

PowerMaxx, PowerMaxx+, Hi-PowerMaxx & Hi-PowerMaxx-XL

Installation & Operating Manual

Pump Station Battery Backups



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1.0 PowerMaxx, PowerMaxx+, Hi-PowerMaxx & Hi-PowerMaxx-XL overview

The PowerMaxx family is designed to provide battery backup to pump stations in the event of a mains failure. They have been specifically designed to meet the requirements of the pump industry. The complete PowerMaxx family has the ability to connect to the AlertMaxx2 high level alarm.

2.0 Box contents

2.1 PowerMaxx (DMS-280) contents

- 1 x PowerMaxx Unit - Battery supplied internally, but disconnected on delivery
- Gland Pack (4 x Large Cable Glands, 2 x Large Blanking Plugs, 1 x Small Cable Gland, 1 x Small Blanking Plug, 4 x Large Nuts & 1 x Small Nut)
- 1 x 3m length of MaxxConnect family cable
- 1 x Installation & Operating Instructions (this document)
- 1 x Chamber Location Sticker Sheet (for Spurs)

2.2 PowerMaxx+ (DMS-365) contents

Box 1 of 2

- 1 x PowerMaxx+ Unit - Battery supplied internally, but disconnected on delivery
- Gland Pack (4 x Large Cable Glands, 2 x Large Blanking Plugs, 1 x Small Cable Gland, 1 x Small Blanking Plug, 4 x Large Nuts & 1 x Small Nut)
- 1 x 3m length of MaxxConnect family cable
- 1 x Installation & Operating Instructions (this document)
- 1 x Chamber Location Sticker Sheet (for Spurs)

Box 2 of 2

- 1 x Expansion Chassis - 2 x Batteries supplied externally
- 1 x PowerMaxx+ Lid
- 1 x Extended 4 Arm Cable Harness
- 1 x Pack of 8 Screws

2.3 Hi-PowerMaxx (DMS-364) contents

- 1 x Hi-PowerMaxx Unit - 5 x Batteries supplied externally
- Gland Pack (4 x Large Cable Glands, 2 x Large Blanking Plugs, 1 x Small Cable Gland, 1 x Small Blanking Plug, 4 x Large Nuts & 1 x Small Nut) 1 x 3m length of MaxxConnect family cable
- 1 x Installation & Operating Instructions (this document)
- 1 x Chamber Location Sticker Sheet (for Spurs)

2.4 Hi-PowerMaxx-XL (DMS-236) contents

Box 1 of 3

- 1 x Hi-PowerMaxx Unit (no inverter or lid) - 5 x Batteries supplied externally
- Gland Pack (4 x Large Cable Glands, 2 x Large Blanking Plugs, 1 x Small Cable Gland, 1 x Small Blanking Plug, 4 x Large Nuts & 1 x Small Nut) 1 x 3m length of MaxxConnect family cable
- 1 x Installation & Operating Instructions (this document)
- 1 x Chamber Location Sticker Sheet (for Spurs)

Box 2 of 3

- 1 x Expansion Chassis
- 1 x Pack of 8 Screws

Box 3 of 3

- 1 x Inverter & Lid Assembly

3.0 Technical information

Specification	
Size (PowerMaxx)	W: 155mm x D: 425mm x H: 300mm
Size (PowerMaxx+)	W: 310mm x D: 425mm x H: 300mm
Size (Hi-PowerMaxx)	W: 475mm x D: 425mm x H: 300mm
Size (Hi-PowerMaxx-XL)	W: 632mm x D: 425mm x H: 300mm
Weight (PowerMaxx) inc. batteries	19.5kg
Weight (PowerMaxx+) inc. batteries	49kg
Weight (Hi-PowerMaxx) inc. batteries	80.5kg
Weight (Hi-PowerMaxx-XL) inc. batteries	87kg
Mains supply	200-250V AC (50Hz)
Internal battery (PowerMaxx)	24V - 22Ah
Internal battery (PowerMaxx+)	24V - 3x22Ah. Total capacity=66Ah
Internal battery (Hi-PowerMaxx & Hi-PowerMaxx-XL)	24V - 5x22Ah. Total capacity=110Ah
Power (standby)	<3W
Power (charging)	55W
Visual display	Red, Blue, Green LED
Operating temperature	5-35°C
Humidity range	<90% RH
Approximate Installation time	30 minutes

