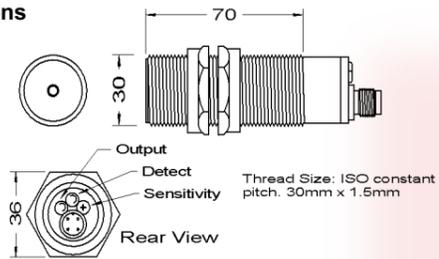


## PB1TS2/C Sensor

This is a broad beam sensor and is typically used on bottling lines, and will work with either glass or plastic containers. The sensor will ignore small gaps between bottles etc.



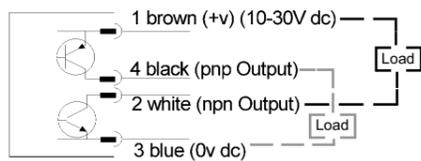
### Dimensions



### SPECIFICATION - GENERAL

Supply	10-30V dc
Output	1 npn > Rated @ 30V dc 1 pnp > 100mA max.
Indication	Output state and Detect LED's
Sensitivity	Adjustable 0-100%
Weight	120g

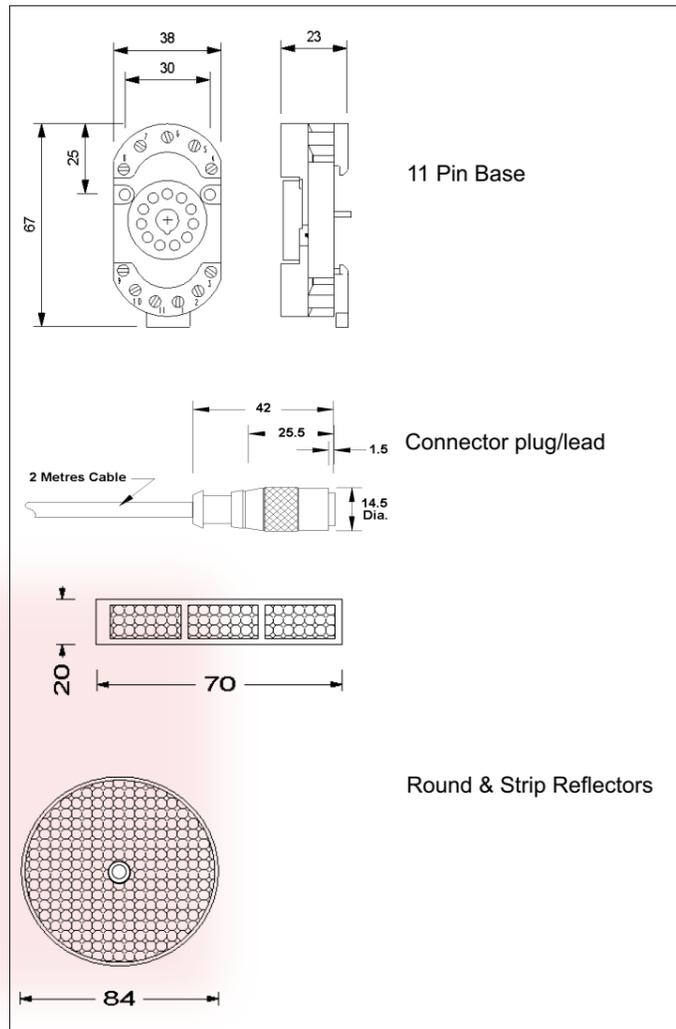
### Connections



Accessories: Connector

## ACCESSORIES

A range of ancillary items for use with specified synatel units.



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# PHOTOELECTRIC SENSOR CATALOGUE

1

photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



level control sensors



special systems



Hazard Approved Sensors

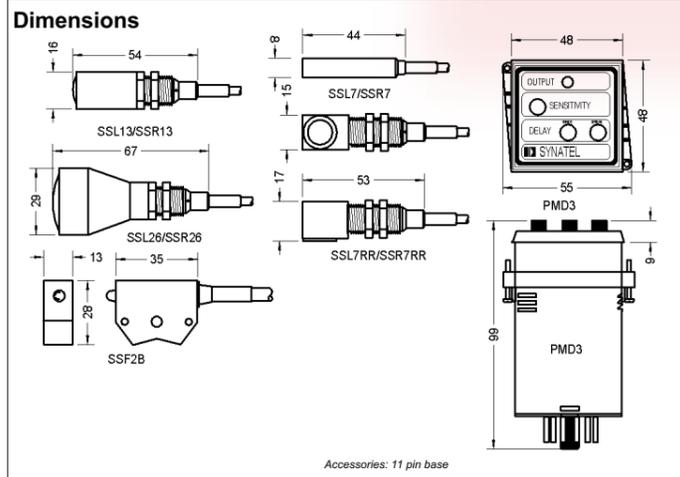


## PHOTOELECTRIC SENSOR RANGE

Synatel produce a range of photoelectric sensors, in different styles and packages, to suit a wide variety of applications. The sensors are available as; throughbeam (object 'breaks' the sensing beam), reflex (object reflects light back to sensor) or polarised retro-reflex units (sensor works with a reflector and the object 'breaks' the beam).

### MODULAR RANGE SERIES SSP1

An 11 pin, international relay base, plug-in control module (PMD3) for use with a range of heads to fulfil a variety of applications.

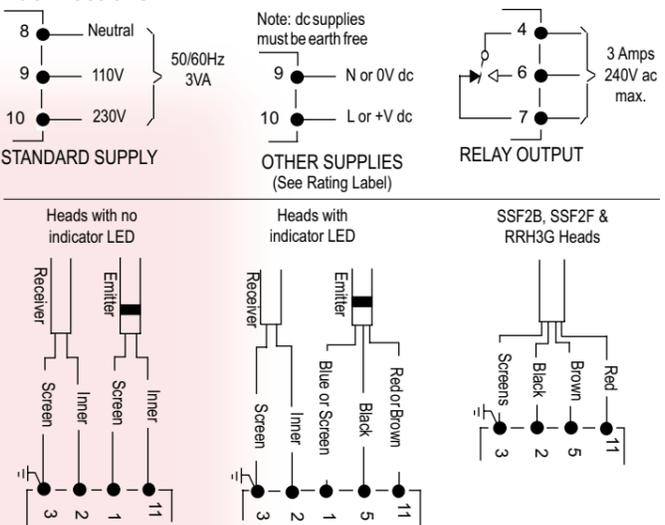


Type	Range (metres)	Weight	Material
<b>Through Beam</b>			
Emitter SSL7	1.25M	70g	Anodised Aluminium
Receiver SSR7	1.25M	70g	Anodised Aluminium
Emitter SSL7RR	1.25M	90g	Anodised Aluminium
Receiver SSR7RR	1.25M	90g	Anodised Aluminium
Emitter SSL13	5.0M	90g	Brass/Anodised Aluminium
Receiver SSR13H	5.0M	90g	Brass/Anodised Aluminium
Emitter SSL26	10M	100g	Brass/Nylon
Receiver SSR26	10M	100g	Brass/Nylon
<b>Reflex</b>			
SSF2B	0.05M	95g	Moulded Polycarbonate

### SPECIFICATION - PMD3 MODULE

Supply (Standard Unit)	110/230V ac 50/60 Hz, 3VA
Output	S.P.C.O relay. 240V 3A non-inductive
Output Mode	Normally de-energised (output off with beam broken). For reverse operation, normally on with beam broken, add suffix 'X' after model number. (PMD3X)
Operating Temp.	-10° to +50°
Operating Speed	5 per second maximum
Operating Range	Dependant upon head used from chart above
Termination	11 pin plug in relay base
Sensitivity	0 to 100% adjustable
Time Delay	Standard, 1.5 to 15 sec. Other times to order
Indication	Output energised (On) LED
Enclosure	Moulded Noryl (modified PPO) & Acrylic
Protection	IP40
Weight	230g

### Connections

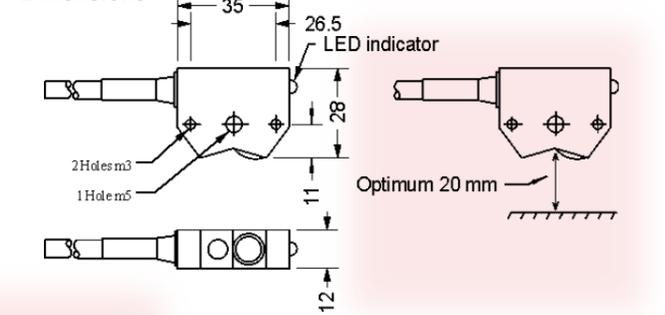


### MINIFLEX REFLEX SENSOR

Short range adaptable, visible light, reflex sensor. The unit is ideal for packaging and labelling machines where the focussed, short range operation prevents false signalling from nearby objects. DC supply, transistor output. Designed & manufactured by SYNATEL



### Dimensions



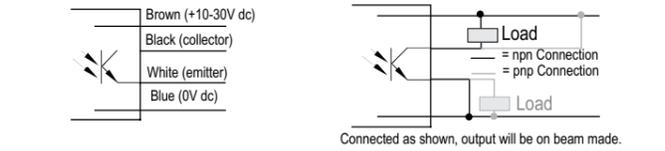
### SPECIFICATION - GENERAL

Supply	10-30V dc
Output	Fully protected, opto-isolated transistor. Rated@ 100mA 30V dc max.
Operating Range	0-0.05M max, 0.02M optimum
Indication	Output On LED
Termination	2M PVC sheathed cable

### MODEL TYPE

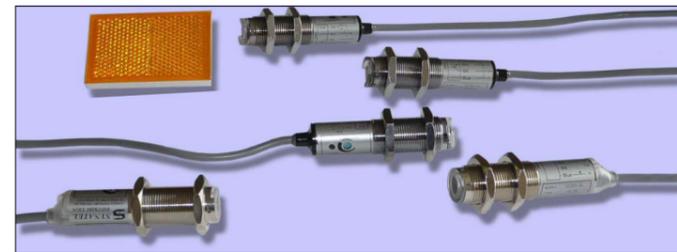
Model	Type	Weight
PE2FO	Visible red light suitable for most applications	100g

### Connections

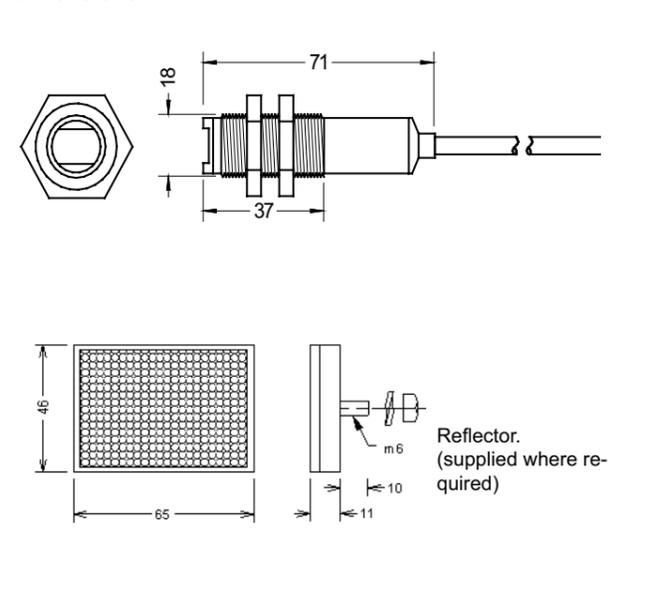


## OPTIBEAM RANGE

A range of 18mm sensors in through beam, non-polarised retro-reflex, polarised retro-reflex and reflex formats. These units provide a very cost effective solution to a wide range of different applications throughout industry.



