TYNEHAM HEAT PUMP CONTROL

Hot water preheating with gaz complement

INSTALLATION, COMMISSIONING AND SERVICING INSTRUCTIONS

For all Tyneham heat pumps

IMPORTANT NOTE

THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT

Hamworthy

Customer After Sales Services

Telephone: 0845 450 2866 E-mail: aftersales@hamworthy-heating.com Fax: 01202 662522

Technical Enquiries

To supplement the detailed technical brochures, technical advice on the application and use of products in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

Site Assembly

Hamworthy offer a service of site assembly for many of our products in instances where plant room area is restricted. Using our trained staff we offer a higher quality of build and assurance of a boiler built and tested by the manufacturer.

Commissioning

Commissioning of equipment by our own engineers, accredited agents or specialist sub-contractors will ensure the equipment is operating safely and efficiently.

Maintenance Agreements

Regular routine servicing of equipment by Hamworthy service engineers inspects the safety and integrity of the plant, reducing the risk of failure and improving performance and efficiency. Maintenance agreements enable our customers to plan and budget more efficiently.

Breakdown service, repair, replacement

Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents throughout the UK.

Spare Parts

A comprehensive spare parts service is operated from our factory in Poole, providing replacement parts for both current and discontinued products. Delivery of parts and components is normally from stock within seven days. However, a next day delivery service is available for breakdowns and emergencies.

TABLE OF CONTENTS

1. WARNINGS AND COMPLIANCE

1.1. Unpacking and reservations

With the carrier present, carefully check the general appearance of the packaging and of the control panel. If in doubt, do not use the appliance.

In the event of disagreement, write to the carrier within 48 hours mentioning all reserves and send a copy of this letter to the After Sales Department.

Storage

The control panel:
- must be arranged horizontally in a place where the temperature is between 0 °C and +45 °C
- must be protected from humidity.

Symbols used in this document

INFORMATION: This symbol draws attention to comments.

CAUTION: Failure to follow these instructions may cause damage to the installation or to other objects.

WARNING: Failure to comply with these instructions may cause injury and serious damage to property.

WARNING: Failure to comply with these instructions may cause electrocution.

Compliance with European Directives

Low voltage (2006/95/CE)
- This appliance complies with all requirements of current I.E.E (BS7671) Wiring Regulation.
- This appliance is not intended for use by persons (including children) whose physical, sensory or mental abilities are reduced, or persons without experience or knowledge, unless they have been able to benefit, through someone responsible for their safety, from supervision or prior instruction concerning the use of the appliance.
- Children must be supervised to ensure they do not play with the appliance.

Electromagnetic compatibility (2004/108/CEE)

- This appliance conforms with all requirements of the electromagnetic compatibility directive BS EN61000 - 6 - 1, BS EN61000 - 6 - 3.
- This is a class A appliance. In a residential environment, this appliance may cause radio-electric interference. In this case, the user may be asked to take appropriate measures.

Environmental compatibility

- This appliance contains electrical and electronic elements which must not be disposed of with household waste.
- Local legislation must be complied with.

Installation and maintenance rules

The control panel must be installed and maintained by an approved professional in accordance with the prevailing regulations and code of practice, particularly current I.E.E (BS7671) Wiring Regulations..

	**CAUTION:**	Before opening the Tyneham Heat Pump Control regulator unit, make sure that no water is present on the top of the case.
	**CAUTION:**	The control panel is classified as an appliance which is not accessible to the public (closed electrical operating zone).
	**CAUTION:**	The control panel must only be used for the purpose for which it was designed; any other use must be considered inappropriate and therefore dangerous.
	**CAUTION:**	The appliance must be sheltered from rain, snow and frost.
	**WARNING:**	The regulation box and its components must not be exposed to a temperature higher than 45°C when it is in service.
	**INFORMATION:**	This product must be assembled, used and maintained in compliance with the information provided in these technical instructions.
	**DANGER:**	Always turn the control panel off before carrying out any work on it.
	**DANGER:**	Always turn the control panel off before carrying out any work on the Tyneham Heat Pump Control, Tyneham or other heating elements (pumps, valves, etc.) controlled by the control panel.

2. TECHNICAL SPECIFICATIONS

2.1. General

The control panel is used to control the heat pump and the hydraulic station. In this way, it is possible to produce domestic hot water according to the Tyneham Heat Pump Control operating mode.
For further information on the operating logic, see chapter: 8.4.1 Load regulation*.

2.2. Dimensions

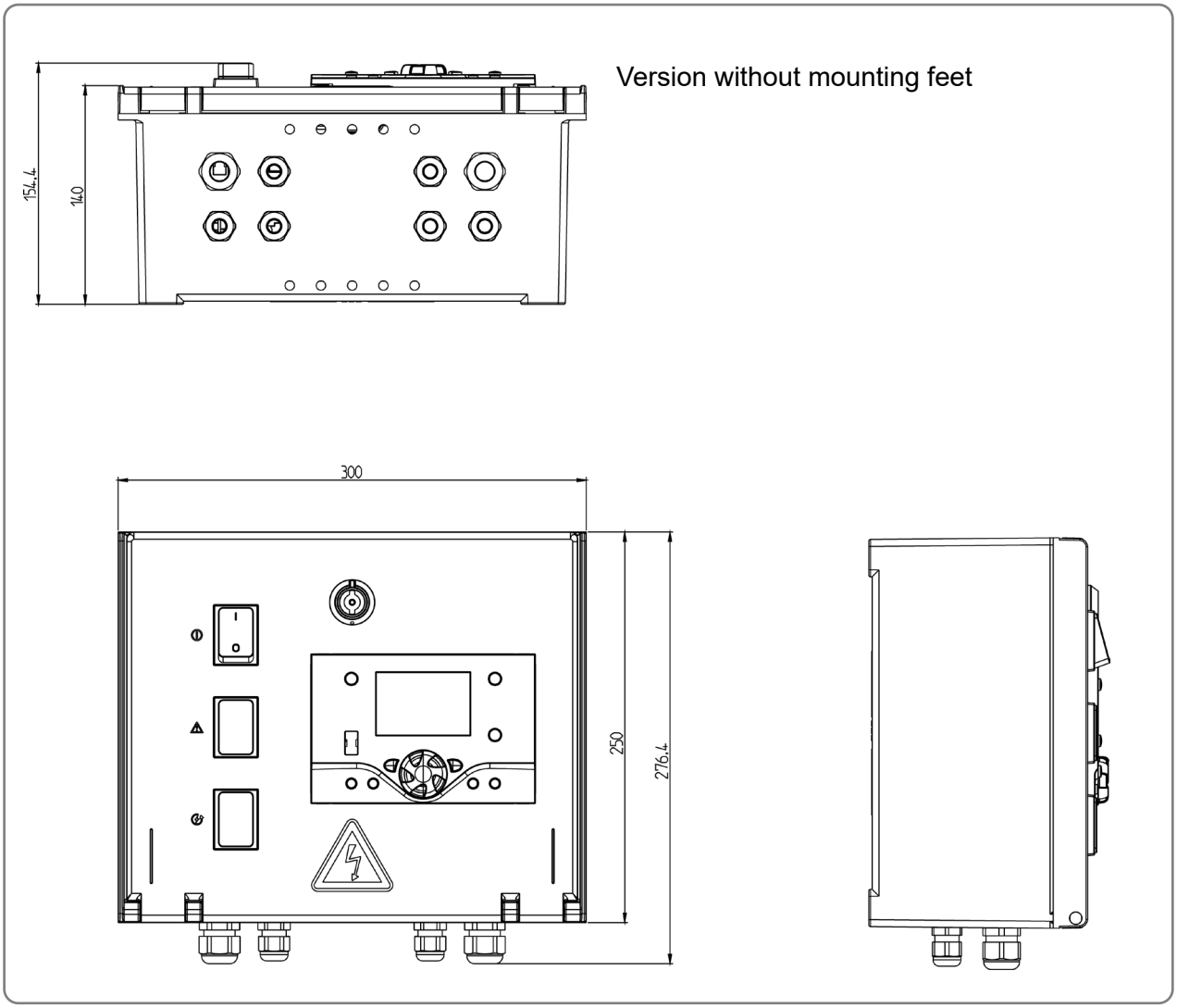


figure 1 - Dimensions (in mm)

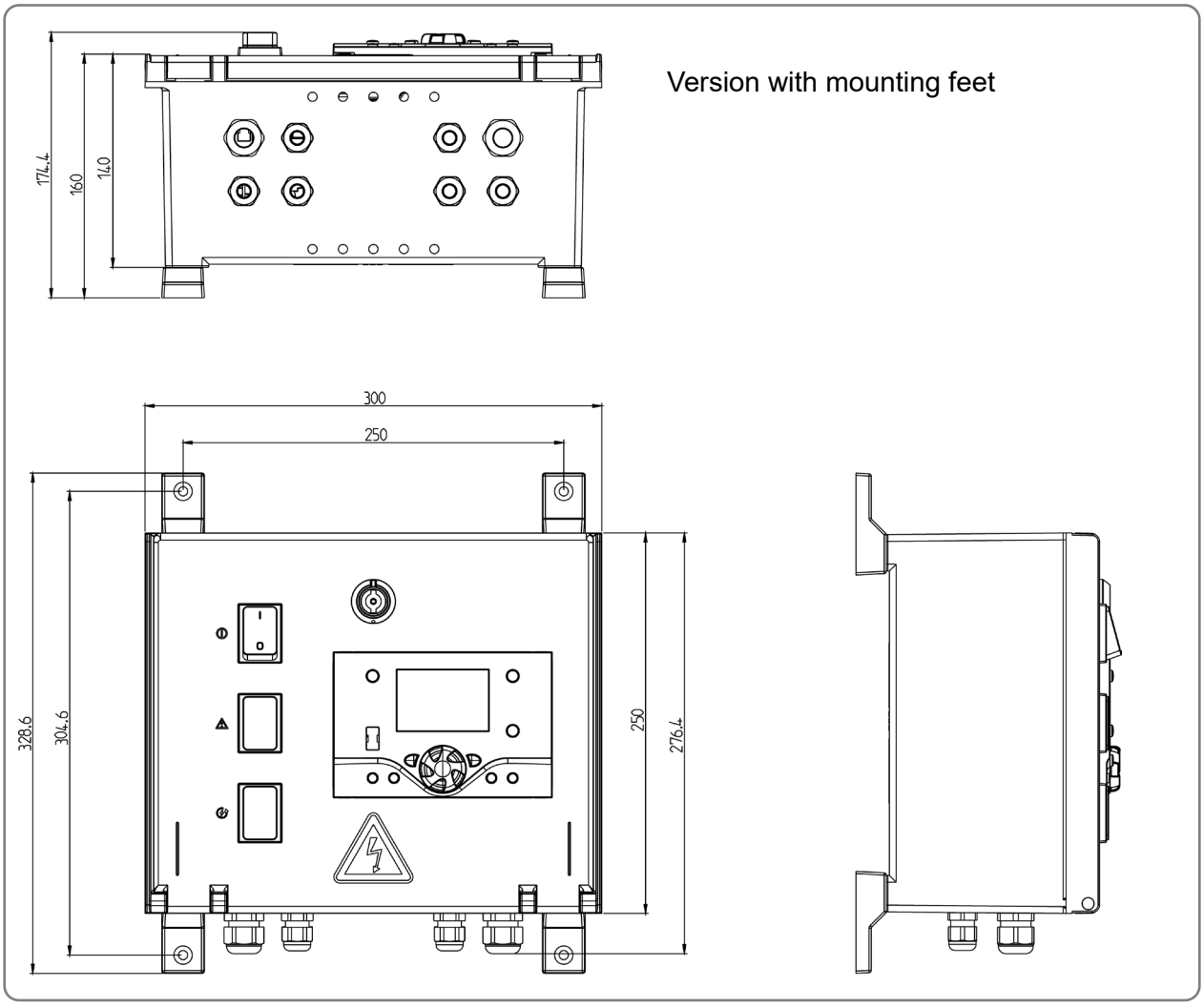


figure 2 - Dimensions (in mm)

2.3. Delivered unit

- Case
- Servicing, installation and maintenance instructions
- Wiring diagram
- Locking key
- Mounting kit (mounting feet + bolts)

2.4. Technical data

Name of manufacturer	HAMWORTHY
Unique reference	Tyneham Heat Pump Control
Single-phase power supply	230 VAC 50Hz
Rated current	6 A
Casing protection index	IP21
Pollution level	Pollution level II
Protection index	Class I (surge voltage = 800 V)
Electrical consumption	On standby: 10W When in operation: Depends on appliances plugged in (pumps, mixing valves)
Relative humidity	<95%
Terminal output power	Voltage: 230V AC (+10%/-15%) Amperage: 2A max. per low voltage output
Type of printed circuit board(s) coating	EPOXY FR4 FT glass
Weight	3.4Kg

2.5. Basic equipment

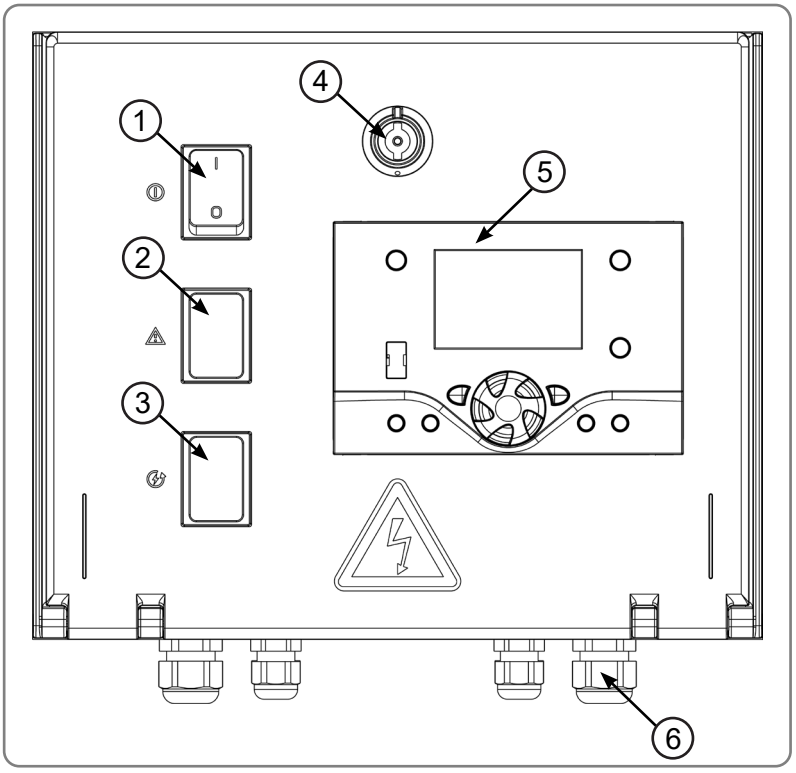


figure 3 - Outside view

1. On switch
2. Fault light
3. Cover
4. Lock
5. Control panel display
6. Packing gland

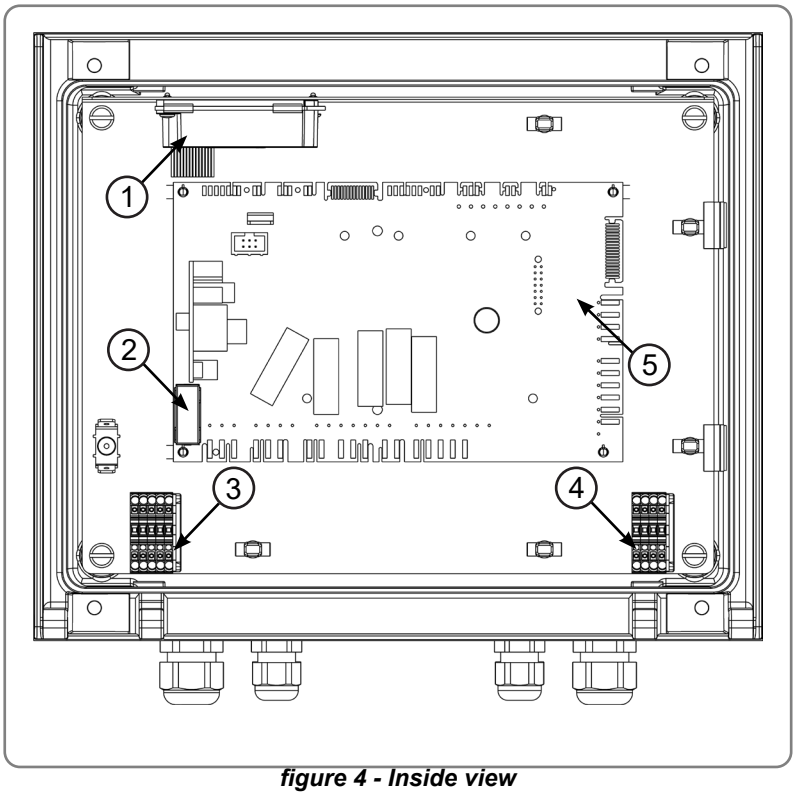


figure 4 - Inside view

1. OCI 351
2. Fuse slot
3. Low voltage power supply terminal block
4. Very low voltage power supply terminal block
5. RVS 21 main circuit board

CAUTION:	The RVS 21 regulator is protected with a 6.3 A fuse. The total load of the consuming elements connected to this regulator must not be more than 6.3 A.

INFORMATION:	The electrical connection diagrams (temperature sensors, etc.) are provided in accordance with the hydraulic configuration.

CAUTION:	The maximum amperage on each of the commanded outputs must not be more than 2 A. The regulation board relays cannot accept a higher load.

3. INSTALLATION

3.1. Installation of the control panel

3.1.1. Installation recommendations

The Tyneham Heat Pump Control control panel must be installed in a technical area. Avoid installing the regulating system under a water pipe.

The equipment is intended to be wall mounted, using screws and anchors supplied (to be adapted to suit the wall structure), at operator height to facilitate the use of the control panel display.

3.1.2. Version with mounting feet

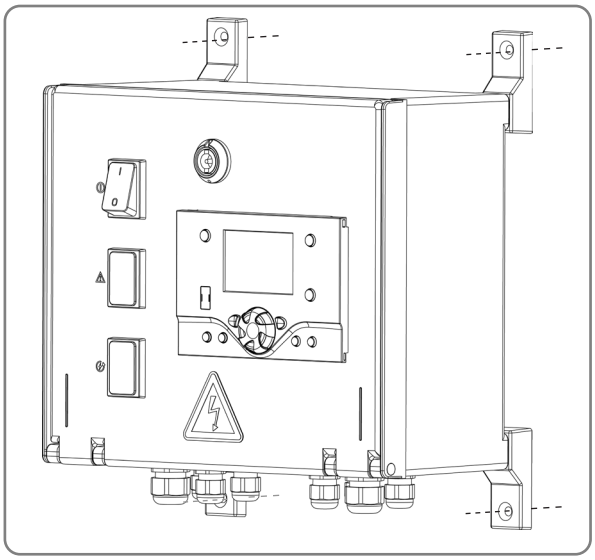


figure 5 - Screw locations

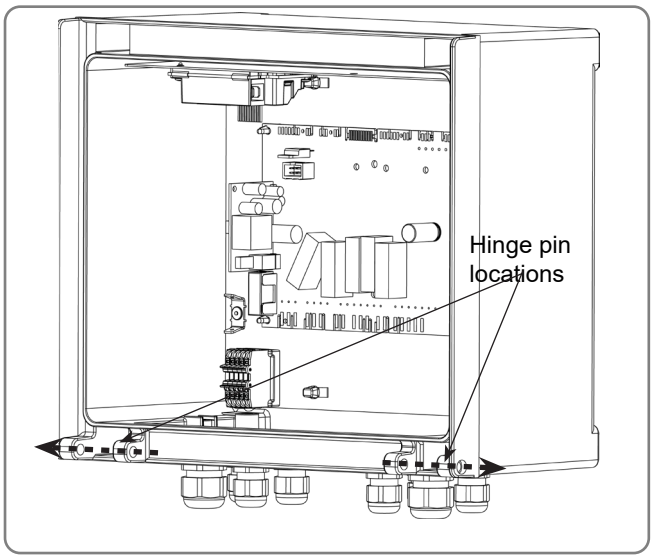


figure 6 - Door hinge pin locations

- Open and remove the door by removing the hinge pins shown in figure 6 from the outside.
- Attach the mounting feet using the four screws supplied in the bag.
- Refit the door by proceeding as for removal but in the reverse order.
- Mount the case level using the screws provided.

3.1.3. Version without mounting feet

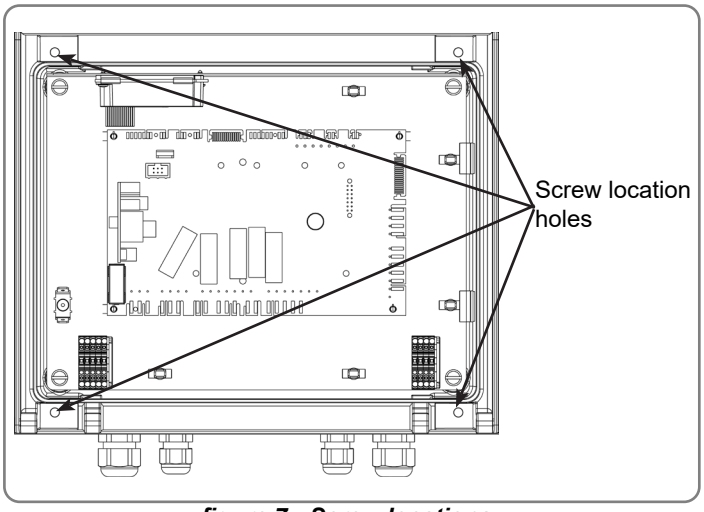


figure 7 - Screw locations

- Open and remove the door by removing the hinge pins shown in figure 6 from the outside.
- Insert the anchors into the wall (if required) using the holes in the case as a pattern, see figure 7.
- Mount the case level using the screws provided.
- Refit the door by proceeding as for removal but in the reverse order.

3.2. Installation of flow sensor in the tank or decoupling bottle

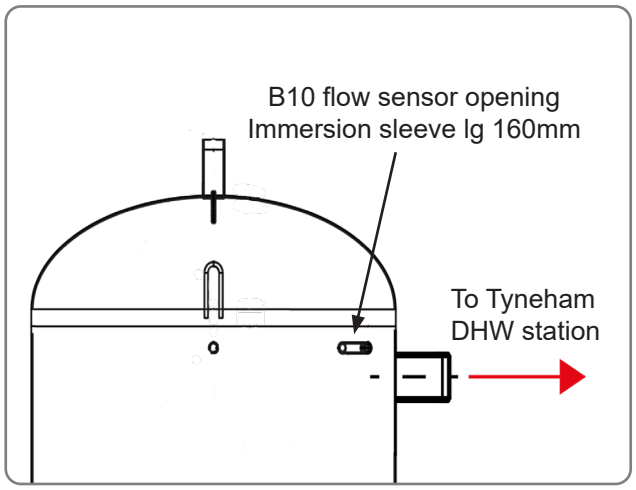


figure 8 - Flow sensor on decoupling tank

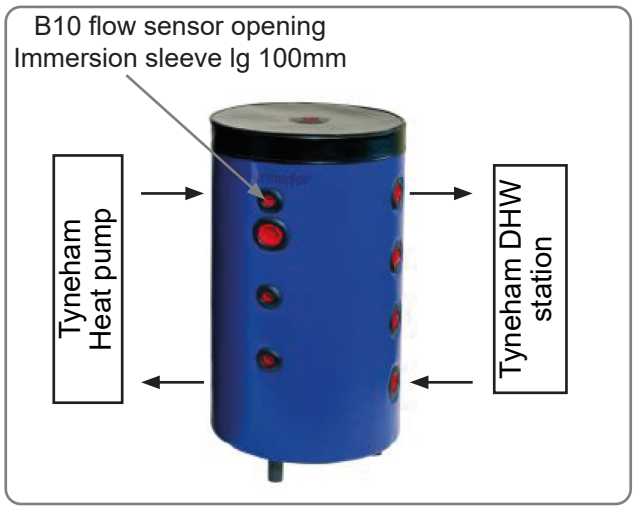


figure 9 - Flow sensor on decoupling bottle

The initial temperature sensor B10 must be located at the top of the water tank as close as possible to where the heating outlet connection. Refer to the drawings for the heating system design to determine the precise location.

