Conder Environmental Solutions
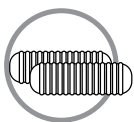
14300 MAINS SEPARATOR ALARM MANUAL

Separator and Alarm provided by:

Alarm Installation,
Commissioning & Servicing Support
Please contact:

www.envirotank.com.au

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Contents

Separator Alarm

Installation, Operation & Maintenance

Name and Address of Manufacturer	Darcy Products Limited Brook House Larkfield Trading Estate New Hythe Lane, Larkfield Kent ME20 6GN
European Directive	94/9/EC
Equipment Name and Type	Separator Monitor Type 14300
Certificate Number	Baseefa 08ATEX0110/2 IECEx BAS 11.0095
Specific Marking of Explosion Protection	[Ex ia] IIC (-20°C ≤ Ta ≤ +50°C)
ATEX Directive Marking	Ex II (1) G
Notified Body	Baseefa 1180 Buxton UK
CE Mark with Notified Body Number	CE$_{1180}$
Harmonised Standards Used	EN 60079-0:2009 EN 60079-11:2012
Serial Number and Year of Manufacture	Displayed underneath the control unit

IMPORTANT

Important Note: In all cases good, standard electrical practice should be followed, and the installation must conform to the appropriate local code of practice – e.g. AS3000 in Australia. In essence, the installation must be such that the intrinsic safety is not compromised by:
- exposure to risk of mechanical damage, unauthorised modification or interference, exposure to moisture, dust and foreign bodies, excessive heat, invasion of intrinsically safe circuit by other electrical equipment or circuitry. (See Note in installation section)

General Description

The standard system is supplied complete with an intrinsically safe control unit together with a high oil probe. The control unit is capable of monitoring up to 3 probe units, displaying their current status via a 2 x 16 display. The output relay enables this status to be signalled to a remote location or activate a beacon if required.

General Operation

The Control Unit monitors the condition of the connected probe units by checking their condition every 30 minutes[1], their current status is displayed on the display located on the front of the unit. If an alarm condition is detected, a warning message is displayed followed by notification of the alarm condition detected, e.g. ***HAZARD ALERT* High Oil Alarm**, the output relay becomes de-energised and the internal buzzer is audible.

The unit then gives the option, via the display, to accept/acknowledge the alarm. On doing so, the output relay energises, the buzzer is muted and the display instructs the user to take the appropriate action, e.g. empty the separator. After the separator has been emptied and refilled with water, the control unit re-scans the probe sensors attached and presuming no alarm condition is detected, **'All Correct'** will be displayed. If the push button is pressed before the separator has been emptied, or it has been emptied but not refilled with water, then the control simply scans the probe sensor(s) and reverts to the alarm condition. Please note the output relay is *de-energised* on detection of any alarm condition or mains failure.

Changing Factory Settings

Alarm Type

The factory setting is STD (standard), this is where the output relay de-energises upon fault detection and energises upon acceptance of the fault.

Alarm Type EXT (Extended) allows the relay to remain de-energised until all alarm conditions become normal.

To enter the "Set Up" mode, firstly remove power from the unit. Whilst holding down the Push Switch, power up the unit keeping the Push Switch depressed, after about 10 seconds the screen will display "Set Up", at this point release the Push Switch.

The display will now show Alarm Type: with a flashing cursor over STD, to change this function to EXT, press the Push Switch once.

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1 The unit is factory set to 30 minutes, but in extreme conditions, this can be manually changed from 2 to 60 minutes at one minute intervals. (See Changing Factory Settings)

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Check Interval

Whilst still in the Set Up mode, power down and then power up the unit, the flashing cursor will now be next to Check Intvl: - by pressing the Push Switch, the time can be altered in increments of 1 minute between 2 and 60.

To exit the Set Up mode at any time, hold the Push Switch whilst powering down and then power up again before releasing the Switch, this will return to the main screen sequence.

Testing the Probe Sensors

The probe interrogation function can be activated at any time by simply pressing the push switch.

Installation

This product has been designed and certified as being intrinsically safe. It is of paramount importance, that the unit should not be modified in any way and the installation be carried out by a suitably experienced and qualified contractor. Any deviation from this may be against the law and could invalidate the certification warranty and render the unit unsafe for its intended use.

Upon powering up the unit for the first time, the LCD will display the following message:

HAZARDOUS AREA EQUIPMENT

Control Unit

Refer to Table 4 on page 7 for required cable specifications.