### Dimensions



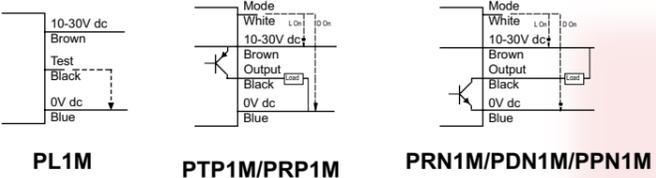
### SPECIFICATION - GENERAL

Supply	10-30V dc
Output	Fully protected, opto-isolated transistor. Rated@ 100mA 30V dc max.
Indication	Output state
Termination	2M PVC sheathed cable
Sensitivity	0-100% on receiver, reflex and retro reflex

### SELECTION CHART

Model	Type	Operating Range	Weight
PRN1M	Reflex npn	0.4M	100g
PRP1M	Reflex pnp	0.4M	100g
PDN1M	Retro-reflex npn	2.0M	100g
PPN1M (polarised)	Retro-reflex npn	1.0M	100g
PTP1M	Receiver pnp	> 8.0M	100g
PL1M	Emitter	> 8.0M	100g

### Connections

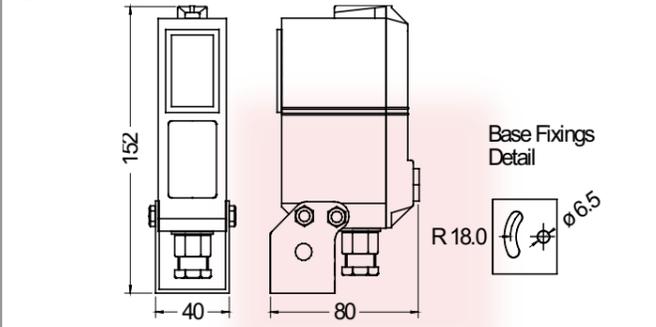


## UNILIGHT RANGE

SYNATEL manufacture a robust and heavy duty range of sensors, all with universal voltage power supplies, sensitivity controls and time delays. Available in through beam, polarised retro-reflex and reflex formats. Units are supplied complete with mounting bracket. (Polarised retro-reflex requires additional reflector).



### Dimensions



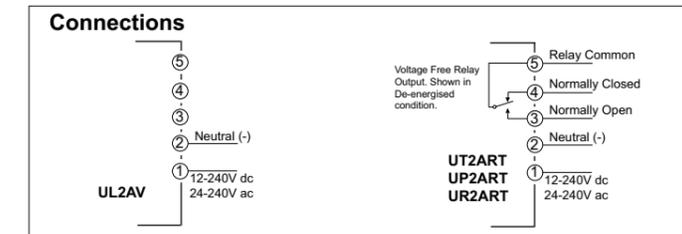
### SPECIFICATION - GENERAL

Supply	12-240V ac/dc
Output	S.P.C.O relay rated at 3A 240V ac max. non-inductive
Indication	Output state and variable intensity alignment
Sensitivity	0-100% on receiver, reflex and retro reflex
Time Delay	0-5 seconds on beam make and beam break

### SELECTION CHART

Model	Type	Operating Range	Weight
UP2ART	Retro-reflex	5.0M	280g
UR2ART	Reflex	0.75M	280g
UT2ART	Receiver	> 8.0M	280g
UL2AV	Emitter	> 8.0M	280g

Accessories: Reflectors



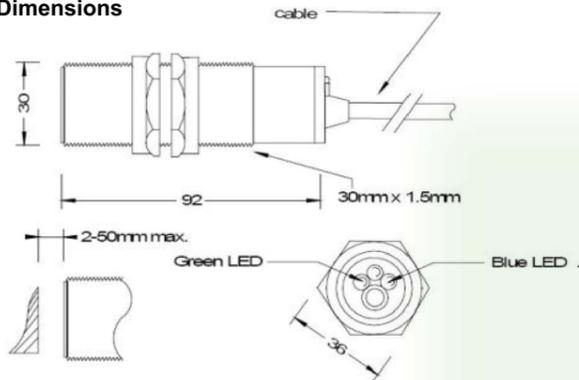
All dimensions shown in mm unless otherwise specified.

## 30mm CAPACITIVE PROXIMITY SENSOR

An innovative range of 30mm capacitive (PremierCap) proximity sensors, designed & manufactured by **SYNATEL** available as 5 wire Relay output, 4 wire 10-30V dc transistor output or 2 wire FET output, multivoltage units. Non flush. ATEX **EN60079** & IECEx **IEC 60079** gas & dust hazard area use approvals. Ideal for level detection in small hoppers, etc. (Dust Zone 20 / Gas Zone 0)

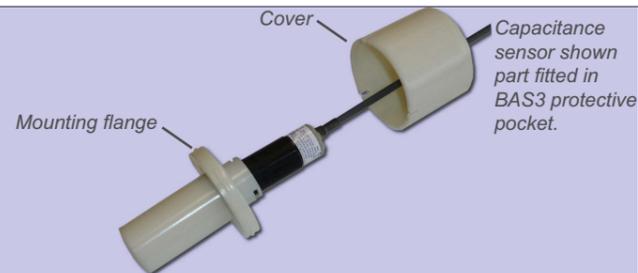


### Dimensions



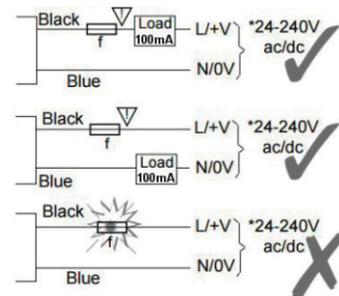
### SPECIFICATION - PREMIERCAP SENSORS

	CX1TRA1	CX1TOAI	CX1TZA1
Supply	15-240V dc/24-240V ac	10-30V dc	24-240V ac/dc
Fusing	1500A capable, 500mA max. 1 per sensor <b>MUST</b> be used.		
Programming	Performed using a combination of 2 magnets (supplied in housing) Some programming functions require both magnets, other functions only require 1 magnet.		
Output	SPO relay	Fully opto-isolated transistor	2 wire FET
Output State	User selectable with 'CalMag' programmer supplied. npn or pnp configurable by user (DC unit only)		
Output Rating	60V 3A max.	30V dc 100mA Max.	100mA max.
Operating Range	0-50mm typically (set by a maximum of 12 steps)		
Ambient Temp.	-15°C to +50°C		
IP Rating	IP66		
Enclosure	Molded Nylon		
Connections	5 wire	4 wire	2 wire
Weight	260g		
Options	BAS3 - protective pocket. Ideal where material is abrasive, insulates sensor from actual material being detected.		



## CONNECTIONS - ALL UNITS

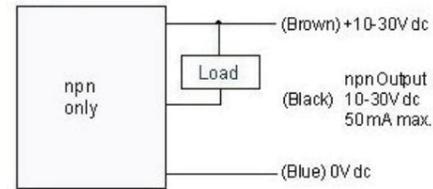
### 2 wire Connections



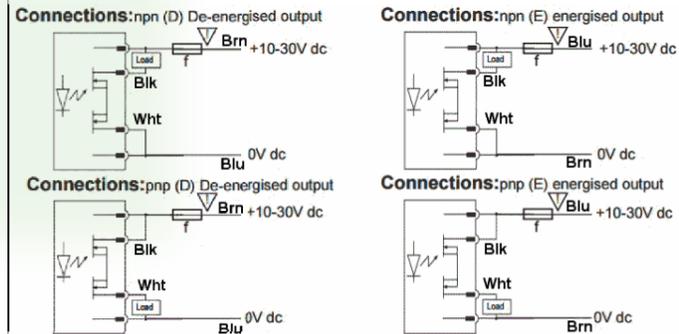
**NOTE:** f= 1500A Capable fuse 500mA max. rating  
1 fuse per unit **MUST** be used.

\*Load must have the same voltage rating as supply being used. Supply polarity is not important.

### 3 wire Connections



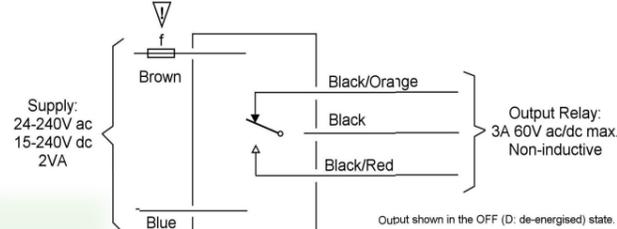
### 4 wire Connections



**NOTE:** f= 1500A Capable fuse 500mA max. rating  
1 fuse per unit **MUST** be used.

See individual unit specification for maximum output switching current.

### 5 wire Connections



**NOTE:** f= 1500A capable fuse 500mA max. rating.  
1 fuse per unit **MUST** be used

# PROXIMITY SENSOR CATALOGUE

2

### photoelectric sensors



### proximity sensors



### speed monitors



### counters & tachometers



### level control sensors



### special systems



### Hazard Approved Sensors

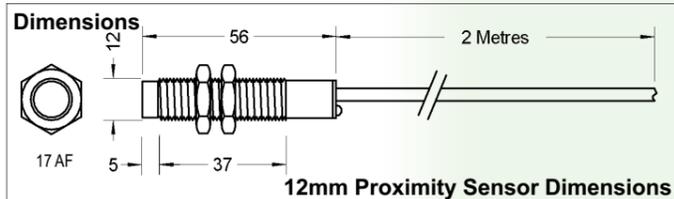


## PROXIMITY SENSOR RANGE

**Synatel** manufacture a range of proximity sensors, both inductive and capacitive, in a variety of enclosures ranging from a 12mm diameter dc type upto a 40mm DIN standard limit switch style; multivoltage with relay output. Units are available with ATEX and IEC Ex certification.

### 12mm INDUCTIVE PROXIMITY SENSOR

A 12mm dc inductive proximity sensor supplied by **SYNATEL**, ideal for general use, such as target detection on rotating/reciprocating machinery. Non-approved.



#### SPECIFICATION - ID1LS

Supply	10-30V dc.
Output	npn, 30V dc 50mA max.
Output State	Normally off (D).
Operating Range	4mm Max.
Hysteresis	15% of operating range.
Operating Speed (Max.)	1Khz.
No. of Cores	3 wire
Ambient Temperature	-15°C to +50°C.
IP Rating	IP65.
Weight	75 grams.
Material	Plated Brass/PVC.

### 18mm INDUCTIVE PROXIMITY SENSOR

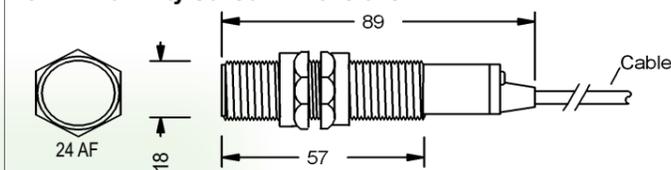
**SYNATEL** design & manufacture a range of 18mm inductive proximity sensors, available as 4 wire DC or 2 wire FET multivoltage units. Non flush. Ideal for target detection on rotating/reciprocating machinery. ATEX **EN60079** & IECEx **IEC 60079** gas & dust hazard area use approvals (Dust zone 21 / Gas zone 1).



#### SPECIFICATION - ID1LS

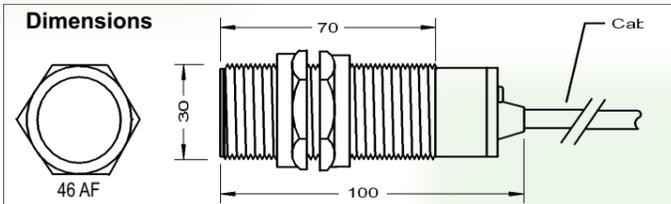
Type:	<b>ID/E1MOAI</b>	<b>ID1MZAI / IE1MZAI</b>
Supply	10-30V dc.	24-240V ac/dc
Output	Opto-isolated transistor, 30V dc 100 mA max. npn or pnp	FET 50 mA max.
Output State	Configurable for normally off (D) or normally on (E).	Normally off (D) or normally on (E) as order options .
Operating Range	8mm Max.	
Hysteresis	15% of operating range.	
Op. Speed (Max.)	100 Hz.	
No. of Cores	4 wire	2 wire
Ambient Temp.	-15°C to +50°C.	
IP Rating	IP66.	
Weight	260 grams.	
Material	Moulded Nylon.	

### 18mm Proximity Sensor Dimensions



### 30mm INDUCTIVE PROXIMITY SENSOR

A range of 30mm inductive proximity sensors, designed & manufactured by **SYNATEL** available as 4 wire DC or 2 wire FET multivoltage units. Non flush. ATEX **EN60079** & IECEx **IEC 60079** gas & dust hazard area use approvals (Dust zone 20 / Gas zone 0).



