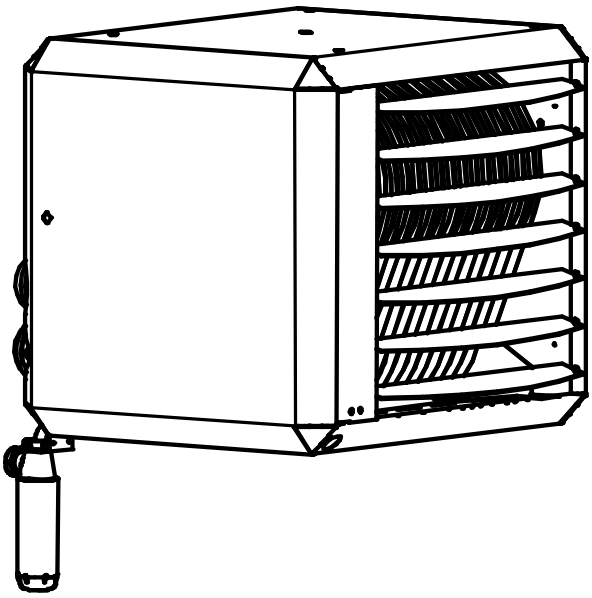
INSTRUCTION MANUAL

PREMIX UNIT AIR HEATER

TYPE HR

Production from 2014



THIS DOCUMENT MUST ABSOLUTELY BE READ BEFORE STARTING THE INSTALLATION.
INSTRUCT USER AND LEAVE THIS DOCUMENT WITH HEATER FOR REFERENCE.

Instruction manual version GB 109e
Heaters for GB
date: 04-05-2015
heaters for natural gas G20 and Propane

1 Introduction:

This installation and user manual is produced specifically for the gas, electrical and mechanical installer , it also gives instructions how to use and maintain the heater.

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3 General

The premix unit air heater is provided with sophisticated control sequence to maintain a comfortable room temperature and even air distribution.

It is paramount that that the installation and maintenance of this appliance are carried out by qualified gas engineers, and strictly according to our instructions.

This is a condensing heater. This means a condensate water discharge system should be installed according to local regulations. Never block this discharge.

3.1 Guarantee

The guarantee is invalidated when the air heaters are not installed in accordance with this manual.

4 Application restrictions



Important!
The installation en maintenance of this air heater should be performed by an authorized competent installer in accordance with this manual.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children may not play with this heater.

4.1 Pre-check

Before unpacking and installation, please check (i.e. on the data badge) if the heater is in accordance with the order and if it is suitable for the local present provisions (gas type, gas pressure, electrical supply etc.)

The Installation must comply with all applicable local and national standards.
The installation of the air heater must be in accordance with the relevant requirements of the Gas Safety regulations (for example in GB; The Institute of Gas Engineers IGE UP-1 and 2), building regulations and the IIE regulations also incorporating the gas safety (installation and use) regulations. Other national and/or local regulations may apply (the Local Authority ,Fire Officer and Insurers)

The competent installer must make sure the heater operates correctly and must instruct the user about the safe operation of the heater.
A ventilation gap of 30 cm is required from the top and bottom of the heater to any flammable materials.
If this heater is drawing its combustion air from within the room in where it is located, the necessary combustion ventilation requirements must be followed for gas safety regulations.
The heater should not be installed in areas containing any corrosive or explosive vapours , in high moisture or dust concentrations, at negative pressures or temperatures higher than 30°C ; please consult Winterwarm or your supplier. The guarantee is then invalidated..

Make sure that the warm air can be blown out freely. There should absolutely be (no possibility of) materials within 5m from the front of the heater.

The heater has been tested in detail on safety and correct operating settings before leaving the factory. It has been adjusted for the type of gas that is stated on the data badge. Should there be any doubt , please contact the manufacturer.

4.2 Protection degree

The heater has a protection degree of IP20, this means for use in a dry and not very dusty environment. This is also the case for the Winterwarm room-thermostat.

5 Technical details:

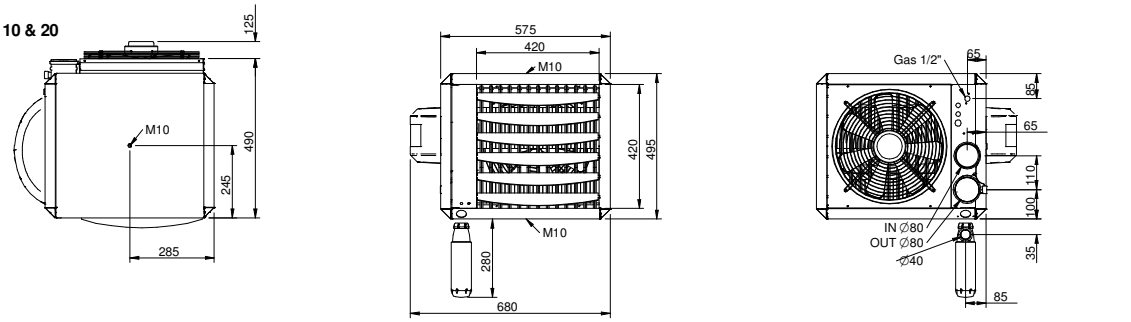
Type HR		**10**	**20**	**30**	**40**	**50**	**60**
Maximum nominal heat input (H.I.)	kW	12,5	20,0	30,0	40,0	50,0	60,0
Minimum nominal heat input (H.I.)	kW	4,0	6,0	9,0	12,0	15,0	18,0
Efficiency max. power	%	96,0	96,0	96,5	97,0	96,5	96,6
Efficiency 30% power	%	106,0	106,0	106,0	106,5	106,0	106,0
Maximum heat output	kW	12,0	19,2	29,0	38,8	48,3	58,0
Minimum heat output	kW	4,2	6,4	9,5	12,8	15,9	19,1
Max air output (warm)	m3/hr	2.000	2.600	3.000	4.500	5.000	6.000
Throw horizontal (max)	m	15	20	23	26	28	30
Gas connection	G”	½” bin	½” bin	¾” bui	¾” bui	¾” bui	¾” bui
Electrical Voltage [50 Hz]	V	230	230	230	230	230	230
Electrical power	W	250	250	275	450	600	600
Electrical current	A	1,1	1,1	1,2	2,0	2,6	2,6
Thermostat bus system (low voltage)		Ja	Ja	Ja	Ja	Ja	Ja
Sound level (average @ 4 meter)	dBA	45	45	45	47	48	49
Suspension height horizontal throw min.	m	1,7	1,7	1,7	1,7	1,7	1,7
Flue length max.	m	9	9	9	9	9	9
Weight	m	45	50	75	85	105	110
Natural gas G20, heater version 3.3							
Nominal supply pressure G20	mbar.	20					
Supply pressure (min-max) G20	mbar.	17-25					
Gas category	Cat.	I2H					
Class	Class.	B23, C13, C33					
Max gas consumption G20	m3/hr	1,3	2,1	3,2	4,2	5,3	6,3
CO2 High G20	%	9,5	9,5	9,2	9,2	9,2	9,2
CO2 Low G20	%	9,0	9,0	8,8	8,8	8,8	8,8
NOx (@ 0%O2)	mg/kWh	28	20	38	35	28	30
NOX Class	Class	5	5	5	5	5	5
CO (@ 0%O2)	mg/kWh	4	5	1	1	3	3
Flue amount max.	kg/hr	19,4	31,1	48,1	64,2	80,2	96,2
Propane, G31, heater version 3.4							
Nominal supply pressure G31	mbar.	30-50					
Supply pressure (min-max) G31	mbar.	25-50					
Gas category	Cat.	I3P					
Class	Class.	B23, C13, C33					
Max gas consumption G31	kg/hr	1,0	1,6	2,4	3,2	4,0	4,8
CO2 High G31	%	10,7	10,7	11,0	11,0	11,0	11,0
CO2 Low G31	%	10,3	10,3	10,5	10,5	10,5	10,5
NOx (@ 0%O2)	mg/kWh	24	17	36	39	32	41
NOX Class	Class	5	5	5	5	5	5
CO (@ 0%O2)	mg/kWh	13	8	3	1	1	1
Flue amount max.	kg/hr	19,4	31,1	48,1	64,2	80,2	96,2