Mount the specific Tyneham immersion sleeve supplied with the tank or bottle in the opening located in the upper section.

- on a bottle : 100mm immersion sleeve to be placed in the upper opening at 90° from the flow opening.

- on a primary water tank: 160mm immersion sleeve to be placed in the upper opening at 45° from the flow opening.

Temperature sensor B10 is inserted all the way into the immersion sleeve and held in place using the seal provided.

CAUTION: **Use the specific Tyneham immersion sleeve supplied with the tank or bottle.**

3.3. Electrical connection

CAUTION:	Do not pull the electrical cables and remove them from heat sources.

WARNING:	Only carry out electrical connections, in particular connection to the main supply, when all other fitting and installation work is completed.

WARNING:	Installations carried out by the customer (cable runs, gas or fuel pipes, etc.) must not be fitted to the Tyneham's jacket!

3.3.1. Installation passage ways

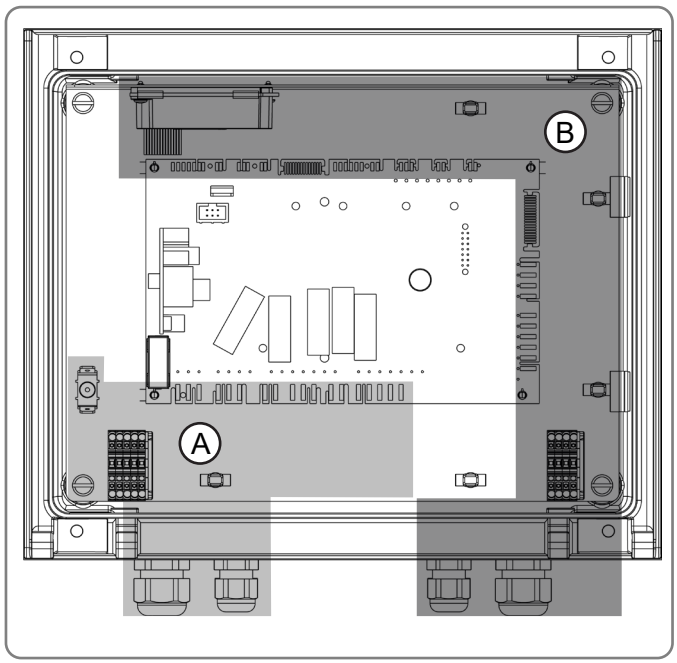


figure 10 - LV and ELV wire passage ways

A Power cable passage area
(LV: between 50V AC and 400V AC).

B Signal wire passage areas (sensors sensors et communication)
(ELV: voltage lower than 20V DC).

DANGER:	Comply with the cabling areas and separation of LV and VLV cables.

3.3.2. Tyneham Heat Pump Control wiring diagram

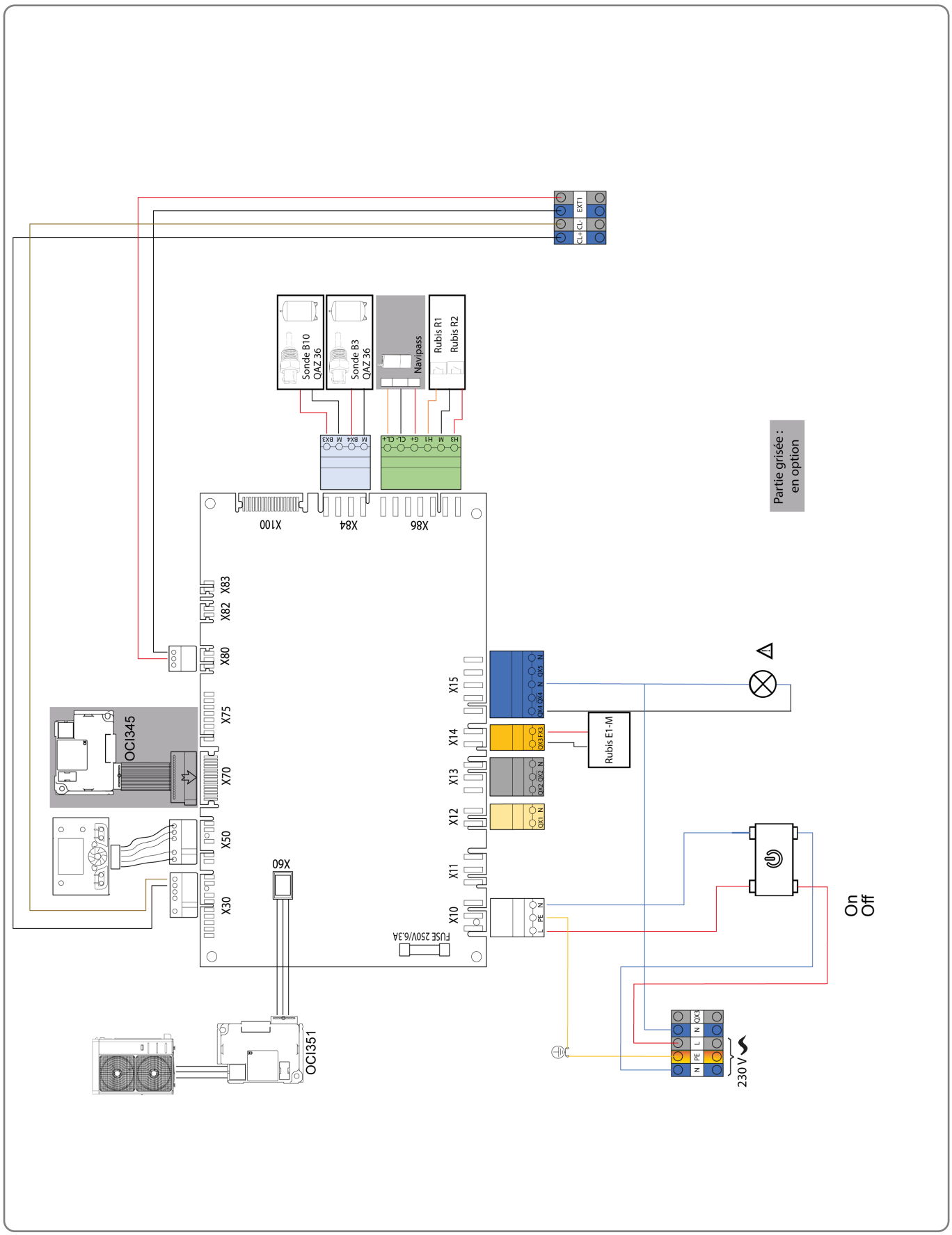


figure 11 - Tyneham Heat Pump Control wiring diagram

3.3.3. Tyneham Heat Pump Control main supply wiring

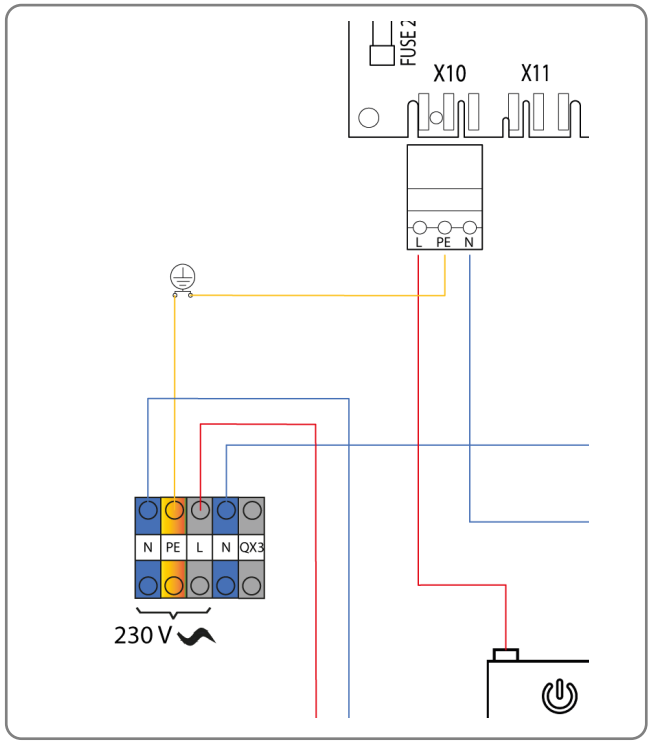


figure 12 - Connecting the mains supply for the Tyneham Heat Pump Control

Mains supply for the Tyneham Heat Pump Control: 230 V AC 50 Hz
Maximum intensity: 6.3 A
Type of cable: 3 G 1.5 mm²

The installation is done directly by pressing with rigid cable or using a screw turner in case of use of flexible cable.
The cable sections above are given as an indication and do not exempt the installer from checking that they correspond to the needs and meet the national and local standards in force. If a cable is damaged, it must be replaced by the manufacturer, its after-sales service or any person of similar qualification to avoid any danger.
Tow presses must be tightened tightly enough to withstand cable traction up to 60N.

CAUTION: The Tyneham Heat Pump Control must be powered by special protected lines from the boiler room's electric panel via two-pole circuit breakers.

3.3.4. Heat pump communication bus connection

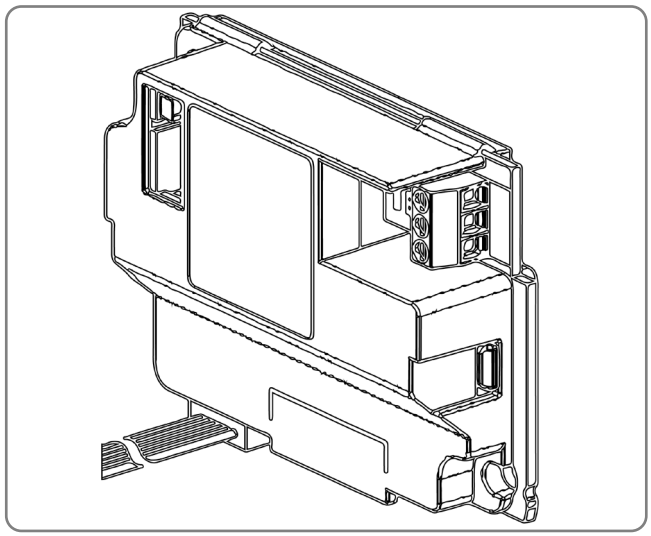


figure 13 - HP communication bus connection

Connection of the communication cable between the heat pump and Tyneham Heat Pump Control with OCI351:

Tyneham Heat Pump Control controls the Tyneham heat pump via preset communication functions.

Connections are made by:
- Shielded twisted pair
- Max. length: 1000 m
- Section: 0.5mm²
- Bus termination : 120 Ohm

		AHP60 14/18	AHP60 26/32	AHP60 50/70
Tyneham Heat Pump Control	A	X-5.2	XC-2.2	R+
	B	X-5.1	XC-2.1	R-
	REF	X-4.1	XC-1.1	GND

3.3.5. Connection to the main regulator

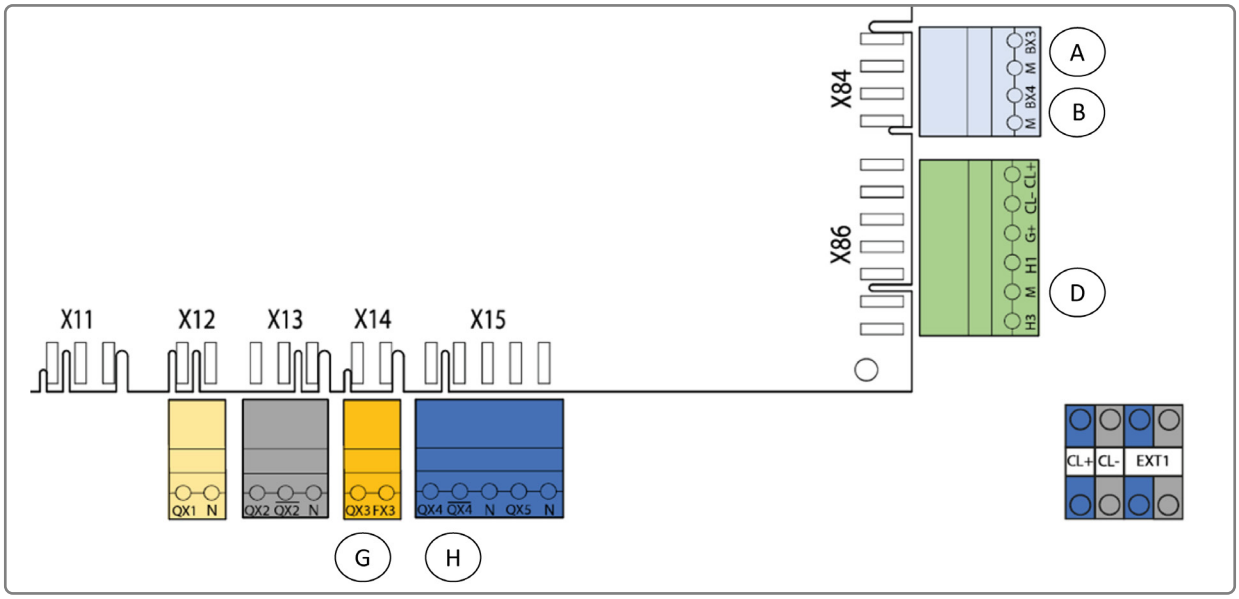


figure 14 - Connection to the main regulator

A Connection of decoupling bottle flow sensor QAZ36.

B Connection of DHW pre-heating tank sensor.

D Connection of W3100 hydraulic station with H1-M = R1 (NO and Com respectively), and H3-M = R2 (NO and Com respectively)

G Connection of Rubis E1

H Connection of the HP(s) alarm summary relay output and the hydraulic station:

Factory wired to the Tyneham Heat Pump Control alarm light

A 230V output can be wired in parallel to remotely report the data to a boiler room indicator or a PLC.

3.3.6. Changing the Fuse

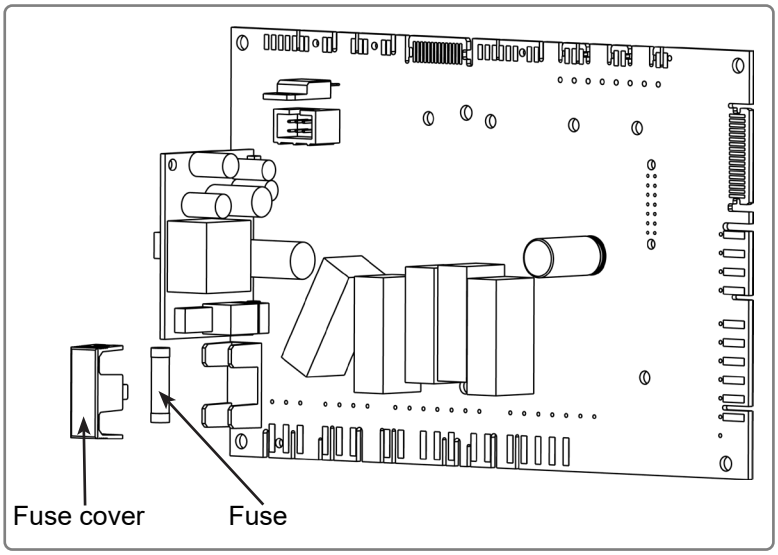


figure 15 - Fuse slot

- Set the switches to "Off".
- Switch off the electric power supply to the controller
- Open the door using the key.
- Remove the fuse cover.
- Remove and replace the fuse.
- Close the door and switch the power back on.

Fuse technical specifications:
Timed fuse
T 6.3A H 250V AC
5 x 20 mm

3.3.7. Closing the control panel

When all connections have been made, close the control panel.

⚠	**WARNING:**	To close the control panel, use the key provided.

⚠	**CAUTION:**	Ensure each cable gland is tight so that no connection inside the control panel can be attempted.

4. USER INTERFACE

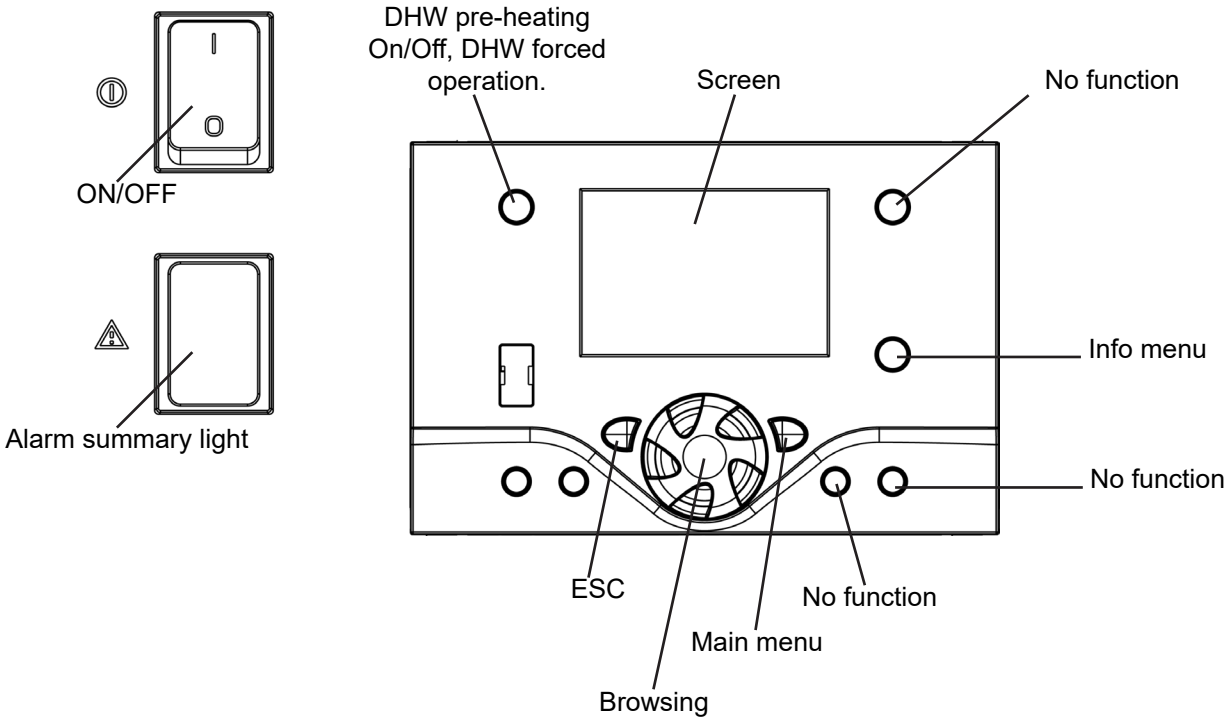
4.1. Presentation of the interface

The Tyneham Heat Pump Control controller user interface comprises:

- An On/Off switch,
- An Tyneham system fault summary indicator light (whether alone or cascaded),
- A back-lit LCD display,
- Two function buttons
- A setting knob,

All customer settings, and any configuration are done through this interface. It also allows viewing information on heat pump operation.

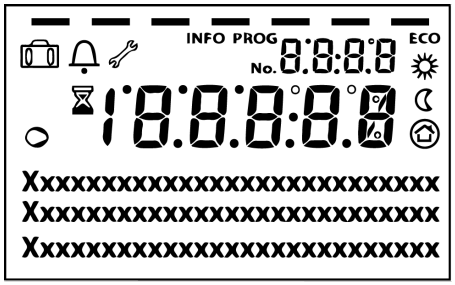
4.2. Display



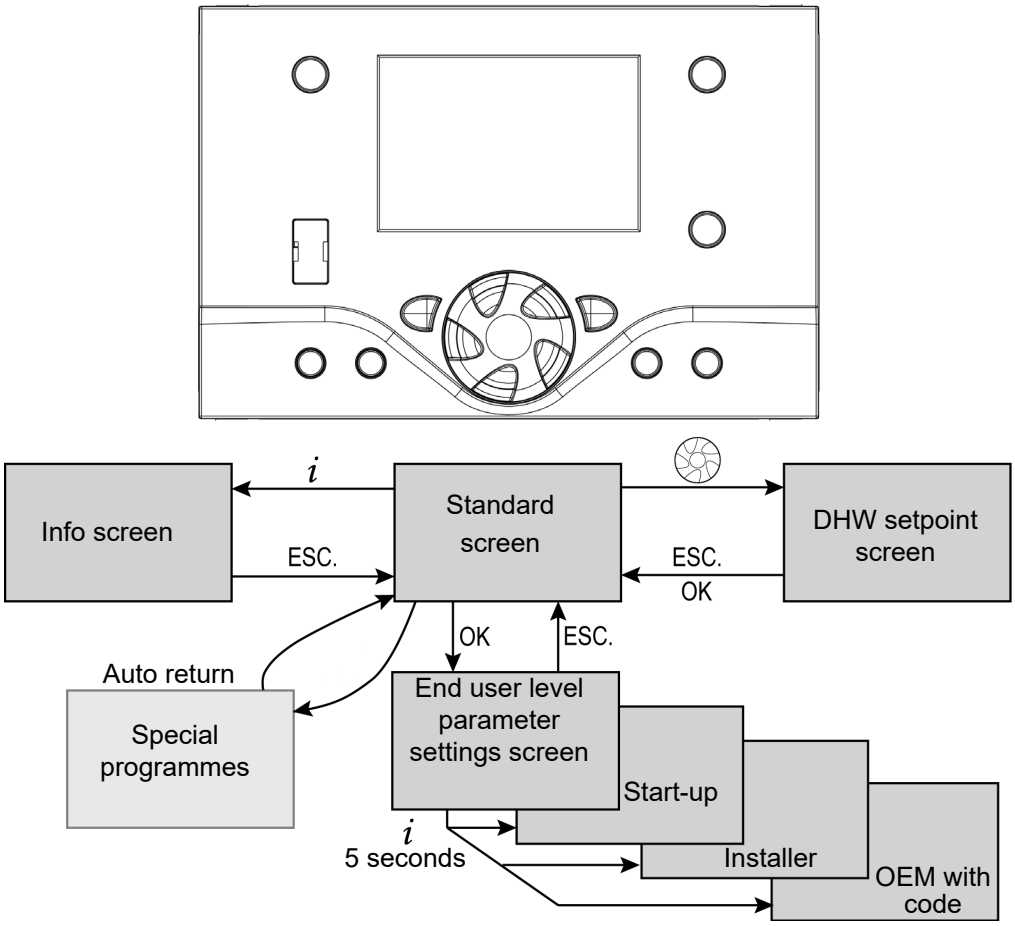
The screen summarises heat pump status: operating regime, time, schedule programme, temperature, any fault condition).

