

Rheem Commpak® Commercial Hot Water Systems



Specifications, Installation and Operating Instructions



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Please read this manual prior to installing this product, it contains all the necessary technical and installation information that will be required by the contractor to correctly install & commission this system. This product must be installed & commissioned in accordance to the Rheem installation instructions, AS 5601, AS3500.4, the relevant electrical & local authorities' requirements.

Operational design of this Hot Water System is protected by Australian Patent No: 2007201101.

Commpak – Range Overview

The Rheem Commpak is a bank of two, three, four, five or six electronic continuous flow water heaters, factory manifolded in parallel complete with multi-speed pump/s, temperature sensors and a controller. All components are factory assembled on a lightweight frame suitable for either wall (2 to 3 water heaters) or floor (4 to 6 water heaters) mounting.

The Rheem Commpak is designed to provide mains pressure performance with a recirculating capacity for small to medium size developments and suitable for:

- ☐ Outdoor and Indoor installations.
- ☐ Natural Gas or Propane (LPG).
- ☐ Energy Consumption Control.
- ☐ Domestic Hot Water (DHW).

The Rheem Commpak is a fully engineered system; completely factory assembled & tested.
Requiring only minimal on-site works to be completed as detailed below:

1. Installation of the package & following 'Service Connections'.
 - a) Gas In b) Cold Water In c) Hot Water Out
 - d) Hot Water Return (Optional) e) Co-axial Flueing for Individual Internal Water Heaters
2. 240V/1Ph/50Hz Power Supply to the controller. Requires 16A Type C or D curve up front protection.
3. Remote alarm monitoring cabling to the controller (optional)
4. Final Commissioning as per the simple instructions provided.

Commpak – Models Available & Technical Data

Commpak Model		CPE02 & CPI02	CPE03 & CPI03	CPE04 & CPI04	CPE05 & CPI05	CPE06 & CPI06					
Input	MJ/hr	410	615	820	1025	1230					
Installation Outdoor or Indoor – Refer to Model Type											
Recovery Rate @ 50°C rise 25°C rise	L/hr	1584 3168	2376 4752	3168 6336	3960 7920	4752 9504					
Peak Flow Rate @ 50°C rise 25°C rise	L/min	26.4 52.8	39.6 79.2	52.8 105.6	66.0 132.0	79.2 158.4					
Dimensions											
Height (Ext / Int)	mm	1800 / 1890	1800 / 1890	1800 / 1890	1800 / 1890	1800 / 1890					
Width	mm	1200	1200	1420	1775	2130					
Depth (Wall / Floor Mount)	mm	350/500	350/500	500	500	500					
Front Clearance (Ext / Int)	mm	800 / 600	800 / 600	800 / 600	800 / 600	800 / 600					
Cold Water	BSPF	40mm									
Hot Water	BSPF	40mm									
Return	BSPF	25mm									
Gas	BSPTM	40mm									
Approx Weight		1P	2P	1P	2P	1P	2P	1P	2P	1P	2P
Wall Mount	kg	110	120	135	145	NA	NA	NA	NA	NA	NA
Floor Mount	kg	120	130	150	160	220	230	245	255	270	280
Wall Mount (WM)		standard		standard		N/A		N/A		N/A	
Floor Mounting Frame (FMF)		optional		optional		standard		standard		standard	
Standby Pump		optional		optional		optional		optional		optional	
Water Supply Pressure		1000KPa Maximum & 150KPa Minimum									
Gas Supply Pressure Range											
Natural	kPa	1.13 Minimum & 3.5 Maximum									
Propane	kPa	2.75 Minimum & 3.5 Maximum									
Power Supply 240V/50Hz	FL Amps	3.62	5.24	4.62	6.24	5.62	7.24	6.62	8.24	7.62	9.24

Notes:

1P = Single Pump

Ext = External System

2P = Dual Pump

Int = Internal system

Commpak – Specifications

The Rheem Commpak Hot Water System is completely Designed, Manufactured, Factory Tested & Supplied by 'Rheem (Australia) P/L'. Operational design of this Hot Water System is protected by "Australian Patent 2007201101". Specifications brief below:

Design Basis: Water regulation pump/s maintain/s the Hot water supply at mains pressure over the Commpak's design capacity. Pump/s plumbed to the water inlet(s) of the electronic Continuous Flow Water Heater(s) (RECFWH) to overcome friction losses inherent within the RECFWH. Pump/s to provide (if required) an adjustable flow rate for the circulation of water throughout the heated water reticulation system, so as to maintain a consistency of temperature and pressure throughout.

A Flow Compensation Device has also been provided to cater for flow rates exceeding the heated water systems designed capability. This device has been installed between the Cold Water Inlet & Hot Water Outlet of the system to automatically provide additional water flow as per the operation of conventional Hot Water Storage Vessel systems.

A pressure responsive differential bypass valve has also been provided to facilitate for an adjustable recirculation flow rate regulation means. This facility also provides for an internal recirculation means to ensure sufficient flow is always maintained through the RECFWH for firing and continuous operation. This feature is especially useful for Dead Leg (no return) Hot Water applications or systems suffering from poorly designed / built recirculation loops.

Unique features

- ☐ Automatic operation of the water regulation pump/s for both Primary & Secondary water reticulation
- ☐ Heated water within the reticulation system is supplied at mains water pressure with automatic compensation to cater for flow demands in excess of design requisites.
- ☐ Separate circulating pump/s no longer required
- ☐ Hot water storage vessel(s) no longer required
- ☐ Capital & Operating Cost Savings
- ☐ Smaller space requirements

Continuous Flow Water Heater(s) (RECFWH): Required numbers are assembled in parallel & hydraulically balanced. 100% duty achieved by parallel operation on demand.

Water Regulation Pump/s (Refer to Pages 17-24 for full details)

- ☐ Pump wetted parts suitable for potable water application.
- ☐ Continuous rated to handle Hot Water up to 110°C.
- ☐ 1000 KPa Operating Pressure.
- ☐ Self Venting Type without the need for manual bleeding.
- ☐ Pump Casing with specifically designed insulation.
- ☐ 240V/1PH/50Hz Continuous rated IP44 motor with Three Speed Settings & Wired to the controller.
- ☐ Pump/s integrated in to the Hot water System with Isolation / Check Valves & required plumbing / fittings.
- ☐ Loss Of Water Supply Pressure Switch Mounted & Wired to the controller. Pressure switch able to be tested in situation without isolating water supply to the Hot water System.

Plumbing & Hot Water Piping Insulation

- ☐ Complete Cold Water & Hot Water Piping; Valves & Fittings all in accordance to AS/NZS3500.4:2003
- ☐ Hot Water Piping Insulation details:
 - o Closed cell PE Foam clad with a reinforced UV resistant foil facing, suitable for outdoor usage.
 - o Operating temperature to 105°C
 - o Rated 'R' Value of 1.0 or greater
 - o Compliance In accordance to AS/NZS3500.4:2003, Amendment 1: 2005; Section 8.2.1 (Piping for Water Heaters) to all climate regions & external locations.
- ☐ Complete Natural Gas Piping; Valves & Fitting as per AS5601

Skid Package

- ☐ All Water Heaters, Pump/s, Plumbing Manifolds & Controller mounted on a common base.
- ☐ Package is factory tested & ready for on site installation

System Controller: Refer to Pages 25-39 for full details.

Commpak – Plumbing Installation

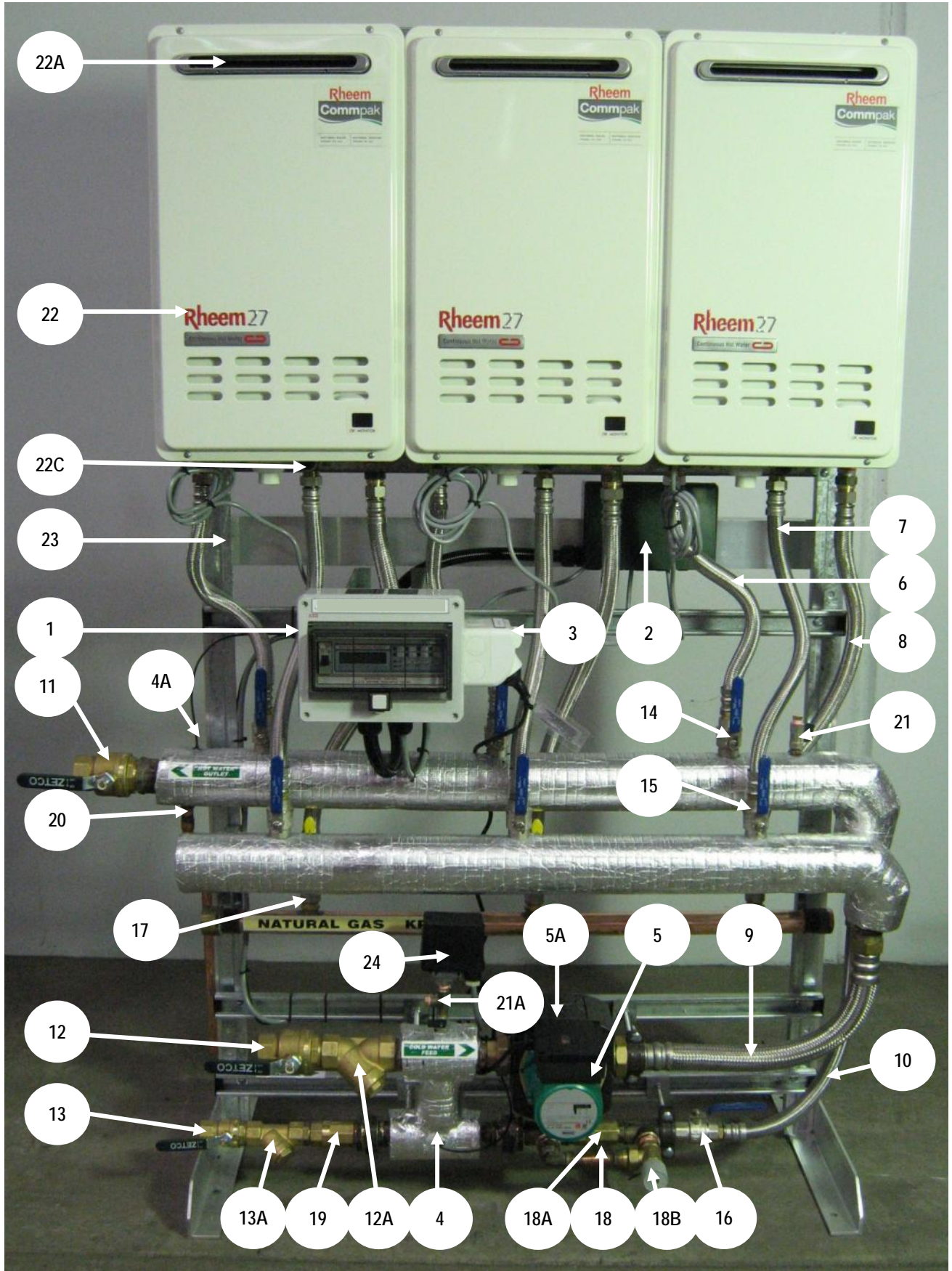
- ☐ Site Location
External Systems - Recommended 800mm access clearance from Horizontal Flue Outlets
Internal Systems - Recommended 600mm access clearance.
Refer: Australian Standard Gas Installations AS5601 – 2004 Fig 5.3 for further regulatory requirements.
- ☐ Secure to wall or secure to the floor as appropriate.
Consult with site structural engineer for any specific securing requirements.
- ☐ Connect both Cold Water & Hot Water piping / valves and fittings as per the requirements of AS3500.4
- ☐ Connect Natural Gas piping / valves & fitting as per the requirements of AS 5601
Natural Gas working pressure 1.13 KPa minimum to 2.75 KPa maximum
Optional: LPG operation available on request.
- ☐ Co-axial Flueing: For Individual water Heaters; Use only Rheem approved products;
Refer: Owner's Guide & Installation Instructions – Electronic Continuous Flow Gas Indoor Water Heater 862 Series 027 Models for further details.

Commpak – Electrical Installation

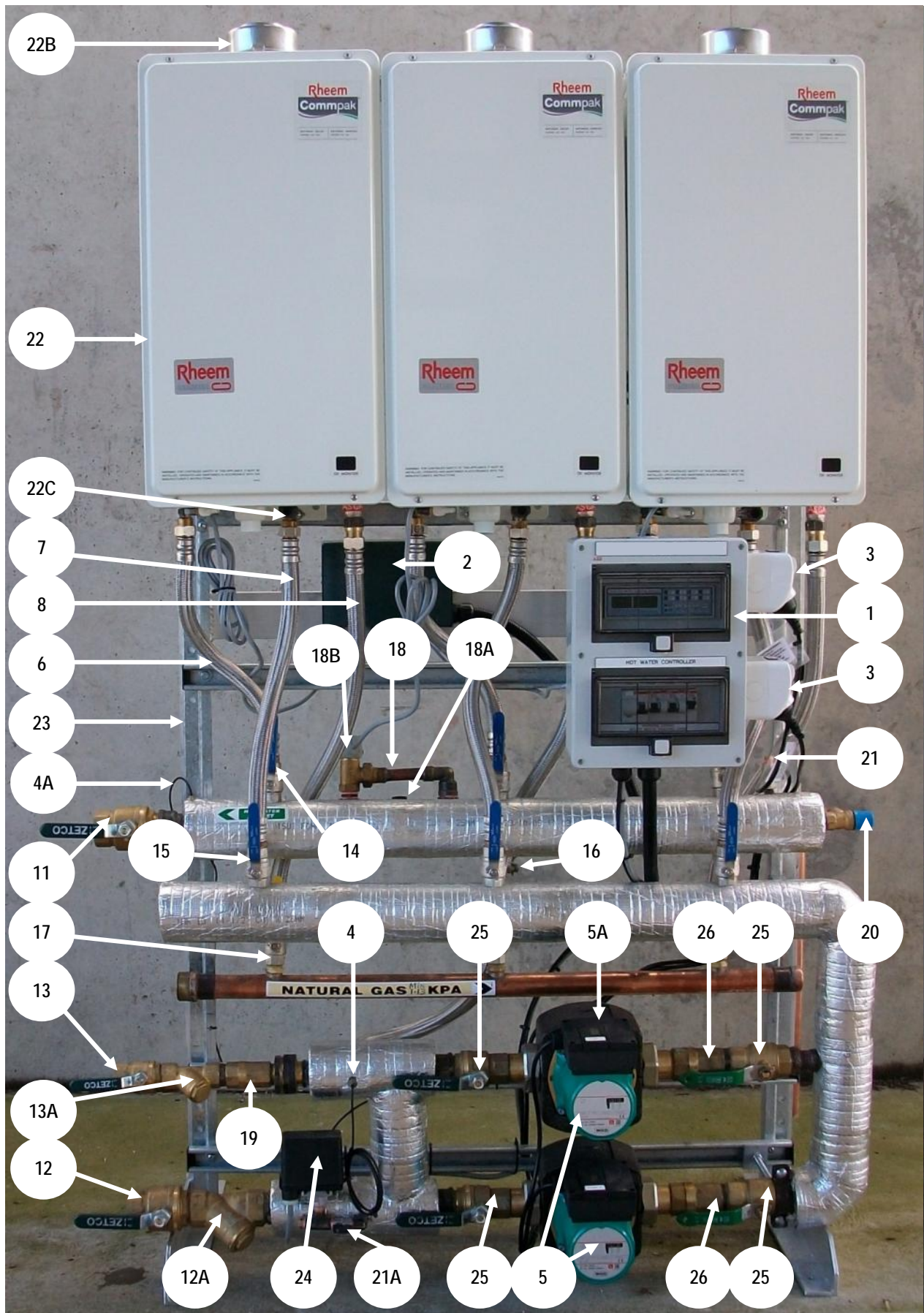
Hot Water System Controller

- ☐ Power supply: 240V/1Ph/50Hz Power Supply to the controller.
Requires 16A Type C or D curve up front protection
- ☐ Hard wired: To the requirements of AS/NZS 3000:2007 Wiring Rules

Commpak CPE03 Single Pump - Major Items Listing



Internal Commpak CPI03 Dual Pumps - Major Items Listing



Commpak – Major Items Listing

Refer to Photographs (Pages 5 & 6); Major Items Listings / Identification (Pages 7 & 8) and
External & Internal Commpak General Drawings (Pages 9 to 12)

Item No.	Description	Function	P&EES Part No's.
1	System Controller	Starts & Stops Pump/s Displays Outlet & Inlet Water Temperature Refer: System Controller Material Schedule – Pages 37 & 39 For material ordering details	Single Pump N1041 Dual Pumps N1042
2	Water Heater General Purpose Power Outlet(s)	240VAC – 1 Phase – 10A x 3 Outlets Local power supply for Water Heater(s)	G-GPO-3
3	Pump Power Outlet	240VAC – 1 Phase – 10A Dedicated local power supply for Pump	P-GPO-1
4	Temperature Sensor	Water Inlet Temperature Sensor	N01039
4A	Temperature Sensor	Water Outlet Temperature Sensor	N01039
5	Pump/s	System water supply & return circulation Refer: Pump Details – Pages 17 - 24	W1040
5A	Pump Speed Selector	Pump is suitable for 3 speed operation Factory default setting No. 3	
6	Hot Water Connector	20mm dia. Flexible connection means from the Continuous Flow Water Heater to the Hot Water Outlet manifold.	HWFC-20
7	Cold Water Connector	20mm dia. Flexible connection means from the Continuous Flow Water Heater to the Cold Water manifold.	CWFC-20
8	Gas Supply Connector	20mm dia. Flexible connection means from the Continuous Flow Water Heater to the Gas Supply Inlet manifold.	GSFC-20
9	Pump Cold Water Connector	32mm dia. Flexible connection means from the pump discharge to the Cold Water manifold.	PCFC-32
10	Bi-directional Pressure Balancing Assembly Connector	20mm dia. Flexible connection means from the Bi-directional Pressure Balancing Assembly to the Hot Water Outlet manifold.	BPBAC-20
11	Hot Water Outlet Isolation Valve	40mm BSP Female Brass Ball Valve System Hot Water Outlet Isolating means	HWO40BSPF
12	Cold Water Inlet Isolation Valve	40mm BSP Female Brass Ball Valve System Cold Water Inlet Isolating means	CWIN40BSPF
12A	Cold Water Inlet Strainer	40mm BSP Female Cold Water Inlet Strainer Protects pump from solids	CWIS40BSPF
13	Hot Water Return Isolation Valve	25mm BSP Female Brass Ball Valve Hot Water Return Isolating means	RWIN25BSPF
13A	Hot Water Return Strainer	25mm BSP Female Hot Water Return Strainer Protects pump from solids	RWS25BSPF
14	Hot Water Isolation Valve	20mm BSP Female Ball Valve Continuous Flow Water Heater Hot Water Isolation Means	HWI20BSPF
15	Cold Water Isolation Valve	20mm BSP Female Ball Valve Continuous Flow Water Heater Cold Water Isolation Means	CWI20BSPF
16	Bi-directional Pressure Balancing Assembly Isolation Valve	20mm BSP Female Ball Valve Bi-directional Pressure Balancing Assembly Isolation Valve Supply Isolation Means Note: In the event of pump failure close valve COMMPAK will operate as per MULTIPAK	BDI20BSPF
17	Gas Isolation Valve	20mm BSP Female Ball Valve Continuous Flow Water Heater Gas Supply Isolation Means	GSi20BSPF

