

INTELLIGENT DIGITAL INDICATORS

DM3400 SERIES

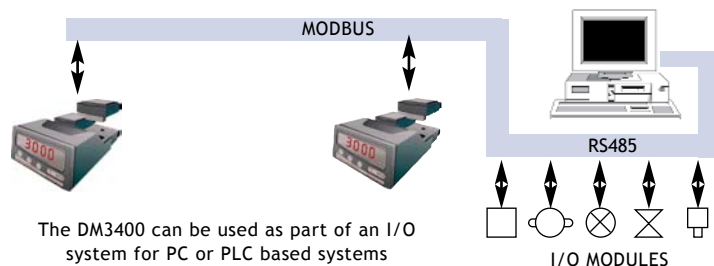
- DM3410 TEMPERATURE INPUTS
- DM3420 PROCESS INPUTS
- TRANSMITTER EXCITATION
- IP65 FRONT PANEL SEALING
- PLUG & PLAY POD OPTIONS
- MODBUS RS485 SERIAL COMMS
- AUTO ROUNDING MODE
- UL APPROVED
- 5 YEAR WARRANTY



INTRODUCTION

The DM3400 is a series of highly accurate and stable digital indicators. The DM3410 and DM3411 are for Temperature indication, and the DM3420 and DM3421 for Process.

The DM3400 series uses leading edge technology to accept all commonly used temperature or process inputs. Engineering units are displayed on a high efficiency Red (Green option) LED display that provides daylight readability. The indicators can easily be used 'stand alone' or, using the Modbus serial communications option pod, as part of a larger system.



The display can be set to show a fixed number of decimal places or to auto scale to show the maximum resolution.

The highly innovative case design enables option 'Pods' to be easily installed without the need for dismantling or re-calibration. A range of 'Plug and Play' Pods are available covering:

- Relay outputs
- Isolated re-transmission ((0 to 10) mA, (0 to 20) mA, (4 to 20) mA)
- Modbus RS485 serial comms.

The flexibility of plug-in option pods combined with the switch mode power supply results in reduced stock holdings and in common with the other products from Status Instruments, a low 'Cost of Ownership'.

The front panel is sealed to IP65 and the case has a moulded in rubber gasket enabling it to seal to the panel maintaining the IP65 rating, ideal for installing it in 'dusty' areas or where low pressure jets of water are used to clean down equipment. Tension clamp*1 two part connectors are provided for 'fast wiring' enabling installation to be completed in typically half the time it would take using conventional screw terminals. These high quality connections are manufactured to IEC-947-1 and IEC-947-7 standards and maintain the contact permanently under tension to also provide superior long-term performance in the presence of vibration.

*1. Alternative clamping yoke screw terminal connectors are available to special order.

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SET UP

Programming is via the front panel keys following a logical menu structure which can be set to 'Short' (default), whereby only the common usage features are presented to the operator, or 'Full' where the full range of programmable features is available. Alternatively via a PC by using the RS485 (Pod-3000-05) Modbus communication pod.

MENU MODE

Two front panel programming menus can be selected as follows with the option of password protection.

FEATURE	SHORT MENU	FULL MENU
Temperature Indicators DM3410 DM3411	Sensor type. Resolution.	Sensor type. Resolution. °C/°F: Burnout condition: User offset: Filter time constant.
Process Indicators DM3420 DM3421	Input type. Resolution. lo:hi	Input type Resolution lo:hi Burnout condition Filter time constant
Dual Alarm Relay Pod-3000/02	Alarm type: Set point.	Alarm type: Set point. Hysteresis: Latch: Invert.
Isolated re-transmission Pod-3000/03	lo : hi.	lo : hi. Output Span.
Modbus Comms Pod-3000/05	Device No: Baud rate: Connections 2/4.	Device No: Baud rate: Connections 2/4.

DM3410 UNIVERSAL TEMP. INDICATOR

SPECIFICATION @ 20 °C

The DM3410 accepts all common thermocouple and RTD types and displays the temperature digitally.