4.0 Health & Safety

In order to minimise the risk of ill health or accidents when installing and/or servicing pump chambers and associated accessories, workers must be fully trained and competent. The following guidelines will help safeguard matters:

- Assessing the risk and working in accordance with the control measures identified.
- Ensure electrical power to the equipment is isolated before carrying out installation or maintenance.
- A suitable first aid kit must be close to hand.
- The electrical installation must comply with the requirements of BS 7671:2008 'Requirements for Electrical Installations' incorporating amendment 3:2015.

5.0 Guarantee

The PowerMaxx family of products is offered with a 24 month component guarantee. This guarantee only covers any defects in workmanship, construction or material. This guarantee does not cover, defects caused by incorrect installation, installer error, abnormal working conditions, misuse or neglect.

6.0 Unit location

The units must be positioned where there is sufficient air circulation to the top and base vents and is permanently accessible for servicing. If using in conjunction with an AlertMaxx2 high level alarm, please ensure the units are no further than a 20m cable length from each other.

MaxxConnect cable can be purchased per 10m (DMS-288). **Do not join cables. Run full lengths only.**

CAUTION!

The units are not waterproof and must be installed indoors or inside a kiosk. The units must also be installed in a chemically neutral environment with a relative humidity of <80%.

Installations not following this guidance will void the manufacturers guarantee.

CAUTION!

These products should only be installed by qualified personnel in accordance with the latest regulations.

7.0 Safety

The units have 240V present at all times and can generate dangerous voltage even if the mains supply is removed. The power switch only disables the ability to generate 240V from the battery pack; however, mains feeds are still live and present supplying the pumps. To be completely safe, remove the fuses from both spurs, ensure the unit is switched off and disconnect the battery pack/s.



240 Volts present at all times Risk of voltage backfeed

Isolate mains & disconnect battery before
working on the circuitry connected to this unit
or the unit itself.

Do not rely on measuring values.
To be serviced by a certified electrician only.

Battery Type: Lead-acid
Battery Specification: 24V DC 22Ah
Caution: Replace with same type only

Risk of electric shock & chemical hazard.

Refer to the instruction manual for handling,
disposal & maintenance information.



8.0 General

The PowerMaxx & PowerMaxx+ can supply one or two pumps (not simultaneously) and have been certified for use on:

- V3

The Hi-PowerMaxx can supply one or two pumps (not simultaneously) and has been certified for use on:

- V4
- V6

The Hi-PowerMaxx-XL can supply one or two pumps (not simultaneously) and has been certified for use on:

- D10

The supplies to the pump/s should be separately fused using non-switched fused spurs and not on the same ring mains.

9.0 Wiring schematic

The below wiring schematic shows a typical installation using a PowerMaxx and Dual V3 pump station.

