SERVICE MANUAL

DUTY STANDBY/ASSIST (E)

FUEL TRANSFER PUMPSET and CONTROL PANEL

WITH BELIMO VALVE CONTROLS
1 Phase Standard Panel
Serial Number:

SERIES: PE DSA(E)

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V4.2

Contents

1.0 Overview

2.0 Installation

3.0 Alarms

4.0 Input connections

5.0 Power connections

6.0 Specification

7.0 Layout and connection diagrams

8.0 Notes

1.0 Overview

The PE Twin Pump Controller is a microprocessor-controlled, duty/standby/assist control panel for use with twin pumpsets transferring from a bulk to a day tank, incorporating tank level controls, bund/seal leakage detection, BMS and fire system interface, using an innovative modular construction.

The main features include:

A compact, self-contained microprocessor panel with plug-in connections.

Automatic pump changeover with alternate starting sequence.

Auto/off/manual facility for each pump.

Bulk tank level controls with low/low pump protection, giving local LED and sounder indication and a remote alarm signal.

Day tank level controls with high and low level alarms, giving local LED and sounder indication and a remote alarm signal.

Switched supply (230/1/50) for Belimo motorised or solenoid valve with facility for low voltage status switch to operate pump contactors.

Building Management Interface (BMS) including fire cut off.

Standard voltage 240/1/50 (24v AC/DC, 12v DC, 415/3/50 or 110/1/50 available).

Mounted in an epoxy-coated steel enclosure 400mm x 500mm x 150mm.

Optional extras include extra volt-free contacts for external equipment, internal RCDs interlocked with pump changeover and an alarm in the event of a pump failure. For critical systems, a remote dialler can be fitted which can send a text message to a mobile phone anywhere in world.

2.0 Installation.

Electrical

The electrical installation MUST be undertaken by a competent person and should comply with the relevant IEE regulations.

Make sure that the mains voltage (±10%) and frequency correspond with the rating plate which is fixed on the inside left side of the control cabinet.

Check that the thermal over-loads are set at the correct current for the pumps.

Wiring: Before making any other connections, make sure the control panel earth (green/yellow) is connected, then connect the neutral and phase connections to the isolator switch.

Direction of rotation: Check direction of rotation. If not correct, see motor manufacturer's details as to which links in the terminal box need to be moved. With three phase motors, invert any 2 of the 3 motor supply cables.

Float switches may be fitted to the supply (bulk tank) and or the filling (day tank). Follow the connection diagram in section 5.0. If dry-run protection is not required, links must be fitted to the bulk tank terminals

Pumps

Make sure that:

The pipework has been flushed clear of debris before fitting the pumps.

The pipework does not put any strain on the pumps. If necessary fit flexible connections.

The pumps must be installed in a level horizontal position with the base plate fixed to a solid surface. The suction diameter of the piping should be no less than the pump inlet diameter which should have a slight upward slope to avoid air getting trapped. The pipework should be checked for leaks before operating the pump

Always fill the pumps with liquid before starting - dry running will damage the mechanical seal and impeller. If the pumps are for water, guard against frost damage.

Starting

Make sure that the selector switches are set to off. Turn each selector switch to **Hand** and check for flow and direction of motor. If correct, select auto and check for leaks and operation of the day tank float switches.

Dry running operation of the pumps will damage the mechanical seal.

3.0 Alarms

D44696 Alarms

Relay 3	Relay 4
Bulk low low	Bulk low
Day hi hi	Day low low
Fire	Pump 1 tripped
Flow fail	Pump 2 tripped
	Bund leak / full
	E stop active

Both pumps off. This will sound local panel alarm only (maintenance).

Relay State

	RL 3			RL 4		
	41	42	43	44	45	46
System off	N/O	C	N/C	N/O	C	N/C
System on (No alarms)	N/C	C	N/O	N/C	C	N/O

All alarm contacts are volt-free. Maximum capacity 1A 30v.

4.0 Inputs

For Normal Operation

Day tank	21	Common day tank			
	22	Hi Hi	N/O	MOR	Pump stop
	23	Hi	N/C	MOF	Working level
	24	Low	N/C	MOF	Working level
	25	Low Low	N/C	MOF	
Bulk tank	26	Common bulk tank			
	27	Low	N/C	MOR	
	28	Low Low	N/C	MOR	Pump stop
Bund	29	Common bund			
	30	Bund	N/O	MOR	
Fire	31	Common fire cut-off			
	32	Fire	N/C		
Flow sensor	33	Common flow sensor			
	34	Flow sensor	N/C	MO FLOW	
Emergency Stop	35	E stop feed	N/C		Only connect to
	36	E stop feed	N/C		35 and 36