The control unit must be positioned in a non-hazardous area. For all wiring details, refer to Figure 2, Table 5 and Table 6 on page 9.

Probes (High Oil & High Liquid Level Probes)

The high oil probe (14005) is supplied pre-installed with the separator tank and simply needs to be connected to the control unit.

If a high liquid probe (14011) is required, this needs to be installed such that the float switch housing is located above the static liquid level. The probe cable can be secured inside the neck of the separator using a probe mounting kit (14050).

Please note the distance above or below the static liquid level will be determined by the type, style and/or size of separator, this information can be obtained from the separator manufacturer. However, as a general *rule of thumb*, the high liquid level probe should be placed 300mm above the static liquid level and the high oil probe 150mm below.

Due to the varying neck lengths (turrets) that occur within each separator, each normal probe unit is fitted with 5 metres of cable.

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Silt Probe

The probe is suspended in the separator to a pre-determined depth and the cable can be secured to the neck of the separator using the probe mounting kit (14050).

Cable Distribution Box

It is advisable to connect the probe cables to a cable distribution box which should be fixed near to the top of the separator neck. The probe cable can then be terminated with a waterproof plug (provided with the distribution box). The plug is then connected to the bulkhead socket (provided with the distribution box). A cable must then be laid to connect the distribution box and the control unit. The type of connection cable required will be dependent on the environment it is used in, the route taken and maximum allowable cable capacitance and inductance (see cable parameters in Table 4 on page 7).

After making the connections in the distribution box, it is advisable to spray the terminals with a conformal coating lacquer to prevent moisture ingress before finally sealing them with waterproof putty.

Connection to Control Unit

The Probe cable should be fed through the appropriate gland in the bottom right hand side of the control unit and connected to the terminals as instructed. The mains cable, and if used, any beacon or sounder cable, must be fed through the appropriate gland on the bottom left hand side of the control unit and connected to the terminals as instructed.

IMPORTANT NOTE: Under NO circumstances must the control unit casing be drilled to allow cable entry in any area(s) other than those already provided, as this would infringe the certification and therefore safety of the product.

Using a Junction Box

An intrinsically safe junction box should be used where incoming cable sizes have to be reduced to gain entry through the cable glands in the base of the control unit.

IMPORTANT NOTE: Under NO circumstances must mains and probe cable joints be made within the same junction box other than a junction box that is approved Intrinsically safe for such purpose, as this would infringe the certification and therefore safety of the installed system.

Maintenance and Repair

Due to the harsh environments which the probes can be subjected to, it is advised that they are inspected and cleaned with a damp cloth at regular intervals. The control unit does not contain user serviceable parts. For all repairs, contact Envirotank.

Technical Information

Electrical

Supply Voltage		230V ±10% 50Hz
Input Current	Normal condition	41mA
	Alarm condition	40mA
Fusing	Primary (FS2)	T 315mA H 250V
	Secondary (FS3)	50mA (Baseefa approved)
Max probe cable length		200m (less if values in Table 4 would be exceeded)
Relay Output		Volt-free SPCO contact 3A
Panel rating		IP65
Panel dimensions		180mm x 180mm x 60mm

Table 1 – Electrical Specifications

Apparatus Supply and I/O Parameters

U_m	253Vrms

Table 2 – Mains Supply and Relay Contact Terminals (TB2 & TB3)

U_o	12.6V
I_o	87mA
P_o	273mW
C_i	0
L_i	0

Table 3 – Hazardous Area Terminals (TB1)

Group	Capacitance (µF)	Inductance (mH)	OR	L/R Ratio (µH/Ω)
IIC	1.15	4.6		74
IIB	7.4	18.7		298
IIA	27	37.5		596

Table 4 – TB1 Load Parameters

Probe Cables

The total capacitance and inductance of the cable used between the control unit and the probe must not exceed that shown in Table 4.

