

Data Sheet

DM61 Panel Meter

FEATURES

- Isolated 24Vdc power supply
- NEMA 4X front face
- Dual line 6 digit display
- On-board USB port for programming with a PC
- Two or four relay outputs
- Isolated analog output

TYPICAL USES

- Tank Level Monitoring & Control
- Pump and Flow Control
- Remote Pressure Indication



DM61 Panel Meter



PERFORMANCE SPECIFICATIONS

| | |
|-------------------------|--|
| Sensor Inputs: | One Field selectable: 0-20, 4-20 mA, ± 10 Vdc (0-5, 1-5, 0-10 V), Modbus® PV (slave) |
| Display: | Two lines of 6 Digits Display reads -99999 to 999999 Red LEDs with leading 0 blanking |
| Character Height: | Upper line: 0.60" (15mm) Lower line: 0.46" (12mm) |
| Intensity (Adjustable): | 8 settings |
| Update Rate: | 200ms |
| Accuracy: | $\pm 0.03\%$ of calibrated span ± 1 count Square root & programmable exponent accuracy range: 10-100% of calibrated span |
| Programming Methods: | Four front panel buttons, digital input, PC and MeterView Pro software, Modbus® registers |
| Noise Filter: | Selectable from 2 to 199 (0 disables filter) |
| Bypass: | Selectable from 0.1 to 99.9% of calibrated span |
| Max./Min. (PV) Display: | Stored until reset or power cycled to the meter |
| Password Protection: | 3-level programmable passwords |
| Non-Volatile Memory: | Programmed settings stored for 10 years (Min.) |

ENVIRONMENTAL SPECIFICATIONS

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|---------------------------|--|
| Temperature Coefficients: | 0.005% of calibrated span/°C (Max.) from 0/65°F (32/149°C) ambient 0.01% of calibrated span/°C (Max.) from -40/32°F (-40/0°C) ambient |
| Temperature Limits: | Operating -40°F to 149°F (-40°C to 65°C) Storage -40°F to 185°F (-40°C to 85°C) |
| Relative Humidity: | 0-90% R.H. non-condensing |

KEY BENEFITS

- Programmable display and function keys
- User-defined peak / valley (Min. / Max.) indication
- Alarm status indicator
- 3 tier password protection
- 3 year warranty

ELECTRICAL SPECIFICATIONS

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|------------------------------------|---|
| Power Options: | 85-265 Vac 50/60Hz, 90-265 Vdc 20 W (Max.) or jumper selectable 12/24 Vdc $\pm 10\%$, 15 W (Max.) Powered over USB for configuration only |
| Normal Mode Rejection: | >60 dB at 50/60Hz |
| Isolation: | 4 kV input/output-to-power line 500 V input-to-output or output-to-P+ supply |
| External Fuse (Required): | UL Recognized, 5 Amp (Max.), slow blow; up to 6 meters may share one 5 Amp fuse |
| Isolated Transmitter Power Supply: | Terminals P+ & P-: 24 VDC $\pm 10\%$ 12/24 VDC powered models selectable for 24, 10, or 5 VDC supply (internal jumper J4) rated @ 100 mA max, @ 50 mA max for 5 or 10 VDC supply. 85-265 VAC models rated @ 200 mA max, |

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PHYSICAL SPECIFICATIONS

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| Front Panel: | NEMA 4X, IP65 Capable when installed in a suitable enclosure |
| Mounting: | Panel (mounting brackets included) |
| Weight: | 9.5 oz |
| Electrical Connections: | Removable screw terminal blocks accept 12 to 22 AWG wire, RJ45 for external relays, digital I/O, and serial communication adapters |
| UL File Number: | UL & cUL Listed 508 Industrial Control Equipment |

NON-WETTED

Enclosure

½ DIN, high impact plastic, UL 94V-0, black

PROCESS INPUT

| | |
|----------------------------|--|
| Inputs: | Field selectable: 0-20, 4-20 mA, ±10 V (0-5, 1-5, 0-10 V), Modbus PV (Slave) |
| Single Input Conditioning: | Linear, square root, programmable exponent, or round horizontal tank volume calculation |
| Multi-Point Linearization: | 2 to 32 points |
| Programmable Exponent: | 1.0001 to 2.9999 |
| Low-Flow Cutoff: | 0-999999 (0 disables cutoff function) |
| Decimal Point: | 0 through 5 places user programmable |
| Calibration Range: | 4-20 mA: (Min.) span input 1 & input 2: 0.15 mA ±10 V: (Min.) span input 1 & 2: 0.10 V An Error message will appear if input 1 and input 2 signals are too close together |
| Input Impedance: | Voltage ranges: Greater than 500 ohms Current ranges: 50-100Ω (depending on resettable fuse impedance) |
| Input Overload: | Current input protected by resettable fuse, 30 Vdc Max. Fuse resets automatically after fault is removed |