Pictograms:

Alarm		PROG	Programming
Compressor			Process in progress.
No.	Parameter number		Maintenance
INFO	Information		



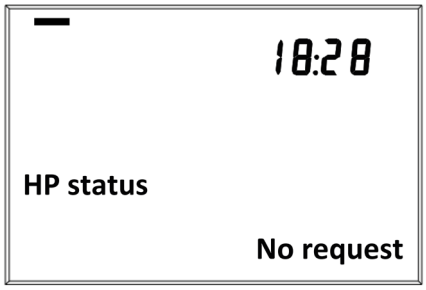
4.2.1. Browsing between the different screens

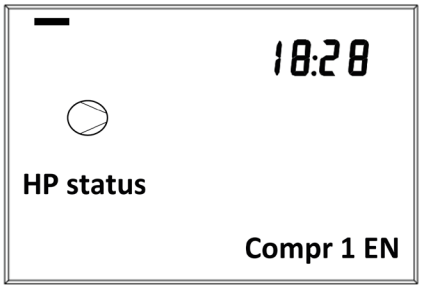


4.2.2. Tyneham HMI preset standard browser display

The basic display of the Tyneham Heat Pump Control in DHW pre-heating mode includes the following information:
- Time
- HP status
- Compressor On indicator light
  if the compressor is in operation
- DHW status
  If the W3100 regulator is connected

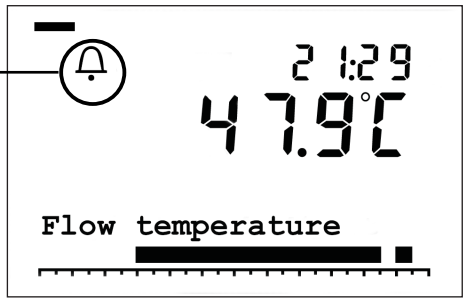
Further information is available when your press the *i* button





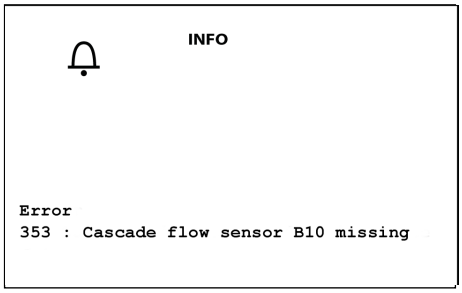
4.3. Fault display

When a non-blocking fault occurs, a small bell appears in the upper left corner of the display. To display the fault, press the information key i.
This type of fault does not cause operation to be blocked, requiring manual intervention..



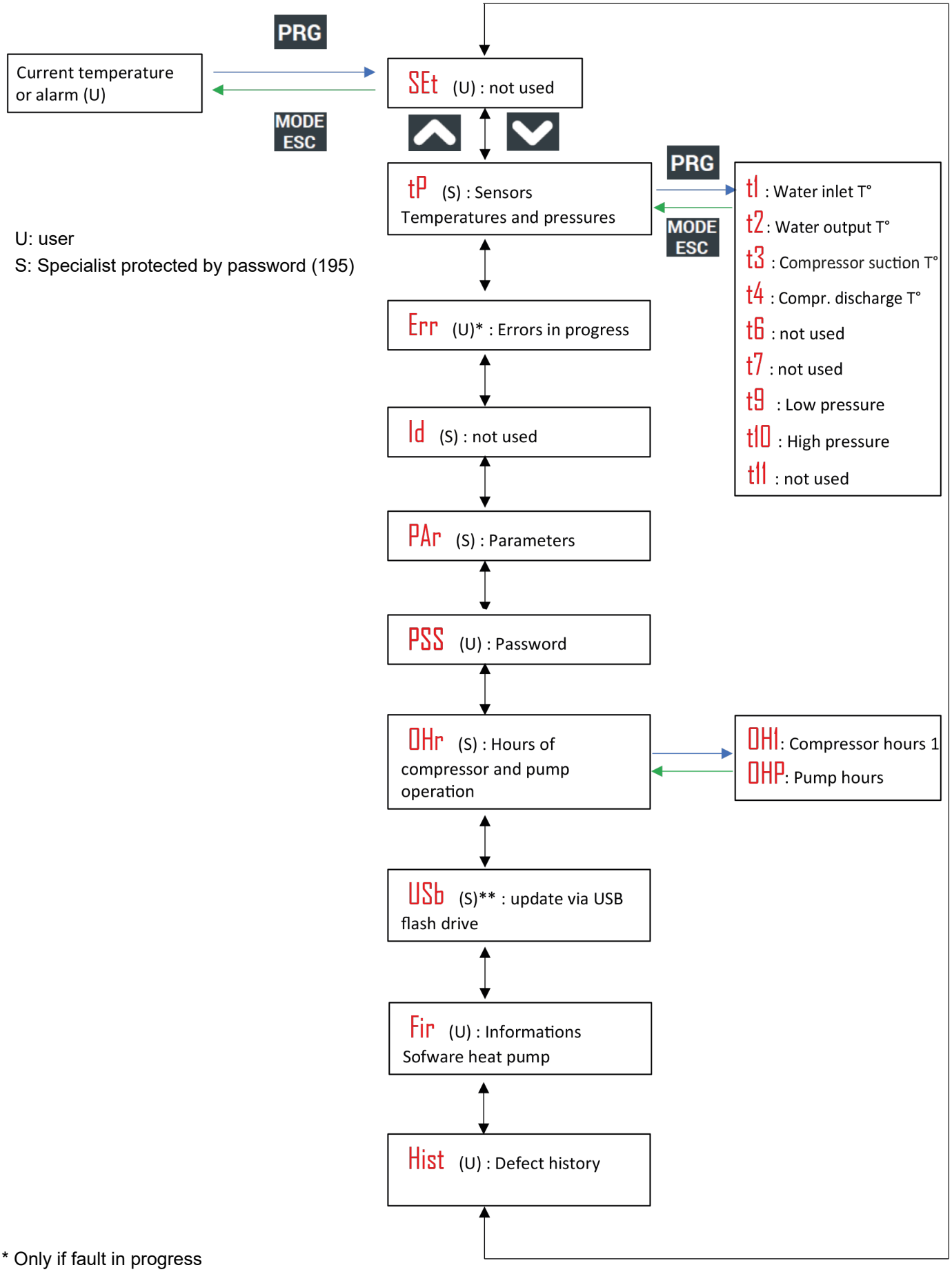
Once the source of the fault has been removed, the bell disappears automatically.

When a fault causes the heat pump to trip, the fault code and its label are permanently displayed on the screen. Similarly, a small bell appears at the top LH corner of the display.



To reset the heat pump controller, remove the source of the fault then press the reset button.

4.4. Tyneham HMI browsing



U: user

S: Specialist protected by password (195)

* Only if fault in progress

** Only if USB drive detected with suitable files

OH2: available only on Tyneham AHP60 50 or 70kW

4.5. HP status

From the basic display, you can scroll basic heat pump information (see list below).

Access	Setting	Exit
i		ESC

1	HP status
2	DHW status
3	Outdoor temperature
4	DHW temperature
5	Heat pump return temperature
6	HP flow temperature
7	Line start temperature
8	Compressor hours of operation

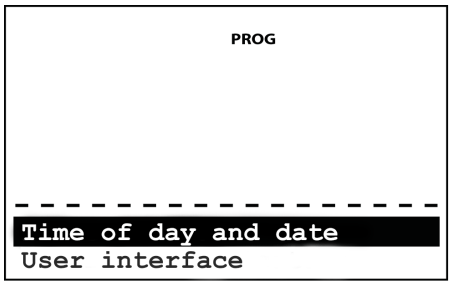
4.6. Settings

Depending on the functions commanded, there are different levels of access to the settings There are 3 access levels:

U: End user
M: Commissioning (reception, starting up),
S: Specialist (technical level).

4.6.1. “End user” level parameter settings

The “end user” level configuration mode is accessed from the standard display by pressing the OK key.
The “PROG” pictogram and the first two sections are displayed on the screen.



The setting knob is used to scroll through the list of parameters. Once the parameter to be modified has been reached, press OK. The parameter values flashes. Adjust this value using the knob.
The new value is validated by pressing OK.

4.6.2. "Commissioning" and "Specialist” level parameter settings

From the standard display, the "Commissioning" and "Specialist" parameter setting modes are accessed by pressing the OK button then the information key i for 5 seconds.

Use the knob to go to the desired level: *Commissioning* or *Specialist* then validate your choice with OK.
The*Commissioning* access level includes the *End user* level. In the same way, the *Specialist* level integrates the *Commissioning* level.

4.6.3. Adjusting the various parameters

From the main menu, after reaching the desired level:

- Turn the knob to scroll through the menu.
- When the desired menu is displayed, press OK to validate.
- Turn the knob to adjust the setting.
- Press OK to confirm the setting

If no setting is made for 8 minutes, the screen returns automatically to the basic display.

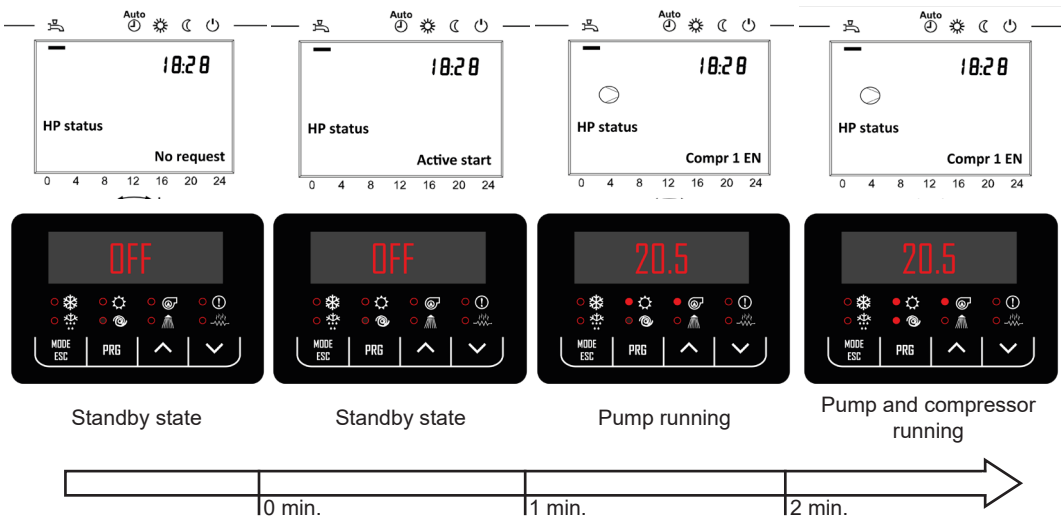
5. OPERATING CYCLES

5.1. Heat Pump start-up

When there is a request for heat, the heat pump start-up cycle is as follows:

Tyneham Heat Pump Control display

Tyneham display

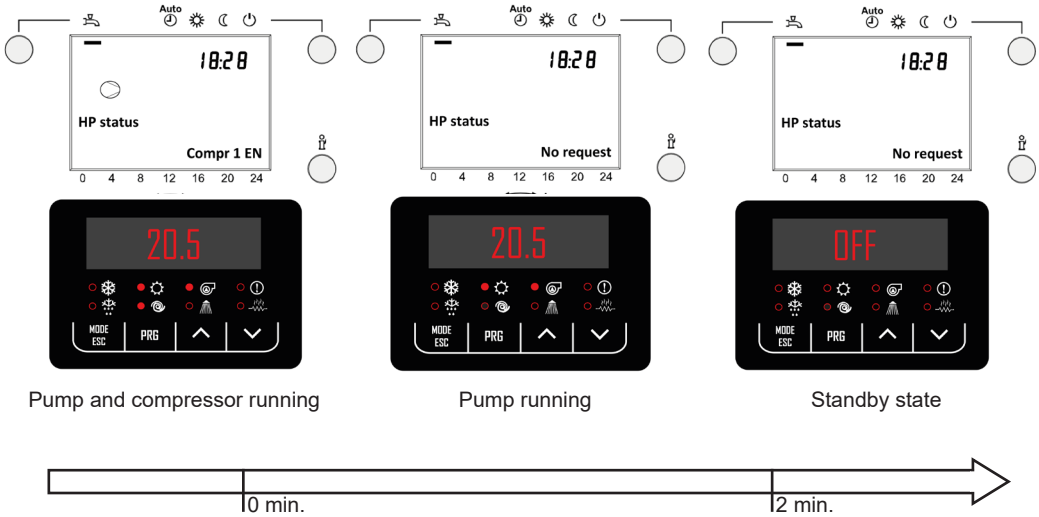


5.2. Heat pump shutdown:

When there is no longer any request for heat, the following heat pump shutdown cycle is applied:

Tyneham Heat Pump Control display

Tyneham display



Note: The system always applied a minimum 5 minute stop time before restarting the compressor to avoid cycles that are too close together

5.3. Cascade cycles

When the heat pump cannot meet the demand for heat by itself, the slave heat pumps are released:

- If the master heat pump has been running for over 10 minutes
- And, if the master heat pump is running at a high compressor power level or if the system output temperature has not been met for a long time.

6. DIAGNOSTIC HELP

Code	Fault relay triggered?	Description	1st diagnostic	Heat pump running?
50	YES	DHW temperature sensor B3 fault	Check the pre-heating tank temperature sensor.	NO
76	YES	Special sensor 1 fault.	Check special sensor 1 declared on input Bx.	YES
81	YES	Short circuit fault on the LPB bus, or no LPB bus power.	Check that the two bus wires are not short circuited or that the DB and MB terminals are not reversed on one of the heat pumps.	YES
82	NO	LPB address collision.	Check the (6600) LPB addresses of the regulators.	NO
84	YES	BSB address collision.	Check for addressing conflicts on BSB accessories.	YES
100	NO	Two regulators with master clock.	Check clock slaving on a regulator (6640).	YES
102	NO	Time setting lost after a power break.	Set the time and leave the regulator powered up for a few minutes.	YES
105	NO	Maintenance message.	Reset the maintenance counters in the maintenance menu.	YES
134	YES	Heat pump alarm/Tyneham fault summaries.	Check the status and presence of a fault on the Tyneham HMI.	NO
174	YES	Hydraulic station error	Note the error code on the W3100 of the hydraulic station and consult its manual if necessary	YES
324	NO	Same Bx sensors.	Two Bx inputs are declared with the same function, check Bx input declarations.	YES
325	NO	Same Bx sensors.	Two Bx inputs are declared with the same function, check Bx input declarations.	YES
330	NO	Input Bx1 without any function.	Check that no sensor is connected to the Bx input if no function is assigned to it.	YES
332	NO	Input Bx3 without any function.	Check that no sensor is connected to the Bx input if no function is assigned to it.	YES
333	NO	Input Bx4 without any function.	Check that no sensor is connected to the Bx input if no function is assigned to it.	YES
354	YES	Special sensor 2 fault.	Check special sensor 2 declared on input Bx.	YES
489	NO	Cascade master missing.	Check that the cascade master is powered up, check regulator addressing to the 6600.	NO
495	YES	Modbus communication error.	Check OCI 351 and Tyneham wiring, check that the Tyneham is powered up.	NO

Maintenance code	Maintenance description
6	The heat pump operating hours meter has reached the limit set for preventive maintenance.
7	The heat pump start-up counter has reached the limit set for preventive maintenance.
8	Compressor start-up frequency is too high, analyse the malfunction *Acknowledgement of this error message is preformed via a reset of the start-up counter in the 'maintenance / special programmes' parameter 7073 Current number of start-ups*
17	The heat pump month counter has reached the limit set for preventive maintenance.

Other symptoms	Description	1st diagnostic
No display on the LCD interface	Tyneham Heat Pump Control fuse fault	Look for the origin of the overload, correct the fault, then replace the fuse.
The display is always coming on and going out.	Spurious supply on the BSB internal bus.	Incorrect accessory connection on the CL+/CL-/G+ connector (Navipass, etc.).
"No connection" display.	Communication error on the BSB internal bus.	Check the connection of the screen and regulation ribbon cables and the accessories connected to CL+/ CL-/G+ (Navipass Modbus)
Operation button is locked in stand-by.	Cannot select the heating circuit or hot water mode from the front panel buttons.	Cannot control heating or hot water production from the controller regulation system.
Operation is locked in stand-by.	Cannot perform actions using front panel buttons.	Screen locking is enabled. It can be disabled from the user interface menu in parameter 26.
Programming is locked in stand-by.	Programming cannot be changed.	Programming locking is enabled. From the parameter to change, press OK and ESC together for 5 seconds.

Special programmes code	**Special programmes description**
308	Enable output test via parameter 7700
311	Heat pump test enabled

7. LIST OF PARAMETERS

Line No.	Programming	Access	See subsection..., page...
Time setting			
1	Hours / minutes		8.1.1, page 31
2	Day / month		8.1.1, page 31
3	Year		8.1.1, page 31
5	Start of summer time		8.1.1, page 31
6	End of summer time		8.1.1, page 31
User interface			
20	Language		8.1.2, page 31
22	Temporary		8.1.2, page 31
26	Operation locking		8.1.2, page 31
27	Programming locking		8.1.2, page 31
28	Direct adjustment		8.1.2, page 31
29	Units		8.1.2, page 31
70	Software version		8.1.3, page 32
Timer programme 4: Domestic hot water (DHW) production			
560	Preselection		8.1.3.1, page 33
561	1st period start time		8.1.3.1, page 33
562	1st period stop time		8.1.3.1, page 33
563	2nd period start time		8.1.3.1, page 33
564	2nd period stop time		8.1.3.1, page 33
565	3rd period start time		8.1.3.1, page 33
566	3rd period stop time		8.1.3.1, page 33
576	Default values		8.1.3.1, page 33
Domestic hot water			
1610	Comfort setpoint		8.2.1, page 35
1680	Rate switching		8.2.1, page 35
Heat pump			
2812	Limit use T° outdoor min air	s	8.3, page 36
2813	Limit use T° outdoor max air	s	8.3, page 36
DHW tank			
5008	Charging time		8.4.1, page 36
5020	Outlet setpoint T° raise		8.4.1, page 36
5036	Increase of charge by 60°C		8.4.1, page 36
Configuration			
5700	Preselect		§8.5.1.1, page 39
5890	Relay output QX1	s	8.5.2, page 40
5891	Relay output QX2	s	8.5.2, page 40
5892	Relay output QX3	s	8.5.1.1, page 39
5894	Relay output QX4	s	8.5.2, page 40
5895	Relay output QX5	s	8.5.2, page 40
5930	Sensor input BX1	s	8.5.2, page 40
5932	Sensor input BX3	s	8.5.1.1, page 39
5933	Sensor input BX4	s	8.5.1.1, page 39
5950	H1 input function	s	8.5.1.1, page 39
5951	H1 contact action direction	s	8.5.1.1, page 39
5960	H3 input function	s	8.5.1.1, page 39
5961	H3 contact action direction	s	8.5.1.1, page 39
6200	Register sensor	s	8.5.2.4, page 43
6205	Reset parameters	s	8.5.2.4, page 43
LPB network			
6600	Appliance address	s	8.6.1, page 44
6601	Segment address	s	8.6.1, page 44
6612	Alarm timeout	s	8.6.2, page 44
6640	Clock operation	s	8.6.3, page 44
Error			
6700	In progress		8.7.1, page 45
6800	History Error 1		8.7.2, page 45
6802	History Error 2		8.7.2, page 45
6804	History Error 3		8.7.2, page 45
6806	History Error 4		8.7.2, page 45
6808	History Error 5		8.7.2, page 45
6810	History Error 6		8.7.2, page 45
6812	History Error 7		8.7.2, page 45
6814	History Error 8		8.7.2, page 45
6816	History Error 9		8.7.2, page 45
6818	History Error 10		8.7.2, page 45
Maintenance/Special operation			
7070	Heat pump maintenance interval	s	8.8.1, page 46
7071	Heat pump time since maintenance	s	8.8.1, page 46
7072	Start Max. compr1/op. hrs.	s	8.8.1, page 46
7073	Start actual compr1/op. hrs.	s	8.8.1, page 46
7202	Heat pump start-up	s	8.8.3, page 47
7207	Heat pump power modulation selection	s	8.8.3, page 47
7214	Test funct. mode		8.8.3, page 47
Modbus slave diagnostics			
7611	UX signal input port 1	s	8.11.3, page 53
7621	UX signal input port 2	s	8.11.3, page 53
7631	UX signal input port 3	s	8.11.3, page 53
Inputs/Outputs test			
7700	Relay test	MES	8.9.1, page 48
7804	Temperature sensor BX1		8.9.2, page 49
7806	Temperature sensor BX3		8.9.2, page 49
7807	Temperature sensor BX4		8.9.2, page 49

Line No.	Programming	Access	See subsection..., page...
7840	H1 voltage signal	MES	8.9.3, page 49
7841	H1 contact status	MES	8.9.3, page 49
7845	H2 voltage signal module 1		8.9.3, page 49
7846	H2 contact status module 1		8.9.3, page 49
7848	H2 voltage signal module 2		8.9.3, page 49
7849	H2 contact status module 2		8.9.3, page 49
7851	H2 voltage signal module 3		8.9.3, page 49
7852	H2 contact status module 3		8.9.3, page 49
7854	H3 voltage signal	MES	8.9.3, page 49
7855	H3 contact status	MES	8.9.3, page 49
Status			
8003	DHW status		§ 8.10, page 50
8006	HP status		§ 8.10, page 51
Cascade diagnostics			
8100	Generator 1 priority		8.11.1, page 52
8101	Generator 1 status		8.11.1, page 52
8102	Generator 2 priority		8.11.1, page 52
8103	Generator 2 status		8.11.1, page 52
8104	Generator 3 priority		8.11.1, page 52
8105	Generator 3 status		8.11.1, page 52
8106	Generator 4 priority		8.11.1, page 52
8107	Generator 4 status		8.11.1, page 52
8108	Generator 5 priority		8.11.1, page 52
8109	Generator 5 status		8.11.1, page 52
8110	Generator 6 priority		8.11.1, page 52
8111	Generator 6 status		8.11.1, page 52
8112	Generator 7 priority		8.11.1, page 52
8113	Generator 7 status		8.11.1, page 52
8114	Generator 8 priority		8.11.1, page 52
8115	Generator 8 status		8.11.1, page 52
8116	Generator 9 priority		8.11.1, page 52
8117	Generator 9 status		8.11.1, page 52
8118	Generator 10 priority		8.11.1, page 52
8119	Generator 10 status		8.11.1, page 52
8120	Generator 11 priority		8.11.1, page 52
8121	Generator 11 status		8.11.1, page 52
8122	Generator 12 priority		8.11.1, page 52
8123	Generator 12 status		8.11.1, page 52
8124	Generator 13 priority		8.11.1, page 52
8125	Generator 13 status		8.11.1, page 52
8126	Generator 14 priority		8.11.1, page 52
8127	Generator 14 status		8.11.1, page 52
8128	Generator 15 priority		8.11.1, page 52
8129	Generator 15 status		8.11.1, page 52
8130	Generator 16 priority		8.11.1, page 52
8131	Generator 16 status		8.11.1, page 52
8138	Cascade starting temperature		8.11.1, page 52
8139	Cascade starting setpoint		8.11.1, page 52
8140	Cascade return temperature	s	8.11.1, page 52
8150	Switching sequence current generator	s	8.11.1, page 52
Diagnostics heat generation			
8400	Compressor 1		8.11.2, page 52
8410	Heat pump return temperature		8.11.2, page 52
8411	HP flow T° setpoint		8.11.2, page 52
8412	HP flow temperature		8.11.2, page 52
8413	Compressor modulation		8.11.2, page 52
8415	Hot gas temperature		8.11.2, page 52
8434	Suction temperature		8.11.2, page 52
8450	Compressor hours of operation		8.11.2, page 52
8451	Compressor start counter	s	8.11.2, page 52
8585	Line start temperature		8.11.2, page 52
Consumer diagnostic			
8700	Outside temperature		§ 8.11.4, page 53
8701	Min outside temperature. reset the min. outdoor T°		§ 8.11.4, page 53
8702	Max outside temperature. reset the max. outdoor T°		§ 8.11.4, page 53
8703	Attenuated outside temperature. reset the attenuated outdoor T°		§ 8.11.4, page 53
8704	Mixed outside temperature		§ 8.11.4, page 53
8820	DHW pump		§ 8.11.4, page 53
8830	DHW temperature 1 (B3)		§ 8.11.4, page 53
8831	DHW setpoint		§ 8.11.4, page 53
8832	DHW temperature 2 (B31)		§ 8.11.4, page 53
8840	Number of DHW pump hours		§ 8.11.4, page 53
8841	DHW pump starts counter		§ 8.11.4, page 53
8850	Temperature from line		§ 8.11.4, page 53
8951	Line start setpoint temperature		§ 8.11.4, page 53
9016	Special temperature 1		§ 8.11.4, page 53
9017	Special temperature 2		§ 8.11.4, page 53
9031	Relay output QX1		§ 8.11.4, page 53
9032	Relay output QX2		§ 8.11.4, page 53
9033	Relay output QX3		§ 8.11.4, page 53
9034	Relay output QX4		§ 8.11.4, page 53
9035	Relay output QX5		§ 8.11.4, page 53

s: specialist level access, see §4.6.2 “Commissioning” and “Specialist” level parameter settings

8. PARAMETERS

8.1. "User interface" parameters

8.1.1. Time setting

Line no.	Programming	Possible values
1	Hours / minutes	00:00 … 23:59
2	Day / month	01:01… 31.12
3	Year	1900 … 2099
5	Start of summer time	01:01… 31.12
6	End of summer time	01:01… 31.12

The controller is provided with a yearly clock that displays the time, day and date.
So that the programming sequences can operate properly, the time and the date must be correctly set on the clock.