Mechanical

Protection and/or screening of the cable should also be taken into account. The maximum length of cable between probe and control unit must not exceed 200 metres or less if the values in Table 4 would be exceeded.
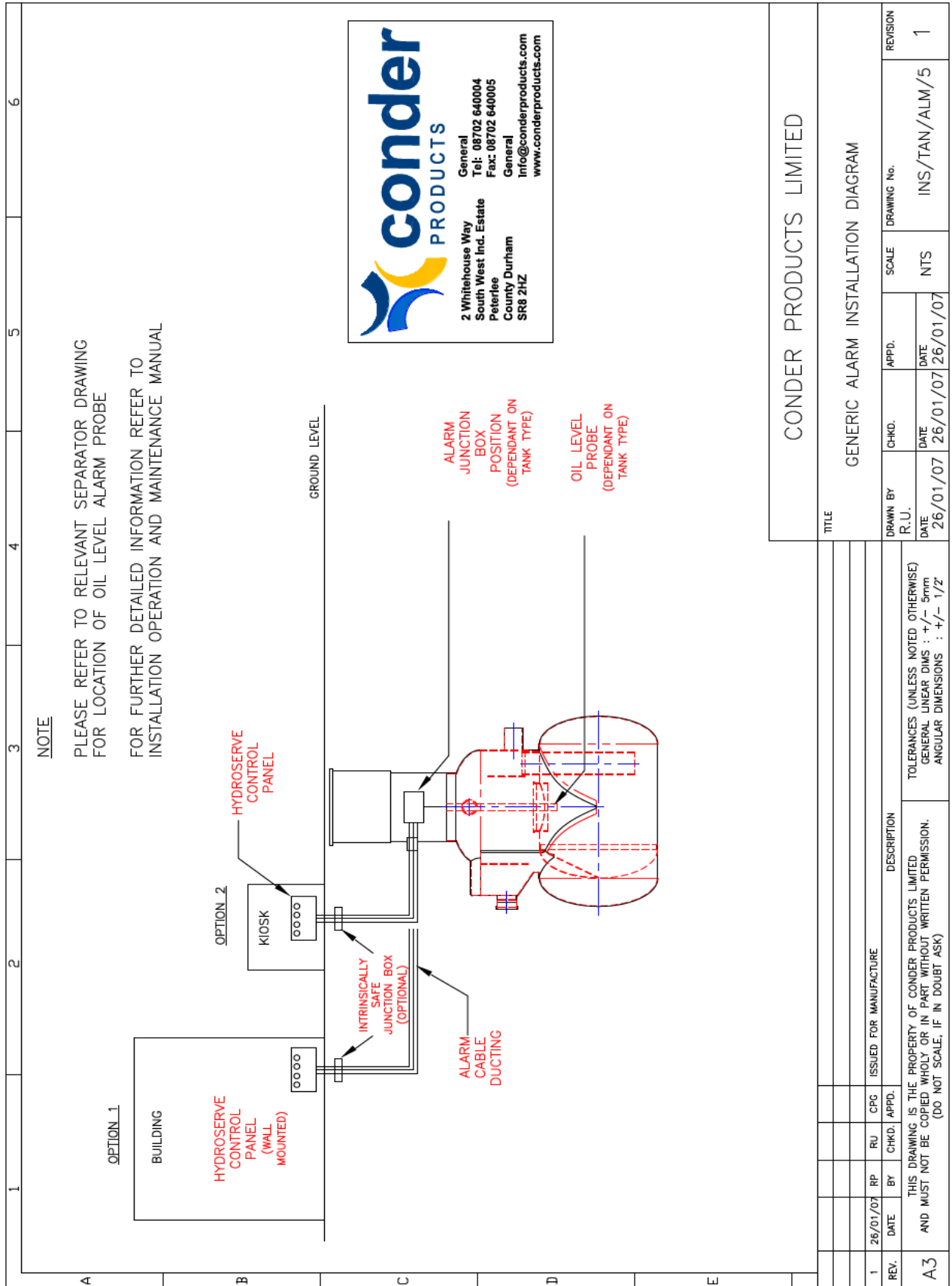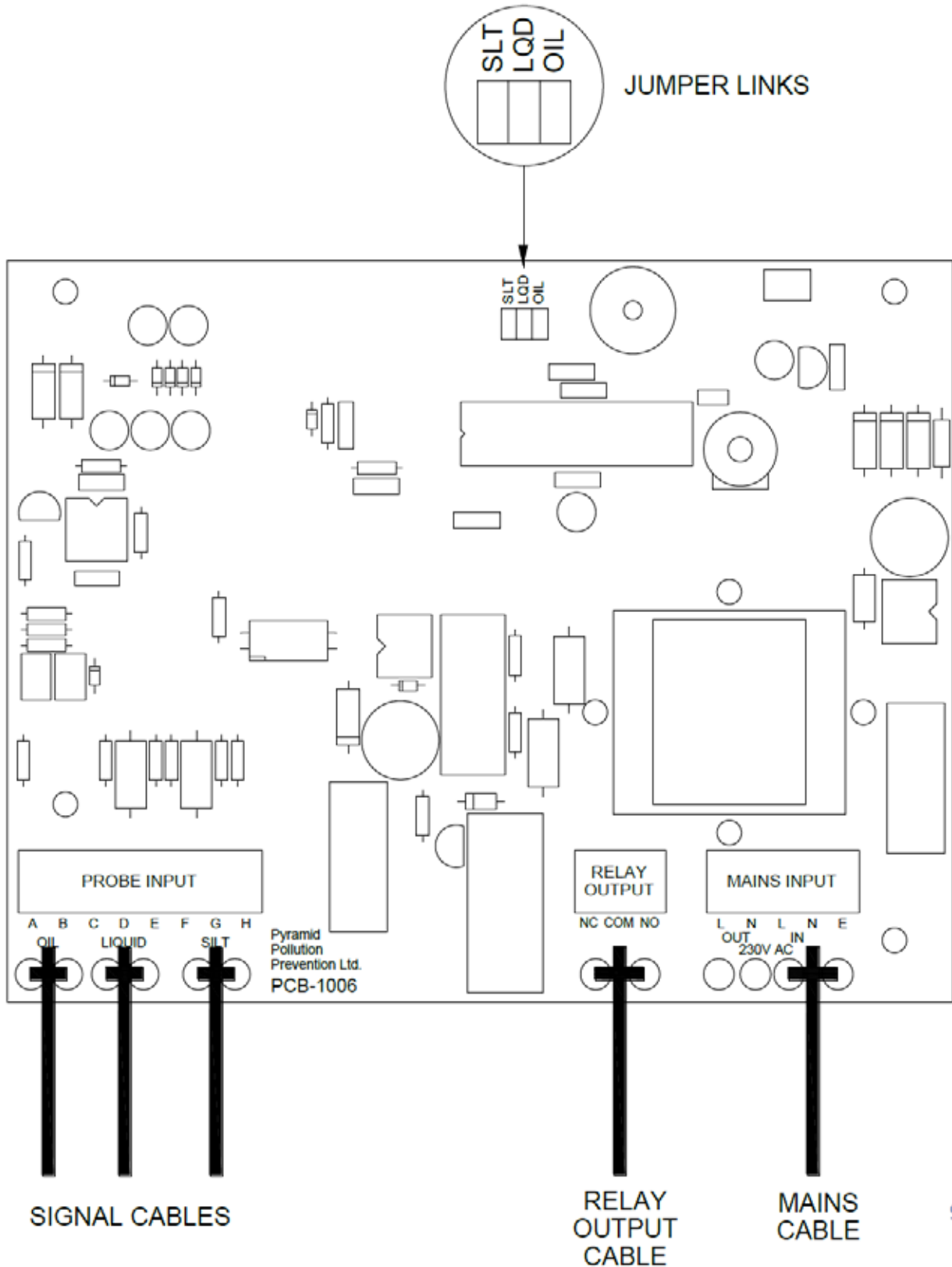
Figure 1 – Installation Diagram

