4 | (-) Common excitation / signal |
| 5 | Signal B input |
| 6 | Signal A input |
| 7 | Not used |
| 8 | High voltage input (300VAC max.) |

**CN6 Analog Output**

| 1 | (-) 4-20mA |
|---|---|
| 2 | (+) 4-20mA |

**2 SPDT Relays (-A2R)**

**CN4 Relay 2**

| 4 | NO2 |
|---|---|
| 5 | CM2 |
| 6 | NC2 |

**CN5 Relay 1**

| 1 | NO1 |
|---|---|
| 2 | CM1 |
| 3 | NC1 |

*NO: Normally Open, CM: Common, NC: Normally Closed*



## Terminals

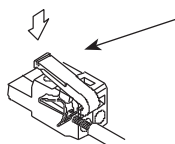| Connector | CN1 | CN2 | CN3 | CN4 & CN5 | CN6 |
|---|---|---|---|---|---|
| Wire cross section | 0.08 to 2.5mm² (28 to 12 AWG) | 0.08 to 0.5mm² (28 to 20 AWG) | 0.08 to 0.5mm² (28 to 20 AWG) | 0.08 to 2.5mm² (28 to 12 AWG) | 0.08 to 2.5mm² (28 to 12 AWG) |
| Strip length | 8 to 9mm | 5 to 6mm | 5 to 6mm | 8 to 9mm | 8 to 9mm |
| Manufacturer | Wago 231-202/026-000 | Wago 733-108 | Wago 733-104 | Wago 231-303/026-000 | Wago 231-302/026-000 |
| Cage clamp connection | Insertion tool or screwdriver with 0.5 mm x 3.0 mm blade | Insertion tool or screwdriver with 0.3 mm x 1.8 mm blade | Insertion tool or screwdriver with 0.3 mm x 1.8 mm blade | Insertion tool or screwdriver with 0.5 mm x 3.0 mm blade | Insertion tool or screwdriver with 0.5 mm x 3.0 mm blade |

### CN2 and CN3 Terminals



*Insertion Tool (included with meter) Insert wires into the proper terminal while using the insertion tool to open the clip inside the connector. Release the insertion tool to fix wire to the terminal.*

### CN1, CN4, CN5 and CN6 Terminals



*Insertion Tool (included with meter) Insert wires into the proper terminal while using the insertion tool to open the clip inside the connector. Release the insertion tool to fix wire to the terminal.*
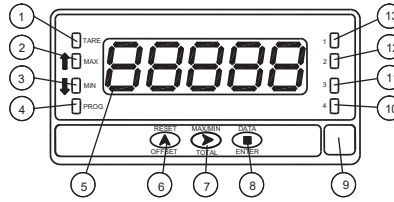
## Input Wiring Diagrams

MAGNETIC SENSOR


SWITCHED CONTACT


NAMUR SENSOR


ENCODER


PNP/ NPN SENSOR


10- 300 Vac    (only 1 input)
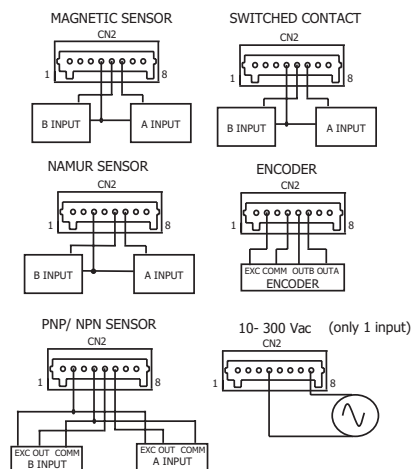

**WARNING!:**
**Never connect a dangerous voltage to PIN 4 of CN2 (input common).**

# prosense® Digital Panel Meters - DPM3-P Series 1/8 DIN

## Programming Panel



| # | Description | Run Mode | Programming Mode |
|---|---|---|---|
| | | **Programming Panel** | |
| 1 | TARE | Indicates that there is an offset value programmed | --- |
| 2 | MAX | Solid indicates rotation sense or count polarity; Blinking indicates visualization of a Max value | Indicates rotation sense (polarity) |
| 3 | MIN | Solid indicates rotation sense or count polarity; Blinking indicates visualization of a Min value | Indicates rotation sense (polarity) |
| 4 | PROG | --- | Indicates programming mode |
| 5 | DISPLAY | Displays the input variable | Displays programming parameters |
| 6 | RESET/OFFSET KEY | In Tachometer mode reset of MAX/ MIN/ TOTAL (if present on display)<br>In Counter mode Reset / OFFSET (starts measuring) | - To increase blinking digit value<br>- Direct access to Setpoints value |
| 7 | MAX-MIN/TOTAL KEY | 1st push allows TOTALIZER visualization (if activated) 2nd push allows Max visualization (only Tachometer) 3rd push allows Min visualization (only Tachometer) Following push: back to current value. | To move blinking digit |
| 8 | ENTER KEY | To enter programming menu or to visualize parameters if programming is locked | - To step forward in programming menu<br>- To validate programmed values<br>- To exit programming menu |
| 9 | Free space for units label | --- | |
| 10 | LED Output 4 | --- | --- |
| 11 | LED Output 3 | --- | --- |
| 12 | LED Output 2 | Activation Output 2 | Programming output 2 |
| 13 | LED Output 1 | Activation Output 1 | Programming output 1 |

