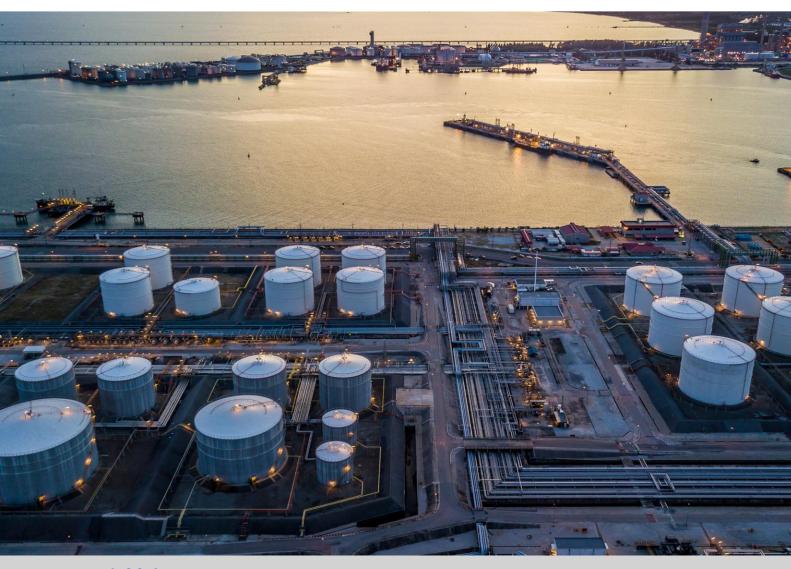


Operating Manual Multi-Probe Alarm (Battery) Type PP/CAEx

Installation, Operation & Maintenance







Product Supplied

The marked product code and firmware configuration below indicate the specific configuration of the alarm supplied.

Table 1 shows the standard products that are available. Other combinations are available on request.

Cumplied	Product Code	Power Source		Relay	Wireless
Supplied	Product Code	Battery	Mains	Outputs	Willetess
	PP/CAEx-2-M230-1-W0	Х	230V	1	Х
	PP/CAEx-2-M230-3-W0	Х	230V	3	Х
	PP/CAEx-2-B-1-W0	✓	Х	1	Х
	PP/CAEx-2-B-3-W0	✓	Х	3	Х

Table 1: Standard products

Cumplied	Firmware	Power	Source	Turns	Language	
Supplied	Config ID	Battery	Mains	Туре	Language	
	C0001	Х	✓	Oil separator alarm	English	
	C0002	✓	Х	Oil separator alarm	English	

Table 2: Standard firmware configurations

Product Codes

- 1. PP/CAEx Common Alarm (Hazardous area certified)
- 2. PCBA version:
 - 2 V2.xx Printed Circuit Board Assembly.
- 3. Power source:

M230 - Mains powered (230V).

- B Battery powered.
- 4. Relay outputs:
 - $0 \dots 4 0$ to 4 relay outputs fitted.
- 5. Wireless communications:

W0 - No wireless.

Applicable Firmware

Firmware ID	Description	Version
PP/FMW-1124	PP/CAEx Common Alarm	V1.03 or later





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Safety Symbols



Safety instructions

General Function

The unit is designed to monitor an oil separator tank for a build-up of oil or fuel. An alarm sounds and an LED beacon flashes when an alarm condition is detected. An LCD displays messages to indicate alarm conditions. The unit is battery powered.

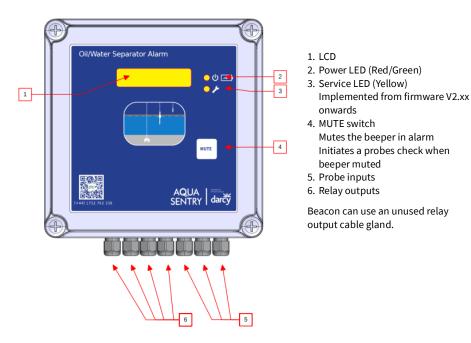


Figure 1: Cable glands, LCD and push button positions

General Operation

The Control Unit monitors the condition of the connected probe units by checking their condition every 30 minutes. Their current status is displayed on the LCD 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 energises, and the internal beeper is audible.

