ModuSat SP Cooling Unit

ModuSat SP Heating Unit

Installation Manual

2551988D

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1 GENERAL INFORMATION

1.1 *Application*

The Evinox ModuSat Single Plate heating/cooling units have been designed to provide heating/cooling for dwellings served by a communal or district system. The heating/cooling is supplied via primary water, which is provided by centralised plant. The Evinox ModuSat SPH/SPC units require electrical supply to function.

1.2 *Symbols*

	**IMPORTANT NOTE REGARDING CORRECT INSTALLATION**
	**WARNING REGARDING PERSONAL SAFETY**
	**WARNING OF DANGER OF ELECTRIC SHOCK**

1.3 *Warning*

- ☐ **Follow the instructions.** These instructions must be read and observed carefully before installing and operating the ModuSat unit. Failure to read and follow the instructions provided within this document may cause a safety hazard or/and failure of the equipment.
- ☐ **Qualified personnel only.** The Evinox cooling unit must be installed, commissioned and maintained by a qualified and competent personnel in accordance with this document as well as national regulations and standards.
- ☐ **Warning of transport damage.** Always check to ensure that the ModuSat unit has not been damaged during the transport.
- ☐ **Warranty.** Any modifications or adjustments carried out without Evinox Energy official authorisation will invalidate the warranty and absolve Evinox Energy from any liability.
- ☐ **Product modifications.** Evinox Energy reserves the right to make changes or modifications to the products without prior notice.

1.4 *Safety instructions*

The Evinox heating/cooling interface unit must be installed, commissioned and maintained by a qualified and competent personnel in accordance with this document as well as national regulations and standards.

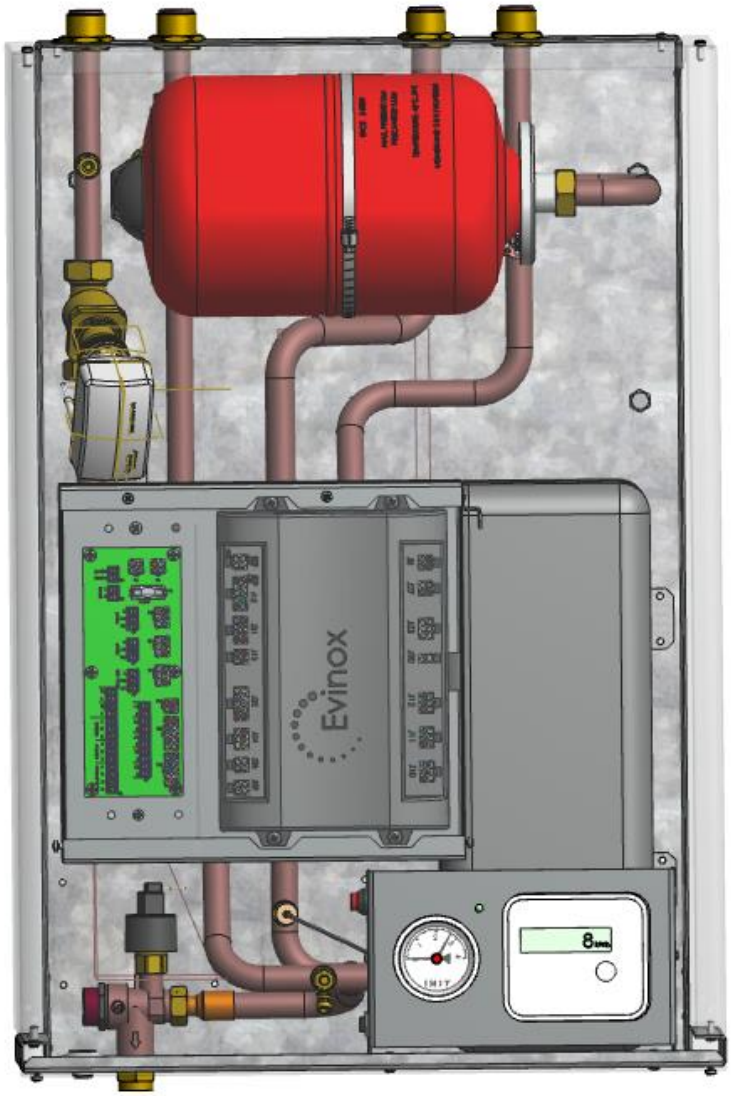
	**Risk of Electric shock.** Disconnect the electricity supply before starting any works on the unit.
	**Qualified personnel.** Electrical installation must only be carried out by technical personnel. .
	**In the case of water leak.** ☐ Slowly close the isolation valve at the top of the unit ☐ Contact Evinox Energy

1.5 *Maintenance requirements*

We recommend the unit is checked at least every 24 months by an authorised maintenance engineer. If the unit is subject to excessively heavy usage or non domestic installations (for example in a light commercial environment), we recommend having it checked more than every 24 months.

2. TECHNICAL FEATURES

2.1 *Typical ModuSat Heating/Cooling Unit*

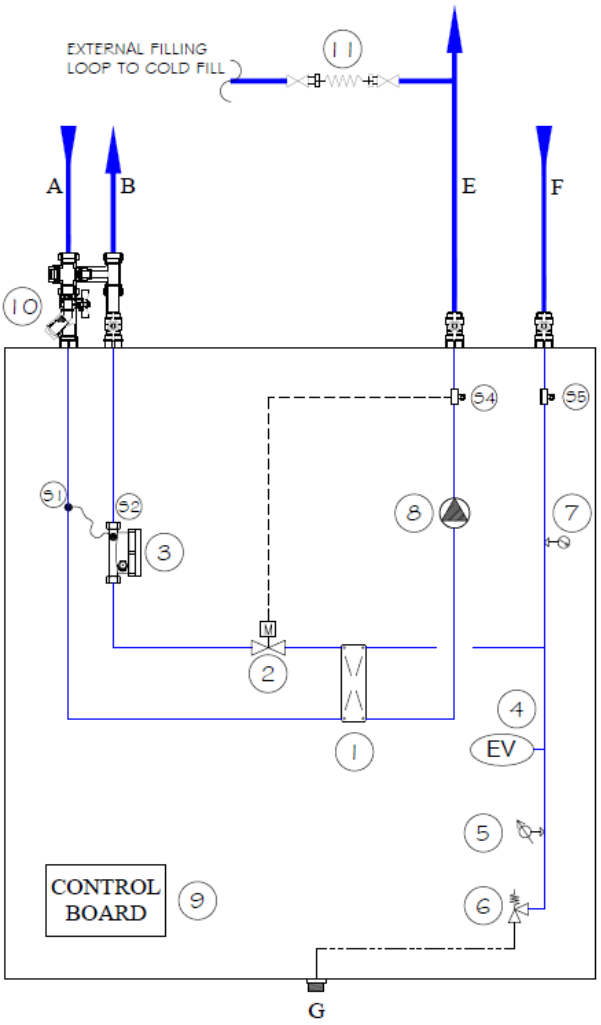


Note: The product may look different from the image shown.

2.2 *Function and operation*

- ☐ **District or communal system** – the primary heating/cooling water flow is used to produce secondary heating/cooling.
- ☐ **Apartment heating/cooling** – when the space heating/cooling demand is requested by the end user controller, the heating/cooling operation is started. The electronically controlled PICV is used to modulate the primary flow rate to match the heating/cooling demand. The unit has an integrated circulation pump which is switched on when the heating/cooling is on.

2.3 *Typical Schematic (All Top Connections)*



Components

A Primary circuit flow
B Primary circuit return
E Dwelling flow
F Dwelling return
G Connection for safety discharge

Primary Circuit Side

1 Insulated plate heat exchanger
2 Pressure Independent Control Valve (PICV) with actuator
3 Heat meter

Cooling Secondary Side Circuit

4 Expansion vessel
5 Low pressure switch
6 Safety relief discharge
7 Pressure gauge
8 Dwelling circulation pump

Controls & Other Items

9 Electronic control board
10 Flushing Bypass kit
11 Filling loop (External)

S1 – Primary flow temperature sensor
S2 – Primary return temperature sensor
S4 – Dwelling flow temperature sensor
S5 – Dwelling return temperature sensor

Note: Other connection arrangements may be used.