#### SPECIFICATION - ID1LS

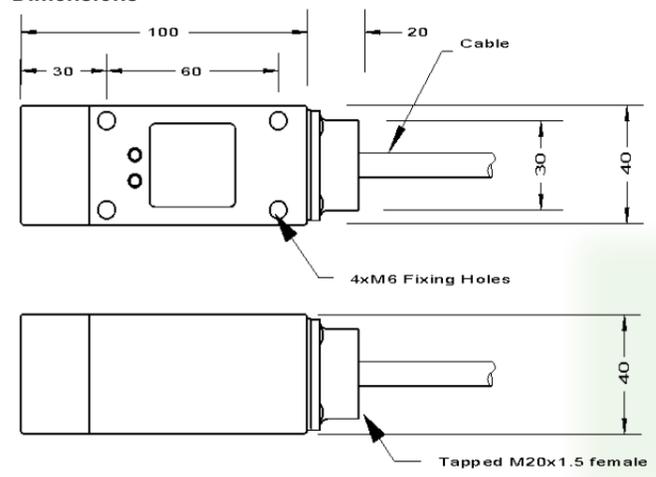
Type:	<b>ID/E1TOAI</b>	<b>ID1TZAI / IE1TZAI</b>
Supply	10-30V dc.	24-240V ac/dc
Output	Opto-isolated transistor, 30V dc 100 mA max. npn or pnp	FET 100 mA max.
Output State	Configurable for normally off (D) or normally on (E).	Normally off (D) or normally on (E) as order options .
Operating Range	8mm Max.	
Hysteresis	15% of operating range.	
Op. Speed (Max.)	100 Hz.	
No. of Cores	4 wire	2 wire
Ambient Temp.	-15°C to +50°C.	
IP Rating	IP66.	
Weight	260 grams.	
Material	Moulded Nylon.	

## 40mm DIN LIMITSWITCH STYLE PROXIMITY SENSOR

**SYNATEL** moulded DIN limit switch style housing (40x40mm) proximity sensors. Non-approved. Ideal for general use, such as replacing existing limit switches or target detection on rotating/reciprocating machinery.



#### Dimensions

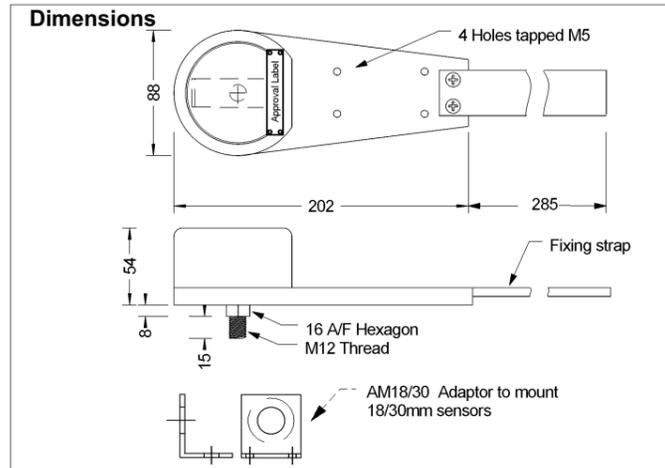


#### SPECIFICATION - GENERAL

Supply	<b>ID/E1DO</b> 10-30V dc	<b>UD1DR</b> 12-240V dc/24-240V ac
Output	Fully protected, opto-isolated transistor. npn/pnp configurable. 100mA 30V dc max.	SPCO relay 2.5A 240V ac max. non-inductive.
Output State	User selectable D=off, E=on	Normally OFF (De-energised)
Operating Range	12mm	
Hysteresis	15% of operating range	
Ambient Temp.	-15°C to +50°C	
IP Rating	IP65	
Enclosure	Moulded Nylon	
No. of Cores	4 wire	5 wire
Weight	325g	

### WHIRLIGIG SENSOR ATTACHMENT

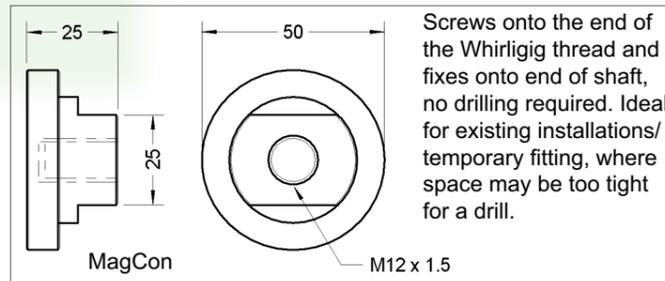
A low cost, fully contained speed monitoring attachment, allowing easy fitting of **SYNATEL** inductive proximity sensors/speed monitors. Simple M12 fixing (Magnetic mounting available as an option). Targets are fully enclosed and require no further guarding. Comes complete with fixing strap & 18/30mm mounting bracket to enable use with any sensor. **EN 80079** (Dust zone20 / Gas zone0)



#### SPECIFICATION - Whirligig (WG1-(A)-#P (# = 1, 2, 4 or 8 pulse)

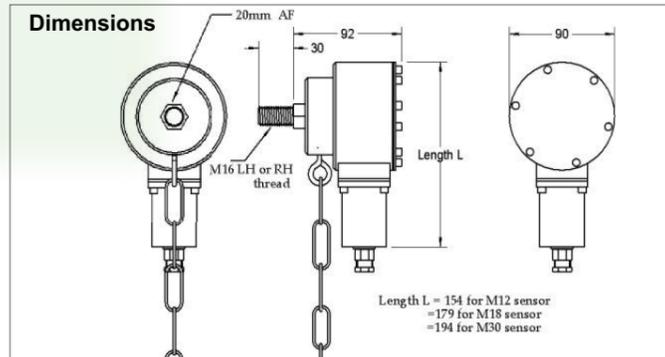
Mounting Thread	M12 x 1.75mm x 18mm deep
Pulse Targets	Located under main cover. Choice of 1, 2, 4, or 8 pulses per revolution.
Fixing	In addition to M12 thread, fixing strap supplied to be fitted to static part of machinery, prevents base from rotating when machine switched on.
Bracket	Supplied. Suitable for fixing 18/30mm inductive based sensors. Fixing screws also supplied.
Approval	Ex II 1G Ex h IIC T5 Ga (Zone0) Ex II 1D Ex h IIC T100°C Da (Zone 20) Tamb = -15°C to +50°C IP40

Accessories: MagCon



### WGHD HEAVY DUTY WHIRLIGIG

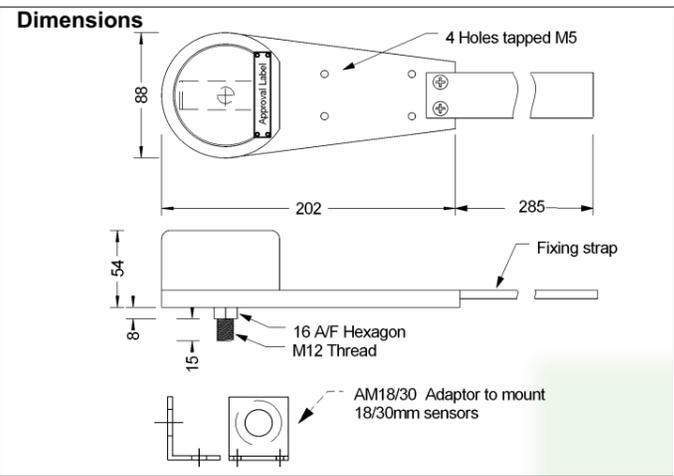
All stainless steel construction, fully contained speed monitoring attachment, ideal for mine or quarry use. Allows easy fitting of all **SYNATEL** 12/18/30mm diameter inductive proximity sensors/speed monitors. Simple M16 fixing. Targets are fully enclosed and require no further guarding.



Fit & Forget Technology

All dimensions shown in mm unless otherwise specified.

See back page for connection details.



**SPECIFICATION - Whirligig (WG1-(A)-#P (# = 1, 2, 4 or 8 pulse)**

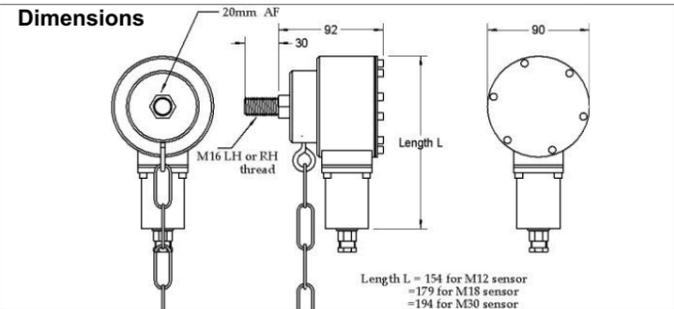
Mounting Thread	M12 x 1.75mm x 18mm deep
Pulse Targets	Located under main cover. Choice of 1, 2, 4, or 8 pulses per revolution.
Fixing	In addition to M12 thread, fixing strap supplied to be fitted to static part of machinery, prevents base from rotating when machine switched on.
Bracket	Supplied. Suitable for fixing 18/30mm inductive based sensors. Fixing screws also supplied.

Accessories: MagCon



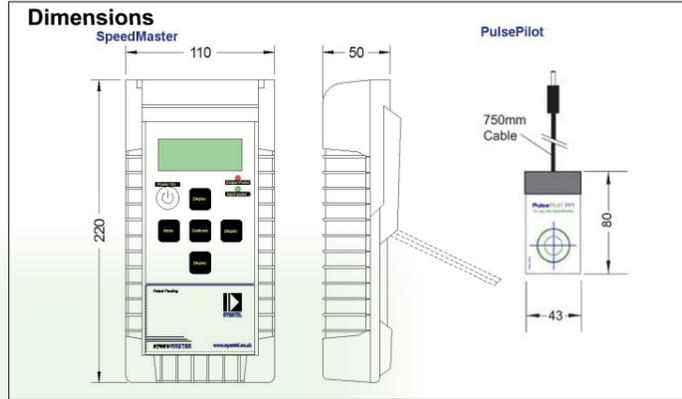
**WGHD HEAVY DUTY WHIRLIGIG**

All stainless steel construction, fully contained speed monitoring attachment, ideal for mine or quarry use. Allows easy fitting of all SYNATEL 12/18/30mm diameter inductive proximity sensors/speed monitors. Simple M16 fixing. Targets are fully enclosed.



**SPEEDMASTER SSM1 CALIBRATOR/CHECKER**

The SpeedMaster is a test instrument designed to check the function/calibration of all types of SYNATEL speed monitors. It can also be used to calibrate sensors to any desired speed. Speed/Switch Point Calibration Checker (Ideal for Calibration/Auditing).



**SPECIFICATION - SPEEDMASTER SSM1 + PULSE PILOT PP1**

Supply	SSM1 - 4 x AA batteries. (PP1 powered by SSM1)
Speed Range	10-3600 PPM. Accuracy $\pm <0.5\%$
Display	5 digit, 7 segment green LED
Power ON	Plug in Pulse Pilot PP1 and press 'ON' button.
Power OFF	SpeedMaster unit powers down automatically after 5 minutes if no buttons pressed. The unit can be turned off immediately by unplugging the Pulse Pilot PP1.
Enclosure	SSM1 - Moulded enclosure, gasketed with membrane keypad. PP1- Glass fibre plate assembly & encapsulated end cap

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**SPEED MONITOR CATALOGUE**

photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



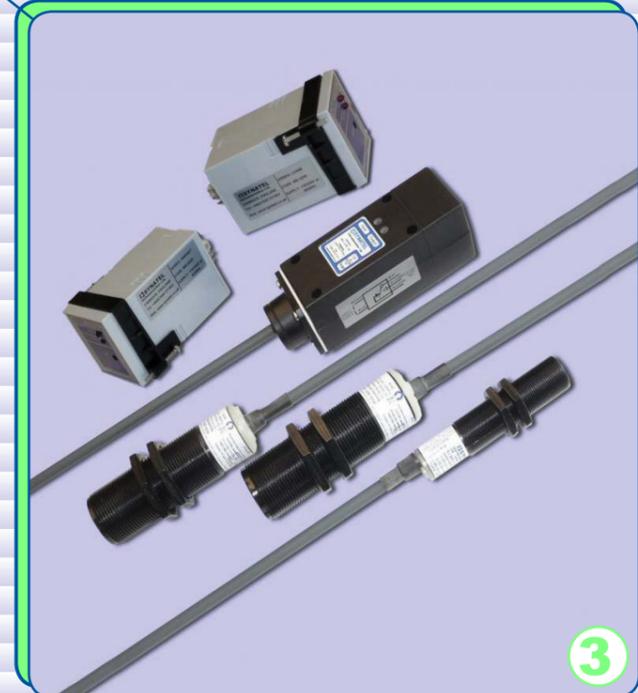
level control sensors



special systems



Hazard Approved Sensors



Walsall Road, Norton Canes, Cannock, Staffordshire. WS11 9TB UK  
 Tel: +44 (0) 1543 277003  
 Fax: +44 (0) 1543 271217  
 Web: www.synatel.co.uk  
 e-mail: sales@synatel.co.uk

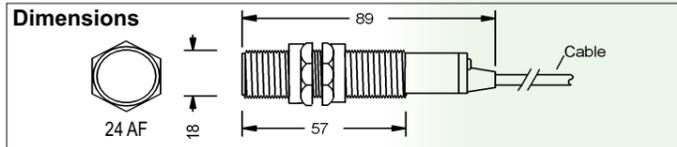


## SPEED MONITOR RANGE

A range of stopped motion, over or under speed monitors, designed and manufactured in the UK by **SYNATEL**. Available in self contained or modular (plug in base) form with separate proximity sensors. ATEX **EN 60079** and IECEx **IEC 60079** approved sensors are available, which can also be used in non-approved applications.