N.B: Toggling between summer and winter time
Dates have been programmed for the change between summer and winter times. The time changes automatically at 2 am (winter time) to 3 am (summer time) or from 3 am (summer time) to 2 am (winter time) on the first Sunday after the respective dates.

8.1.2. User interface

Line no.	Programming	Possible values
20	Language	English | Deutsch | Français | Italiano | Nederlands | Español
22	Temporary	temporary | permanent
26	Operation locking	stop | start
27	Programming locking	stop | start
28	Direct adjustment	Automatic storage | Storage with confirmation
29	Units	°C, bar | °F, PSI

Info. (22):

- ***Temporary:***
  After pressing the "Infos" button, the display returns to the basic "preset" display after eight minutes or by pressing the Operating modes button.
- ***Permanent:***
  After pressing the "Infos" button, the display returns to the "new" standard display after a maximum of eight minutes. The last information selected is visible on the new basic display.

Operation locking (26):
If the operation locking function is enabled, the following control elements cannot be adjusted any longer:
Heating circuit mode, hot water mode, temp. room temperature comfort setpoint (button), occupied button.

Programming locking (27):
If the programming locking function is enabled, the following control elements cannot be adjusted any longer:

- ***Temporary programming suspension***
  Programming locking may be temporarily disabled at the programming level. **To do this, press the OK and ESC buttons together for at least 3 seconds.** The programming locking function temporary suspension remains effective until the user quits the programming level.
- ***Temporary programming suspension***
  First perform a temporary suspension then cancel "Programming locking" on line 27.

Direct adjustment (28):

- ***Automatic***
  A correction of the setpoint value with the knob is adopted without any specific validation (timeout) or by pressing the OK button.
- ***With validation***
  A correction of the setpoint value with the knob is only validated after pressing the OK button.

8.1.3. Software version

Line no.	Programming
70	Software version

The indication provides the current version of the user interface.

8.1.3.1. Time programme (DHW circuits)

Line no. DHW	Programming	Possible values
560	Preselection	Mon-Sun | Mon-Fri | Sat-Sun | Mon…Sunday
561	1st period start time	00:00 … 24:00
562	1st period stop time	00:00 … 24:00
563	2nd period start time	00:00 … 24:00
564	2nd period stop time	00:00 … 24:00
565	3rd period start time	00:00 … 24:00
566	3rd period stop time	00:00 … 24:00
576	Default values	No | Yes

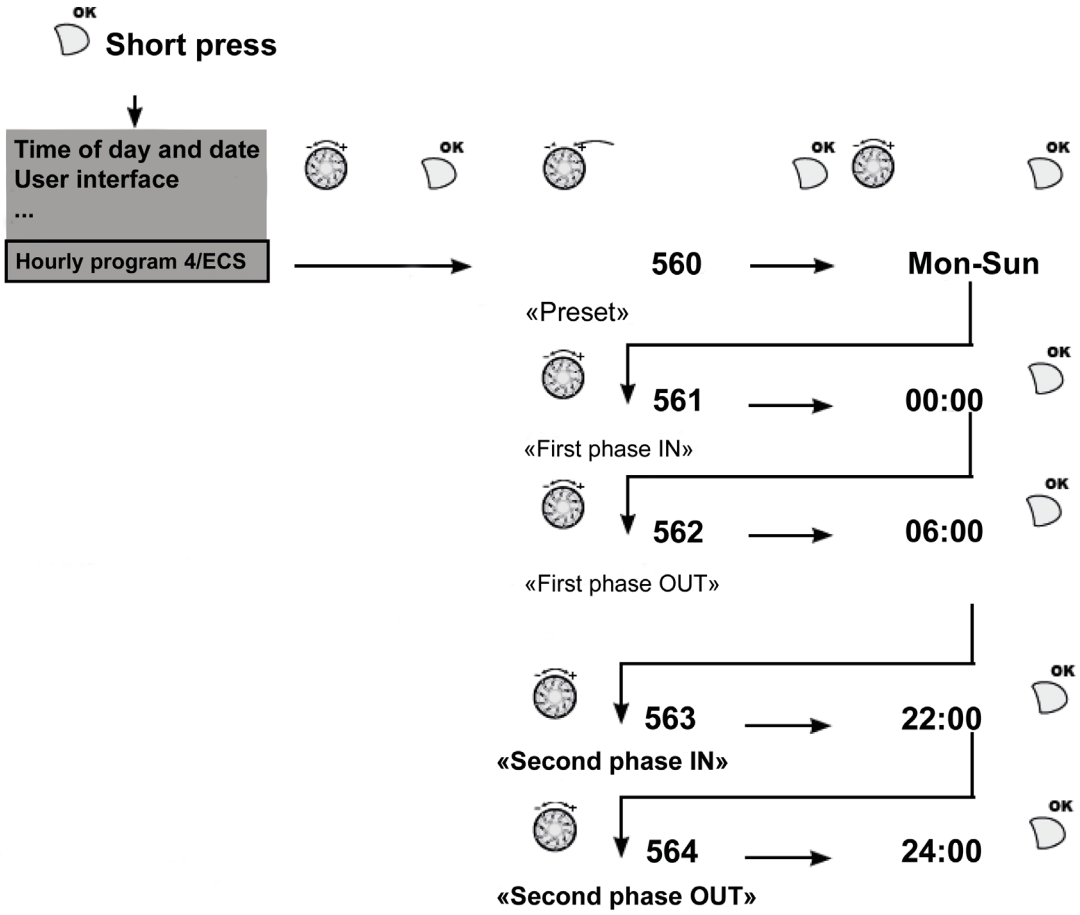
The Tyneham Heat Pump Control provides a DHW pre-heating function via the Tyneham heat pumps and a plate exchanger.

In order to optimiser product performance, DHW pre-heating by the Tyneham is programmed for specific time ranges.

The parameters shown above are used for this time range definition function.

Example of settings for a charge between 22:00 and 06:00 the next day

If no setting is made for 8 minutes, the screen returns automatically to the basic display.



INFORMATION:	Every time the user accesses the "DHW timer programme 4" menu, the first parameter displayed is 560 "Preset". This always displays the default values "Mon-Sun" regardless of any programming done previously.

8.2. “DOMESTIC HOT WATER (DHW)” PARAMETERS

The Tyneham Heat Pump Control recognises that it has to control a DHW circuit when a sensor is connected to its B3 input.

The Tyneham Heat Pump Control can control a DHW actuator (Q3 DHW pump to be defined in QX3).
The names of the sensor and the pump used are:

	Sensor	Pump
DHW	B3	Q3

The following functions are available on the DHW circuit:
• Adjustment of timer programmes
• Adjustment of settings
• DHW storage tank with charge management

The Tyneham Heat Pump Control displays the DHW and DHW tank menus when a sensor is connected to its B3 input.
The control adjusts the DHW temperature to the desired setpoint according to the timer programme.

8.2.1. Basic settings

8.2.1.1. Setpoint value

Line no.	Programming	Possible values
1610	Comfort setpoint	8 … 80°C

The above setpoint corresponds to the DHW pre-heating setpoint for defined time ranges.

The default setpoint is 50°C. Adjusting it leads to changes in product performance.

8.2.1.2. Rate switching

Line no.	Programming	Possible values
1680	Rate switching	none | off | on

In the case of external switching via the Hx input, the rate to be switched to should be defined in advance.

This parameter therefore ensures that the system works correctly once the plate exchanger regulator has been connected.

The default value: is “off”.

8.3. "Heat pump" parameters

The Tyneham heat pump produces heat within a preset outdoor temperature range. Beyond this range, the Tyneham Heat Pump Control forces the Tyneham to switch off.

Line no.	Programming	Possible values
2812	Limit use T° outdoor min air	-50°C ... 0 °C
2813	Limit use T° outdoor max air	0°C ... 50 °C

8.4. “DHW TANK” parameters

*8.4.1. Charge regulation**

The Tyneham product ensures gradual pre-heating of the DHW over the defined time range. This operating mode allows optimal system performance outside the DHW draw-off phases.

The parameters and the diagram below describe the DHW charge regulation.

Line no.	Programming	Possible values
5008	DHW start of charge delay	0 ... 30 min

This parameter allows the heat production provided by the Tyneham to be delayed at the start of the time range.

This keeps temperatures in the hydraulic circuit even before the DHW pre-heating starts.

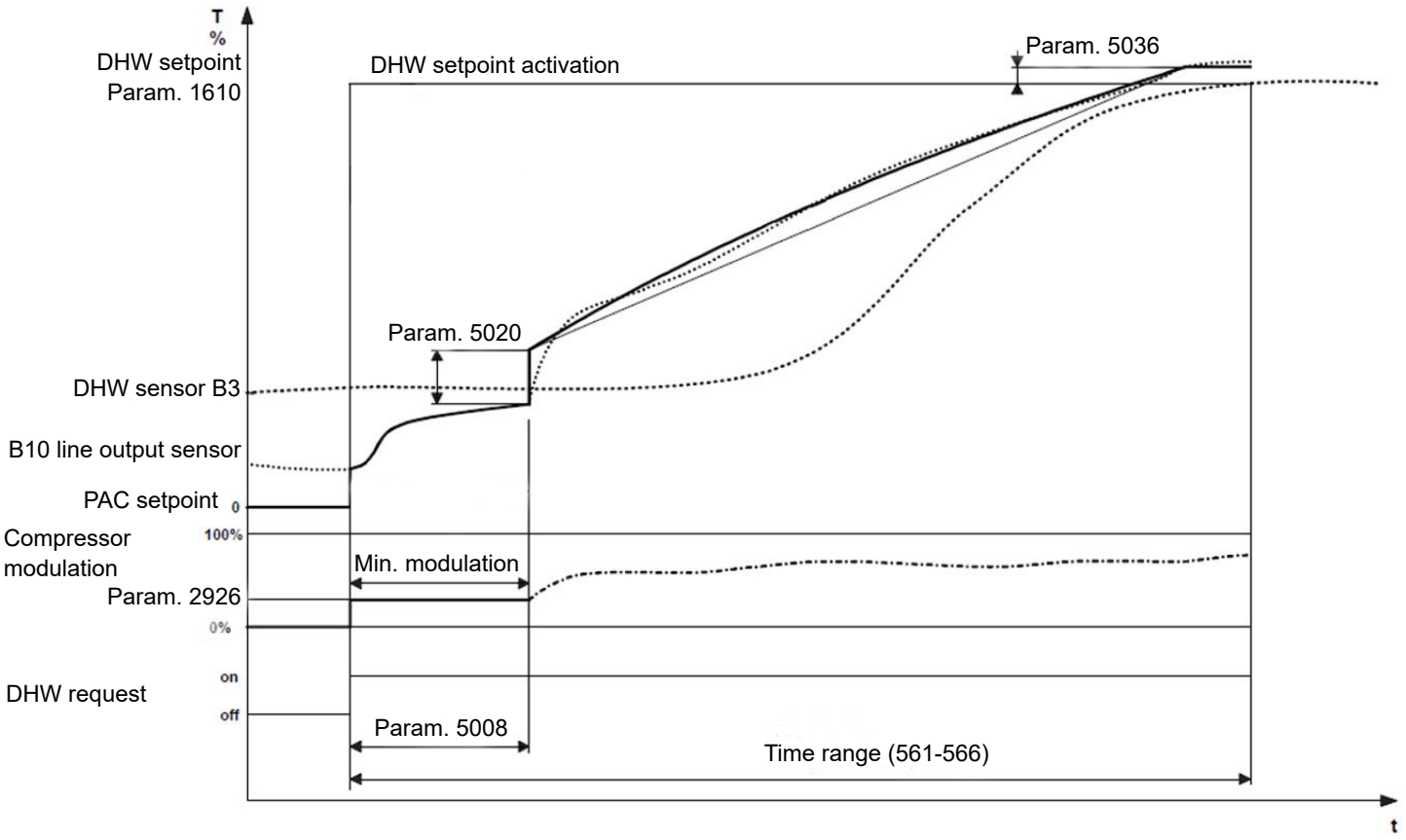
Line no.	Programming	Possible values
5020	Flow set T° over-value at charge start	0...30 °C

The heat production setpoint transmitted to the Tyneham generator is higher than the above parameter at charge start.

Line no.	Programming	Possible values
5036	Flow set T° over-value at charge end	0 ... 30 °C

The heat production setpoint transmitted to the Tyneham generator at the end of charging corresponds to the raised DHW setpoint for the above parameter

** = restricted access level*



Charge regulation logic in time range:

DHW charging is carried out gradually over a defined time range.
During this time period, the DHW temperature setpoint changes continuously in order to reach the desired final setpoint at the end of the DHW charging.
The setpoint transmitted to the Tyneham producer is adjusted respectively throughout the charging period in order to meet the needs of the DHW setpoint.

In order to correctly define the starting point for this gradual setpoint, the Tyneham generator is released at its minimum modulation, and the plate exchanger is released.

In this way, temperatures in the circuit are kept even for a predefined period of time.
The generator is then free to follow the appropriate modulation to meet the needs of the set point at all times.

INFORMATION: This operating mode is the only one authorised for the hot water production.

8.5. "Configuration" settings

The heat pump controller must be properly configured to adapt to boiler room demands for Tyneham type DHW pre-heating applications only.

It has four configurable 230V outputs (QX1, QX2, QX4, and QX5), one configurable dry contact output (QX3), three configurable sensor inputs (BX1, BX3 and BX4) and two 0...10 volt or on/off inputs (H1 and H3).

The BX3 input is used for the B10 decoupling bottle sensor on controller No.1.
The QX3 output is used to control the hydraulic station on controller No.1.
Output QX4 is used for the remote alarm function on each controller.

INFORMATION:

The QX4 output must be a summary of installation faults that includes the hydraulic station. It is not possible to distinguish between faults from specific Tyneham Heat Pump Control units in a cascade. To distinguish between the faults from each heat pump, connections must be made to the programmable 230V output from each Tyneham. Refer to the Tyneham instructions

Heat pump controller inputs / outputs	Configuration after setting via preselect P5700
QX1	-
QX2	-
QX3	Plate exchanger regulation control
QX4	Alarm relay K10
QX5	-
BX1	-
BX3	B10 line output sensor
BX4	DHW sensor B3
H1	Plate exchanger regulation ON status return
H3	Plate exchanger regulation fault return

WARNING:

The factory configuration is not suitable for Tyneham use. Only pre-selects 5 to 8 are suitable (see chapter 8.5.1.1)

8.5.1. Hydraulic configuration

8.5.1.1. Assigning the Tyneham model and the application*

Line no.	Programming
5700	Preselect

This parameter is used to preset a number of values that ensure a match between the Tyneham Heat Pump Control heating or hot water application and the model of the Tyneham used in the installation.

Line no.	Function	5 Tyneham AHP60 14 18kW	6 Tyneham AHP60 26 32kW	7 Tyneham AHP60 50kW	8 Tyneham AHP60 70kW
5892	Relay output QX3	DHW pump/valve Q3	DHW pump/valve Q3	DHW pump/valve Q3	DHW pump/valve Q3
5894	Relay output QX4	Alarm output K10	Alarm output K10	Alarm output K10	Alarm output K10
5932	Sensor input BX3	B10 line output sensor	B10 line output sensor	B10 line output sensor	B10 line output sensor
5933	Sensor input BX4	DHW sensor B3	DHW sensor B3	DHW sensor B3	DHW sensor B3
5950	H1 input function	Switching of heating circuit + DHW operation	Switching of heating circuit + DHW operation	Switching of heating circuit + DHW operation	Switching of heating circuit + DHW operation
5951	H1 input function action direction	Normally closed	Normally closed	Normally closed	Normally closed
5960	H3 input function	Error/alarm message	Error/alarm message	Error/alarm message	Error/alarm message
5961	H3 input function action direction	Operation	Operation	Operation	Operation

* = *restricted access level*

8.5.2. Configuring Tyneham Heat Pump Control inputs / outputs

*8.5.2.1.Relay output QX**

Line no.					Programming	Possible values
QX1	QX2	QX3	QX4	QX5		
5890	5891	5892	5894	5895	Relay output QX1, 2, 3, 4, 5	None | Consumption circuit pump 1 Q15 | Consumption circuit pump 2 Q15 | Pool circuit pump Q19 | Heating circuit 3 pump Q20 | Alarm output K10 | Timer programme 5 K13 | Heating circuit 1 pump Q2 | DHW pump/valve Q3 | Stage 1 compressor K1 | Raise gen. regulation K32 | Heating circuit 2 pump Q6 | Regulator dT 1 K21 | Regulator dT 2 K22 |

The output settings assign the corresponding functions based on the selection.
By default, relay QX1 is configured for remote fault reporting.

None
No function on the relay output.

Consumption circuit pump 1 Q15
Function not available.

Alarm output K10
If a fault occurs it is reported by the alarm relay. Contact closure has a two minute delay time. Once the error is eliminated, i.e. the error message is no longer present, the contact opens immediately.
Note: If the fault cannot be eliminated for now, the relay can still be reset. This is done from the *Faults* page.

Pump CC3 Q20
Function not available.

Consumption circuit pump 2 Q15
Function not available.

Pump CC1 Q2
Function not available.

Pump CC2 Q6
Function not available.

DHW pump/valve Q3
The relay controls the activation of the W3100 hydraulic station

Temp. change regulator 1 K21 / Temp. change regulator 1 K22
Relays K21 and K22 are used by the temperature change regulator dT.

Pool circuit pump Q19
Function not available.

Condenser pump Q9
Function not available.

* = *restricted access leve*l

Time programme 5 K13
The relay is controlled by the settings for timer programme 5.

Compressor stage 1 K1
The relay is used to control the first stage of the compressor.
This assignment can be used to notify the HP operation request to an external regulator (outside the defrosting cycle).

*8.5.2.2. Sensor input BX**

Line no.			Programming	Possible values
BX1	BX3	BX4		
5930	5932	5933	Sensor input BX1, 3, 4	None | Pool sensor B13 | Flow sensor common B10 | Special temp. sensor 1 | Special temp. sensor 2 | Outdoor sensor B9 | Room thermostat B5 | Room thermostat B52 | Room thermostat B53 |

The output settings assign the corresponding functions based on the selection.

None
No function on the sensor input.

External sensor B9
Function not available.

B10 line output sensor
This sensor is required for the common flow line.

Pool sensor B13
Function not available.

Special temp. sensor 1
This sensor can be used for the temperature difference regulator general function.

Special temp. sensor 2
This sensor can be used for the temperature difference regulator general function.

Room thermostat B5
Function not available.

Room thermostat B52
Function not available.

Room thermostat B53
Function not available.

* = *restricted access level*

*8.5.2.3.Inputs H1 / H3**

Line no. H1	Line no. H3	Programming	Possible values
5950	5960	Function input Hx	none | switching of heating circuit + DHW operation | switching of heating circuit modes | switching of heating circuit 1 mode | switching of heating circuit 2 mode | HC3 rate switching | error message / alarm message | consump. circuit request 1 | consump. circuit request 2 | consump. circ. request 1 10V | consump. circ. request 2 10V | pressure measurement 10V | generator release swimming pool | DHW temperature level | HC1 temperature level | HC2 temperature level | HC3 temperature level | Room thermostat HC1 | Room Thermostat 2 | Room thermostat 3 | Room measurement 10V

DHW rate switching
This function is active at input H1.

Error/alarm message
This function is active at input H3.
The input causes a regulator error message. If the alarm output is configured accordingly (relay outputs QX4, line 584), then the error is forwarded or displayed by an additional contact (e.g. an outside indicator or buzzer).

Line no. H1	Line no. H3	Programming	Possible values
5951	5961	Contact action direction	none | HC+DHW rate switching | normally closed contact | operation contact

Normally-closed contact (H3)
The contact is normally closed and must be opened to enable the chosen function

Operation contact (H1)
The contact is normally open and must be closed to enable the chosen function.

Parameter *Hx contact action direction*	**Contact status on terminal Hx**	**Function status / action**
Operation contact	open	inactive
	closed	active
Normally-closed contact (NC)	open	active
	closed	inactive

WARNING: In order to preserve the proper functioning of the product, the functions and directions of action of contacts H1 and H3 must not be modified under any circumstances

* = *restricted access level*

*8.5.2.4.Register sensor**

If faulty sensors are detected after installation and to avoid integrating them with correct status (which may occur if automatic detection is used), there is a Commissioning function.
This function learns to recognise the connected sensors and, if a fault occurs, generates an error message while inhibiting any installation diagram change.

Line no.	Programming	Possible values
6200	Register sensor	no | yes

At midnight, the standard device records the status of the sensor terminals, so long as the regulator has already been running for at least two hours. If a sensor fails after registration, then the standard device generates an error message. This setting is used to immediately register the sensors. This may be necessary, e.g. when a sensor is removed and is no longer of any use.

Line no.	Programming	Possible values
6205	Reset parameters	no | yes

All of the parameters can be reset to the factory settings except for the following pages:
- Time and date
- User interface
- Radio and all time programmes, and
- And the manual rate setpoint.

8.6. "LPB system" parameters

To communicate with other regulators, OCI 345 offers an LPB bus.
This accessory screws onto the heat pump controller unit.
The LPB bus allows the Tyneham Heat Pump Control regulation to create HP cascades.

* = *restricted access level*

8.6.1. LPB address*

Line no.	Programming	Possible values
6600	Appliance address	0 … 16
6601	Segment address	0 ... 14

The device address identifies every device on the bus, in a similar way to a postal address. Every device must have a correct address to ensure communication. **Prefer segment 0 for generators.**

8.6.2. System messages*

Line no.	Programming	Possible values
6612	Alarm timeout	0 ... 60 min

Timeout between when the fault appears and when the output set as the "K10 alarm output" is triggered.
This time also acts when sending the fault condition for a slave heat pump to the master heat pump.

8.6.3. Clock*

Line no.	Programming	Possible values
6640	Clock operation	Independent | Slave without adjustment | Slave with adjustment | Master

This setting determines the action of the system time on the time set in the regulator.

Independent
The time can be set on the regulator. The regulator time is not synchronised with system time.

Slave without adjustment
The time cannot be set on the regulator. The regulator time is automatically synchronised with system time all of the time.

Slave with adjustment
The time can be set on the regulator. It is simultaneously taken as the system time by the master. The regulator time is however automatically and constantly adapted to match system.

Master
The time can be set on the regulator. The regulator time becomes the reference time for the system. System time is synchronised.