2.4 *Technical Parameters*

Electrical

Electric supply	220 / 240 Volt (AC)
Frequency	50 Hz
Current absorption	0,6 Amps

Hydraulic connections

		SPH/SPC-R20 … SPH/SPC-R60	SPH/SPC-R70 … SPH/SPC-B40	SPH/SPC-B50 … SPH/SPC-B70
Primary circuit supply	A	3/4 ”	1”	1 ¼ ‘’
Primary circuit return	B	3/4 “	1”	1 ¼ ‘’
Apartment circuit supply	E	3/4 “	1’’	1 ¼ ‘’
Apartment circuit return	F	3/4 “	1’’	1 ¼ ‘’
Safety discharge	G	1/2 “	1/2 “	1/2 “

Hydraulic characteristics

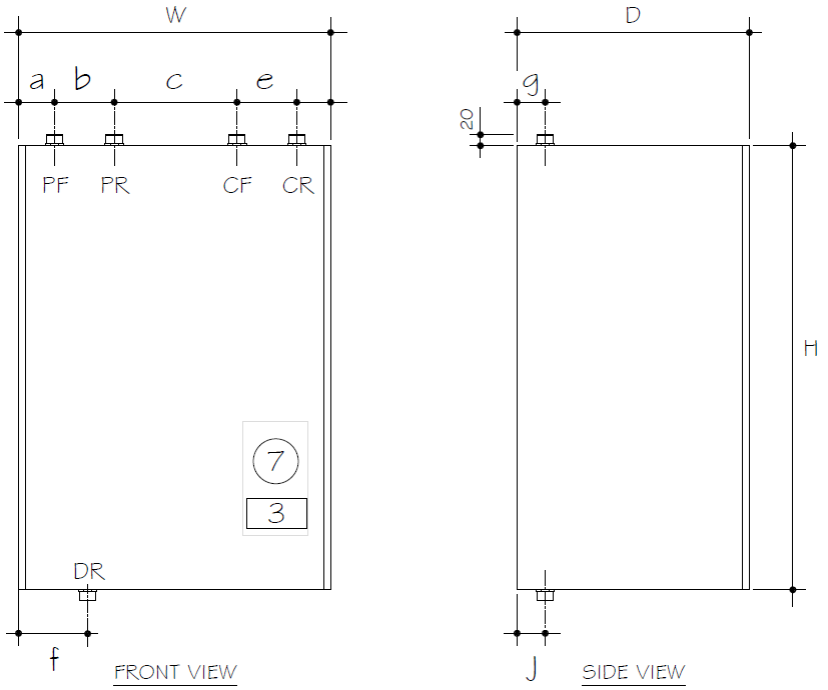
Pipework material	Copper
Plate heat exchanger material	Stainless steel 316L
Operating medium	Water
Primary circuit max pressure	16 bar
Primary minimum differential pressure	50 kPa* (0.5 bar) *may vary depending on the required output
Primary maximum differential pressure	400 kPa* (4 bar) *may vary depending on the required output
Secondary circuit recommended cold fill pressure	1.5 bar
Secondary maximum pressure	3 bar
Expansion vessel size	8 litre

Weight

	Dry (kg)	Wet (kg)
SPH/SPC R20	33.0	34.0
SPH/SPC R30	33.7	34.8
SPH/SPC R40	34.2	35.6
SPH/SPC R50	34.8	36.4
SPH/SPC R60	35.4	37.2
SPH/SPC R70	43.1	46.6
SPH/SPC B30	45.8	50.5
SPH/SPC B40	47.2	52.8
SPH/SPC B50	53.9	60.9
SPH/SPC B60	55.2	63.2
SPH/SPC B70	56.6	65.5

2.5 *Typical Dimensions*

These dimensions are for both SPC and SPH units.



PF	PRIMARY FLOW
PR	PRIMARY RETURN
CF	COOLING FLOW
CR	COOLING RETURN
DR	DRAIN

	CONNECTIONS		DIMENSIONS									BIM MODEL
MODUSAT SPC/SPH	PF, PR, SF, SR	DR	W	D	H	a	b,e	c	f	g	J	(MAGICAD.COM)
SPC/SPH-R20	3/4"	1/2"	467	335	580	53.5	60	165	80	42.5	42.5	SPC1
SPC/SPH-R30	3/4"	1/2"	467	335	580	53.5	60	165	80	42.5	42.5	SPC1
SPC/SPH-R40	3/4"	1/2"	467	335	580	53.5	60	165	80	42.5	42.5	SPC1
SPC/SPH-R60	3/4"	1/2"	467	335	580	53.5	60	165	80	42.5	42.5	SPC1
SPC/SPH-R70	1"	1/2"	467	335	580	53.5	90	185	80	42.5	42.5	SPC2
SPC/SPH-B40	1"	1/2"	475	335	685	51	90	185	134	42.5	42.5	SPC3
SPC/SPH-B50	1 1/4"	1/2"	560	370	685	60	120	195	104	57.5	42.5	SPC4
SPC/SPH-B70	1 1/4"	1/2"	560	370	685	60	120	195	104	57.5	42.5	SPC4

Minimum space requirements for access and servicing: Top: 190 mm should be allowed for the flushing bypass kit on the top of the unit with 3/4 " connections and 250 mm for the units with 1" connections, Front: 700 mm, Side: 50 mm, Bottom: Sufficient space to connect the drain.
Please Note: Evinox do not supply 1 1/4" valve kits.

3. INSTALLATION

The ModuSat interface units must be installed, commissioned and maintained by qualified and competent personnel in accordance with this document as well as national regulations and standards.

3.1 *Handling*

- ☐ The unit should be moved into position before lifting still within its packaging to prevent any damage whilst being positioned. Only once it is safely situated, the unit should be removed from its packaging and lifted into position.
- ☐ The ModuSat unit may have been transported and handled many times prior to the installation, therefore it is vitally important that all unions and connections are checked and tightened as required. In case of damage please contact Evinox Energy on 01372 722277 immediately.
- ☐ Packaging materials must be disposed in accordance with the requirements of the construction site or the property.

	**Lifting.** Take care when lifting this appliance. It is recommended that at least two people perform the lifting.
	**Leave caps over the connections.** Ensure that the protective cover (caps) over the ModuSat pipe connections are kept in place to prevent ingress of any debris.

3.2 *Positioning*

The ModuSat units should be installed in a sheltered environment and are not suitable for outdoor installation. It is recommended that the surrounding environment conditions do not exceed 40 °C with the relative humidity from 15% to 85%.

Note: As the unit contains water in order to operate, it is recommended not to place electrical devices, such as control boards and other devices, underneath the unit in the case of a water leak. The manufacturer cannot accept any responsibility for goods damaged in such a way.

	**Maintenance space.** It should be ensured that a sufficient space around the unit is provided to allow the future maintenance and servicing of the unit. The removal of the HIU panels should not be restricted.

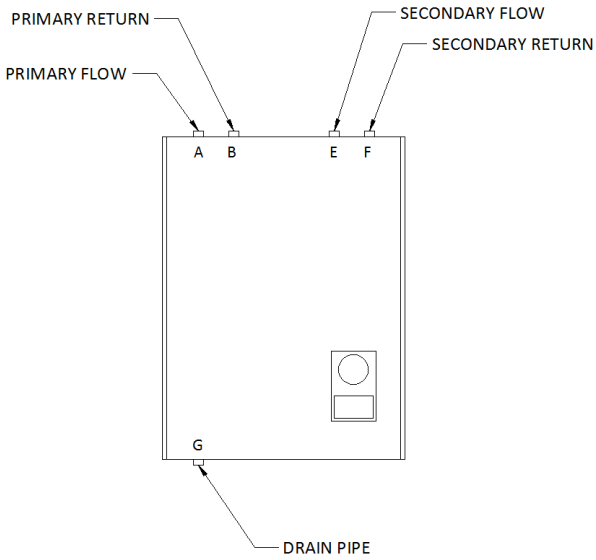
3.3 *Hydraulic connections*

Connection arrangement.
Ensure that the hydraulic connections of the pipework piped up to the unit are correct and follows the hydraulic schematic. The manufacturer cannot accept any responsibility for any damage caused to the unit due to crossed connections.
Any Evinox engineer callout/visit due to this issue will be chargeable.

The ModuSat unit is designed to be wall mounted with the typical primary and secondary connections as shown below.

The Evinox Energy flushing by-pass valve kit should be installed prior to connecting the unit and the valves left in an isolated position.

The whole system should be cleaned and flushed before installing the cooling interface unit to ensure the ModuSat unit is not damaged.



