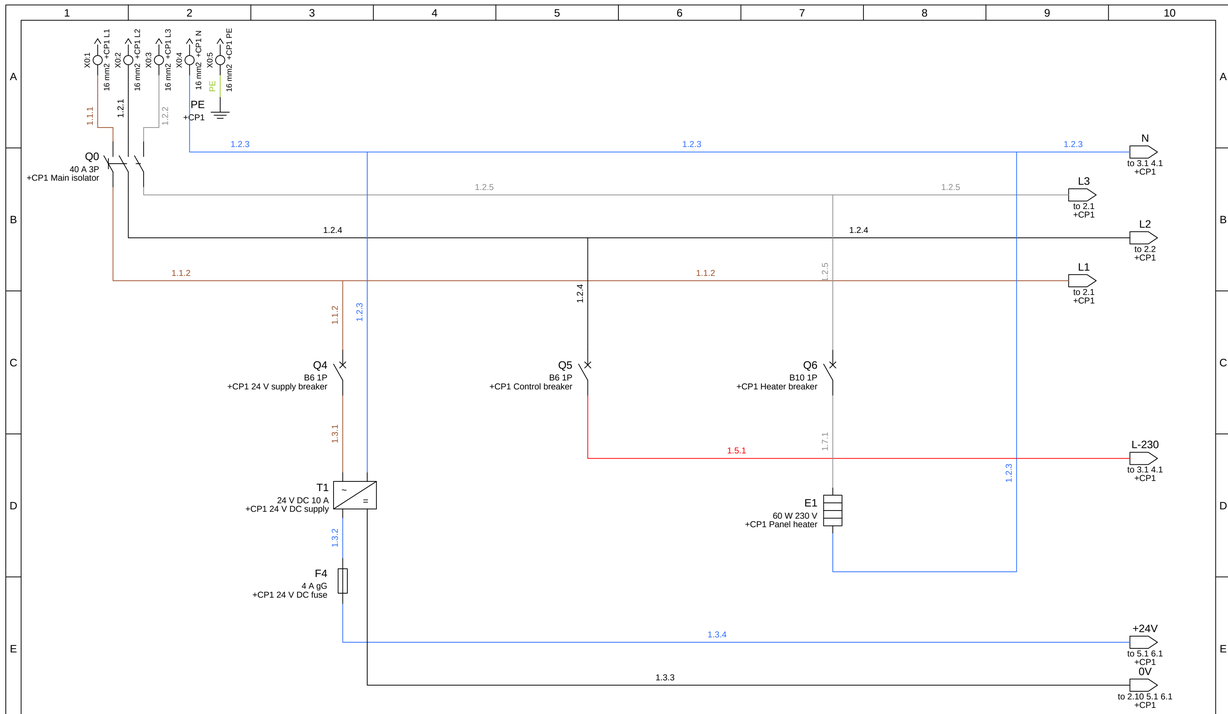
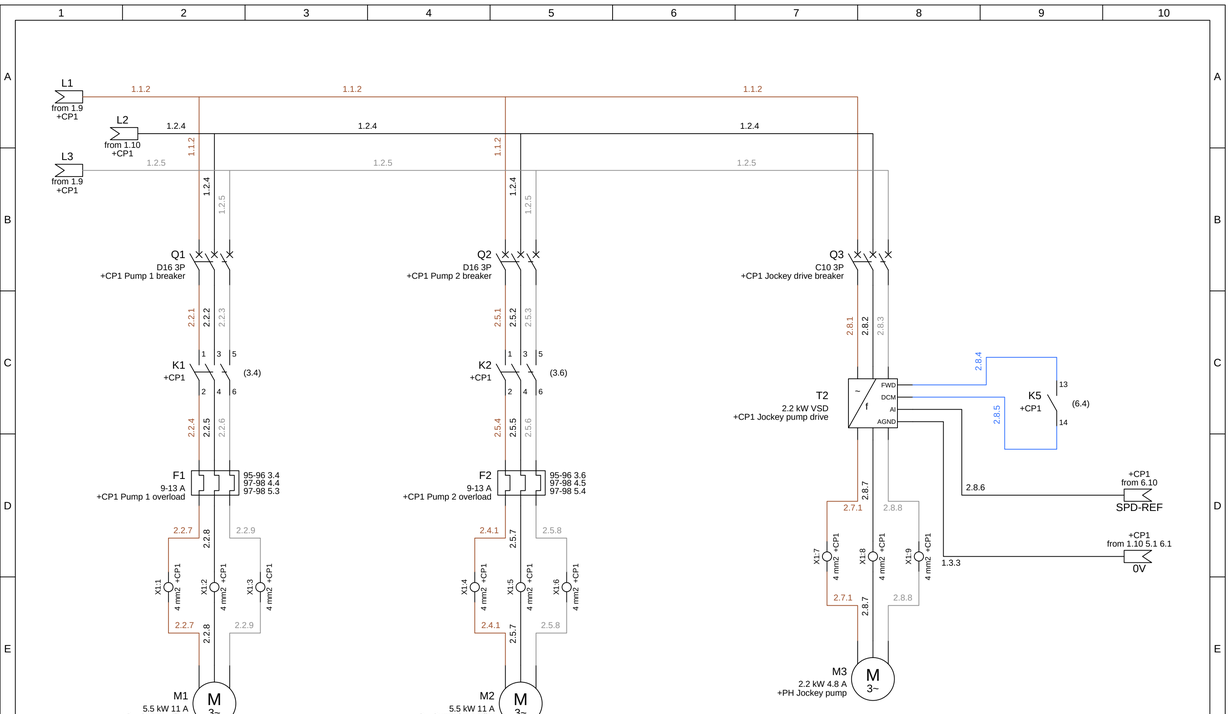


Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 1 of 6
Title: Incoming supply and distribution		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026



Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 2 of 6
Title: Pump motor starters 400 V		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026