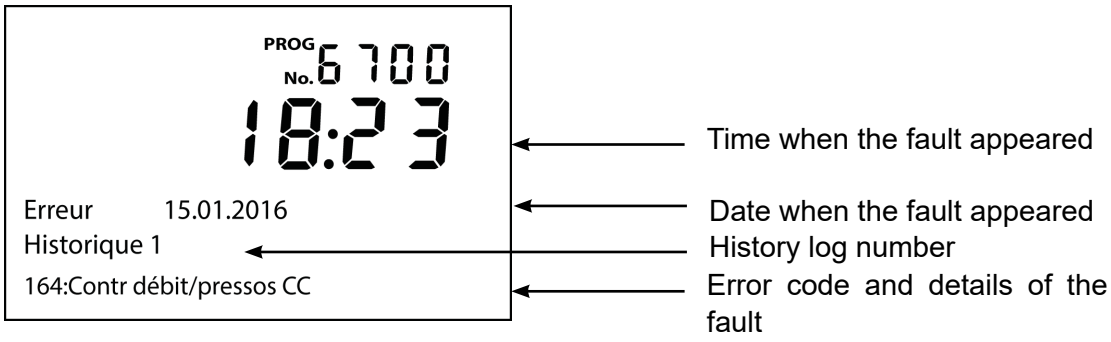
* = *restricted access leve*l

8.7. "Error" parameters

As soon as an error occurs, an error message can be seen at the Info level via the Info button. The display shows the cause of the error.
The heat pump controller records the last ten faults. The system stores the fault code and the time when the fault occurred.

8.7.1. Error in progress

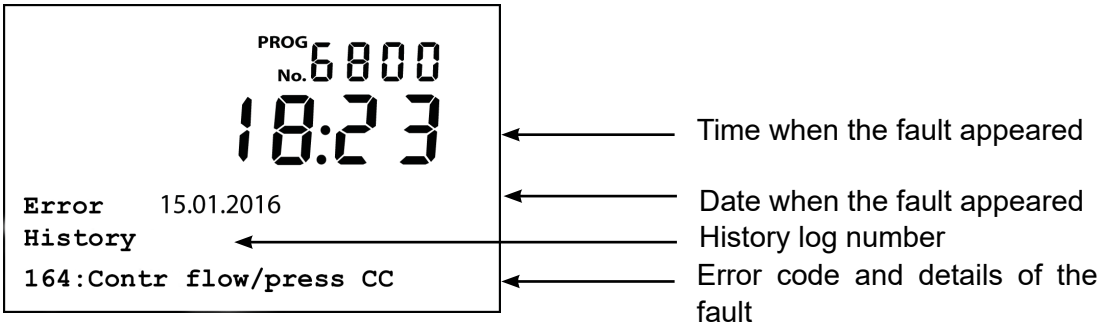
Line no.	Programming	Possible values
6700	In progress ...	00:00 … 23:59 h:m



8.7.2. History

Line no.	Programming	Possible values
6800, 6802, 6804, 6806, 6808, 6810, 6812, 6814, 6816, 6818	History ...	00:00 … 23:59 h:m

The unit stores the last ten errors that occurred in non volatile memory. A new entry clears the oldest entry from the memory. For every error input, the system records the code and the time.



8.8. "Maintenance/Special operation" parameters

8.8.1. Maintenance function

Line no.	Programming
7070	Heat pump interval
7071	Time since heat pump maintenance
7072	Max starts compr 1/hrs run
7073	Cur starts compr 1/hrs run

Heat pump interval Sets the interval (in months) between heat pump servicing.

Time since Displays the period of time (in months) since the last service check.
If the value is over the "Heat pump interval" setting.

Heat pump maintenance
- The 🔧 symbol is displayed, and
- A maintenance message is provided at the info level: 17 : HP interval (priority 6).

8.8.2. Maximum number of heat pump start up requests per hour of operation

Max starts Compr1 /hour Maximum number of heat pump compressor start up requests per hour of operation

Counter Starts compr1 / hour Average number of heat pump start up requests per hour of operation reached during the last six weeks If the value is over the "Max starts Compr1 /hour" setting.

- The 🔧 symbol is displayed, and
- A maintenance message is provided at the info level: 8: Too many compressor 1 starts (priority 9).

* = *restricted access leve*l

8.8.3. Commissioning*

Line no.	Programming	Possible values
7202	Heat pump commissioning	Off | Heating | Cooling
7207	Select heat pump power modulation	
7214	Test funct. mode	

Commissioning the heat pump

The commissioning function allows the Tyneham heat pump to operate in line with consumer requirements. Setting 7202 determines the operating mode.
CAUTION: Only “heating” mode is allowed on Tyneham heat pumps.

The heat pump however only comes on if the power selection (7207) has been made.

The commissioning function ends if a power break occurs (7202 = Off).
The compressor does not come back on automatically if the heat pump reaches a safety limit value during the active commissioning process. In this case, the output selection is reset (7207 = 0%), but the commissioning function itself (7202 = heating for example) remains active.

The commissioning function automatically switches off after two hours with no manual changes made to the 7202 parameter settings.
The 7207 parameters are reset to the default values after manually aborting or disabling the commissioning function.
The parameters need to be re-entered to restart the commissioning function.

Select heat pump power modulation

This setting defines the power (0...100%) of a modulating heat pump during the active commissioning sequence. The heat pump will operate at a set power level during the active commissioning sequence.

* = *restricted access level*

8.9. "Inputs/outputs test" parameters

The inputs/outputs test is used to ensure that the connected components operate properly.

CAUTION: **The selected sensor values are updated with a maximum of 5 seconds. The display does not take into account any corrections to the measured values.**

INFORMATION: The relay test can be activated via diagnostics software and via the operating interface. It remains active for a maximum of eight minutes after which time it is forced to shut down.

*8.9.1. Relay output test**

Line no.	Programming	Possible values
7700	Relay test	No test | All stopped | Relay output QX1 | Relay output QX2 | Relay output QX3 | Relay output QX4 | Relay output Q5 | Relay output QX21 module 1 | Relay output QX22 module 1 | Relay output QX23 module 1 | Relay output QX21 module 2 | Relay output QX22 module 2 | Relay output QX23 module 2 | Relay output QX21 module 3 | Relay output QX22 module 3 | Relay output QX23 module 3

The relay test allows enabling or disabling all of the relay outputs (burner, pumps, etc.) regardless of regulator status. This is used to quickly check the wiring.
A parameter dedicated to this purpose allows triggering each relay individually. The set state remains active after exiting this parameter.
The test can be stopped explicitly, else it automatically disables itself after one hour.

No test
The output test is disabled.

Everything is on STOP
All of the outputs are disabled.

Relay output QX...
Only QX... is set.

Relay output QX2... module n
Only QX2... on extension module n is enabled.

* = *restricted access level*

8.9.2. Sensor input test

Line no.	Programming	Possible values
7804	Sensor T° BX1	-28 ... 350°C
7806	Sensor T° BX3	-28 ... 350°C
7807	Sensor T° BX4	-28 ... 350°C

The input test is used to read the current measurement values from the device input terminals. This is used to quickly check the wiring.

8.9.3. Test of inputs H1 / H2 / H3*

Line no.	Programming	Possible values
7840	H1 voltage signal	0 ... 10 V
7841	H1 contact status	Open | Closed
7845	Module 1 H2 voltage signal	0 ... 10 V
7846	Module 1 H2 contact status	Open | Closed
7848	Module 2 H2 voltage signal	0 ... 10 V
7849	Module 2 H2 contact status	Open | Closed
7851	Module 3 H2 voltage signal	0 ... 10 V
7852	Module 3 H2 contact status	Open | Closed
7854	H3 voltage signal	0 ... 10 V
7855	H3 contact status	Open | Closed

The input test is used to read the current measurement values from the device input terminals. This is used to quickly check the wiring.

* = *restricted access level*

8.10. "Status" parameters

The current operating state of the installation is viewed using the status displays.

Line no.	Programming
8003	DHW status

Final user (info level)	Commissioning, specialist	Status No.
Active manual intervention.	Active manual intervention.	4
Fluid decanting regime	Fluid decanting regime	199
	Heat maintenance mode active	222
Heat maintenance mode EN	Heat maintenance mode EN	221
	Discharge protection active	79
	Load duration limit active	80
	Load locked	81
Load locking active.		82
	Forcing, maximum temperature of the tank	83
	Forcing, maximum temperature of load	84
	Forcing, anti-Legionella setpoint	85
	Forcing, comfort setpoint	86
Forced load active		67
	Active start	92
Accelerated load active		94
	Load, Comfort setpoint	96
	Load, reduced setpoint	97
Activated load		69
Antifreeze protection enabled	Antifreeze protection enabled	24
	Antifreeze protection of water heater snapshot	223
Delayed power-cut response active.	Delayed power-cut response active.	17
Load on standby	Load on standby	201
	Under load, maximum temperature of the tank	70
	Under load, maximum temperature of load	71
	Under load, comfort temperature	99
	Under load, reduced temperature	100
Under load		75
Stop	Stop	25
Ready	Ready	200

Line no.	Programming
8006	HP status

Final user (info level)	Commissioning, specialist	Status No.
Fault.	Fault.	2
	Limit outdoor min. temp	187
	Limit outdoor max. temp	188
Locked		10
	Limit compressor hot gas	32
	Limit max. stop temperature	34
	Limit min. stop temperature	139
	Minimum active compr. stop time	35
Time limit active		37
	Maximum active compr. stop time	38
	Compressor EN	46
Heating mode		137
	Locked, max. return temperature	261
	Locked, min. return temperature	262
	Locked, max. flow temperature	263
	Locked, min. flow temperature	264
	Locked, max. hot gas temperature	267
Compressor locked		258
	Frost protection installation activated	23
Frost protection activated		24
	Active start	49
	Stop timer activated	17
	Released, evaporator ready	50
	No request	51
Stop		25

8.11. "Diagnostics" parameters

8.11.1. Cascade diagnostics

Various setpoints and true values, relay switching states and generator states may be displayed for diagnostics purposes.

Line no.	Programming	Possible values
8100, 8102, 8104, 8106, 8108, 8110, 8112, 8114, 8116, 8118, 8120, 8122, 8124, 8126, 8128, 8130	Generator priority	0 ... 16
8101, 8103, 8105, 8107, 8109, 8111, 8113, 8115, 8117, 8119, 8121, 8123, 8125, 8127, 8129, 8131	Generator state	Missing | Failed | Man. setting active | Locked Heat pump active | Sweeping funct. active | DHW separation activated | Out. Temp. limitation active | Not released | Released
8138	Cascade starting temperature	0 ... 140°C
8139	Cascade starting setpoint	0 ... 140°C
8140	Cascade return temperature	0 ... 140°C
8150	Current generator cascade switch	0 ... 990 h

8.11.2. Generator diagnostics

Various setpoints and true values, relay switching states and generator states may be displayed for diagnostics purposes.

Line no.	Programming	Possible values
8400	Compressor 1	ON | OFF
8410	Heat pump return temperature	0 … 140°C
8411	HP flow T° setpoint	0 … 140°C
8412	HP flow temperature	0 … 140°C
8413	Compressor modulation	0 … 100%
8415	Hot gas temperature	0 … 140°C
8434	Suction temperature	0 … 140°C
8450	Compressor hours of operation	0 … 199,999 h
8451	Compressor start counter	0 … 199999
8585	Line start temperature	0 … 140°C

8.11.3. Modbus slave diagnostics

The information below is used to troubleshoot the Tyneham heat pump via the signals exchanged over the Tyneham Heat Pump Control / Tyneham communication network

Line no.	HMI text	Related functions	Possible values
7611	UX signal input port 1	Compressor modulation	0 … 100 (Hz)
7621	UX signal input port 2	Fan modulation	0 … 100 (%)
7631	UX signal input port 3	Circulation pump modulation	0 … 100 (%)

8.11.4. Consumer diagnostics

Various setpoints and true values, relay switching states and timer states may be displayed for diagnostics purposes.

Line no.	Programming	Possible values
8700	Outdoor temperature	-50 … 50°C
8701	Minimum outdoor temperature	-50 … 50°C
	Reset the min. outdoor temperature	
8702	Maximum outdoor temperature	-50 … 50°C
	Reset the max. outdoor temperature	
8703	Attenuated outdoor temperature	-50 … 50°C
	Reset the attenuated temperature	
8704	Mixed outdoor temperature	-50 … 50°C
8820	DHW pump	off | on
8830	DHW temperature 1 (B3)	0 ... 140 °C
8831	DHW setpoint	8 ... 80 °C
8832	DHW temperature 2 (B31)	0 ... 140 °C
8840	Number of DHW pump hours	0 ...8333:7:00h
8841	DHW pump starts counter	0 ... 199999
8950	Line start temperature	0 … 140°C
8951	Line start setpoint temperature	0 … 140°C
9016	Special temperature 1	0 … 140°C
9017	Special temperature 2	0 … 140°C
9031	Relay output QX1	Open | Closed
9032	Relay output QX2	Open | Closed
9033	Relay output QX3	Open | Closed
9034	Relay output QX4	Open | Closed
9035	Relay output QX5	Open | Closed

* HP pressure

9. HYDRAULIC DIAGRAMS AND CONFIGURATIONS

CAUTION: Managing the primary circuit flow rate is essential to ensure product performance and service life. The flow setting value must be adapted to suit the application. Refer to the sizing study.

It is essential to install regulator valves (not supplied) on the decoupling tank return and on the return from every heat pump if a cascade installation is used.

When a cascade installation is used, the flow must be balanced between all units. We recommend performing this balancing using balancing valves so that individual flow levels can be measured over time.

CAUTION: Flow adjustment and checking are the responsibility of the installer/operator and will not be performed by Hamworthy. When the system is commissioned, a balance check will be required by Hamworthy. If no check is performed, commissioning will be refused.

9.1. Symbols used in the diagrams

Symbol	Function
	Isolation valve open
	2-channel powered valve
	Pump
	Temperature sensor
	Sieve filter
	Cut-off valve with bleed tap

Symbol	Function
	Balancing valve
	Safety mixing valve
	Outdoor sensor
	No return valve
	Safety valve

9.2. List of diagrams

HEAT PUMP ONLY WITH ONE PRE-HEATING TANK
1 decoupling bottle or tank, 1 DHW pre-heating tank

Diagrams
HYF110
HYF111

A. HYDRAULIC DIAGRAM

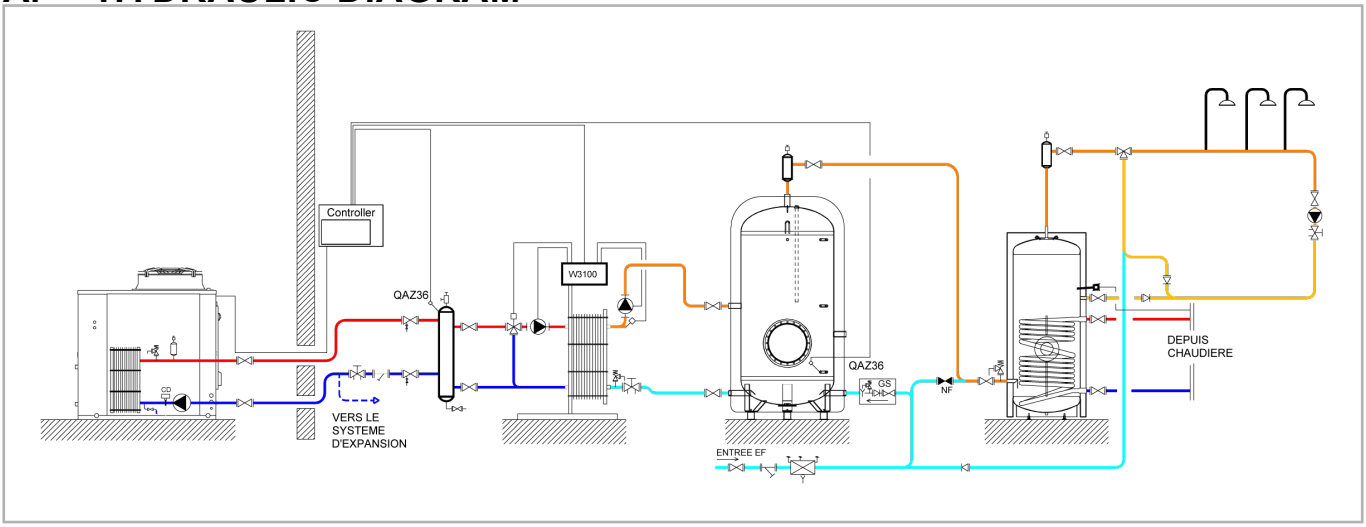


figure 16 - Diagram HYF110

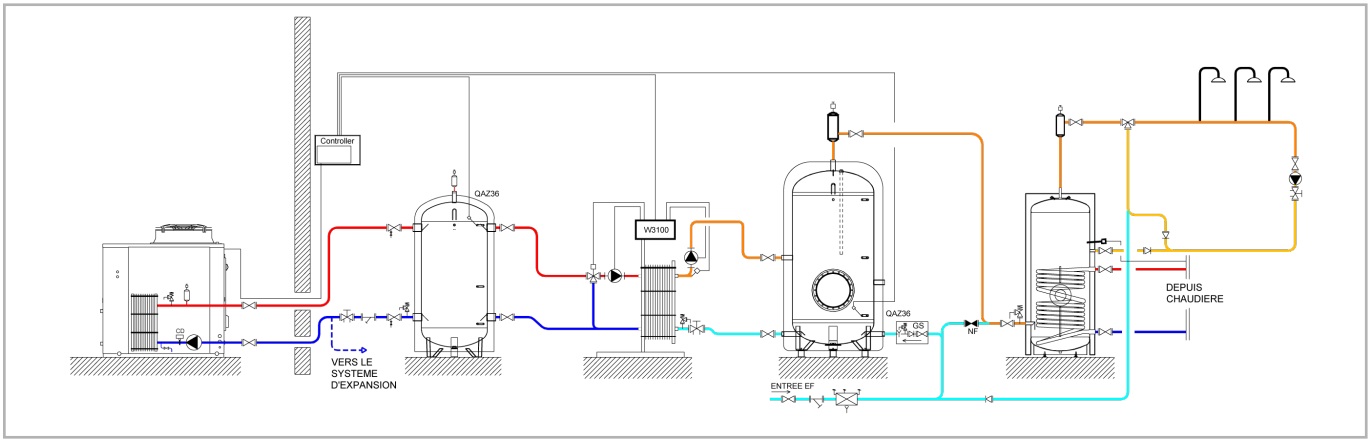


figure 17 - Diagram HYF111

B. REGULATION ACCESSORIES REQUIRED

	Quantity	Appliance reference	Order No.
Immersion sleeve sensor kit	2	QAZ 36	AA059261

C. DESCRIPTIONS

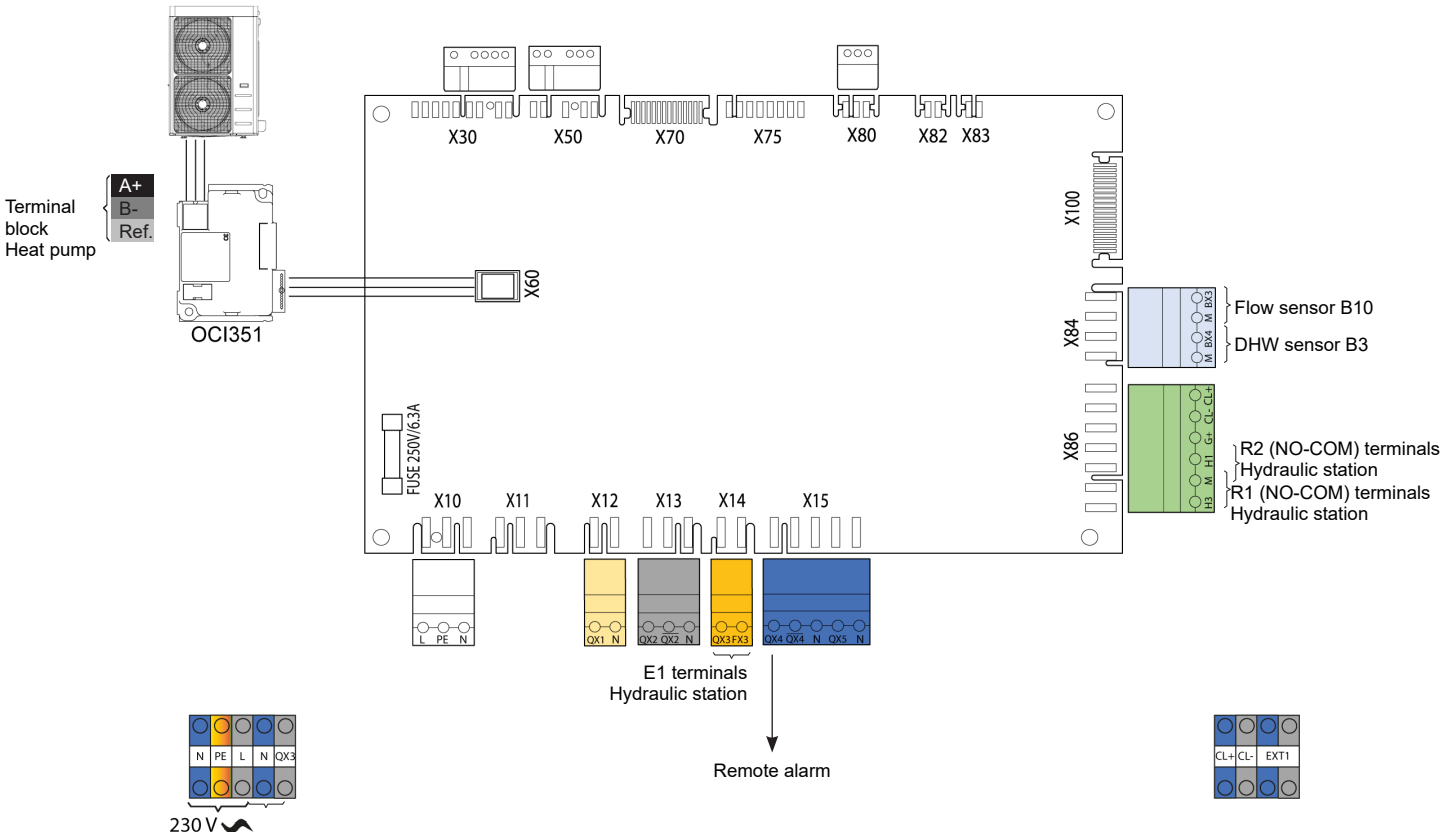
The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period.

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period. This was defined during the sizing study.

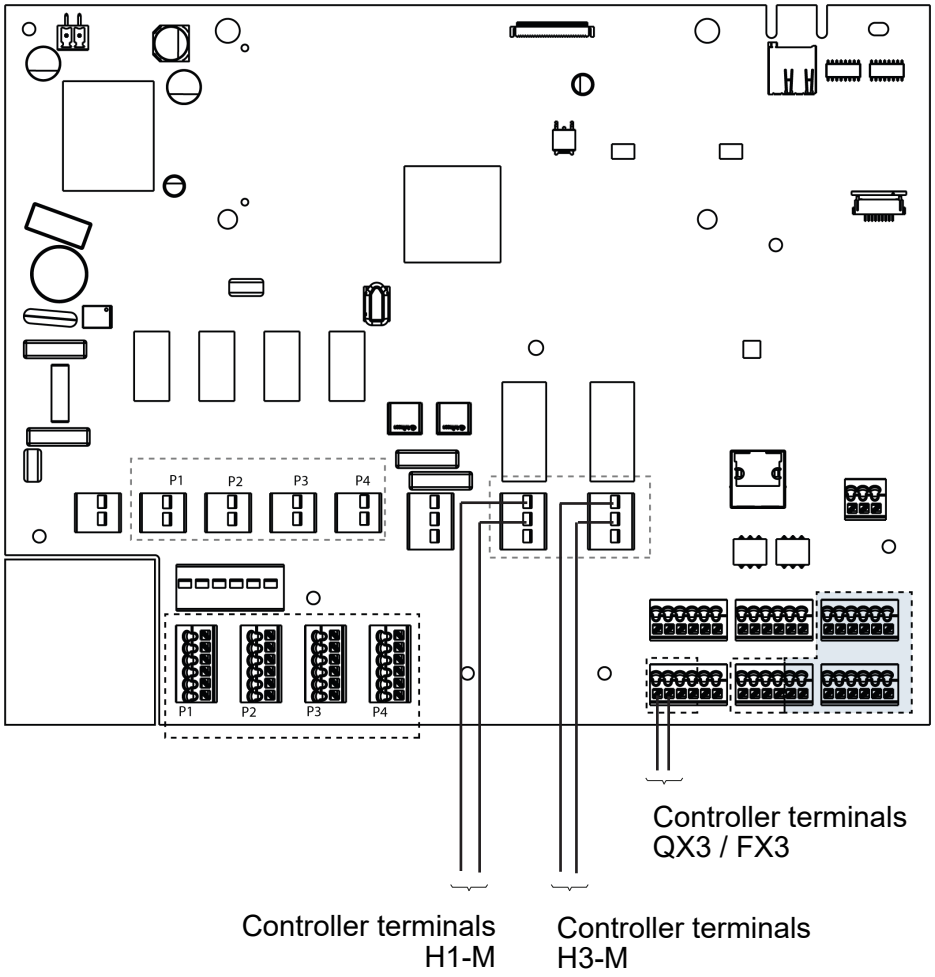
If it is deemed necessary to implement anti-Legionella cycles on the downstream gas-heated tank, these will be covered by the gas generator. If anti-Legionella cycles are required on the preheating tank(s), the solution shown does not contain the hydraulic or electrical elements used to perform them. If this is to be expected, please contact our pre-sales department to choose the most suitable solution for your installation.