HR80, 100, 120

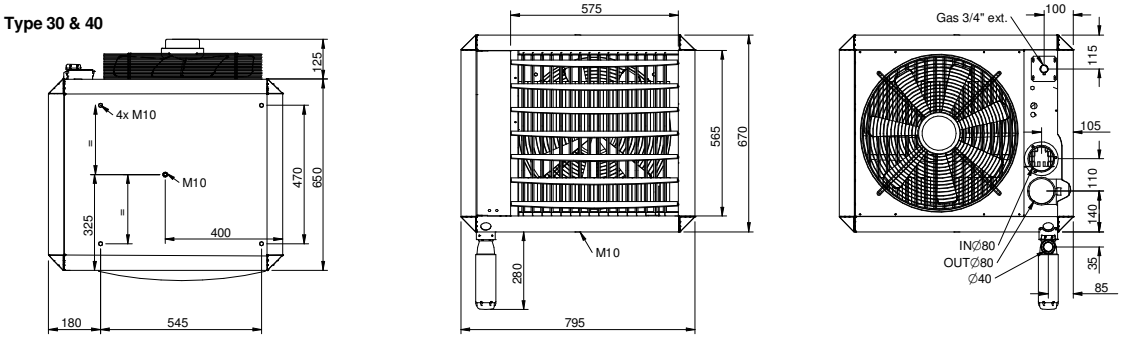
The HR80 & 100 & 120 heaters are respectively 2 x HR40, 50 & 60 heaters been placed on top of each other in cascade in one casing with 1 gas connection, 1 combined air inlet, 1 combined flue outlet, 1 electrical connection, 1 thermostat connection and 1 condensate drain. For the proper functioning and to prevent interaction between the two burners, a gravity check valve has been placed between the premix burner fan and the burner.
Please note that when more then only this heater is connected to one thermostat the micro switches on the print boards in the heaters have to be set different.
See section 12.3 multiple heaters on 1 room thermostat.

Type HR		**80**	**100**	**120**
Maximum nominal heat input (H.I.)	kW	80,0	100,0	120,0
Minimum nominal heat input (H.I.)	kW	24,0	30,0	36,0
Efficiency max. power	%	97,0	96,8	96,5
Efficiency 30% power	%	105,0	105,0	105,0
Maximum heat output	kW	77,6	96,8	115,8
Minimum heat output	kW	25,2	31,5	37,8
Max air output (warm)	m3/hr	8.500	10.000	12.000
Throw horizontal (max)	m	30	30	33
Gas connection	G”	1” int.	1” int.	1” int.
Electrical Voltage [50 Hz]	V	230	230	230
Electrical power	W	900	1000	1050
Electrical current	A	3,9	4,4	4,7
Thermostat bus system (low voltage)		Ja	Ja	Ja
Sound level (average @ 4 meter)	dBA	50	51	52
Suspension height horizontal throw min.	m	1,7	1,7	1,7
Flue length max.	m	9	9	9
Weight	m	180	195	205
Natural gas G20, heater version 3.3				
Nominal supply pressure G20	mbar.	20		
Supply pressure (min-max) G20	mbar.	17-25		
Gas category	Cat.	I2H		
Class	Class.	B23, C13, C33		
Max gas consumption G20	m3/hr	8,4	10,6	12,6
CO2 High G20	%	9,2	9,2	9,2
CO2 Low G20	%	8,8	8,8	8,8
NOx (@ 0%O2)	mg/kWh	35	28	30
NOX Class	Class	5	5	5
CO (@ 0%O2)	mg/kWh	1	3	3
Flue amount max.	kg/hr	128,4	160,4	192,4
Propane, G31, heater version 3.4				
Nominal supply pressure G31	mbar.	30-50		
Supply pressure (min-max) G31	mbar.	25-50		
Gas category	Cat.	I3P		
Class	Class.	B23, C13, C33		
Max gas consumption G31	kg/hr	6,4	8,0	9,6
CO2 High G31	%	11,0	11,0	11,0
CO2 Low G31	%	10,5	10,5	10,5
NOx (@ 0%O2)	mg/kWh	39	32	41
NOX Class	Class	5	5	5
CO (@ 0%O2)	mg/kWh	1	1	1
Flue amount max.	kg/hr	128,4	160,4	192,4