The unit then gives the option, via the display, to accept/acknowledge the alarm. On doing so, the output relay de-energises, the beeper is muted, and the display instructs the user to take the appropriate action, e.g. empty the oil separator. After the oil 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 oil 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.

A low battery is indicated by a double flash of the power LED and the LED beacon.





Technical Support

Technical support and repairs may be obtained from:

Darcy Spillcare Manufacture 1 Hickmans Rd Wallasey Birkenhead CH41 1JH United Kingdom

Phone: 0800 0370 899 (UK), +44 (0) 1732 762338 (Rest of world)

Installation

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., BS EN 60079-25 and BS 7671:2018+A3:2024 in the UK. 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.

Any deviation from this could invalidate the certification warranty and render the unit unsafe for its intended use. Please contact Aquasentry for any advice on 01732 441016.

The unit must be installed using a peak or similar cover to protect from direct sunlight.

Safety Instructions

- ⚠ Installation should only be performed by a skilled, competent person according to IEC 60079-14 and local wiring regulations.
- ⚠ The control unit should be connected as a permanently wired installation.
- △ Only use Procell Constant PC1500 or Varta Industrial Pro 4006 LR06 (AA) primary cells.
- ⚠ If extending the probe cables, only a round section cable between 3mm and 6.5mm should be used to ensure a good seal is maintained in the M12 cable glands.
- The alarm is certified ATEX/UKEX/IECEx as Associated Apparatus and must only be installed in the safe area.
- ⚠ The conductivity probe and high level probe are Simple Apparatus and can be installed in the hazardous area.
- △ Care must be taken that there are no loose wire strands which could come into contact with adjacent terminals. The use of bootlace ferrules is recommended to reduce the risk.
- △ Cable glands supplied with the alarm are IP66 or better. Only use cable glands with at least an IP66 rating if replacing them for any reason.
- Only use the mounting points shown in Figure 4. Do not drill holes in the enclosure or otherwise modify it as this would affect the IP65 rating and may allow water and/or moisture to enter the enclosure, affecting the correct function of the alarm. It would also invalidate the ATEX/UKEX/IECEx certification.
- Mounting hardware used to secure the control unit to a wall or other mounting point must be suitably rated to hold the weight.
- The voltages used on all the relay output contacts must be similar, i.e. do not mix low voltage (ELV) and high voltage (LV).





- ▲ Maximum allowed voltage, current and power for relay contacts is determined by EN 60079-11:2012 Cl, 6.3.14. See Technical Specifications.
- ⚠ The product has been certified to use only PP/BCN-1-2 beacon on the beacon output, J13. Only use this type of beacon. Do not attach any other device to this output.
- ⚠ The control panel may not function correctly if it is not used in accordance with the instructions in this manual.

Specific Conditions for Safe Use

- When replacing the cells in the device, they shall be replaced with either four Procell PC1500 LR6
 (AA) primary cells, or four Varta Industrial Pro 4006 LR6 (AA) primary cells. All four replacement cells shall be from the same manufacturer and not mixed.
- 2. There is a risk of electrolyte leakage from the primary cells. To avoid the risk of electrolyte dripping onto the electronics, the device shall be mounted so that gravity prevents such an accumulation.
- 3. The relay outputs "OUT1", "OUT2", "OUT3" and "OUT4", individually must not switch more than the following root-mean-square electrical values for resistive loads; 250 Volts, 5 Amperes, or 100 Volt-Amperes.
- 4. Only the Darcy "PP/BCN-1-2 LED Beacon" shall be connected at connector marked "BEACON + -".