### 18mm ROTASTOP STOPPED MOTION MONITOR

An 18mm diameter unit, incorporating a proximity sensor & stopped motion circuit. An 'on' state is maintained whilst a pulse is sensed. ATEX **EN60079**/IECEX **IEC 60079**. (Dust Zone 21/Gas Zone 1).



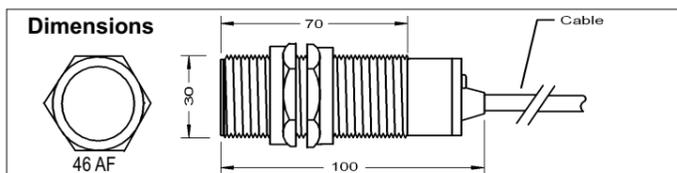
SPECIFICATION	
Supply	24-240V ac/dc.
Connection/Output	2 wire - FET 100mA max..
Output State	Normally off (D), On when target sensed.
Output Time-out	At least one pulse within 4 seconds.
Operating Range	8mm Max.
Hysteresis	15% of operating range.
Operating Speed (Max.)	100hz.
No. of Cores	2 wire
Ambient Temperature	-15°C to +50°C.
IP Rating	IP66.
Weight	260 grams.
Material	Plated Brass/PVC.

### 30mm ROTASLIP UNDERSPEED MONITOR

The **Rotaslip** monitors from **SYNATEL** are designed to detect a stud or bolt on a shaft and indicates a fault condition (open circuit) if the input speed reduces by 20% or more below set running speed. ATEX **EN60079** & IECEx **IEC 60079** gas & dust hazard area use approvals (Dust zone 20 / Gas zone 0).

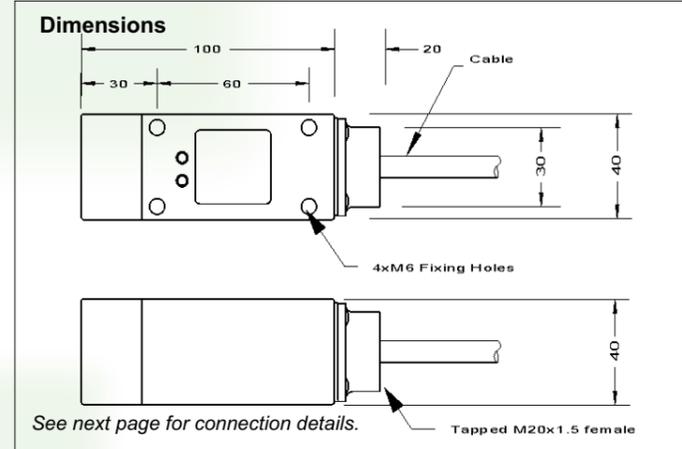


SPECIFICATION		
Type:	PU1TZA1	PU1TRA1
Supply	24-240V ac/dc	15-20V dc/24-240V ac
Output	FET 100mA max.	S.P.C.O Relay, 60V ac/dc 3A max. Non-ind.
Output State	Normally off (D), stays on (E) providing correct input pulses received. If pulses fall 20% or more below set running speed, sensor goes off (D).	
Start-up Delay	30 sec. max. Allows machinery to reach normal running speed before sensor monitors pulses.	
Operating Range	8mm Max.	
Hysteresis	15% of operating range.	
Op. Speed	10-3600 PPM (Pulses per Minute).	
No. of Cores	2 wire	5 wire
Ambient Temp.	-15°C to +50°C.	
IP Rating	IP66.	
Weight	260 grams.	
Material	Moulded Nylon.	



### ROTAMATIC LIMIT SWITCH STYLE UNDERSPEED MONITOR

Designed, manufactured & supplied by **SYNATEL**, the **ROTAMATIC** sensor is a moulded, DIN standard limit switch packaged underspeed monitor with relay output. Output goes open circuit if input speed reduces by 20% of programmed speed setting. **EN 50281** (Dust zone21).



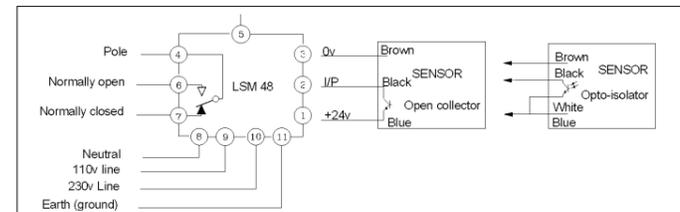
SPECIFICATION - ROTAMATIC PU1DR(A)	
Supply	12-240V dc/24-240V ac
Output	S.P.C.O Relay, 240V ac/dc 3A max. Non-ind.
Output State	Normally off (D), stays on (E) providing correct input pulses received. If pulses fall 20% or more below set running speed, sensor goes off (D). 30 sec. max. Allows machinery to reach normal running speed before sensor monitors pulses.
Start-up Delay	30 sec. max. Allows machinery to reach normal running speed before sensor monitors pulses.
Operating Range	12mm Max.
Hysteresis	15% of operating range.
Op. Speed	10-3600 PPM (Pulses per Minute).
No. of Cores	5 wire
Ambient Temp.	-15°C to +50°C.
IP Rating	IP65.
Weight	500g.
Material	Moulded Nylon.

### MODUSTOP LSM48 STOPPED MOTION MONITOR

A modular stopped motion monitor, designed by **SYNATEL** to work with a separate proximity sensor. Output goes open circuit after time period if incoming pulses stop.



SPECIFICATION - LSM48	
Supply	110/230V ac 50/60 Hz (24V dc optional)
Output	SPCO Relay rated @ 5A 240Vac max. Non-inductive.
Output State	Output energised (ON) providing at least one input pulse is received within time period set on top plate. Output de-energises if no pulses received.
Operating Range	Dependant upon sensor used.
Time Delay	Standard input delay = 1.5-15 seconds. Other delays of: 0.3-3 sec, 3-30 sec, 6-60 sec.
Input	nnp or contact. (Any Synatel dc proxy sensor).
Indication	LED indication of input pulse & output ON.
Connection	11 pin international plug-in relay base
weight	210g

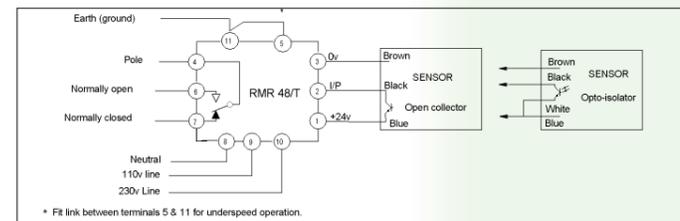


### MODUSLIP UNDERSPEED MONITOR

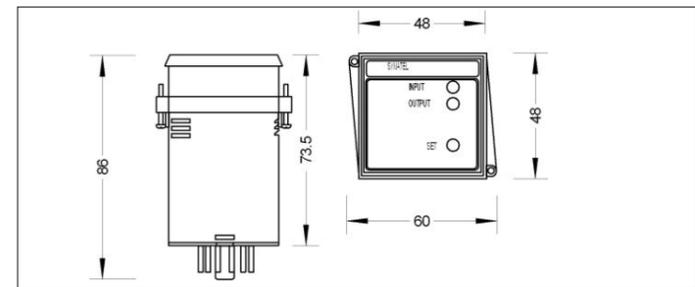
A modular stopped motion monitor, designed by **SYNATEL** to work with a separate proximity sensor. Output goes open circuit after time period if incoming pulses stop.



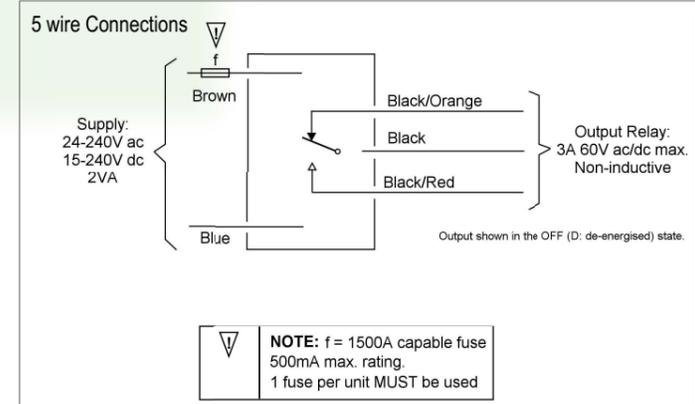
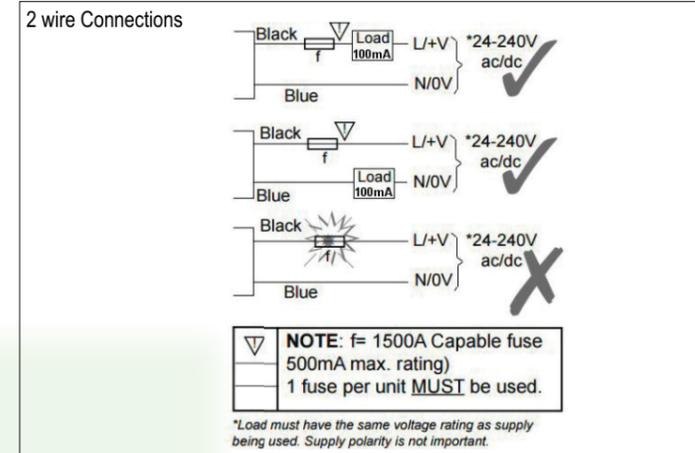
SPECIFICATION - RMR48/T	
Supply	110/230V ac 50/60 Hz (24V dc optional)
Output	SPCO Relay rated @ 5A 240Vac max. Non-inductive.
Output State	Output energised (ON) at set running speed. De-energised if rotation reduces by 20% below set speed.
Operating Range	Dependant upon sensor used.
Speed Range	10-10,000 ppm (Pulses per Minute).
Start-up Delay	Programmable. Output energises for set time period & ignores incoming pulses, allows machines to achieve normal running speed. Max. delay = 30 sec..
Input	nnp or contact. (Any Synatel dc proxy sensor).
Indication	LED indication of input pulse & output ON.
Connection	11 pin international plug-in relay base
weight	210g



## DIMENSIONS - MODUSTOP and MODUSLIP MODULES



## CONNECTIONS - 2 wire and 5 wire Sensors



## WHIRLIGIG SENSOR ATTACHMENT

A low cost speed monitoring attachment, allowing easy fitting of **SYNATEL** inductive proximity sensors/speed monitors. Simple fixing. Targets are fully enclosed. Complete with fixing strap & 18/30mm mounting bracket. **EN 80079** (Dust zone20 / Gas zone0)



Fit & Forget Technology

All dimensions shown in mm unless otherwise specified.

photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



level control sensors



special systems



Hazard Approved Sensors

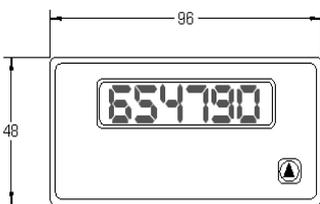


# MULTICOUNT - COUNTERS & TACHOMETERS

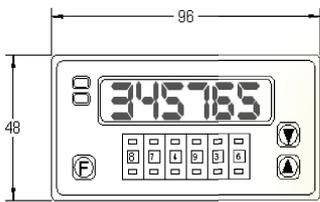
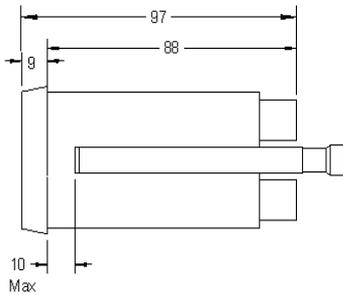
The Multicount counters and tachometer are a highly cost effective range of digital displays which can be user programmed for counting, batching, speed display or dwell/bake time indication. 48 x 96mm DIN enclosure. Auto, manual reset. Counter with thumbwheel settings, speed indicator has floating decimal point facility.