RTD (Pt100)

Sensor Range		(-200 to 850) °C, (18 to 390) Ω
Linearisation	Standard	BS EN 60751 (IEC-751) BS 1904 (DIN 43760), JISC 1604 Custom [X]*1
Basic Measurement Accuracy		0.1 °C ± 0.05 % rdg
Thermal Drift	Zero	0.008 °C/°C
	Span	0.01 %/°C
Excitation Current		(300 to 550) µA
Lead Resistance Effect		0.002 °C/Ω
Maximum Lead Resistance		50 Ω/leg

THERMOCOUPLE

Basic Measurement Accuracy		± 0.04 % FRI ± 0.04 % rdg or 0.5 °C (whichever is greater) FRI = Full Range Input
Linearisation	Standard	BS EN 60584-1 (IEC 584-1)
	Custom	[X]*1
Cold Junction Error		± 0.5 °C
Cold Junction Tracking		0.05 °C/°C
Cold Junction Range		(-30 to 60) °C
Thermal Drift	Zero	0.1 µV/°C
	Span	0.01 %/°C

*NOTE:

1. Custom characterisation is available pre-programmed at the factory at extra cost. Please contact your nearest Sales Office for further information.

DM3420 PROCESS INDICATOR

The DM3420 accepts all common process signals, current or voltage, and displays the signal digitally in engineering units. An internal power supply provides excitation for field transmitters.

PROCESS

Voltage	Range	(0 to 1) V (1 to 5) V (0 to 10) V
Accuracy		0.05 % FS
Thermal Drift	Zero	0.1 µV/°C
	Span	0.01 %/°C
Current	Range	(0 to 20) mA (4 to 20) mA (0 to 10) mA
Input Impedance		47 Ω (current) 1 MΩ (voltage)
Accuracy		0.05 % FS
Thermal Drift		0.01 %/°C
Excitation		24 V ± 5 % @ 50 mA

GENERAL SPECIFICATION @ 20 °C

Input/Output Isolation		500 VAC rms (Galvanically Isolated)
Update Time		250 ms maximum
Time Constant (Filter off)		< 1 s (to 63 % of final value)
Filter Factor	Programmable	Off, 2 s, 10 s or Adaptive
Warm-up Time		120 s to full accuracy
Display Range		-999 to 9999
Power Supply	S1	(90 to 253) VAC, (50 to 60) Hz
	S2	(20 to 35) VDC
Power Consumption		6 VA maximum (options fitted)

DISPLAY

4 Digit RED LED Standard	14.2 mm high/high intensity
4 Digit GREEN LED Option	14.2 mm high/high intensity
4 Alarm RED LED Indicators	2.5 mm high numeric

ENVIRONMENTAL

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

APPROVALS

EMC	Emissions	BS EN50081-1
	Susceptibility	BS EN50082-2

ELECTRICAL SAFETY

BS EN61010-1
UL Approved

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CONNECTION METHOD

TENSION CLAMP*2 TWO PART

The tension clamp pulls the conductor firmly against the copper current bar which is coated with a tin lead compound:

- Zero-maintenance connection
- Gas-tight clamping point
- Constant contact force
- Wire size (0.5 to 1.5) mm²

CONNECTION ENVIRONMENTAL APPROVALS

Low Temperature	IEC 68-2-1
Dry Heat	IEC 512-6-9
Damp Heat	IEC 512 -6-3
Damp Heat cyclical	IEC 68-2-30
Salt Spray	IEC 512-6-6
Sulphur Dioxide	IEC 68-2-46
Hydrogen Sulphide	IEC 68-2-16
Gas Tightness	IEC 512-Pr.11n

*NOTE:

2. Alternative clamping yoke screw terminal connections are available to special order.

OUTPUT OPTIONS

PLUG AND PLAY OPTION PODS

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

POD-3000/02 DUAL RELAY ALARM

Two independent mains rated relay outputs (common connection).

Contacts	2 x Changeover relays common wiper	
Ratings	AC	DC
Maximum Load	7 A @ 250 V	7 A @ 30 V
Maximum Power	1750 VA	210 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

POD-3000/03 ISOLATED RE-TRANSMISSION

Ranges	(0 to 10) 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.	
Max. Output Load	Active	1 K Ω
	Passive	[(Vsupply-2)/20] K Ω
Max. External Supply Voltage	30 V (Passive mode)	
Voltage Effect	0.2 μ A/V	
Ripple Current	< 3 μ A	
Breakdown Isolation	500 VAC	
Stability	1 μ A/°C	
Termination	Standard	5 way tension clamp connector
	Optional	Screw terminals

COMMUNICATIONS

POD-3000/05 RS 485 MODBUS COMMS.