Installation Steps

- 1. Choose a mounting position that will not be exposed to direct sunlight or use a peak or similar cover to prevent direct sunlight exposure.
- 2. Use the mounting points provided on the enclosure to mount in the position required. See Figure 4 for mounting points and dimensions.
- 3. The alarm is supplied fitted with IP66 (or better) blanking plugs to protect against water ingress if installed prior to wiring. At the time of wiring, replace with the supplied IP66 (or better) cable glands as required for the installation. Ensure all the unused holes are fitted with blanking plugs to prevent water ingress.
- 4. For a float switch probe, hang the probe in the tank at the position which an alarm should occur.
- 5. For a conductivity probe, immerse the probe in water. The depth of oil build up that will cause an alarm is chosen by the depth of the top electrode. An alarm occurs when the top electrode is covered by oil or is exposed to air.
- 6. Wire the float, conductivity, or silt probe cables into J1 ... J3 terminals on the PCBA inside the alarm according to Figure 2 and Table 3, Table 4 and Table 5.
- 7. If supplied, wire the beacon into J13 according to Table 7. Only use beacon type PP/BCN-1-2.
- 8. Set jumper link J10 and SW1, DIP switch 4 according to the probe type being used on probe input IN 2 (J2). See Figure 5.
- 9. Install the cells in the battery holder, observing correct polarity as marked inside the battery holder. Only use Procell Constant PC1500 or Varta Industrial Pro 4006 LR06 (AA) primary cells.

Screw the lid back onto the enclosure base and ensure the 4 screws are tightened enough, but not over tight (1.0 Nm), that the rubber seal is compressed to maintain the IP65 seal.





Installation Diagram

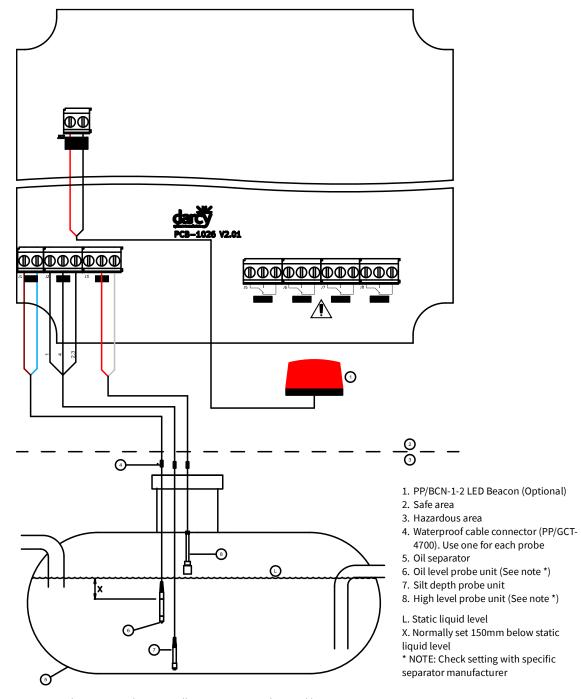


Figure 2: Oil separator alarm installation: Wiring probes and beacon

Probe Terminals

Each of the 3 probe inputs only supports some probe models, as below. Refer to Figure 5 for DIP switch settings to enable/disable probes that are in use.

Input 1

Probe Type	J1-1	J1-2
PP/14200 – 38mm Conductivity Probe		
PP/14201 – 25mm Conductivity Probe	Brown	Blue
PP/14205 – 12mm Conductivity Probe		
PP/14000 – High Oil Float Switch Probe	Red	Black

Table 3: Input 1 (J1) probe cable connections and supported probe models

Input 2

Probe Type	J2-1	J2-2	J2-3	Jumper Link J10	SW1 DIP switch 4
PP/PROBE/SILT-1 – Silt Probe (Wire 5 is optional earth wire)	Wire 1	Wire 4	Wires 2 and 3	2-3	ON
PP/14220 – Silt Probe	Brown	Green/Yellow	Blue	2-3	ON

Table 4: Input 2 (J2) probe cable connections and supported probe models

Input 3

Probe Type	J3-1	J3-2	J3-3
PP/PROBE/HLQD-1 – High Liquid Float Switch Probe		Red	White

Table 5: Input 3 (J3) probe cable connections and supported probe models

Cess Pit Using PP/GCT-4136 LR03 Level Regulator Probe

For alarm panels that have been supplied configured as C0001 or C0002, according to Table 2 and are to be used in a cess pit application, wire the probe as follows:

Input 1

This probe input is not used in a cess pit application.

