PROGRAMMABLE COUNTER / SPEED / FREQUENCY / TIMER / TOTALISER / PERIOD / CLOCK / POSITION INDICATOR

Model 5012

DIGITAL PROCESS MEASUREMENT

Processing your future

The Model 5012 is a 6 digit (-199999 to 999999) low-cost universal programmable indicator for use in all types of frequency & counting applications. The indicator has uni-polar & bi-polar pulse / frequency inputs for counting, frequency / speed (dual channel), period, flow, timing, totalising & positioning applications. It can be used in conjunction with most standard pulse / frequency generating sensors. Sensor excitation is standard & the output voltage is link selectable. Various options are available (see option list below). Selected options now feature 'Plug & Play' technology, allowing option boards to be ordered separately & field fitted when required.

MODELS

Three variations of this instrument are available, depending on the required functionality :

Model 5012	6 digit (-199999 to 999999)	Freq, Period, Count, Rate, Totaliser, Event timer
Model 5012-C	6 digit (-199999 to 999999)	Real time clock + all Model 5012 features
Model 5012-Q	6 digit (-199999 to 999999)	Quadrature input + all Model 5012 features

All Models offer up & down counter (with reset/preset), dual channel frequency input, which can be added, subtracted, or ratioed. Period indication is also available as standard. Time tagging feature is available on the Model 5012-C as an option.

FEATURES

- ❑ 1/8 DIN enclosure (45 x 92 cut-out), UL 94 V-0 flame retardant, 147mm depth
- ❑ Front panel IP 65 / NEMA 4 / UL Type 4 rating, bezel 48 x 96 mm
- ❑ -199999 to 999999 display counts, 14.2mm bright red LED display
- ❑ 24VDC supply for encoders & proximity switches
- ❑ Counting, frequency, speed, period, timing, totalising & positioning functions
- ❑ Dual channel frequency inputs (can be added, subtracted or ratioed)
- ❑ 'Plug & play' feature available with selected options
- ❑ Keypad lockout option available at no extra charge
- ❑ Meets European EMC directive 89/336/EEC & Low Voltage directive 73/23/EEC
- ❑ 3 year guarantee

OPTIONS

3001-P	2 set points (solid-state relays)	3010	95-265V AC/DC power supply
3001-M	2 set points (electro-mechanical relays)	3012	Peak / valley hold
3002	RS 485 serial interface	3013	RS 232 serial interface
3003	0 - 20mA / 4 - 20 mA analogue output	3017-P	3 set points (solid-state relays)
3004-P	1 set point (solid-state relay)	3017-M	3 set points (electro-mechanical)
3004-M	1 set point (electro-mechanical relay)	3018-P	4 set points (solid-state relays)
3006	Isolated outputs (order with 3002/3/7/13)	3018-M	4 set points (electro-mechanical)
3007	0 - 10V analogue output	3020	Ultra bright Red LED display
3008	12 / 24V galvanic isolated DC supply	3023	Pulse output
3009	Parallel BCD output	3025	Keypad lockout

NOTE : Most of the above options are factory fitted. Customer / field fitted options are available as 'plug-&-play' boards and software activated options. Contact factory for more information.

NOTE : Option 3009 cannot be ordered together any alarm options.

SPECIFICATIONS

GENERAL

Setup and calibration	Full digital with visual prompting in plain messages
Memory retention	Full non-volatile operation
Accuracy (frequency)	0.01% (scaling = 1), or 1 count
Internal oscillator	11.059 Mhz precision
Real time clock drift	0.8 seconds per day max
Real time clock backup	30 days typically

FREQ / SPEED / PERIOD / COUNT

Input frequency range	0.15Hz - 15000Hz. Max 0.01Hz res. Period max 1 second.
Pulse amplitude	50mV up to 24V maximum, uni-polar or bi-polar.
Frequency calculation time	5 milliseconds (no averaging)
Frequency averaging	None, 0.5, 1.1 and 4.5 seconds programmable.

Counter reset via 'Enter' key (press for 3 seconds) or via external reset (instantaneous).
Selectable for most standard sensors by jumper links and differing connections.
Jumper links for hysteresis selection.

SENSOR EXCITATION **(FOR ENCODERS, PROXIMITY SWITCHES ETC)**

Link selectable for
24 VDC (17-26V), current limited to 25mA. Optional 50mA.
12VDC (10-13V), maximum 50mA.
5VDC ± 1%, maximum 50mA.

Optional : 24 VDC (17-26V), increased current capacity 100mA with Option 3010.