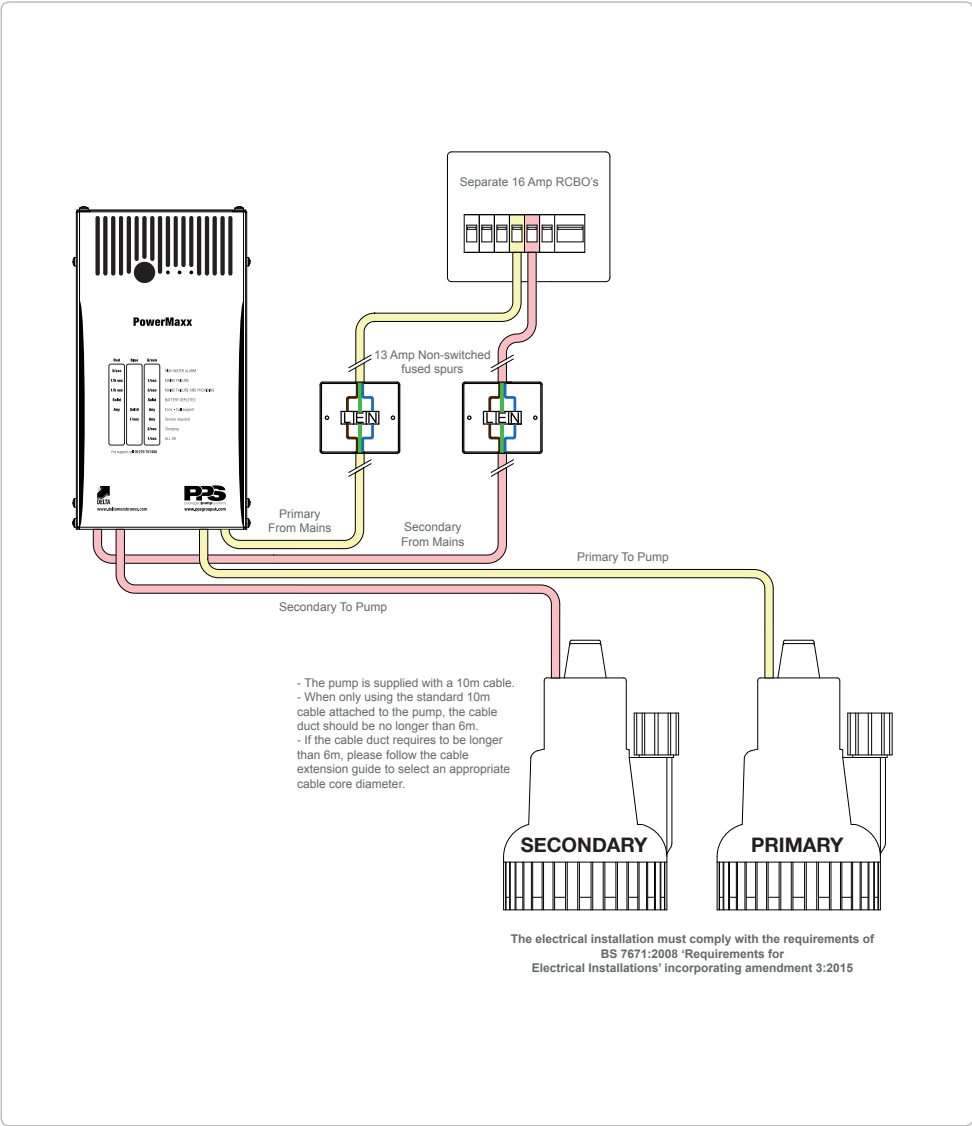


Figure 1. Wiring schematic

10.0 Wiring a solitary PowerMaxx

1. Remove the fuses from the spurs that will power the pumps being used with the PowerMaxx.
2. Ensure the power switch of the PowerMaxx is in the OFF position.
3. Remove the PowerMaxx lid and side panels from the unit.
4. If you are configuring the unit with **one pump**, fit two large cable glands into the primary side of the unit and two blanking plugs into the secondary side of the unit.
If you are configuring the unit with **two pumps**, fit two large cable glands into the primary side of the unit and two large cable glands into the secondary side of the unit.
If you are connecting an **AlertMaxx2**, fit a small cable gland into the small hole above the secondary holes.
5. Using the cable glands on the back of the PowerMaxx, feed the power and pump cables through and to the correct terminal blocks on the lower circuit board.
There are two connector blocks on the lower circuit board: **PRIMARY** and **SECONDARY**. The primary connector block should always have a connection, as this is the supply that charges the PowerMaxx.
6. Connect the supply to the "From Mains" and the corresponding pump to the "To Pump" (figure 2).
7. Connect the battery pack to the inverter by plugging in the grey Anderson connector.