3.4 *Wall fixing*

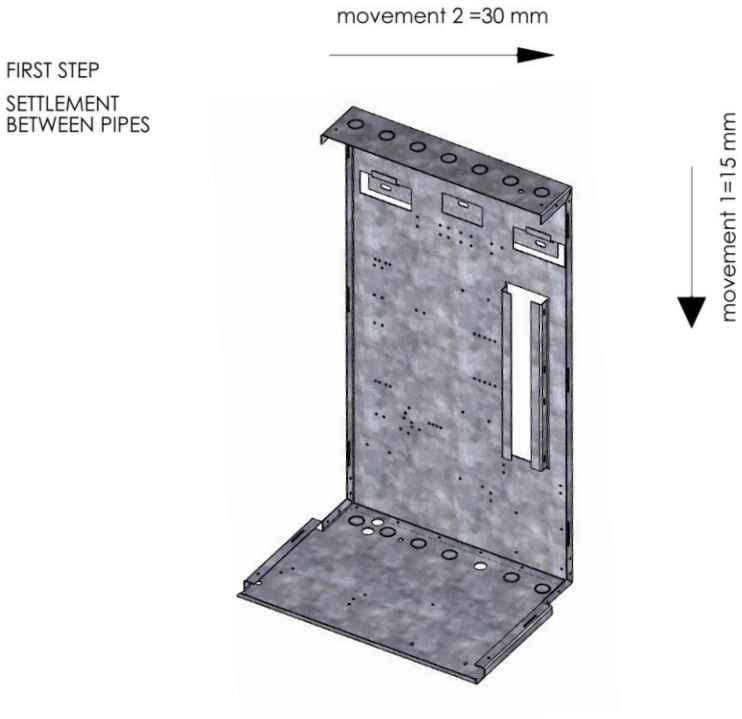
The ModuSat unit is designed to be wall mounted. There are drillings on the back plate of the unit that ensure mounting with the wall fixing bracket.

Wall fixing
Installer must ensure that appropriate fixings are used.

3.5 *Use of Pre-installation Rig*

A pre-installation rig is available upon request. It consists of a back panel constructed of steel. This will enable the installer to arrange the piping entering and leaving the unit during first fix prior to the unit being delivered / installed. The configuration of the pre-installation rig will be as per the unit being supplied and the project requirements.

HOW TO INSTALL PRE-INSTALLATION RIG



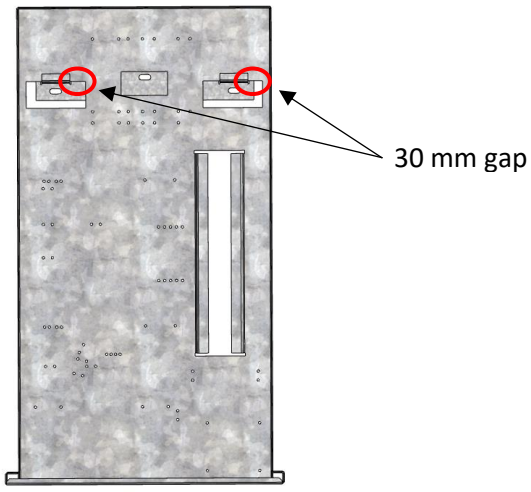
STEP1: Securely fix the mounting bracket to the wall in the required position. Hang the ModuSat SPC Pre-Installation Rig on the wall fixing bracket. Then slide down by 15mm and across to the right by 30mm, as indicated in diagram.

STEP2: Fit the Evinox Energy Flushing Bypass & Valve Kit to the rig and then make final connections to the pipework running to the ModuSat.

STEP3: Shut off isolation valves, pressure test pipework and then disconnect the valve unions.

STEP4: To remove the pre-installation rig slide the rig to the left taking all connections off centre, slowly lift and remove.

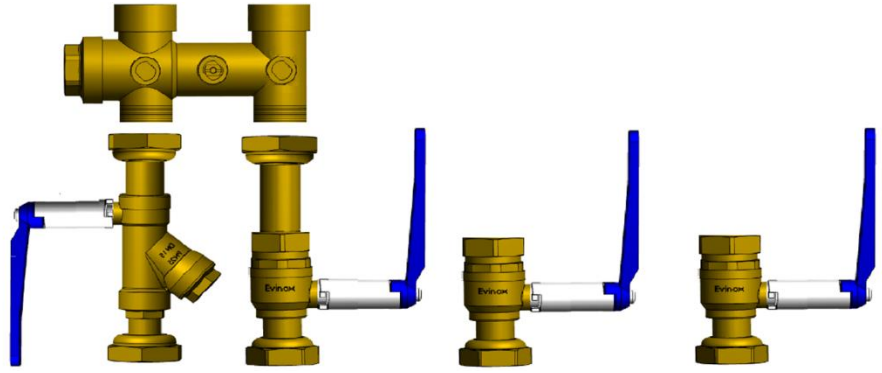
Maintenance Space
In order to remove the ModuSat cooling interface unit, ensure that 30 mm gap is left between the hook and the edge of the cutout in the pre-installation rig as shown in the image below.



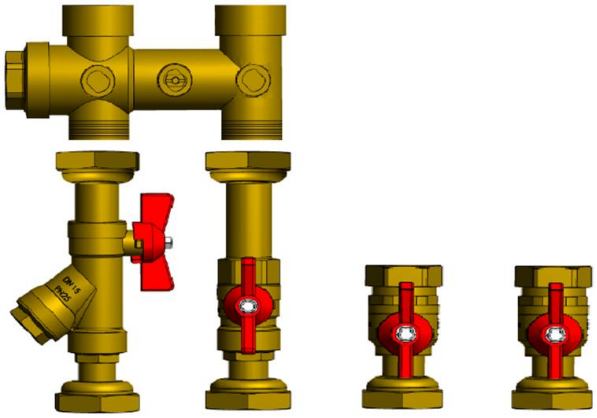
3.6 *Evinox Flushing By-pass Kit*

Evinox flushing by-pass kit allows to isolate HIU from the network during cleaning and flushing the system. The kit includes an H shape by-pass with inbuilt isolation valve, 1 strainer and 3 isolation valves.

Evinox FLUSH-KIT-C01 for ModuSat SPC



Evinox FLUSH-KIT-SP1 for ModuSat SPH



⚠	**Close valves** Before connecting flushing by-pass kit to the HIU ensure all isolation valves are closed. Valves can be opened after the system has been flushed.

3.7 *Flushing Primary Circuit*

The whole primary system should be cleaned and flushed in accordance to BG29/2021 before filling ModuSat® heat interface unit.

To open the by-pass:

- ☐ Ensure both isolation valves are in the closed position as shown in the picture.
- ☐ Use a suitable screwdriver or other tool to twist the screw on the H-shape by-pass valve into the open position.
- ☐ Close the bypass after flushing is complete.

	Provide isolation valves and a strainer. If Evinox valve kit is not used, it must be ensured that there are isolation valves provided. Strainers on the primary and secondary heating inlets are required to ensure the components in the unit are protected from debris and sediments.
	Tighten the connections. When connecting the ModuSat® heat interface unit, ensure that all the connections are tightened to avoid any leaks.

3.8 *First fill of the HIU*

	Clean and flush the system before connecting the unit. Filling the system should be performed only after the system has been fully flushed and clean. Poor water quality may cause failure of the operation of the unit.
	Water quality. It is recommended that the flushing and cleaning of the primary circuit, domestic water circuit and secondary heating circuit is performed by a qualified person in accordance with current standards, regulations and BSRIA guidelines.
	In the case of a water leak. ☐ Take caution of hot water ☐ Slowly close the isolation valves at the top or bottom of the unit ☐ Contact Evinox Energy
	The ModuSat® pump should not be used for flushing. The pump is integral to the unit and should not be used for flushing and cleaning the system. Failure to meet this requirement will invalidate the warranty.

3.9 *Filling the primary circuit*

Please take care when filling the ModuSat® unit.

- ☐ Make sure that the by-pass valve is in closed position
- ☐ Slowly open the isolation valves on the primary circuit.
- ☐ Visually check that there are no leaks. Tighten the connections of the valve kit if necessary.
- ☐ If there is a leak internal to the unit, ensure the isolation valves are left in a closed position.

3.10 *First fill of apartment heating or cooling system*

The ModuSat unit is fitted with a manometer gauge that is mounted in the front panel. This gauge reading should be used when filling the secondary circuit.

- ☐ An external filling loop should be used for filling the secondary circuit with the mains water.
- ☐ Open the isolation valves slowly when filling the system.
- ☐ Cold fill should be done to about 1.5 bar in a single story dwelling. The pressure required will depend on the head of the system (difference between the lowest and highest point).
- ☐ Once the required pressure is reached, close the filling loop ball valve, vent the system and repeat it again.