ANALOGUE OUTPUT OPTION

Analogue output isolation	Optional, 1500V input/output isolation (order option 3006)
Analogue output accuracy	0.1% of full scale, 12 bits
Analogue output temp. coefficient	20 ppm / °C typically
Current analogue output load	500 Ω maximum (current is source, not sink)
Voltage analogue output load	1 kΩ minimum

SET POINT OPTIONS

Electro-mechanical relay:	
Rating	250V AC, 30V DC, 2A, power factor 1
Form type	Form C (change-over contact)
Solid-state relay:	
Rating	400V AC/DC, 0.5A, power factor 1
Form type	Form A (normally open contact)

SERIAL INTERFACE OPTIONS

Serial interface	RS-232 or RS-485, 2400, 4800, 9600 & 19200 baud
Isolation to input	Optional, 1500V isolation (order option 3006)
Capabilities - Digibus protocol	Full remote control, except for field setup
Capabilities - Asciibus protocol	- continuous output approximately 5 x second - output on demand via print button - output on demand via serial request

MECHANICAL SPECIFICATIONS

Dimensions	DIN 1/8, 96 mm wide x 48 mm high x 147 mm deep
Protection	Industrial strength, UL 94 V-0 flame retardant ABS plastic
Front panel rating	IP 65 / NEMA 4 / UL Type 4 with supplied o-ring seal

ENVIRONMENTAL

Operating temperature range	-10 to +50°C
Service temperature range	-15 to +60°C
Storage temperature range	-40 to +80°C
Humidity	< 85% non-condensing

NOTE : Digital inputs are available as standard for reset, preset, start, stop and other functions. A potential free contact is required to operate these digital inputs (active is low). Digital input functions differ depending on mode of operation.

PROGRAMMABLE SETTINGS

Channel display	: Ch1, Ch2, Ch1+Ch2, Ch1-Ch2, Ch1/Ch2
Rate / total display	: Selectable via front keypad
Frequency / counting factor	: 000.001 to 999.999
Frequency / counting scaler	: 10.000, 1.000, 0.100, 0.010, 0.001
Decimal point	: Selectable on any digit
Filtering	: None, 0.5, 1.1, 4.5 seconds selectable
Frequency mode	: Normal or inverse (period) display
Counter features	: Reset (count up) or Preset (count down)
Event timer	: HHHH.MM or HH.MM.SS or SSSSSS or SSSSS.S or SSSS.SS
Real time clock	: 12h or 24h mode; external sync & preset
*Analog output zero / span	: -199999 to 999999 (for 0 - 20mA / 4 - 20mA or 0 - 10V out)
*Alarm values	: -199999 to 999999
*Alarm hysteresis	: 0 to 255 (default 1)
*Alarm delay	: 0 to 255 seconds (default 0)
*Alarm relay settings	: Selectable HIGH or LOW alarm
*Alarm relay state	: Selectable normally open or normally closed
*Protocol options	: DPM's DIGIbus or ASCIIbus
*RS485 address	: 0 to 99
*RS232 / RS485 baud rate	: 2400, 4800, 9600, 19200

* indicates option

POWER SUPPLY

STANDARD
115 / 230 VAC ± 10% (standard), link selectable, 50/60Hz, 5VA typical
12VDC or 24VDC non-isolated on request, 5VA typical

OPTIONAL
12VDC isolated switch mode power supply option (Option 3008-12), 5VA typical
24VDC isolated switch mode power supply option (Option 3008-24), 5VA typical
95V-265V AC/DC switch mode power supply option (Option 3010), 5VA typical