Input 2

This probe input is not used in a cess pit application.

Input 3

Probe Type	J3-1	J3-2	J3-3
PP/GCT-4136 – LR03 Level Regulator Float Switch			
Probe			
This probe is NOT Simple Apparatus!			
Do NOT use in an Ex-application, such as an oil		Brown	Blue
separator.			
Only intended for use in a non-Ex application, such			
as a cess pit.			

Table 6: Input 3 (J3) LR03 Level Regulator probe cable connections





Beacon Terminals

J13 Terminal	Connect To		
+	Beacon positive terminal (Red wire)		
-	Beacon negative terminal (Black wire)		

Table 7: Beacon cable connection details (J13)







Figure 3: External view of Oil/Water Separator Alarm

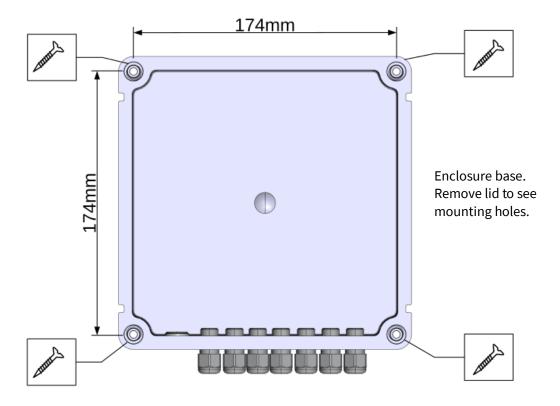


Figure 4: Enclosure mounting hole positions





Jumper Link and DIP Switch Settings

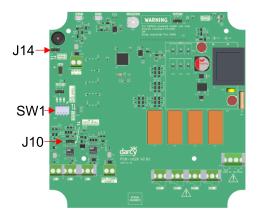


Figure 5: Jumper Link and DIP Switch Settings

NOTE: Power off and on or reset for DIP switch changes to take effect once changes are made!

SW1 DIP Switch	Probe Input	Enable / Disable	
1	IN 1	Enable Probe (ON)	
1	(J1)	Disable Probe (OFF)	
2	IN 2	Enable Probe (ON)	
	(J2)	Disable Probe (OFF)	
3	IN 3	Enable Probe (ON)	
3	(J3)	Disable Probe (OFF)	
4	Always set this DIP switch to ON		

Table 8: SW1 - Probe Enable

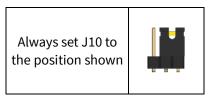


Table 9: J10 Setting

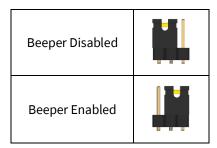


Table 10: J14 - Beeper Enable/Disable





Operation

Apply Power

The power LED will flash green every 5 seconds. It will flash red when an alarm occurs.

Startup Screens

The first screen shown after power up or reset gives the firmware ID, version and build date. The details shown below may differ from that programmed into the unit.

The second screen shown a few seconds later shows the Git commit ID, the configuration ID and revision programmed into the unit.

The third screen shown a few seconds later shows the manufacturer and model.

Main Screen

After the startup screens above, the alarm will begin checking the probes for alarm conditions. As standard, the probes are checked six times, eight seconds apart. This is to prevent false alarms that could possibly be caused by movement of the liquid in the tank. The bottom row shows the incrementing check number and number of total checks.