Commpak – Major Items Listing

Refer to Photographs (Pages 5 & 6); Major Items Listings / Identification (Pages 7 & 8) & External & Internal Commpak General Drawings (Pages 9 to 12)

Item No.	Description	Function	P&EES Part No's
18	Bi-directional Pressure Balancing Assembly	<p>This assembly performs 3 functions</p> <p>1/ If hot water outlet pressure is less than coldwater inlet pressure (demand exceeds design capability), assembly allows coldwater flow from inlet to outlet, to maintain mains water pressure.</p> <p>2/ If hot water outlet pressure is greater than coldwater inlet pressure (Nom. Set 50Kpa) low or no demand condition, assembly allows hot water flow from outlet to inlet, to maintain mains water pressure (+ 50Kpa)</p> <p>3/ In installations with no return circulation or high resistance, assembly allows hot water to flow from outlet to inlet, to maintain minimum flow requirement for firing of the Continuous Flow Water Heater(s)</p>	BDPBA
18A	Bi-directional Pressure Balancing Assembly One Way Valve	Allows coldwater flow from inlet to outlet, to maintain constant pressure.	OWV-20
18B	Bi-directional Pressure Balancing Assembly Regulating Valve	Allows hot water flow from outlet to inlet, to maintain constant pressure and minimum flow requirement for firing of the Continuous Flow Water Heater(s) Normally Set: 50-60Kpa (Flow & Return Systems) 10Kpa (Dead Leg / No Return Systems)	RV-20
19	Hot Water Return One Way Valve	Prevents reverse flow of cold water into hot water reticulation system.	OWV-20
20	Pressure Safety Valve	System safety relief valve - 10 Bar operation	PSV-10
21	Plug & Gauge Cock	Hot Water Manifold 6mm Test point for pressure gauge	PGC-6
21A	Plug & Gauge Cock	Cold Water Manifold 6mm Test point for pressure gauge & Isolation means for Loss of prime testing	PGC-6
22	Continuous Flow Water Heater	Water Heating means. Refer: Rheem 27 Owner's Guide & Installation Instructions Electronic Continuous Flow Gas Water Heater Model 027 Outdoor - Series 872 & Indoor - Series 862 for further details.	Rheem Supply Item
22A	External Continuous Flow Water Heater waste Gas Flue Outlet	Recommended 800mm access clearance from Flue Outlets. Clearance Measurements for Horizontal Flue Terminals Refer Australian Standard Gas Installations AS5601 – 2004 Fig 5.3R	
22B	Internal Continuous Flow Water Heater waste Gas Flue Outlet	Refer Rheem: 'Owners guide and Installation Instructions' <i>Electronic Continuous Flow Gas Indoor Water Heater</i> Series 862 – Models 27 for approved spacing requirements.	
22C	Continuous Flow Water Heater water inlet strainer	Protects the Continuous Flow Water Heater from damage due to ingress of solids. Located on cold water inlet of Water Heater	
23	Mounting Frame	Hot water System mounting frame assembly Refer Commpak general arrangement drawings for full details	MF ASS CE 040 to CE 120
24	Pressure Switch	Pump protection against dry running Pump disabled <110Kpa & re-enabled > 130Kpa	PS-070759
25	Pump Isolation Valve	32mm BSP Female Ball Valve. Pump isolation means	PIV32BSPFM
26	Pump Discharge one way valve	32mm Pump one way valve. Prevents back flow circulation through stationary pump	POWV32

Commpak Internal Single Pump – General Arrangement

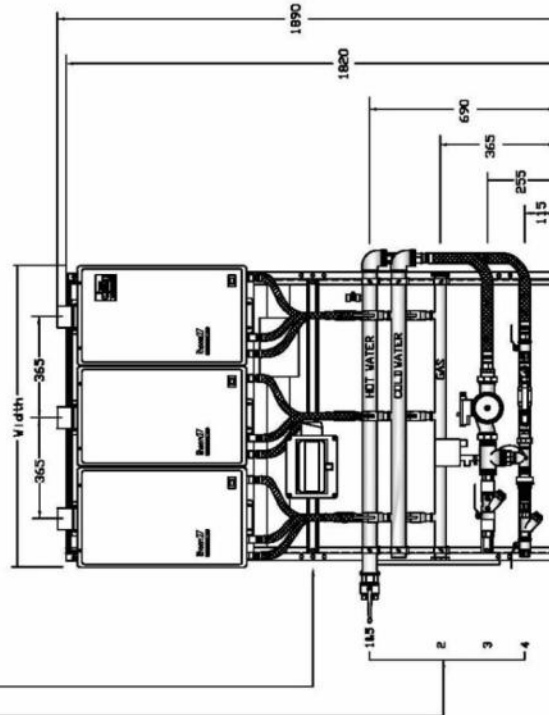
SERVICE CONNECTIONS PROVIDED:

- (1) HOT WATER OUT 40MM BSP FEMALE BRASS BALL VALVE.
- (2) NATURAL GAS/LPG INLET 40MM BSP FEMALE.
- (3) COLD WATER IN 40MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (4) HOT WATER RETURN 25MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (5) PRESSURE RELIEF VALVE 20MM BSP FEMALE TO DRAINAGE.

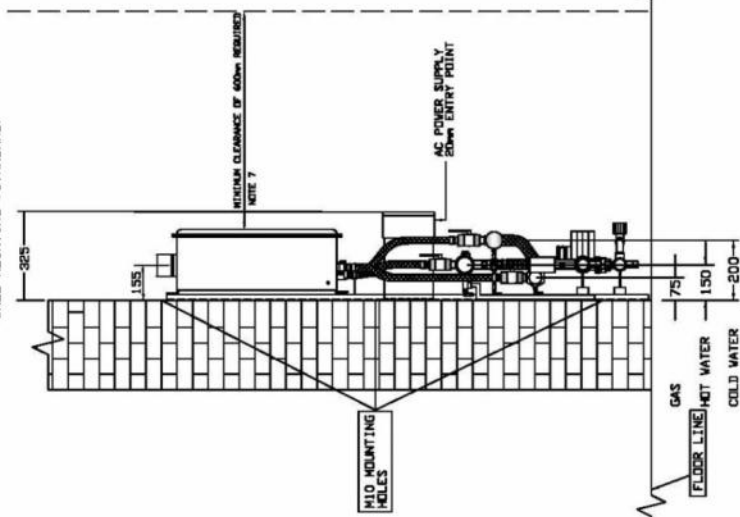
POWER SUPPLY REQUIREMENTS : 240V/1PH/50Hz - 16A TYPE C OR D CURVE UP FRONT PROTECTION PROVIDED : IPSS CONTROL BOX PRE-WIRED TO WATER HEATERS & PUMP.

FRONT VIEW

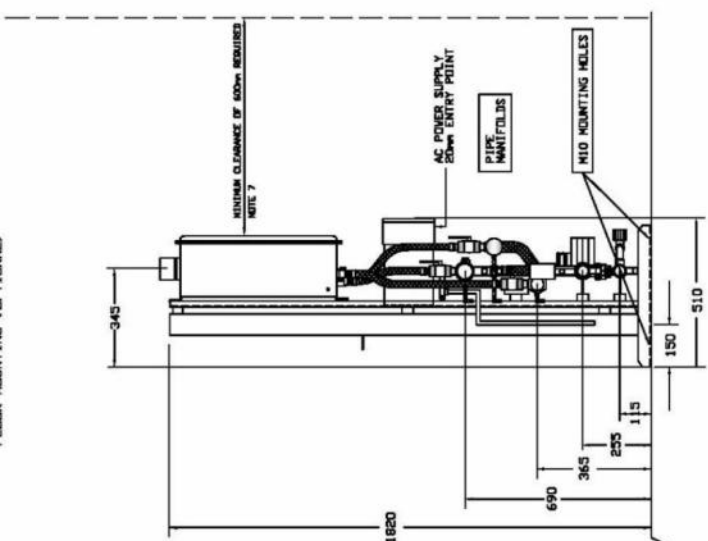
Model	CP102	CP103	CP104	CP105	CP106
Width (mm)	1200	1200	1420	1775	2130



SIDE VIEW WALL MOUNTING (STANDARD)



SIDE VIEW FLOOR MOUNTING (OPTIONAL)



NOTES :

1. THIS UNIT IS SUITABLE FOR A FLOW & RETURN OR DEAD LEG SYSTEM.
2. IPSS CONTROL BOX COMPLETE WITH GENERAL PURPOSE 240VAC POWER OUTLET(S) PRE-WIRED.
3. NATURAL GAS/LPG WITH APPROPRIATE PIPE SIZE AS PER ASS601 SHALL BE PROVIDED BY OTHERS.
4. WATER PIPE SIZING TO THIS PACKAGE SHALL BE BY OTHERS IN ACCORDANCE WITH ASS500 FOR THE GIVEN HOT WATER FLOW BY OTHERS.
5. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
6. PACKAGE SUITABLE FOR INTERNAL INSTALLATION ONLY.
7. SPACING - ALLOW AT LEAST 600MM CLEARANCE FOR ACCESS.
8. REFER TO OPERATION MANUAL FOR OTHER DETAILS.
9. DRAWING SUBJECT TO CHANGE WITHOUT NOTICE.

NO.	DATE	REVISION		BY	CHECKED	FOR CONTINUATION		DESCRIPTION
		ORIGINAL ISSUE				PS	RH	
0	07/08	ISSUED				PS	RH	RHEEM AUSTRALIA P/L
1	03/08	CHANGED DETAIL				PS	RH	1 Alan St
2	10/08	CHANGED DETAIL				PS	RH	Rydalmere NSW 2116
3	08/10	27 LITRE WATER HEATER & OTHER DESIGN UPGRADE				PS	RH	email: commercial@rheem.com.au
4	08/10	27 LITRE INTERNAL WATER HEATER DESIGN UPGRADE				PS	RH	rheem.com.au
		DRAWN		SCALE	DRAWING NO.	REVISION		
		BH		1:1	CPAKS-31	1		

Commpak Internal Dual Pumps – General Arrangement

SERVICE CONNECTIONS PROVIDED:

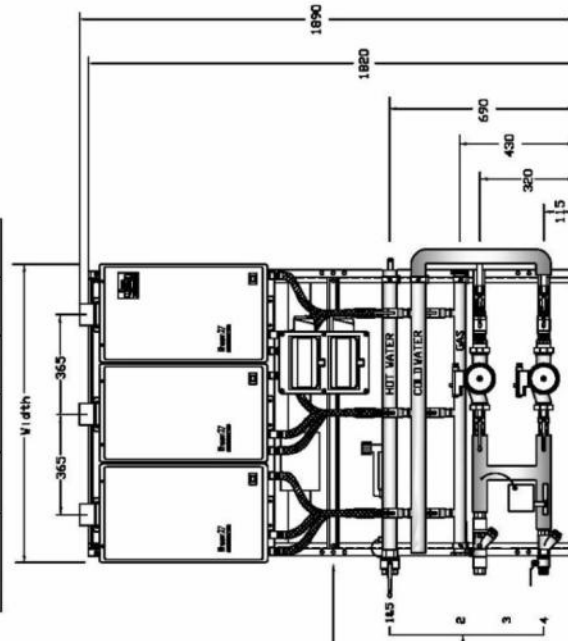
- (1) HOT WATER OUT
40MM BSP FEMALE BRASS BALL VALVE.
- (2) NATURAL GAS/LPG INLET.
40MM BSP F-MALE.
- (3) COLD WATER IN.
40MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (4) HOT WATER RETURN.
25MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (5) PRESSURE RELIEF VALVE
20MM BSP FEMALE TO DRAINAGE.

POWER SUPPLY

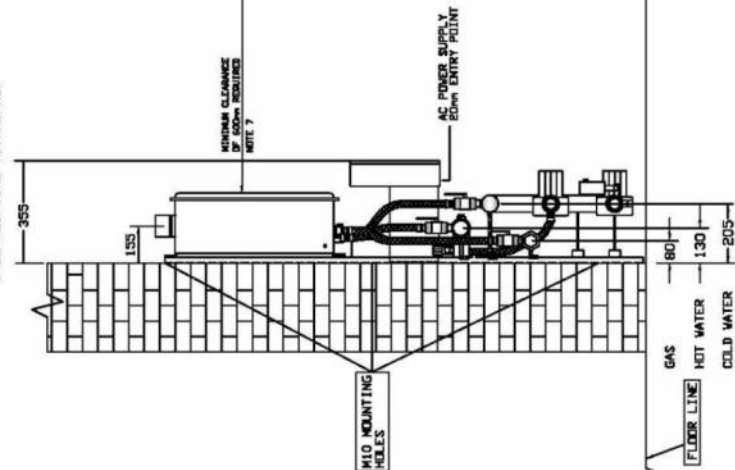
REQUIREMENTS : 240V/1PH/50Hz – 16A TYPE C OR D CURVE UP FRONT PROTECTION.
PROVIDED : 1PSS CONTROL BOX PRE-WIRED TO WATER HEATERS & PUMP.

FRONT VIEW

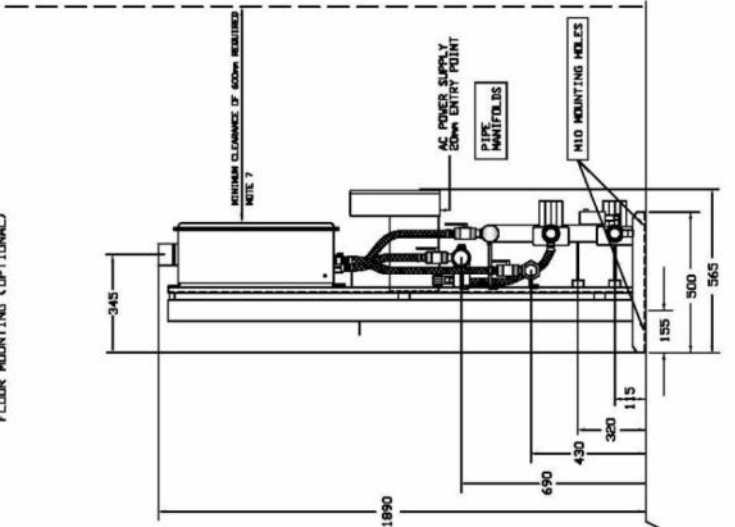
Model	CP102	CP103	CP104	CP105	CP106
Width (mm)	1200	1200	1420	1775	2130



SIDE VIEW WALL MOUNTING (STANDARD)



SIDE VIEW FLOOR MOUNTING (OPTIONAL)



NOTES

1. THIS UNIT IS SUITABLE FOR A FLOW & RETURN OR DEAD LEG SYSTEM.
2. IPSS CONTROL BOX COMPLETE WITH GENERAL PURPOSE 240VAC POWER OUTLET(S) PRE-WIRED.
3. NATURAL GAS/LPG WITH APPROPRIATE PIPE SIZE AS PER ASS601 SHALL BE PROVIDED BY OTHERS.
4. WATER PIPE SIZING TO THIS PACKAGE SHALL BE BY OTHERS IN ACCORDANCE WITH AS3500 FOR THE GIVEN HOT WATER FLOW BY OTHERS.
5. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
6. PACKAGE SUITABLE FOR INTERNAL INSTALLATION ONLY.
7. SPACING – ALLOW AT LEAST 600MM CLEARANCE FOR ACCESS.
8. REFER TO OPERATION MANUAL FOR OTHER DETAILS.
9. DRAWING SUBJECT TO CHANGE WITHOUT NOTICE.