11.0 Wiring a solitary PowerMaxx+

1. Remove the fuses from the spurs that will power the pumps being used with the PowerMaxx+.
2. Ensure the power switch of the PowerMaxx+ is in the OFF position.
3. Remove the PowerMaxx+ lid and side panels from the unit.
4. If you are configuring the unit with **one pump**, fit two large cable glands into the primary side of the unit and two blanking plugs into the secondary side of the unit.
If you are configuring the unit with **two pumps**, fit two large cable glands into the primary side of the unit and two large cable glands into the secondary side of the unit.
If you are connecting an **AlertMaxx2**, fit a small cable gland into the small hole above the secondary holes.
5. Using the cable glands on the back of the PowerMaxx+, feed the power and pump cables through and to the correct terminal blocks on the lower circuit board.
There are two connector blocks on the lower circuit board: **PRIMARY** and **SECONDARY**. The primary connector block should always have a connection, as this is the supply that charges the PowerMaxx+.
6. Connect the supply to the "From Mains" and the corresponding pump to the "To Pump" (figure 2).
7. Unpack box 2 of 2 and position the expansion chassis next to the PowerMaxx+ on either side of the unit. Using the screws provided, fix the expansion chassis to the PowerMaxx+.
8. Install the two extra batteries into the battery tray of the expansion chassis so that the grey Anderson connectors face into the centre of the PowerMaxx+. Plug each **RED** Anderson connector attached to the extended four arm cable to each **GREY** Anderson connector on the three batteries installed in the unit and one to the connector from PCB1. The batteries have **GREY** Anderson connectors and the harness has **RED** Anderson connectors.

The following configuration is ONLY acceptable - RED to GREY connectors.

12.0 Wiring a solitary Hi-PowerMaxx

1. Remove the fuses from the spurs that will power the pumps being used with the Hi-PowerMaxx.
2. Ensure the power switch of the Hi-PowerMaxx is in the OFF position.
3. Remove the Hi-PowerMaxx lid and place in front of the unit - **take care not to damage the cables.**
4. Remove the side panels and position the Hi-PowerMaxx in the chosen location for installation.
5. If you are configuring the unit with **one pump**, fit two large cable glands into the primary side of the unit and two blanking plugs into the secondary side of the unit.
If you are configuring the unit with **two pumps**, fit two large cable glands into the primary side of the unit and two large cable glands into the secondary side of the unit.
If you are connecting an **AlertMaxx2**, fit a small cable gland into the small hole above the secondary holes.
6. Using the cable glands on the back of the Hi-PowerMaxx, feed the power and pump cables through to the correct terminal blocks on the lower circuit board.
There are two connector blocks on the lower circuit board: **PRIMARY** and **SECONDARY**. The primary connector block should always have a connection as this is the supply that charges the Hi-PowerMaxx.
7. Connect the supply to the 'From Mains' and the corresponding pump to the 'To Pump' (figure 2).
8. Install all five batteries into the battery trays so that the grey Anderson connectors face into the centre of the Hi-PowerMaxx. Plug each **RED** Anderson connector attached to the extended six arm cable to each **GREY** Anderson connector on the five batteries installed in the unit and one to the connector from PCB1. The batteries have **GREY** Anderson connectors and the harness has **RED** Anderson connectors.
The following configuration is ONLY acceptable - RED to GREY connectors.
9. Tuck the grey Anderson connectors and cables into the void between the batteries.