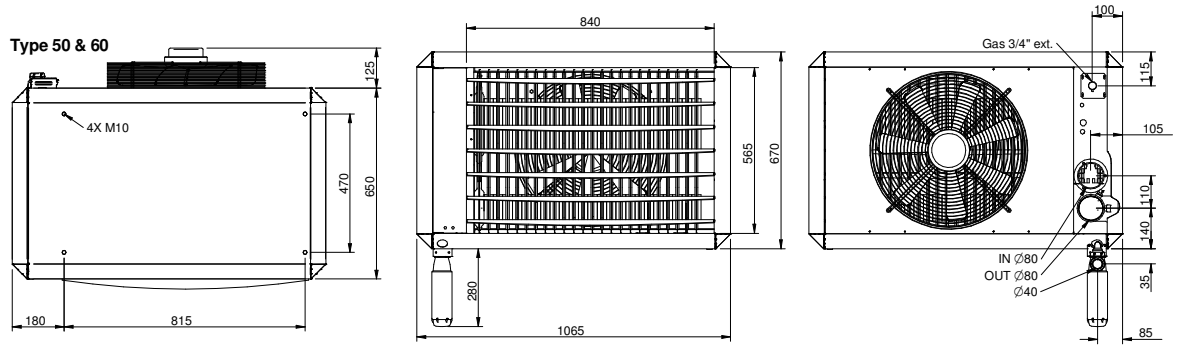
Type 10 & 20



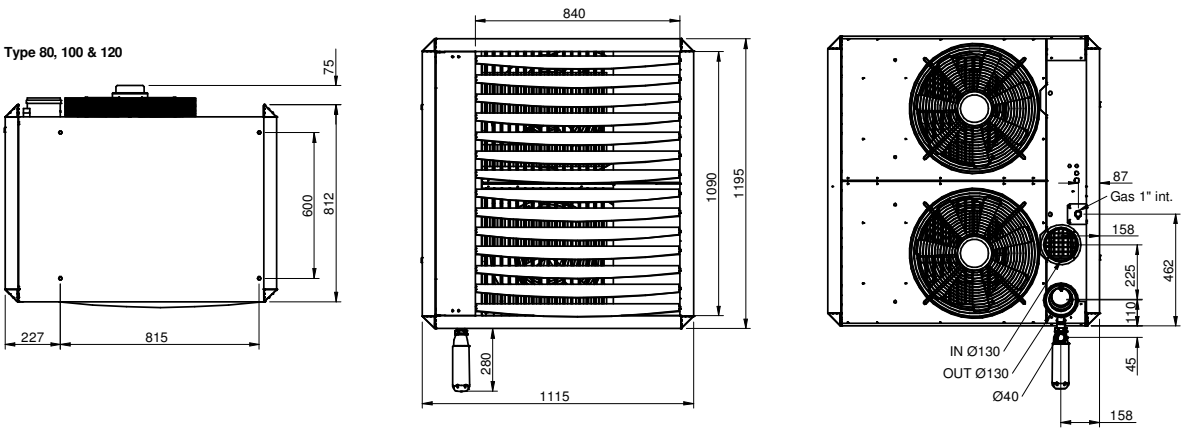
Type 30 & 40



Type 50 & 60

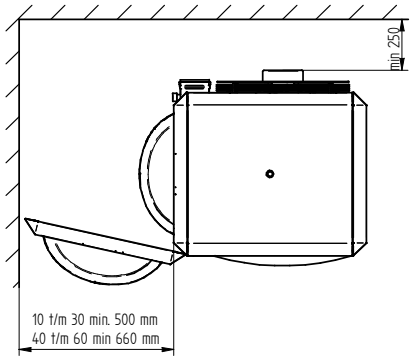


Type 80, 100 & 120



6 Installation

6.1 Positioning

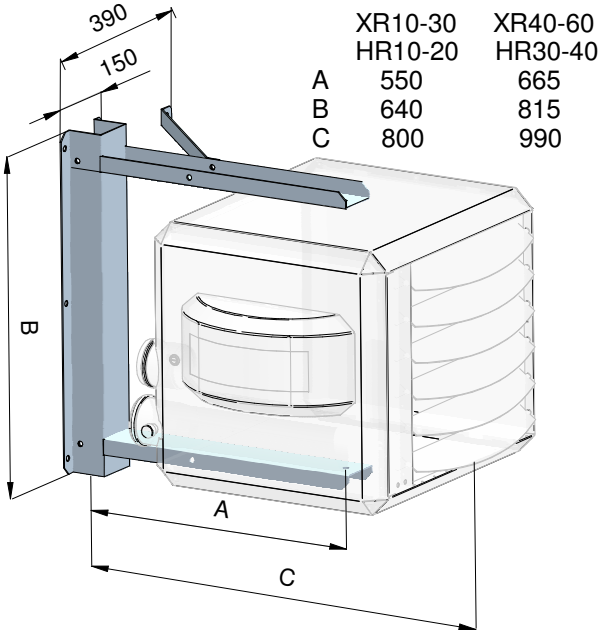


- Check that the support is solid enough.
- The heater is designed as free hanging. The heater should be able to blow the warm air free from any ducting or obstacles. Also the air intake should be free.
- Keep sufficient distance between the heater and any obstruction , in connection with safety and access for service and maintenance. Pay particular attention to any flammable materials. Please take into account the possibility to open the door of the heater for the necessary service and maintenance work . Make sure the air flow to and from the heater is unhindered. Any obstacles should be a minimum of 5 metres away from the front of the heater.
- The heater can be installed horizontally or on an angle of maximum 45 degrees downwards.
- The heaters type 10 and 20 are provided with 2 off M10 threaded sockets as fixing points (see the dimension diagram).
- The types 30 and 40 have in the middle a M10 socket and also 4 sockets on the top corners of the heater
- The types 50 and 60 have on the top and bottom 4 M10 sockets. (see drawings)
- Use preferably the Winterwarm suspension kits.
- Make sure that after fitting, there is no mechanical tension on any connecting gas or electric supplies.
- If the heater is installed with the air stream vertical downwards the maximum suspension height is 8 meters. Otherwise the warm air will not reach the floor.

Attention:
See the application-restrictions in this manual (Chapter 4) for further installation restrictions.

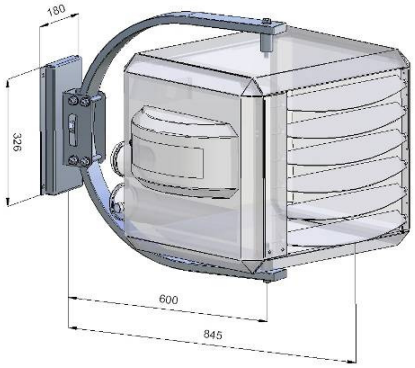
Available suspensions:

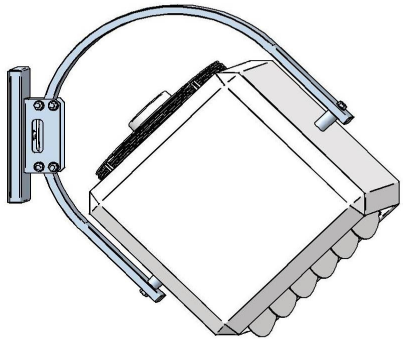
Standard bracket for type HR10 to 40
Horizontal