REVISION		DATE		SCALE		DRAWING No.		REVISION	
1		10/05/10		1:1		CPAKD-31		1	A1

BY		CHECKED		APPROVED FOR CONSTRUCTION	
PM	RM	PM	RM	PM	RM
PM	RM	PM	RM	PM	RM
PM	RM	PM	RM	PM	RM
PM	RM	PM	RM	PM	RM

DATE		REVISION	
07/08		ORIGINAL ISSUE	
09/08		ADDED CLIENT DETAILS	
10/08		CHANGED BELLON	
08/10		27 LITRE WATER HEATERS & OTHER DESIGN UPDATES	
08/10		27 LITRE INTERNAL WATER HEATERS DESIGN UPDATES	

DESCRIPTION	
Rheem Commpak – CP103 Commercial Mains Pressure Dual Pumps Internal Hotwater System	

RHEEM AUSTRALIA P/L	
1 Alan St Rydalmere NSW, 2116	
email: commercial@les@rheem.com.au	
rheem.com.au	

Commpak External Single Pump – General Arrangement

SERVICE CONNECTIONS PROVIDED

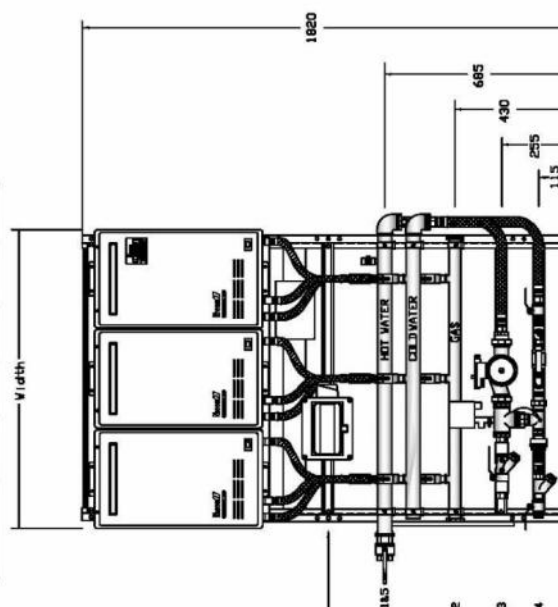
- (1) HOT WATER OUT
40MM BSP FEMALE BRASS BALL VALVE.
- (2) NATURAL GAS/LPG INLET.
40MM BSP-T-MALE.
- (3) COLD WATER IN.
40MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (4) HOT WATER RETURN.
25MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (5) PRESSURE RELIEF VALVE.
20MM BSP FEMALE TO DRAINAGE.

POWER SUPPLY

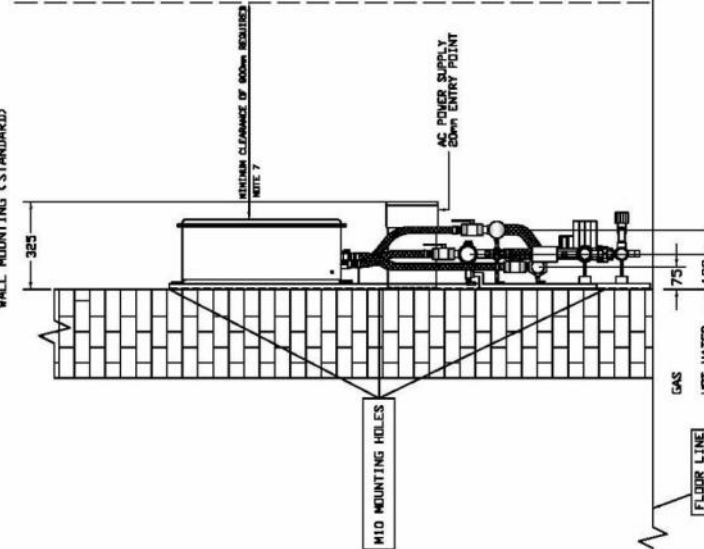
REQUIREMENTS : 240V/1PH/50Hz – 16A TYPE C OR D CURVE UP FRONT PROTECTION.
PROVIDED : IP55 CONTROL BOX PRE-WIRED TO WATER HEATERS & PUMP.

FRONT VIEW

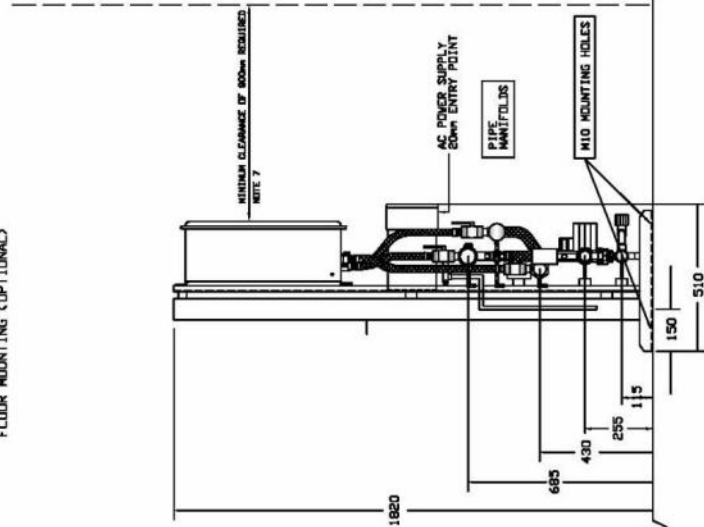
Model	CPE02	CPE03	CPE04	CPE05	CPE06
Width (mm)	1200	1200	1420	1775	2130



SIDE VIEW WALL MOUNTING (STANDARD)



SIDE VIEW FLOOR MOUNTING (OPTIONAL)



NOTES :

1. THIS UNIT IS SUITABLE FOR A FLOW & RETURN OR DEAD LEG SYSTEM.
2. IP55 CONTROL BOX COMPLETE WITH GENERAL PURPOSE 240VAC POWER OUTLET(S) PRE-WIRED.
3. NATURAL GAS/LPG WITH APPROPRIATE PIPE SIZE AS PER ASS601 SHALL BE PROVIDED BY OTHERS.
4. WATER PIPE SIZING TO THIS PACKAGE SHALL BE BY OTHERS IN ACCORDANCE WITH ASS500 FOR THE GIVEN HOT WATER FLOW BY OTHERS.
5. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
6. PACKAGE SUITABLE FOR EXTERNAL INSTALLATION ONLY.
7. SPACING – ALLOW AT LEAST 800MM CLEARANCE FOR ACCESS.
8. REFER TO OPERATION MANUAL FOR OTHER DETAILS.
9. DRAWING SUBJECT TO CHANGE WITHOUT NOTICE.

NO	DATE	REVISION
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NO	DATE	REVISION
0	07/09	ORIGINAL ISSUE
1	07/04	ADDED CLINT DETAILS
2	10/04	CHANGED DESIGN
3	02/10	27 LITRE WATER HEATERS & OTHER DESIGN UPDATES
4	02/10	FUNCTIONAL UPDATES

BY	CHECKED	FOR CONSTRUCTION
PH	PH	PH
PH	PH	PH
PH	PH	PH
PH	PH	PH
PH	PH	PH

RHEEM AUSTRALIA P/L
1 Alan St
Rydalmere NSW 2116
commercialsales@rheem.com.au
rheem.com.au

DESIGNED	DRAWN	CHECKED	DATE	SCALE	REVISION
PH	PH	PH	02/10	1:1	4

DESCRIPTION
Rheem Commpak – CPE03
Commercial Hot and Pressure
Single Pump External Hotwater System

01	02/10	01/10	01/10	01/10	01/10
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Compak External Dual Pumps – General Arrangement

SERVICE CONNECTIONS PROVIDED

- (1) HOT WATER OUT
40MM BSP FEMALE BRASS BALL VALVE.
- (2) NATURAL GAS/LPG INLET.
40MM BSP F-MALE.
- (3) COLD WATER IN.
40MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (4) HOT WATER RETURN.
40MM BSP FEMALE BRASS BALL VALVE/STRAINER COMBINATION.
- (5) PRESSURE RELIEF VALVE
20MM BSP FEMALE TO DRAINAGE.

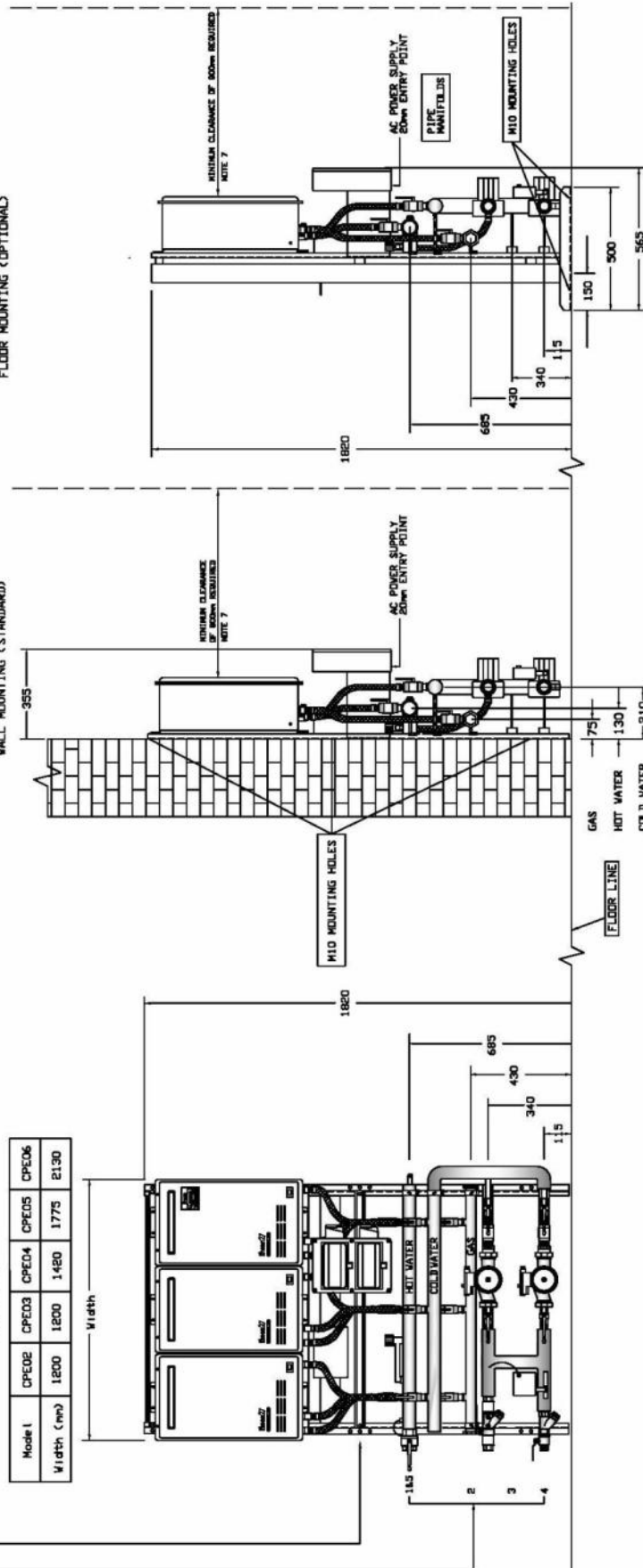
POWER SUPPLY
REQUIREMENTS : 240V/1PH/50Hz – 16A TYPE C OR D CURVE UP FRONT PROTECTION.
PROVIDED : 1PMS CONTROL BOX PRE-WIRED TO WATER
HEATERS & PUMP.

FRONT VIEW

Model	CPE02	CPE03	CPE04	CPE05	CPE06
Width (mm)	1820	1820	1480	1775	2130

WALL MOUNTING (STANDARD)

SIDE VIEW FLOOR MOUNTING (OPTIONAL)



NOTES :

1. THIS UNIT IS SUITABLE FOR A FLOW & RETURN OR DEAD LEG SYSTEM.
2. 1PMS CONTROL BOX COMPLETE WITH GENERAL PURPOSE 240VAC POWER OUTLET(S) PRE-WIRED.
3. NATURAL GAS/LPG WITH APPROPRIATE PIPE SIZE AS PER ASS601 SHALL BE PROVIDED BY OTHERS.
4. WATER PIPE SIZING TO THIS PACKAGE SHALL BE BY OTHERS IN ACCORDANCE WITH ASS500 FOR THE GIVEN HOT WATER FLOW BY OTHERS.
5. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
6. PACKAGE SUITABLE FOR EXTERNAL INSTALLATION ONLY.
7. SPACING - ALLOW AT LEAST 800MM CLEARANCE FOR ACCESS.
8. REFER TO OPERATION MANUAL FOR OTHER DETAILS.
9. DRAWING SUBJECT TO CHANGE WITHOUT NOTICE.

NO.	DATE	REVISION	BY	CHECKED	APPROVED FOR CONSTRUCTION	DESCRIPTION
0	07/05	ORIGINAL ISSUE	PH	PH		
1	08/06	ADDED CLIENT DETAILS	PH	PH		
2	10/06	CHANGED DESIGN	PH	PH		
3	08/10	27 LITRE WATER HEATERS & OTHER DESIGN UPDATES	PH	PH		
4	08/10	210 LITRE WATER HEATERS & OTHER DESIGN UPDATES	PH	PH		

RHEEM AUSTRALIA P/L		RHEEM COMPACT - CPE03	
1 Alan St		Commercial Mains Pressure	
Rydalmere NSW, 2116		Dual Pumps External Hotwater System	
email : commercial@leserheem.com.au		rheem.com.au	

DESIGNED	DRAWN	DATE	SCALE	DRAWING NO.	REVISION
PH	PH	08/10	N.T.S	CPEAKD-3E	A1

Commpak – Commissioning

Refer to Photographs (Pages 5 & 6); Major Items Listings / Identification (Pages 7 & 8) & External & Internal Commpak General Drawings (Pages 9 to 12)

Commpak – Initial Checks

1. Check that the power supply to the system controller (Item #1) is switched OFF.
2. Check that an adequate Water Supply is available to the Commpak Hot Water System.
Water Supply Pressure shall not exceed 1000KPa.
3. OPEN Cold Water Inlet Valve (Item #12), Hot Water Outlet Valve (Item #11) & Hot Water Return Valve (Item #13)
Check all individual Water Heater isolation valves (Items #14 & #15) are OPEN;
Check Bi-directional Pressure Balancing Isolation Valve (Item #16) is OPEN.
4. Check that the system is fully charged, all the air is bled from the system and no leaks are evident.
Air shall be bled by opening the Hot water Outlets & Pressure Relief valve of the Hot Water System (Item #20).
5. Check that an adequate Gas Supply (Volume & Pressure) is available to the Commpak Hot Water System as per AS5601.
Minimum Gas Supply Pressure at full operational load: Natural - 1.13 kPa Propane - 2.75kPa
6. OPEN all individual water heater Gas Isolation Valves (Item #17) and purge Gas Lines.

System is now Ready for Start Up

Commpak – Start-up Checks

System Pump/s Warning: Dry running of the Pump/s will result in permanent damage and is not covered under warranty

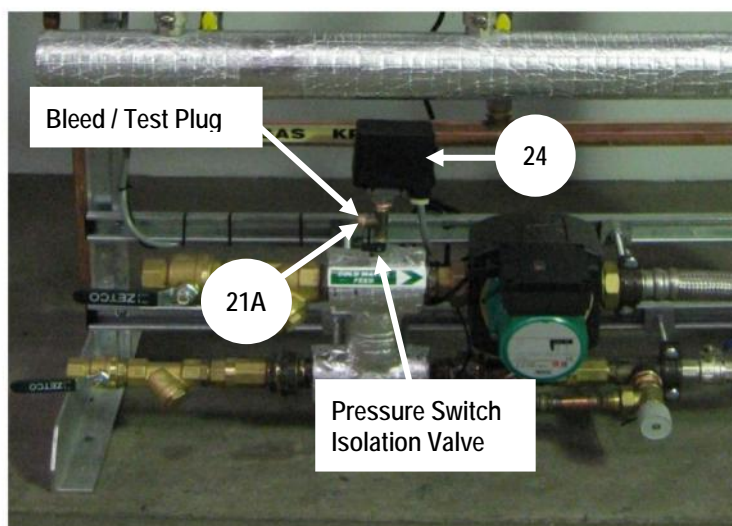
7. Before turning 240VAC power on to the Hot Water System Controller ensure the following checks are undertaken.
8. Check & Confirm pump/s speed (Item #5A, factory set on number 3).
Note: **Read and comply with the instructions as specified on the TAG tied to end of power lead.**
9. Check that the pump/s power supply lead to the dedicated 'Pump Power Outlet' (Item #3) is plugged in and turned ON.
10. Check individual Water Heater (Item #22) power supply leads are plugged in (Item #2) and turned ON
11. Turn on the power supply to the Hot Water System Controller (Item #1)
Check Hot Water System Controller status (as displayed on the control module) (Item #1)
LCD display is ON & Pump Run LED(s) are illuminated.
Refer to Hot water System Controller insert (pages 25 - 39) for additional details.
12. Check all Water Heaters (Item #22) have fired and are operational
Note: All Hot Water Units have been factory tested, temperature pre-set and gas pressures adjusted and as such no further adjustments are required.
13. Check Hot Water Outlet Temperature Display (Item #1) registers a temperature rise.

Turn on several hot water outlets (fixtures) on the installation to check that all the individual Water Heaters and Pump/s are operating correctly.

14. When satisfied, CLOSE Hot Water Outlet Isolation Valve (item #11)
Depress the 'RESET' button on the Hot Water System Control Module (item #1) and hold ON for 5 seconds.
This will enable both the Hot Water Outlet Temperature (T1) and the Return Water Temperature (T2) to be displayed simultaneously.
The Pump will turn OFF when return Temperature (T1) has reached 60°C (nominal default value).
Re OPEN Hot Water Outlet Isolation Valve (item 11) Pump will restart and CFHW units will fire.
Leave running until satisfied with operation.

Commpak – Commissioning – Final Checks

15. Test & Confirm Pump/s Loss Of Water Protection Pressure Switch (Item #24 & Item # 21A):
- Turn off the Isolating Valve to the Pressure Switch during the normal operation of the Hot water System.
Undo the bleed / test Plug to relieve the pressure.
This will initiate the pump/s shut down timer (user programmable) nominally set at 45 seconds.
Check & confirm pump is locked-out on time out.
 - Redo (Screw back in) the bleed / test Plug & open the isolation valve to the Pressure Switch.
This will re-instate operation of Pump/s. Check & confirm this on the controller.



16. Check system for any leaks (Gas & Water)
17. Turn system 240VAC power OFF (Item #1).
Isolate Main Water Valves (Items #11; #12 & #13); Check and clean the Inline Cold water Supply Strainer; Hot water Return Water Strainer & Individual Water Heater Strainers (Items #11A; #12A & #13A).
18. Advise customer to check strainers after 1 Week usage.
Continue to check strainers on a weekly basis until they inspect clean.
Continue to check strainers on a monthly basis until they inspect clean.
Continue to check strainers on a Quarterly basis until they inspect clean.
Thereafter check every six (6) months.
19. Re-instate Commpak by repeating steps 2 to 14
20. Fill in commissioning sheet (page #16).
21. 'Rheem Commpak Commercial Hot Water System' can now be left on line.