Other combinations of number of probe checks and check interval can be factory configured before delivery of the alarm.

On completion of all the checks, any alarms are displayed or "All Correct" if no alarms exist.





If alarms exist, these messages are shown cyclically, about two seconds apart. Only the alarms that exist are displayed.

A low battery alarm is displayed if the battery voltage is less than 4.2V typically.

Checking the Probes Manually

The probes can be checked at any time by simply pressing the push switch.

Test Mode

Test mode can be used during installation to show the instantaneous state of all the probes as well as the battery state for battery variant. Once powered up, one of the following methods can be used to enter test mode.

- If the unit's lid is secured in place so no access to the internal board is possible without removing the lid, press and hold the button on the front of the unit for about 5 seconds until the LCD shows "TEST MODE", then release the button.
- With the lid removed and the board inside accessible, press and release the TEST button on the board inside the unit.

To exit test mode, simply press the reset switch on the board inside the unit without pressing the front of unit button.

If no action is taken, normal operation will resume when the button has not been pressed for 10 minutes to prevent the unit being left in test mode and causing excessive battery drain and to resume normal alarm function.

- The unit will reset after 10 minutes to ensure it is not accidentally left in test mode.
- Probes that have been disabled by the DIP switches on the board are shown with a '-' symbol.
- When enabled, probes show a '1' or '0' for alarm or normal, respectively.
- Batteries are considered low and in need of replacement below about 4.20V.
- Battery voltage is typically 6.40V for new batteries.





A typical screen layout in test mode is shown below.

Top row:

- I 000 Current state of probe inputs, updated every second. A '0' indicates the probe is in the normal state, and a '1' indicates the probe is in alarm.
- BAT=6. 00U Battery voltage.

Bottom row:

- O 00000 All five outputs are controlled manually to set the states of the four relay outputs and the beacon.
- DIP=1000 The current state of the DIP switches, updated every second.

Manual Control of Outputs

The outputs can be manually controlled using the MUTE switch on the front panel.

A flashing block cursor highlights the output that will be activated/deactivated. Briefly pressing the MUTE switch moves the cursor to the next output, wrapping back to the first output after the last.

Pressing and holding the MUTE switch for about a second toggles the state of the selected output between enabled and disabled.





Technical Specifications

Control Panel

Commence Alexand DD/CAE.
Common Alarm PP/CAEx
Dimensions: 194mm (W) x 194mm (H) x 61.5mm (D)
Ingress Protection: IP65
Material: ABS (base), ABS (lid)
Lid Screws: Torque: 1.0 Nm, Size: PH 3
Operating temperature: -20°C +50°C (ambient temperature)
Do not allow direct exposure to sunlight
Relative humidity: 100%
Altitude: < 2,000m
Pollution degree: 2
Intended for use indoors or outdoors, and in wet locations
IEC/EN 61010-1:2010+A1:2019, Class II, CAT II
4 x AA (LR06) 1.5V alkaline primary cells
Only use Procell Constant PC1500 or Varta Industrial Pro 4006
Typically 2 years
Safe electrical isolation acc. to EN 60079-11, voltage peak value 358V
200m (less if values in Table 11 would be exceeded)
IN 1: Conductivity probe or float switch with volt-free contacts
IN 2: Silt probe (J10 = 2-3, SW1-4 = ON)
IN 3: High level float switch probe with volt-free contacts
Up to 4 x bistable relays, volt-free SPDT contacts
Maximum allowed voltage, current and power is determined by EN 60079-
11:2012 Cl, 6.3.14 to be 5A, 250V AC / 30V DC, 100VA. Do not exceed.
Output suited for use with PP/BCN-1-2 LED beacon.
Flashes on alarm condition.
Internal beeper sounds intermittently on alarm condition.
Can be muted by pressing a key on front panel.
Can de disabled with jumper link J14.
Front-panel MUTE switch, internal RESET switch, and internal TEST switch.
16 x 2 character LCD
Red/Green power LED
Yellow service LED
$\langle \xi x \rangle$ (1) G [Ev ia Ga] B (-20°C < Ta < +50°C)
(CX) II (1) G [Ex ia Ga] IIB (-20°C \leq Ta \leq +50°C)