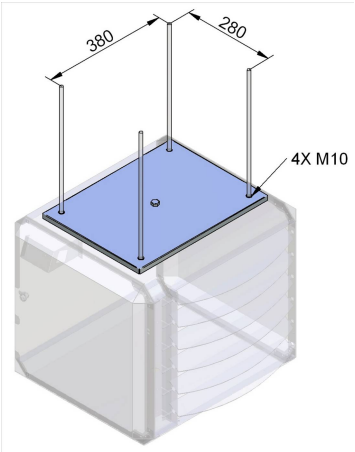


	XR10-30 HR10-20	XR40-60 HR30-40
A	550	665
B	640	815
C	800	990

Design bracket type HR10 and 20
horizontal/ max 45 degrees down

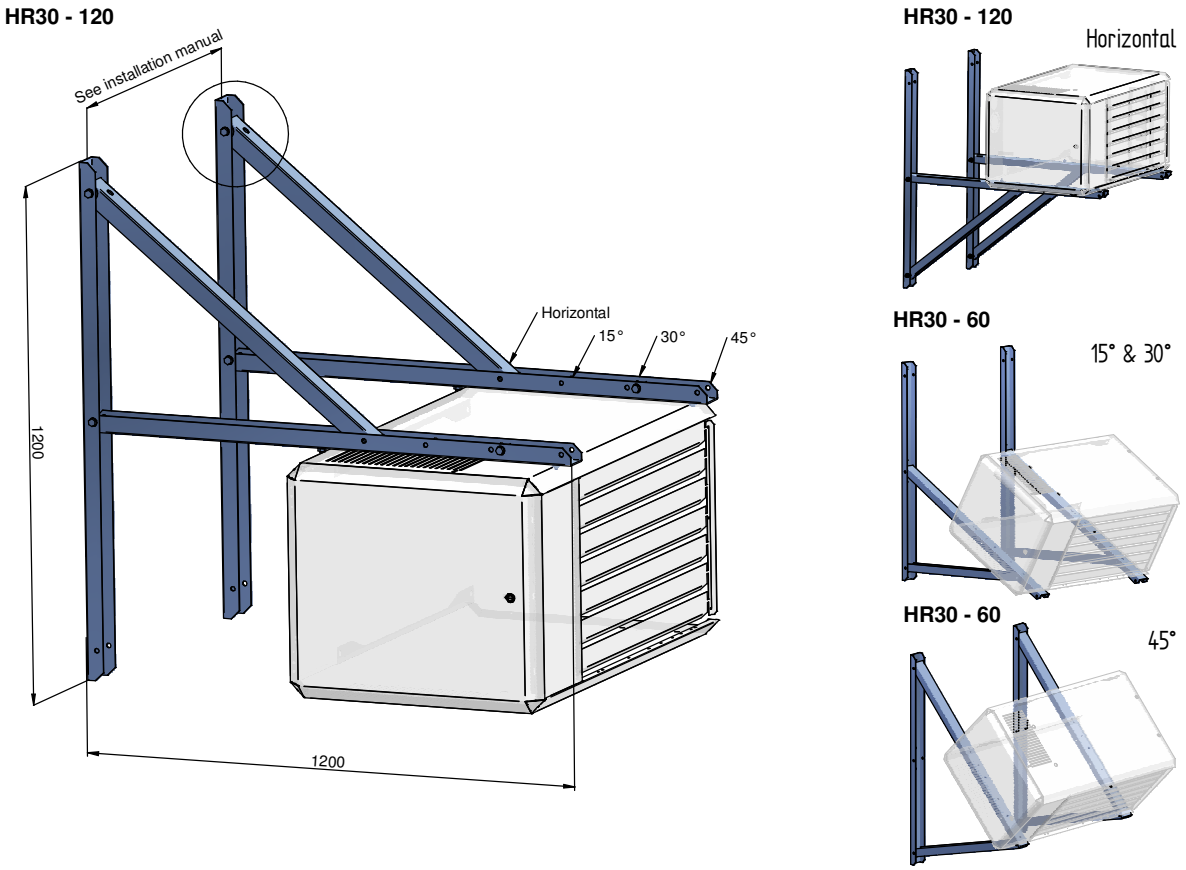






Suspension adapter for type HR10 and 20
M10 threaded bar

Wall console set HR30 up to 120
Art. Nr. : GA8580



6.2 Gas connection

The gas supply line has to meet the national valid requirements and possibly the local requirements of the building inspector, police or fire brigade. (In GB it must comply with Gas Engineers publication UP-1 and UP-2 together with BS 6891.
A manual isolation valve in the supply line must be placed within reach of the heater, and all gas lines must be mounted without any mechanical tension.
When testing the supply lines with pressures above 60 mbar, this manual valve at the heater must be closed.
The working and standing supply pressure must be a minimum of 17 mbar, and a maximum of 30 mbar ,measured at the inlet pressure nipple of the gas control in the heater .

6.3 Electrical connection

6.3.1 230Vac supply

The installation must comply with local and national requirements, (as well as IEE regulations)
The unit heater is delivered completely wired internally, where controls of any type are to be added (e.g. room thermostat) , the relevant wiring diagrams must be followed to. Never use a room thermostat to interrupt the electrical supply to the heater!
Make provisions to completely isolate the heater for maintenance purposes. This can be an isolation switch (min.3mm contact opening gap) , a power plug or a non-switched fuse spur.
The wiring diagram for the heater can be found towards the end this manual.
The supply is 230Vac. with earth. The control circuit is a two wire low voltage Argus-link bus communication.

6.3.2 Room thermostat

The heater can only be controlled by special modulating Winterwarm room thermostats:

The Multi Therm Comfort; modulating digital clock thermostat with optimiser. It can control 1 to 8 air heaters HR10 up to HR60 or 1 to 4 air heaters HR80 up to 120.

The Multi Therm Standard; modulating digital thermostat. It can control 1 to 8 air heaters HR10 up to HR60 or 1 to 4 air heaters HR80 up to 120.

The Interface printboard; special designed interface module for connecting the air heaters with Building Mangagement Systems. (0-10V (modulating input) signal, high/low signal, external reset and other different in and outputs.

ON/OFF thermostat

The heater can not be controlled with a simple on/off thermostat.

In all cases the communication between heater and thermostat is based on a two wire, low-voltage connection. In the appliance the wire for the thermostat has to be connected to connection 4 and 5 (see also electrical wiring diagram) Attention: This also needs a change in the settings on the print board, see chapter 11

When mounting the thermostat, take attention to the following items:

- Mount the thermostat in a place where the air can circulate free pass the thermostat. Take notice that the sun does not shine directly upon the thermostat (in the winter). Do not place the thermostat on a cold wall. Place the thermostat on an inner wall free from draught.

Never place the thermostat within the throw of the heater.

6.3.3 Thermostat cable

In all cases the communication between the heater and the thermostat is based on a two wire, low-voltage connection. In the appliance the wire for the thermostat has to be connected to connection 4 and 5 (see also electrical wiring diagram).



Cable specification: signal cable, 1x2x0,8 (shielded and twisted)
Maximum length 250m.

If the cable is chosen too thin, the signal will become too poor. If the cable is not shielded and twisted the signal might become disturbed in an EMC unfriendly environment.
Keep the thermostat cable separated from mains cables. Connect the earth shield of the cable only to the earth terminal in the heater.

If these guidelines are not followed it may result in malfunction of the installation or worse, it could damage the thermostat or the electronics in the heater.

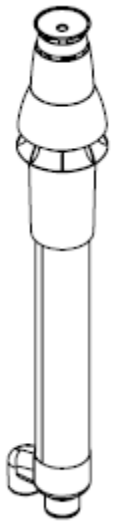


Never mount the thermostat near aerials of internal communication networks. These emit radiation that could lead to disturbance of the thermostat. Always keep some meters distance.

6.3.4 Fuses

On the heater control HC there are two fuses. See electrical wiring diagram.
F1 and F2 are in the power supply of the heater. Replace the fuse only by a fuse of the same type, 5AT

6.4 Air intake / combustion products discharge



Check for compliance with local / national regulations.
The combined Winterwarm combustion-air supply / combustion-gas outlet device (Roof terminal or wall terminal) has to be used, only so the installation is CE approved. See installation drawings.
Always connect a roof terminal for condensing appliances, otherwise condensate can form ice in the winter on the terminal.
Make sure the roof terminal is at least 0,5m above roof level Maximum flue Length Use only pipes and bends for overpressure with profiled sealing-rings.

6.4.1 Flue terminals

Only the flue terminals that are provided with the heater may be used. These terminals are certified together with the heater.