RELAYS

| | |
|--------------------|--|
| Rating: | 2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external |
| Resistive Load: | 3 Amp @ 30 Vdc and 125/250 Vac |
| Inductive load: | ¼ HP (approx. 50 watts) @ 125/250 Vac |
| Deadband: | 0-100% span, user-defined/field programmable |
| High or Low Alarm: | Field selectable; user may program for high, low or disabling alarm function |

Relay Operation: Automatic (non-latching), latching (requires manual acknowledge), sampling (based on time), pump alternation control (2 to 8 relays), Off (disable unused relays and enable interlock feature, manual on/off control mode)

Relay Reset: User selectable via front panel buttons or digital inputs
 1. Automatic reset only (non-latching), when input passes the reset point
 2. Automatic + manual reset at any time (non-latching)
 3. Manual reset only, at any time (latching)
 4. Manual reset only after alarm condition has cleared (latching)
 Front panel button or digital input may be assigned to acknowledge relays programmed for manual reset

Time Delay: 0 to 999.9 seconds, on and off relay time delays. Programmable and independent for each relay

Fail-Safe Operation: Programmable and independent for each relay. Relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state

Auto Initialization: When power is applied to the meter, relays will reflect the state of the input to the meter

SERIAL COMMUNICATIONS

| | |
|--------------------------|---|
| Protocol: | Modbus® RTU |
| Meter Address/ Slave ID: | 1-247 |
| Baud Rate: | 300-19,200 bps |
| Transmit Time Delay: | Programmable between 0-199 msec or transmitter always on for RS-422 |
| Data: | 8 bit (1 start bit, 1 or 2 stop bits) |
| Parity: | Even, odd, or none with 1 or 2 stop bits |
| Byte-to-Byte Timeout: | 0.01-2.54 seconds |
| Turn Around Delay: | <2 msec (fixed) |

USB CONNECTION

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|-----------------|-------------------------------------|
| Compatibility: | USB 2.0 standard, compliant |
| Connector Type: | Micro-B receptacle |
| Cable: | USB A Male to Micro-B cable |
| Driver: | Microsoft® Windows® XP/Vista/7/8/10 |
| Power: | USB Port |

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ISOLATED 4-20 mA TRANSMITTER OUTPUT

| | | |
|------------------------------------|---|--|
| Output Source: | Process variable (PV), (Min.)/(Max.), set points 1-8, manual control setting, or Modbus® input | |
| Scaling Range: | 1.000 to 23.000 mA for any display range | |
| Calibration: | Factory calibrated: 4-20 mA | |
| Analog Output Programming: | 23 mA (Max.) for all parameters: over/under range, Min./Max. & break | |
| Accuracy: | ±0.1% span ±0.004 mA | |
| Temperature Drift: | 0.4 µA/°C (Max.) from 32/149°F (0/65°C) ambient 0.8 µA/°C (Max.) from -40/32°F (-40/0°C) ambient Analog output drift is separate from input drift | |
| Isolated Transmitter Power Supply: | Terminals I+ & R: 24 Vdc ±10% @ 40 mA (Max.) may be used to power the 4-20 mA output or other devices. Present on both AC & DC powered units | |
| External Loop Power Supply: | 35 Vdc (Max.) | |

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|-------------------------|------|-------|
| Output Loop Resistance: | Min. | Max. |
| Power Supply 24 Vdc | 10Ω | 700Ω |
| 35 Vdc (external) | 100Ω | 1200Ω |

DIGITAL I/O EXPANSION MODULE

| | | |
|-----------------------|---|--|
| Channels: | 4 digital inputs and 4 digital outputs per module | |
| System: | Up to 2 modules for a total of 8 inputs and 8 outputs | |
| Digital Input Logic: | High: 3 to 5 Vdc Low: 0 to 1.25 Vdc | |
| Digital Output Logic: | High: 3.1 to 3.3 Vdc Low: 0 to 0.4 Vdc | |
| Source Current: | 10 mA (Max.) | |
| Sink Current: | 1.5 mA (Max.) | |
| +5 V Terminal: | To be used as pull-up for digital inputs only 4-Relay Expansion Module | |

