FINE CONTROLS (UK) LTD

Fine Controls have been supplying process controls & instrumentation equipment since 1994, & now serves an ever expanding customer base, both in the UK & globally.

We offer a full range of valve & instrumentation products & services, with our product rangerepresenting leading technologies & brands:

Flow: Flow Meters & Transmitters, Flow Switches, Flow Control Valves & Batch Control Systems

Temperature: Temperature Probes & Thermowells, Temperature ransmitters,Temperature Regulators & Temperature Displays

Level: Level Transmitters & Switches

Pressure: Pressure Gauges &Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

Precision Pneumatics: Pressure Regulators, I-P Converters, Volume Boosters, Vacuum Regulators

Valves: Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

Services: Repair, Calibration, Panel Build, System Design & Commissioning

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SIEMENS

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INTELLIGENT DIGITAL INDICATOR, WITH TFML....

DM3600

- UNIVERSAL INPUT
- FLOW TOTALISER FUNCTIONS
- 6 DIGIT DISPLAY
- RELAY & ANALOGUE OUTPUTS
- RS485 SERIAL MODBUS COMMS
- IP65 SEALED FRONT
- BATCH CONTROL FUNCTIONS
- TFML
- UL APPROVED
- 5 YEAR WARRANTY

INTRODUCTION

The DM3600 is an intelligent digital panel meter that can accept inputs from a wide variety of sensors and display the signal digitally. In addition, it has the facility to accept up to two option 'Pods' which can be either isolated (4 to 20) mA re-transmission or two alarm relays.

The DM3600 is available in two models. The DM3600U which is a universal input panel indicator and the DM3600A, a universal panel indicator with totaliser functions.

All functions are programmable via the integral front panel keys or via the optional RS485 serial communications port using the Modbus protocol.

The DM3600 supports TFML (Transfer Function Module Library) i.e the ability to download custom functionality by means of standard modules available from the web site. This allows pre-written or custom control functions to be quickly and easily incorporated.

The DM3600A totaliser function enables non-volatile storage of the integrated total to be maintained within the unit, even after loss of power. Output options can be selected to operate on Process Variable (PV) or Total.

TRANSFER FUNCTION MODULE LIBRARY (TFML)
FML has been designed to offer the user enhanced power and flexibility by providing a mechanism whereby each unit can be customised to perform a particular function.

Common Modules are listed below and are available from our website www.status.co.uk. They are simply down-loaded into the DM3600 unit.

TRANSFER FUNCTION MODULE LIBRARY PROGRAMS INCLUDE:

- ✓ PID control
- ✓ Rate of change limiter
- ✓ Peak Hold
- ✓ Valley Hold
- ✓ 3-Step control
- ✓ Pump lift station control
- ✓ Level with density compensation

...and many more

Please contact the Sales Office for details of other and custom modules. New ones are being added all the time.

STATUS INSTRUMENTS

SPECIFICATIONS @ 20 °C

UNIVERSAL INPUT TYPES

Sensor	Range and Linearisation
mA	(4 to 20) mA, ± 20 mA, ± 10 mA
RTD	Pt100, Ni120, Custom*1
T/C	K, J, T, R, S, B, N, L, B, E, Custom*1
mV	± 100 mV
Volts	± 10 V, ± 5 V, (1 to 5) V, ± 1 V
Minimum Span	Any span within the range can be selected, but the recommended span is > 10 % of range

CURRENT INPUT

Basic Accuracy	0.05 % FS ± 0.05 % of reading*2
Thermal Drift	0.02 %/°C
Input Impedance	20 Ω
Linearity	Linear, X½, X³/₂, X⁵/₂, Custom*1

A 19.5 V ± 0.5 V @ 25 mA isolated power supply is available to power the current loop.