It should also be noted that the gas back-up is sized to fulfil all DHW requirements on its own. This is an additional safety mechanism with regard to extreme weather conditions that are not favourable to the HP's operation.

D. CUSTOMER'S ELECTRICAL CONNECTION



E. HYDRAULIC STATION



F. HYDRAULIC STATION PROGRAMMING

☞ Start up the hydraulic station

INFORMATION: The hydraulic station arrives pre-programmed and requires no specific adjustment.

- *Settings / Equipment / Hydraulic diagram* menu

  Check the application — Hydraulic configuration | HP application

G. SPECIFIC START-UP PROCEDURE

☞ Make the accessories' electrical connections.

☞ Start up the HP on its own.

☞ Perform the following settings in "Specialist" mode:

	Line No.	*Value*
• *Time and date* menu		
Set the time	Hour / minute (1)	HH.MM
Set the date	Day / month (2)	DD.MM
Set the year	Year (3)	YYYY
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
Configure the hydraulic station output (preset)	Relay output QX3 (5892)	*DHW pump/valve Q3*
Configure the alarm output (preset)	*Relay output QX4 (5830)*	*Alarm output K10*
Assign the tank flow sensor (preset)	*Sensor input BX3 (5932)*	*B10 line output sensor*
Assign the DHW preheating sensor (preset)	*Sensor BX4 output (5933)*	*DHW source B3*
Configure the H1 input (preset)	*H1 input function (5950)*	*Switching of heating circuit + DHW operation*
Configure the contact direction (preset)	*Contact H1 action direction (5951)*	Normally closed
Configure the H3 input (preset)	*H3 input function (5960)*	*Error/alarm message*
Configure the contact direction (preset)	*Contact H3 action direction (5961)*	*Operation*
Configure mixer unit 1 (preset)	*Mixer unit 1 function (6014)*	*Multifunction*
• *DHW* menu		
Adjust the comfort setting	Nominal setting *(1610)*	- - -°C
• *DHW Tank* menu		

	Line No.	***Value***
Set the DHW over-value (preset)	*Flow setpoint over-value (5020)*	5°C
• *Timer programme 4/DHW* menu		
Preselection	Preselection (560)	Monday-Sunday
Adjust the timer programming	1st phase ON (561)	00: 00 h
Adjust the timer programming	1st phase Off (562)	06: 00 h
Adjust the timer programming	2nd phase ON (563)	22: 00 h
Adjust the timer programming	2nd phase Off (564)	24: 00 h

• Switch the DHW rate to automatic

H. HYDRAULIC VALIDATION

☞ Switch the power to the Tyneham back on:

It is necessary to adjust the flow rate of the HP taking the following characteristics into consideration

	AHP60-14	AHP60-18	AHP60-26	AHP60-32	AHP60-50	AHP60-70
Nominal flow rate (m^3/h)	2.4	3.1	4.5	5.5	8.6	11.5

Refer to § 10 , page 81 for the regulator input/output tests.

HEAT PUMP ONLY WITH TWO PRE-HEATING TANKS *2 or 3 DHW preheating tanks*	Diagrams HYF120 page 1 / 5

A. HYDRAULIC DIAGRAM

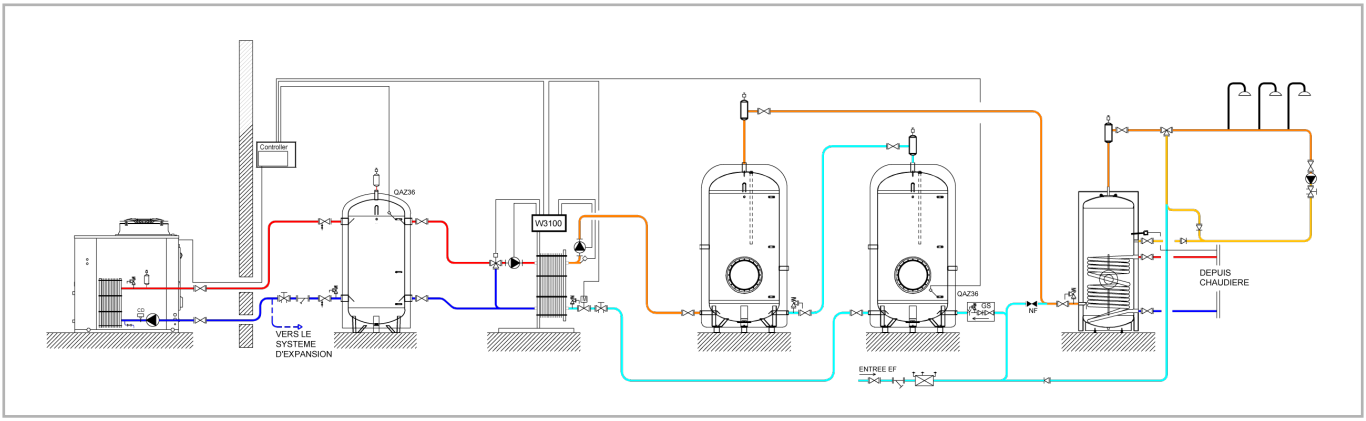


figure 18 - Diagram HYF120

B. REGULATION ACCESSORIES REQUIRED

	Quantity	Appliance reference	Order No.
Immersion sleeve sensor kit	2	QAZ 36	AA059261

C. DESCRIPTIONS

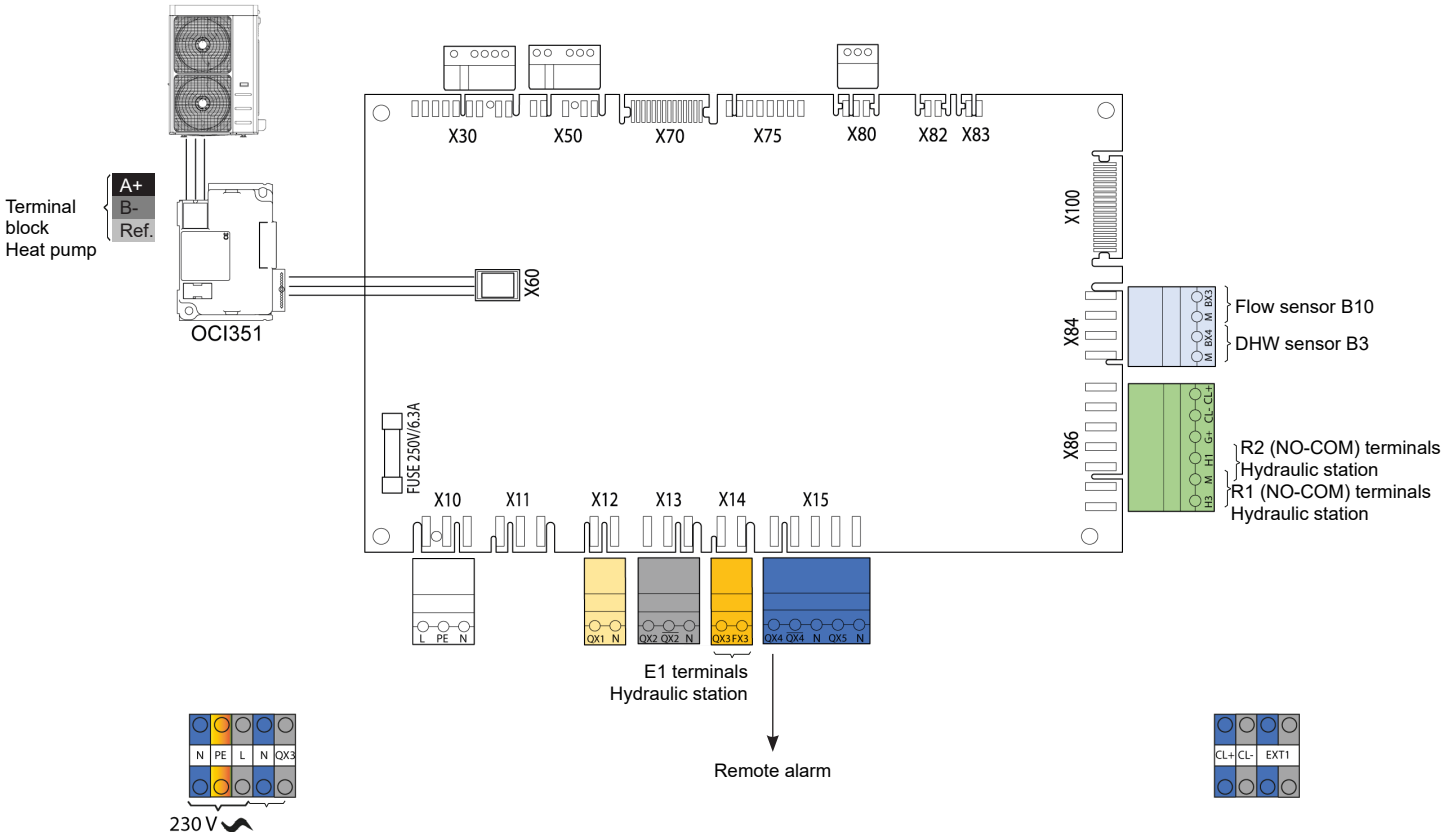
The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period.

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period. This was defined during the sizing study.

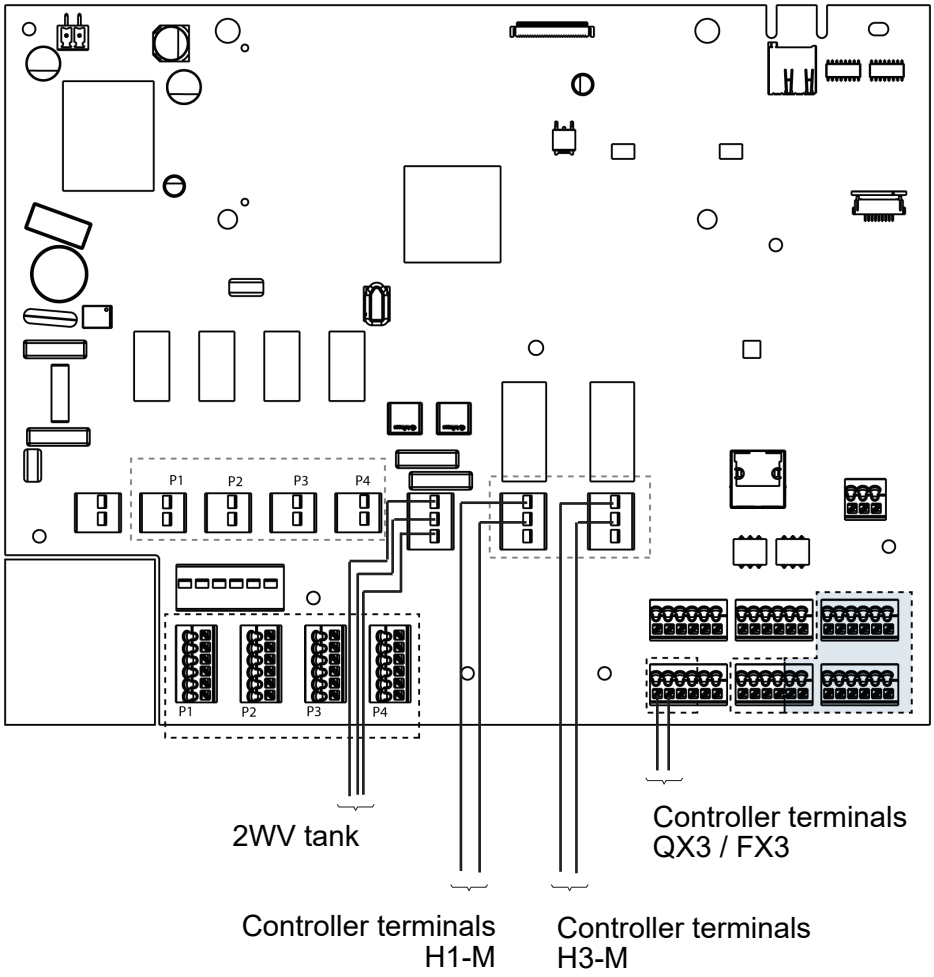
If it is deemed necessary to implement anti-Legionella cycles on the downstream gas-heated tank, these will be covered by the gas generator. If anti-Legionella cycles are required on the preheating tank(s), the solution shown does not contain the hydraulic or electrical elements used to perform them. If this is to be expected, please contact our pre-sales department to choose the most suitable solution for your installation. It should also be noted that the gas back-up is sized to fulfil all DHW requirements on its own. This is an additional safety mechanism with regard to extreme weather conditions that are not favourable to the HP's operation.

When 2 or more DHW preheating tanks are linked to the HP, it is necessary to add an isolation valve at the plate exchanger's secondary inlet in order to prevent cold water from being bypassed to the hot water tank during the drawing-off phases. This valve is supplied fitted and is controlled by the W3100.

D. CUSTOMER'S ELECTRICAL CONNECTION



E. HYDRAULIC STATION



F. HYDRAULIC STATION PROGRAMMING

☞ Start up the hydraulic station

INFORMATION: The hydraulic station arrives pre-programmed and requires no specific adjustment.

- *Settings / Equipment / Hydraulic diagram* menu

  Check the application | Hydraulic configuration | HP application

G. SPECIFIC START-UP PROCEDURE

☞ Make the accessories' electrical connections.

☞ Start up the HP on its own and the hydraulic station.

☞ Perform the following settings in "Specialist" mode:

	Line No.	***Value***
• *Time and date* menu		
Set the time	Hour / minute (1)	HH.MM
Set the date	Day / month (2)	DD.MM
Set the year	Year (3)	YYYY
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
Configure the hydraulic station output (pre-set)	Relay output QX3 (5892)	*DHW pump/valve Q3*
Configure the alarm output (preset)	*Relay output QX4 (5830)*	*Alarm output K10*
Assign the tank flow sensor (preset)	*Sensor input BX3 (5932)*	*B10 line output sensor*
Assign the DHW preheating sensor (pre-set)	*Sensor BX4 output (5933)*	*DHW source B3*
Configure the H1 input (preset)	*H1 input function (5950)*	*Switching of heating circuit + DHW operation*
Configure the contact direction (preset)	*Contact H1 action direction (5951)*	Normally closed
Configure the H3 input (preset)	*H3 input function (5960)*	*Error/alarm message*
Configure the contact direction (preset)	*Contact H3 action direction (5961)*	*Operation*
Configure mixer unit 1 (preset)	*Mixer unit 1 function (6014)*	*Multifunction*
• *DHW* menu		
Adjust the comfort setting	Nominal setting *(1610)*	- - -°C
• *DHW Tank* menu		
Set the DHW over-value (preset)	*Flow setpoint over-value (5020)*	5°C
• *Timer programme 4/DHW* menu		
Preselection	Preselection (560)	Monday-Sunday
Adjust the timer programming	1st phase ON (561)	00: 00 h
Adjust the timer programming	1st phase Off (562)	06: 00 h

	Line No.	*Value*
Adjust the timer programming	2nd phase ON (563)	22: 00 h
Adjust the timer programming	2nd phase Off (564)	24: 00 h

- Switch the DHW rate to automatic

H. HYDRAULIC VALIDATION

☞ Switch the power to the Tyneham back on:

It is necessary to adjust the flow rate of the HP taking the following characteristics into consideration

	AHP60-14	AHP60-18	AHP60-26	AHP60-32	AHP60-50	AHP60-70
Nominal flow rate (m^3/h)	2.4	3.1	4.5	5.5	8.6	11.5

Refer to § 10 , page 81 for the regulator input/output tests.

2 OR 3 HEAT PUMPS CASCADE WITH ONE PRE-HEATING TANK
1 decoupling bottle or tank, 1 DHW pre-heating tank

Diagrams
HYF210
page 1 / 6

A. HYDRAULIC DIAGRAMS

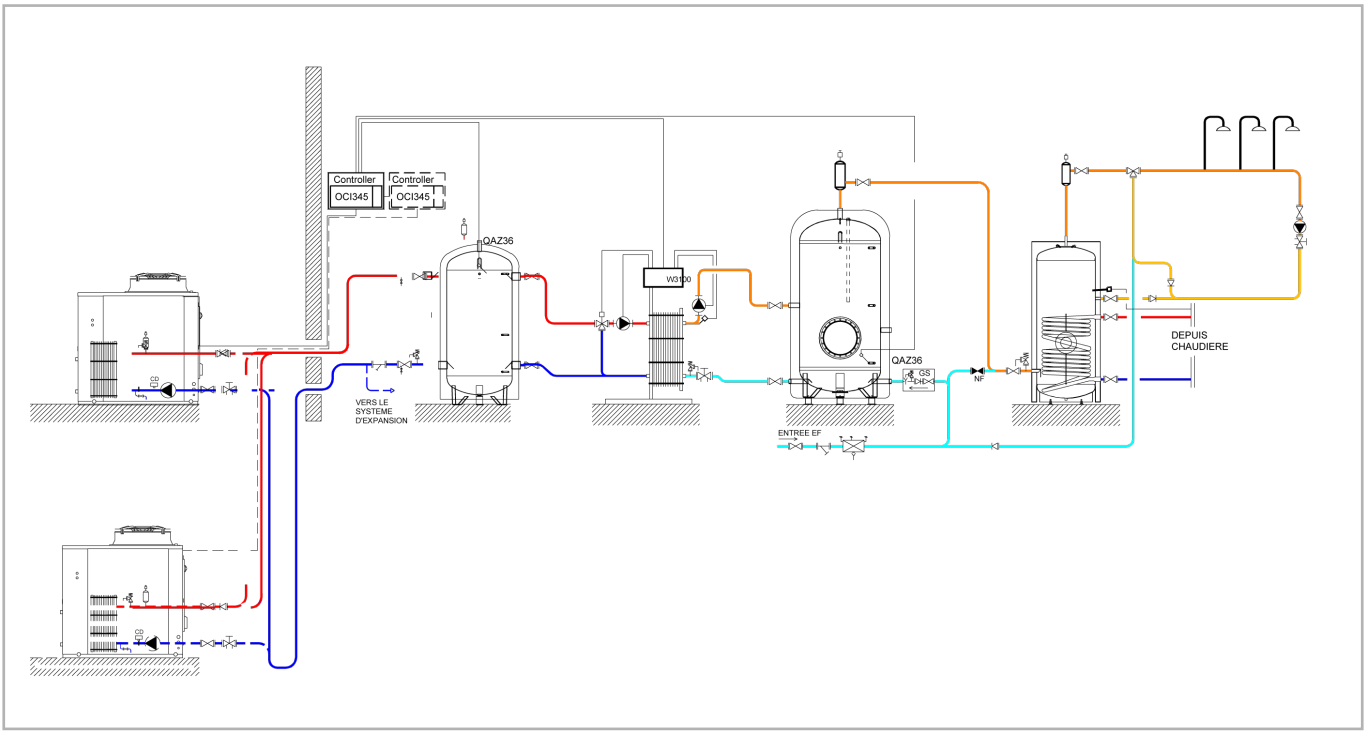


figure 19 - Diagram HYF210

B. REGULATION ACCESSORIES REQUIRED

	Quantity	Appliance reference	Order No.
OCI kit	1 per heat pump	OCI 345	AA059752
Immersion sleeve sensor kit	2	QAZ 36	AA059261

C. FUNCTIONAL EXPLANATIONS

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period.

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period. This was defined during the sizing study.

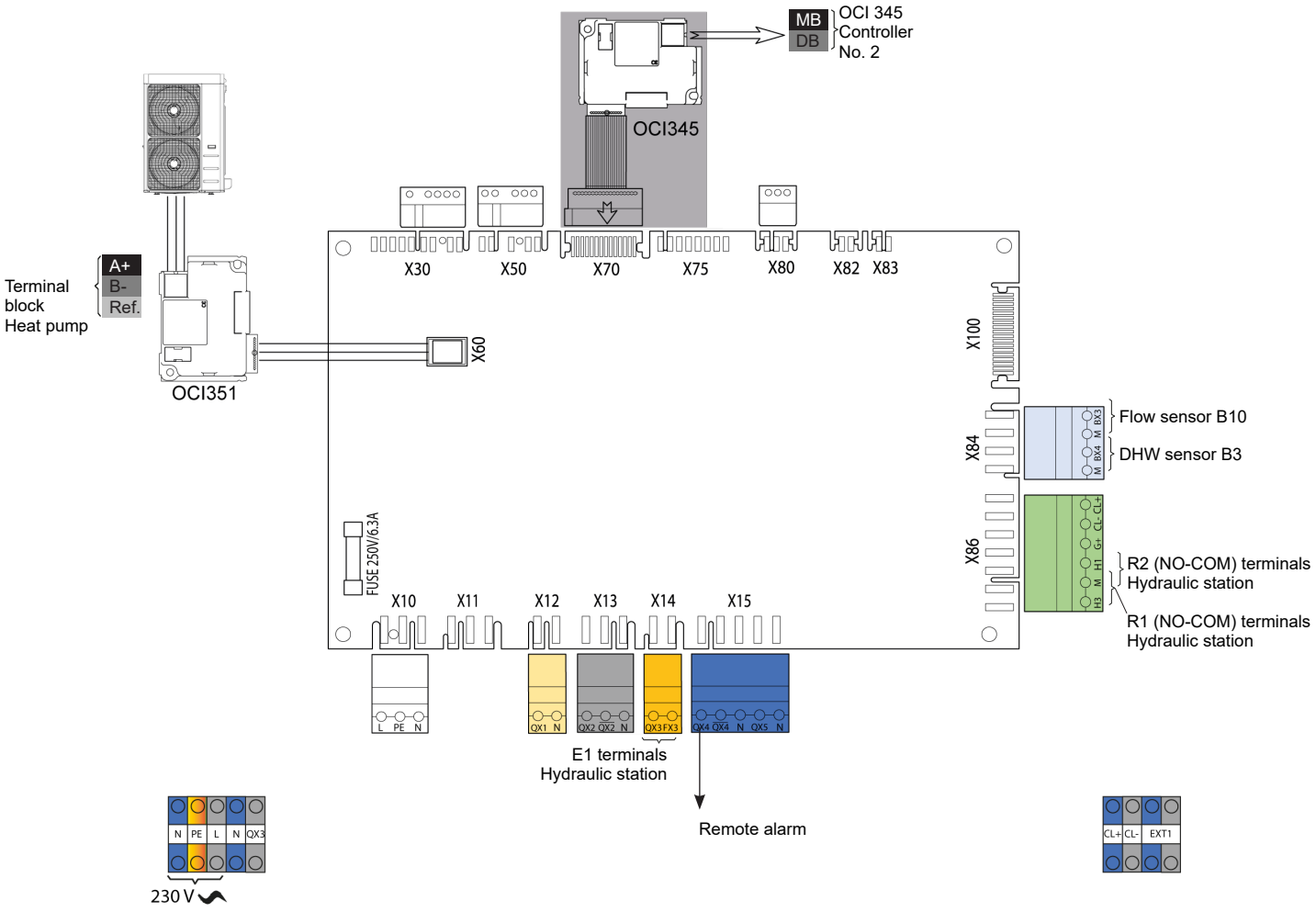
If it is deemed necessary to implement anti-Legionella cycles on the downstream gas-heated tank, these will be covered by the gas generator. If anti-Legionella cycles are required on the preheating tank(s), the solution shown does not contain the hydraulic or electrical elements used to perform them. If this is to be expected, please contact our pre-sales department to choose the most suitable solution for your installation.