Finish.

Commpak – Pump Installation



- Pump Casing Arrow to match the flow direction
- Motor is "Horizontally" mounted only
Motor Terminal Box is "SIDE or TOP" position
ONLY DO NOT position at "BOTTOM" of Motor;
- Never Operate the Pump "Dry";
- Ensure Cable Gland is tight & cable is looped down on exiting of terminal box as shown;
- Test & Confirm Loss Of Water Protection Pressure Switch (Item #-#24) is operational as per instructions (Clause 15 of this page)
- Clean Pump Suction Strainer regularly.

Commpak – Fault Finding Procedure


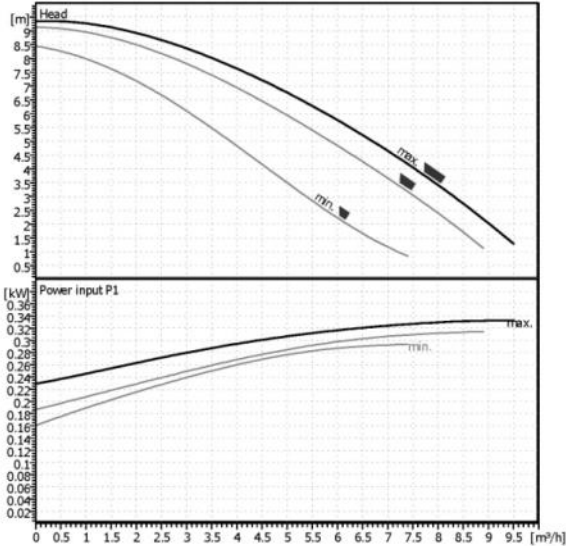
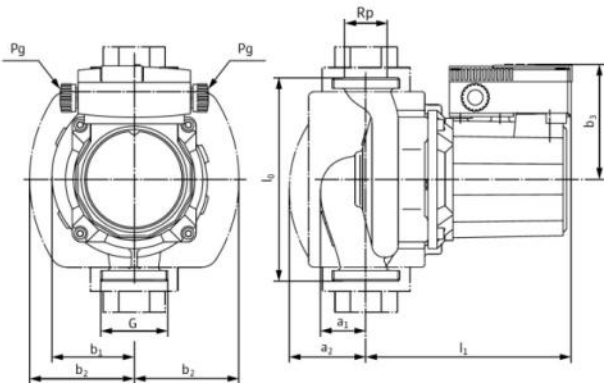
Fault	Possible Causes	Description & Recommended Corrective Action
Hot Water System not operating	Power Failure	<p>Check system Controller – Is the LCD Temperature Display ON</p> <ul style="list-style-type: none"> No Check Controller Isolator is turned ON If not turn toggle to the ON position (UP) <p>Note: The controller isolator is an Earth Leakage (safety switch) and will Trip (turn OFF) if an earth fault of 30ma or greater is present. To check for fault unplug all leads from their power outlets Turn the isolator ON If isolator trips? - Faulty control module Contact supplier for additional assistance. If isolator does not trip? - Plug in each power lead one at a time until isolator trips – leave offending item unplugged & report to supplier. Check 240VAC Supply from distribution board powering Controller Is ON Check breaker rating is 16A or greater, as tripping may occur on larger Systems if below this value.</p> <ul style="list-style-type: none"> Yes LCD Temperature Display is ON Power OK
	Controller Fault	<p>Check system Controller – Are any Fault LEDs illuminated</p> <ul style="list-style-type: none"> Yes Faulty T1 or T2 Sensor LED Illuminated Check connections are good and no breaks in cable. If Good? Sensor is faulty Replace Sensor Yes High Temperature LED Illuminated Check actual water temperature & compare against controller displayed value. If displayed value is incorrect replace T2 sensor If same? Check High Temp setting (refer page 34) set value If setting value correct? = Faulty RECFWH or incorrect DIP Switch setting Refer RECFWH manual for details Yes Pump Low Temp Fault LED Illuminated Check all strainers are clear Check Pump is ON & operating Check Gas pressure is OK Yes Pump Lock-out LED Illuminated Check water supply is turned on Check Pump is On & operational Check Pressure Switch (item 24) contacts are open Check Gas Supply is ON & correct Pressure <p>NOTE: Controller RESET button will clear any latched fault. Refer System Controller Pages 25 - 40 for additional information</p> <p>NOTE If System Controller is faulty <i>Un-plug the pump from the dedicated Pump Power Outlet & Plug into a water heater General Purpose Out let.</i></p> <p><i>System will continue to operate until Controller can be replaced</i></p>
	Pump Fault	<p>Refer Pump Manual Pages 17 - 24 for additional Information</p> <p>NOTE If Pump is faulty Isolate Pump Electrically & Close Valve No. #16. Commpak will operate as per Multipak (Hot water on demand but no return flow) until pump can be replaced.</p>
	RECFWH Fault	Refer to Rheem Owner's Guide and Installation Instructions for additional Information

Note: RECFWH = Rheem Electronic Continuous Flow Water Heater

Commpak – Commissioning Sheet

Customer :		
Project & Address:		
Package Details:		
Installation	OK	Comments
Overall Installation?		
Installation Requirements:		Compliance to AS5601 is mandatory Refer: Rheem Owner's Guide & Installation Instructions Models 027
Individual Water Heaters Co-axial Flueing		Electronic Continuous Flow Gas Outdoor Water Heater 872 Series Electronic Continuous Flow Gas Indoor Water Heater 862 Series
Ventilation Requirements?		Compliance to AS5601 is mandatory
Fuel: Natural Gas / LPG		
Gas Pressure During full Load Operation?		Natural Gas: 1.13 Minimum & Up to 3.5 kPa Propane: 2.75 Minimum & Up to 3.5 kPa
Inlet Water Pressure		
Inlet Water Pressure?		Minimum 150 kPa & up to 1000 kPa
Valves		
All the Valves are in Open Position?		
Differential Bypass Valve Position?		Flow & Return System: Set to No. 6 Dead Leg System: Set to No. 1
Pressure Safety Valve Operation?		
Pump/s		
Operation?		Pump Speed: Factory Pre-set to No. 3
Package Controller (In accordance to System Controller – Test Sheet – Refer Pages 34 & 35)		
Set Temperature Reached?		
Check Indicators?		
Overall Operation?		
System		
Flow & Return System or Dead Leg System?		
All Water Heater Operations?		
System Temperature Reached & Pump/s Shutdown?		
Differential Bypass Valve Operation?		Simulate both Flow/Return or Dead Leg Systems
Comments		
Client to carry out regular preventative maintenance as below: Pump Inlet Strainer; Hot Water Return Strainer & Water Heaters Inlet Strainers: Check & Clean as per the schedule – Refer Clauses 17 & 18 of Page 14 - Commissioning – Final Checks		
Sign Off		
System Commissioned By:	Customer's Representative:	
Date:	Date:	

Commpak – Pump Manual

<p>WILO AG Nortkirchenstrasse 100 D 44263 Dortmund Phone +49 (0) 231 / 4102-0 Telefax +49 (0) 231 / 4102-7575</p>	<p>TOP-Z 30/10 1~ PN 10 System: Circulator</p>																																				
<p>Customer Customer no. Contact Care of</p>	<p>Project Project no. Position no. Location</p>	<p>Page 1 / 1 Date 2009-02-13</p>																																			
<div style="display: flex;"> <div style="flex: 1;">  </div> <div style="flex: 1; padding-left: 10px;"> <p>Requested data</p> <table style="width: 100%;"> <tr><td>Flow</td><td>0</td><td>m³/h</td></tr> <tr><td>Head</td><td>0</td><td>m</td></tr> <tr><td>Fluid</td><td>Water, pure</td><td></td></tr> <tr><td>Fluid temperature</td><td>20</td><td>°C</td></tr> <tr><td>Density</td><td>0.9983</td><td>kg/dm³</td></tr> <tr><td>Kinematic viscosity</td><td>1.005</td><td>mm²/s</td></tr> <tr><td>Vapor pressure</td><td>0.02337</td><td>bar</td></tr> </table> </div> </div>			Flow	0	m³/h	Head	0	m	Fluid	Water, pure		Fluid temperature	20	°C	Density	0.9983	kg/dm³	Kinematic viscosity	1.005	mm²/s	Vapor pressure	0.02337	bar														
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<p>Dimensions per pump mm</p> <table style="width: 100%;"> <tr><td>l0</td><td>180</td><td>b3</td><td>102</td><td></td><td></td><td></td></tr> <tr><td>a2</td><td>72.5</td><td>l1</td><td>171.5</td><td></td><td></td><td></td></tr> <tr><td>a1</td><td>52</td><td>Pg</td><td>2 x 13,5</td><td></td><td></td><td></td></tr> <tr><td>b1</td><td>68.5</td><td>G</td><td>G2</td><td></td><td></td><td></td></tr> <tr><td>b2</td><td>92</td><td></td><td></td><td></td><td></td><td></td></tr> </table>			l0	180	b3	102				a2	72.5	l1	171.5				a1	52	Pg	2 x 13,5				b1	68.5	G	G2				b2	92					
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<p>Motordata per Motor/Pump/</p> <table style="width: 100%;"> <tr><td>Rated power P2</td><td>0.18</td><td>kW</td></tr> <tr><td>Power input P1</td><td>0.335</td><td>kW</td></tr> <tr><td>Nominal speed</td><td>2800</td><td>1/min</td></tr> <tr><td>Rated voltage</td><td>1~230 V, 50</td><td>Hz</td></tr> <tr><td>Max. power consumption</td><td>1.62</td><td>A</td></tr> <tr><td>Degree of protection</td><td>IP 44</td><td></td></tr> <tr><td>Permitted voltage tolerance</td><td colspan="2">+/- 10%</td></tr> </table>			Rated power P2	0.18	kW	Power input P1	0.335	kW	Nominal speed	2800	1/min	Rated voltage	1~230 V, 50	Hz	Max. power consumption	1.62	A	Degree of protection	IP 44		Permitted voltage tolerance	+/- 10%															
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Reserves to change any technical data.

Software version 3.1.7 - 10.10.2007 (Build 3)

User group

COM

data status 2007-12-11

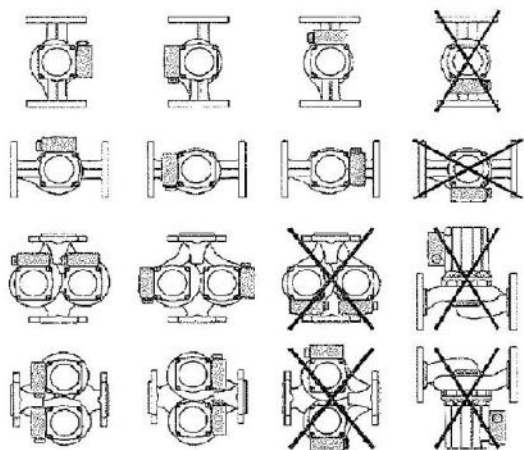


Fig. 2

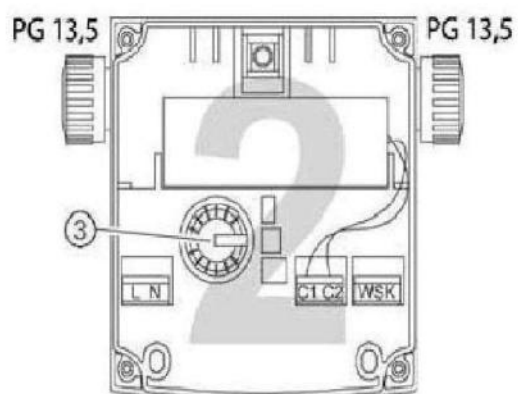


Fig. 4

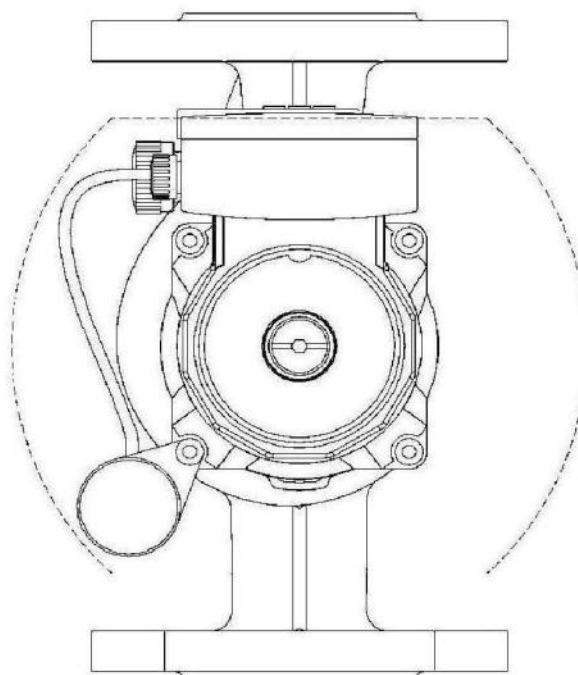


Fig. 5

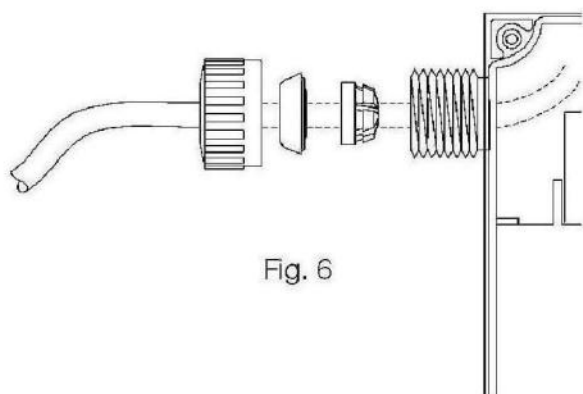


Fig. 6

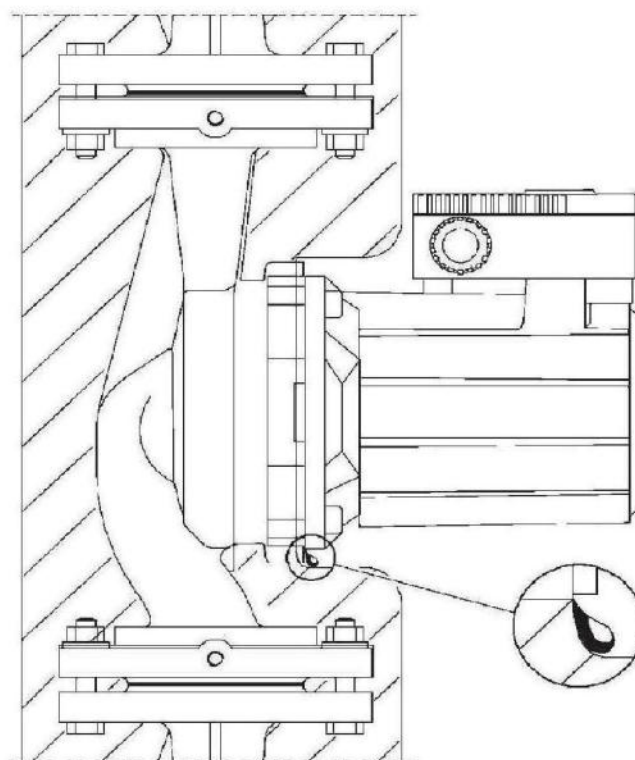


Fig. 7

1 General Information

Assembly and installation should only be carried out by qualified personnel.

1.1 Uses

The circulating pumps are used to pump liquids in

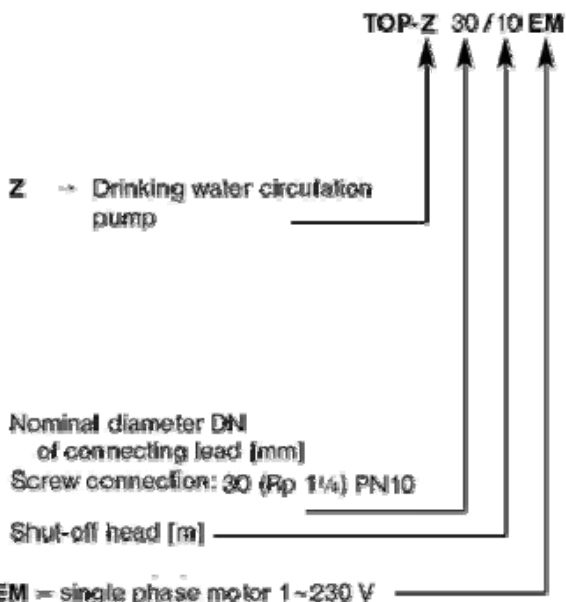
- Warm water heating systems,
- Cooling and cold water circuits,
- Closed industrial circulation systems,
- Circulation systems for drinking water (applies to TOP-Z only).



The pumps in the TOP-S/-SD/-D range must not be used for drinking water or foodstuffs.

1.2 Product data

1.2.1 Rating plate



- Flow media:

- Drinking water and water for food enterprises (TOP-Z pumps only) acc. the European drinking water directive. According to the German drinking water regulation 2001, pump housings in bronze (CC 491K) have to be used in systems.

- Minimum inlet pressure at the pump suction side in order to prevent cavitation noises at an ambient temperature of +40°C and a water temperature of T_{max} .

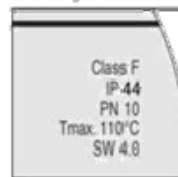
+50°C	0.5 bar
+80°C	0.8 bar
+110°C	2.0 bar

These Values are valid up to 300m above sea level. For higher elevations add 0.01 bar/100m additional height.

1.2.2 Connection and electrical data

- Observe pump rating plate data.