4-RELAY EXPANSION MODULE

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|----------------------------------|--|
| 4-Relay Expansion Module Relays: | (4) Form A (SPST) rated 3 A @ 30 Vdc and 125/250 Vac resistive load; 1/4 HP (approx. 50 watts) @ 125/250 Vac for inductive loads |
|----------------------------------|--|

ACCESSORIES

| Model: | Description: |
|------------|---|
| 101B224-01 | DIN rail mounting kit for two expansion modules |
| 101B224-03 | 4 SPST (Form A) Relays |
| 101B224-04 | 4 digital inputs & 4 digital outputs (2 may be connected) |
| 101B224-06 | RS-232 serial adapter |
| 101B224-07 | RS-485 serial adapter |
| 101B224-09 | USB to RS-232 non-isolated converter |
| 101B224-02 | Suppresser (snubber): 0.01 µF/470 Ω, 250 VAC |

ORDERING CODE

| Part Number: | Switches & Outputs: | Power Supply: |
|--------------|---------------------|---------------|
| DM61-A-AC | None | AC |
| DM61-C-AC | 2 Relays | AC |
| DM61-B-AC | 4-20 mA | AC |
| DM61-E-AC | 4 Relays | AC |
| DM61-D-AC | 2 Relays & 4-20 mA | AC |
| DM61-F-AC | 4 Relays & 4-20 mA | AC |
| DM61-A-DC | None | DC |
| DM61-C-DC | 2 Relays | DC |
| DM61-B-DC | 4-20 mA | DC |
| DM61-E-DC | 4 Relays | DC |
| DM61-D-DC | 2 Relays & 4-20 mA | DC |
| DM61-F-DC | 4 Relays & 4-20 mA | DC |

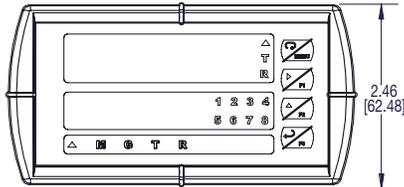
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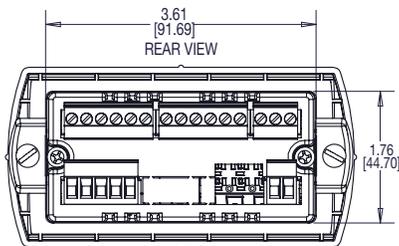
DIMENSIONS in [] are millimeters

For reference only, consult Ashcroft for specific dimensional drawings

Front View



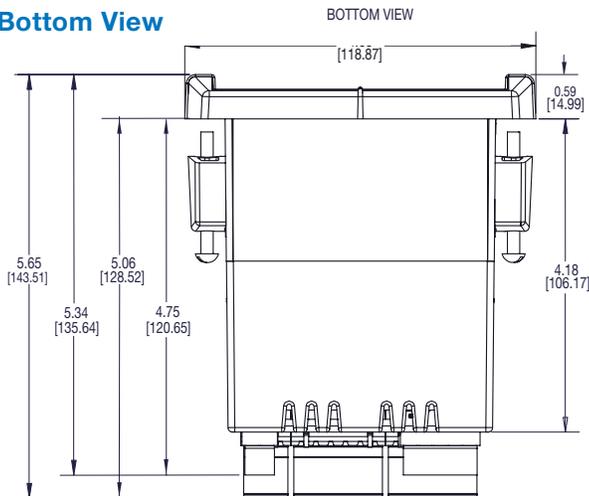
Rear View



Notes:

1. Mounting brackets are representative only, size and location may vary by installation
2. Internal electronics and mounting gasket not shown.
3. Recommended 1/8 DIN installation cutout size of 3.622" x 1.772" (92mm x 45mm) (W x H)
4. Panel thickness 0.04" - 0.25" (1.0mm-6.4mm)
5. Allow at least 6" behind panel for wiring
6. Recommended Min. panel thickness to maintain type 4X:
 0.06" (1.5mm) steel panel
 0.16" (4.1mm) plastic panel

Bottom View



Notes:

1. Panel cutout required: 1.772" x 3.622" (45mm x 92mm)
2. Panel thickness: 0.040 - 0.250" (1.0mm - 6.4mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152mm) behind the panel