The following terminals are allowed:

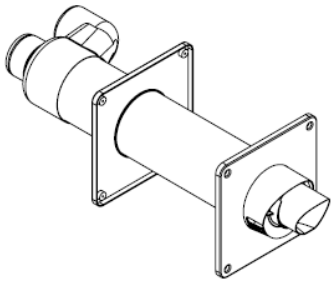
HR10-60

- Concentric roof terminal type M&G Skyline 80-80 article: IA8214
- Concentric wall terminal type M&G HR80-80 article: IA8216

HR80-120

- Concentric roof terminal type M&G 130-130 HR article: IA8307
- Concentric wall terminal type M&G 130-130 HR article: IA8314

6.4.2 Flue material



Only single wall, suited for overpressure class P1 and temperature class T120 flue material is allowed.

- Single thick wall (min 1,5mm) aluminium according EN-1856-1
- Stainless steel according EN-1856-1
- Plastic flue material temperature class T120 according EN-14471

Condensate in the flue system

The During heating, condensate is formed in the discharge system. This condensate must flow back into the heater. Therefore the flue discharge pipes have to be mounted in such a way that the inclination of the pipes will result in the condensate flowing into the heater (minimum inclination 50mm per meter).
When the condensate flows back from a stainless steel or plastic flue system into the heater, a separate condensate drain should be mounted before the aluminium flue exit from the heater.

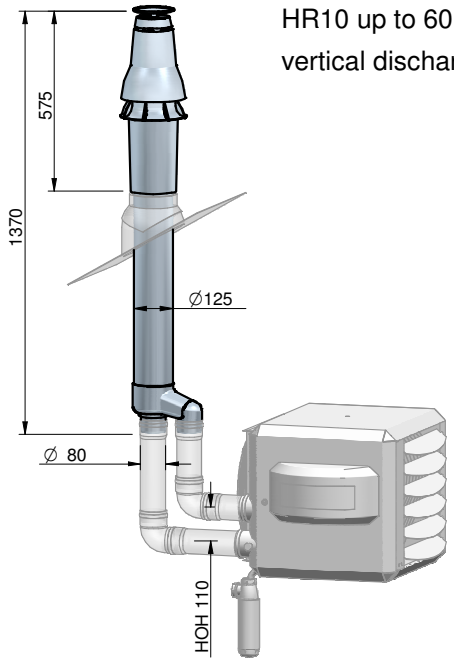
6.4.3 Combustion air intake

Single wall, ridged, aluminium, stainless steel, plastic air tight and should withstand corrosion. To avoid accumulation of water into the supply pipes, they should also be mounted with an inclination towards the heater.

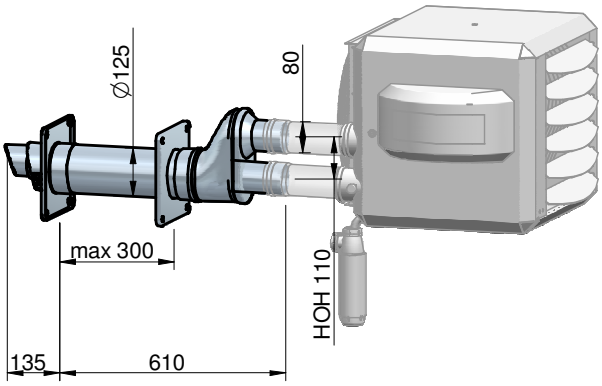
6.4.4 Maximum flue length

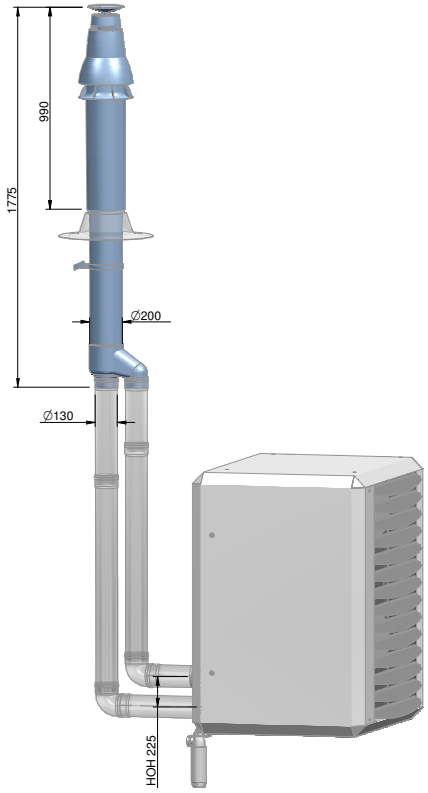
The maximum pressure drop in either the air supply pipe, or the flue pipe ,must not exceed 9 metres straight pipe , excluding the terminal. Whenever bends are used the pressure drop is greater and therefore a 90° bend will count as 2 metres and a 45° bend as 1 metre. All flue pipes must be of the same diameter as the flue spigots on the heater, and all flue joints must be sealed. For further information regarding the flue system please contact your reseller.
In case of a vertical flue terminal, the flue exit should be at least 50cm above the roof. Take also distance into account with air intake openings to the building. (national or local regulations)

HR10 up to 60
vertical discharge

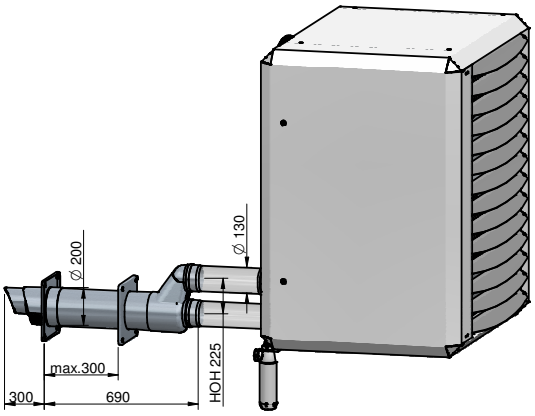


HR10 up to 60
horizontal discharge





HR80 up to 120
vertical discharge



HR80 up to 120
horizontal discharge

6.5 Condensate discharge

The condensate discharge pipe is on the bottom of the heater. The separate delivered siphon has to be connected to the condensate Ø40mm PVC pipe. On the siphon a pipe Ø 40mm can be mounted. The discharge system after the sifon has to be minimum Ø25mm and mounted with an inclination to the sewer. The advised inclination should be minimum 30mm per meter. The horizontal length should not exceed 5 meter.

The condensate should connected according to local and national regulations. Do not let the condensate drip on the roof or roof edge outside the building, dangerous ice can be formed in the winter. Condensate should be drained away to the sewer.

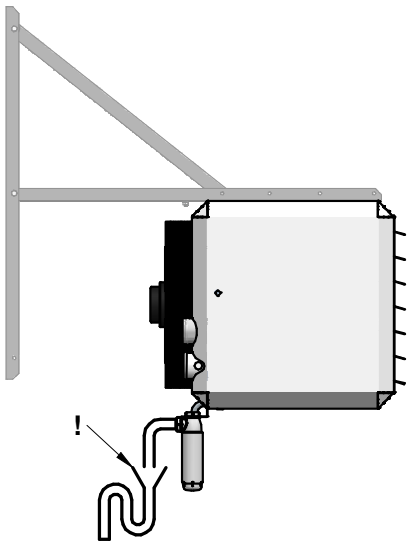
The condensate outlet from the heater should never be closed.
Protect the condensate drain from freezing. Ice can also close the condensate drain.