REGULATORY COMPLIANCE

Regulatory requirements — Complies with EC Directives 89/336/EEC & 73/23/EEC

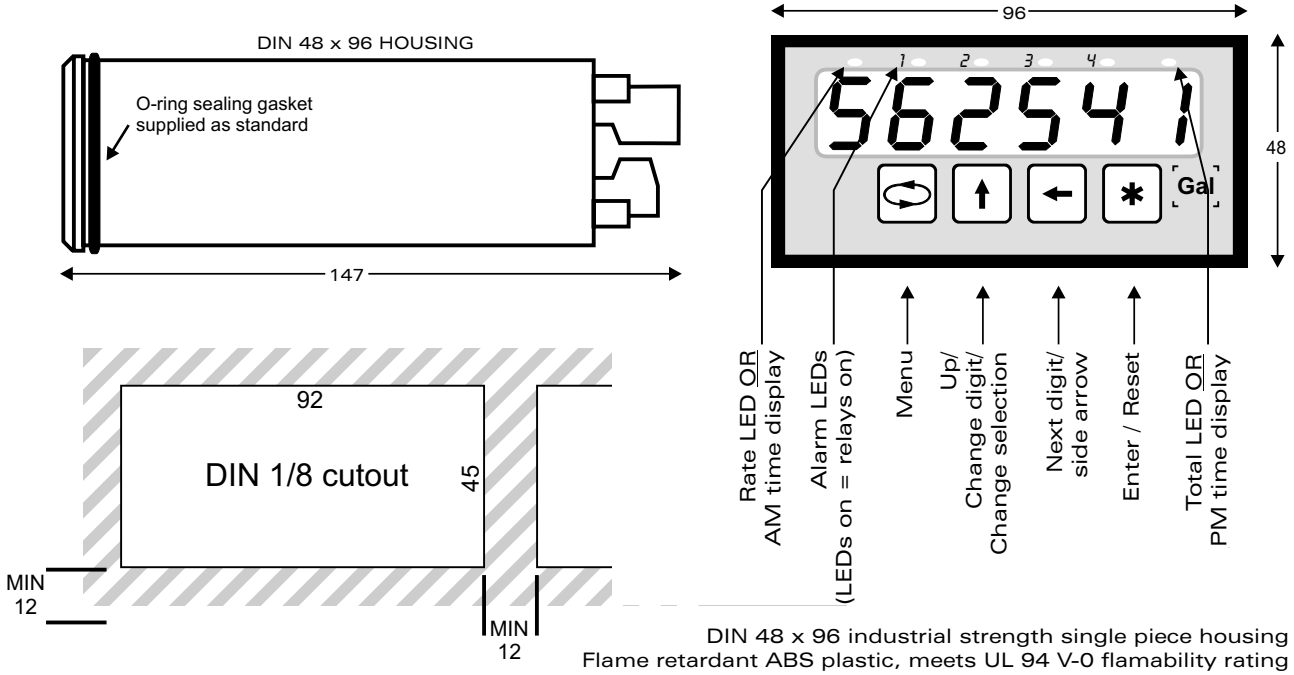
ORDERING EXAMPLE

Option modules (see page 1)

MODEL 5012-Q - 3001P - 3003

Model type :	Quadrature input
Auxiliary supply :	230 VAC
Analogue output :	4 - 20 mA
Alarm set points :	2 set points with solid-state relays