LED Beacon PP/BCN-1-2

Model	PP/BCN-1-2	
	73mm (Diameter)	
	48mm (Height)	
Enclosure	11.5mm (Base mounting plate height)	
	Ingress Protection: IP65	
	Material: ABS (base), PS (lens)	
Operating Temperature	-20°C +50°C	
Operating Voltage	6V	
Current Consumption	rrent Consumption 35mA	
Static/Flash	Flash rate and duration controlled by firmware in control panel	
Lens Colour	Red	
Cable Length 5m		

Limiting (Entity) Parameters

Parameter	Unit	IN 1 (J1)	IN 2 (J2)	IN 3 (J3)
U _o	V	8.2	8.2	8.2
I _o	mA	4.51	45.93	128.76
Po	mW	9.27	94.17	263.96
Co	μF	79.79	79.79	80.99
Lo	mH	6966.84	67.32	8.49

Table 11: Limiting (Entity) Parameters for J1 to J3

The limiting (entity) parameters 'L_o' and 'C_o' are valid for each input only when the bulk Inductance 'L_i' and Capacitance 'C_i' of the external circuit is matched using one of the following methods:

- 1. $L_i + L_{cable} < 1\%$ of L_o , and $C_i + C_{cable} < 100\%$ of C_o or;
- 2. $C_i + C_{cable} < 1\% C_o$ and $L_i + L_{cable} < 100\%$ of L_o or;
- 3. Both L_i + L_{cable} and C_i + C_{cable} < 50% L_o and C_o .

In case of item 3 above, the reduced value of 'C_i' shall be $\leq 1~\mu F$ for Groups IIA, and IIB. Additionally, the values of 'C_i' and 'L_i' must also include the lumped value of any capacitance and inductance from cables connected to these inputs.





Accessories

Probe Types

These probes are suitable for use with the alarm.

Part Number	Туре	Use
PP/14200	38mm Conductivity Probe	Detection of oil build-up on the water surface in a tank
PP/14201	25mm Conductivity Probe	Detection of oil build-up on the water surface in a tank
PP/14205	12mm Conductivity Probe	Detection of oil build-up on the water surface in a tank
PP/14000	High Oil Float Switch Probe (Not recommended for new installations. Use one of the above conductivity probes instead.)	Detection of oil build-up on the water surface in a tank
PP/PROBE/HLQD-1	High Liquid Float Switch Probe	Detection of overall high liquid level in a tank
PP/PROBE/SILT-1	Silt Probe	Detection of silt build-up in the bottom of a tank
PP/14220	Silt Probe (Not recommended for new installations. Use PP/PROBE/SILT-1 instead.)	Detection of silt build-up in the bottom of a tank
PP/GCT-4136 NOT Simple Apparatus! Do NOT use in an Ex-application, such as	NOT Simple Apparatus! Do NOT use in an Ex-application, such as an oil separator.	Detection of cess level in a cess pit NOT Simple Apparatus! Do NOT use in an Ex-
an oil separator. Only intended for use in a non-Ex application, such as a cess pit.	Only intended for use in a non-Ex application, such as a cess pit.	application, such as an oil separator. Only intended for use in a non-Ex application, such as a cess pit.





Probe Accessories

Part Number	Туре	Use
PP/14103	Probe Cord Guide	
PP/14050	Probe Mounting Kit	
PP/14039	Signal Distribution Box	
PP/14006	Junction Box (Power & Probe)	
PP/GCT-4700	Waterproof Cable Connector	Extending probe cable lengths

Beacon

PP/BCN-1-2 LED beacon. The product has been certified for use with only this beacon. Only use this beacon type.

