

Model DM61 Digital Panel Meter



APPLICATIONS

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

FEATURES:

- Large Two Line 6-Digit Display
- Field Selectable Inputs
- Dual Scale Display Feature – Single Input
- Programmable Display and Function Keys
- User-Defined Peak / Valley (Min. / Max.) Indication
- Alarm Status Indicator
- On-Board Digital Input
- 3 Tier Password Protection

The Ashcroft DM61 digital panel meter is ideal for fulfilling application requirements where monitoring and/or data-logging is necessary. Incorporating user-friendly functions, it allows for quick set-up and programming. Its dual-line indication offers a distinct benefit for level measurement and the large panel display supplies high accuracy and precision due to an internal 24-bit A/D converter. This model also offers Modbus communication and expansion modules, thereby making it one of the most advanced meters available.

PRODUCT SPECIFICATIONS

Note: Except where noted all specifications apply to operation at +25°C (+77°F).

Inputs: Field selectable: 0-20, 4-20 mA, ±10 Vdc (0-5, 1-5, 0-10 V), Modbus PV (slave)

Display: 2 lines of 6 Digits; display reads –99999 to 999999, red LEDs with leading 0 blanking

Character Height: upper line: 0.60" (15 mm) / lower line: 0.46" (12 mm)

Intensity (Adjustable): 8 settings

Update Rate: 200 msec

Function Key Assignment: Programmable upper and lower displays may be assigned to PV1, PV2, PCT (%), max/min, alternate max and min, setpoints, units (lower display only), and Modbus input.

Accuracy: ±0.03% of calibrated span ±1 count, square root & programmable exponent accuracy range: 10-100% of calibrated span

Programming Methods: Panel buttons, digital input, PC and DPM ProView software, Modbus registers, or cloning with Copy function.

Noise filter: Selectable from 2 to 199 (0 disables filter)

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 for allowing / restricting user access.

LEVEL-I. Allows use of function keys and digital inputs.

LEVEL-II. Provide access to function keys, digital inputs and editing set/reset points.

LEVEL-III. Prohibits all programming, function keys and digital inputs.

Non-Volatile Memory: Programmed settings stored for 10 years (min.) in the event power is lost.

ELECTRICAL SPECIFICATIONS

Power Options: 85-265 Vac 50/60 Hz, 90-265 Vdc 20 W max or jumper selectable 12/24 Vdc ±10%, 15W (max.)

Fuse: Required external fuse: UL Recognized, 5 Amp (max.), slow blow; up to 6 meters may share one 5 Amp fuse

Isolated Transmitter Power Supply: Terminals P+ & mp; P-: 24 Vdc ±5% @ 200 mA max (standard), (12/24 VDC powered models rated @ 100 mA max); 5 or 10 Vdc @ 50 mA max, selectable with internal jumper J4.

Normal Mode Rejection: Greater than 60 dB at 50/60 Hz

Isolation: 4 kV input/output-to-power line. 500 V input-to-output or output-to-P+ supply

Overvoltage Category: Installation Overvoltage Category II: Local level with smaller transient overvoltages than Installation Overvoltage Category III.

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature Range: –40/65°C (–40/149°F)

Storage Temperature Range: –40 to 85°C (–40/185°F)

Relative Humidity: 0-90% R.H. non-condensing.

Temperature Coefficients: 0.005% of calibrated span/°C max from 0/65°C (32/149°C) ambient, 0.01% of calibrated span/°C max from –40/0°C (–40/32°F) ambient

PHYSICAL SPECIFICATIONS

Front Panel: NEMA 4X, IP65

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

Electrical Connections: Removable screw terminal blocks accept 12 to 22 AWG wire, RJ45 for external relays, digital I/O, and serial communication adapters

Mounting: Panel (mounting brackets included)

Weight: 9.5 oz

UL File Number: UL & c-UL Listed. E160849; 508 Industrial Control Equipment

PROCESS INPUT

Math Function: linear, square root, programmable exponent, or round horizontal tank volume calculation

Multi-Point Linearization:

2 to 32 points for PV or PV1

2 to 8 points for PV2 (Dual-Scale Level feature)

Programmable Exponent: 1.0001 to 2.9999

Low-Flow Cutoff: 0-999999 (0 disables cutoff function)

Decimal Point: 0 through 5 places

Calibration Range: 4-20 mA: minimum span input 1 & input 2: 0.15 mA. ±10 V: minimum 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 1 MΩ. Current ranges: 50-100Ω (depending on resettable fuse impedance)