Parts list

Item	Maker	Part number	Description	Quantity	Tags
1	Example Controls	EC-BCN-24-RD	Beacon LED red 24 V DC IP65	1	P10
2	Example Controls	EC-ES40	E-stop 40 mm twist release, 1 NC	1	S0
3	Example Controls	EC-ESS-65	E-stop station IP65, 1 NC	1	S10
4	Example Controls	EC-HTR-60	Anti-condensation heater 60 W, thermostat	1	E1
5	Example Controls	EC-PB22-BU	Push button 22 mm blue, 1 NO	1	S6
6	Example Controls	EC-PL22-AM	Pilot light 22 mm LED amber 230 V	3	P3 P4 P5
7	Example Controls	EC-PL22-GN	Pilot light 22 mm LED green 230 V	3	P1 P2 P6
8	Example Controls	EC-PL22-RD	Pilot light 22 mm LED red 230 V	1	P7
9	Example Controls	EC-PL22-WH	Pilot light 22 mm LED white 230 V	1	P0
10	Example Controls	EC-PLC-AI4	PLC analog input card, 4 x 4-20 mA	3	A18 A19 A20
11	Example Controls	EC-PLC-AO4	PLC analog output card, 4 x 0-10 V	1	A21
12	Example Controls	EC-PLC-DI8	PLC digital input card, 8 x 24 V DC	11	A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11
13	Example Controls	EC-PLC-DO8	PLC digital output card, 8 x 24 V DC	6	A12 A13 A14 A15 A16 A17
14	Example Controls	EC-PSU-24-10	Power supply 24 V DC 10 A	1	T1
15	Example Controls	EC-RLY2-230	Relay 2 changeover, 230 V AC, with base	1	K4
16	Example Controls	EC-RLY2-24	Relay 2 changeover, 24 V DC, with base	5	K5 K6 K7 K11 K12
17	Example Controls	EC-SND-230	Panel sounder 22 mm 230 V AC	1	P8
18	Example Controls	EC-SS22-2	Selector switch 22 mm 2-position, 1 NO	3	S3 S4 S5
19	Example Controls	EC-TMR-ON	On-delay timer 0.1 s to 10 h, 24-240 V	1	K3
20	Example Drives	ED-VSD-2K2	Variable speed drive 2.2 kW 400 V, IP20	1	T2
21	Example Electric	EE-CT12-230	Contactor 12 A AC-3, 230 V AC coil	2	K1 K2
22	Example Electric	EE-FH10-2	Fuse holder 10 x 38 with 2 A gG fuse	1	F3
23	Example Electric	EE-FH10-4	Fuse holder 10 x 38 with 4 A gG fuse	1	F4
24	Example Electric	EE-MCB1-B10	Circuit breaker 1-pole B10 10 kA	1	Q6
25	Example Electric	EE-MCB1-B6	Circuit breaker 1-pole B6 10 kA	2	Q4 Q5
26	Example Electric	EE-MCB3-C10	Circuit breaker 3-pole C10 10 kA	1	Q3
27	Example Electric	EE-MCB3-D16	Circuit breaker 3-pole D16 10 kA	2	Q1 Q2
28	Example Electric	EE-OL-9-13	Thermal overload relay 9-13 A	2	F1 F2
29	Example Electric	EE-SW40-3P	Door-interlocked isolator 40 A 3-pole	1	Q0
30	Example Motors	EM-P22-4	Pump motor 2.2 kW 400 V 4-pole IE3	1	M3
31	Example Motors	EM-P55-4	Pump motor 5.5 kW 400 V 4-pole IE3	2	M1 M2
32	Example Sensors	ES-CAP-M18	Capacitive sensor M18 PNP NO	1	B3
33	Example Sensors	ES-LS-67	Position switch IP67, roller lever	1	B2
34	Example Sensors	ES-LT-3	Level transmitter 0-3 m 4-20 mA	1	B7
35	Example Sensors	ES-PS-2	Pressure switch 0.2-2 bar G1/4	1	B1
36	Example Sensors	ES-PT-10	Pressure transmitter 0-10 bar 4-20 mA	1	B5
37	Example Sensors	ES-PT-4	Pressure transmitter 0-4 bar 4-20 mA	1	B6
38	Example Terminals	ET-FT16	Feed-through terminal 16 mm2	4	X0:1 X0:2 X0:3 X0:4
39	Example Terminals	ET-FT2.5	Feed-through terminal 2.5 mm2	15	X2:1 X2:2 X2:3 X2:4 X2:5 X2:6 X2:7 X2:8 X2:9 X2:10 X2:11 X2:12 X2:13 X2:14 X2:15
40	Example Terminals	ET-FT2.5-RD	Feed-through terminal 2.5 mm2, red	4	X3:1 X3:2 X3:3 X3:4
41	Example Terminals	ET-FT4	Feed-through terminal 4 mm2	9	X1:1 X1:2 X1:3 X1:4 X1:5 X1:6 X1:7 X1:8 X1:9
42	Example Terminals	ET-PE16	Earth terminal 16 mm2, green-yellow	1	X0:5

Cable schedule

Cable	Type	Cores	Used	Spare	From	To	Length (mm)	Wires	Site length (m)
W1	4G2.5 SWA	4	3	1	+CP1	+PH	30.5	2.2.7 2.2.8 2.2.9	18.0
W2	4G2.5 SWA	4	3	1	+CP1	+PH	30.5	2.4.1 2.5.7 2.5.8	21.0
W3	4G1.5 SY	4	3	1	+CP1	+PH	32.5	2.7.1 2.8.7 2.8.8	24.0
W4	3G1.5 SWA	3	2	1	+CP1	+PH	11.5	3.2.2 3.2.3	15.0
W5	2x1.0 YY	2	2	0	+CP1	+PH	22.5	1.3.4 5.8.1	26.0
W6	2x1.0 YY	2	2	0	+CP1	+PH	22.5	1.3.4 5.9.1	28.0
W7	3x0.34 PUR	3	3	0	+BT	+CP1	74.5	1.3.3 1.3.4 5.9.2	42.0
W8	2x1.0 YY	2	2	0	+CP1	+PH	41.5	1.3.3 6.7.1	12.0
W9	2x0.75 CY	2	2	0	+CP1	+PH	22.5	1.3.4 6.8.1	27.0
W10	2x0.75 CY	2	2	0	+CP1	+PH	22.5	1.3.4 6.8.2	25.0
W11	2x0.75 CY	2	2	0	+BT	+CP1	22.5	1.3.4 6.9.1	44.0

Cable totals

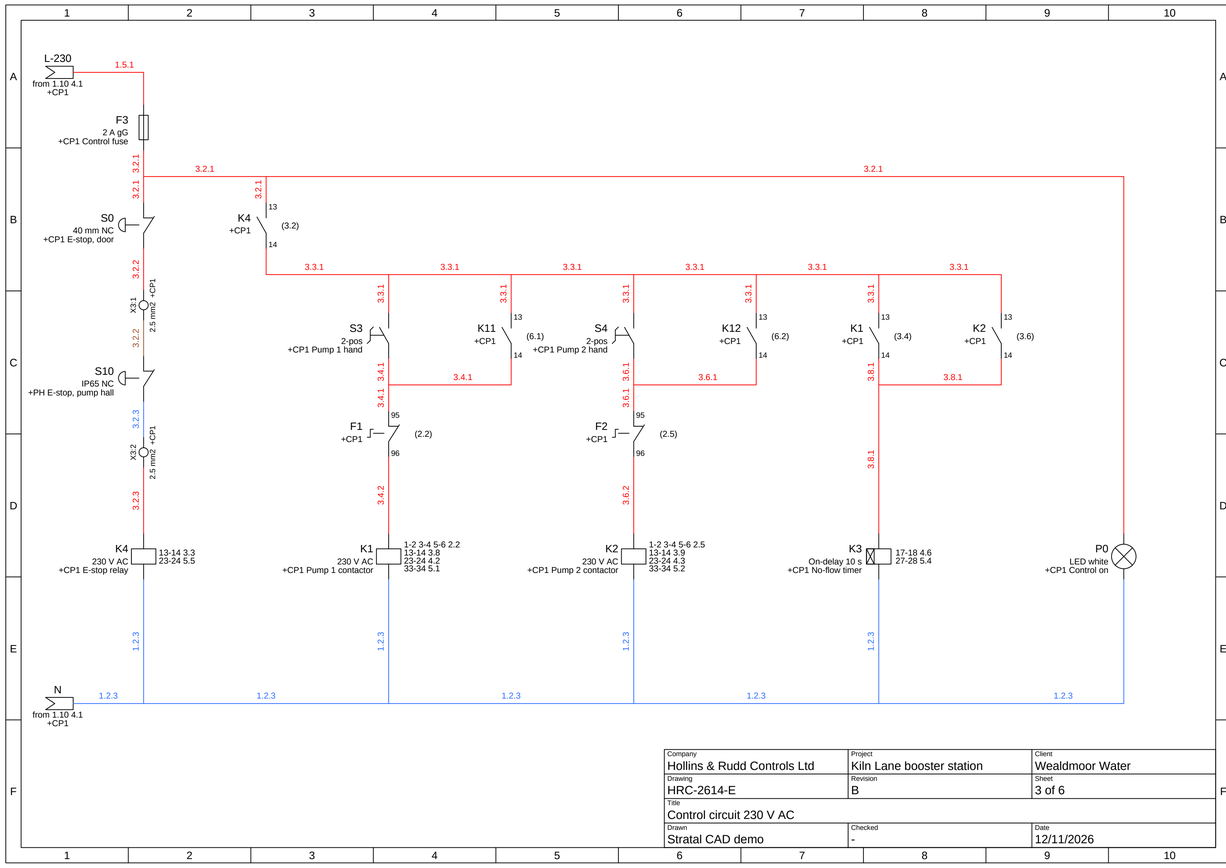
Type	Cables	Cores	Site length (m)	Without site length	Cable tags
2x0.75 CY	3	2	96.0	0	W9 W10 W11
2x1.0 YY	3	2	66.0	0	W5 W6 W8
3G1.5 SWA	1	3	15.0	0	W4
3x0.34 PUR	1	3	42.0	0	W7
4G1.5 SY	1	4	24.0	0	W3
4G2.5 SWA	2	4	39.0	0	W1 W2