To be sure that the condensate can always flow out of the heater, an extra siphon should be mounted before connecting to the sewer.

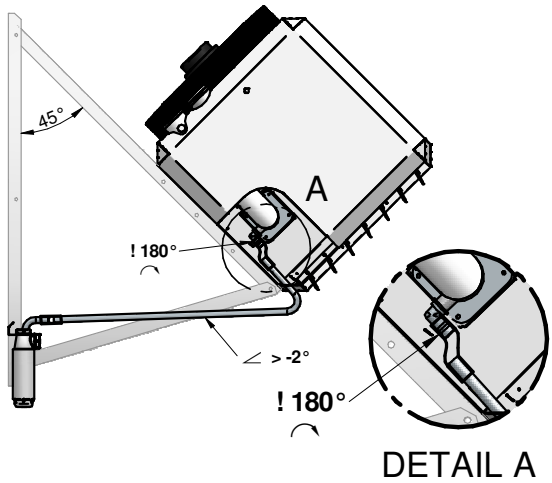
When the condensate discharge system is placed the siphon has to be filled with water. This is important because otherwise the flue gases can flow into the room where the heater is placed.

The heater can be mounted also with the hot air blowing to the ground. In this case the condensate pipe has to be mounted to the front connection of the heater. Therefore the small sheet metal in the front of the heater can be removed and the pipe can be replaced to the front of the heater.

HR10 up to 120
Horizontal



HR10 up to 60
Angle: 15°, 30° en 45°



DETAIL A

Max. amount condensate rate:

	HR10 HR20	HR30/35 HR40	HR50 HR60	HR80	HR100 HR120
Max. Condens l/h	2	3	4	6	8

7 Functioning of the unit

7.1 General

The unit can heat as well as ventilate. By using the temperature-sensor on the unit and the one in the room-thermostat, the temperature-difference between the two in the room is monitored. Should the difference become higher than a set value, due to the fact that warm air has accumulated underneath the roof, the system-fan will start and push the warm air down, acting as a de-stratification fan.

7.2 Heat demand

If the thermostat indicates heat demand, the following cycle will commence:

1. **Pre purge**: The electronic circuit board acknowledges the heat-demand and the premix burner fan will start running for 30 seconds. Display print ➔ 1
2. **Ignition**: After 30 seconds of pre purge the electrode will spark for max. 5 seconds, the gas valve is opened and the gas-air mixture will ignite. Display print ➔ 2
3. **Burn**: When the flame is detected Display print ➔ b. the unit will modulate to the desired load after ca. 15 seconds. Depending on the given load, the system fan will start modulating (step-less) as well. The air heater will **always burn for a minimum of 4 minutes**. This is to evaporate eventual condensation in the discharge system.
4. **End of heat demand:** When the heat demand ends, the burner will switch off and the system fan will continue to run for ca. 3 minutes in order to cool the unit down (Display print ➔ P).

The unit will try to ignite twice before lockout on flame fault.
In the case of flame failure during operation, the heater will attempt one restart.
When the heater is in lockout you see in the display intermittent an A1. On the display of the room thermostat you see failure 1.

7.3 Delta-T-regulation (temperature controlled de-stratification fan)

In case there is no heat demand, the delta-T-regulation will be active.
When the temperature-difference between the sensor on the unit (the NTC) and the sensor in the thermostat is bigger than the set value (factory setting standard 8°C), the system fan will start, at a regulated speed, depending on the differential temperature difference. This operation ensures an even temperature distribution throughout the building, thus acting as a fully automatic variable de-stratification fan. Should this delta-T-regulation not be required, in the Menu Program Settings on the room thermostat this regulation can be switched off. See user manual of the special Winterwarm Room thermostat.

7.4 Summer ventilation

It is possible to let the ventilator run on a certain speed in the summer. Please follow the instructions in the manual from the thermostat.

7.5 High limit protection

7.5.1 T max. Heat exchanger

The unit contains 2 temperature protections. The NTC thermostat monitors the air temperature electronically. Should the temperature, in a first step, become too high, the burner will modulate to the minimum input and the system fan will modulate to the maximum speed.
When the temperature still increases, the burner will switch off (on display you see intermittent an E1). When the heat exchanger has been cooled to normal levels the burner will start automatically.
Should the temperature increase to an unacceptable level, the heater stops (on the display you see intermittent A2). Only after a manual reset the heater can start again. Manual reset can be done on the electronic circuit board or with the special Winterwarm Room thermostat

7.5.2 T max. Flue gas outlet

For the application of plastic flue material on the HR heaters the maximum flue gas temperature is monitored (Tflue < 120 °C). A temperature sensor in the flue outlet the heater monitors the temperature of the flue. When the flue temperature is too high (Tflue > 110 °C), the burner modulates its capacity to the minimum. When the temperature keeps rising, and reaches 115°C, the burner stops. When after an automatic restart the situation repeats itself the heater will lock out. The error A7 will show in the display.

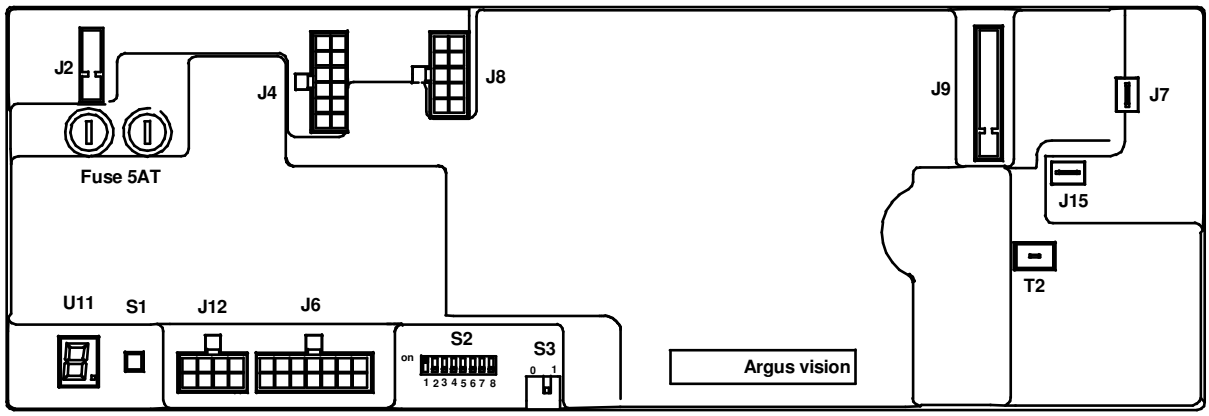
7.6 Flue Transport Supervision

The unit is provided with a pressure switch to control the transport of combustion air through the heat exchanger. It checks in the pre purge phase if there is sufficient movement of combustion air through the heat exchanger by measuring the pressure difference over the heat exchanger. If the pressure difference is too low in the pre purge phase, default A9 will occur. This could mean that combustion air is leaking from the heat exchanger and so the heat exchanger must be checked on leakage.