13.0 Wiring a solitary Hi-PowerMaxx-XL

1. Remove the fuses from the spurs that will power the pumps being used with the Hi-PowerMaxx-XL.
2. Ensure the power switch of the Hi-PowerMaxx-XL is in the OFF position.
3. Remove the Hi-PowerMaxx-XL side panels from the unit.
4. If you are configuring the unit with **one pump**, fit two large cable glands into the primary side of the unit and two blanking plugs into the secondary side of the unit.
If you are configuring the unit with **two pumps**, fit two large cable glands into the primary side of the unit and two large cable glands into the secondary side of the unit.
If you are connecting an **AlertMaxx2**, fit a small cable gland into the small hole above the secondary holes.
5. Using the cable glands on the back of the Hi-PowerMaxx-XL, feed the power and pump cables through and to the correct terminal blocks on the lower circuit board.
There are two connector blocks on the lower circuit board: **PRIMARY** and **SECONDARY**. The primary connector block should always have a connection, as this is the supply that charges the Hi-PowerMaxx-XL.
6. Connect the supply to the "From Mains" and the corresponding pump to the "To Pump" (figure 2).
7. Unpack box 2 of 3 and position the expansion chassis next to the Hi-PowerMaxx-XL on right hand side of the unit. Using the screws provided, fix the expansion chassis to the Hi-PowerMaxx-XL.
8. Unpack box 3 of 3 and position the lid in front of the unit.
9. Install all five batteries into the battery trays so that the grey Anderson connectors face into the centre of then Hi-PowerMaxx-XL. Plug each **RED** Anderson connector attached to the extended six arm cable from the inverter to each **GREY** Anderson connector on the five batteries installed in the unit and one to the connector from PCB1. The batteries have **GREY** Anderson connectors and the harness has **RED** Anderson connectors.
The following configuration is ONLY acceptable - RED to GREY connectors.
10. Tuck the grey Anderson connectors and cables into the void between the batteries.

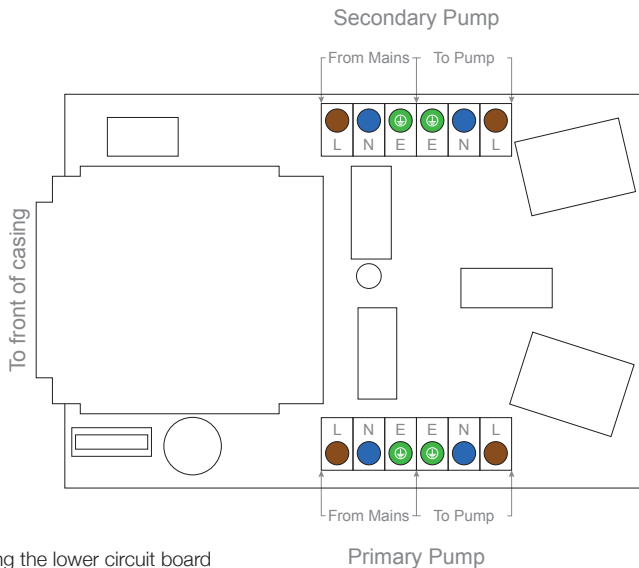


Figure 2. Wiring the lower circuit board

14.0 Configuring the upper circuit board to the pump/s

- Using the diagram below, set the switches on the upper circuit board according to your systems configuration (figure 3). **If you are connecting an AlertMaxx2, set switch 1 in the DOWN position (NO AlertMaxx Present) until configuring the units.**

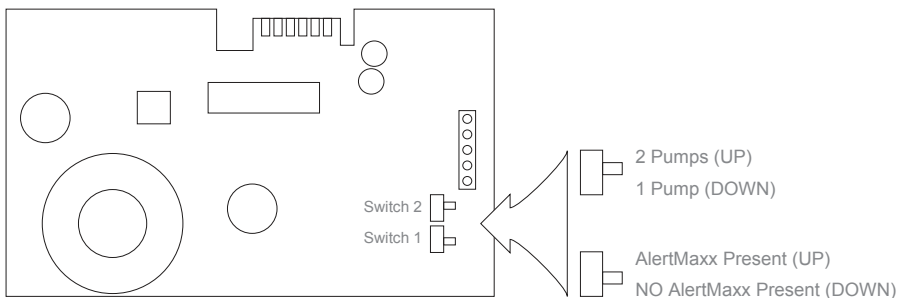


Figure 3. Configuring the upper circuit board

15.0 Setup of the unit

1. Replace the side panels of the unit, followed by the lid.
2. Replace the fuses to the spurs supplying the unit and turn on the mains power.
3. Check that the pump/s are receiving power **(with the unit switched off)** by lifting the float switches on the pump/s.
4. Switch the unit on; all three LED's should flash three times.
5. The blue LED will be permanently lit while the unit checks the environment and the connections.
6. After 10-20 seconds, one of the following LED combinations will be displayed.