It should also be noted that the gas back-up is sized to fulfil all DHW requirements on its own. This is an additional safety mechanism with regard to extreme weather conditions that are not favourable to the HP's operation.

The implementation of a cascade of several HPs requires the addition of OCI345 back-up modules (one per HP) to ensure communication between HPs and the proper functioning of the cascade algorithm.

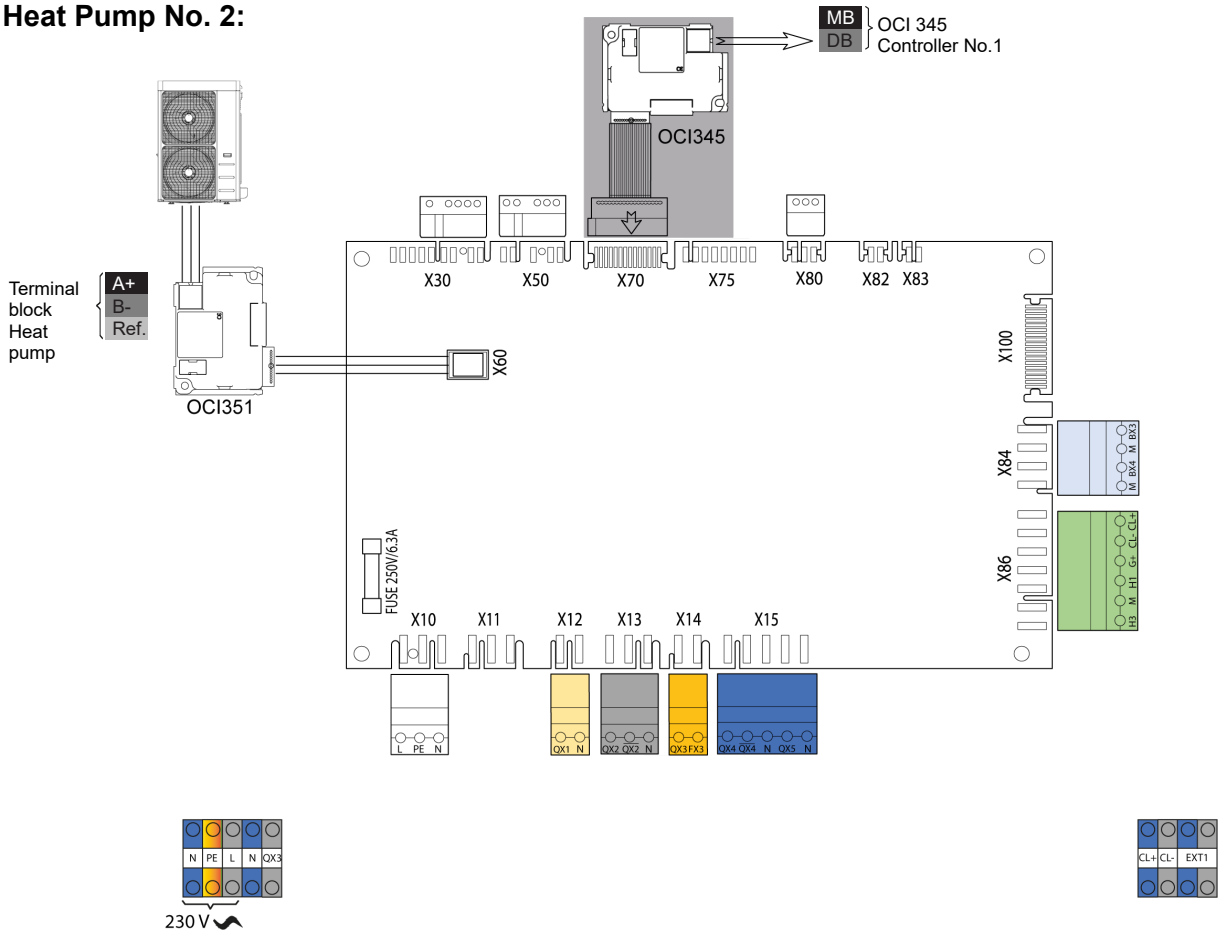
D. CUSTOMER'S ELECTRICAL CONNECTION

Tyneham Heat Pump Control Tyneham Master No.1

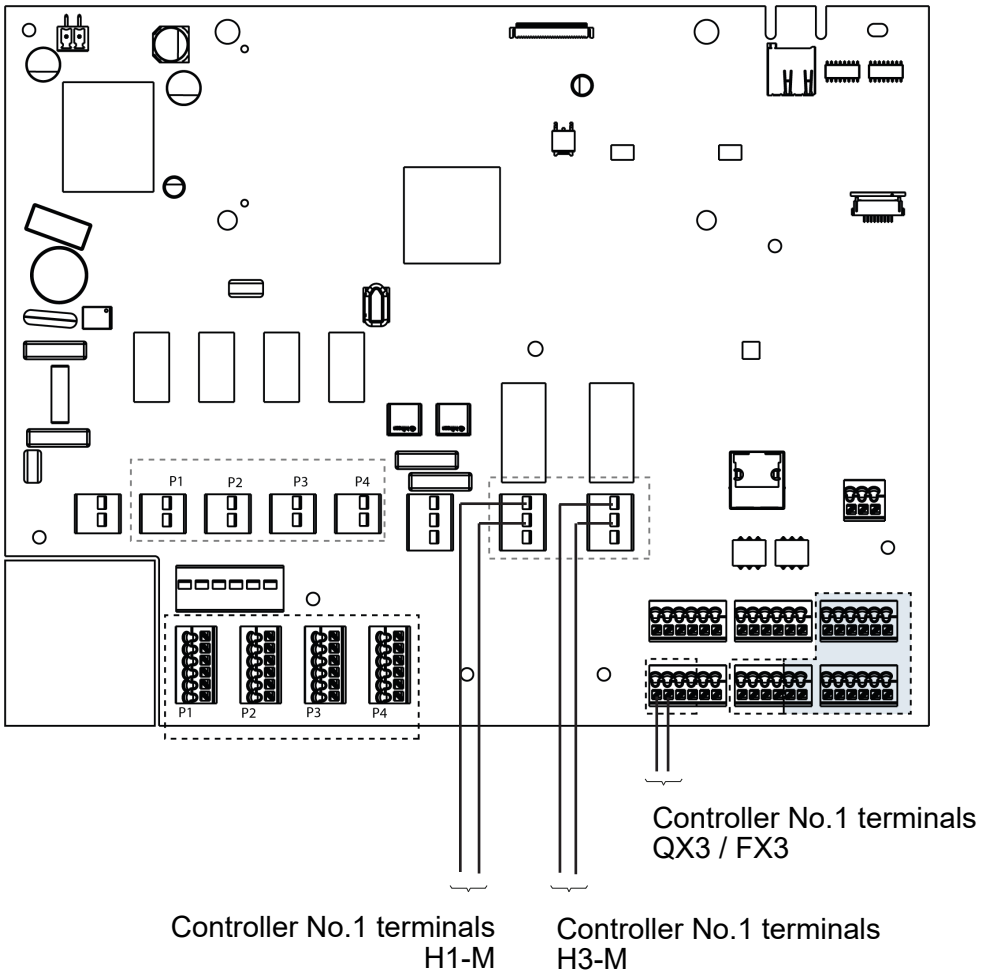


Diagrams: HYF210

Heat Pump No. 2:



E. HYDRAULIC STATION



F. HYDRAULIC STATION PROGRAMMING

☞ Start up the hydraulic station

INFORMATION: The hydraulic station arrives pre-programmed and requires no specific adjustment.

- *Settings / Equipment / Hydraulic diagram* menu

  Check the application

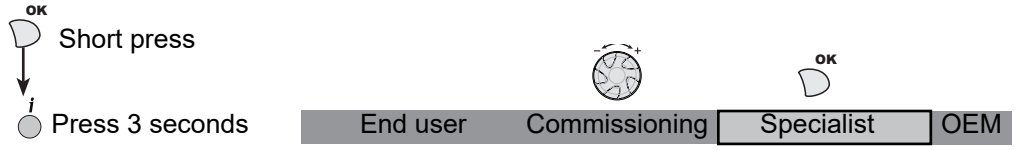
Hydraulic configuration	HP application

G. SPECIFIC START-UP PROCEDURE

☞ Make the accessories' electrical connections.

☞ Start up each HP.

☞ Perform the following settings in "Specialist" mode:



Heat Pump No. 1 Cascade master:

	Line No.	*Value*
• *Time and date* menu		
Set the time	Hour / minute (1)	HH.MM
Set the date	Day / month (2)	DD.MM
Set the year	Year (3)	YYYY
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
Configure the hydraulic station output (preset)	Relay output QX3 (5892)	*DHW pump/valve Q3*
Configure the alarm output (preset)	*Relay output QX4 (5830)*	*Alarm output K10*
Assign the tank flow sensor (preset)	*Sensor input BX3 (5932)*	*B10 line output sensor*
Assign the DHW preheating sensor (preset)	*Sensor BX4 output (5933)*	*DHW source B3*
Configure the H1 input (preset)	*H1 input function (5950)*	*Switching of heating circuit + DHW operation*
Configure the contact direction (preset)	*Contact H1 action direction (5951)*	Normally closed
Configure the H3 input (preset)	*H3 input function (5960)*	*Error/alarm message*
Configure the contact direction (preset)	*Contact H3 action direction (5961)*	*Operation*
Configure mixer unit 1 (preset)	*Mixer unit 1 function (6014)*	*Multifunction*
• *DHW* menu		
Adjust the comfort setting	Nominal setting *(1610)*	- - -°C
• *DHW Tank* menu		
Set the DHW over-value (preset)	*Flow setpoint over-value (5020)*	5°C
• *Timer programme 4/DHW* menu		
Preselection	Preselection (560)	Monday-Sunday
Adjust the timer programming	1st phase ON (561)	00: 00 h
Adjust the timer programming	1st phase Off (562)	06: 00 h

	Line No.	***Value***
Adjust the timer programming	2nd phase ON (563)	22: 00 h
Adjust the timer programming	2nd phase Off (564)	24: 00 h

- *LPB network* menu

Number of the appliance (preset)	*Appliance address* (6600)	1
Number of the segment (preset)	*Segment address* (6601)	0
Adjust the clock rate	Clock operation (6640)	Master

- Switch the DHW rate to automatic

Heat Pump No. 2:

	Line No.	***Value***
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
• *LPB network* menu		
Number of the appliance	Appliance address (6600)	2
Number of the segment (preset)	*Segment address (6601)*	*0*
Adjust the clock rate (preset)	*Clock operation (6640)*	*Slave without adjustment*

H. HYDRAULIC VALIDATION

☞ Switch the power to the Tyneham back on:

It is necessary to adjust the flow rate of each HP taking the following characteristics into consideration:
Unit flow characteristics of each HP, when all HPs are in operation

	AHP60-14	AHP60-18	AHP60-26	AHP60-32	AHP60-50	AHP60-70
Nominal flow rate (m^3/h)	2.4	3.1	4.5	5.5	8.6	11.5

Refer to § 10 , page 81 for the regulator input/output tests.

2 Heat Pumps Cascade with 2 or 3 Pre-Heating Tanks

1 decoupling tank, 2 or 3 DHW pre-heating tanks

Diagrams
HYF220
HYF23a

A. HYDRAULIC DIAGRAMS

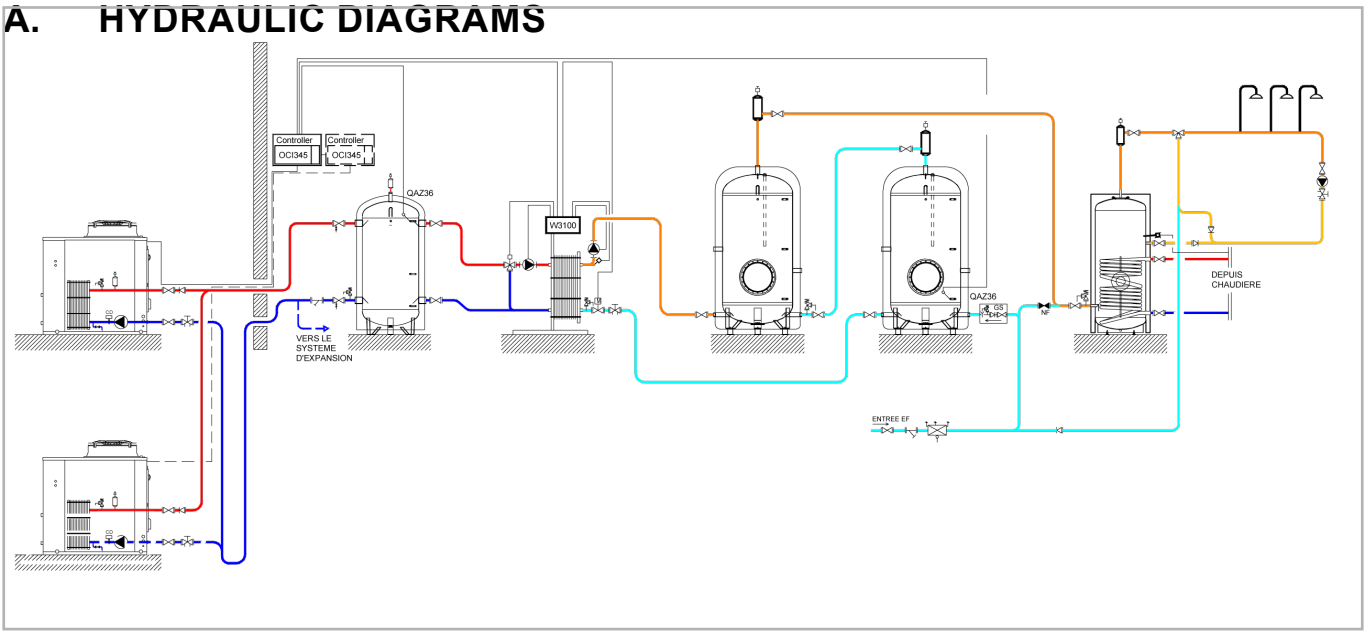


figure 21 - Diagram HYF220

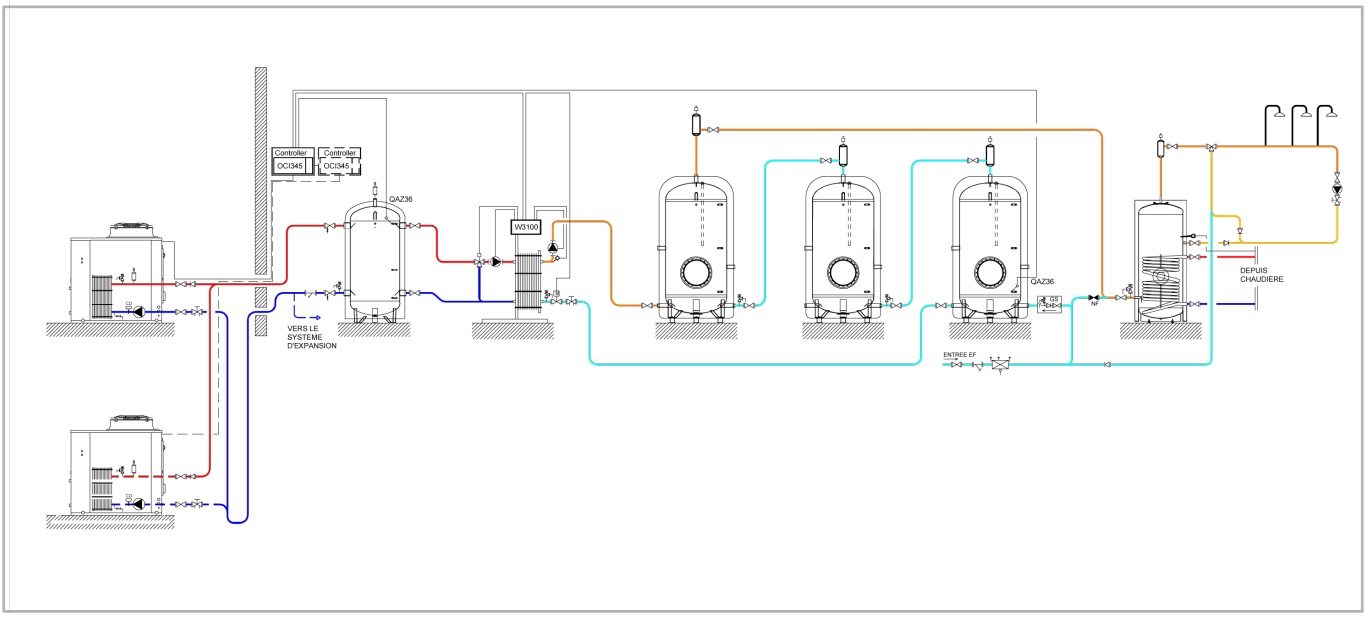


figure 20 - Diagram HYF23a

B. REGULATION ACCESSORIES REQUIRED

	Quantity	Appliance reference	Order No.
OCI kit	1 per heat pump	OCI 345	AA059752
Immersion sleeve sensor kit	2	QAZ 36	AA059261

C. FUNCTIONAL EXPLANATIONS

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period.

The HP supports DHW production during a time period with a configurable duration. Care will be taken to ensure that draw-offs are virtually non-existent during this time period. This was defined during the sizing study.

If it is deemed necessary to implement anti-Legionella cycles on the downstream gas-heated tank, these will be covered by the gas generator. If anti-Legionella cycles are required on the preheating tank(s), the solution shown does not contain the hydraulic or electrical elements used to perform them. If this is to be expected, please contact our pre-sales department to choose the most suitable solution for your installation.

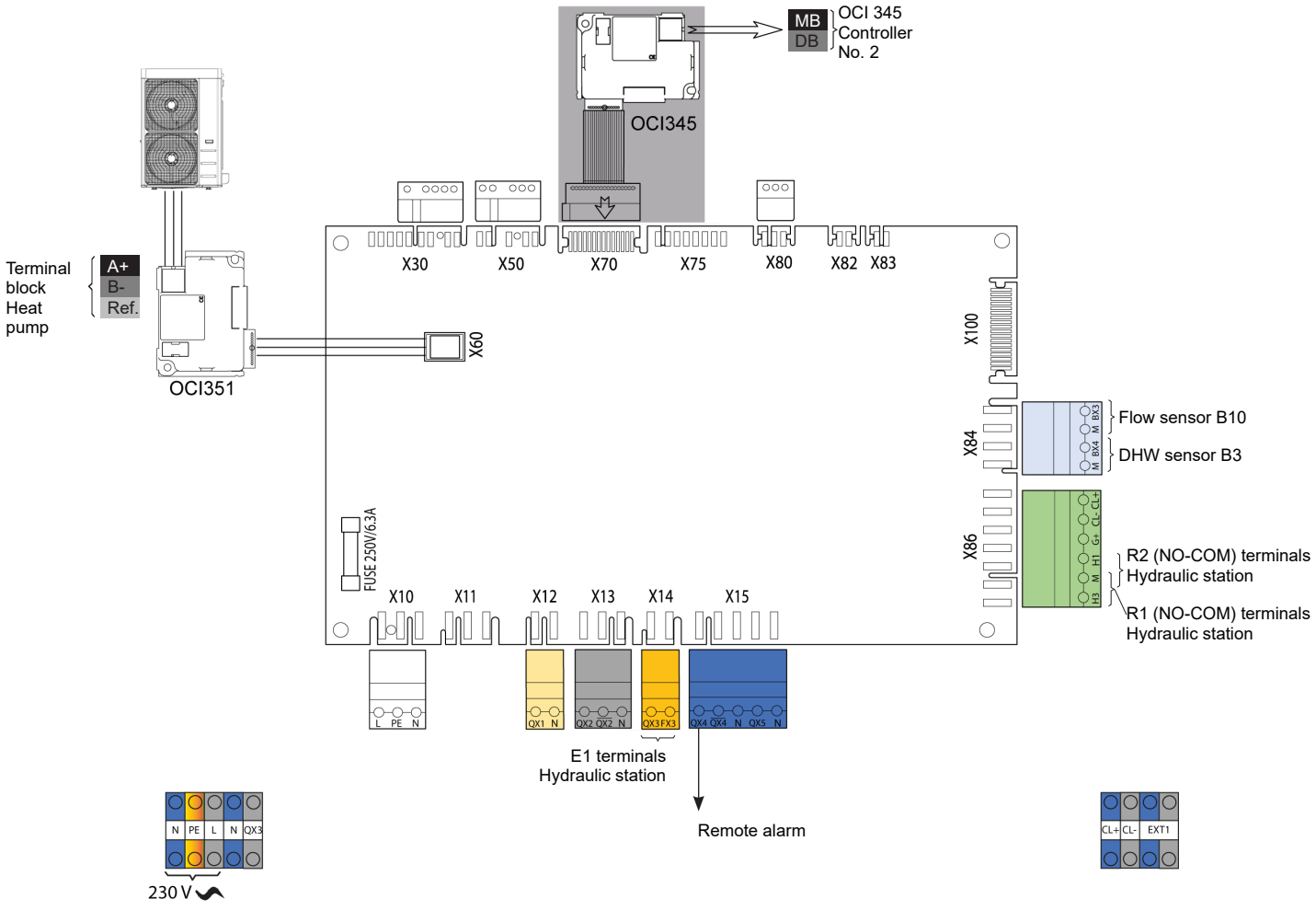
It should also be noted that the gas back-up is sized to fulfil all DHW requirements on its own. This is an additional safety mechanism with regard to extreme weather conditions that are not favourable to the HP's operation.

When 2 or more decoupling tanks are linked to the HP, it is necessary to add an isolation valve at the plate exchanger's secondary inlet in order to prevent cold water from being bypassed to the hot water tank during the drawing-off phases. This valve is supplied fitted and the exchanger is controlled by the W3100.

The implementation of a cascade of several HPs requires the addition of OCI345 back-up modules (one per HP) to ensure communication between HPs and the proper functioning of the cascade algorithm.