NOTES

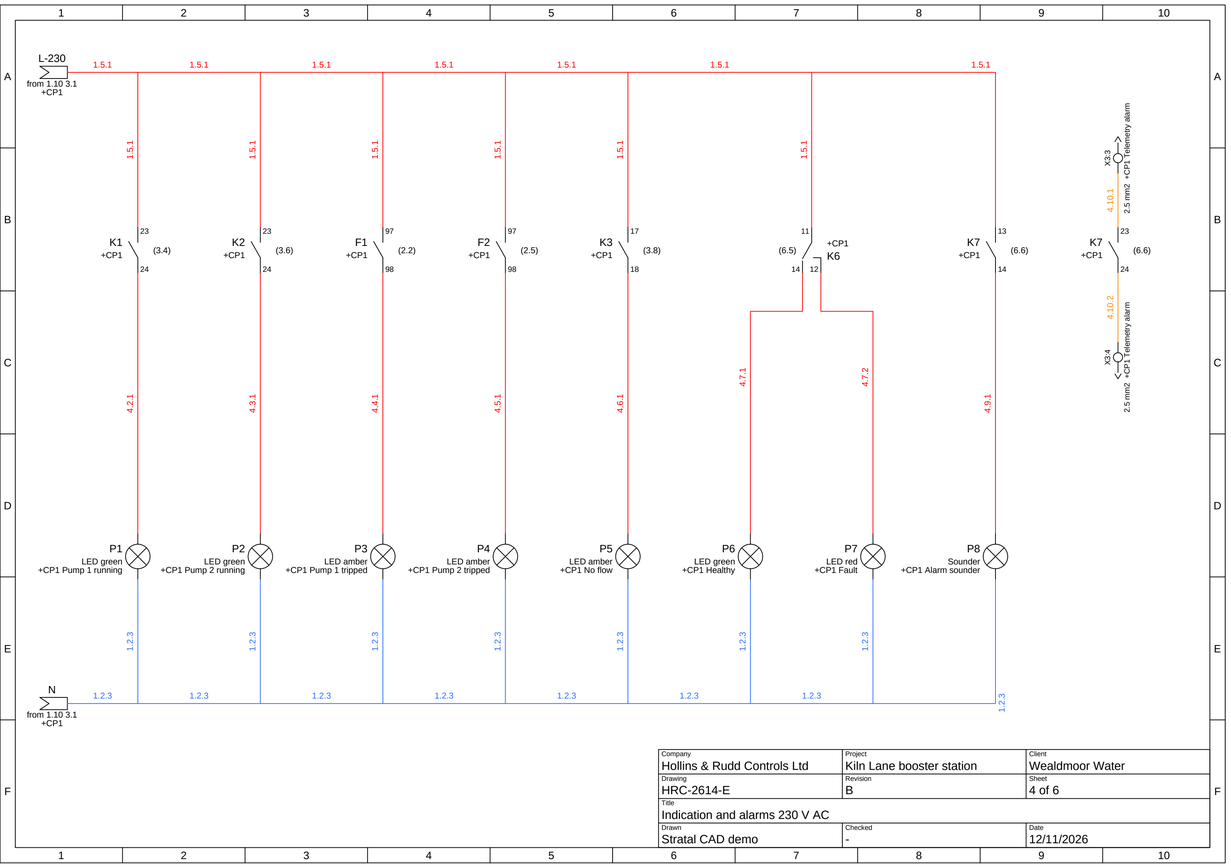
1. Schematic sheets 1 and 2 of 6 as the plugin draws them (ELSHEET frames), 1:1.
2. Wire numbers sheet.column.n, one per potential, carried across sheets by the off-sheet connectors (ELNUMBER); contacts numbered by position and cross-referenced (ELXREF).
3. Parts list from the example catalogue (ELPARTS); cable schedule and cable totals with site lengths. All three lists are placed by ELREPORT and redraw when the drawing changes.
4. Fictional project, client and makers, for demonstration only.

Stratal CAD
cad.stratal.co.uk

TITLE: CP1 booster station control panel Supply, distribution, motor starters	
PROJECT: Kiln Lane booster station (fictional)	DRAWN: Stratal CAD demo
DRAWING NO.: STR-ELS-001 / SHEET: 1 of 6 / SCALE: 1:1 / SIZE: A1	
SOFTWARE: Stratal CAD 0.1.8, Electrical Schematics 0.9.0	DATE: 12 Nov 2026
STATUS: DEMONSTRATION DRAWING - NOT FOR MANUFACTURE	



Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 3 of 6
Title: Control circuit 230 V AC		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026



Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 4 of 6
Title: Indication and alarms 230 V AC		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026

Bill of materials

Item	Description	Rating	Quantity	Tags
1	Anti-condensation heater	60 W 230 V	1	E1
2	Circuit breaker	B10 1P	1	Q6
3	Circuit breaker	B6 1P	2	Q4 Q5
4	Contactor or relay coil	230 V AC	3	K1 K2 K4
5	Contactor or relay coil	24 V DC	5	K5 K6 K7 K11 K12
6	Emergency stop, normally closed, latching	40 mm NC	1	S0
7	Emergency stop, normally closed, latching	IP65 NC	1	S10
8	Fuse	2 A gG	1	F3
9	Fuse	4 A gG	1	F4
10	Indicator lamp	Beacon red	1	P10
11	Indicator lamp	LED amber	3	P3 P4 P5
12	Indicator lamp	LED green	3	P1 P2 P6
13	Indicator lamp	LED red	1	P7
14	Indicator lamp	LED white	1	P0
15	Indicator lamp	Sounder	1	P8
16	PLC analog input		3	A18 A19 A20
17	PLC analog output		1	A21
18	PLC input		11	A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11
19	PLC output		6	A12 A13 A14 A15 A16 A17
20	Position switch, normally open	IP67	1	B2
21	Power supply	24 V DC 10 A	1	T1
22	Pressure switch, normally open	0.5 bar	1	B1
23	Proximity sensor, three-wire	M18 PNP	1	B3
24	Push button, normally open	22 mm blue	1	S6
25	Selector switch, two positions	2-pos	3	S3 S4 S5
26	Terminal	16 mm2	5	X0:1 X0:2 X0:3 X0:4 X0:5
27	Terminal	2.5 mm2	19	X2:1 X2:2 X2:3 X2:4 X2:5 X2:6 X2:7 X2:8 X2:9 X2:10 X2:11 X2:12 X2:13 X2:14 X2:15 X3:1 X3:2 X3:3 X3:4
28	Terminal	4 mm2	9	X1:1 X1:2 X1:3 X1:4 X1:5 X1:6 X1:7 X1:8 X1:9
29	Thermal overload relay	9-13 A	2	F1 F2
30	Three-phase motor	2.2 kW 4.8 A	1	M3
31	Three-phase motor	5.5 kW 11 A	2	M1 M2
32	Three-pole circuit breaker	C10 3P	1	Q3
33	Three-pole circuit breaker	D16 3P	2	Q1 Q2
34	Three-pole isolating switch	40 A 3P	1	Q0
35	Timer relay coil, on-delay	On-delay 10 s	1	K3
36	Transmitter, two-wire 4-20 mA	0-10 bar	1	B5
37	Transmitter, two-wire 4-20 mA	0-3 m	1	B7
38	Transmitter, two-wire 4-20 mA	0-4 bar	1	B6
39	Variable speed drive with control terminals	2.2 kW VSD	1	T2

Cable cores

Cable	Core	Wire	From	To
W1	1	2.2.7	X1:1	M1:U
W1	2	2.2.8	X1:2	M1:V
W1	3	2.2.9	X1:3	M1:W
W2	1	2.4.1	X1:4	M2:U
W2	2	2.5.7	X1:5	M2:V
W2	3	2.5.8	X1:6	M2:W
W3	1	2.7.1	X1:7	M3:U
W3	2	2.8.7	X1:8	M3:V
W3	3	2.8.8	X1:9	M3:W
W4	1	3.2.2	X3:1	S10:11
W4	2	3.2.3	S10:12	X3:2
W5	1	1.3.4	X2:1	B1:13
W5	2	5.8.1	B1:14	X2:2
W6	1	1.3.4	X2:3	B2:13
W6	2	5.9.1	B2:14	X2:4
W7	1	1.3.3	B3:BU	X2:7
W7	2	1.3.4	X2:5	B3:BN
W7	3	5.9.2	B3:BK	X2:6
W8	1	1.3.3	P10:X2	X2:9
W8	2	6.7.1	X2:8	P10:X1
W9	1	1.3.4	X2:10	B5:+
W9	2	6.8.1	B5:-	X2:11
W10	1	1.3.4	X2:12	B6:+
W10	2	6.8.2	B6:-	X2:13
W11	1	1.3.4	X2:14	B7:+
W11	2	6.9.1	B7:-	X2:15