Red LED	Blue LED	Green LED	During initial configuration
4/sec	On		No battery connected
3/sec	On		No primary mains present
2/sec	On		Secondary mains present and switch 2 in 1 pump position
1/sec	On		No secondary mains present. Note: this can only occur if you have set the configuration switch to 2 pumps (switch 2: UP) and have no secondary mains present
On	On		Error in connection of cabling (reversed of mains and pumps)
		1/sec	The unit is correctly connected
		2/sec	The unit is correctly connected and charging

7. If the unit fails to configure correctly - switch the unit off, remove the fuses from the spurs, remove the side panels and lid, redo the connections or set the configuration switches to the correct positions (section 13.0) and then replace the covers and turn the unit back on. If the issue still persists, please call technical support on 01279 757400.
8. **If you are connecting an AlertMaxx2, please refer to section 19.0 of this manual.**
9. The units will always begin charging after it has been connected and configured.

16.0 Principals of operation

Normal operation

The power bypasses the unit and goes direct to the pumps (figure 4). Pump supply #1 (primary) also charges the battery.

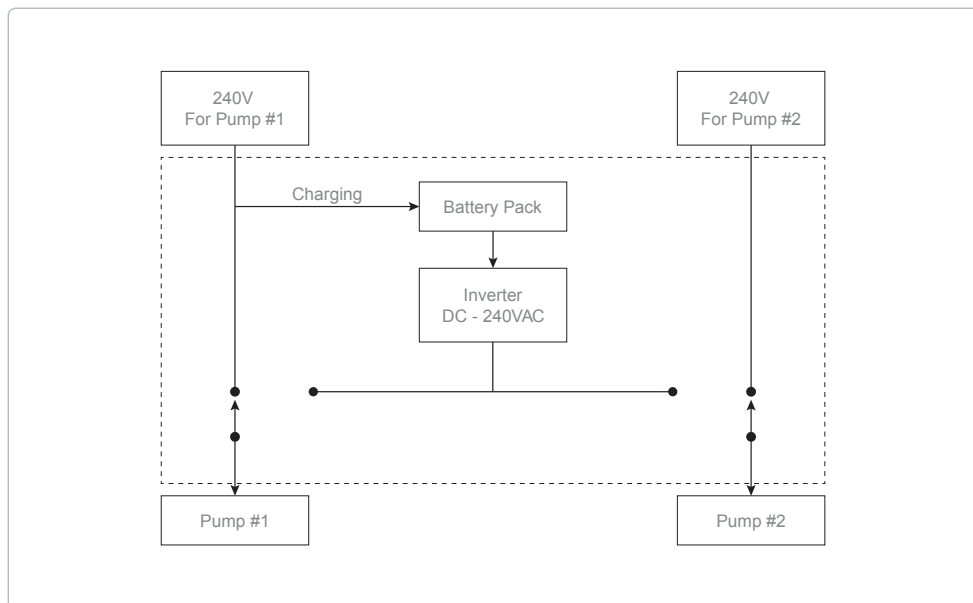


Figure 4. Basic schematics

Backup operation

When the unit senses that the power is down, the unit enters backup mode. To save power the battery backup will periodically and dynamically test if the pump/s need/s power (float up). If the pump/s need/s power, it will serve the pump/s as long as they need or until the battery is depleted.

If two pumps are connected and both supplies have failed it will serve both pumps in a rotational manner giving equal priority until the power returns or the battery is depleted.

If the secondary power has failed, it will serve the secondary pump as required from the battery. However, it will also charge the battery from the primary spur, when the secondary pump does not need power.

Charging after power failure

After any power failure, the battery is always charged. This process can take up to 15 hours for a PowerMaxx, 45 hours for a PowerMaxx+ and 100 hours for a Hi-PowerMaxx and Hi-PowerMaxx-XL.

17.0 Battery life

The batteries have a nominal life span of 3 years. This life span is shortened by the following:

- Temperatures above 25°C.
- Number of discharges (the number of times the unit has been used without mains power).
- The depletion level when discharging and the number of times the batteries are used. Extended periods providing backup power will impact battery life.