4. Water treatment

The quality and cleanliness of the water within both the primary and secondary circuits is vitally important, to prevent damage to the ModuSat components and to ensure that the efficiency and service life of the unit is maintained.

It is therefore necessary to fully flush and treat both primary and secondary circuits using suitable water treatment chemicals.

	**Water treatment in accordance to these instructions.** Please confirm with the water treatment consultants that the chemicals used and cleaning method statement complies with the requirements set out in this section.
	**Water quality may damage the unit.** Poor water quality may damage the components used in the unit and invalidate the warranty. The manufacturer cannot take responsibility for any damage of the unit caused by poor water quality.
	**Chemical cleaning and dosing.** Chemical cleaning and dosing of the system should be in line with the current regulations, standards and guidelines. Which are, but are not limited to: ☐ BSRIA Application Guide BG29/2021 ☐ BS7593:2006 ☐ Requirements of Thames Water Utilities ☐ The Water Industry Act 1991, Section 119 ☐ HSE The Control of Legionellosis 1991 ☐ HSC Approved Code of Practice and Guidance HSG274, Part 2

4.1 *Water Quality Guidelines*

	Recommended
Hardness (TH)	Up to 150 mg/l (as $CaCO_3$)
Chlorides (Cl^-)	Up to 150 mg/l
PH	7.5 – 9.0
Resistivity	> 2000 Ohm/cm
Sulphate (SO_4^{2-})	Up to 70 mg/l
Conductivity	200 crs
TDS	0-200 ppm
Free carbon dioxide (CO_2)	Up to 5 mg/l
Manganese (Mn)	Up to 0.1 mg/l
Iron (Fe)	Up to 0.2 mg/l (or 5ppm)
Copper	Up to 1 mg/l

Typical Water Quality Guidelines

- ☐ TH - Total hardness is caused by calcium and magnesium.
- ☐ pH – this measures the alkalinity of the water, neutral alkalinity is pH7. Heating systems require an alkaline pH. Lower pH will increase the corrosion risk.
- ☐ TDS – dissolved solids in the system and is a measure of the cleanliness of the water. (Satisfactory level should be within TDS of 10% of the mains water).
- ☐ Conductivity – this is the measure of the ability of water to pass an electrical current.
- ☐ Free copper – the level of copper in the system.
- ☐ Total Iron and Manganese – this measures iron concentration in mg/litre. These are strong oxidants and may increase the risk for corrosion.

Visual inspection should be carried out ensuring that the water is clear, bright and free from particulate matter. The system must be fully vented, pressurised and dosed with anti-corrosion and anti-bacteria growth inhibitor.

4.2 *Dosing Secondary System*

Once the system is cleaned and flushed the inhibitors should be added to the secondary side to prevent the corrosion or bacteria growth.

A suitable long term corrosion inhibitor and inhibitor for preventing the bacteria should be introduced in a proportion of the system volume.

	Excessive filling of the secondary circuit with untreated water may lead to scale build up and corrosion. This may damage the ModuSat unit or reduce the performance.
	Please confirm with the water treatment consultants that the chemicals used and cleaning method statement complies with the requirements set out in this section.
	Evinox Energy do not take responsibility for approving inhibitors used for dosing the system.

4.3 *Warranty due to Water Quality*

The warranty of the ModuSat unit is strictly related to the instructions and procedures indicated in this manual and the warranty does not cover any damage caused by scale and/or corrosion resulting from poor water quality.

The components and materials used in the system assembly should also be checked to ensure they do not contribute to dissolved oxygen that can cause corrosion.

Also:-

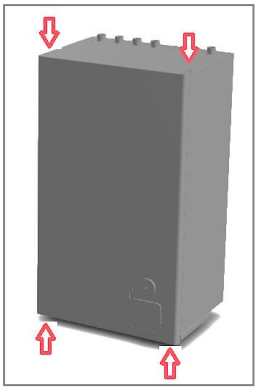
- ☐ Ensure there is no air in the system
- ☐ Ensure there are no “dead” legs in the system
- ☐ Remove gas permeable parts and materials
- ☐ Ensure the expansion vessels are properly sized and the pre-charge pressure valve in order to guarantee positive pressure, with respect to the ambient pressure, throughout the circuits.

5. Electrical Connections

	**Risk of Electric shock.** Disconnect the electric supply before starting any works on the unit.
	**Qualified personnel.** Electrical installation must only be carried out by technical personnel.
	**Overvoltage or lightning.** The ModuSat unit has no protection against lightning or other overvoltage shocks.
	**Power supply via un-switched double pole fused connection.** The ModuSat requires a 220/240V (AC) 50Hz mains supply connection through an un-switched fused connection fitted with a 3 Amp fuse (to BS1632). Extension cords, multiple plugs, and other adapters must not be used. The device must be earthed.
	**Follow the instructions** Any damage caused by an incorrect connection will invalidate the warranty. Evinox Energy cannot accept any responsibility for incorrect wiring.

The ModuSat wiring board is located within the ModuSat itself under a removable metal cover. To access the connection board, the full front case cover should be removed. The connection board is found in the centre of the unit to your left. To take off the cover the retaining screw should be removed and the cover lifted off.

5.1 *Removing the Front panel*

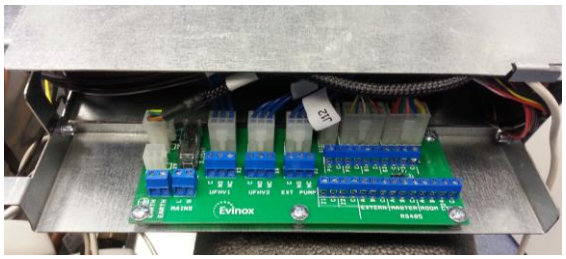


To access the wiring board, the front panel must be removed.

- ☐ The front panel is fixed with four screws – two at the top of the unit and two at the bottom as shown with are.
- ☐ Untighten the screws and remove the panel pushing it upwards firs and then removing it towards yourself.
- ☐ The panel is powder coated stainless steel. Take care when removing and placing the front panel to ensure the surface is not damaged. Ensure
- ☐ After the works are finished, place the panel on the unit and tighten the screws.

5.2 *ModuSat Wiring Connections*

The ModuSat® wiring board is located within the ModuSat® itself behind the metal cover

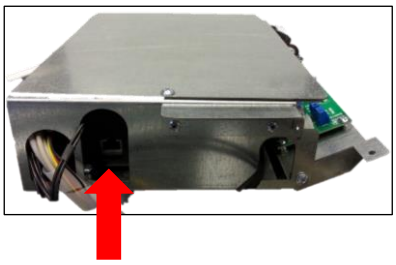


To access the connection board, take off the cover. The retaining screw should be removed and the cover lifted off. The connection board also has two screws which will need to be removed and the board can be pulled out from its position. The board is now accessible and all required connections can be made simply using the clearly labelled screw down terminal connections. Guides for the various connection applications and requirements are detailed in the wiring principle drawings shown on page 18.

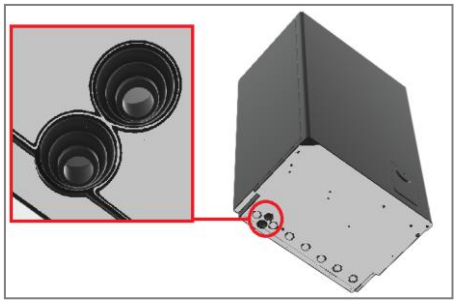
	The Control Board The control board is located next to the connection board on your right hand side. The control board cover must not be removed. Doing so may invalidate the warranty.
	Connection Terminations Evinox Energy strongly recommend in accordance with best practice that all wiring connections to the board, especially the BUS and room controller are terminated using 'bootlace ferrule' connectors. These connectors ensure a good connection and that the whole cross sectional area of the wiring is intact.