## Dimensions
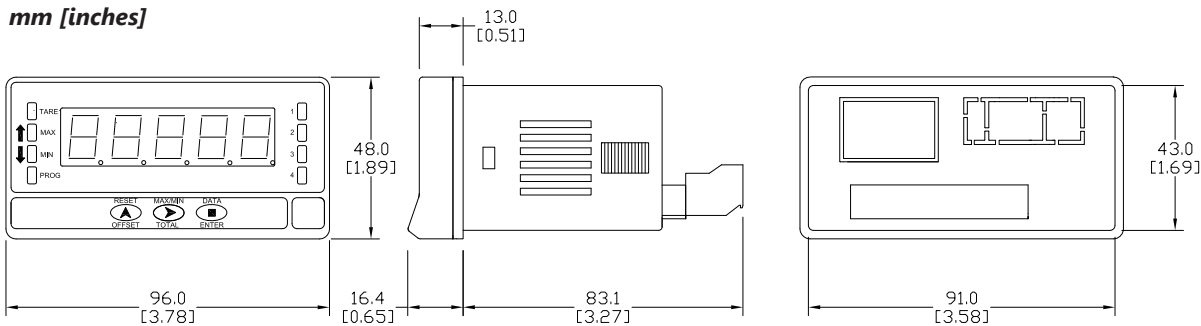
*mm [inches]*



| **Installation** | |
|---|---|
| *Dimensions* | 96 x 48 x 60mm (1/8 DIN) |
| *Panel Cutout* | 92 x 45mm (Max. panel thickness 10mm) |
| *Case Material* | Polycarbonate UL 94 V-0 |

See our website www.AutomationDirect.com for complete Engineering drawings.

## Insert



*Scan or click the above QR code to be taken to the DPM2-P Series Quick Start Guide*

## Manual



*Scan or click the above QR code to be taken to the DPM2-P Series Manual*

# ProSense® Digital Panel Meters DPM Series


*Type DPM1-A-LP*


*Type DPM1-A-T*


*Type DPM1-A-2R*


*Type DPM2*


*Type DPM2L*


*Type DPM3*

## Description

The ProSense DPM family of digital panel meters includes both 1/32 DIN and 1/8 DIN meter sizes with simple menu-driven pushbutton configuration. A wide variety of input signals can be accepted for process, temperature, load cell, voltage, current, pulse, frequency, and other applications. Available output options include alarm relays, analog signal retransmission, and sensor excitation voltage. Backed by a 3-year warranty, ProSense digital panel meters offer outstanding features and performance at an incredible price point.

*Click on the thumbnail or go to https://www.automationdirect.com/VID-PS-0007 for a short video on Digital Panel Meters*