RTD

Sensor Range		(-200 to 850) °C (18 to 390 Ω)
Linearisation		BS EN60751/JISC1604/Custom*1
Basic Accuracy		0.1 °C ± 0.05 % of reading*2
Thermal Drift	Zero	0.004 Ω/°C
	Span	0.01 %/°C
Excitation Current		1 mA
Lead Resistance Effect		0.002 °C/Ω
Max Lead Resistance		50 Ω/leg

Accuracy		± 0.04 % FS or ± 0.04 % reading or ± 0.5 °C, whichever is greater*2
Linearisation		BS 4937/IEC 584 3/Custom*1
Cold Junction Error		± 0.5 °C
Cold Junction Tracking		0.05 °C/°C
Cold Junction Range		(-20 to 60) °C
Thermal Drift	Zero	4 µV/°C
	Span	0.002 %/°C

VOLTAGE INPUT

Basic Accuracy	0.04 % FS ± 0.04 % of reading*2
Thermal Drift	0.01 %/°C
Input Impedance	1 MΩ
Linearity	Linear, X½, X³/₂, X⁵/₂, Custom*1
Range	± 100 mV, ± 1 V, ± 5 V, ± 10 V, (1 to 5) V

*Notes:

1. Custom can be up to 60 co-ordinate pairs or up to 7 segments of 15th order polynominal
2. Full accuracy for any span > 10 % of range
3. Accuracy true for (500 to 1760) °C
4. Accuracy true for (400 to 1650) °C

REMOTE DIGITALS OPTION

Two isolated digital inputs are available to reset latched alarms, reset peak and valley memories, reset total or for customised use with TFML.

OUTPUT OPTIONS

PLUG IN AND PLAY OPTIONS

Simple plug in pre-calibrated units, no dismantling or re-calibration.

POD-3000/02 DUAL RELAY ALARM/PULSE

Two independent relay outputs

Contacts		2 x changeover relays with common wiper	
Ratings		AC	DC
Maximum Load		5 A @ 250 V	5 A @ 30 V
Maximum Power		1250 VA	150 W
Maximum Switching		253 V	125 V
Electrical Life		10*5 operations at rated load	
Mechanical Life		50 million operations	
Termination	Standard	5 way tension clamp connector	
	Optional	Screw terminals	

Relay can be set as High/Low or deviation alarm on rate or total, or configured to 100 ms output pulse at pre-determined total intervals.

POD-3000/03 ISOLATED RE-TRANSMISSION

Ranges		(0 to 100) mA (Active or Passive) (0 to 20) mA (Active or Passive) (4 to 20) mA (Active or Passive)
Minimum Current Output		0 mA
Maximum Current Output		23 mA
Accuracy		0.07 % F.S.
Resolution		1 part in 30 000
Max. Output Load	Active	1 KΩ
	Passive	[(Vsupply-2)/22] KΩ
Max. Ext. Supply Voltage		30 V (Passive mode)
Voltage Effect		0.2 µA/V
Ripple Current		< 3 µA
Isolation		500 VAC
Stability		1 µA/°C
Termination	Standard	5 way tension clamp connector
	Optional	Screw terminals

VOLTAGE OUTPUTS

Voltage Outputs may be obtained by connecting an external resistor and selecting the appropriate current range, as shown in the table below.

RESISTOR	CURRENT	OUTPUT
1 KΩ	(0 to 10) mA	(0 to 10) V
500 Ω	(0 to 20) mA	(0 to 10) V
250 Ω	(4 to 20) mA	(1 to 5) V

GENERAL

Filter (seconds)		None, Programmable (fixed), Adaptive
Power Supply	S1	(90 to 264) VAC (50 to 60) Hz*8
	S2	(20 to 35) VDC
Power Consumption		10 VA (worst case) 6 VA typical
Isolation (Tested to)		I/O ports 500 V Supply to I/O 3750 V

ENVIRONMENTAL

Sealing to Panel	IP65
Ambient Operating Range	(-30 to 60) °C
Ambient Storage	(-50 to 85) °C
Ambient Humidity	(10 to 90) % RH

EMC

Emissions & Immunity	BS EN61326
Safety	BS EN61010-1 UL Approved

SET UP
Configuration can be set up either from the integral front panel keys or via the optional serial Modbus communications interface.The front panel keys and display give access to a user menu. The menu type can be set to 'Short', whereby only the most common menu items are presented, or 'Full', where all menu items are presented.