Terminal strips

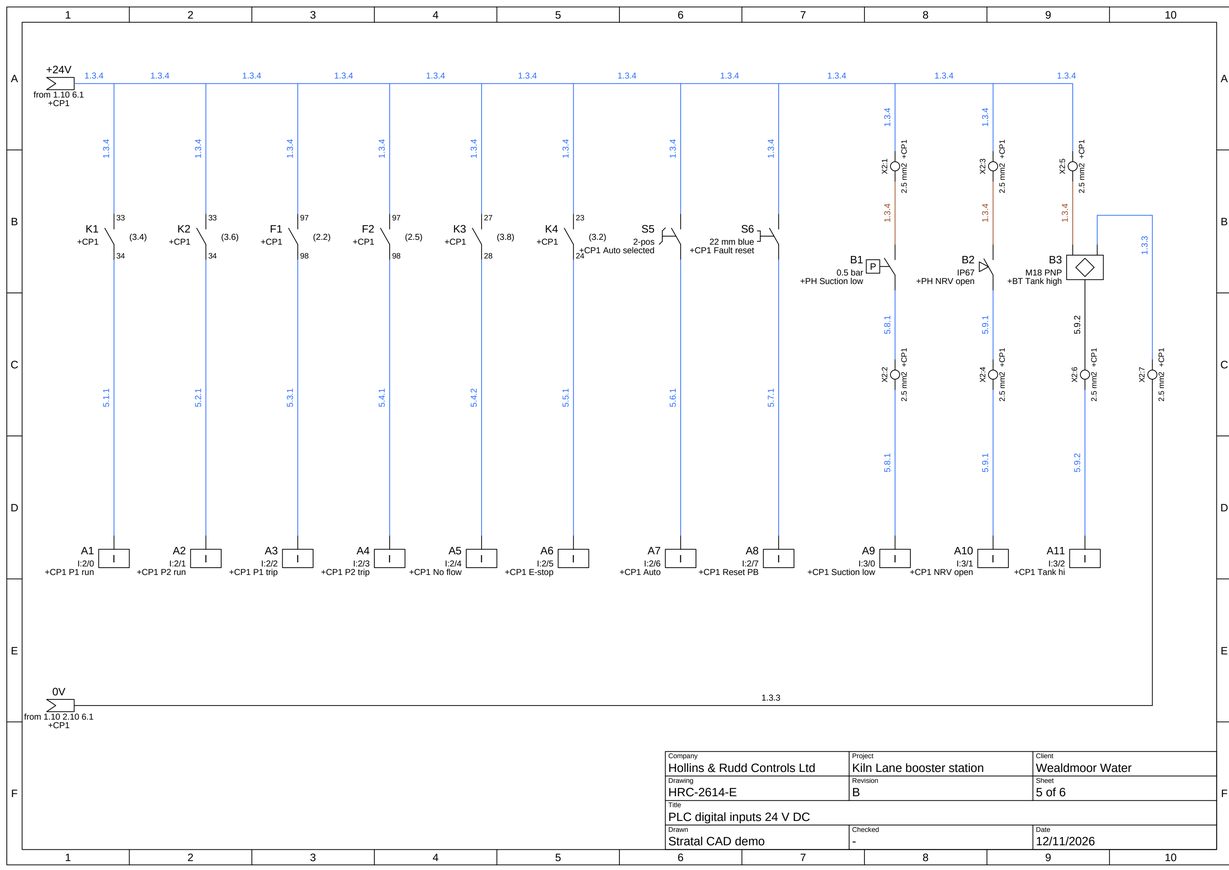
Strip	Terminal	Top wires	Bottom wires
X0	1		1.1.1
X0	2		1.2.1
X0	3		1.2.2
X0	4		1.2.3
X0	5		PE
X1	1	2.2.7	2.2.7
X1	2	2.2.8	2.2.8
X1	3	2.2.9	2.2.9
X1	4	2.4.1	2.4.1
X1	5	2.5.7	2.5.7
X1	6	2.5.8	2.5.8
X1	7	2.7.1	2.7.1
X1	8	2.8.7	2.8.7
X1	9	2.8.8	2.8.8
X2	1	1.3.4	1.3.4
X2	2	5.8.1	5.8.1
X2	3	1.3.4	1.3.4
X2	4	5.9.1	5.9.1
X2	5	1.3.4	1.3.4
X2	6	5.9.2	5.9.2
X2	7	1.3.3	1.3.3
X2	8	6.7.1	6.7.1
X2	9	1.3.3	1.3.3
X2	10	1.3.4	1.3.4
X2	11	6.8.1	6.8.1
X2	12	1.3.4	1.3.4
X2	13	6.8.2	6.8.2
X2	14	1.3.4	1.3.4
X2	15	6.9.1	6.9.1
X3	1	3.2.2	3.2.2
X3	2	3.2.3	3.2.3
X3	3		4.10.1
X3	4	4.10.2	

NOTES

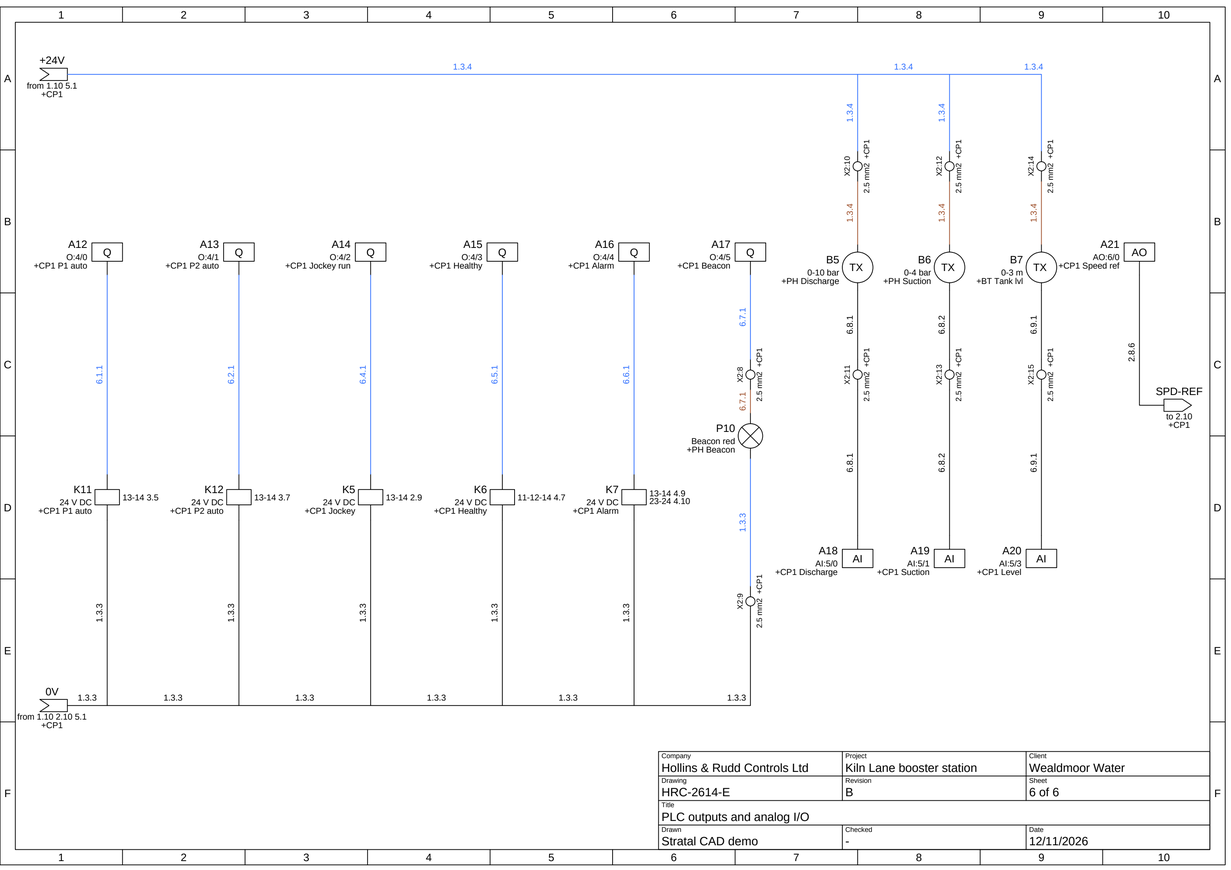
1. Schematic sheets 3 and 4 of 6, 1:1. Pump 1 and 2 run in hand (S3, S4) or from the PLC (K11, K12); the E-stop relay K4 drops both.
2. Bill of materials, cable cores and terminal strips placed by ELREPORT.
3. Fictional project, client and makers, for demonstration only.