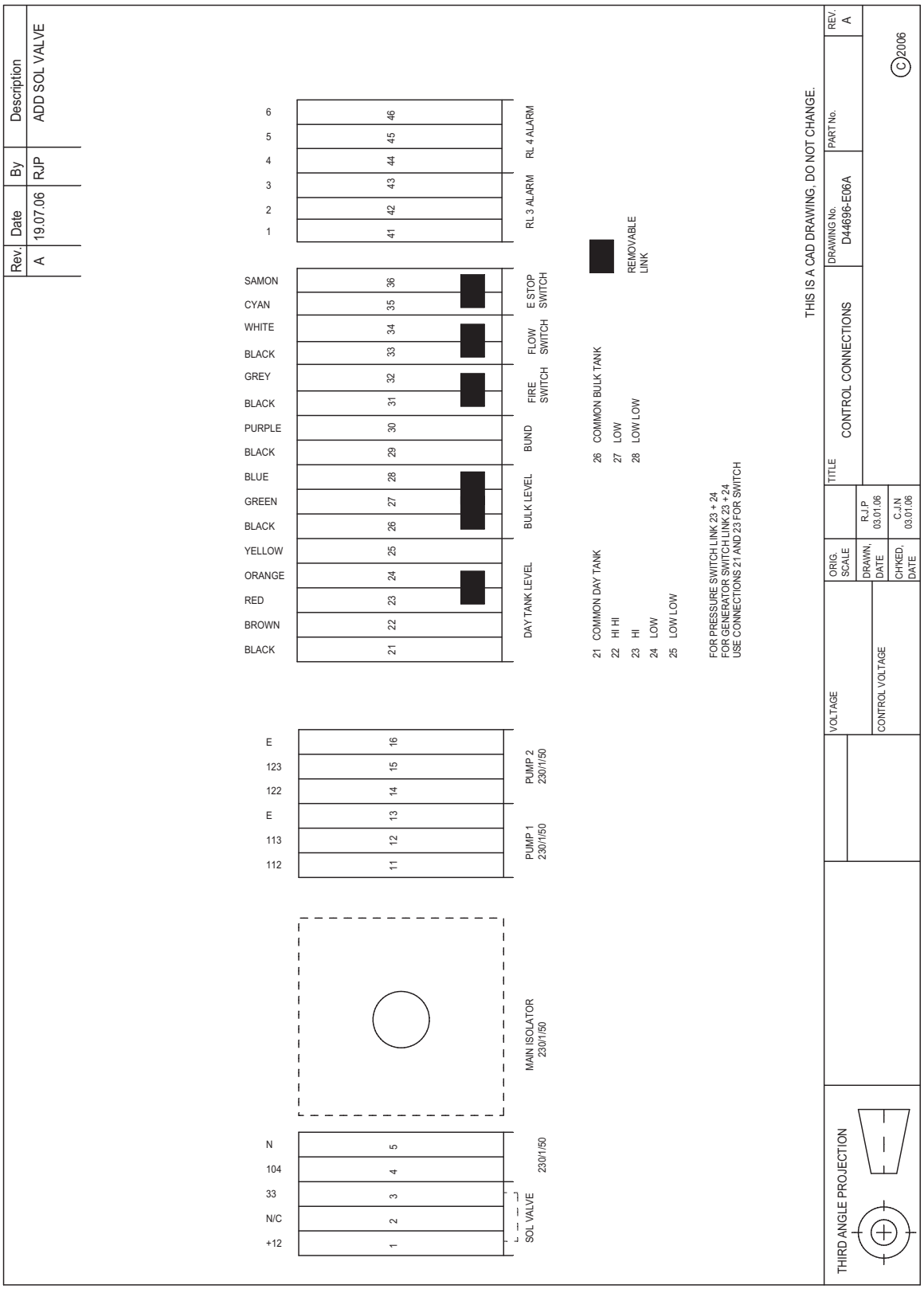
Notes	MOF	Make on fall	Float switch
	MOR	Make on rise	Float switch
	MO FLOW	Make on flow	Flow switch

For pressure switch or single pump stop/start link 22 + 23

NOTE : All inputs are for volt-free contacts only.