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Probe Enable Jumper Links

Figure 2 – Probe Enable Jumper Links

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To operate a probe, REMOVE appropriate jumper link

Probe Type	Remove Link
High Oil	OIL
High Liquid	LQD
Silt	SLT

Table 5 – Probe Enable Jumper Links

Probe Cable Terminals

Probe Type	A	B	C	D	E	F	G	H
High Oil	RED	BLUE						
High Liquid			-	RED	BLUE			
Silt						BROWN	GREEN/ YELLOW	BLUE

Table 6 – Probes cable wiring connection details

Flashing Beacon Wiring

The relay output terminals, TB2, may be used to operate a 230V flashing beacon when an alarm occurs. The beacon should be wired according to Table 7 and Table 8. Any commoning of live and neutral connections must be done externally to the unit's enclosure.

TB2 Terminal	Connect To
NO	No Connection
COM	TB3 Mains live
NC	Beacon Live Terminal

Table 7 – Wiring from relay output to beacon

TB3 Mains Terminal	Connect To
L out	TB2 COM Terminal
N out	Beacon Neutral Terminal
E	Mains earth

Table 8 – Wiring to beacon from relay output

Accessories

	Part Number
High Oil Probe	**14005**
High Level Probe	**14011**
Silt Probe	**14220**
Intrinsically Safe Junction Box (Power & Probe)	**14006**
Signal Distribution Box	**14039**
Probe Mounting Kit	**14050**
230V AC Flashing Amber Beacon & Siren **(includes mounting bracket & glands)**	**14100**
Probe Cord Guide	**14103**

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