### DPM Series Digital Panel Meters Process Input Selection Guide

| Model | Size | Display | Inputs | Outputs | Power | Price |
|---|---|---|---|---|---|---|
| DPM1-A-LP | 1/32 DIN | 10mm, Red LED*, -1999 to 9999 Selectable decimal point | 4-20mA | None | Loop Powered | $104.00 |
| DPM1-A-H | | | ±20mA, ±100mV ±10V, ±20V ±200V | | 85-265 VAC, 50/60 Hz 100-300 VDC | $119.00 |
| DPM1-A-L | | | | | 21-53 VAC, 50/60 Hz 10.5-70 VDC | $119.00 |
| DPM1-T-H | | 10mm, Red LED, -1999 to 9999 | RTD Pt100 (3-wire) TC Type J, K, T or N | | 85-265 VAC, 50/60 Hz 100-300 VDC | $119.00 |
| DPM1-T-L | | | | | 21-53 VAC, 50/60 Hz 10.5-70 VDC | $119.00 |
| DPM1-A-2R-H | | 8mm, Red LED, -1999 to 9999 Selectable decimal point | ±20mA, ±100mV ±10V, ±60V | 2 Relays Form A SPST Normally Open | 85-265 VAC, 50/60 Hz 100-300 VDC | $132.00 |
| DPM1-A-2R-L | | | | | 21-53VAC 50/60 Hz 10.5-70VDC | $132.00 |
| DPM1-A-A2R-H | | | | 2 Relays Form A SPST Normally Open 4-20mA | 85-265 VAC, 50/60 Hz 100-300 VDC | $145.00 |
| DPM1-A-A2R-L | | | | | 21-53 VAC, 50/60 Hz 13.5-70 VDC | $145.00 |
| DPM2-AT-HL | 1/8 DIN | DPM2: 14mm, Red LED, -9999 to 9999 DPM2L: 20mm, Red LED, -1999 to 9999 Selectable decimal point | ±20mA, ±10V ±200V, 100-100k Ohm potentiometer, 1k-50k Ohm resistance, RTD Pt100 (3-wire) RTD Pt1000 (4-wire) TC Type J, K, T or N | None | 20-265 VAC, 50/60 Hz 11-265 VDC | $139.00 |
| DPM2L-AT-HL | | | | | | $149.00 |
| DPM2-AT-2R-HL | | | | 2 Relays Form C SPDT | | $152.00 |
| DPM2L-AT-2R-HL | | | | | | $164.00 |
| DPM3-AT-H | | 14mm, Red, Green, Amber LED -19999 to 39999 Selectable decimal point | ±20mA, ±10V RTD Pt100 (3-wire) TC Type J, K, T or N Load Cell ±15mV, ±30mV, ±150mV Potentiometer | None | 85-265 VAC, 50/60Hz 100-300 VDC | $173.00 |
| DPM3-AT-2R-H | | | | 2 Relays Form C SPDT | | $195.00 |
| DPM3-AT-4R-H | | | | 4 Relays Form A Normally Open with shared common | | $210.00 |
| DPM3-AT-A-H | | | | 4-20mA | | $195.00 |
| DPM3-AT-A2R-H | | | | 2 Relays Form C SPDT 4-20mA | | $217.00 |
| DPM3-AT-L | | | | None | 22-53 VAC, 50/60 Hz 10.5-70 VDC | $173.00 |
| DPM3-AT-2R-L | | | | 2 Relays Form C SPDT | | $195.00 |
| DPM3-AT-4R-L | | | | 4 Relays Form A Normally Open with shared common | | $210.00 |
| DPM3-AT-A-L | | | | 4-20mA | | $195.00 |
| DPM3-AT-A2R-L | | | | 2 Relays Form C SPDT 4-20mA | | $217.00 |

*\* Illumination based on available loop current and will not be as bright as the powered Digital Panel Meters*

# prosense® Digital Panel Meters DPM Series

## DPM Series Digital Panel Meters Electrical Input Selection Guide

| Model | Size | Display | Inputs | Outputs | Power | Price |
|-------|------|---------|--------|---------|-------|-------|
| DPM1-E-H | 1/32 DIN | 10mm, Red LED, -1999 to 9999 Selectable decimal point | 100 / 600 VAC or VDC 1A / 5A AC or DC | None | 85-265 VAC, 50/60 Hz 100-300 VDC | $119.00 |
| DPM1-E-L | | | | | 21-53 VAC, 50/60Hz 10.5-70 VDC | $119.00 |
| DPM2-E-HL | 1/8 DIN | 14mm, Red LED, -9999 to 9999 | 600 / 200 / 20 VAC or VDC 1A / 5A / shunt 60mV / shunt 100mV AC or DC | None | 20-265 VAC, 50/60 Hz 11-265 VDC | $139.00 |
| DPM2-E-2R-HL | | | | 2 Relays Form C SPDT | | $152.00 |
| DPM3-E-H | | 14mm, Red, Green, Amber LED -19999 to 19999 Selectable decimal point | 600 / 200 / 20 / 2 VAC True RMS or VDC 1A / 5A / shunt 50mV / shunt 60mV / shunt 100mV AC True RMS or DC | None | 85-265 VAC 100-300 VDC | $202.00 |
| DPM3-E-A2R-H | | | | 2 Relays Form C SPDT 4-20mA | | $239.00 |
| DPM3-E-L | | | | None | 22-53 VAC 10.5-70 VDC | $202.00 |
| DPM3-E-A2R-L | | | | 2 Relays Form C SPDT 4-20mA | | $239.00 |