Stratal CAD
cad.stratal.co.uk

TITLE: CP1 booster station control panel Control circuit and indication 230 V AC	
PROJECT: Kiln Lane booster station (fictional)	DRAWN: Stratal CAD demo
DRAWING NO.: STR-ELS-002	SHEET: 2 of 6
SCALE: 1:1	SIZE: A1
SOFTWARE: Stratal CAD 0.1.8, Electrical Schematics 0.9.0	DATE: 12 Nov 2026
STATUS: DEMONSTRATION DRAWING - NOT FOR MANUFACTURE	



Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 5 of 6
Title: PLC digital inputs 24 V DC		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026



Company: Hollins & Rudd Controls Ltd	Project: Kiln Lane booster station	Client: Wealdmoor Water
Drawing: HRC-2614-E	Revision: B	Sheet: 6 of 6
Title: PLC outputs and analog I/O		
Drawn: Stratal CAD demo	Checked: -	Date: 12/11/2026

PLC1 +CP1 PLC rack (generic footprints, not a maker's dimensions)

0	1	2	3	4	5	6
PS	CPU	DI 8	DI 8	DO 8	AI 4	AO 4
		M2	M3	M4	M5	M6

Slot 2 DI 8 M2

Ch	Address	Tag	Description
0	I:2/0	A1	P1 run
1	I:2/1	A2	P2 run
2	I:2/2	A3	P1 trip
3	I:2/3	A4	P2 trip
4	I:2/4	A5	No flow
5	I:2/5	A6	E-stop
6	I:2/6	A7	Auto
7	I:2/7	A8	Reset PB

Slot 3 DI 8 M3

Ch	Address	Tag	Description
0	I:3/0	A9	Suction low
1	I:3/1	A10	NRV open
2	I:3/2	A11	Tank hi
3	I:3/3	spare	
4	I:3/4	spare	
5	I:3/5	spare	
6	I:3/6	spare	
7	I:3/7	spare	

Slot 4 DO 8 M4

Ch	Address	Tag	Description
0	O:4/0	A12	P1 auto
1	O:4/1	A13	P2 auto
2	O:4/2	A14	Jockey run
3	O:4/3	A15	Healthy
4	O:4/4	A16	Alarm
5	O:4/5	A17	Beacon
6	O:4/6	spare	
7	O:4/7	spare	

Slot 5 AI 4 M5

Ch	Address	Tag	Description
0	AI:5/0	A18	Discharge
1	AI:5/1	A19	Suction
2	AI:5/2	spare	
3	AI:5/3	A20	Level

Slot 6 AO 4 M6

Ch	Address	Tag	Description
0	AO:6/0	A21	Speed ref
1	AO:6/1	spare	
2	AO:6/2	spare	
3	AO:6/3	spare	

I/O list

Address	Kind	Tag	Description	Location	Wire	Line
I:2/0	DI	A1	P1 run	+CP1	5.1.1	5.1
I:2/1	DI	A2	P2 run	+CP1	5.2.1	5.2
I:2/2	DI	A3	P1 trip	+CP1	5.3.1	5.3
I:2/3	DI	A4	P2 trip	+CP1	5.4.1	5.4
I:2/4	DI	A5	No flow	+CP1	5.4.2	5.4
I:2/5	DI	A6	E-stop	+CP1	5.5.1	5.5
I:2/6	DI	A7	Auto	+CP1	5.6.1	5.6
I:2/7	DI	A8	Reset PB	+CP1	5.7.1	5.7
I:3/0	DI	A9	Suction low	+CP1	5.8.1	5.8
I:3/1	DI	A10	NRV open	+CP1	5.9.1	5.9
I:3/2	DI	A11	Tank hi	+CP1	5.9.2	5.9
I:3/3	DI	spare				
I:3/4	DI	spare				
I:3/5	DI	spare				
I:3/6	DI	spare				
I:3/7	DI	spare				
O:4/0	DO	A12	P1 auto	+CP1	6.1.1	6.1
O:4/1	DO	A13	P2 auto	+CP1	6.2.1	6.2
O:4/2	DO	A14	Jockey run	+CP1	6.4.1	6.4
O:4/3	DO	A15	Healthy	+CP1	6.5.1	6.5
O:4/4	DO	A16	Alarm	+CP1	6.6.1	6.6
O:4/5	DO	A17	Beacon	+CP1	6.7.1	6.7
O:4/6	DO	spare				
O:4/7	DO	spare				
AI:5/0	AI	A18	Discharge	+CP1	6.8.1	6.8
AI:5/1	AI	A19	Suction	+CP1	6.8.2	6.8
AI:5/2	AI	spare				
AI:5/3	AI	A20	Level	+CP1	6.9.1	6.9
AI:5/4	AI	spare				
AI:5/5	AI	spare				
AI:5/6	AI	spare				
AI:5/7	AI	spare				
AO:6/0	AO	A21	Speed ref	+CP1	2.8.6	6.10
AO:6/1	AO	spare				
AO:6/2	AO	spare				
AO:6/3	AO	spare				
AO:6/4	AO	spare				
AO:6/5	AO	spare				
AO:6/6	AO	spare				
AO:6/7	AO	spare				

Terminal plan

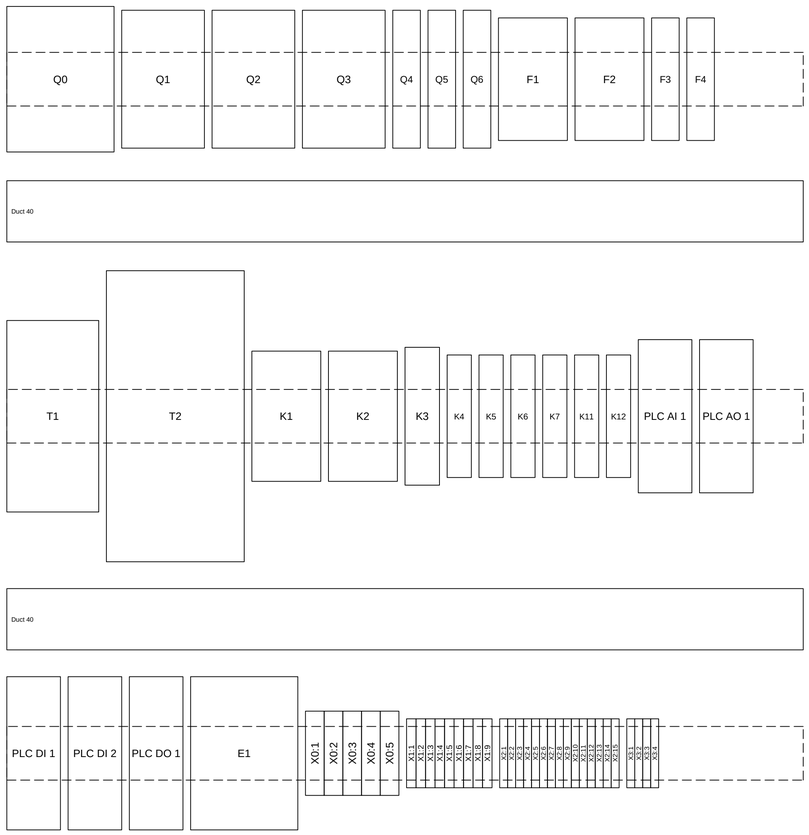
Strip	Terminal	Top wire	Top to	Bottom wire	Bottom to
X0	1			1.1.1	Q0:1
X0	2			1.2.1	Q0:3
X0	3			1.2.2	Q0:5
X0	4			1.2.3	wire 1.2.3
X0	5			PE	PE:PE
X1	1	2.2.7	F1:2	2.2.7	M1:U
X1	2	2.2.8	F1:4	2.2.8	M1:V
X1	3	2.2.9	F1:6	2.2.9	M1:W
X1	4	2.4.1	F2:2	2.4.1	M2:U
X1	5	2.5.7	F2:4	2.5.7	M2:V
X1	6	2.5.8	F2:6	2.5.8	M2:W
X1	7	2.7.1	T2:U	2.7.1	M3:U
X1	8	2.8.7	T2:V	2.8.7	M3:V
X1	9	2.8.8	T2:W	2.8.8	M3:W
X2	1	1.3.4	wire 1.3.4	1.3.4	B1:13
X2	2	5.8.1	B1:14	5.8.1	A9:I
X2	3	1.3.4	wire 1.3.4	1.3.4	B2:13
X2	4	5.9.1	B2:14	5.9.1	A10:I
X2	5	1.3.4	wire 1.3.4	1.3.4	B3:BN
X2	6	5.9.2	B3:BK	5.9.2	A11:I
X2	7	1.3.3	B3:BU	1.3.3	0V:1
X2	8	6.7.1	A17:Q	6.7.1	P10:X1
X2	9	1.3.3	P10:X2	1.3.3	wire 1.3.3
X2	10	1.3.4	wire 1.3.4	1.3.4	B5:+
X2	11	6.8.1	B5:-	6.8.1	A18:AI
X2	12	1.3.4	wire 1.3.4	1.3.4	B6:+
X2	13	6.8.2	B6:-	6.8.2	A19:AI
X2	14	1.3.4	wire 1.3.4	1.3.4	B7:+
X2	15	6.9.1	B7:-	6.9.1	A20:AI
X3	1	3.2.2	S0:12	3.2.2	S10:11
X3	2	3.2.3	S10:12	3.2.3	K4:A1
X3	3			4.10.1	K7:23
X3	4	4.10.2	K7:24		