18.0 Battery servicing

Replacement of the battery pack should be done every 2-3 years to ensure maximum backup time. In some cases, the batteries may need earlier replacement. This will be indicated by a LED combination (flashing blue LED). Servicing of the battery packs should be performed by a qualified service person with knowledge about batteries and the required precautions. The battery packs should be replaced with the same type the unit is installed with. This information can be found within the unit or on page 6.

WARNING!

Do not dispose of batteries in a fire. The batteries may explode.

Do not dispose of batteries in landfill. Please recycle safely at your local recycling plant.

Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes and may be toxic.

19.0 Connecting an AlertMaxx2 (if purchased)

The PowerMaxx, PowerMaxx+, Hi-PowerMaxx or Hi-PowerMaxx-XL can be connected to an AlertMaxx2. Battery backup capacity and condition are fed directly to the PPS Op-Centre when connected via Wi-Fi.

The PowerMaxx, PowerMaxx+, Hi-PowerMaxx and Hi-PowerMaxx-XL are supplied with 3m of 4 core MaxxConnect family cable.

The AlertMaxx2 can only be connected to PowerMaxx, PowerMaxx+, Hi-PowerMaxx and Hi-PowerMaxx-XL which is running the software version 3.0 or higher. This can be identified by the software identification sticker on the back of the battery backup units.