Repair and Service

For any repair or service, please contact Darcy. See section Technical Support for contact information.

Separators and alarms should be serviced and maintained in accordance with BS EN 858-2.

If cleaning is required, a damp cloth and mild detergent should be used.





PP/CAEx Common Alarm UK DoC



Darcy Common Alarm

UK DECLARATION OF CONFORMITY

This product meets all the essential safety requirements of the referenced UK Statutory Instruments.

Equipment Name and Type		Common Alarm PP/CAEx	
Manufacturer		Darcy Products Ltd. Brook House Larkfield Trading Estate New Hythe Lane Larkfield Kent ME20 6GN	
UK Legislation comp	oliance	S.I. 2016/1091 Electromagnetic Compatibility Regulations 2016	
		 S.I. 2016/1101 Electrical Equipment (Safety) Regulations 2016 S.I. 2016/1107 Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 	
		S.I. 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012	
Certificate Number Specific Marking of Explosion Protection		ExVeritas 24UKEX1766X	
Specific Marking of t	-xplosion Frotection	(ξχ) II (1) G [Ex ia Ga] IIB (-20°C ≤ Ta ≤ +50°C)	
declaration is placed	ove-named company, I	EN IEC 61326-1:2021 (Emissions Class B) EN 61010-1:2010/A1:2019 IECEx (international voluntary scheme) IEC 60079-0:2017 Edition 7 IEC 60079-11:2011 Edition 6 ATEX (European legal directive) EN IEC 60079-0:2018 Edition 7 EN IEC 60079-11:2012 Edition 6 UKEX (UK European legal directive) BS EN IEC 60079-0:2018 Edition 7 BS EN IEC 60079-1:2012 Edition 6 EN IEC 63000:2018 Displayed on the side of the control unit declare that, on the date the equipment accompanied by this quipment conforms with all technical and regulatory requirements of	
Martin Jeffries – Quality Manager		DATED: 02/10/2025 Larkfield	





PP/CAEx Common Alarm EU DoC



Darcy Common Alarm

EU DECLARATION OF CONFORMITY

This product meets all the essential safety requirements of the referenced EU Directives.

Equipment Name and Type		Common Alarm PP/CAEx
Manufacturer		Darcy Products Ltd.
		Brook House
		Larkfield Trading Estate
		New Hythe Lane
		Larkfield
		Kent
		ME20 6GN
Applicable Europea	n Directives:	2014/30/EU – Electromagnetic Compatibility Directive (EMC)
		2014/35/EU – Low Voltage Directive (LVD)
		2014/34/EU – Equipment for Potentially Explosive Atmospheres
		(ATEX)
		2011/65/EU – Restriction of Hazardous Substances Directive (RoHS)
Certificate Number		ExVeritas 24ATEX1765X
Specific Marking of Explosion Protection		(Ex) II (1) G [Ex ia Ga] IIB (-20°C ≤ Ta ≤ +50°C)
EU Harmonised	EMC	EN IEC 61326-1:2013 (Emissions Class B)
Standards	LVD	EN 61010-1:2010/A1:2019
	ATEX	IECEx (international voluntary scheme)
		o IEC 60079-0:2017 Edition 7
		o IEC 60079-11:2011 Edition 6
		ATEX (European legal directive)
		o EN IEC 60079-0:2018 Edition 7
		o EN IEC 60079-11:2012 Edition 6
		UKEX (UK European legal directive)
		o BS EN IEC 60079-0:2018 Edition 7
		o BS EN IEC 60079-11:2012 Edition 6
	RoHS	EN IEC 63000:2018
Serial Number and \		Displayed on the side of the control unit
		declare that, on the date the equipment accompanied by this
		quipment conforms with all technical and regulatory requirements of
the above listed directives and standards.		
Martin Jeffries – Quality Manager		
1,		DATED: 02/10/2025
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	Parameter and the second	







Head Office

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