NOTES

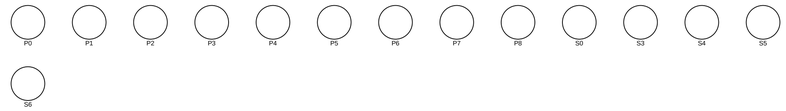
1. Schematic sheets 5 and 6 of 6, 1:1. PLC addresses by ELPLCIO Address Slot (8 a card, from slot 2); the programmer's tag table was read back with ELPLCIO Import.
2. PLC rack PLC1 placed by ELPLC: power supply, CPU and 5 I/O cards with their channel lists and spare channels. Generic footprints, not a maker's dimensions. It redraws when a channel changes.
3. I/O list and terminal plan placed by ELREPORT.
4. Fictional project, client and makers, for demonstration only.

Stratal CAD
cad.stratal.co.uk

TITLE: CP1 booster station control panel PLC I/O 24 V DC and PLC rack	
PROJECT: Kiln Lane booster station (fictional)	DRAWN: Stratal CAD demo
DRAWING NO.: STR-ELS-003	SHEET: 3 of 6
SCALE: 1:1	SIZE: A1
SOFTWARE: Stratal CAD 0.1.8, Electrical Schematics 0.9.0	DATE: 12 Nov 2026
STATUS: DEMONSTRATION DRAWING - NOT FOR MANUFACTURE	



Panel +CP1 600 x 800 mm



Door

Panel layout (ELPANEL File)	
Backplate	600 x 800 mm
Rails	3, 220 mm apart
Rail 1	fill 79 %
Rail 2	fill 82 %
Rail 3	fill 75 %
Duct 1	543.8 to 583.8 mm
Duct 2	277.5 to 317.5 mm
On the rails	61
On the door	14

PLC module	Channels used
PLC AI 1	3
PLC AO 1	1
PLC DI 1	8
PLC DI 2	3
PLC DO 1	6

ON THE BACKPLATE AND DOOR

Rail	Devices left to right (ELPANEL File)
1	Q0 Q1 Q2 Q3 Q4 Q5 Q6 F1 F2 F3 F4
2	T1 T2 K1 K2 K3 K4 K5 K6 K7 K11 K12 PLC AI 1 PLC AO 1
3	PLC DI 1 PLC DI 2 PLC DO 1 E1 X0:1 X0:2 X0:3 X0:4 X0:5 X1:1 X1:2 X1:3 X1:4 X1:5 X1:6 X1:7 X1:8 X1:9 X2:1 X2:2 X2:3 X2:4 X2:5 X2:6 X2:7 X2:8 X2:9 X2:10 X2:11 X2:12 X2:13 X2:14 X2:15 X3:1 X3:2 X3:3 X3:4
Door	P0 P1 P2 P3 P4 P5 P6 P7 P8 S0 S3 S4 S5 S6

NOTES

1. Layout by ELPANEL Place for location +CP1: 61 devices on 3 DIN rails 220 mm apart with two 40 mm wiring ducts, the PLC cards as modules, terminal strips side by side, and the 14 door devices on the door (right).
2. Footprints from the example catalogue (ELPARTS) where it gives one, else the plugin's typical sizes; not a maker's dimensions. The layout redraws when its devices change.
3. Fictional project, client and makers, for demonstration only.

Stratal CAD

cad.stratal.co.uk

TITLE
CP1 booster station control panel
Panel layout, backplate 600 x 800 mm

PROJECT	DRAWN		
Kiln Lane booster station (fictional)	Stratal CAD demo		
DRAWING NO.	SHEET	SCALE	SIZE
STR-ELS-004	4 of 6	1:2	A1
SOFTWARE	DATE		
Stratal CAD 0.1.8, Electrical Schematics 0.9.0	12 Nov 2026		

STATUS
DEMONSTRATION DRAWING - NOT FOR MANUFACTURE

Consumer unit DB-PH1: main switch 100 A, 9 of 12 ways used, SPD fitted, TN-S, Ze 0.28 ohm, U0 230 V

Board	Circuit	Description	Feeds	Device	Curve	In (A)	RCD	Cable	Cable (mm2)	CPC (mm2)	Method	Length (m)	Ib (A)	It (A)	Factors	Iz (A)	Vd (V)	Vd (%)	Limit (%)	R1+R2 (ohm)	Zs (ohm)	Max Zs (ohm)	Disconnect (s)	Min CPC (mm2)	Result	Notes
DB-PH1	1	Lighting, pump hall	Lighting	MCB	B	6	RCD1	TE 4D5	1.5	1.0	C	24	2.6	20	1	20	1.81	0.79	3	0.87	1.15	7.28	0.4	0.63	Pass	
DB-PH1	2	Sockets, pump hall	Sockets	MCB	B	20	RCD1	TE 4D5	2.5	1.5	C	19	13	27	1	27	4.45	1.93	5	0.445	0.72	2.19	0.4	0.97	Pass	AFDD recommended for socket-outlet circuits up to 32 A, and required in some buildings (421.1.7)
DB-PH1	3	Sockets, workshop bench	Sockets	RCBO	B	32	own	TE 4D5	4	1.5	C	14	20	37	1	37	3.08	1.34	5	0.281	0.56	1.37	0.4	1.23	Pass	AFDD recommended for socket-outlet circuits up to 32 A, and required in some buildings (421.1.7)
DB-PH1	4	Frost heater 2 kW	Fixed	MCB	B	16	RCD2	TE 4D5	2.5	1.5	C	11	8.7	27	1	27	1.72	0.75	5	0.258	0.54	2.73	0.4	1.28	Pass	
DB-PH1	5	Dehumidifier, in insulated wall	Fixed	MCB	B	20	RCD2	TE 4D5	6	2.5	103	22	15	23.5	1	23.5	2.41	1.05	5	0.277	0.56	2.19	0.4	1.24	Pass	
DB-PH1	6	External lighting	Lighting	RCBO	B	6	own	TE 4D5	1.5	1.0	C	48	1.8	20	1	20	2.51	1.09	3	1.74	2.02	7.28	0.4	0.37	Pass	
DB-PH1	7	Sump pump socket	Sockets	MCB	B	16	RCD2	TE 4D5	2.5	1.5	C	16	6	27	1	27	1.73	0.75	5	0.375	0.65	2.73	0.4	1.07	Pass	AFDD recommended for socket-outlet circuits up to 32 A, and required in some buildings (421.1.7)
DB-PH1	8	Telemetry outstation	Fixed	RCBO	B	6	own	TE 4D5	2.5	1.5	C	9	1	27	1	27	0.16	0.07	5	0.211	0.49	7.28	0.4	1.39	Pass	
DB-PH1	9	Sub-main to chemical store	Distribution	MCB	C	32	-	TE 4D5	10	4	C	35	22	64	1	64	3.39	1.47	5	0.27	0.55	0.68	5	1.25	Pass	no 30 mA RCD: BS 7671 normally requires one for socket-outlets, lighting in dwellings and cables concealed in walls