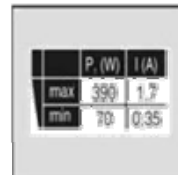
Example:



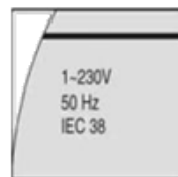
Explanation:

Insulation materials category/Protection category IP
PN = nominal pump pressure level

Max. medium temperature
Software version SW
(important for option module connection)



Max. power consumption P_{max}
Max. current I

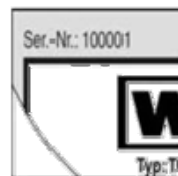


Voltage:

Single-phase current

1~ 230

Frequency: 50 Hz



Serial no.: ongoing numbering



Series/pump type

Article no./manufacturing date

e.g. 04 05
year (2004) month (May)

- Temperature range of the flow medium:

Flow medium:	TOP-Z
Drinking water	●
● Admissible flow medium	up to 24 °a: max. +80 °C (short term (2h): +110 °C)
	TOP-Z20/4, TOP-Z25/6: up to 22 °a: max. +65 °C (short term (2h): +80 °C)

2. Safety

These operating instructions contain basic guidelines to be followed for assembly and operation. Furthermore, all of the special safety instructions provided in the following sections must be followed.

2.1 Danger symbols used in these operating instructions

Safety precautions in these operating instructions which, if not followed, could cause personal injury are indicated by the symbol:



with the following symbol used to indicate electrical voltage:



The symbol below indicates that by ignoring the relevant safety instructions, damage could be caused to the pump or installation:

ATTENTION!

2.2 Staff training

All operation, maintenance, inspection and assembly staff must have the appropriate qualifications for such work.

All personnel entrusted with assembly, commissioning, operation, maintenance and inspection tasks must read the operating instructions and in particular the chapter on "Safety" and ensure they have fully understood them.

The operator must clearly define the areas of responsibility and supervision of staff.

2.3 Risks incurred by failure to comply with the safety precautions

Failure to comply with the safety precautions could result in personal injury or damage to the pump or installation. Failure to comply with the safety precautions invalidates any claim for damages.

In particular, failure to comply may lead to problems such as:

- Failure of important pump or installation functions,
- Injury resulting from electrical or mechanical factors.

2.4 Safety precautions for the operator

The existing national regulations for the prevention of accidents must be followed.

All risks caused by electrical energy must be eliminated. All directives issued by the VDE [German Association of Electrical Engineers] and the local electricity supply companies must be observed.

2.5 Safety information for inspection and assembly

All existing national regulations for the prevention of accidents, as well as all available internal work, operation and safety instructions issued by the operator, must be followed.

The operator must ensure that all inspection and installation work is carried out by authorized and qualified specialists who have carefully studied these instructions.

Work on a pump or installation should only be carried out once the latter have been brought to a standstill.

All of the applicable safety and protection installations must be reattached and switched back on immediately following completion of work.

2.6 Unauthorised modification and manufacture of spare parts

Alterations to the pump or installation may only be carried out with the manufacturer's consent. The use of original spare parts and accessories authorised by the manufacturer will ensure safety. The use of any other parts may invalidate claims involving the liability of the manufacturer.

2.7 Unauthorised operating methods

The operating safety of the pump or installation supplied can only be guaranteed if it is used in accordance with paragraph 1 of the operating instructions. All values must neither exceed nor fall below the limit values given in the catalogue or data sheet.

3 Transport and interim storage

ATTENTION! Danger as a result of inappropriate transport and storage!

The pump must be protected against moisture and physical damage during transport and interim storage.

4 Product and accessory description

4.1 Pump description

The pump has a wet-running motor (single-phase current (1–) for mains connection voltage and mains frequency see rating plate, (Chap. 1.2.2), in which all rotating parts are surrounded by the pump medium. Depending on the design of the pump, the pump medium may lubricate the friction bearing rotor shaft.

The motor speed can be adjusted by different settings. Depending on the terminal box provided, switch to the required speed manually either by turning the switch knob or moving the switch connector to the relevant socket (Chap. 6.2).

The section entitled "Terminal boxes" indicates which terminal boxes are attributed to each individual pump type.

TOP-Z:

The pumps in this range are specially designed to cope with the operating conditions present in drinking water circuits. According to the German drinking water regulation 2001, pump housings in bronze (CC 491K) have to be used in systems.

4.1.1 Terminal box

Electrical connection	max. power consumption $P_{I\max}$ (see rating plate data)	Terminal box type	
		TOP-Z	
1~	$98W \leq P_{I\max} \leq 245W$	1	

Table 1: Allocation of terminal box type to pump type (see fig. 4 also)

See Table 2 for the necessary terminal box fittings:

Terminal box type	Speed switching (Fig. 4, Pos. 3)
1	Speed adjustment switch, 3 settings

Table 2: Terminal box fittings

4.2 Products delivered

- Complete pump
- Installation and Operating Instructions
- Two-part heat insulation (for single pump only)

5 Assembly / Installation

5.1 Installation

- The pump must be installed in a dry, well-ventilated and frost-free place.
- Before installing the pump, remove the two halves of the heat insulation shell.
- Installation should only take place once all welding and soldering work has been completed and the pipe network has been rinsed. Dirt can have an adverse effect on the functioning of the pump.
- The pump must be installed in an easily accessible place to facilitate inspection and replacement.
- It is recommended that shut-off devices be installed in front of and behind the pump. This will save having to drain and refill the entire system if the pump needs to be replaced.

Assemble the pump such that water cannot drip onto the pump motor or terminal box.

- When assembling pumps with combination flange PN6/10, always follow the guidelines below (Fig. 3):

1. Do not assemble one combination flange to another.

ATTENTION! Risk of leaking!

Assembling one combination flange to another combination flange is not a reliable procedure.

2. Additional washers **must** be placed between the screw nut head and combination flange (Fig. 3, Pos. 1).

ATTENTION! Risk of leaking!

- Securing elements such as split washers are not reliable.

- Faulty assembly can cause the screw nut to become hooked into the long slot. This in turn can lead to insufficient tightening of the screws and impede the operation of the flange connection.

3. It is recommended to use screws with a property class of 4.6 for all flange connections. When using screws made of any material other than 4.6 (e.g. 5.6 or greater), observe the screw tightening torque given for 4.6 during assembly.

Admissible screw tightening torques:

for M 12 → 40 Nm,

for M 16 → 95 Nm,

ATTENTION! Risk of leaking!

Should screws of a property class of greater than 4.6 be tightened at a tightening torque other than that indicated, the greater tension could lead to splitting of the edges of the long slot. This in turn will reduce the tightness of the screws causing the flange connection to produce leaks.

4. Always use screws of sufficient length:

- When installing in flow pipes of open systems, the expansion flow pipe must branch off before the pump (DIN EN 12828).
- Carry out stress-free installation with the pump motor shaft in horizontal plane (see installation position in Fig. 2).
- The flow direction of the pump medium must correspond to the directional arrow on the pump housing.
- The motor terminal box must not point downwards (see admissible installation position in Fig. 2). It may be necessary to turn the motor housing round after loosening the hexagon socket screws.

ATTENTION! Risk of damage to the O-ring!

When turning the motor housing round, ensure the O-ring between the can pot and the pump housing does not become damaged. The O-ring must not be turned and must remain at the edge of the can pot pointing towards the impeller.

- For single pumps: put into place and push together the two halves of the heat insulation shell such that the guide pins fit flush into the corresponding holes.

ATTENTION! Risk of build-up of condensation water!

For units that require insulation and for which the standard insulation provided cannot be used, only the pump housing may be insulated. The condensation water openings on the motor flange must be left open (Fig. 7).

5.2 Electrical connection



All electrical connections must be completed by a qualified and licensed electrician in strict compliance with local regulations.



Risk of electric shock!

Prior to commencing work on the pump, the supply voltage must be switched off at all terminals. Due to the presence of a hazardous contact voltage (capacitors), work on the module may then only begin after five minutes have elapsed (1~ model only). Check that all connections (including potential-free contacts) are neutral.

- According to Part 1 of VDE 0730, the pump must be connected to the electrical supply by a solid wire equipped with a plug or an all-pole switch. The width of the contact gap must be at least 3 mm.
- Mains fuse: 10 A, time-lag.
- The pump/installation must be earthed in compliance with the applicable regulations.

- When using a double pump, separate connection cables that can be switched individually and a separate 10 A time-lag fuse must be provided for each pump to ensure operating safety.
- Check that the mains current and connection voltage comply with the data on the rating plate.

ATTENTION! Risk of excess voltage!

The motor may become damaged should the wrong voltage be chosen.

TOP-S/-SD/-Z

Fig. 8 h: 1~230V: $330\text{ W} \leq P_{\text{max}} \leq 400\text{ W}$, with WSK

- When using the pump in systems in which the water temperature exceeds 90°C, a connecting cable with corresponding heat resistance must be used.
- The supply cable must be laid in such a way that it never touches the pipework and/or the pump and motor casing.
- To guarantee protection against dripping water and to ensure strain relief of the cable gland (PG 13.5), a connecting cable with an external diameter of 10 - 12 mm is to be used and assembled as shown in Fig. 6. In addition, the cables in the vicinity of the cable gland are to be bent into a run-off loop to drain off any dripping water.

TOP-S/-SD/-Z

Fig. 8 h: 1~230V: $330\text{ W} \leq P_{\text{max}} \leq 400\text{ W}$, with WSK

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6 Operation

6.1 System filling and venting

The system must be filled and vented properly. The pump rotor chamber will vent automatically after a short running period. Brief dry running will not damage the pump.

ACHTUNG! Risk of damage to the pump!

The required inlet pressure must be obtained at the pump suction side.



Risk of burning if the pump is touched!

Depending on the operating conditions of the pump and/or installation (pump medium temperature) the entire pump can become very hot.

6.2 Setting

– Speed setting:

For 1~ pumps (Fig. 4):

Loosen the fixing screws and remove the terminal box lid. Set the 3-level rotary switch inside the terminal box (Fig. 4, Pos. 3) to the symbol corresponding to the desired speed.

The speed setting can be read through a window when the terminal box lid is closed.

ACHTUNG! Risk of damage to the pump!

If both pumps within a double pump are to be run simultaneously, the speed setting for both **must** be identical.

7 Maintenance/Service



Risk of electric shock!

Prior to maintenance or repair work, turn off the pump at all terminals and ensure that it cannot be turned back on by unauthorised personnel.



Risk of scalding!

In the event of high water temperatures and high system pressures, the pump should be allowed to cool down.

ACHTUNG!

Risk of leaking!

Should the motor head be removed from the pump housing for servicing or repair work, the O-RING between the can pot and the pump housing must be replaced. When assembling the motor head, ensure the O-ring is correctly in place.

8 Problems, Causes and Remedies

Problem	Cause	Remedy
The unit is making noises	There is air in the unit.	Vent the unit.
	The pump volume rate is too strong.	Decrease the pump output by switching to a lower speed.
	The pump lift is too high.	Decrease the pump output by switching to a lower speed.
The pump is making noises	Cavitation noise has occurred in the pump due to insufficient inlet pressure.	Check the pressure level/system admission pressure and increase to the admissible range.
	There is a foreign body inside the pump housing or impeller.	Disassemble the pump head and remove the foreign body.
	There is air in the pump.	Vent the pump/unit.
	Shut-off valves are not fully open.	Open the shut-off valves fully.
Pump output too low	There is a foreign body inside the pump housing or impeller.	Disassemble the pump head and remove the foreign body.
	Wrong pumping direction.	Exchange the pump pressure and suction sides. Observe the arrow indicating direction on the pump housing.
	Shut-off valves are not fully open.	Open the shut-off valves fully.
Motor is switched on but fails to run	Elektrical fuse faulty/has switched off.	Change fuse/switch on electrical connection. Should the fuse blow several times in a row: – Check the pump for electrical faults. – Check the pump mains cable and electrical connection.
	Residual current operated circuit-breaker has triggered.	Switch residual current operated circuit-breaker back on. Should the circuit-breaker trip several times in a row: – Check the pump for electrical faults. – Check the pump mains cable and electrical connection.
	Undervoltage	Check the voltage at the pump (observe rating plate data).
	Winding damage	Call customer Services.
	Faulty terminal box	Call customer Services.
	Faulty capacitor (with 1~ only).	Replace the capacitor.

Problem	Motor is switched on but fails to run.			
Cause	Motor protection has switched the pump off as a result of:			
	a) Hydraulic overloading	b) A blockage	c) An excessive pump medium temperature.	d) An excessive ambient temperature.
Remedy	a) Reduce the pump on the pressure side to an operating point which is on the characteristic line.	b) Fully remove the pump vent screw, check and rectify free running of pump rotor by turning the slotted end of the shaft with a screwdriver. Alternative: Disassemble the motor head and check; unblock by turning the impeller where necessary. If the blockage cannot be removed, contact Customer Services.	c) Decrease the pump medium temperature in accordance with the rating plate.	d) Decrease the ambient temperature, e.g. by insulating the pipes and fittings.

D EG - Konformitätserklärung

GB EC - Declaration of conformity

F Déclaration de conformité CEE

Herewith, we declare that this product:

TOP-Z./.

in its delivered state complies with the following relevant provisions:

EC-Machinery directive

Elektromagnetic compatability - directive

90/37/EG

89/336/EEG

To E/ as amended/ avec les amendements suivants:

91/269/EEG

92/31/EEG

93/68/LWG

Low voltage directive

73/23/EEG

To E/ as amended/ avec les amendements suivants:

93/68/EEG

Applied harmonized standards, in particular:

Dortmund, 17.11.2003

EN 809

EN 80336-1.

EN 80336-2-61,

EN 61000-6-1,

EN 61000-6-2,

EN 61000-6-3,

EN 61000-6-4.

i.v. Erwin Priedl

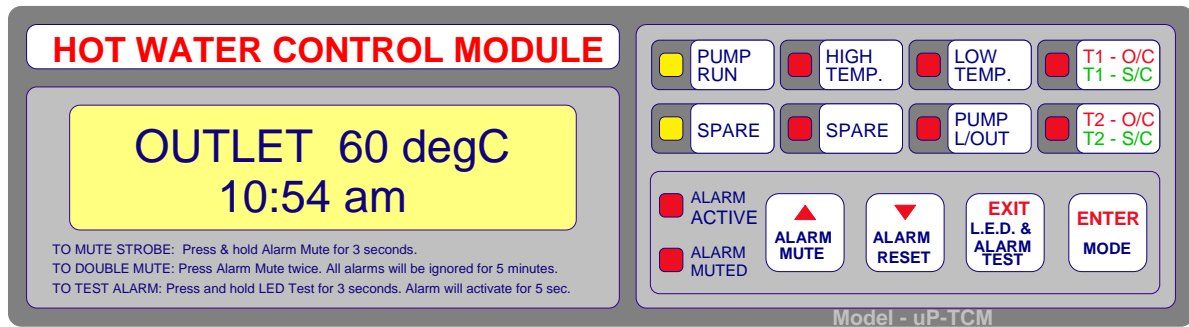
Erwin Priedl
Quality Manager



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Commpak – System Controller - Model uP-TCM-01



The uP-TCM-01 Temperature Control Module is housed in a DIN Rail Mount Enclosure with an equivalent width of 9 poles. This Microprocessor based Module is designed for reliable Temperature Control and Monitoring.

Facia Display Panel:

Four Standard LEDs, Six Bi-Coloured LEDs, One Sixteen Character Two Line Liquid Crystal Display and Four Tactile Push Buttons are incorporated on the Facia Display panel, covered with a Polyester Label.

Outputs:

Five output relays are included in the unit, to provide for Control and Alarm interface functions.

Two relays are dedicated to Pump Control and the other three relays are for Volts-Free monitoring.

The three Volts Free relays are user programmable for various alarm functions.

One audible alarm output: 12VDC – 20ma (mutable) with user programmable maximum ON time facility

One strobe light visual alarm output: 12VDC – 200ma (extinguishable).

The Module also incorporates a comprehensive alarm monitoring and annunciation facilities.

Inputs:

Interface circuitry accommodates for three different types of Temperature Sensors.

The module has provision for simultaneous monitoring of two Temperature Sensors.

Being: T1 for the Return Water and T2 for the Outlet Water.

Note: The temperature sensors are pre calibrated and do not require any adjustment.

Eight digital inputs are also provided to enable / disable various controller functions.

Other Features:

A Set-Up mode is incorporated to allow user access to numerous control parameters (if required) for fine tuning of the control module to best suit the required the application.

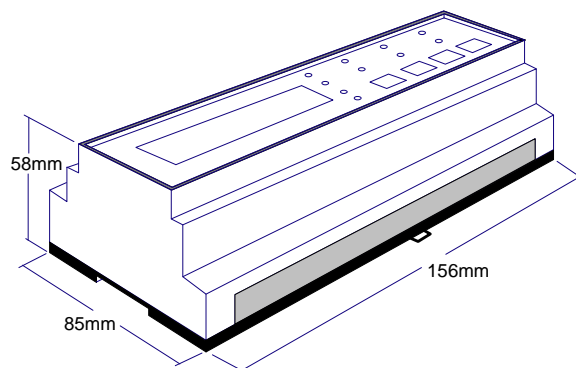
Pump run hours and No. of starts are recorded for up to two pumps.

A real time clock is provided to facilitate up to nine user programmable ON – OFF settings

An alarm fault logger logs up to 40 faults, recording alarm type, time and date. Once 40 faults have been logged, then the oldest fault is over ridden by newest fault.

All set-up parameters and recorded data are stored in non-volatile Eeprom.

All cabling to the Module is performed through plug in connectors.