7.7 Description heater control HC

The heater control HC controls the unit and communicates with the room thermostat.
Functions integrated in the heater control HC are:
-two wire communication with room thermostat
-spark igniting on burner
-ionisation flame guard on burner
-controlling the gas valve
-modulating the premixed fan and burner
-modulating the system fan
-guarding the temperature of the heat exchanger
-LED signals status of heater, heat demand: green, failure: red
-Status of heater on 8 segment display on heater control HC
-reset of heater
-service mode function

Lay-out print board



J2 Main power connection 230V
J4 Connection for gas valve and system fan
J6 Connection for room thermostat, appliance recognition and the status LED's green and red
J7 Earth burner
J8 Not used
J9 Premix- fan
J12 Connections for Temperature sensors
J15 Ionisation selector

F1 & **F2** Fuses 2x 5AT

U11 Status display

S1 Reset service button
S2 Micro switch heater no. Standard 1 to "on"
S3 Power supply thermostat when S2 nr1 to "on" then S3 op 1 else S3 to 0

T2 Ignition transformer, connection for igniter

8 Putting into operation and adjustment

8.1 General

Prior to packaging, each unit is checked in detail on safety and well functioning. It is a.o. adjusted to the right efficiency of combustion. In general, the heater does not need to be adjusted after installation, only a check of well functioning is necessary by a competent person. Also obtain a flue gas analysis and record it for later reference.
Use only a calibrated instrument !
The CO2 value may be adjusted if necessary, only do this in case it turns out that the CO2 value is not correct. Do not ever turn injudiciously the adjusting screws!
Adjustment of the gas control without a supporting flue gas analysis will invalidate the warranty.

Once the unit is installed according this manual, the unit can be put into operation. Make sure the gas pipe is clean, gastight and free from air.
Switch on the electric supply with the maintenance-switch, and open the door in order to be able to observe the first start-up and so become familiar with the functioning of the heater.
Should the gas line not be purged correctly the heater will attempt to start twice before going into a lock-out condition. Manual reset is necessary in that case.

Do not forget to instruct the end user about a safe use of the heater (presence of gas, place of the manual gas valve !), the operation of the heater (lock-out indication and reset) and about the necessary maintenance. This manual must be left with the end user.

8.2 Start by using the service-button

Press the service-button once for 10 seconds, and the unit will commence the ignition-cycle; (30 sec pre-purge, ignition, 15 sec flame stabilise, modulating operation) The burner will then start on minimum load Display print ➔ L/b . By pressing the service-button again, the burner will go to maximum load. Display print ➔ H/b
Pressing the service-button for a third time will put the unit into normal operation. (depending if there is heat demand from the room thermostat).

8.3 Start by using the thermostat

Put the thermostat in the highest position. The start sequence is always the same as 8.2.

8.4 To simulate a lock out condition

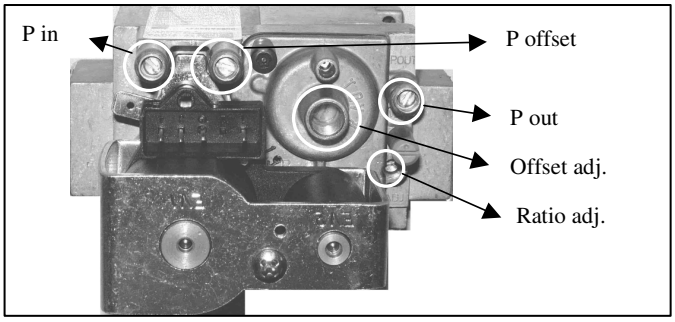
Close the manual gas supply valve. The heater will go to lock-out after a restart attempt. The display on the electronic circuit board shows [**A 1**]. The red LED will light as well. Check also the function of the reset button (with gas valve open again), and observe if the heater starts smoothly.

Display on the print board

0	stand-by	Stand-by
1	Pre-purge	System checks and 30 sec pre purge of the burner fan
2	Ignition	The ignition electrode sparks 5 sec. and the gas valve opens, within 5 sec flame detection should occur.
b	Burn	After 15 sec stabilisation time, the heater will modulate to the desired power. The heater will remain burning minimum 4 minutes.
P	Post purge	The heater will cool the heat exchanger for 3 minutes, and the premix fan will post purge for 1 minute.
F	Summer ventilation	The system fan is running on the summer ventilation mode
F Blinking	Delta-T-regulation	The system fan is running on low position on Delta-T-regulation
L/1/2/ . . . Blinking	Service Low	The heater is running on the service mode. When the heater burns, the heater will run on minimum power.
H/1/2/ . . . Blinking	Service High	The heater is running on the service mode. When the heater burns, the heater will run on maximum power.

9 Adjusting the gas-control

In principle, it is **not** necessary to adjust the gas control after putting the unit into operation. In case it needs to be adjusted, (e.g. after fitting a new one), this must be done only by a qualified person. **Only use calibrated instruments !** A poor adjustment can lead to overheating and / or production of the poisonous carbon monoxide !.



There are two screws to adjust the gas control, the Offset adjuster and the Ratio adjuster.
The Offset adjuster is used in Low fire. The Ratio adjuster is used in High fire.

Put the heater into operation at high fire by pressing the service button first 10 seconds and press again shortly. You see on display H/b.

If the heater does not ignite while sparking, you can, if necessary, close the air-openings of the coloured ring on the gas-air mixer with thumb and forefinger during ignition. The mixture will become richer and will ignite more easily.

Look for the correct CO2 values in the table with technical data.
Readjust the CO2 when the deviation is more then 0,3%

1 **Check the CO2 in High fire**
Decrease CO2 → turn the Ratio adjuster to the right (less gas).
Increase the CO2 → turn the Ratio adjuster to the left (more gas).

2 Then **check the CO2 in Low fire**. The CO2 in low fire is lower then the high fire CO2.
Decrease the CO2 → turn the Offset adjuster to the left.
Increase the CO2 → turn the Offset adjuster to the right

After adjusting the CO2 in Low fire, return to high fire, and Readjust the CO2 with the Ratio adjuster.
Then return to Low fire again and eventually readjust the CO2 with the Offset adjuster.

Repeat these steps until both values are oké.

Never forget to check the CO (carbon monoxide) production of the heater!!! Too much CO means mostly that the mixture is too rich. CO value should always be below 100 ppm.

HR80, 100 & 120 CO2 adjustment:
Check respectively at high and low level first heater 1 and adjust if necessary, then Heater 2 and adjust if necessary after this check then both heaters together.

10 Problem solving

10.1 General

When it turns out that the problem is **not** caused by the external circumstances (i.e. no electric supply power or no gas), please take the following instructions into account. Please remember the built in waiting times of the heater (do not react too soon!) and the signals of the LEDs and the code on the display on the electronic circuit board.

To simplify the investigation of the failing heater please check first:

- Check the fuses as well as the wires and plugs in the heater for possible loose contacts.
- In a heat-demand situation, the green LED on the heater must light up.
- In a failure situation, the red LED on the heater must light up, if so, reset.
- Use first the service-button to put the heater in run mode, try later the room thermostat.