Circuit chart DB-PH1

Board	Circuit	Description	Protective device	RCD	Cable (mm2)	CPC (mm2)
DB-PH1	1	Lighting, pump hall	B6 MCB	RCD1 30 mA	1.5	1.0
DB-PH1	2	Sockets, pump hall	B20 MCB	RCD1 30 mA	2.5	1.5
DB-PH1	3	Sockets, workshop bench	B32 RCBO	own 30 mA	4	1.5
DB-PH1	4	Frost heater 2 kW	B16 MCB	RCD2 30 mA	2.5	1.5
DB-PH1	5	Dehumidifier, in insulated wall	B20 MCB	RCD2 30 mA	6	2.5
DB-PH1	6	External lighting	B6 RCBO	own 30 mA	1.5	1.0
DB-PH1	7	Sump pump socket	B16 MCB	RCD2 30 mA	2.5	1.5
DB-PH1	8	Telemetry outstation	B6 RCBO	own 30 mA	2.5	1.5
DB-PH1	9	Sub-main to chemical store	C32 MCB	-	10	4

Schedule of test results DB-PH1 (design aid: not a certificate)

Board	Circuit	Description	Device	In (A)	Cable (mm2)	CPC (mm2)	Max Zs (ohm)	0.8 x Max Zs (ohm)	R1+R2 at 20 C (ohm)	R1+R2 (ohm)	R2 (ohm)	IR L-N (Mohm)	IR L-E (Mohm)	Polarity	Zs (ohm)	RCD (ms)	RCD 5x (ms)	Result	Notes
DB-PH1	1	Lighting, pump hall	B6 MCB	6	1.5	1.0	7.28	5.82	0.725	0.71	0.43	299	299	Correct	1.02	22	12	Pass	
DB-PH1	2	Sockets, pump hall	B20 MCB	20	2.5	1.5	2.19	1.75	0.371	0.38	0.23	299	299	Correct	0.68	24	14	Pass	
DB-PH1	3	Sockets, workshop bench	B32 RCBO	32	4	1.5	1.37	1.1	0.234	0.22	0.16	250	299	Correct	0.52	19	11	Pass	
DB-PH1	4	Frost heater 2 kW	B16 MCB	16	2.5	1.5	2.73	2.18	0.215	0.21	0.13	299	299	Correct	0.5	23	15	Pass	
DB-PH1	5	Dehumidifier, in insulated wall	B20 MCB	20	6	2.5	2.19	1.75	0.231									Not tested	
DB-PH1	6	External lighting	B6 RCBO	6	1.5	1.0	7.28	5.82	1.45	1.45	0.87	299	299	Correct	1.78	27	16	Pass	
DB-PH1	7	Sump pump socket	B16 MCB	16	2.5	1.5	2.73	2.18	0.312									Not tested	
DB-PH1	8	Telemetry outstation	B6 RCBO	6	2.5	1.5	7.28	5.82	0.176	0.27	0.16	299	299	Correct	0.57	21	12	Pass	
DB-PH1	9	Sub-main to chemical store	C32 MCB	32	10	4	0.68	0.54	0.225									Not tested	

RCD RCD1: 63 A, 30 mA, type A
RCD RCD2: 63 A, 30 mA, type A
Note: connected load 90.1 A (sum of Ib, no diversity) against a 100 A main switch
Basis: BS 7671:2018+A4:2026 Tables 4D5, 4D2A, 4B1, 4C1, 52.2, 41.1, 41.3, 41.5, 54.3, 4Ab and 64 as plain numbers (data/bs7671-domestic.json). Design aid, check against BS 7671: not a certificate and no claim of compliance; a competent person checks the design.

DESIGN STEPS (from the command line)

Step	Result on the command line
ELCU Check	Circuit 5 Dehumidifier: Fail: In 20 A > Iz 13.5 A.
	Circuit 8 Telemetry: Fail: cpc 1.0 mm2 < 1.15 mm2 (543.1.3).
ELCU Size 5	Smallest by current 6 mm2, by every check 6 mm2; set to 6 mm2.
ELCU Size 8	Smallest by current 1.0 mm2, by every check 2.5 mm2; set.
ELCU Test 6	Fail: insulation resistance L-E 0.7 < 1 Mohm (Table 64).
ELCU Test 6 again	After the fault was cleared: Pass.
ELCU Rcd Remove RCD1	Not removed: circuit 1 is under RCD1.
ELCU Check	DB-PH1: 9 circuits, 0 failing, 0 board problems.

DB-PH1 RESULTS (ELREPORT Circuits and Tests)

Circuit	Description	Cable	Iz (A)	Vd (%)	Zs / max (ohm)	Design	Test
1	Lighting, pump hall	1.5 mm2	20	0.79	1.15 / 7.28	Pass	Pass
2	Sockets, pump hall	2.5 mm2	27	1.93	0.72 / 2.19	Pass	Pass
3	Sockets, workshop bench	4 mm2	37	1.34	0.56 / 1.37	Pass	Pass
4	Frost heater 2 kW	2.5 mm2	27	0.75	0.54 / 2.73	Pass	Pass
5	Dehumidifier, in insulated wall	6 mm2	23.5	1.05	0.56 / 2.19	Pass	Not tested
6	External lighting	1.5 mm2	20	1.09	2.02 / 7.28	Pass	Pass
7	Sump pump socket	2.5 mm2	27	0.75	0.65 / 2.73	Pass	Not tested
8	Telemetry outstation	2.5 mm2	27	0.07	0.49 / 7.28	Pass	Pass
9	Sub-main to chemical store	10 mm2	64	1.47	0.55 / 0.68	Pass	Not tested

ELECTRICAL PROPERTIES DOCK, DB-PH1 CIRCUIT 3 (PANELROWS)

Field	Value
Board	DB-PH1
Main switch (A)	100
Ways	12
SPD fitted	1
Ze (ohm)	0.28
U0 (V)	230
Earthing	TN-S
Dwelling	0
Supply	Public
Draw circuit chart	1
Draw test results	1
Circuit shown	3 of 9 (ELCU Circuit shows another)
Description	Sockets, workshop bench
Feeds	Sockets
Device	RCBO
Curve	B
Rating In (A)	32
Cable type	TE

Field	Value
Cable size (mm2)	4
CPC size (mm2)	0
Reference method	C
Length (m)	14
Design current Ib (A)	20
Ambient (C)	0
Circuits grouped	0
Grouping	Bunched
In insulation (mm)	0
Ca (typed)	1
Cg (typed)	1
Ci (typed)	1
Let-through I2t (A2s)	0
Location	General
Bathroom zone	-
IP code	
SELV	0
Concealed in walls	0

Field	Value
AFDD fitted	0
Measured R1+R2 (ohm)	0.22
Measured R2 (ohm)	0.16
IR L-N (Mohm)	250
IR L-E (Mohm)	299
Polarity	Correct
Measured Zs (ohm)	0.52
RCD time (ms)	19
RCD time 5x (ms)	11
Iz	37 A (factors 1)
Voltage drop	3.08 V (1.34 %, limit 5 %)
Zs	0.56 ohm (max 1.37)
Disconnection	0.4 s
Adiabatic	min cpc 1.23 mm2 (If 448 A)
Smallest cable	4 mm2 (by current 4)
Result	Pass
Test result	Pass

NOTES

1. Drawn by ELCU: design schedule, circuit chart and schedule of test results are one object that redraws with every change (ELCU Show Both).
2. Checks from the bundled BS 7671:2018+A4:2026 table values. A design aid, check against BS 7671: not a certificate and no claim of compliance; a competent person checks the design.
3. Measured test values are fictional demonstration inputs.
4. Fictional project, client and makers, for demonstration only.