## DPM Series Digital Panel Meters Pulse, Frequency Input Selection Guide

| Model | Size | Display | Inputs | Outputs | Power | Price |
|-------|------|---------|--------|---------|-------|-------|
| DPM1-P-H | 1/32 DIN | 10mm, Red LED, 0 to 9999 Selectable decimal point | 7kHz (tachometer rpm or rate modes) 9999Hz (frequency meter mode) | None | 85-265 VAC 100-300 VDC | $119.00 |
| DPM1-P-L | | | | | 1-53 VAC 10.5-70 VDC | $119.00 |
| DPM1-P-A2R-H | | 8mm, Red LED, 0 to 9999 Selectable decimal point | 12kHz (tachometer rpm or rate modes) 9999Hz (frequency mode) 100Hz (duty/PWM mode) | 2 Relays Form A SPST Normally Open 4-20mA | 85-265 VAC 100-300 VDC | $145.00 |
| DPM1-P-A2R-L | | | | | 21-53 VAC 13.5-70 VDC | $145.00 |
| DPM2-P-HL | 1/8 DIN | 14mm, Red LED, 0 to 9999, 0 to 999999 Totalizer Selectable decimal point | 7.5 kHz (counter mode) 25kHz (tachometer rpm or rate modes) | None | 20-265 VAC 11-265 VDC | $139.00 |
| DPM2-P-2R-HL | | | | 2 Relays Form C SPDT 4-20mA | | $152.00 |
| DPM3-P-H | | 14mm Red, Green, Amber LED -99999 to 99999, -9999999 to 99999999 Totalizer Programmable decimal point | 19kHz (without totalizer) 9.9 kHz (with totalizer) | None | 85-265 VAC 100-300 VDC | $173.00 |
| DPM3-P-A2R-H | | | | 2 Relays Form C SPDT 4-20mA | | $217.00 |
| DPM3-P-L | | | | None | 22-53 VAC 10.5-70 VDC | $173.00 |
| DPM3-P-A2R-L | | | | 2 Relays Form C SPDT 4-20mA | | $217.00 |

# prosense® Digital Panel Meter Accessories
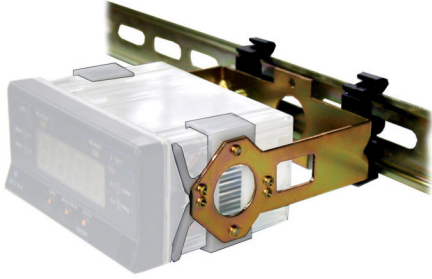


| Panel Meter Accessories | | | |
|---|---|---|---|
| **Model** | **Description** | **Weight (lbs)** | **Price** |
| **DPM-BKT1** | ProSense panel mount bracket, for use with DPM2 and DPM3 series 1/8 DIN digital panel meters. Hardware included. | 0.3 | $22.50 |
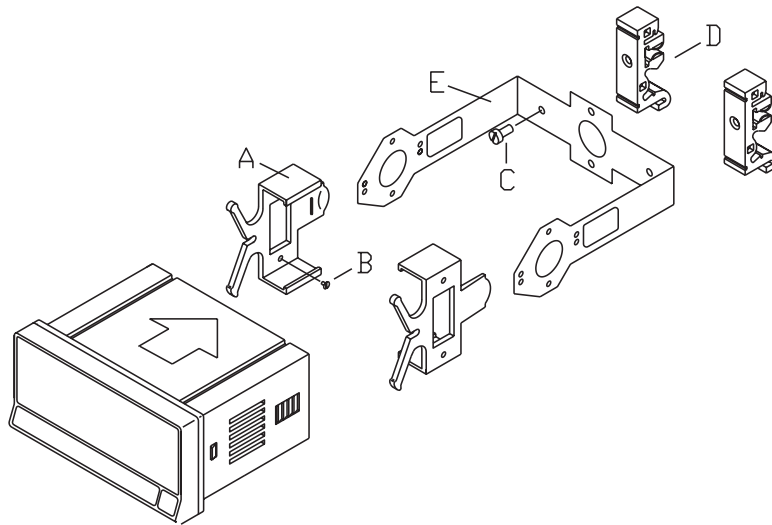


The DPM-BKT1 kit includes:

A. 2 mounting clips.

B. 4 screws M3 x 6 DIN 963 to attach the clips to the inside of the arms of part E.

C. 2 screws M4 x 8 DIN 84 to attach DIN rail clips to part E.

D. 2 DIN rail clips (DIN rail EN50022 or EN50035).

E. 1 metal bracket.

(Panel Meter not included)

## Insert



*Scan or click the above QR code to be taken to the DPM-BKT1 Insert*

*See our website www.AutomationDirect.com for complete Engineering drawings.*