OTHER SOFTWARE FEATURES
Start up alarm delay
Peak and Valley memories*5
Password protection
Set baud rate
Set device address
Set 2 or 4 wire comms

FEATURE	SHORT MENU	FULL MENU
DM3600 Universal Indicator	Sensor Type Range Linearity User Linearisation Decimal Point Engineering Lo Engineering Hi Autoscale	Units Burns out Filter
DM3600A Universal Indicator with Flow totalisation	Sensor Type Range Linearity User Linearisation Decimal Point Display Rate/Total Engineering Lo Engineering Hi Autoscale	
Dual Alarm Pod*6 Pod-3000/02	Set point Alarm Action	
Isolated Current re-transmission*6 Pod-3000/03	Re-transmission Type Span	

FRONT PANEL RUN TIME CONTROLS (Single Channel Units)

Clear:	latched alarms
	Total
	Peak/valley
Edit	Set point shortcut
Show	Peak reading*5
Show	Valley reading*5
Show	Secondary variable*7
Show	Electrical value*7
Show	Upper 6 digits of total*7

*NOTES:
5. 'U' Version only.
6. Can be applied to either Rate or Total for 'A' versions.
7. 'A' Version only.
8. (90 to 253) VAC, (50 to 60) Hz for UL & LVD compliance.

CONNECTIONS

Input	5 way tension clamp connector (2 Part)
Comms + Digitals	8 way RJ45 connector (Supplied with matching plug and 1 m cable)

COMMUNICATIONS OPTION

RS485 MODBUS COMMUNICATIONS
DM3600 is available with RS485 serial communications using MODBUS RTU protocol, and is compatible with the vast majority of software platforms used in the process control industry.

Physical Layer	4 wire or 2 wire half duplex RS485
Protocol	Modbus RTU format Isolation 500 VAC
Maximum Fan out	32 units (can be increased with repeaters)
Termination Standard	RS485

M-CONFIG
With the RS485 Modbus serial communications option fitted, remote programming and interrogation can be performed from a PC. To facilitate this Status Instruments have written a comprehensive, easy to use, configuration software program called M-Config, which is available ***free of charge*** from our web site www.status.co.uk This program also communicates with the Medacs back of panel range.

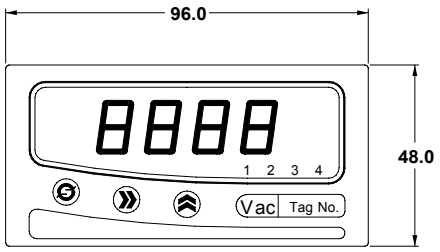
Also available are RS232/485 convertors to convert the RS232 normally standard on PC computers to the more industrial RS485 suitable for multidrop applications over long distances. Contact Sales for details.

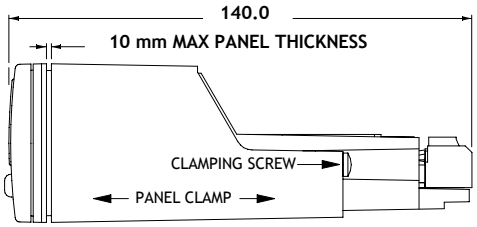
M-SCADA
M-Scada software is available in 2 versions, Lite for up to 50 tags, and Professional for up to 100 tags. The Scada package integrates with Medacs and the DM3000 series and provides a cost effective way of constructing a powerful control and monitoring system.