5.2.1 RJ45 Connections

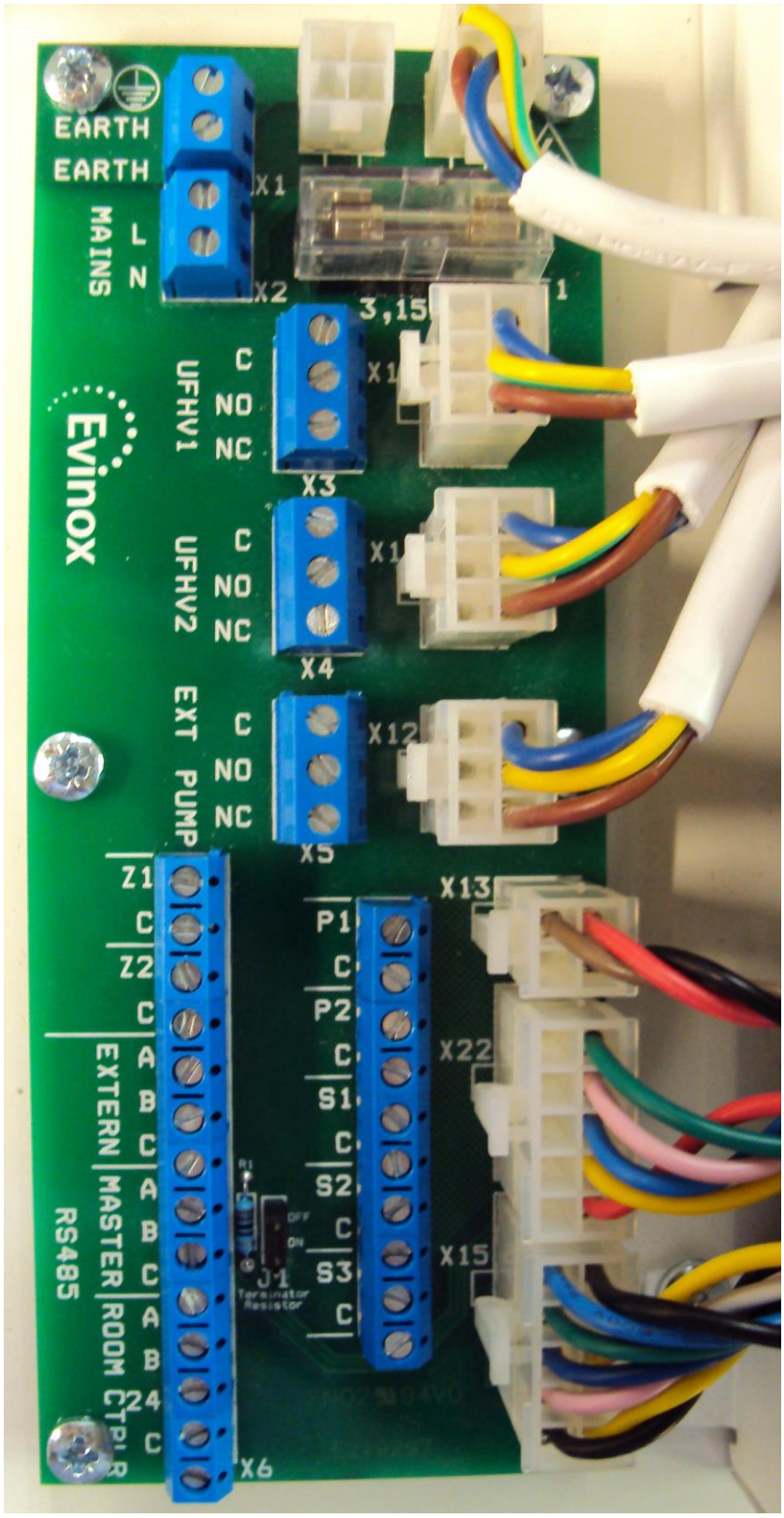
If the TCP/IP network is used, instead of the BUS termination the RJ45 need to be connected to the control board. The RJ connection can be found at the side of the control board as shown below with the red arrow.



Cable glands are fitted at the bottom of the ModuSat® case as shown in below



5.3 *ModuSat Connection Board*



Please Note: When connecting external valves or pumps to the ModuSat control board, it must be ensured that each connection does not exceed 1amp @ 220/240V (AC).

5.4 *Typical Wiring Diagram with 2-zone control*

*SEE **STD-MOD-BMS** DRAWING WITH NOTES AT THE END OF THIS MANUAL*

5.5 *SmartTalk system wiring*

Typical Modbus system architecture

*SEE **STD-MOD-2013-BUS 1 – E** DRAWING WITH NOTES AT THE END OF THIS MANUAL*

Typical TCP/IP system architecture

*SEE **STD-MOD-2015-TCP-IP-3** DRAWING WITH NOTES AT THE END OF THIS MANUAL*

6. SETTING INTO OPERATION / COMISSIONING

	**Evinox Commissioning Engineers** The unit should be commissioned by Evinox Energy commissioning engineers to validate the warranty unless otherwise specified by Evinox Energy.
	**System Checklist Prior Commissioning** It is important that the system is fully ready for the works to be carried out.
	**Report to Evinox** If there is a problem with the unit, isolate it from the hydraulic connections and the power (if necessary) and report to Evinox Energy.

6.1 *Pre-commissioning checklist*

	Pre-requisite of Commissioning	Check
1	Primary network and plant room fully operational and complete (including water treatment) in line with these instructions	☐
2	Secondary system fully operational including water treatment in line with these instructions	☐
3	The ModuSat unit is installed as per the hydraulic connections in line with these instructions	☐
4	Electric connections and supply is complete and all controls functional in line with these instructions	☐
5	Evinox SmartTalk system installed, tested and operational (including the broadband connection	☐
6	Apartment reference and postal address schedule issued to Evinox	☐

6.2 *Setting unit into operation*

6.2.1 Pressure independent control valve (PICV)

PICV Parameter	SPC/SPH-R20 … SPC/SPH-R60	SPC/SPH-R70 … SPC/H-B40	SPC/SPH-B50 … SPC/SPH-B70
Maximum flow rate	1330 l/h	3609 l/h	4001 l/h
Start up ΔP	25 kPa	25 kPa	25 kPa
Max ΔP	400 kPa	400 kPa	400 kPa
Valve size	DN15	DN25	DN32
Thread	G 3/4”	G 1 1/4”	G 1 1/2”
Actuator Stroke	5 mm	5.5 mm	5.5 mm
Actuator control signal	0-10V	0-10V	0-10V
Mechanical pre-setting	Available	Available	Available

Tighten Actuator Connections
Ensure that the actuators are tightened to ensure correct operation of the unit.

6.2.2 Pump

Evinox ModuSat from SPC/SPH-R20 to SPC/SPH-R60 have an integral Wilo Yonos Para Pulse-width modulation (PWM) circulation pump.

The other ModuSat models have pumps with a manual dial which should be used to set required speed.

Wilo Yonos Para Pump LED – Description of Status

LED	Indicators	Diagnosis	Status	Remedy
Solid green	Pump in operation	Pump runs according to its setting	Normal operation	
Blinks quick green	PWM model:	Pump in standby	Normal operation	
Blinks red/ green	Pump in function but stopped	Pump restarts by itself after the fault is disappeared	1. Low voltage U<160 V or High voltage >253 V	1. Check voltage supply 195 V < U < 253 V
			2. Module overheating: temperature inside motor too high	2. Check water and ambient temperature
Blinks red	Pump out of function	Pump stopped (blocked)	Pump does not restart by itself due to a permanent failure	Change pump
LED off	No power	No power to pump	1. Pump is not connected to power supply	1. Check cable connection
			2. LED is damaged	2. Check if pump is running
			3. Electronics are damaged	Change pump

Available Pump Head
Ensure that the available pump head meets the requirements of the secondary system.

6.3 *Initial Commissioning Procedure*

The following will be checked when commissioning the unit. The method may vary depending on the project.

	Evinox Energy Commissioning Check-List	
1	Check if the unit is connected correctly to the hydraulic circuits. Confirm that the unit is correctly connected to the electrical supply.	☐
2	Set the unit into operation by installing firmware, checking if all the components are functional.	☐
3	Confirm the unit performs cooling function. If Evinox ViewSmart Room Controller is used this will include ViewSmart functionality check.	☐
4	Ensure the unit has an ID number, record serial numbers of the control board and the heat meter.	☐

	**Evinox Technical Personnel** Evinox Technical Personnel who will visit the project during the course of the installation and at completion to arrange for final commissioning and calibration, do so to assist the contractor and install team to deal with any questions and queries. **They do not perform the role of quality control or inspector of the installation or provide approval for the works carried out.**
	**Booking Commissioning** All commissioning must be booked 6 weeks in advance and will be carried out to a pre-agreed programme that will be confirmed with the client prior to commissioning.
	**Warranty** Evinox Energy Commissioning is required for warranty validation.