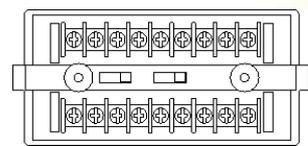
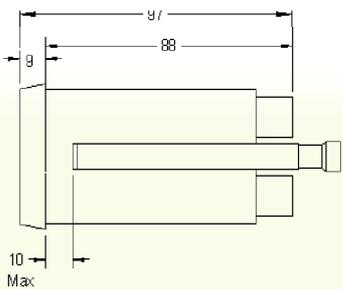
### Dimensions



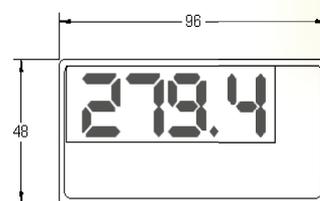
MFC100



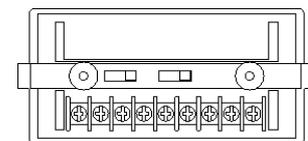
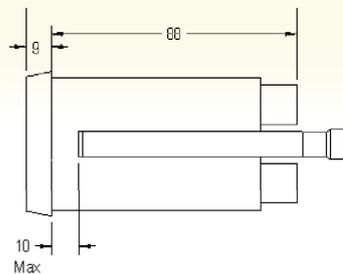
MFC102



Rear View MFC units



MSD100



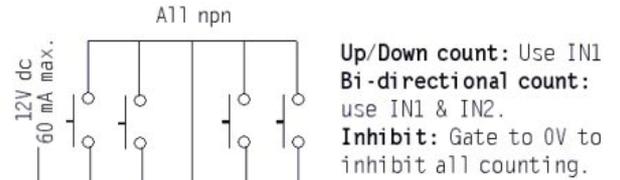
Rear View MSD unit

### SPECIFICATION - MULTICOUNT

Supply	110/230V ac
Consumption	3VA
Sensor Supply	12V dc smoothed, 60mA maximum.
Input	npn or volt free contact
Output	- None -
MFC100	2 x SPCO rated @ 5A ac non-ind.
MFC102	1 x SPCO rated @ 5A ac non-ind.
MSD100	(can be used for underspeed applications)
Memory Retention	10 year memory of programme settings.
Connection	Screw terminal on rear of unit.
Protection	IP41
Weight	400g

### Connections

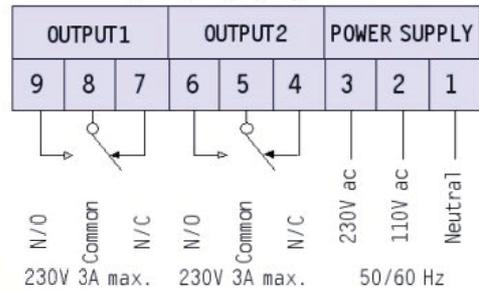
#### MFC100/MFC102



10	11	12	13	14	15	16	17	18
+V	IN1	IN2	0V	RST	GATE	<del>No Connection</del>		

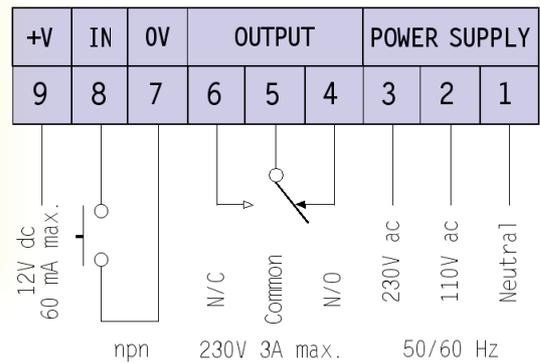
A: <math>-2.5\text{KHz}</math>  
 B: <math><60\text{ Hz}</math>

Legend:   
 A: Manual Reset  
 B: Not Used  
 N: Auto-Reset  
 R: C

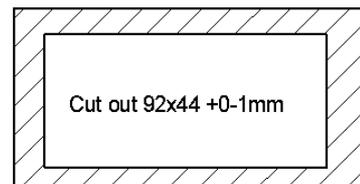


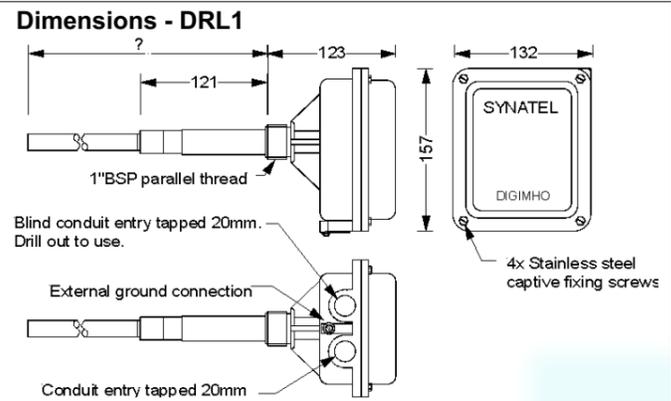
Note: MFC100 No outputs - MFC101 use output2  
 MFC102 use output1 (pre o/p) & output2 (main o/p)

#### MFC100/MFC102



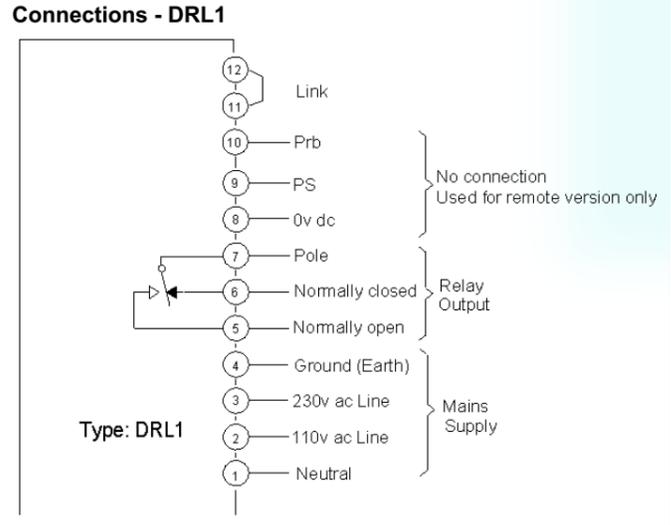
### Panel Cut-out





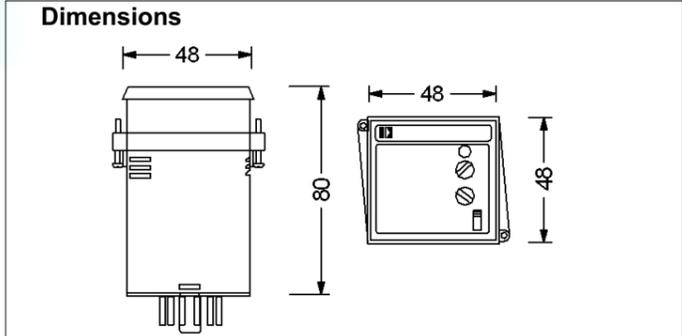
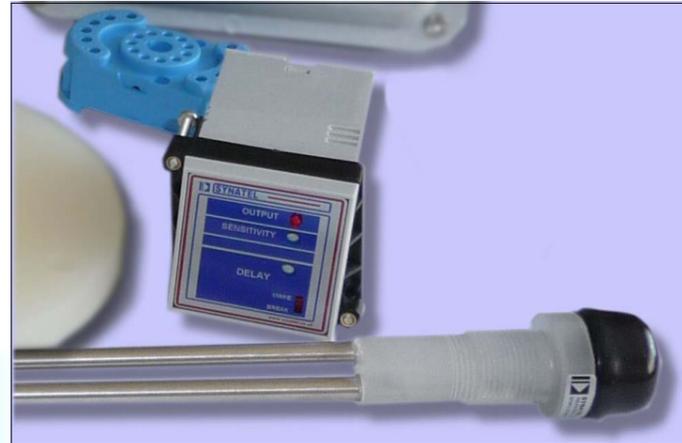
SPECIFICATION	
Supply	110/230 ac 50/60 Hz.
Load	1.5VA ac
Ambient Temperature	-10°C to +50°C Probe Heads (Typical).
Output	1 set of volt free change-over relay contacts, rated @ 2.5A 240V ac non-inductive.
Output Mode	High or Low level, selected via a switch.
Calibration	6 x inline DIP switches.
Compensation	Power shield compensator for material build up around probe rod & vessel wall. Prevents false signalling. Ideal for sticky or viscous materials.
Indication	LED's for Power, Timer & Output.
Mounting/Fixing	1" BSP Male
Protection	IP65
Enclosure	Flame retardant, glass filled nylon.
Weight	Digimho DRL1: 2Kg
Ancillary Parts	1" bsp probe mounting flange: 98mm dia. - polypropylene. Consists of 4 x 9mm mounting holes on 127 PCD, 1" BSP fitting for probe unit.

Note: Probe rods are as detailed under **Digimatic DML4AI**

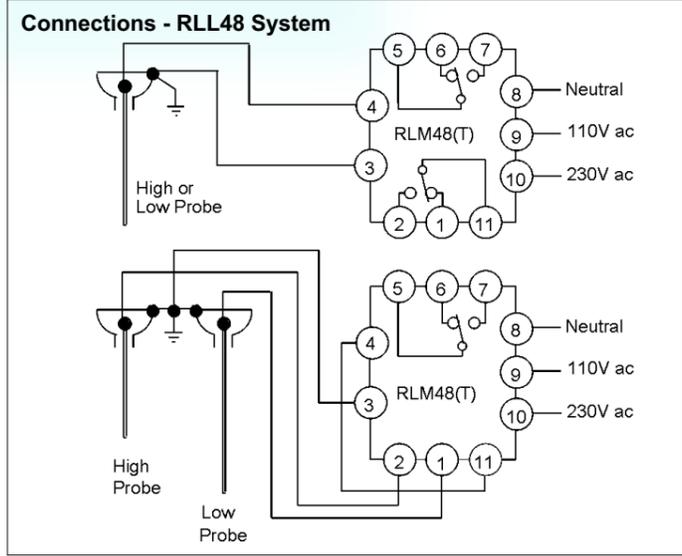


### RLL48 MODULAR RESISTANCE LEVEL SYSTEM

Especially suited for use with conductive materials such as rain/tap water etc. Easy calibration. 48mm DIN standard enclosure suitable for panel mounting. 11 pin plug in base connection. LED output indication. 110/230V ac supplies. SPCO relay output. Designed & manufactured by **SYNATEL**. High level or low level options available. Various single or twin level probes available.



SPECIFICATION	
Supply	110/230 ac 50/60 Hz.
Load	1.5VA ac
Ambient Temperature	-10°C to +50°C Probe Heads (Typical).
Output	2 sets of volt free change-over relay contacts, rated @ 2.5A 240V ac non-inductive.
Output Mode	High or Low level specified when ordered.
Calibration	Analogue rotary over 500 ohms to 30K.
Indication	LED's for Output.
Mounting/Fixing	11 pin relay base for RLM modules. (48mm square DIN mounting).
Protection	IP40 for module, typically IP65 for probe.
Weight	RLM48/T, RLM48L/T - 220g MRP2 probe - 300g



# LEVEL CONTROL SENSOR CATALOGUE 5

photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



level control sensors



special systems



Hazard Approved Sensors



Walsall Road, Norton Canes, Cannock, Staffordshire. WS11 9TB UK  
Tel: +44 (0) 1543 277003  
Fax: +44 (0) 1543 271217  
Web: [www.synatel.co.uk](http://www.synatel.co.uk)  
e-mail: [sales@synatel.co.uk](mailto:sales@synatel.co.uk)



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## LEVEL CONTROL SENSOR RANGE

SYNATEL manufactures a range of fixed point level control equipment, both R.F. capacitive and resistive, for use in liquids, free flowing powders and granular solids. We also manufacture capacitive proximity sensors in 30mm dia. enclosures. ATEX EN 60079 & IECEx IEC 60079 explosive hazard area use approved units available.