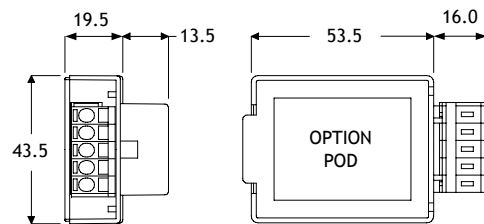
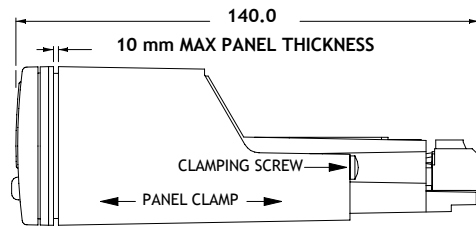
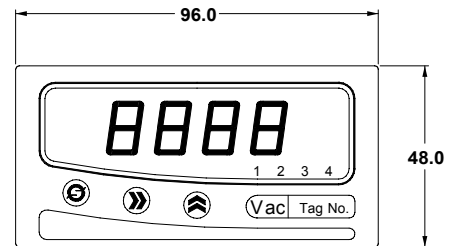
PC communication for configuration and monitoring.

Physical Layer	4 wire or 2 wire half duplex RS485	
Baud Rate	Software Selectable 19,200 or 9,600	
Protocol	Modbus RTU format	
Breakdown Isolation	500 VAC	
Maximum Fan out	32 units	
Termination	Standard	5 way tension clamp connector
	Optional	Screw terminals
Optional Ribbon	Cable - RC	

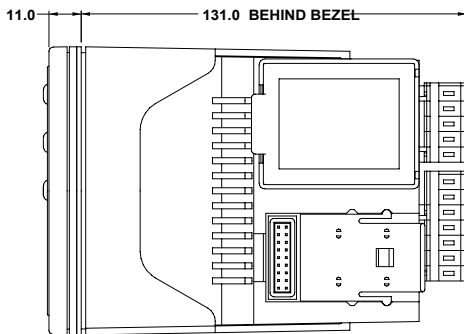
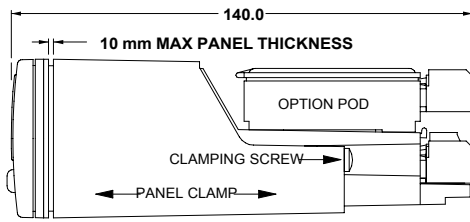
MECHANICAL DETAILS

Material	ABS/PC
Flammability	IEC707 FV0 UL 94V0
Weight	230 gms
Panel cut out	(92 x 45) mm

MAIN UNIT (All dimensions in mm)



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ASSOCIATED PRODUCTS:

SEM104 The SEM104 is a low cost (4 to 20) mA transmitter for use with standard Pt100 platinum resistance sensors in the size of a standard DIN terminal block.

SEM205P SEM205P is a second generation "Smart" Head Mount temperature transmitter which accepts Pt100 temperature sensors and generates an industry standard (4 to 20) mA transmission signal.

SEM210 SEM210 is a second generation "Smart" Head Mount temperature transmitter which accepts most commonly used temperature sensors (also slide-wire sensors or mV inputs) and generates an industry standard (4 to 20) mA transmission signal.

SEM1000 Analogue signal Isolator
SEM1020 Loop Booster
SEM1100 Line powered process isolator
SEM1200 Signal Splitter
SEM1300 Power supply unit
SEM1400 Loop powered trip amplifiers
SEM1503/1504 Pt100 transmitters
SEM1500TC Isolating TC transmitter

DM400 & DM420 Loop, field and panel indicators. Connected in series with the (4 to 20) mA loop current they display the process variable digitally in engineering units.

SENSORS A complete range of sensors and accessories are available:

- Platinum resistance temperature detectors
- Thermocouples
- Thermistors

ORDER CODE

SERIES DM34			/	
Universal Temperature	1			
Universal Process	2			
RED LED Version	0			
GREEN LED Version	1			
Power Supply (90 to 253) VAC (50 to 60) Hz				S1*
Power Supply (20 to 35) VDC				S2

*NOTE: Supplied as standard unless otherwise specified.

OPTIONS

POD-3000/02 Dual Relay Output (2 per unit max)
POD-3000/03 Isolated (4 to 20) mA re-transmission (1 per unit max)
POD-3000/05 Isolated Modbus RS485 (1 per unit max)
POD-3000/05-RC Ribbon Cable Option
ACC001 Pack of 10, 5 way optional screw terminals.