Commpak – System Controller – Special Features

- Powered from 85 to 260v AC
- All connections to Module are pluggable with all field wiring on one side of module.
- Two channel thermistor interface
- Configurable for three different thermistor types
- Comprehensive Alarm Monitoring
- Indicator and Alarm test facilities
- Inbuilt Hour Run Meters for up to two pumps
- Inbuilt pump start counters for up to two pumps
- Presets Menu for viewing set parameters
- Set-Up mode for changing set parameters
- Temperature sensors are monitored for open-circuit and short circuit condition
- Push Button Beep verification
- All Alarms can be Muted, with any new alarm condition re-instating the alarm
- All alarms can be double muted to provide 5 minutes isolation of Alarms (Maintenance & Testing)
- Two channel Ultra Violet Unit monitor with selectable lock-out condition
- High temperature differential alarm with selectable lock-out condition
- Low temperature differential alarm with adjustable time delay
- Low temperature differential lock-out with adjustable time delay
- Individual pump start and stop settings for up to two pumps.
- Bicoloured LEDs to expand controller functionality
- 16 character, 2 line LCD with LED back lighting
- Real time clock
- Two relay outputs provided for pump control
- Three fully programmable volts-free relay outputs
- Inbuilt code switches to provide additional modes of operation
- Solvent Resistant Polyester Film Label
- Monitoring of up to 8 digital inputs
- Provision for external 12v audible alarm (if inbuilt Piezo is inadequate)
- Provision for external 12v Strobe Light
- Provision for low pressure monitoring (loss of Towns Mains)
- Provision for heater resetting.
- Comprehensive 50 fault data logger with time and date stamping (disabled in double mute mode)
- Selectable Displayed Information during normal mode
- Selectable Alarm Output as Continuous or Timed (for situations where use of audible alarms is restricted)
- Selectable LCD backlight options
- Strobe output can be muted independently of Alarm Output
- Selectable P1 to P2 start delay and P1/P2 Overlap time

Commpak – System Controller - Operation

TEMPERATURE SENSORS:

The module can cater for three different types of thermistors.

Refer to the diagram for jumper settings.

Sensor T1 is assigned to the Return Water. Sensor T2 is assigned to the Outlet Water.

The default display shows Outlet temperature, if dual temperatures are selected then both the outlet and return temperatures are displayed.

Each sensor is continually monitored, and if an open-circuit or a short-circuit condition is sensed, then the audible alarm is activated.

The alarm is indicated on the LCD and also on the respective Sensor LED. Red for o/c, and flashing Green for s/c.

This type of alarm is non latching. Relay outputs are affected if set to Sensor fault or common fault.

If sensor T1 o/c or s/c fault occurs, then the T2 temperature is also assigned to T1, likewise, if sensor T2 o/c or s/c fault occurs, then the T1 temperature is assigned to T1.

If both sensors have o/c or s/c faults then all temperature monitoring will cease, and ?? will replace the temperature reading on the LCD.

ULTRA VIOLET UNIT MONITORING:

Up to two UV units can be monitored.

The input circuitry can be configured for normally open or normally closed.

Individual On and Off time delays are provided.

The output can set to follower or latched.

Output is in the form of the general audible alarm, and a "UV1 Fault" or UV2 Fault" message on the LCD.

Relay outputs are affected if set to UV fault or common fault.

If the UV Lock-out is enabled, then the lock-out LED will activate and the pumps will turn off. The relay output pump lock-out is also affected.

HIGH TEMPERATURE MONITORING:

The high temperature monitor can be set to either of the two temperature sensors T1 or T2.

Individual ON and OFF temperature thresholds are provided.

A time delay of 1-99 seconds is provided.

The output can be configured as a follower or latched.

The high temperature LED (if fitted) will flash during the timing process.

Relay outputs are affected if set to high temp, temp fault or common fault.

If the high temperature lock-out is enabled, then the lock-out LED will activate and the pumps will turn off.

The relay output pump lock-out is also affected.

LOW TEMPERATURE MONITORING:

The low temperature monitor can be set to either of the two temperature sensors T1 or T2.

Individual ON and OFF temperature thresholds are provided.

A time delay of 1-99 minutes is provided.

The output can be configured as a follower or latched.

The low temperature LED will flash during the timing process.

Relay outputs are affected if set to low temp, temp fault or common fault.

LOW TEMPERATURE LOCK-OUT:

The low temperature lock-out can be set to either of the two temperature sensors T1 or T2.

Individual ON and OFF temperature thresholds are provided.

A time delay of 1-99 minutes is provided.

The output can be configured as a follower or latched.

The pump lock-out LED will flash during the timing process.

Relay outputs are affected if set to pump lock-out, temp fault or common fault.

PUMP FAULT MONITORING:

Digital inputs are provided for pump Fault monitoring. These are virtually an instantaneous input.

They are disabled on the single pump controller, but the dual pump controller utilises them to swap the pumps over in the event of a fault.

Pump faults are displayed on the respective LEDs.

The faults are latched. To reset the faults press Alarm Reset.

Commpak – System Controller - Operation

TEMPERATURE CONTROL:

Pump control is primarily set in this section.

The Lead start/stop and lag start can be set to either T1 or T2. The lag stop is fixed to T1.

On a single pump system, the on/off function is set by the LEAD ON and the LEAD OFF temperature, and also by the LAG ON (Low) and LAG OFF temperature.

If the pump is started from the Lead on setting, then the pump Minimum Run Timer MRT will activate (if enabled) causing the pump to run for the MRT time, unless the lead stop temperature has not been reached.

On a dual pump system, the lead pump control is identical, but the lag pump control differs in that there are two independent start temperatures.

The lag start (High) is enabled when the lead pump start/MRT is active, otherwise the Lag Start (Low) is active.

RELAY OUTPUTS:

Three programmable relay outputs, RL1, RL2 and RL3 are provided for volts-free monitoring of the controller.

The relays are a normally open contact set, but the option of setting them individually to non failsafe or failsafe is possible.

Each of the three relays can be set to one of fifteen alarm types, with each relay in addition having a dedicated option.

Refer to the table below for available types.

Note that if relay 3 is set to Heater Reset, then that function is automatically enabled.

If relay 5 is set to common fault, the output mode is preset to failsafe.

CLOCK:

If the Clock is not displayed, then it can be read in Presets mode. In Set-Up mode the time, day and date can be adjusted.

PUMP CONTROL:

The Control page provides additional control functions.

In the single pump controller, the only relevant parameters are the MRT and clock control.

The remaining functions pertain to pump alternation in dual pump systems.

Pump run option determines if two pumps are permitted to run together. The lead pump can be fixed as pump 1 or pump 2, or set to alternate.

Pump alternation can be time based from 1-24 hours, or set at up to two fixed clock times. It is possible to set specific days, or any day.

If alternation is time based, then the two clock settings can be utilised for disabling and enabling the pumps.

HEATER RESET:

If relay RL3 is set to Heater Reset, then the Heater Reset mode is enabled.

This relay is then utilised for switching 240vac to a contactor, whose contact set is arranged as Normally Closed.

If the low temperature instantaneous input remains active for a period of 4 minutes, then RL3 is activated for a period of 30 seconds, isolating the power to the Water Heaters.

After the 30 seconds has elapsed, RL3 de-activates and power is restored to the Water Heaters causing them to reset.

This cycle will continue as long as the low temperature instantaneous input is active.

LOW PRESSURE LOCK-OUT:

The module has the provision to monitor a pressure switch monitoring the Towns Mains pressure to the Hot Water System.

The pressure switch will be configured as contact closure on low pressure.

If a contact closure is sensed continuously for a period of 15 seconds, then the pumps will be locked out. "Low Pressure L/Out" will be displayed on the LCD, and the Pump Lock-Out LED will turn on.

The fault is latched, to reset press Alarm Reset once the low pressure fault has been rectified. Note that the pumps will require priming prior to operating the unit.

ALARM RESET:

Pressing Alarm Reset will reset all latched alarms. If COMMS are enabled, then it will also reset all latched Alarms on all the connected modules.

LED TEST:

Press and hold the LED & Alarm Test button and all LEDs will eliminate while the button is depressed. The bi-coloured LEDs will toggle between red and green in order to check both colours.

Relay Output Options
P1 Run
P2 Run
Pump Run
P1 Ready
P2 Ready
Pump Ready
P1 Fault
P2 Fault
Pump Fault
Low temp
High Temp
Temp Fault
UV Fault
Sensor Fault
Pump Lock-Out
Heater Reset (RL3 only)
Low Pressure Fault (RL4 only)
Common Fault (RL5 only)

Commpak – System Controller - Operation

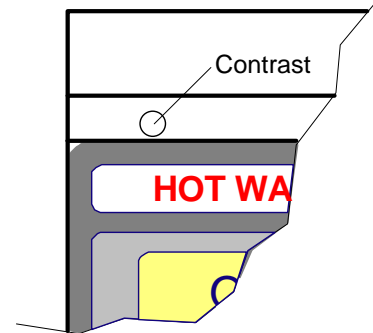
LCD BACKLIGHT:

The LCD is provided with LED backlighting. The Backlight operation can be set to Manual or Automatic, within the DISPLAY page of the Menu System. In Manual mode the Backlight turns on whenever a button is pressed and remains on for X seconds as set in the Backlight On Time. Its range is 10 to 99 seconds. If set to 10 seconds then the Backlight will remain on permanently. In the Automatic Mode the Backlight turns on for any button or alarm operation. The Time On function also applies to this mode after all Alarms are cleared.

LCD CONTRAST:

The LCD contrast is adjustable via a potentiometer, accessed via a hole in the module casing, refer to adjacent drawing.

It is adjusted using a small straight bladed screwdriver. Clockwise to increase & Anti-clockwise to decrease.



ALARM SYSTEM:

The Controller incorporates a comprehensive Alarm Monitor. Any given alarm condition can be muted by pressing the Alarm Mute button. If an Alarm condition clears, but there is still one present, then the Alarm will remain muted. If a new Alarm activates then the Alarm will re-activate. All Alarms will be logged unless the Double Mute Mode is active. When the Alarm is muted the Audible Alarms will be muted, but the Strobe (if fitted) will remain active. To mute the Strobe, press and hold the Alarm Mute button for 5 seconds. If another Fault appears the Alarm and the Strobe will re-activate.

Relay Outputs are affected with various Alarm conditions, refer to the detailed relay output options available.

Alarm Output Mode is another option available within the DISPLAY page of the Menu System. Options are Continuous and Timed. In continuous mode the alarm output remains active until muted or turned off, in Timed mode the Alarm only operates for X minutes then it automatically activates the Alarm Mute mode. If another Alarm appears then the Alarm will re-activate and start timing again. This mode is handy where Audible and Visual Alarms cause problems with neighbouring residents. It is suggested that remote monitoring be used if this mode is utilised.

ALARM TEST:

Press and hold the LED & Alarm Test button for 5 seconds and the LED Test function will turn off, and the Alarm Test mode will be enabled. This function will latch so the button can be released. The Alarm and Strobe (if connected) will operate for 5 seconds. The Alarm Mute function can also be tested also by pressing the Alarm Mute button during the 5 second test period.

ALARM DOUBLE MUTE:

If the Alarm Mute button is pressed twice within 1 second, Double Mute Mode is enabled. The Alarm Muted LED will flash, and all Alarms will be ignored for a 5 minute period. This mode is handy when commissioning installations where numerous Alarms become annoying both locally and remotely on a monitored system. Note that no faults are logged while this mode is active. This mode can be turned off by pressing Alarm Reset or by activating the Alarm Test function.

STROBE OUTPUT:

A 12volt Strobe Output is provided. This will activate whenever the alarm activates. If the alarm is muted, the Strobe will continue to operate. To mute the Strobe, press and hold the Alarm Mute button for 5 seconds. If a different Alarm condition arises, the alarm and strobe will re-activate.

DISPLAY OPTIONS:

Within the DISPLAY page of the Menu System, are display options for the LCD.

This information will be displayed unless a fault message needs to be displayed. The display will rotate through all current fault messages at a 3 second refresh rate.

There are four options as follows:

Temp & Time: Outlet Temperature and Time of day will be displayed.

Pump Stats: The display will circulate the P1 Hours, P2 Hours, P1 Starts and P2 Starts, with a update time of 3 seconds.

Fault Log: The display will show the status of the logger, i.e. Number of faults logged, and if >50 then Log O/Write.

Dual Temps: Outlet Temperature & Return Temperature will be displayed.

Commpak – System Controller - Operation

FAULT LOG:

Unless the Controller is in the Double Mute mode, where all Audible and Visual Alarms are muted for a 5 minute duration, or Set-Up mode where Alarm Parameters can be altered, all Alarm conditions are logged to memory. The Logger will Log the LAST 50 faults. Once the fault count exceeds 50, the logger starts overwriting itself. Each logged fault is time and date stamped.

Enter the Presets mode by pressing the MODE button. Press the DOWN button and "FAULT LOG will be displayed.

Press MODE again, and "VIEW FAULTS" will be displayed, along with "Last 50".

Press MODE again and the number of faults logged will be displayed. Press MODE to display the Last logged fault. Pressing the DOWN button will move down the fault list. Pressing the UP button will move up the Fault List. The logged fault may include one or more faults if they occur simultaneously.

The information displayed on the LCD is Fault No., Fault description, and the Time and Date.

Pressing the EXIT button three times will exit this mode, or it will auto-exit after 60 seconds of button inactivity.

The Fault Log can be cleared from within SET-UP mode.

INFORMATION:

Within the INFORMATION page of the Menu System, is all the relevant information relating to this Controller.

The following Information can be accessed: DiCon company contact details.

Job Number, which should be provided if seeking additional info, or reporting a fault.

Module Serial Number. Module Software Version.

PRESETS MODE:

This mode is used to view all current settings, hour meters, start counters, general information and logged faults.

Once in this mode, the controller will auto-exit after 60 seconds of button inactivity.

To enter this mode press the MODE button, PARAMETERS will be displayed. Refer to the attached drawing, you can see that this is the first page of the Menu System.

Pressing UP will move up through the pages, pressing DOWN will move down through the pages.

When you have reached the relevant page, press ENTER (MODE). This will display either the Sub Page Heading (PARAMETERS page), or the first item within the page.

If within the PARAMETERS page, you will need to press the ENTER button again to select the relevant Sub Page.

Once the display is showing a data item, pressing the UP or DOWN button will move through the available items.

If a particular mode is disabled, then items relating to that mode will not be displayed.

Press EXIT go back one step, or repeat again to exit altogether.

Note that while in this mode, Controller operation is unaffected.

SET-UP MODE:

This mode is to configure the controller to your application. All data viewed within Presets Mode can be altered, except for the following: Hour run meters, Start counters, Job Number, Serial Number, Software version, Firmware version and Contact Details.

To enter this mode, press and hold the **ALARM MUTE** (▲) **ALARM RESET** (▼) and the buttons for 5 seconds. The Power On LED will start flashing, and SET-UP MODE will be displayed on the LCD. Press **MODE** (**ENTER**) button to accept. You can exit by pressing **EXIT**, or the mode will auto-exit after 60 seconds of button inactivity.

Scrolling through the various pages, sub pages and items is identical to the Presets Mode.

When you have an item displayed that you require to be changed, press **ENTER** and the current value will be inserted into brackets.

Press UP (▲) or DOWN (▼) to change the value, then press MODE again to accept the displayed setting. Pressing UP (▲) or DOWN (▼) will move through the items again.

Notes:

If the data to be changed is a 2 digit number, you can press and hold the UP(▲) DOWN (▼) button and it will automatically change, after a short time it will change at a faster rate.

If the data to be changed has more than 2 digits, then the data is changed 2 digits at a time. The current digits will be flashing. To scroll through the pairs of digits press **EXIT**.

If changing in the USER DEFINED display, brackets will not be displayed, as the full 12 characters x 2 lines are available. On entry the first character will be flashing, you can scroll through all the alpha-numeric characters utilising the auto slow/fast mode if desired, and use the **EXIT** button to scroll to the right. To accept this data press **ENTER**, and the currently addressed character will no longer flash.

In the INFORMATION page there is an item called CODE. This option is used to input codes to access secure data within the controller. You will be advised should you ever need to use this option.

MENU INFORMATION DETAILS:

Refer to the respective Menu Column to determine if a particular option is displayed.

If a particular ITEM is disabled, some of the following related ITEMS may not be displayed.