V4.2

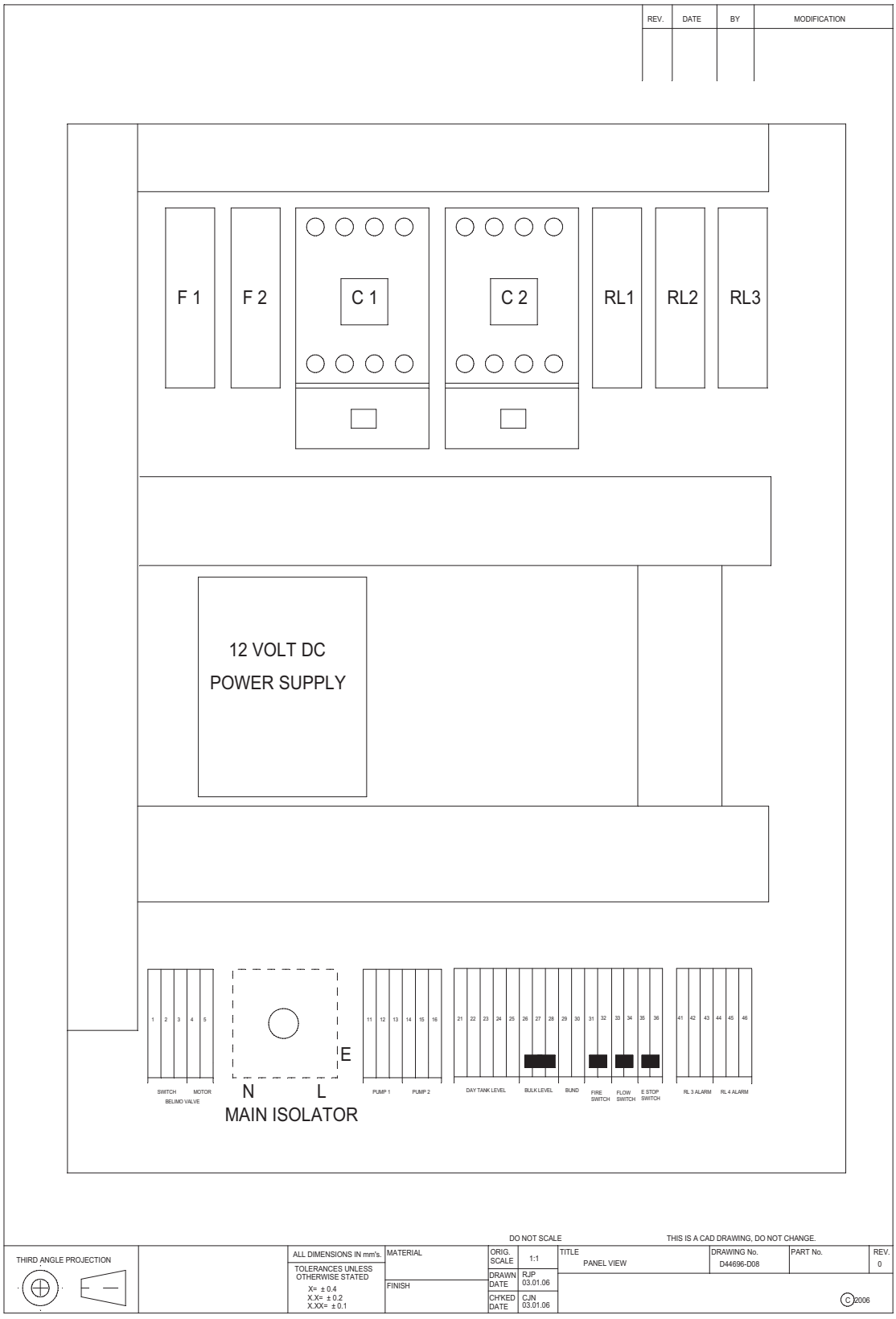
5.0 Power Connections.