P05 050 2.2HEX



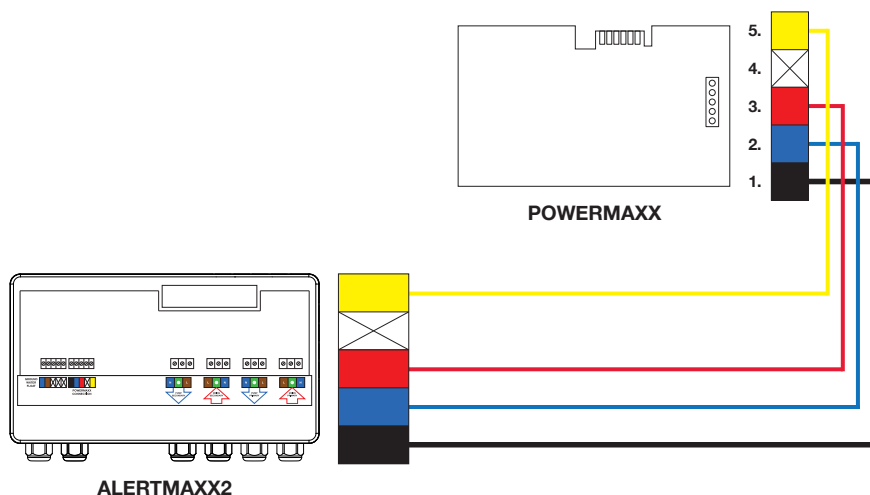
P05 050 3.0HEX

20.0 MaxxConnect cabling

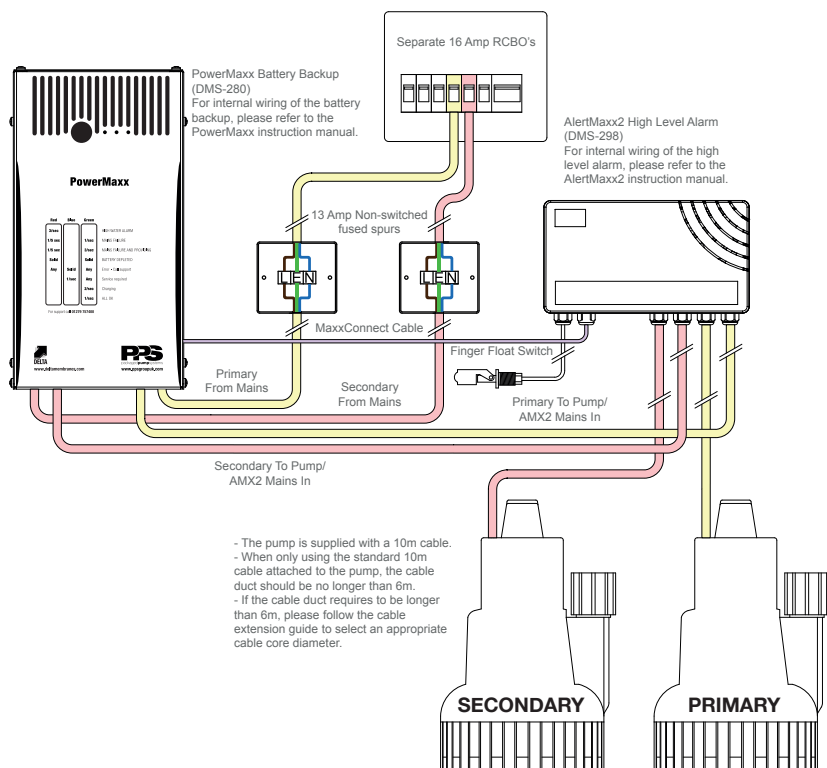
The units are to be a maximum of 20m cable distance apart. MaxxConnect family cable can be purchased per 10m (DMS-288). **Do not join cables. Run full lengths only.**

PLEASE NOTE

The AlertMaxx2 must have the pump/s wired into it. The AlertMaxx2 must be installed in series to the PowerMaxx, this means the AlertMaxx2 must be installed in between the PowerMaxx & the pump/s as per figure 6 on page 15.



21.0 AlertMaxx2 wiring schematic



The electrical installation must comply with the requirements of BS 7671:2008 'Requirements for Electrical Installations' incorporating amendment 3:2015

Figure 6. AlertMaxx2 wiring schematic

22.0 Wiring a MaxxConnect system

1. Install the AlertMaxx2 and battery backup as per the wiring schematic on page 15.
Leave isolated and turned off.
2. Wire in the MaxxConnect cable according to the wiring schematic on page 15.
3. Configure switch 2 on the battery backup upper circuit board to the UP position (alarm).
4. Reconnect the batteries in the battery backup and AlertMaxx2.
5. Refit the fascia/covers on the AlertMaxx and battery backup and power on the mains and units.
6. The battery backup should now start up with a 5/sec green LED indicating it is trying to find the AlertMaxx2. This could take up to 2 minutes.
7. The battery backup will signal its connection success by a 2/sec green LED. This indicates the battery backup has entered its initial charging phase. 1/sec green LED indicates a fully charged battery.

CAUTION!

MaxxConnect misconnections will destroy one or all connected units (this can be detected by the manufacturer) and void the guarantee.

23.0 Additional LED combinations and error codes

The MaxxConnect introduces two new LED combinations to the battery backup and one new error code to the AlertMaxx2:

1. 8/sec green LED - Trying to find AlertMaxx2
2. 1/sec red, solid blue, 1/sec green LEDs - Failed to connect
3. E5 - Cannot find battery backup

If the mains power fails, the AlertMaxx2 will keep itself operating and charging from the battery backup.

24.0 Spares

Part No.	Description
DMS-366	Battery Pack
DMS-288	MaxxConnect family cable extension - sold per 10m

25.0 LED codes

Red LED	Blue LED	Green LED	Fault
3/sec			High water alarm
1/5sec		1/sec	Mains failure
1/5sec		3/sec	Mains failure and providing
Solid		Solid	Battery depleted
Any	Solid	Any	Error - Call support
	1/sec	Any	Service required
		2/sec	Charging
		1/sec	All OK
All flash in sequence			Battery too low to start up
3/sec	Solid		Serious internal error (software)
2/sec	Solid		Serious internal error (inverter failure)
2/sec	Solid	2/sec	Overcurrent on pump
Solid			Fuse blown (250mA slow)

26.0 PPS Technical Department

If you are experiencing any technical issues, please contact the PPS Technical Department on **0300 9000 999** from 9:00am - 5:00pm or email **info@ppsgroupuk.com**.

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