7. SPH/SPC SERVICING AND INSPECTION

SPH/SPC inspection should be carried out every 2 years in line with the current regulations, standards and guidelines. Which is, but not limited to *BSRIA Heat Interface Unit Guide BG62/2015*

	Evinox Energy ModuSat SPH/SPC Servicing and Inspection Checklist	Check
1	No leaks associated with SPH/SPC	☐
2	Visual inspection of primary isolation valves	☐
3	Strainer valves clean where accessible	☐
4	Primary differential pressure above required minimum	☐
5	Thermal insulation intact	☐
6	Secondary heating/cooling system pressure within nominal range	☐
7	Control valves respond to demand for heating/cooling	☐
8	Heating/Cooling pump is functional	☐
9	Primary supply temperature as commissioned	☐
10	Heat meter registers demand	☐
11	Appliance can be read remotely (where applicable)	☐
12	Consumer satisfied with heating/cooling performance	☐
13	Take primary water sample	☐

8. WARRANTY

The warranty has value if good practice has been strictly observed during installation and in use. Evinox Energy is not liable for equipment breakdown and damage to persons and objects caused by:

- Transportation damage
- Installation in which the instructions and good practice were not complied with
- Improper use of the device, abnormal use conditions, tampering by unauthorised personnel or inadequate maintenance; corrosion and/or sludge accumulation; lack of electrical energy; absence of suitable drainage; exceeding operating limits, electrical and water system faults
- Frost damage
- Wear due to normal use
- Malfunctioning of system controls and or safety systems
- Corrosion due to oxygenation poor water quality or roaming currents
- The pump being run against a closed system.

From commissioning, ModuSat appliances have a warranty against all manufacturing faults and material defects for a period of:

- 5 years for the stainless steel plate heat exchangers
- 2 years for parts and labour Note: where Evinox Energy do not carry out the commissioning the two-year warranty will cover parts only with no labour cover)

The ModuSat warranty will always start from the commissioning date providing this date is within six months of the date of invoice to allow for project completion. If the ModuSat is commissioned outside the 6-month extension date, the warranty will reduce accordingly.

This warranty is strictly limited to the supply, free of charge, of parts acknowledged as being defective after inspection by our technical department. Any costs arising from this inspection will be charged if the part is deemed not to be defective. The defective parts must be returned otherwise the replacement part will be charged for.

Failure to comply with the relevant installation requirements of the Building Regulations, Local Water Byelaws and Building Standards will invalidate any warranty claim.

The ModuSat must be fitted with the ModuSat Flushing by-pass isolation valve kit for ease of servicing and undertaking warranty work. Warranty calls that include draining the system will be chargeable if isolation valves have not been fitted.

It is imperative that the level of corrosion protector within the system is kept within industry guidelines at all times. Special attention should be given to ensure that, after any decoration or building works where radiators might be removed, the system is replenished with chemicals. Non-use of inhibitor will invalidate the warranty.

We will record details of the unit and commence the warranty when we commission the ModuSat units.

Any warranty claims that are a result of user error, poor installation or lack of servicing will be chargeable. Please note that all replacement parts provided under warranty are subject to factory inspection to determine cause of failure. Replacement parts are chargeable until passed as faulty by Evinox Energy, when a credit will be provided. Any parts that have failed as a result of poor servicing or misuse will not be covered by our warranty.

Any modifications to the appliance will invalidate the warranty.

Installation of the Evinox Energy unit should only be carried out by suitably skilled and qualified personnel. If failure occurs due to poor or faulty installation work, this will invalidate the warranty.

Your Evinox Energy appliance is one of the most reliable and technically advanced products available on the market, however, it is imperative that it is installed, commissioned and serviced in accordance with Evinox Energy installation and servicing manuals to ensure long life, reliability and efficiency.

Exclusions to the Warranty

The following are not covered by the warranty:

- Electric degradation of parts resulting from connection and installation on electricity supply whose voltage measured at the entry of the apparatus would be lower by 15 % or higher of 10 % than the nominal voltage of 230 volts
- Degradation of parts arising from external elements affecting the ModuSat Unit i.e. (effect of storm, moisture, freezing, etc.)
- All consecutive incidents resulting from a failure to check the safety components (unvented kit etc.)
- Scaling, nor its consequences
- The wear of the safety relief valve
- Cost of postage for returned parts.

9. KIWA CERTIFICATE

CERTIFICATE

Kiwa UK Regulation 4 (KUKreg4) Approval (ATS3)

Certificate number 2006764

Date issued 29th June 2020

Date expired 28th June 2025 Orignal/Amendment Original

Description: Range of modular combined heating interface units providing a combination of either hot water, heating or cooling via a plate heat exchanger depending on model options. Heating and cooling circuits incorporate a safety relief valve (set at 3 bar) and expansion vessel and inlet connection can be either top or bottom entry configuration. Maximum working pressure 16 bar (primary, CWS and HWS) 2.5 bar on heating circuit. Maximum operating temperature 85°C.

UK Approval

Issued by Kiwa Watertec

Product Designation: Please see attached approval letter for full range of models.

This is to certify that the above range of products manufactured/supplied by

Company name: Evinox Energy Ltd

Has been tested and found to comply with the requirements of the Water Supply (Water Fittings) Regulations 1999 for England and Wales, the Water Byelaws 2014, Scotland and the Water Regulations, Northern Ireland.

This certificate must be read in conjunction with the acceptance letter for this product.

This approval is intended for compliance with the above Regulations and must not be considered equivalent to the product certification provided by Kiwa N.V.

To comply with the Regulations and Byelaws all products require the correct installation. Details of the installation requirements (IRNs) can be obtained from the acceptance letter supplied with this certificate.

Applicable IRNs for this certificate: R001

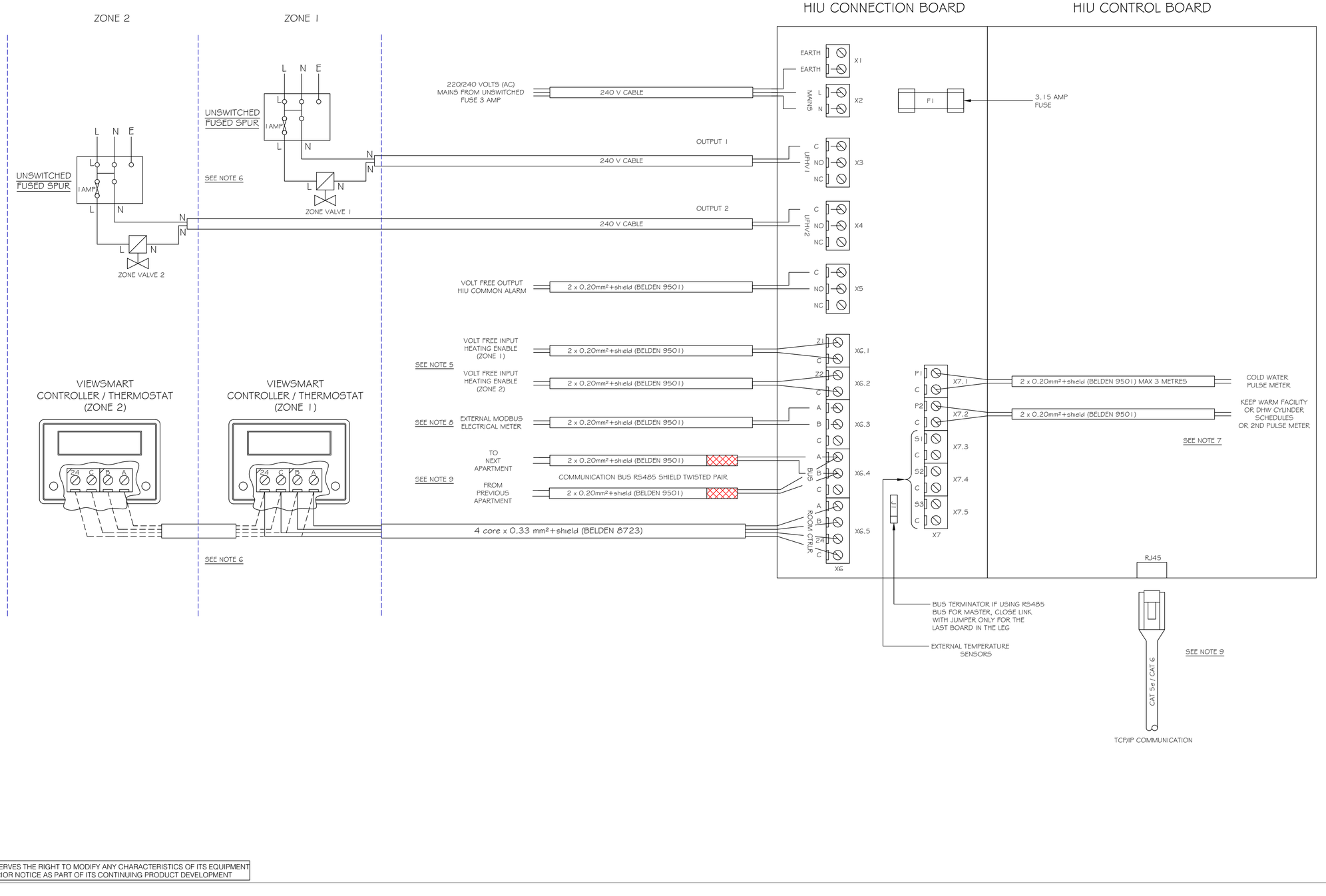
David Jay, Business Unit Manager – Authorised Signatory