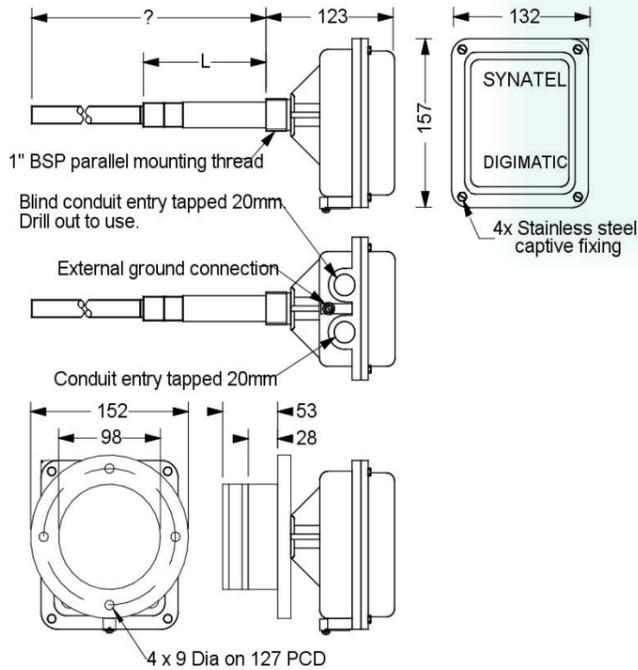
## DIGIMATIC DML4AI Self Contained Capacitance Probe

A fixed point capacitance level control suitable for detecting liquids, powders & granular solids. Approved to ATEX EN 60079 & IECEx IEC 60079 standards for Explosive Dust Hazard Area use. Automatic high/low level calibration with manual override. LED display. 110/230 Vac/24 Vdc supply connections in same unit. Volt free relay output. Power shield compensator, prevents false signalling due to material build-up on probe rod. Simple calibration.

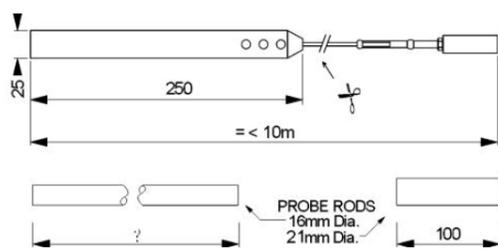


### Dimensions

L = 60mm (short powershield) or customer length - **DML4AIV**  
L = 121mm - Standard **DML4AI**



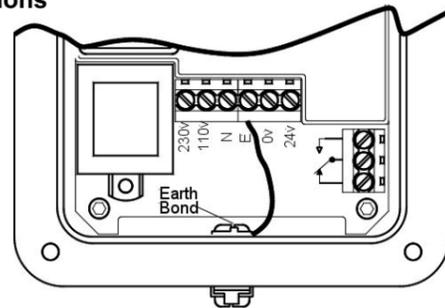
### Dimensions - Probe Rods



### SPECIFICATION

Supply	110/230 ac 50/60 Hz. 24V dc stabilised.
Supply Tolerance	-6% to +2%.
Supply Cable Size	Min: 1 sq mm, max: 4 sq mm.
Fusing/Cct Breaker (Max Rating.)	5A. (1500A capable).
Load	1.5VA ac/50mA dc.
Ambient Temperature	-10°C to +50°C.
Sensitivity	0.5 picofarad.
Output	1 set of volt free change-over relay contacts, rated @ 2.5A 60V ac non-inductive.
Output Mode	High or Low level, selected via a switch.
Time Delay	Adjustable via single pushbutton. Prevents false signalling due to spurious splashing etc.
Calibration	Automatic or manual calibration using independant pushbuttons for covered & un-covered conditions.
Indication	LED display for calibration purposes & timer settings. LED's for Power, Probe covered & Calibrating mode.
Mounting/Fixing	1" BSP Male. Mounting flange available as an option.
Protection	IP65
Connections	Via screw terminal block(s).
Enclosure	Flame retardant, glass filled nylon. Other parts: Stainless, PTFE.
Compensation	Powershield for material build up on probe to vessel (earth/ground). Prevents false signalling.
Weight	Digimatic <b>DML4AI</b> : 2Kg 100 x 22 mm dia rod: 250g 200 x 16mm dia rod: 250g 1 metre rod: 1.5Kg 2 metre rod: 3Kg 10 metre wire rope/weight: 1.25Kg
Options	Standard unit - <b>DML4AI</b> - 822-029 Short powershield version - <b>DML4AIV</b> Flush mounting version - <b>DML4AIFP</b>
Probe rods	<b>Probe Rods</b> 100mm x 22mm dia. - 822-006 200mm x 16mm dia. - 822-005 1000mm x 16mm dia. - 822-003 2000mm x 16mm dia. - 822-004 10 mtr wire rope/weight - 823-004 (1mtr rod, 2 mtr rod & 10 mtr wire rope assembly can all be cut to suitable length on site).
Ancillary Parts	1" bsp probe mounting flange: Probe mounting flange 98mm dia. - polypropylene. Consists of 4 x 9mm mounting holes on 127 PCD, 1" BSP fitting for probe unit.
Approvals	ATEX <b>EN 60079</b> , IECEx <b>IEC60079</b> (Dust Zone 20).

### Connections

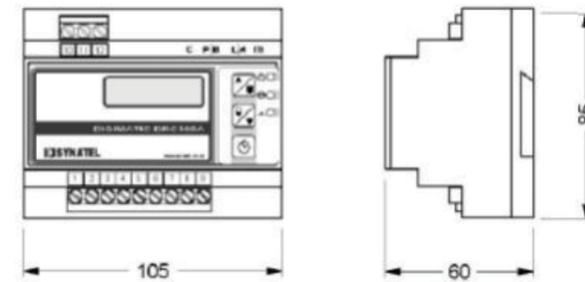


## DIGIMATIC DMR2A Remote Capacitance Probe

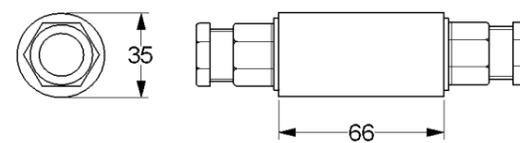
A fixed point, capacitance level control system consisting of 3 parts: Control unit, signal Transverter plus probe head/probe rod. Approved for ATEX 1D Explosive Dust hazard Use. LED display shows calibration & run mode readings. Power shield compensator, prevents false signalling due to material build-up on probe rod. Adjustable timer to prevent false signalling from 'splashing' materials. ATEX EN61241 (Dust Zone 20).



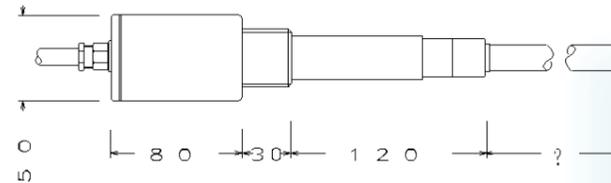
### Dimensions - DRC205A



### Dimensions - DCT2AA

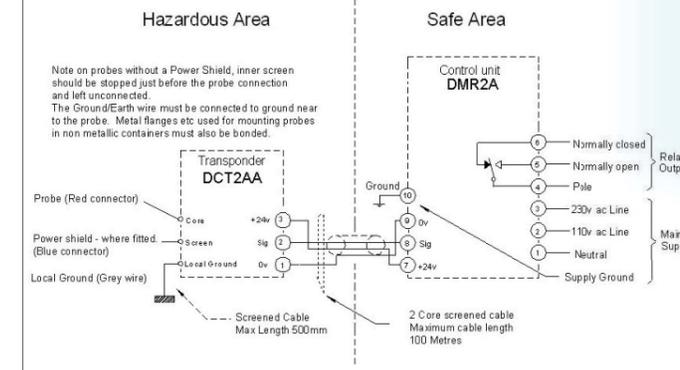


### Dimensions - RPP1 (polypropylene) or RPK1 (Peek)



Note: Probe rods are as detailed under **Digimatic DML4AI**

### Connections



### SPECIFICATION

Supply	110/230 ac 50/60 Hz.
Load	1.5VA ac
Ambient Temperature	-10°C to +50°C for <b>DRC205A</b> Probe heads depend upon type/material used up to a maximum of 250°C.
Probe Heads (Typical)	<b>RPP1</b> : Polypropylene suitable upto 125°C <b>RPK1</b> : PEEK suitable upto 250°C
Output	1 set of volt free change-over relay contacts, rated @ 2.5A 240V ac non-inductive.
Output Mode	High or Low level, selected via a switch.
Time Delay	Adjustable via single pushbutton. Prevents false signalling due to spurious splashing etc.
Calibration	Automatic or manual calibration using independant pushbuttons for covered & un-covered conditions.
Indication	LED display for calibration purposes & timer settings. LED's for Power, Probe covered & Calibrating mode.
Mounting/Fixing	1" BSP Male ( <b>RPP1/RPK1</b> ), Din rail mounting for <b>DRC205A</b>
Protection	<b>DRC205A</b> - IP40, all others - IP65
Connections	400mm max. screened, hi-temp cable already supplied between probe head & <b>DCT2AA</b> . Upto 100m between <b>DCT2AA</b> and <b>DRC205A</b> in multicore cable.
Enclosure	<b>DRC205A</b> : Polycarbonate <b>DCT2AA</b> : Polypropylene <b>RPP1</b> : Polypropylene with PTFE & stainless steel parts. <b>RPK1</b> : PEEK with PTFE and stainless steel parts.
Compensation	Powershield for material build up on probe to vessel (earth/ground). Prevents false signalling.
Weight	<b>DRC205A</b> : 275g <b>DCT2AA</b> : 120g <b>RPP1/RPK1</b> : 410g
Ancillary Parts	1" bsp probe mounting flange: Probe mounting flange 98mm dia. - polypropylene. Consists of 4 x 9mm mounting holes on 127 PCD, 1" BSP fitting for probe unit.
Approvals	ATEX <b>EN 61241</b> (Dust Zone 20).

## DIGIMHO RESISTANCE LEVEL PROBE

The **Digimho DRL1** resistance level control probe, designed & manufactured by **SYNATEL**, is self contained & is especially suited for use with highly conductive, sticky materials such as carbon black/treacle/molasses etc. 110/230V ac supply connections in the same unit. Volt free change over relay output. Powershield to automatically compensate for build up of conductive material around probe, preventing false signalling. Easy calibration.



Fit & Forget Technology

All dimensions shown in mm unless otherwise specified.

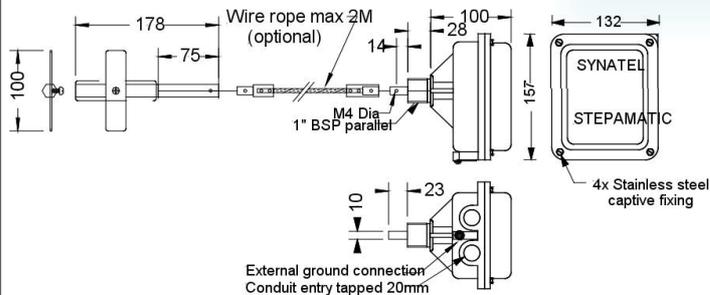
## STEP-A-MATIC SML1A ROTARY PADDLE PROBE

The STEP-A-MATIC SML1(A), designed & manufactured by SYNATEL, is a patented, rotary paddle level control suitable for powders & granular solids. Approved to ATEX 50281 standards for Explosive Dust Hazard Area use (Pre 2012/2014 standards). High/low level output switch. LED output state indication. 24V dc, 90-260V ac supply connections in same unit. Volt free, change over relay output. Adjustable timer to prevent false signalling from 'splashing' materials.

The STEP-A-MATIC uses a patented, unique stepper motor drive instead of the traditional synchronous motor. This utilises a direct drive eliminating the need for gearboxes & clutches, and makes the drive virtually indestructible, it also allows the motor to rotate in both direction, to avoid compaction of light materials. The paddle also 'shakes at the end of it's rotation cycle to discard clinging material. Variable torque setting allows one paddle to suit virtually all applications, and paddles can be extended upto 2m in length. Torque & Rotation are monitored for fail-to-safe operation.