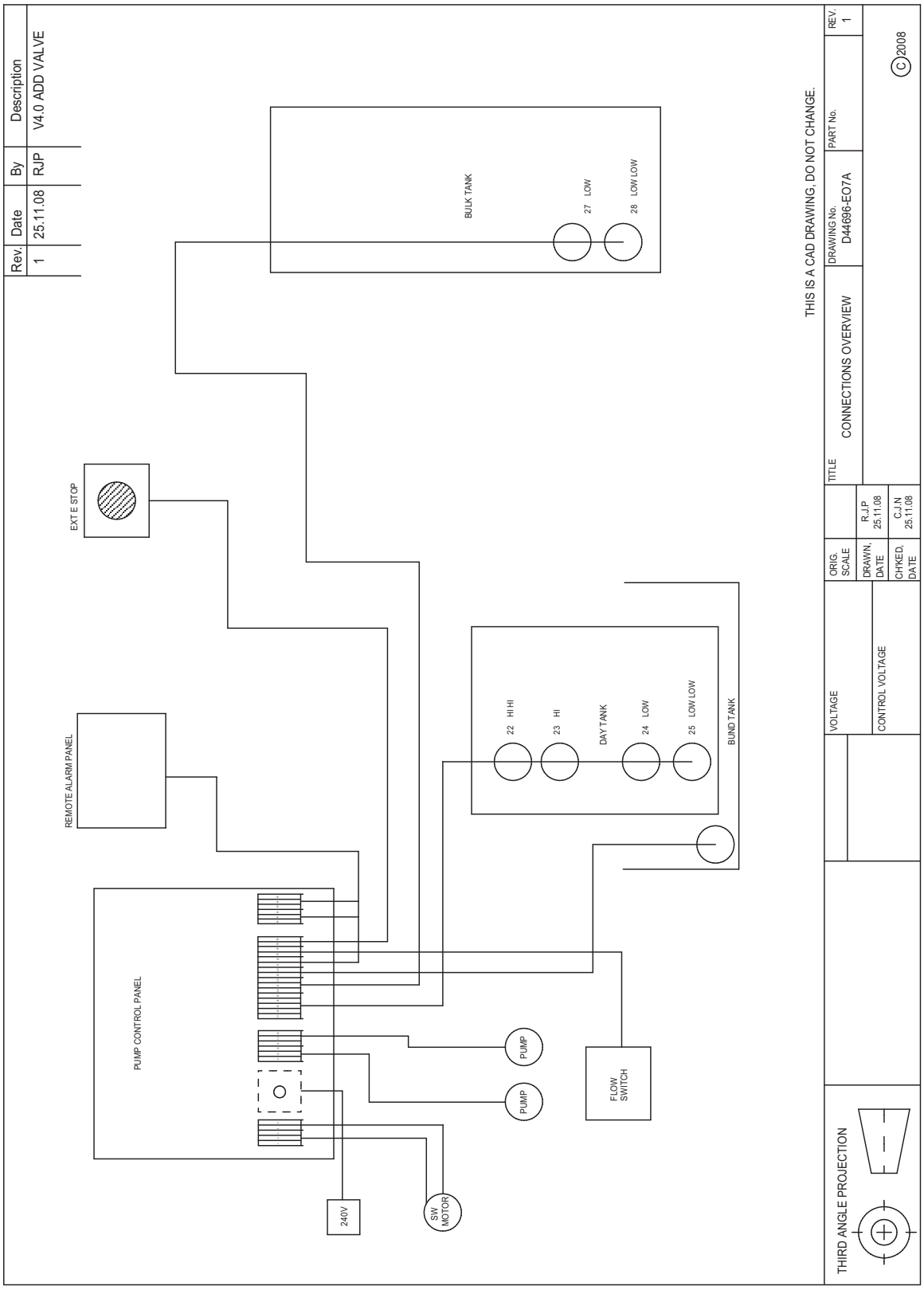


6.0 Specification

Voltage	110/1/50 240/1/50 415/3+N/50 24v AC/DC 12v DC
Maximum Pump size:	110 volt 1.5 kW 240 volt 2.5 kW 415 volt 11.0 kW *
Enclosure	Sheet steel polyester coated with a hinged lockable door. The door is fitted with a gasket to protect against damp and dust with a mechanically interlocked door switch. Cable entry is provided via a removable un-drilled gland plate fitted at the bottom of the enclosure.
Size	500mm x 400mm x 150mm * 4.0kW and above 500mm x 400mm x 200mm
Duty pump	Automatic pump rotation when auto is selected on both pumps.
Level control	Low voltage (5v) using float switches.
Pressure switch	Used on pressure booster sets (5v).
Emergency stop	Contacts fitted for external N/C Emergency stop. Link if not used.
Flow switch	Contacts for Flow switch (Link if not used).
Bund leak	Contacts for float switch N/O
Fire switch	N/C contacts from remote fire panel to shut system down if a fire is detected. (Link if not used).

7.0 Layout and connection diagrams




Rev. Date By Description
1 25.11.08 RJP V4.0 ADD VALVE
BULK TANK
27 LOW
28 LOW LOW
EXT E STOP
REMOTE ALARM PANEL
PUMP CONTROL PANEL
22 HI HI
23 HI
DAY TANK
24 LOW
25 LOW LOW
BUND TANK
PUMP
PUMP
FLOW SWITCH
240V
SW MOTOR
THIS IS A CAD DRAWING, DO NOT CHANGE.
TITLE
CONNECTIONS OVERVIEW
DRAWING No.
D44696-EO7A
PART No.
REV.
1
VOLTAGE
CONTROL VOLTAGE
ORIG. SCALE
DRAWN, DATE
R.J.P 25.11.08
CH'KED, DATE
C.J.N 25.11.08
THIRD ANGLE PROJECTION
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8.0 Notes

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PE MANUAL V4.2 11022020 1phase std