Kiwa Watertec

Certificate issued to:
Evinox Energy Ltd
Unit 37, Barwell Business Park
Leatherhead Road
Chessington
KT9 2NY

Kiwa Watertec
(A Trading Division of Kiwa Ltd)
26A Rassau Industrial Estate
Ebbw Vale
Gwent
NP23 5SD
United Kingdom
T +44 (0)1495 308185
F +44 (0)495 304496
uk.water@kiwa.com
www.kiwa.co.uk

kiwa approved UK WATER REGULATION 4



NOTES

1. **Electric wiring of MODUSAT and VIEWSMART**

   The MODUSAT connection board is inside the unit shall be connected to the ViewSmart by means of a 4x0.33 sq mm + shield cable (BELDEN 8723) having a max. length of 25m.

2. **Shield Termination**

   The Screening on the bus communication cable (RS Part no 528-2106). Connect together and put in terminal 'C'
   This screening must be connected to earth at the amplifier at the start of the run. The screening must not be connected to anything at the end of the run. This will enable any electrical disturbance to travel one direction down the screening to earth.

3. **External Pumps & Valves**

   Pumps & valves must have a localised power supply. Switched neutral connection to be fitted with 1 amp in-line fuse on live cable.

4. **Termination**

   Bootlace ferrules to be used for connections to the connection board and ViewSmart.

5. **Heating**

   When Evinox ViewSmart is used, Z1-C and Z2-C connections not needed. Z1-C and Z2-C only to be used for 3rd party controller to enable heating. Other configurations are available.

6. **Zone valves and second ViewSmart controller**

   Zone valves and a second ViewSmart controller are only needed when two zone are used. Current Part L1A Building Regulations stipulate that all new heating systems in dwellings that are not open plan and with area greater than 150 m² must include at least two heating zones, each controlled by a thermostat and zone valve.

7. **Keep Warm Facility and DHW cylinder schedules**

   When Evinox ViewSmart is used, P2-C connection is not needed for KWF control. P2-C only to be used for 3rd party controller to enable Keep Warm Facility or DHW cylinder schedules. P2-C can also be used for 2nd pulse meter.

8. **Electricity Meter**

   Electricity consumption displayed on the ViewSmart. Extra credits towards BREEAM.

9. **RS-485 or TCP/IP Communication**

   Depending on the project specification RS-485 or TCP/IP communication protocol can be used.

REV	DATE	REVISION

Evinox Energy Ltd.
Barwell Business Park
Leatherhead Road
Chessington
London KT9 2NY
Tel: 44 (0) 1372 722 277
Fax: 44 (0) 1372 744 477
www.evinox.co.uk

CLIENT

PROJECT

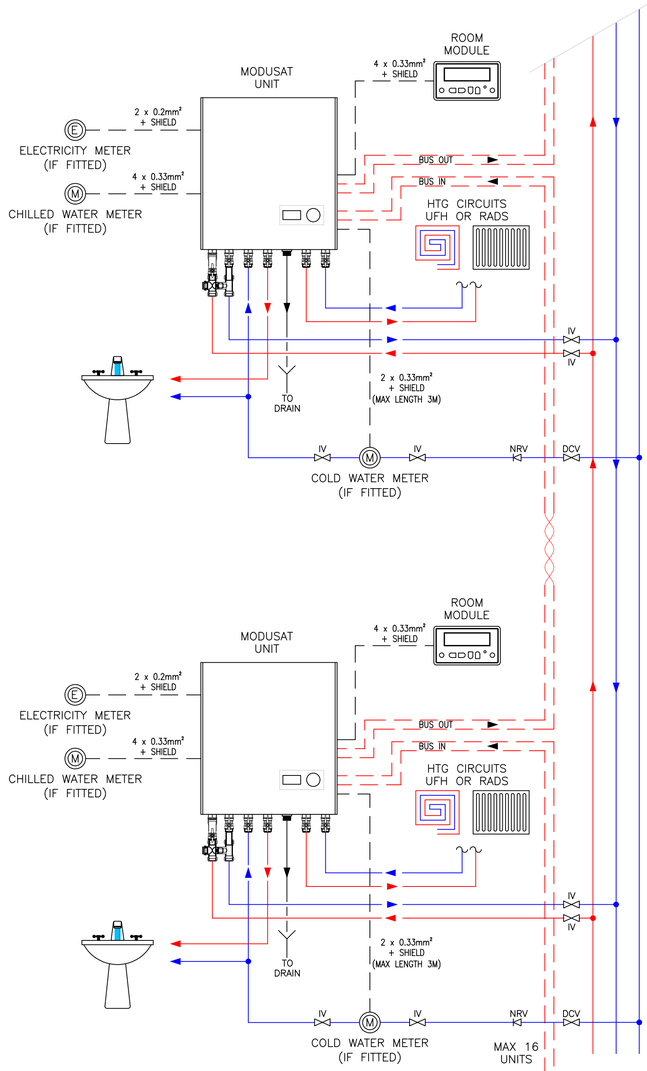
TITLE
TYPICAL WIRING
CONNECTION ARRANGEMENT
WITH TWO ROOM CONTROLLERS

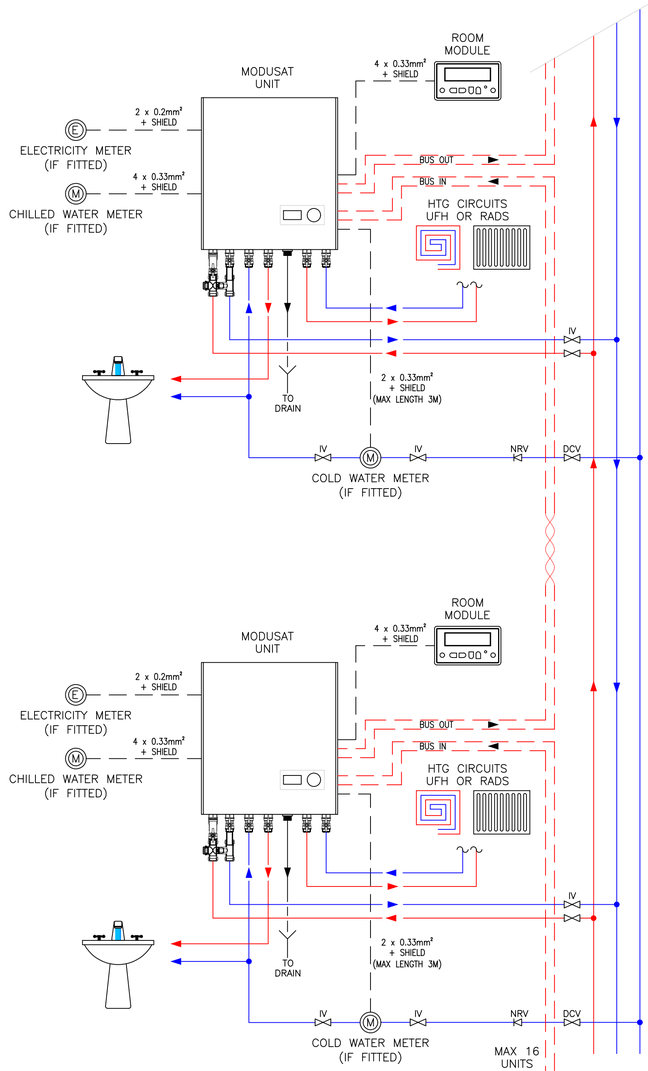
DRAWN	CHECKED	DATE	SCALE
AK	PL	SEP 2018	N.T.S.