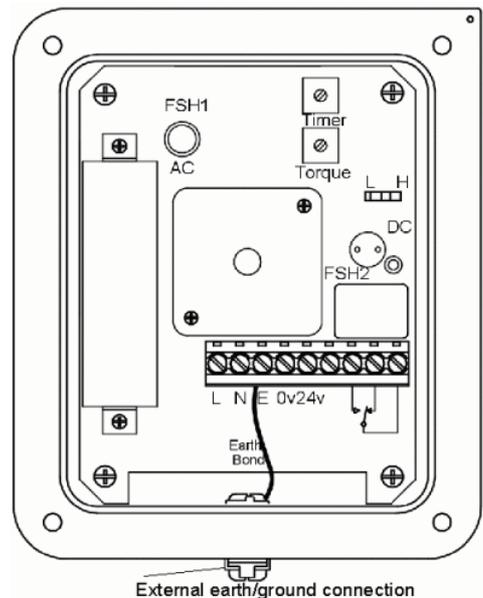
### Dimensions



## SPECIFICATION

Supply	24V dc, 90-260V ac 50/60Hz.
Supply Tolerance	-6% to +2%.
Supply Cable Size	Min: 1 sq mm, max: 4 sq mm.
Fusing/Cct Breaker (Max Rating.)	5A.
Load	6VA max. ac, 50mA max. dc.
Ambient Temperature	-20°C to +50°C.
Output	1 set of volt free change-over relay contacts, rated @ 2.5A 60V ac non-inductive.
Output Mode	High or Low level, selected via a switch.
Time Delay	Adjustable via potentiometer. 0-30 sec. material arriving and leaving.
Calibration	Electronic torque control potentiometer. Indication
Indicators	LED shows power ON.
Mounting/Fixing	1" BSP Male.
Protection	IP65
Connections	Via screw terminal block(s).
Weight	Step-a-Matic <b>SML1A</b> : 2Kg Twin blade paddle: 200g 2 mtr Extension: 325g Approvals
	<b>ATEX EN 50281</b> (Dust Zone 20).

### Connections



level control sensors



## LEVEL CONTROL SENSOR CATALOGUE

pt2

5

*Detection and Control - In Action!*

**SYNATEL**  
INSTRUMENTATION LTD.



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e-mail: [sales@synatel.co.uk](mailto:sales@synatel.co.uk)

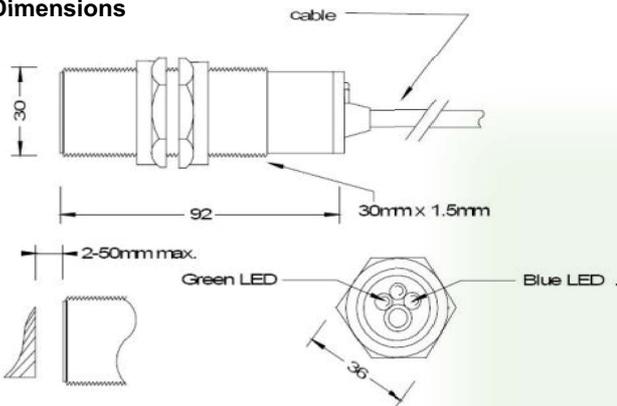


## 30mm CAPACITIVE PROXIMITY SENSOR

An innovative range of 30mm capacitive (PremierCap) proximity sensors, designed & manufactured by **SYNATEL** available as 5 wire Relay output, 4 wire 10-30V dc transistor output or 2 wire FET output, multivoltage units. Non flush. ATEX **EN60079** & IECEx IEC **60079** gas & dust hazard area use approvals. Ideal for level detection in small hoppers, etc. (Dust Zone 20 / Gas Zone 0)

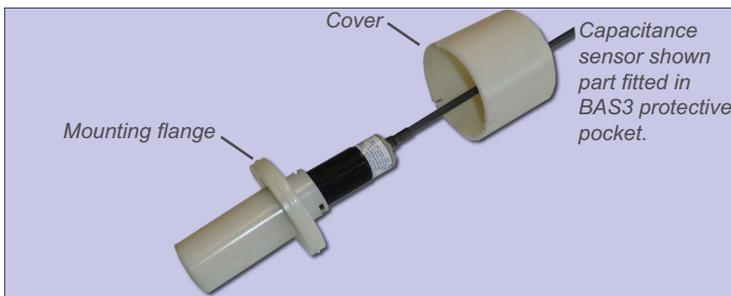


### Dimensions



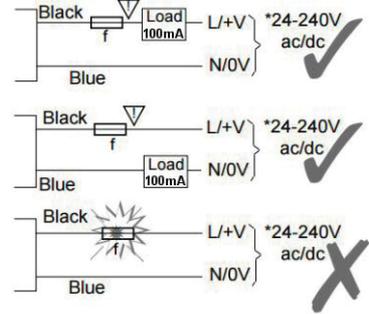
### SPECIFICATION - PREMIERCAP SENSORS

	<b>CX1TRA1</b>	<b>CX1TOAI</b>	<b>CX1TZA1</b>
Supply	15-240V dc/24-240V ac	10-30V dc	24-240V ac/dc
Fusing	1500A capable, 500mA max. 1 per sensor <b>MUST</b> be used.		
Programming	Performed using a combination of 2 magnets (supplied in housing) Some programming functions require both magnets, other functions only require 1 magnet.		
Output	SPCO relay	Fully opto-isolated transistor	2 wire FET
Output State	User selectable with 'CallMag' programmer supplied. npn or pnp configurable by user (DC unit only)		
Output Rating	60V 3A max.	30V dc 100mA Max.	100mA max.
Operating Range	0-50mm typically (set by a maximum of 12 steps)		
Ambient Temp.	-15°C to +50°C		
IP Rating	IP66		
Enclosure	Molded Nylon		
Connections	5 wire	4 wire	2 wire
Weight	260g		
Options	BAS3 - protective pocket. Ideal where material is abrasive, insulates sensor from actual material being detected.		



## CONNECTIONS - ALL UNITS

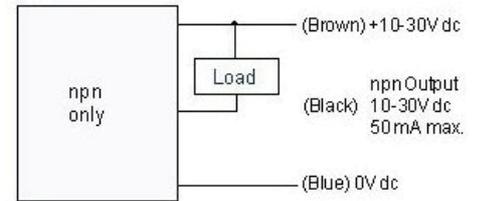
### 2 wire Connections



**NOTE:** f= 1500A Capable fuse 500mA max. rating) 1 fuse per unit **MUST** be used.

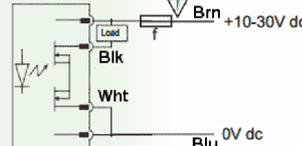
\*Load must have the same voltage rating as supply being used. Supply polarity is not important.

### 3 wire Connections

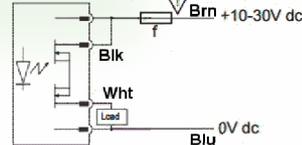


### 4 wire Connections

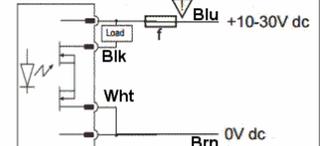
#### Connections: npn (D) De-energised output



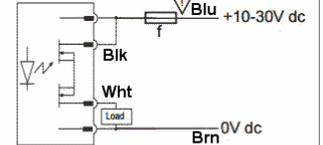
#### Connections: pnp (D) De-energised output



#### Connections: npn (E) energised output



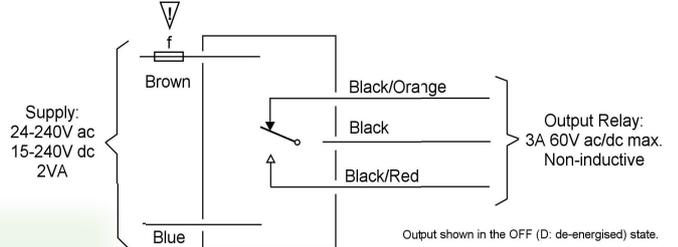
#### Connections: pnp (E) energised output



**NOTE:** f= 1500A Capable fuse 500mA max. rating) 1 fuse per unit **MUST** be used.

See individual unit specification for maximum output switching current.

### 5 wire Connections



**NOTE:** f= 1500A capable fuse 500mA max. rating. 1 fuse per unit **MUST** be used

photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



level control sensors



special systems



Hazard Approved Sensors

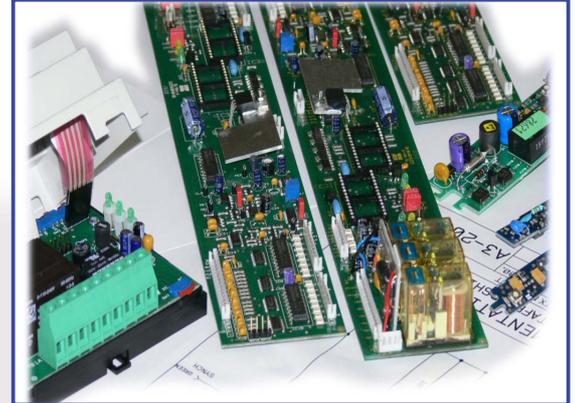


## SPECIAL/CUSTOM SYSTEMS CATALOGUE

Synatel have their own in-house design & manufacturing capabilities including: Expert CAD/CAM design & draughting staff, component sourcing & purchasing expertise, manual & automatic PCB assembly & flow soldering. Plus we have a dedicated team of test engineers using manual, semi-automatic & automatic test rigs to ensure high quality, reliable products every-time. **SYNATEL - Detection & Control in Action!**

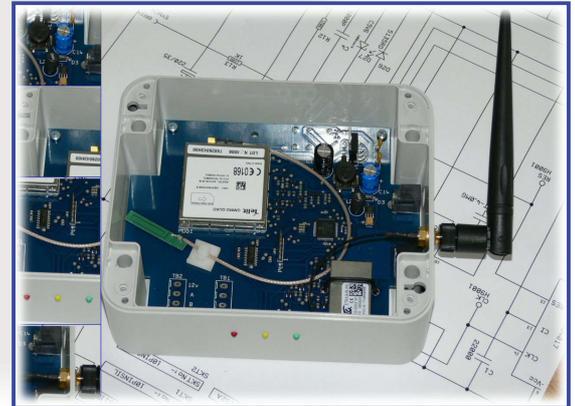
## CUSTOM DESIGN/MANUFACTURE

- ▶ From concept through to finished product.
- ▶ Existing circuit boards manufactured, populated & tested.
- ▶ Product modification/design.
- ▶ Redesign/manufacture of existing circuit.
- ▶ International approvals applied, where required.



## WIRELESS COMMUNICATION

- ▶ Full Wireless Communication.
- ▶ Bluetooth Communication.
- ▶ Network Capability. WLAN.
- ▶ Telecoms. Text or e-mail notifications.



## APPROVALS

- ▶ ATEX - UK/European markets.
- ▶ IECEx - International markets inc. Australia & Singapore.
- ▶ CSA - Canadian/North American markets.
- ▶ InMetro - Brazilian market.
- ▶ CE - Low voltage, RF directives etc. (contact us for details).

*(Some approvals are available as standard, others available at certification cost).*



If you have specialist sensor needs, contact Synatel - our expert Sales & Design staff are happy to talk through your requirements & provide quotations against your specifications. Quantities, Approvals (if required) & time scales are all taken into consideration - giving you all the information that you require to enable you to make an informed decision.