MECHANICAL DETAILS

Material	ABS/PC
Flammability	IEC707 FVO, UL 94VO
Weight	230 gms
Panel cut out	(92 x 45) mm

(All dimensions in mm)





STATUS INSTRUMENTS

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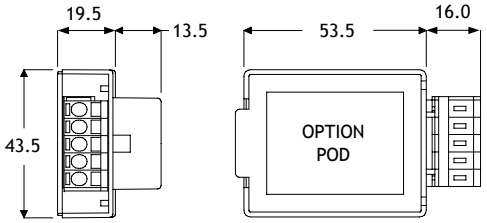
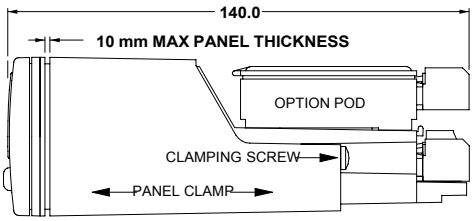
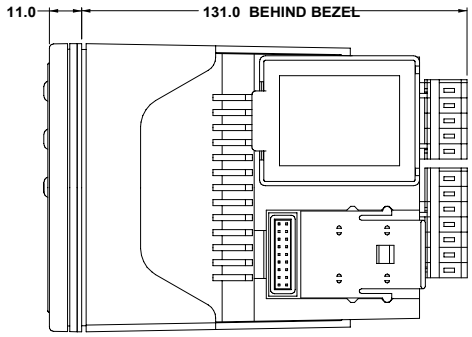


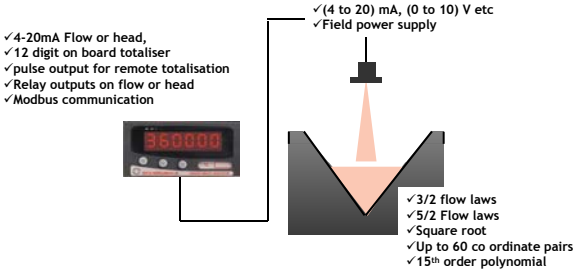




APPLICATIONS

DM3600 can be used as an indicating trip-amp, interfacing with a wide range of field devices. This is often preferred by operators, as calibration or alarm set-point changes can be made easily and confirmed on the display.

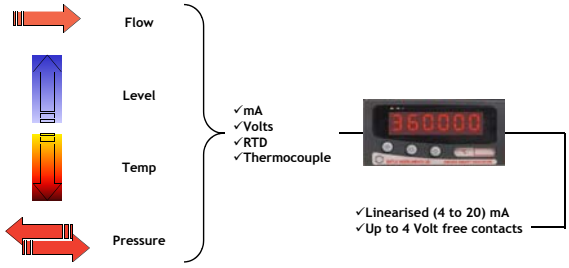
DM3600 can linearise, with up to 60 co-ordinate pairs for straight line interpolation, or up to a 15th order polynomial for highest accuracy. Alarms, local display etc are all standard.



DM3600 can be used with almost any level sensor to measure "head" upstream of a flume or weir. Standard software allows power 3/2 and 5/2 flow linearisation, giving a (4 to 20) mA output proportional to flow, as well as pulsing a relay in multiples of flow rate to an external totaliser.

A standard TFML module can provide 3-step valve control based on flow.

The optional M-scada package can provide historic and real time trending.



ORDER CODE

SERIES	DM3600		/		/	

Universal Input	U
Universal Input + Totaliser	A

No Comms	00
Modbus Serial RS485 comms + TFML upgrade	01

Power supply (90 to 264) VAC, (50 to 60) Hz	S1
Power supply (20 to 35) VDC	S2

OPTIONAL ACCESSORIES

OPT- 3600-02/01	DIN rail mounted Break-out board to connect RJ45 to SCREW TERMINALS
Pod-3000/02	Dual Relay Output (2 per unit maximum)
Pod-3000/03	Isolated (4 to 20) mA re-transmission (1 per unit maximum)
DIN RAIL KIT	RMK3000
M-Config	Configuration tool. This package is also available as a free download from the website
M-Scada	Scada Package. Available in Lite and Professional versions.
M-OPC	Full functionality OPC server.

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