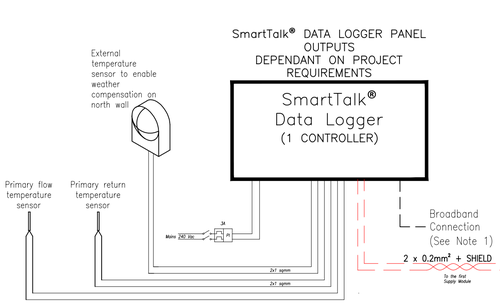
DRAWING No STD/MOD/BMS

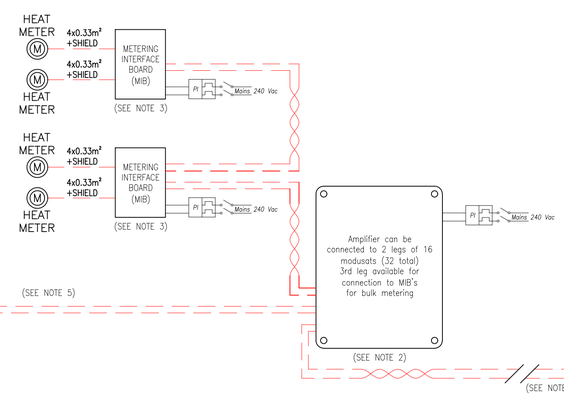
NOTES

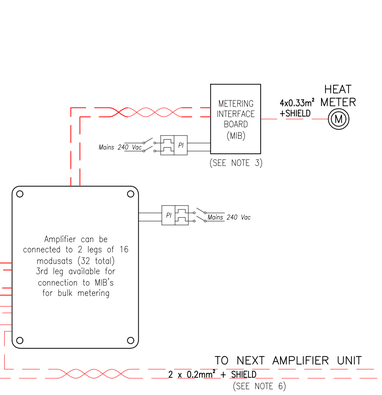
1. STATIC IP ADDRESS (MINIMUM 1GB DATA PER MONTH).
2. AMPLIFIER FOR PLANT ROOM BULK METERING AS REQUIRED.
3. EACH MIB IS ABLE TO CONNECT TO TWO HEAT METERS. MAX HEAT METER CABLE LENGTH 10M
4. MAXIMUM CABLE LENGTH FROM AMPLIFIER TO THE LAST MODUSAT HIU 500M
5. MAXIMUM CABLE LENGTH FROM MASTER CONTROLLER TO THE FIRST AMPLIFIER 100M
6. MAXIMUM CABLE LENGTH BETWEEN AMPLIFIERS 500M

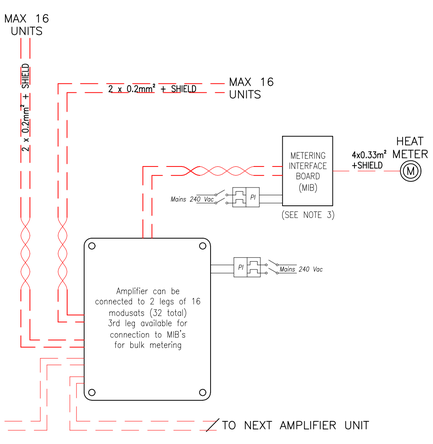












REV	DATE	REVISION
E	10/09/19	AMENDED HIU PIPEWORK CONFIGURATION
D	25/5/16	MASTER -> SmartTalk® DATA LOGGER
C	14/12/15	MIB'S & HEAT METERS INDICATED ADDITIONAL NOTES ADDED
B	5/5/15	METERS, CABLE SPECIFICATIONS ADDED
A	18/6/13	ADDITIONAL TEMPERATURE SENSOR ADDED

Evinox Energy Ltd.
Barwell Business Park
Leatherhead Road
Chessington
London KT9 2NY
Tel: 44 (0) 1372 722 277
Fax: 44 (0) 1372 744 477
www.evinox.co.uk

CLIENT

PROJECT

TITLE
MODUSAT SmartTalk DATA LOGGER AND SUPPLY UNIT BUS PRINCIPLE SYSTEM ARCHITECTURE

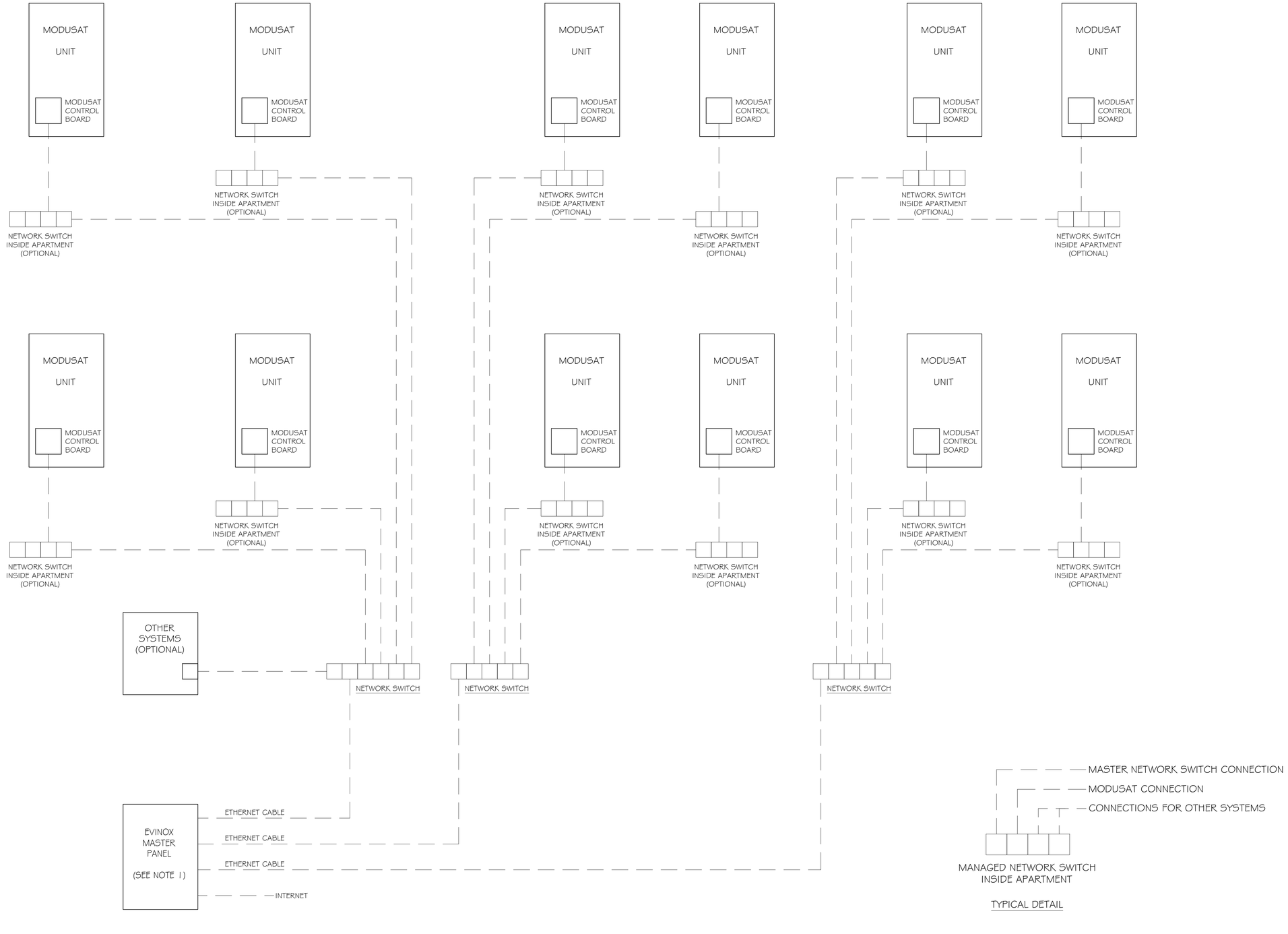
DRAWN	CHECKED	DATE	SCALE
BJW	JAL	AUGUST 2016	N.T.S

DRAWING No
STD/MOD/2013/BUS 1

E

NOTES

1. PLEASE REFER TO DRAWING No STD-MOD-2015-TCP/IP-MC FOR MASTER PANEL DETAILS.



TYPICAL DETAIL

REV	DATE	REVISION

Evinox Ltd.
Unit B. Blenheim House
1 Blenheim Road
Epsom
Surrey KT19 9AP
Tel: 44 (0) 1372 722 277
Fax: 44 (0) 1372 744 477
www.evinox.co.uk

CLIENT

PROJECT

TITLE
TYPICAL TCP / IP NETWORK FOR MODUSAT SYSTEM

DRAWN	CHECKED	DATE	SCALE
BJW	SS	JAN. 2015	N.T.S.

DRAWING No
STD-MOD-2015-TCP/IP-3