**Call +44 (0) 1543 277003, or e-mail [sales@synatel.co.uk](mailto:sales@synatel.co.uk) for more information.**

**See our website: [www.synatel.co.uk](http://www.synatel.co.uk)**

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Web: [www.synatel.co.uk](http://www.synatel.co.uk)  
e-mail: [sales@synatel.co.uk](mailto:sales@synatel.co.uk)



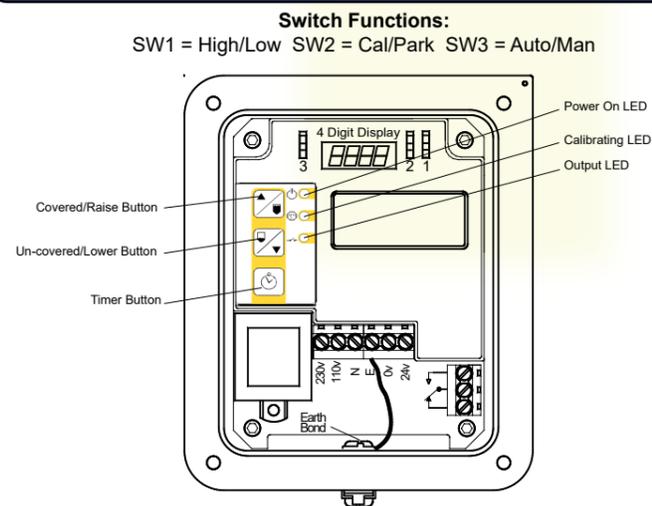
## DIGIMATIC DML4AI ATEX & IECEx APPROVED CAPACITANCE LEVEL PROBE SENSOR

A fixed point RF, capacitance level control suitable for use in non-conductive liquid & free flowing granular solids. Approved for use in explosive dust hazard areas, such as flour mills, silo's, saw mills, paper mills. Multivoltage supplies, relay output, powershield technology - compensates for material build up/sticking to probe rod (prevents false signalling).

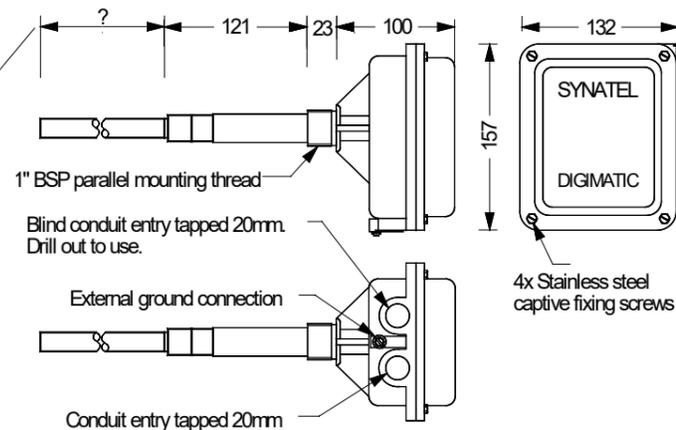
- ▶ ATEX/IECEx approved (explosive dust hazard area) - conforms to EN60079 directive(s).
- ▶ Programmable sensitivity for product being detected.
- ▶ Programmable output timer - prevents false signalling from material 'splashing' on probe rod.
- ▶ Powershield - prevents false signalling from material sticking/clinging to probe rod & side wall of container.
- ▶ LED display - used for calibrating sensitivity & timer settings, also shows material actual level sensing values in run mode.
- ▶ Multi Voltage Supplies: 24V dc or 110/240V ac.
- ▶ Relay output. Volt free change over contacts.
- ▶ 1" BSP male mounting thread.
- ▶ LED indication of Power On, Calibrating & Output state.
- ▶ Membrane keypad for programming sensitivity & timer settings.



### CONNECTIONS/FUNCTIONS



### DIMENSIONS - standard unit



? = Probe Rod Lengths: 100mm x 24mm dia.  
30 cm x 16mm dia.  
1 metre x 16mm dia.  
2 metre x 16mm dia.  
10 metre wire rope & weight.

Note: 1 metre, 2 metre & 10 metre wire rope probes can be cut to length, on site using a hacksaw.

#### ATEX Certificate Details - DML4AI:

Certificate No: TRAC11ATEX11268X  
ExII 1 (1)D

#### IECEx Certificate Details - DML4AI:

Certificate No: TRC 12.0016X  
Ex ta[ia] IIIC T100°C  
-20°C ≤ Tamb ≤ +50°C IP65

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e-mail: [sales@synatel.co.uk](mailto:sales@synatel.co.uk)



ATEX and IECEx

## HAZARD AREA USE APPROVED SENSORS 7

Conform to relevant parts of BS EN 60079 Standards



photoelectric sensors



proximity sensors



speed monitors



counters & tachometers



level control sensors



special systems



Hazard Approved Sensors



7

## 18mm & 30mm ATEX & IECEx SENSORS

A range of sensors including: Inductive & Capacitive proximity switches, stopped motion and underspeed monitors all ATEX & IECEx approved to EN60079 directive. Certified for Dust or Gas hazard area use as shown. Units are fully encapsulated to help minimize effects from vibration & prevent moisture ingress.

- ▶ All units on this page are ATEX/IECEx approved (explosive dust/gas hazard area) - conforms to EN60079 directive(s).

### Inductive proximity sensor 18mm Diameter housing (1)

ID/E1MOAI  
ID1MZAI  
IE1MZAI

- ▶ 10-30V dc 4 wire npn/pnp connection (3) & (4), or 24-240V ac/dc 2 wire FET output connection (5)
- ▶ 8mm operating range, 50mA output 2 wire, 100mA 4 wire. 100Hz operating speed.



### Inductive stopped motion sensor 18mm Diameter housing (1)

SU1MZAI

- ▶ 24-240V ac/dc 2 wire FET output connection (5)
- ▶ 8mm operating range, 50mA output, 15-3600 ppm operating speed. (4 seconds between pulses min.)



### Inductive Proximity sensor 30mm Diameter Housing (2)

ID/E1TOAI  
ID1TZAI  
IE1TZAI

- ▶ 10-30V dc 4 wire npn/pnp connection (3) & (4), or 24-240V ac/dc 2 wire FET output connection (5)
- ▶ 8mm operating range, 100mA output, 100 Hz operating speed.



### Inductive Underspeed Sensor 30mm Diameter Housing (2)

PU1TZAI  
PU1TRAJ

- ▶ 24-240V ac/dc 2 wire FET output connection (5) or 15-240V dc/24-240V ac 5 wire relay output connection (7)
- ▶ 8mm operating range, 10-3600 ppm operating speed. (20% trip below normal running speed).  
2 wire - 100mA output.  
5 wire - 3A non-ind. output.



### Capacitive Proximity Sensor 30mm Diameter Housing (2)

CD1TZAI  
CE1TZAI  
CD1TRAJ  
CE1TRAJ

- ▶ 24-240V ac/dc 2 wire FET output connection (5) or 15-240V dc/24-240V ac 5 wire relay output connection (7)
- ▶ Typically 25mm operating range (adjustable).  
2 wire - 100mA output.  
5 wire - 3A non-ind. output.



#### ATEX Certificate Details - 18mm Sensors:

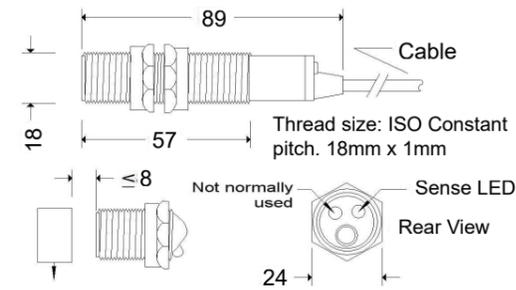
Certificate No: Baseefa14ATEX0115X  
ExII 2G Ex mb IIC T5 Gb  
ExII 2D Ex mb IIIC T100°C Db  
ExI M2 Ex mb I Mb

#### IECEx Certificate Details - 18mm Sensors:

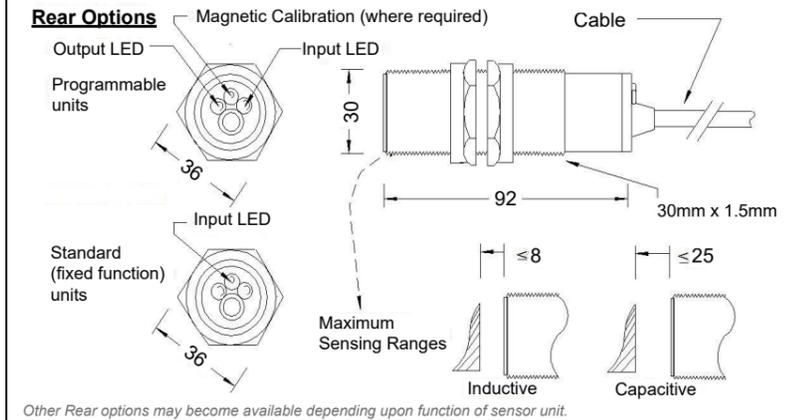
Certificate No: BAS 14.0061X  
Ex mb IIC T5 Gb  
Ex mb IIIC T100°C Db  
Ex mb I Mb  
-15°C ≥ Tamb ≥ +50°C IP66

## DIMENSIONS

### 18mm Diameter Sensors (1)



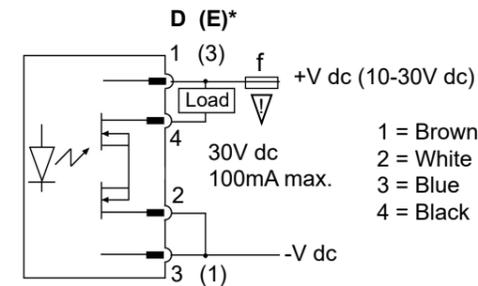
### 30mm Diameter Sensors (2)



## CONNECTIONS (options)

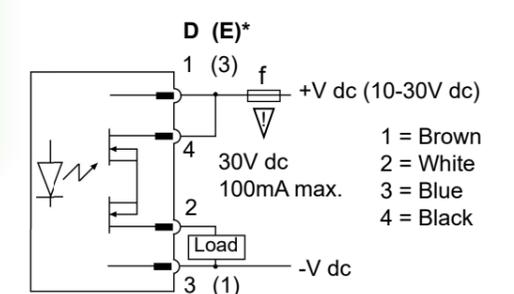
### 4 wire dc connections (3)

#### Current Sink (nnp)



1 = Brown  
2 = White  
3 = Blue  
4 = Black

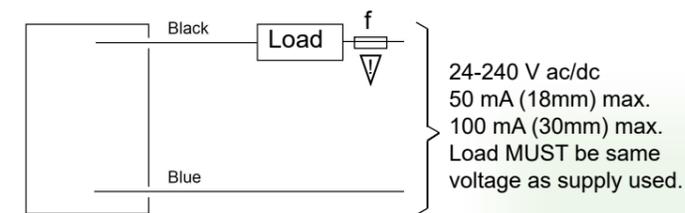
#### Current Source (pnp)



1 = Brown  
2 = White  
3 = Blue  
4 = Black

Note\*: Supply Connections: Output normally OFF - use D connections, Output normally ON - use (E) connections.

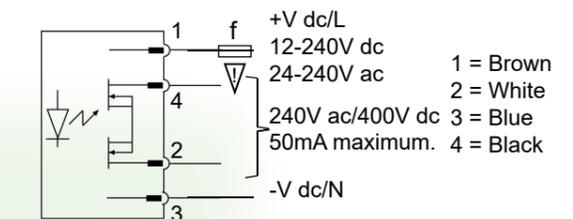
### 2 wire dc connections (5)



24-240 V ac/dc  
50 mA (18mm) max.  
100 mA (30mm) max.  
Load MUST be same voltage as supply used.

### 4 wire universal connections (6)

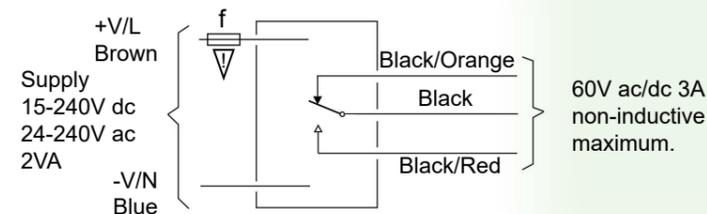
Note: Check supply voltage required is not only 10-30V dc before using these connections.



1 = Brown  
2 = White  
3 = Blue  
4 = Black

Note: additional output fusing may be required to suit application, local regulations, certification requirements.

### 5 wire relay connections (7)



60V ac/dc 3A non-inductive maximum.

Note: additional output fusing may be required to suit application, local regulations, certification requirements.

#### ATEX Certificate Details - 30mm Sensors:

Certificate No: Baseefa12ATEX0266X  
ExII 1G Ex ma IIC T5 Ga  
ExII 1D Ex ma IIIC T100°C Da

## IMPORTANT NOTE!



Fusing: 1500A Capable (500mA maximum rating).  
1 fuse per unit **MUST** be used.

#### IECEx Certificate Details - 30mm Sensors:

Certificate No: BAS 12.0118X  
Ex ma IIC T5 Ga  
Ex ma IIIC T100°C Da  
-15°C ≥ Tamb ≥ +50°C IP66