Stratal CAD
cad.stratal.co.uk

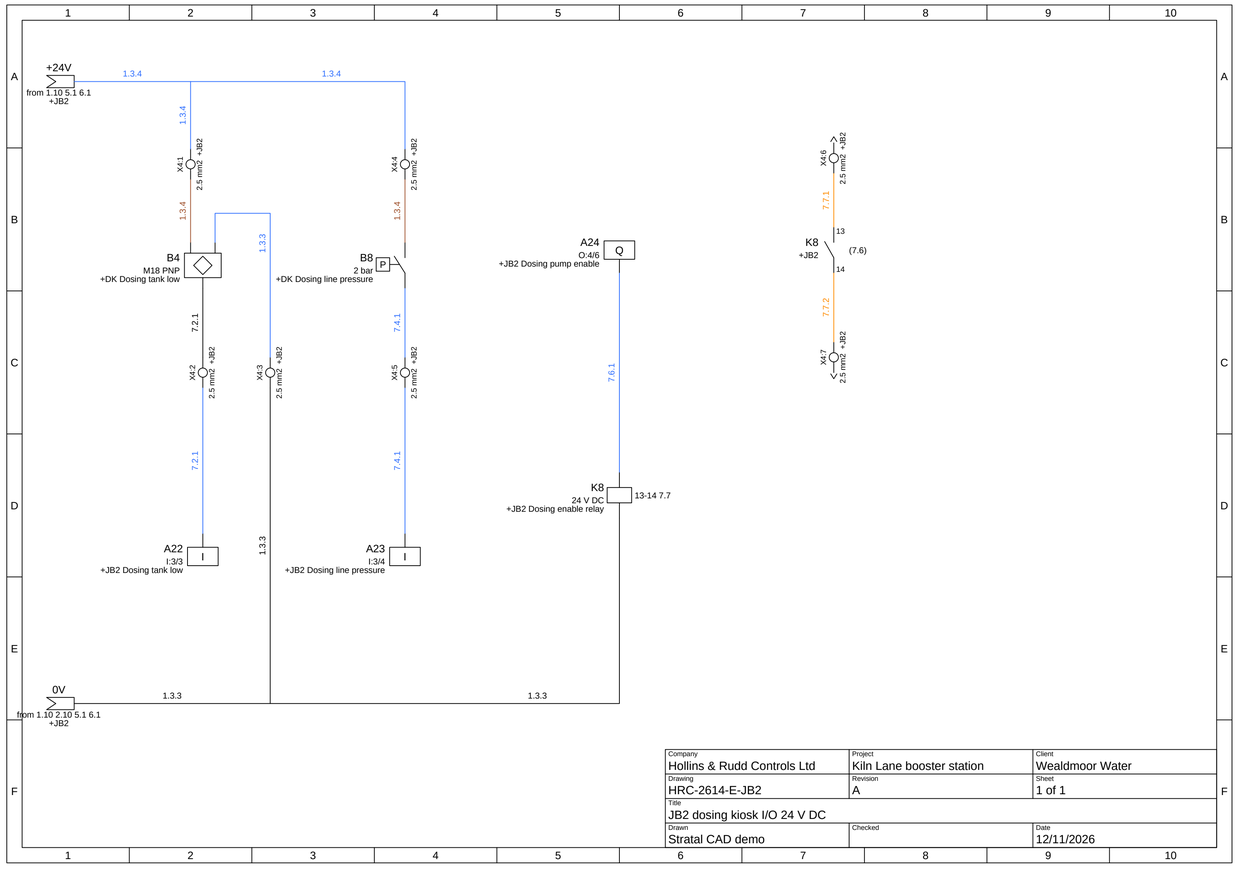
TITLE
Pump house small power board DB-PH1
Circuit schedule, chart and test results

PROJECT	DRAWN
Kiln Lane booster station (fictional)	Stratal CAD demo

DRAWING NO.	SHEET	SCALE	SIZE
STR-ELS-005	5 of 6	1:1	A1

SOFTWARE	DATE
Stratal CAD 0.1.8, Electrical Schematics 0.9.0	12 Nov 2026

STATUS
DEMONSTRATION DRAWING - NOT FOR MANUFACTURE



PROJECT (2 drawings, from the command line)

ELPROJECT step	Result on the command line
Check, before	21 problems across its drawings.
Number, JB2 open	Refused: JB2 is open in Stratal CAD: save and
	close it, then try again. Nothing changed.
Number	7 devices and 16 wires changed in 2 drawings,
	each saved.
Check, after parts	0 problems across its drawings.
Build Csv, Xlsx, Pdf	Project reports written (CP1 sheets 1-6,
	JB2 sheet 7); report PDF on A3 landscape.
Compare with rev A	0 added, 0 removed, 128 changed.

TAGS RENUMBERED (JB2 device lists before and after)

JB2 tag before	After ELPROJECT Number
A1, A2, A3	A22, A23, A24
B1, B2	B4, B8
K1 (coil and contact)	K8

Cable schedule

Cable	Type	Cores	Used	Spare	From	To	Length (mm)	Wires
W20	3x0.34 PUR	3	3	0	+DK	+JB2	74.5	1.3.4 1.3.3 7.2.1
W21	2x1.0 YY	2	2	0	+DK	+JB2	22.5	1.3.4 7.4.1

I/O list

Address	Kind	Tag	Description	Location	Wire	Line
I:3/0	DI	spare				
I:3/1	DI	spare				
I:3/2	DI	spare				
I:3/3	DI	A22	Dosing tank low	+JB2	7.2.1	1.2
I:3/4	DI	A23	Dosing line pressure	+JB2	7.4.1	1.4
I:3/5	DI	spare				
I:3/6	DI	spare				
I:3/7	DI	spare				
O:4/0	DO	spare				
O:4/1	DO	spare				
O:4/2	DO	spare				
O:4/3	DO	spare				
O:4/4	DO	spare				
O:4/5	DO	spare				
O:4/6	DO	A24	Dosing pump enable	+JB2	7.6.1	1.6
O:4/7	DO	spare				

Device list

Tag	Type	Description	Location	Rating	PLC address	Cross-reference	Maker	Part number
0V	Off-sheet connector, destination		+JB2			from 1.10 2.10 5.1 6.1		
+24V	Off-sheet connector, destination		+JB2			from 1.10 5.1 6.1		
A22	PLC input	Dosing tank low	+JB2		I:3/3		Example Controls	EC-PLC-DI8
A23	PLC input	Dosing line pressure	+JB2		I:3/4		Example Controls	EC-PLC-DI8
A24	PLC output	Dosing pump enable	+JB2		O:4/6		Example Controls	EC-PLC-DO8
B4	Proximity sensor, three-wire	Dosing tank low	+DK	M18 PNP			Example Sensors	ES-CAP-M18
B8	Pressure switch, normally open	Dosing line pressure	+DK	2 bar			Example Sensors	ES-PS-2
K8	Contactor or relay coil	Dosing enable relay	+JB2	24 V DC		13-14 7.7	Example Controls	EC-RLY2-24
K8	Normally open contact		+JB2			(7.6)		
X4:1	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:2	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:3	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:4	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:5	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:6	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5
X4:7	Terminal		+JB2	2.5 mm2			Example Terminals	ET-FT2.5

Terminal strips

Strip	Terminal	Top wires	Bottom wires
X4	1	1.3.4	1.3.4
X4	2	7.2.1	7.2.1
X4	3	1.3.3	1.3.3
X4	4	1.3.4	1.3.4
X4	5	7.4.1	7.4.1
X4	6		7.7.1
X4	7	7.7.2	

NOTES

1. The project's second drawing: one schematic sheet, 1:1. Drawn and numbered on its own (ELNUMBER Scheme Sequence), so its tags repeated CP1's.
2. ELPROJECT Number renumbered the repeated tags across the project and gave one wire number to each potential joined through the +24V and 0V connectors; each drawing was saved by the command.
3. Fictional project, client and makers, for demonstration only.

Stratal CAD
cad.stratal.co.uk

TITLE
JB2 dosing kiosk junction box
PLC I/O and project numbering

PROJECT	DRAWN		
Kiln Lane booster station (fictional)	Stratal CAD demo		
DRAWING NO.	SHEET	SCALE	SIZE
STR-ELS-006	6 of 6	1:1	A1
SOFTWARE	DATE		
Stratal CAD 0.1.8, Electrical Schematics 0.9.0	12 Nov 2026		

STATUS
DEMONSTRATION DRAWING - NOT FOR MANUFACTURE