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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: 1/4 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)

Note: 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

Note: 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: Less than 2 msec (fixed)

Note: Refer to the DP61 Modbus Register Tables for details

ISOLATED 4-20 mA TRANSMITTER OUTPUT

Output Source: Process variable (PV), max/min, 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: 4.000 to 20.000 = 4-20 mA output

Analog Output Programming: 23.000 mA (max.) for all parameters: over/under range, max/min & break

Accuracy: ±0.1% Span ±0.004 mA

Temperature Drift:

0.4 µA/°C (max.) from 0/65°C (32/149°F) ambient
0.8 µA/°C (max.) from -40/0°C (-40/32°F) ambient

Note: 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 maximum

Output Loop Resistance:

Power Supply	Min.	Max.
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 maximum

Sink Current: 1.5 mA minimum

+5 V Terminal: To be used as pull-up for digital inputs only

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

HOW TO ORDER

DM61

MODEL
DM61-Single Output
Digital Panel Meter

A

OUTPUT OPTIONS
A- None
B- 4-20mA Output
C- 2 Relays
D 2 Relays & 20mA Output
E- 4 Relays
F- 4 Relays & 20mA Output

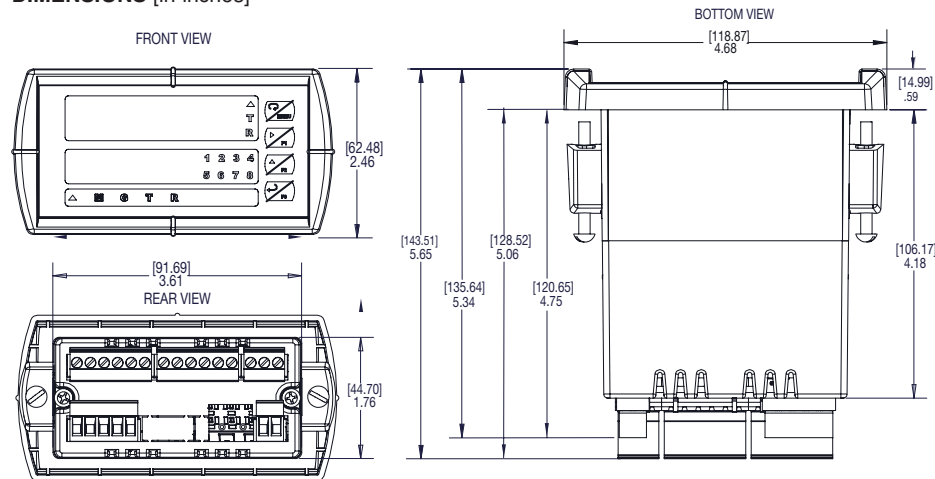
DC

POWER SUPPLY
AC- 85-265 Vac
DC- 12-24 Vdc

Accessory Part#

Accessory Part#	Description
101B224-01	Din Rail Mounting for Two Modules (pertains to 101B224-03, -04, -06, -07)
101B224-03	4 Relays Expansion Module
101B224-04	4 Digital Inputs & 4 Digital Outputs Module
101B224-05	Meter Copy Cable
101B224-08	DProM to USB Adapter (connects meter to PC & software)
101B224-06	RS-232 Serial Adapter
101B224-09	USB to RS-232 Non-Isolated Converter
101B224-07	RS-422/485 Serial Adapter
101B224-02	Suppressor (Snubber)

DIMENSIONS [in inches]



NOTES:

1. MOUNTING BRACKETS ARE REPRESENTATIVE ONLY, SIZE AND LOCATION MAY VARY BY INSTALLATION.
2. INTERNAL ELECTRONICS AND MOUNTING GASKET NOT SHOWN.
3. RECOMMENDED 1/6 DIN INSTALLATION CUTOUT SIZE OF 3.622" x 1.772" (92 mm x 45 mm) (W x H).
4. PANEL THICKNESS 0.04"-0.25" (1.0 mm-6.4 mm).
5. ALLOW AT LEAST 6" BEHIND PANEL FOR WIRING.
6. RECOMMENDED MINIMUM PANEL THICKNESS TO MAINTAIN TYPE 4X:
0.06" (1.5 mm) STEEL PANEL
0.16" (4.1 mm) PLASTIC PANEL

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" (152 mm) behind the panel.