Commpak – System Controller – Presets/Set-Up Mode Selection Ranges:

PAGE	SUB-PAGE	ITEM	OPTIONS	MENU MODE	
				Presets	Set-Up
1 - TYPE		1.1- Hot Water Controller	Single Pump Hot Water Controller, Dual Pump Hot Water Controller	*	*
2 - PARAMETERS	2.1 - UV SYSTEM	2.1.1 - UV Monitoring	Disable, Enable	*	*
		2.1.2 - Input State #	N/Open, N/Closed	*	*
		2.1.3 - On Delay #	0-99 Seconds	*	*
		2.1.4 - Off Delay #	0-99 Seconds	*	*
		2.1.5 - UV Lock-Out #	Disable, Enable	*	*
		2.2.1 -		*	*
	2.2 - RESERVED	2.2.2 -		*	*
		2.2.3 -		*	*
		2.2.4 -		*	*
	2.3 - HIGH TEMP.	2.3.1 - High Temp. Alarm	Disable, Enable	*	*
		2.3.2 - Sensor #	T1, T2	*	*
		2.3.3 - Set On Point #	0-99 deg.C	*	*
		2.3.4 - Set Off Point #	0-99 deg.C	*	*
		2.3.5 - Input Delay #	0-99 Seconds/Minutes	*	*
		2.3.6 - Output Mode #	Follower, Latched	*	*
		2.3.7 - Lock-Out #	Disable, Enable	*	*
	2.4 - LOW TEMP.	2.4.1 - Low Temp. Alarm	Disable, Enable	*	*
		2.4.2 - Sensor #	T1, T2	*	*
		2.4.3 - Set On Point #	0-99 deg.C	*	*
		2.4.4 - Set Off Point #	0-10deg.C	*	*
		2.4.5 - Input Delay #	0-99 Minutes	*	*
		2.4.6 - Output Mode #	Follower, Latched	*	*
	2.5 - LOW TEMP L/OUT	2.5.1 - Low Temp L/Out	Disable, Enable	*	*
		2.5.2 - Sensor #	T1, T2	*	*
		2.5.3 - Set On Point #	0-99 deg.C	*	*
		2.5.4 - Set Off Point #	0-99 deg.C	*	*
		2.5.5 - Input Delay #	0-99 Minutes	*	*
		2.5.6 - Output Mode #	Follower, Latched	*	*
	2.6 - TEMP CONTROL	2.6.1 - Lead Sensor	T1, T2	*	*
		2.6.2 - Lead Start	0-99 deg.C	*	*
		2.6.3 - Lead Stop	0-99 deg.C	*	*
		2.6.4 - Lag Sensor	T1, T2	*	*
		2.6.5 - Lag Start (Low)	0-99 deg.C	*	*
		2.6.6 - Lag Start (High)	0-99 deg.C	*	*
		2.6.7 - Lag Stop	0-99 deg.C (T1 Only)	*	*
	2.7 - RELAYS	2.7.1 - RL1 Output	see Note 2 below	*	*
		2.7.2 - RL1 Mode	Normal, Failsafe	*	*
		2.7.3 - RL2 Output	see Note 2 below	*	*
		2.7.4 - RL2 Mode	Normal, Failsafe	*	*
		2.7.5 - RL3 Output	see Note 2 below	*	*
		2.7.6 - RL3 Mode	Normal, Failsafe	*	*
	2.8 - CLOCK	2.8.1 - Time	Set Time	*	*
		2.8.2 - Day	Set Day	*	*
		2.8.3 - Date	Set Date	*	*
3 - CONTROL		3.1 - Pump Run	One Pump, Both pumps	*	*
		3.2 - Lead Pump	P1, P2, Alternate	*	*
		3.3 - Change-Over	Time, Clock	*	*
		3.4 - Change-Over Time	1-99 Hours	*	*
		3.5 - Lead/Lag Overlap Delay	0-99 Seconds	*	*
		3.6 - Lead MRT	Disable, Enable	*	*
		3.7 - MRT Time #	0-99 Minutes	*	*
		3.8 - Timed Operation	Disable, Enable	*	*
		3.9 - Disable Time #	Time/Day	*	*
		3.10 - Enable Time #	Time /Day	*	*
4 - PUMP STATUS		4.1 - P1 Hours Run	0-999999.99 Hours	*	*
		4.2 - P2 Hours Run	0-999999.99 Hours	*	*
		4.3 - P1 Starts	0-999999 Starts	*	*
		4.4 - P2 Starts	0-999999 Starts	*	*
5 - DISPLAY		5.1 - Displayed Data	Time/Temp, Pump Stats, Fault Log, Dual Temps	*	*
		5.2 - Backlight Mode	Manual, Auto	*	*
		5.3 - Backlight On-Time	10(Always On)-99 Seconds	*	*
		5.4 - Alarm Mode	Continuous, Timed	*	*
		5.5 - Alarm Run Time #	1-99 Minutes	*	*
		5.6 - Spare	Disable, Enable	*	*
6 - INFORMATION		6.1 - DiCon Contact Details	Toggles between 2 screens	*	*
		6.2 - Code Entry	0-9999	*	*
		6.3 - Job Number	25 Alpha Numeric Characters	*	*
		6.4 - Serial Number	0-9999	*	*
		6.5 - Software Version	8 Alpha Numeric Characters	*	*
7 - FAULT LOG	VIEW FAULTS	7.1 - Clear Logger Memory	No, Yes	*	*
		7.2 - View Last 50 Faults	Fault 50 - Fault 1	*	*

Note 1:- # - Not displayed if respective Mode disabled (Page 5, Item 5.8)

Note 2: Relay Output Options: P1 Run, P2 Run, Pump Run, P1 Ready, P2 Ready, Pump Ready, P1 Fault, P2 Fault, Pump Fault, Low Temp, High Temp, Temp Fault, UV Fault, Sensor Fault, Pump Lock-Out Heater Reset (RL3 only), Low Pressure Fault (RL4 only) and Common Fault (RL5 only).

uP-TCM-01 Menu Details

Commpak – System Controller – Specifications:

Power Supply:

100-250v AC, 50Hz
Module Load -: xx mA max
xx mA min

Display Indicators/Display:

4 x 3mm Superbright LEDs.
6 x 3mm Bi-Colour LED

Switches/Facia Push Buttons:

4 Tactile Pushbuttons provided for Module Operation

Control Inputs:

P1-Run, P1-Ready, P1-Fault (time delayed)
P2-Run, P2-Ready, P2-Fault (time delayed)
UV-1Monitor, UV-2 Monitor
Referenced to Module Common
Pump Manual Run Indication (Run LED flashes)

Analogue Inputs:

2 x Temperature Sensor inputs.
0-115 degC, with o/c & s/c detection.

Temperature Sensor Inputs:

Hardware selectable to:-
Type 1: VDO, Type 2-Rheem, Type 3-DiCon

Low Pressure Input:

Utilises one of the Control Inputs,
Fixed time delay Of 15 seconds.

UV Monitor Inputs:

Configurable inputs.
Adjustable ON delay 0-99 seconds.
Adjustable OFF delay 0-99 seconds.
Pump Lock-out option.

High Temperature Alarm:

T1 or T2 selectable.
Separate ON and OFF set points.
Adjustable time delay 0-99 seconds.
Configurable as Latching or Self Resetting.
Pump Lock-out option.

Low Temperature Alarm:

T1 or T2 selectable.
Separate ON and OFF set points.
Adjustable time delay 0-99 minutes.
Configurable as Latching or Self Resetting.

Low Temperature Pump Lock-Out:

T1 or T2 selectable.
Separate ON and OFF set points.
Adjustable time delay 0-99 minutes.
Configurable as Latching or Self Resetting.

Temperature Control:

Lead Pump: T1 or T2 selectable.
Separate ON and OFF set points.
Lag Pump: T1 or T2 selectable.
2 stage (Low & High) ON set points.
Separate OFF (T1 only) point.

Volts Free Contacts:

Programmable as Normal or Fail-Safe.
Programmable Relays RL3, RL4 and RL5
Rated at 240v AC, 2 amp.

Contactor Relays:

Pump 1 and Pump 2 Contactor/Pump Relays.
Rated at 240v AC 10 amp, 3 amp 0.7pf.

Hour Meters:

2 provided, P1 Hours and P2 Hours.
Resolution: 36sec (0.01 hour).
Range: 0.00-999999.99 hours.

Start Counters:

2 provided, P1 Starts and P2 Starts.
Range: 0-99999999 Starts.

Real Time CLock:

Time, day and date
With back-up approx 6 weeks back-up.

Pump Control Modes:

Selectable Lead Pump.
Auto Lead Pump change on pump Time/Clock.
Pump Run Selection – One/Both.
Lead to Lag start delay 0-99 seconds.
P1 to P2 Overlap delay.
Pump disable/enable clock settings.
Lead pump MRT.

Display Modes:

LED Test Mode
User selectable LCD display options: Temp & Time, Pump
Stats,
Fault Log status and Dual Temps.

Alarm Output:

On Board Piezo provides Audible Alarm and Button/Mode
operation verification.
Alarm Modes: Continuous and Timed (1-99 minutes)
Alarm Mute and Double Mute Modes.
Strobe Output (Muteable):
Rating: 12 volt, 200mA max
Sonalert Output (Muteable):
Rating: 12 volt, 20mA max

Display Backlight:

Manual and Auto modes, with adjustable on-time
Range: 10-99 seconds.

Fault Logger:

Capacity: Last 50 Faults, all time and data stamped

Menu Modes:

Presets and Set-Up Modes.

Communications:

On board RS485 Communications are provided for
applications when this product is utilised with other Dicon
modulised products.

Commpak – System Controller – Fault/Status Messages:

Initialising Eeprom:	Controller has rebooted, and loading all default settings into Eeprom.
T1 Sensor Fault:	T1 (return water) sensor is faulty, refer to LED for o/c or s/c fault indication.
T2 Sensor Fault:	T2 (return water) sensor is faulty, refer to LED for o/c or s/c fault indication.
High Temp Fault:	High Temperature Fault Alarm.
High Temp. L/Out:	High Temperature Alarm is active and the pumps are locked Out.
Low Press. L/Out:	Controller has detected a Low Pressure Situation, restore Water Supply, reprime Pumps and press Alarm Reset to clear lock-out condition.
UV-1 Fault:	UV-1 unit has failed, check operation/power supply, tubes etc.
UV-2 Fault:	UV-2 unit has failed, check operation/power supply, tubes etc.
Heater Resetting:	Low Temperature input has been active for at least 4 minutes, so Heaters are being reset.
SET-UP Mode, press Enter:	Set-Up mode has been accessed, press ENTER to enter mode.
Pumps Off Until:	The Pumps have been disabled via the time clock, and will be re-enabled at the displayed time/day.
Controller Locked-Out:	The Controller has been locked-out, contact supplier for further instructions.

Commpak – System Controller – Module Block Diagram:

CONNECTION NOTES:

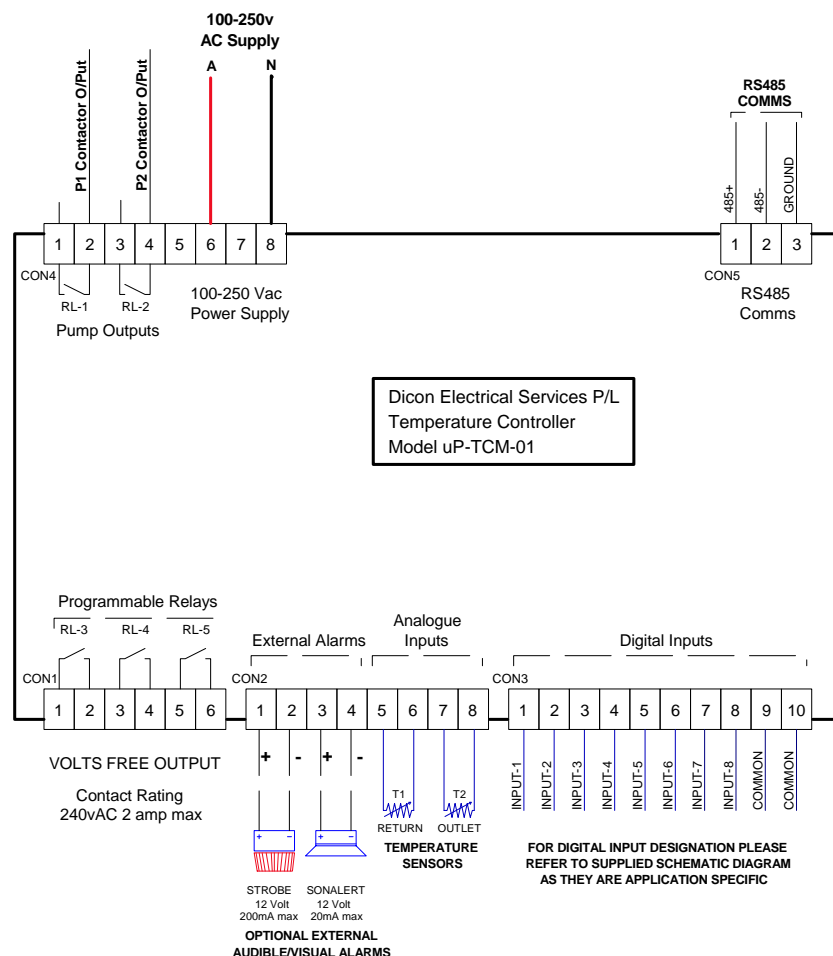
All terminations on the module are pluggable. For ease of Module replacement, each connector can be withdrawn, ensuring that cable connections are not transposed.

Ensure the external alarm output current limits are not exceeded.

The volts free contacts are rated at 240v ac, but be aware of its presence if using some for volts free monitoring.

RS485 comms are ONLY for other DiCon control products, and cannot be used for any other purpose.

The pump relays are configured as isolated contacts in order to provide the option of connecting independent upstream protection for each pump.



Commpak – System Controller – Test Sheet

TEMPERATURE CONTROL MODULE uP-TCM TEST / INFORMATION SHEET							
DICON JOB No.		CLIENT No.		A.C. SUPPLY REQUIREMENTS		VOLTS @ Hz	
MODULE SERIAL No.						AMPS(F.L.C.)	
PROJECT				SOFTWARE VERSION			
				HARDWARE VERSION		uP-TCM-01b	
<small>NOTE: Most of the above information can be viewed within PAGE 6 - INFORMATION of the Menu System. Sensor T1 = Return Sensor T2 = Outlet</small>							
CONTROLLER SET-UP MODE SETTINGS (To View - Presets Mode, To Edit - Setup Mode)							
PAGE 1 : CONTROLLER TYPE				PAGE 3: CONTROL			
Type	Options	Default	As Left		Options	Default	As Left
	1P HW Control, 2P HW Control	2P HW Control					
PAGE 2 : PARAMETERS							
U.V. SYSTEM	Options	Default	As Left	Pump Run	One, Both Pumps	Both Pumps	
UV Monitoring	Disabled, Enabled	Disabled		Lead Pump	Alternate, P1, P2	Alternate	
Input State	N/Open, N/Closed	N/Open		Pump Change	Equalise, Time	Equalise	
On Delay	0-99 seconds	60 seconds		Pump Change Time	1-99 Hours	3 hrs.	
Off Delay	0-99 seconds	90 seconds		Lag Start Delay	0-99 seconds	60 seconds	
UV Lock-out	Disabled, Enabled	Disabled		Lead MRT	Disabled, Enabled	Enabled	
LOW PRESSURE	Options	Default	As Left	MRT Time	0-99 minutes	3 minutes	
On Delay	0-99 seconds	45 seconds		Timed Operation	Disabled, Enabled, Default	Disabled	
Output Mode	Follower, Latched	Follower		If timed operation is enabled, refer settings on reverse of sheet.			
HIGH TEMP.	Options	Default	As Left	PAGE 4: PUMP STATUS			
High Temp Alarm	Disabled, Enabled	Enabled		P1 Hours Run	0-999999.99 hours	0 hours	
Sensor	T1, T2	T2		P2 Hours Run	0-999999.99 hours	0 hours	
Set ON Point	0-99 deg. C	85 deg. C		P1 Starts	0-999999	0 starts	
Set OFF Point	0-99 deg. C	80 deg. C		P2 Starts	0-999999	0 starts	
Input Delay	0-99 seconds	1 second		PAGE 5: DISPLAY			
Output Mode	Follower, Latched	Follower		Displayed Info	Temp/Time, Pump Stats, Logged Faults, Dual temps	Temp/Time	
High Temp Lock-out	Disabled, Enabled	Disabled		Back Light Mode	Manual, Auto	Automatic	
LOW TEMP.	Options	Default	As Left	D/Light on Time	10(Always on)-99 seconds	30 seconds	
Low Temp Alarm	Disabled, Enabled	Enabled		Alarm Mode	Continuous, Timed	Continuous	
Sensor	T1, T2	T2		Piezo Alarm	Disabled, Enabled	Enabled	
Set ON Point	0-99 deg. C	50 deg. C		PAGE 7: FAULT LOG			
Set OFF Point	0-99 deg. C	52 deg. C		Clear Log	No, Yes	No	
Input Delay	0-99 minutes	10 minutes		JUMPER SETTINGS			
Output Mode	Follower, Latched	Follower		<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>Comms</p> <p>EOL RESISTOR</p> <p>SEL 5</p> </div> <div style="text-align: center;"> <p>VDO</p> <p></p> </div> <div style="text-align: center;"> <p>Sensor Type</p> <p>RHEEM</p> <p></p> </div> <div style="text-align: center;"> <p>DICON</p> <p></p> </div> </div>			
Low Temp L/OUT	Options	Default	As Left	<div style="display: flex; justify-content: space-between;"> ASSEMBLED BY: DATE: / / </div>			
Low Temp L/Out	Disabled, Enabled	Enabled		<div style="display: flex; justify-content: space-between;"> TESTED BY: DATE: / / </div>			
Sensor	T1, T2	T2		<div style="display: flex; justify-content: space-between;"> PUMP SET WIRED BY: DATE: / / </div>			
Set ON Point	0-99 deg. C	30 deg. C		<div style="display: flex; justify-content: space-between;"> PUMP SET TESTED BY: DATE: / / </div>			
Set OFF Point	0-99 deg. C	35 deg. C		<div>COMMENTS:</div> <div style="height: 100px; border: 1px solid black;"></div>			
Input Delay	0-99 minutes	3 minutes					
Output Mode	Follower, Latched	Latched					
TEMP. CONTROL	Options	Default	As Left				
Lead Sensor	T1, T2	T1					
Lead Start	0-99 deg. C	40 deg. C					
Lead Stop	0-99 deg. C	60 deg. C					
Lag Sensor	T1, T2	T2					
Lag Start	0-99 deg. C	55 deg. C					
Lag Stop	0-99 deg. C	50 deg. C (T1)					
RELAYS	Options	Default	As Left				
Relay 3 Output	see below	Pump Fault					
Relay 3 Mode	Normal, Failsafe	Normal					
Relay 4 Output	see below	Temp Fault					
Relay 4 Mode	Normal, Failsafe	Normal					
Relay 5 Output	see below	Common Fault					
Relay 5 Mode	Normal, Failsafe	Failsafe					
CLOCK	Options	Default	As Left				
Time							
Day							
Date							
RI 3, RI 4 & RI 5 Output Options	<div> P1 Run, P2 Run, Pump Run, P1 Ready, P2 Ready, Pump Ready P1 Fault, P2 Fault, Pump Fault, Low Temp, High Temp, Temp Fault, UV Fault, Sensor Fault, Pump L/Out, Heater Reset (RL3 only) Low Pressure (RL4 only), Common Fault (RL5 only) </div>						
Notes:	All fault conditions are included in Common Fault Sensor T1 = Return, Sensor T2 = Outlet						

Commpak – System Controller – Test Sheet

TEMPERATURE CONTROL MODULE - PAGE 2

DICON JOB No.	CLIENT No.	A.C. SUPPLY	VOLTS @	Hz
MODULE SERIAL No.		REQUIREMENTS	AMPS(F.L.C.)	
PROJECT		SOFTWARE VERSION		
		HARDWARE VERSION	uP-TCM-01b	

TIMED OPERATION SETTINGS (only applicable if function Enabled within Control Page)

FUNCTION	Options	Default	As Left		FUTURE CHANGES - DATE:	
# Switched Input	Disabled, Enabled	Disabled				
FUNCTION	# TIME SETTINGS		# RANGE SETTINGS		TIME	DAY
	Default	As Left	Default	As Left		
OFF - 1	1:00 AM	am/pm	Off			
ON - 1	5:00 AM	am/pm	Off			
OFF - 2	1:00 AM	am/pm	Off			
ON - 2	5:00 AM	am/pm	Off			
OFF - 3	1:00 AM	am/pm	Off			
ON - 3	5:00 AM	am/pm	Off			
OFF - 4	1:00 AM	am/pm	Off			
ON - 4	5:00 AM	am/pm	Off			
OFF - 5	1:00 AM	am/pm	Off			
ON - 5	5:00 AM	am/pm	Off			
OFF - 6	1:00 AM	am/pm	Off			
ON - 6	5:00 AM	am/pm	Off			
OFF - 7	1:00 AM	am/pm	Off			
ON - 7	5:00 AM	am/pm	Off			
OFF - 8	1:00 AM	am/pm	Off			
ON - 8	5:00 AM	am/pm	Off			
OFF - 9	1:00 AM	am/pm	Off			
ON - 9	5:00 AM	am/pm	Off			

Timed Operation Function Description

Note 1 # Switched Input

When Enabled, Input No. 5 by-passes the timed operation & reverts to 24 hour temperature control.
If the input is OPEN, Clock operation has control. If CLOSED the clock operation is bypassed.
The manual bypass does not change any time/day setting within this page.