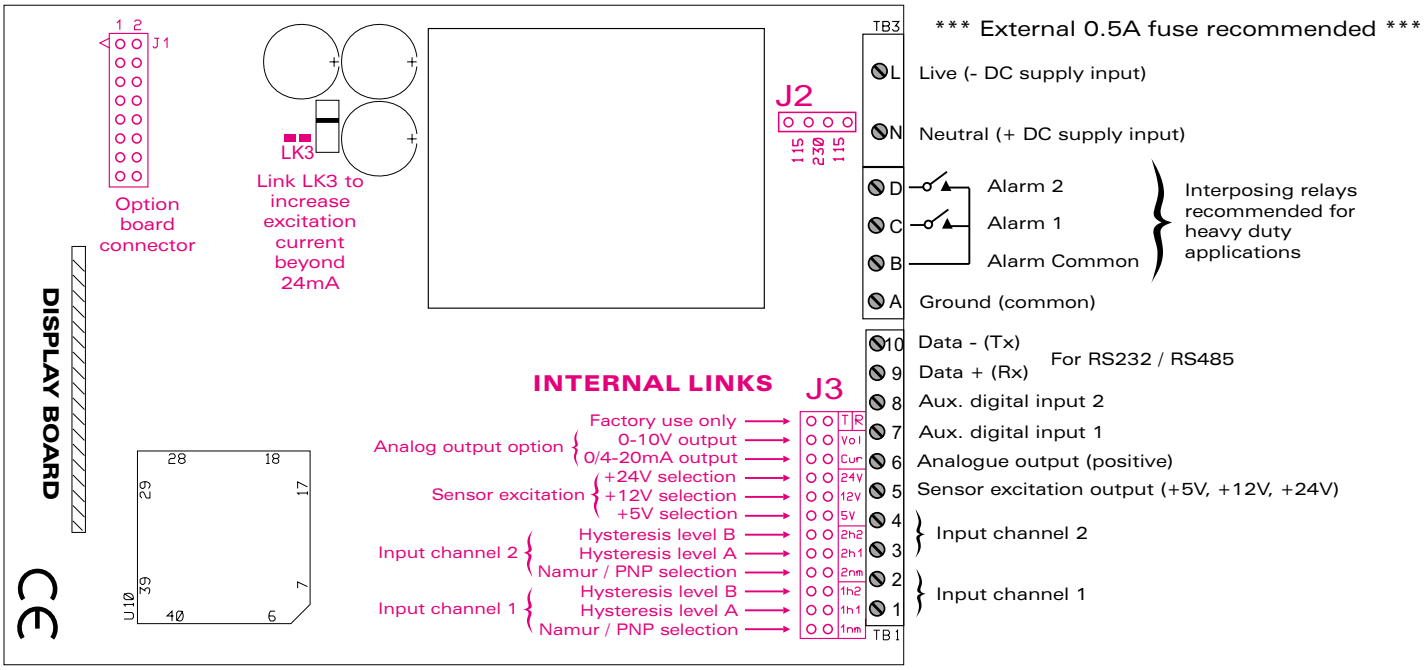
FRONT PANEL — DIMENSIONS & CUTOUT



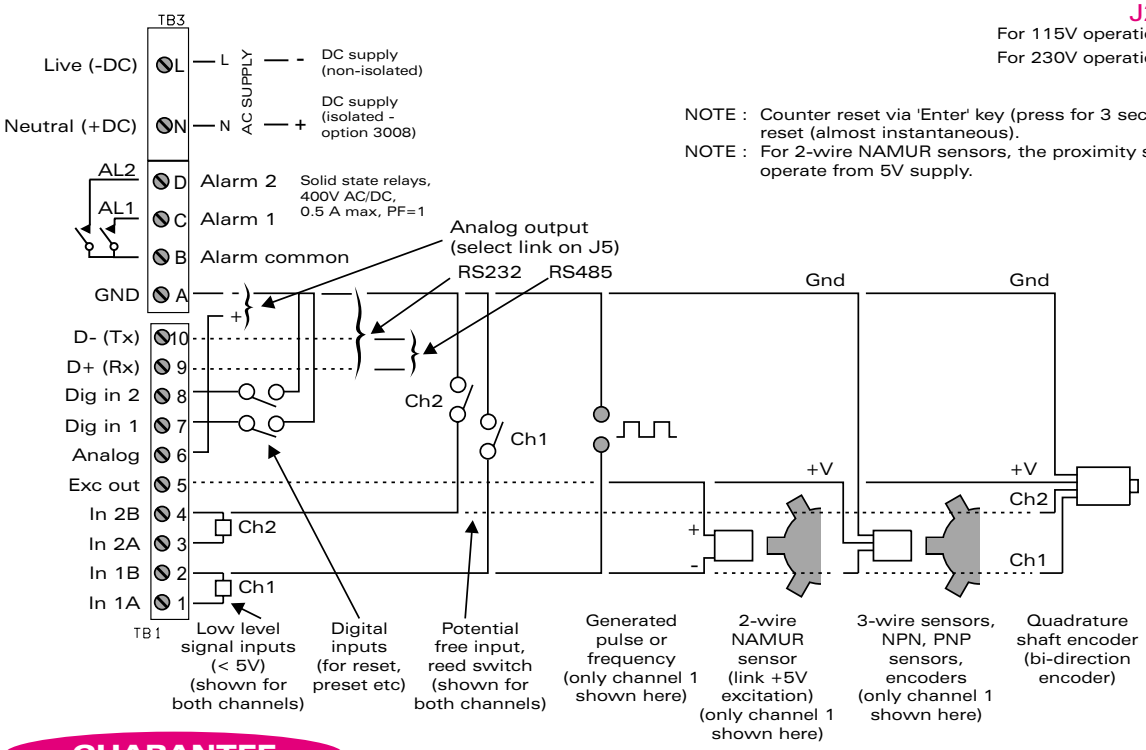
Dimension in mm

DIN 48 x 96 industrial strength single piece housing
Flame retardant ABS plastic, meets UL 94 V-0 flamability rating
Front panel rating is IP65 with supplied o-ring seal

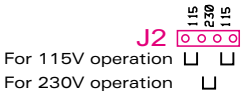
PINOUT



APPLICATION EXAMPLES



POWER SUPPLY LINKS



NOTE : Counter reset via 'Enter' key (press for 3 seconds) or via external reset (almost instantaneous).
NOTE : For 2-wire NAMUR sensors, the proximity switch must be able to operate from 5V supply.

GUARANTEE

This product is guaranteed against faulty workmanship or defective material, for a period of 3 (three) years from date of delivery by DPM.

DPM undertakes to replace without charge all defective equipment which is returned to it (transportation costs prepaid) during the period of guarantee, provided there is no evidence that the equipment has been abused or mishandled in any way.

DPM reserves the right to alter any specification without notice.

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CE

CERTIFICATION DEKRA DIN ISO 9001

DISTRIBUTED BY:

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