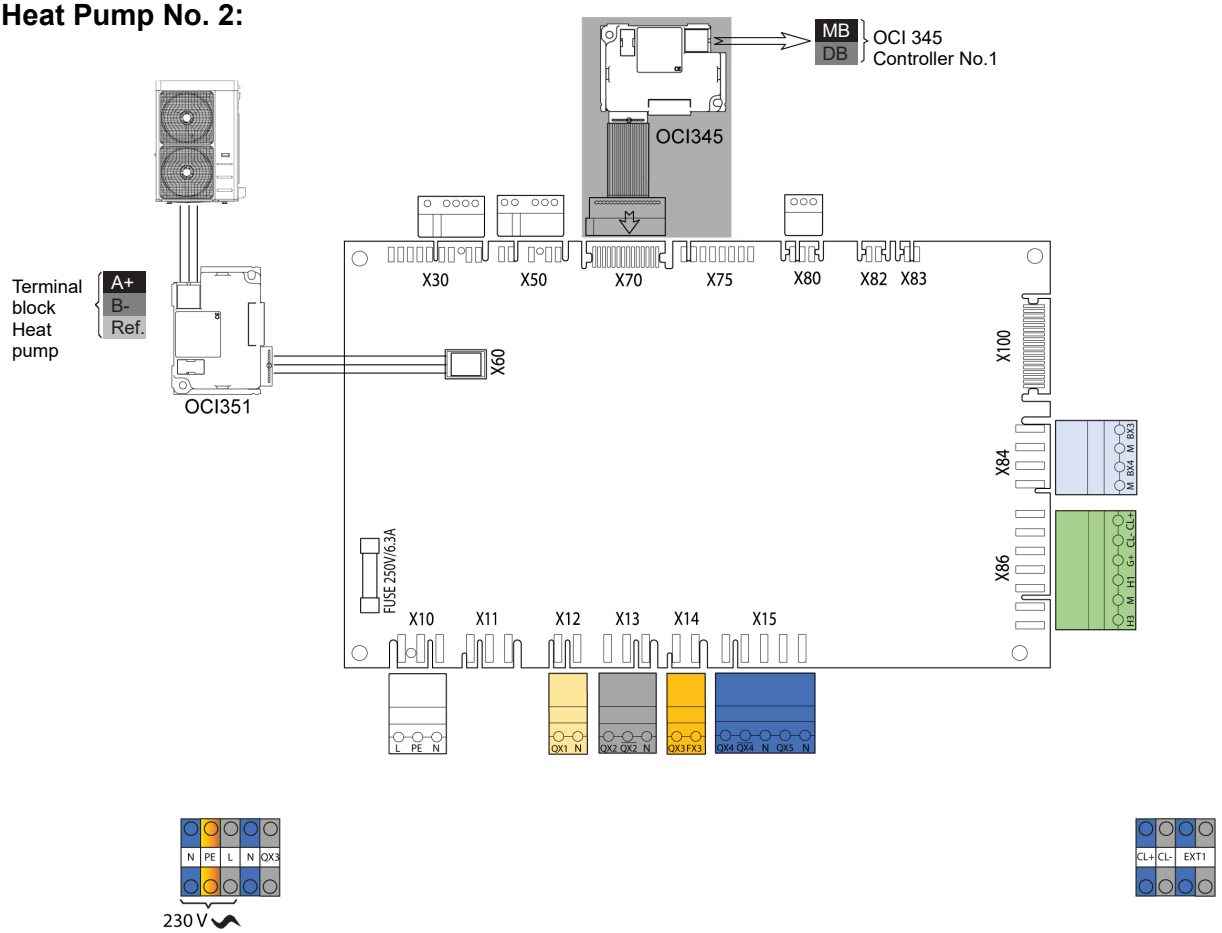
D. CUSTOMER'S ELECTRICAL CONNECTION

Tyneham Heat Pump Control Tyneham Master No.1

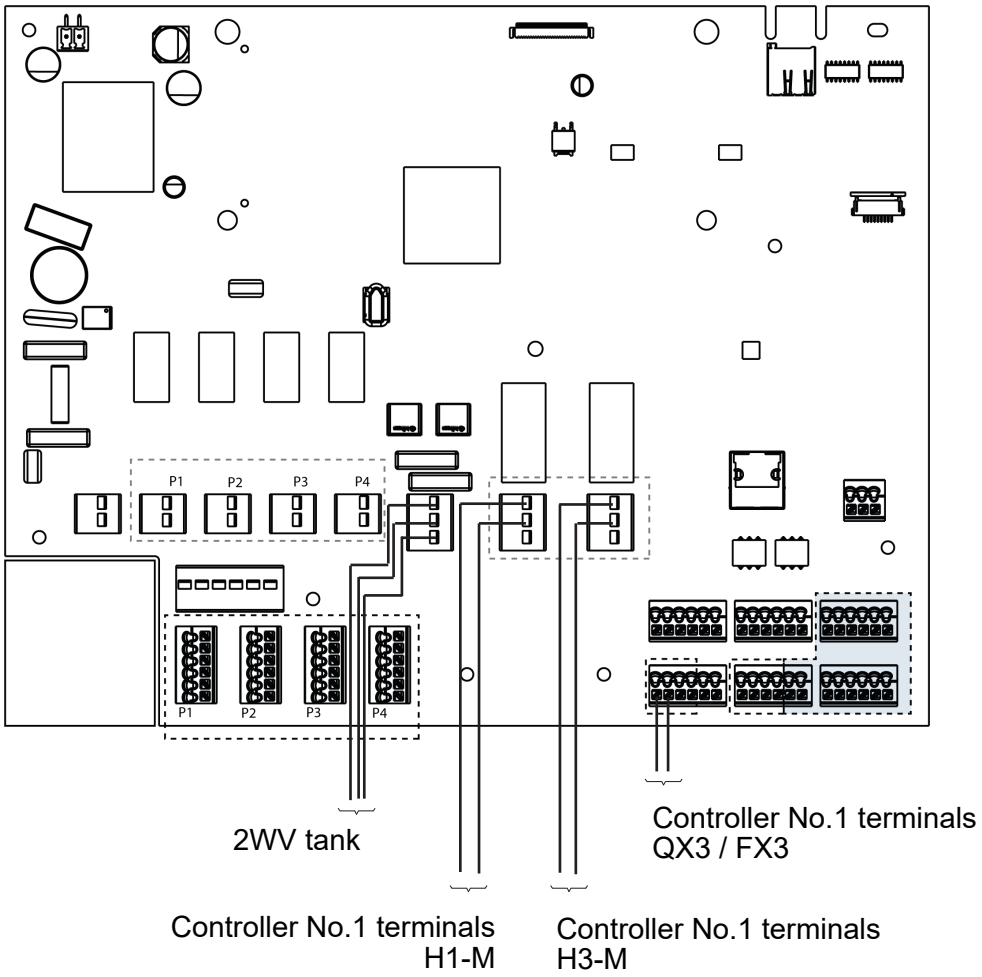


Diagrams: HYF220, HYF23a

Heat Pump No. 2:



E. HYDRAULIC STATION



F. HYDRAULIC STATION PROGRAMMING

☞ Start up the hydraulic station

INFORMATION: The hydraulic station arrives pre-programmed and requires no specific adjustment.

- *Settings / Equipment / Hydraulic diagram* menu

  Check the application | Hydraulic configuration | HP application

G. SPECIFIC START-UP PROCEDURE

☞ Make the accessories' electrical connections.

☞ Start up each HP.

☞ Perform the following settings in "Specialist" mode:

Heat Pump No. 1 Cascade master:

	Line No.	*Value*
• *Time and date* menu		
Set the time	Hour / minute (1)	HH.MM
Set the date	Day / month (2)	DD.MM
Set the year	Year (3)	YYYY
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
Configure the hydraulic station output (preset)	Relay output QX3 (5892)	*DHW pump/valve Q3*
Configure the alarm output (preset)	*Relay output QX4 (5830)*	*Alarm output K10*
Assign the tank flow sensor (preset)	*Sensor input BX3 (5932)*	*B10 line output sensor*
Assign the DHW preheating sensor (preset)	*Sensor BX4 output (5933)*	*DHW source B3*
Configure the H1 input (preset)	*H1 input function (5950)*	*Switching of heating circuit + DHW operation*
Configure the contact direction (preset)	*Contact H1 action direction (5951)*	Normally closed
Configure the H3 input (preset)	*H3 input function (5960)*	*Error/alarm message*
Configure the contact direction (preset)	*Contact H3 action direction (5961)*	*Operation*
Configure mixer unit 1 (preset)	*Mixer unit 1 function (6014)*	*Multifunction*
• *DHW* menu		
Adjust the comfort setting	Nominal setting *(1610)*	- - -°C
• *DHW Tank* menu		
Set the DHW over-value (preset)	*Flow setpoint over-value (5020)*	5°C

	Line No.	***Value***
• *Timer programme 4/DHW* menu		
Preselection	Preselection (560)	Monday-Sunday
Adjust the timer programming	1st phase ON (561)	00: 00 h
Adjust the timer programming	1st phase Off (562)	06: 00 h
Adjust the timer programming	2nd phase ON (563)	22: 00 h
Adjust the timer programming	2nd phase Off (564)	24: 00 h
• *LPB network* menu		
Number of the appliance (preset)	*Appliance address* (6600)	1
Number of the segment (preset)	*Segment address* (6601)	0
Adjust the clock rate	Clock operation (6640)	Master

• Switch the DHW rate to automatic

Heat Pump No. 2:

	Line No.	***Value***
• *Configuration* menu		
Preset the model of heating heat pump	Preset (5700)	AHP60-14 or 60-18 = 5 AHP60-26 or 60-32 = 6 AHP60-50 = 7 AHP60-70 = 8
• *LPB network* menu		
Number of the appliance	Appliance address (6600)	2
Number of the segment (preset)	*Segment address (6601)*	*0*
Adjust the clock rate (preset)	*Clock operation (6640)*	*Slave without adjustment*

H. HYDRAULIC VALIDATION

☞ Switch the power to the Tyneham back on:

It is necessary to adjust the flow rate of each HP taking the following characteristics into consideration:
Unit flow characteristics of each HP, when all HPs are in operation

	AHP60-14	AHP60-18	AHP60-26	AHP60-32	AHP60-50	AHP60-70
Nominal flow rate (m^3/h)	2.4	3.1	4.5	5.5	8.6	11.5

Refer to § 10 , page 81 for the regulator input/output tests.

10. ELECTRICAL VALIDATION

Tyneham Heat Pump Control:

		Line No.	*Value*
• ***Inputs/outputs test*** menu			
Check the sensor values			
B10 line output sensor		Temp. sensor BX3 (7806)	- - - °C
DHW sensor B3		Temp. sensor BX4 (7807)	- - - °C
Check input H1/ H3			
Read return W3100 R1		Signal input H1 (7844)	--- (open)/°°°(closed)
Read return W3100 R2		Signal input H3 (7858)	--- (open)/°°°(closed)
Enable outputs			
Alarm output		Relay test (7700)	Output QX4
Hydraulic station control output		Relay test (7700)	Output QX3
Cancel enable		Relay test (7700)	**No test**
• ***Generator diagnostics*** **menu**			
Check the values for the heat pump in use			
Heat pump flow sensor	Heat pump flow temperature	(8412)	- - - °C
Heat pump return sensor	Heat pump return temperature	(8410)	- - - °C
Compressor output sensor	Hot gas temperature	(8415)	- - - °C
Compressor input sensor	Gas suction temperature	(8434)	- - - °C
• ***Modbus slave diagnostics*** **menu**			
Compressor modulation		UX signal input port 1 (7611)	0...100 (Hz)
Fan modulation		UX signal input port 2 (7621)	- - -
Circulation pump modulation		UX signal input port 3 (7631)	- - -
• ***Consumer diagnostics*** **menu**			
Check the value of the HP outdoor temperature sensor			
Outdoor temperature	Outdoor temperature	(8700)	- - - °C

11. LACK OF WATER SAFETY FUNCTION

WARNING: The Tyneham Heat Pump Control system does not provide a lack of water safety function for the installation..

We recommend installing an outside safety system that switches off the Tyneham Heat Pump Control and forces the Tyneham to stop via dry contact input DI3 (refer to the Tyneham instructions) if the installation comes to lack water.

Installation recommendations:
- Install a pressure sensor on the power supply contact on the Tyneham Heat Pump Control
- Install a pressure sensor on the outside safety input to the Tyneham controller (refer to the Tyneham instructions)

12. SPARE PARTS LIST

ITEM	DESIGNATION	REF. FOR MODELS Hamworthy
001	Empty Tyneham Heat Pump Control case	AA79681
002	Tyneham Heat Pump Control lock with key	AA79689
003	Tyneham Heat Pump Control door only	AA79685
004	Tyneham Heat Pump Control OCI interface	AA79700
005	RVS21 board, Tyneham Heat Pump Control with board mounting + fuse + fuse cover	AA79696
006	Tyneham Heat Pump Control WAGO terminal blocks (x2)	AA79697
007	AVS37 display with Tyneham Heat Pump Control wiring	AA79695
008	Tyneham Heat Pump Control green power on switch	AA79692
009	Tyneham Heat Pump Control red fault indicator light	AA79691
010	Tyneham Heat Pump Control switch cover	AA79694
011	Tyneham Heat Pump Control wall mounting	AA79690
	Tyneham Heat Pump Control x84 x86 connectors	AA79698
	Complete wiring set with Tyneham Heat Pump Control connectors	AA79699

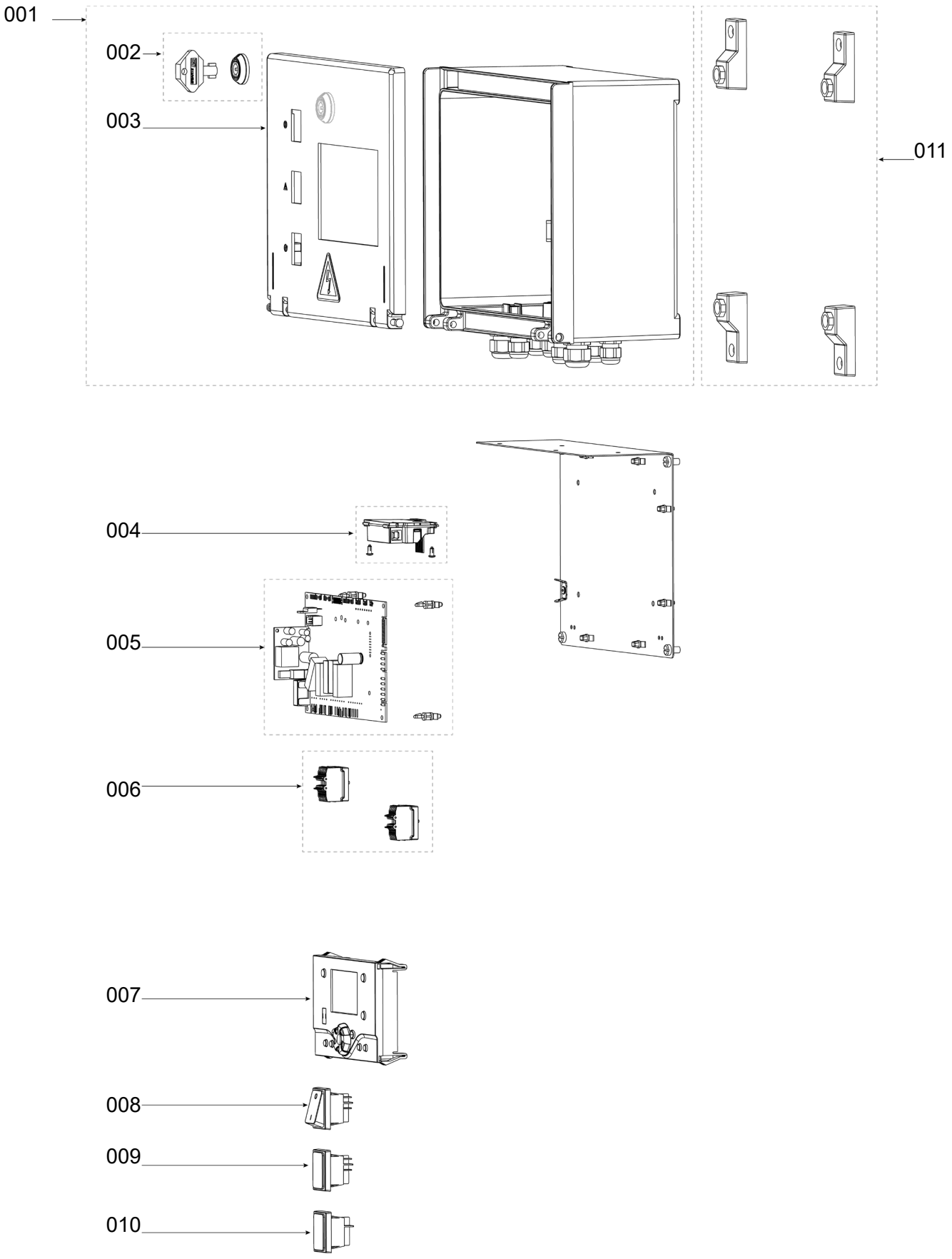


figure 22 - Tyneham Heat Pump Control set

13. ADDITIONAL ACCESSORIES

Each additional accessory is delivered with its own instructions (fitting, electrical connections and use).

13.1. Temperature sensors

13.1.1.Sensors not included with the control panel (to be ordered separately as accessories)

- 2 QAZ36 immersion sensors: (CTN 10 kΩ; 25°C)
  Ref. AA059261

Install the sensor in the sensor immersion sleeve. Bulb length 40.5 mm, diameter 6 mm.	
Connection: 2-wire cable, length 6 m.	
Protection: not shown.	Measuring range: 0..95°C

13.1.2.LPB OCI345 bridge (cascade accessory to be ordered separately)

- The OCI 345 is an LPB bus bridge to BSB bus (internal regulator)
  Ref. AA059752
  4.5mm² cable, 2 non-swappable wires, 250m

13.1.3.Sensor characteristics

13.1.3.1. CTN 1 k / QAZ34

T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]
-30.0	13’034	-13.0	5’303	4.0	2’387	21.0	1’170	38.0	617
-29.0	12’324	-12.0	5’046	5.0	2’284	22.0	1’125	39.0	595
-28.0	11’657	-11.0	4’804	6.0	2’186	23.0	1’081	40.0	575
-27.0	11’031	-10.0	4’574	7.0	2’093	24.0	1’040	41.0	555
-26.0	10’442	-9.0	4’358	8.0	2’004	25.0	1’000	42.0	536
-25.0	9’889	-8.0	4’152	9.0	1’920	26.0	962	43.0	517
-24.0	9’369	-7.0	3’958	10.0	1’840	27.0	926	44.0	500
-23.0	8’880	-6.0	3’774	11.0	1’763	28.0	892	45.0	483
-22.0	8’420	-5.0	3’600	12.0	1’690	29.0	859	46.0	466
-21.0	7’986	-4.0	3’435	13.0	1’621	30.0	827	47.0	451
-20.0	7’578	-3.0	3’279	14.0	1’555	31.0	796	48.0	436
-19.0	7’193	-2.0	3’131	15.0	1’492	32.0	767	49.0	421
-18.0	6’831	-1.0	2’990	16.0	1’433	33.0	740	50.0	407
-17.0	6’489	0.0	2’857	17.0	1’375	34.0	713		
-16.0	6’166	1.0	2’730	18.0	1’320	35.0	687		
-15.0	5’861	2.0	2’610	19.0	1’268	36.0	663		
-14.0	5’574	3.0	2’496	20.0	1’218	37.0	640		

13.1.3.2. CTN 10 k / QAZ36

T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]	T[°C]	R[Ohm]
-30.0	175203	20.0	12488	70.0	1753	120.0	387	170.0	117
-25.0	129289	25.0	10000	75.0	1481	125.0	339	175.0	105
-20.0	96360	30.0	8059	80.0	1256	130.0	298	180.0	95
-15.0	72502	35.0	6535	85.0	1070	135.0	262	185.0	85
-10.0	55047	40.0	5330	90.0	915	140.0	232	190.0	77
-5.0	42158	45.0	4372	95.0	786	145.0	206	195.0	70
0.0	32555	50.0	3605	100.0	677	150.0	183	200.0	64
5.0	25339	55.0	2989	105.0	586	155.0	163		
10.0	19873	60.0	2490	110.0	508	160.0	145		
15.0	15699	65.0	2084	115.0	443	165.0	130		

Check list prior to commissioning Tyneham

Please refer to the Tyneham manual for more details on the criteria for accepting readings

Outdoor unit:

Outdoor positioning (check that the recommendations are complied with): ☐ Outdoors ☐ Alcove ☐ Other

Distances compliant with the environment: ☐ Yes ☐ No

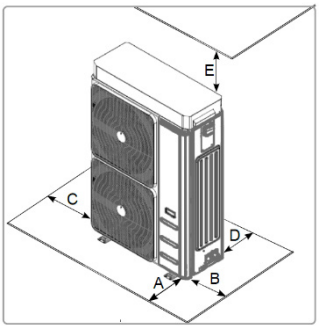
Neighbourhood distancing: ☐ Yes ☐ No

Ventilation distance (VMC, chimney, HP): ☐ Yes ☐ No

Studs or anti-vibration system present: ☐ Yes ☐ No

HP raised above the ground: ☐ Yes ☐ No

Insulated and traced exterior pipes: ☐ Yes ☐ No



MODÈLE	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
AHP60 14 -18 kW	1500	500	400	400	500
AHP60 26 - 32 kW	1500	700	400	400	-

AHP60 50 – 70 kW: see instructions

Condensate drain connected and protected against frost

☐ Yes ☐ No.

Each Tyneham communication bus connected to its Controller regulation: ☐ Yes ☐ No

Primary hydraulic circuit

Hydraulics performed according to the diagram provided in the study: ☐ Yes ☐ No

Fluid conveyed: ☐ Water ☐ Water + Glycol Content in %: ……

Boiler room hydraulic pressure: …… Bar HP hydraulic pressure: …… Bar

Top-up water meter present: ☐ Yes ☐ No

Sieve filter present on the return HP: ☐ Yes ☐ No

Tank return balancing valve present: ☐ Yes ☐ No

In cascade, balancing valve present on each HP: ☐ Yes ☐ No

Softener present for the top-up water: ☐ Yes ☐ No

No automatic water top-up: ☐ Yes ☐ No

Expansion system connected and filled with water: ☐ Yes ☐ No

Air bleeder present on each high point: ☐ Yes ☐ No

Decoupling bottle present between the hydraulic station and the HPs: ☐ Yes ☐ No

Fitting and wiring of the decoupling bottle flow sensor (location according to instructions): ☐ Yes ☐ No

Hydraulic station and DHW tanks:

Communication connected between the station and the controller No.1 (3 pairs):	☐ Yes	☐ No
A group or a safety valve is directly connected to each tank:	☐ Yes	☐ No
Valve calibration according to the operating pressure of the tank:	☐ Yes	☐ No
Anode(s) fitted to each DHW tank:	☐ Yes	☐ No
Safety mixer present upstream of the draw-off points:	☐ Yes	☐ No
Several pre-heating tanks installed, hydraulic station return 2WV present:	☐ Yes	☐ No
Fitting and wiring of the preheating tank sensor B3 (location according to instructions):	☐ Yes	☐ No

Check of the HP input power supply (do not switch on):

Caution: Switching on the product using a temporary power supply/construction kit is prohibited.

Proximity switch disconnector present:	☐ Yes	☐ No
Three-phase + neutral power supply with subscription suitable for HP capacities:	☐ Yes	☐ No
HP circuit breaker amperage and curve compliance:	☐ Yes	☐ No
Compliance with HP power cable sections:	☐ Yes	☐ No
Check that connections are tight:		☐ Done

Pre-operations: With the disconnect switch open, please open the fuse holders contained in the HP, then close the HP's main circuit breaker, and then the proximity switch.

Readings to be taken at the Tyneham input without closing the fuse holders:

Mesures à effectuer	Valeurs relevées
Tension Neutre – Terre (NT)	..... Volts
Tension Phase 1 – Neutre (PN)	..... Volts
Tension Phase 1 – Terre (PT)	..... Volts
Tension Phase 1 – Phase 2	..... Volts
Tension Phase 2 – Phase 3	..... Volts
Tension Phase 3 – Phase 1	..... Volts

ⓘ

The measured NT voltage should be approx. 0 Vac (~5 Vac allowed)

The PT and PN voltages should be approx. 230Vac +/-10% with a stable value.

The voltages between the phases must be identical and approx. 380Vac +/-10% with a stable value.

If the readings taken are consistent, please open the proximity switch and close the fuse holders.

⚠ **CAUTION:**

You can now turn on the HP, **you should not try to start it!**
Please check that the display lights up. If this is not the case, a 2-phase inversion must be performed. See chapter § of the Tyneham manual.
The heating cord will gradually heat the compressor.
This operation must be performed for at least 12 hours before a start-up operation or after a long shutdown period.
You can then fill the HP with water and carry out the air purge. See section §

Caution ! This reading does not constitute a boiler room report.

Hamworthy Heating Accredited Agents

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