Note 2 # Time Settings : Nine (9) OFF & ON settable times available.

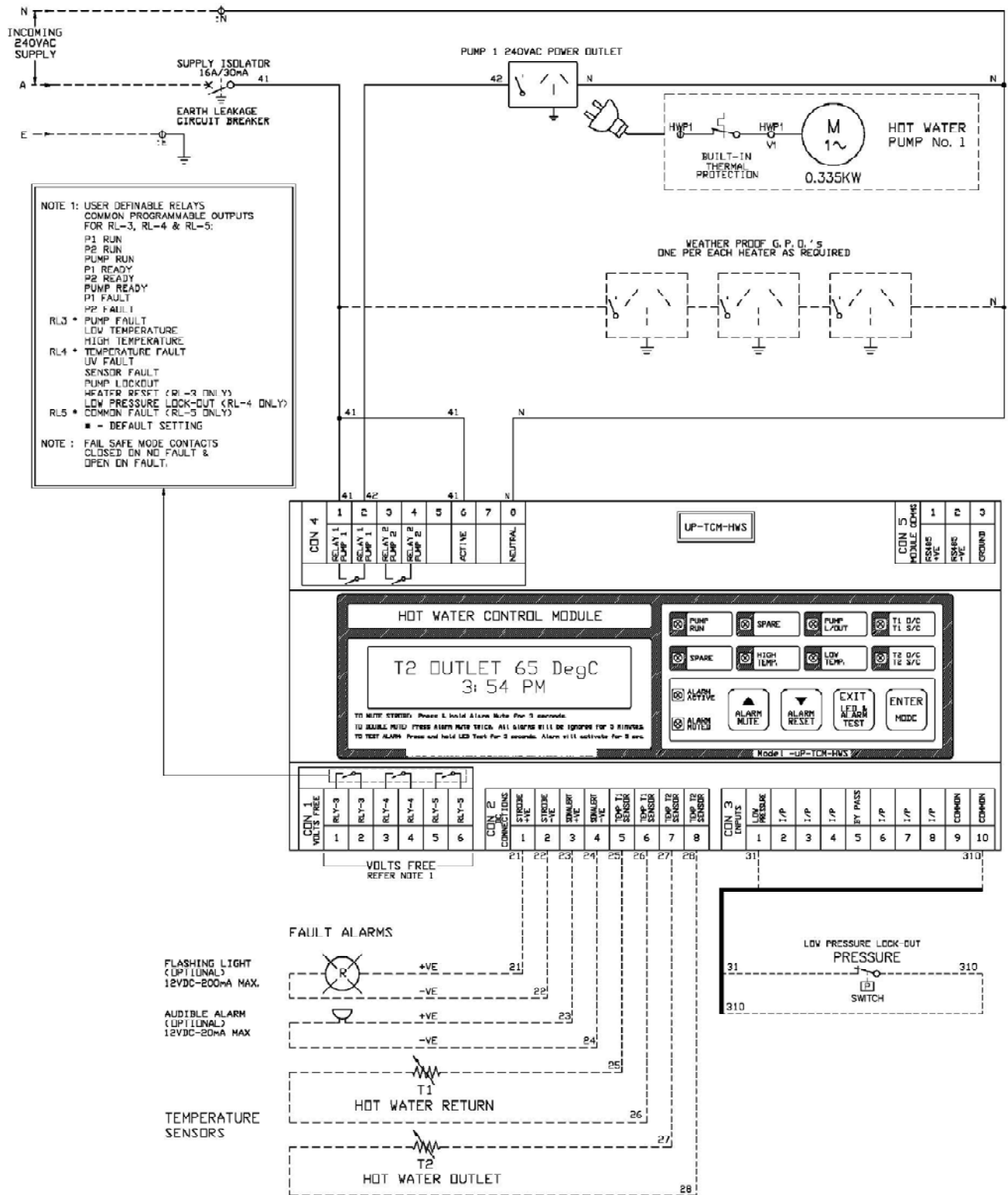
Note 3 # Range Settings : Each range setting can be assigned as:

ANY : Reoccurs for everyday of the week.

MON, TUE, WED, THUR, FRI, SAT, SUN : Occurs on a set day of the week.

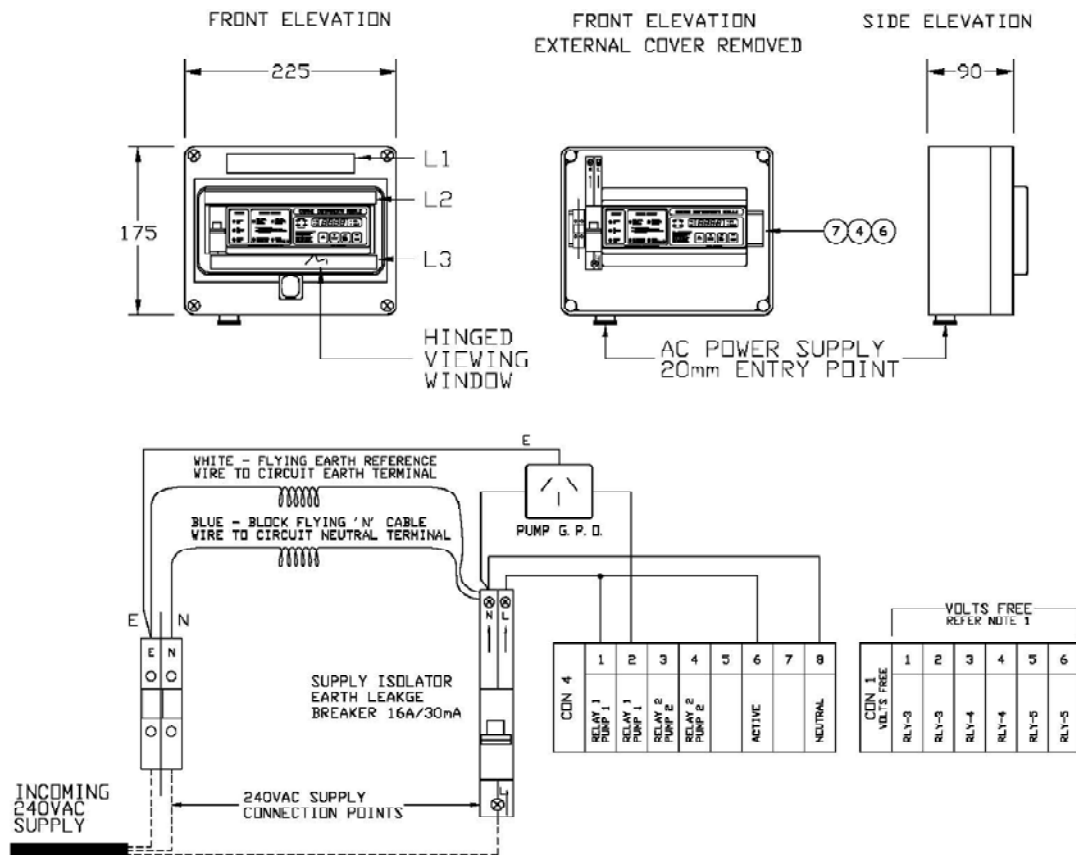
OFF : Indicates that the current OFF/ON setting is disabled.

Commpak – Single Pump Wiring Schematic



Commpak – Single Pump Lay-out & Material Schedule

LAY-OUT DETAILS



MATERIAL SCHEDULE

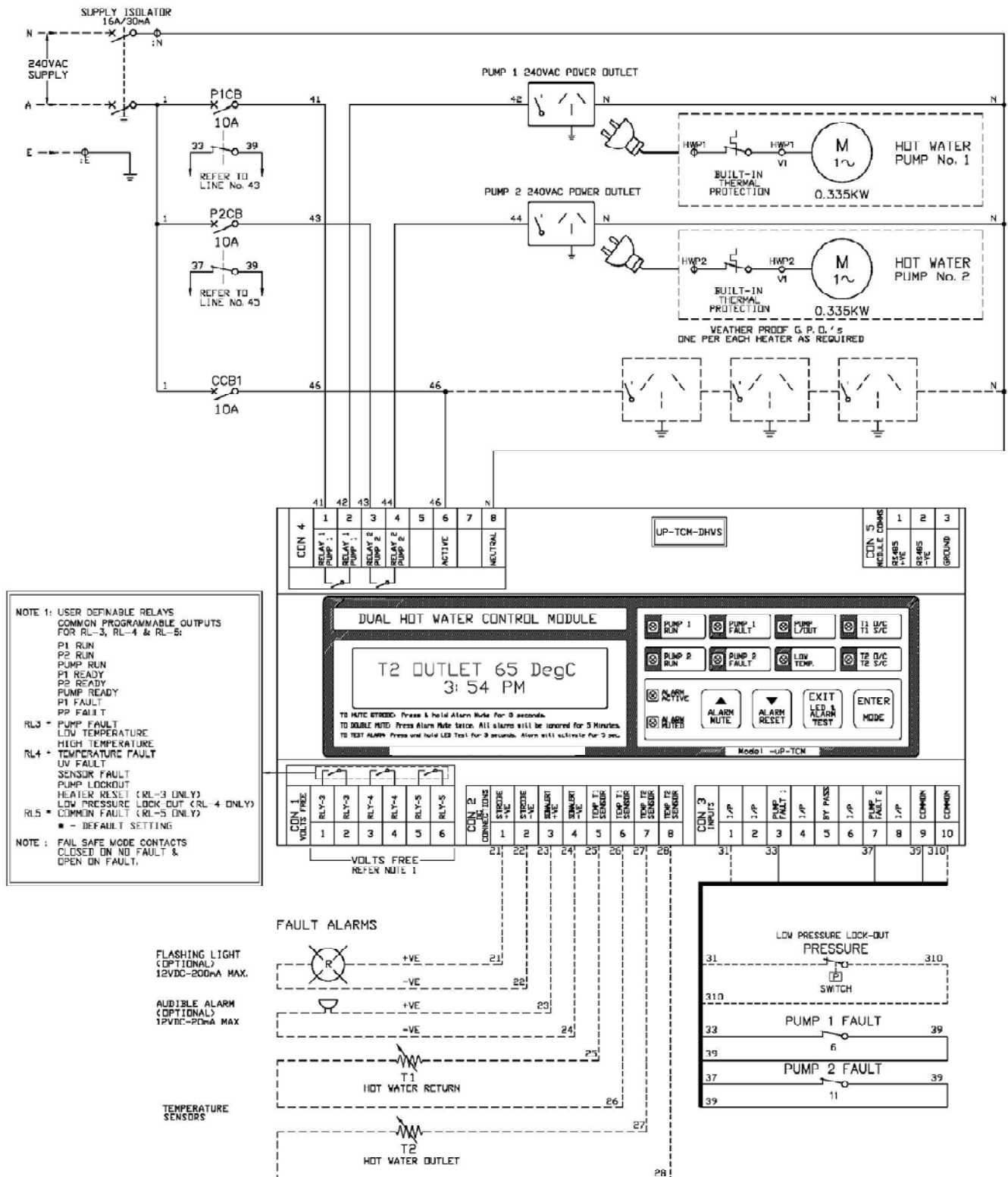
REF. No.	DESCRIPTION	SUPPLIER	PART No.
1			
2			
3			
4	CIRCUIT BREAKER	ABB	S271-C16 16A/30mA
5			
6	HOT WATER MODULE		UP-TCH-HMS
7	TERMINAL	WEIDMULLER	VDU4 0.5-4mm 750V/35A
8			
9			
PANEL CONSTRUCTION		POLYCARBONATE ENCLOSURE COLOUR : LIGHT GREY PROTECTION : IP55 COMPLETE WITH HINGED CLEAR POLYCARBONATE CLIP DOWN VIEWING WINDOW	

LABEL SCHEDULE

L1		L3	WARNING 240VAC ISOLATE BEFORE REMOVING COVER
L2	240VAC ISOLATOR		HOT WATER CONTROLLER

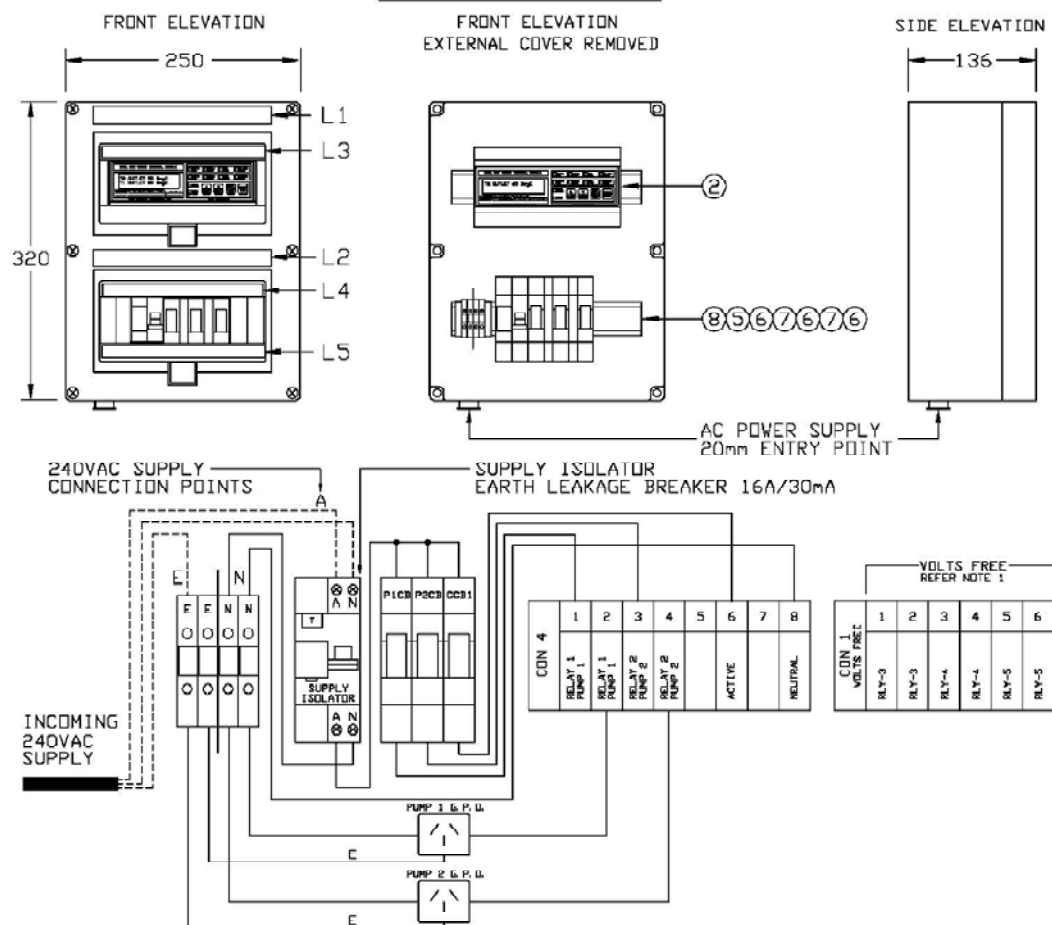
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Commpak – Dual Pumps Wiring Schematic



Commpak – Dual Pumps Lay-out & Material Schedule

LAY-OUT DETAILS



MATERIAL SCHEDULE

REF. No.	DESCRIPTION	SUPPLIER	PART No.
1			
2	HOT WATER MODULE		UP-TCM-DHWS
3			
4			
5	ISOLATOR	ABB	D9951C16 16A/30mA
6	CIRCUIT BREAKER	*	S201-C*** **A
7	CIRCUIT BREAKER AUX. BLOCK	*	S2CH6R
8	TERMINAL	WEIDMULLER	WDU4 0.5-4mm ² 730V/35A
9			
	PANEL CONSTRUCTION	POLYCARBONATE ENCLOSURE COLOUR : LIGHT GREY	PROTECTION : IP55
		COMPLETE WITH HINGED CLEAR POLYCARBONATE VIEWING WINDOW	

LABEL SCHEDULE

L1		L4	ISOL. P1CB P2CB CCB1
L2	HOT WATER CONTROLLER	L5	WARNING 240VAC ISOLATE BEFORE REMOVING COVER
L3	UP-TCM-DHWS		

** - RED LETTERING ON WHITE BACKGROUND

Rheem Australia Pty Ltd

ABN 21 098 823511

FOR SERVICE TELEPHONE

131 031 Within AUSTRALIA
0800 657 335 Within NEW ZEALAND

FOR SALES TELEPHONE

132 552 Within AUSTRALIA
0800 657 336 Within NEW ZEALAND

WWW.RHEEM.COM.AU

Commpak – Commercial Warranty

- ☐ One (1) year parts and labour.
- ☐ Five (5) years on the new heat exchanger, free of charge, with installation and labour costs being the responsibility of the owner

NOTE: Every care has been taken to ensure accuracy in preparation of this publication.
No liability can be accepted for any consequences, which may arise as a result of its application.

COMES ON STEADY, HOT AND STRONG

INSTALL A