Volatile lock out Can only be reset by hand

A/0 Blinking	Internal failure	Print board defective
A/1 Blinking	No Flame	Within 5 sec flame, then flame failure: Case 1: No flame: Case 2
A/2 Blinking	Exchanger too hot	Heater stops on temperature heat exchanger too hot. Case 3
A/3 Blinking	Sensor error	Temperature sensor on heat exchanger error. Case 4
A/4 Blinking	Too many flame failures	Too many flame failures on ionisation; Case 1, 5
A/5 Blinking	Internal error	Print board defective
A/6 Blinking	Safety relays	Safety relay failure Case 10
A/7 Blinking	Flame	Flame detection when there should not be a flame or The flue gas temperature sensor detects an error condition, case 12.
A/8 Blinking	Burner fan	Burner fan dos not run; Case 6 Burner fan runs; Case 7
A/9 Blinking	Pressure switch	Insufficient air transport over the heat exchanger, Case 11

Non volatile lockout Will disappear when the error is cleared.

E/0 Blinking	Internal defect	Print board defective
E/1 Blinking	1e temperature safety	Heater stops on temperature heat exchanger too hot. When heater is cooled down the heater will restart. Case 3
E/2 Blinking	Selection resistance	Heater recognition does not work Case 8
E/3 Blinking	Selection resistance	Heater recognition does not work Case 8
E/9 Blinking	Reset error	Too many switches on reset button Case 9

Case 1: Within 5 sec flame, then flame failure.

- The flame is not detected. Check the ignition cable and electrode. (cable resistance 1K ohm
- The heater has electrically a poor earth.
- The print board is defective.

Case 2:

- There is not enough gas pressure.
- The mixture of gas/air is poor, adjust the gas valve
- The gas valve does not open, check during ignition on 230V on the valve.
- Check whether the ignition electrode sparks, replace cable, electrode

Case 3: Heat exchanger too hot

- Check whether the system fan blows enough air.
- Check the setting of the gas valve, the heater may me overloaded.

Case 4: Temperature sensor on heat exchanger error.

- The sensor has internally 2 sensors. These differ too much. Measure the resistance from each sensor, the resistance should be 20K at 25° en 25K at 20°. If the measured values differ too much, replace sensor.
- Rotate the sensor ¼ turn. So the contact point is different on the sensor housing.

Case 5: Too many flame failures while burning

- The setting of the gas valve is not ok, adjust the gas valve
- The flue outlet is blocked

Case 6: The premix does not run

- Premix fan is Blocked or the wiring is bad
- Premix fan is defective

Case 7: The pre-mix fan runs, but not the correct speed.

- Check if the fan runs smoothly.
- Check the wiring.

Case 8: Selection resistance error

- Check the appliance recognition part, replace if necessary

Case 9: Reset button error

- Too many switches on reset button in a short period of time. These error will disappear after some time, or if the main power is disconnected for a while.

Case 10: Safety relay error

- Plug J4 is not connected well, the bridge on connector 4 between 5 and 11 is not connected well.
- Otherwise change printboard.

Case 11: Insufficient air transport over the heat exchanger

- Check the pressure switch and the connections
- Check the heat exchanger for flue leakage

Case 12: the flue gas temperature sensor detects an error condition

- The flue gas temperature > 120 °C ➔ insufficient air transport of the system fan or burner adjustment is not correct, check CO2 and CO percentages.
- Loose or closed contact temperature sensor circuit, check the wiring
- The flue gas temperature sensor faulty, check the resistance value of the RG sensor ➔20 k at 25 °C and 25 k at 20 °C.

Heater does start, but shows other problems.

Heater ignites explosively, has often flame failures:

- Check the right setting of the gascontrol, the right CO2 setting is important for the correct ignition.
- Check the ignition cable (1kOhm)
- Check the setting of the ignition electrode, the spark has to be formed between the electrodes and not between the electrode and the burner.

Insufficient output

- The heat output of the heater will be insufficient if there is too much resistance in the inlet- or outlet flue system. In this case the premix-burner-fan will be on full speed, but because of the high resistance too little air is moved and therefore also too little gas. The pressure in the outlet flue for example, will normally never be above 30 Pascal.

Non modulating system fan

- System fan (M1) does not start or does not vary in speed; Check first the functioning of this fan by connecting it to 230 Volt. Check with a multi-meter if the different lower tensions are secondary present on the transformer as well. The fuse could have failed. If the motor and transformer are OK, the cause of the problem must be in the heater control HC, as the heater control HC dictates the different voltages from the transformer to the fan-motor. In that case, replace the heater control HC.

11 Maintenance / spare parts

The heater must be inspected and cleaned regularly (once a year) by a qualified installer who understands this appliance.
This is all the more important as the circumstances are heavier, especially in case of dust, humidity, high frequency of switching on/off etc.

Activities:

11.1 General inspection

- Check the overall condition of the installation. Check the heater, the thermostat, the wires and the gas line.

11.2 Inspection of the heater

Before starting the inspection, switch off the electric power to the heater with the maintenance-switch and close the manual gas valve.

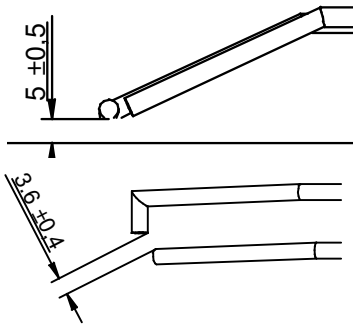
- Take out the burner, complete with flange and pre-mix fan, by unscrewing the 6 off M6 socket screws and you have taken off the ignition and fan wires
- Check the heat exchanger from the inside for dirt and/or damage.
- Check the burner on damage and clean the ignition electrode if necessary . CAUTION: do not twist the electrode out of shape!
- Check the air supply and the flue discharge.
- Clean eventual the inside of the heater with a vacuum cleaner.
- In case the heat exchanger is dirty on the outside, clean it with a soft brush. Never use a steel wire brush!
- Clean the fan-grid with a vacuum cleaner and a brush.
- Put the burner back in (renew the gasket)

After this, check the heater on efficiency of combustion and adjust these if necessary
Check the heater operates correctly.

11.3 Ignition electrode

For the correct ignition of the burner it is important that the ignition electrode is adjusted right.

- The distance between the electrode and the burner should be 5.0 ±0.5 mm.
- The distance between the two electrodes should be 3.6 ±0.4 mm.
- Check the setting of the ignition electrode, the spark has to be formed between the electrodes and not between the electrode and the burner.



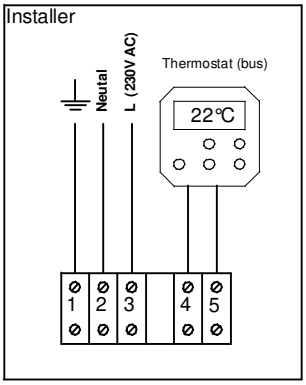
11.4 Spare parts

	10	20	30	40	50	60
Burner HR for nat. gas	GA3206	GA3207	GA3208	GA3208	GA3210	GA3212
Burner for Propane	GA3242	GA3244	GA3246	GA3248	GA3250	GA3252
Ignition/Ionisation electrode set	GA3460	GA3460	GA3460	GA3460	GA3460	GA3460
Premix fan Torin	IX4522	IX4522	IX4522	IX4522	IX4522	IX4522
Gas control SIT SIGMA 848	IX3000	IX3000	IX3000	IX3000	IX3000	IX3000
Control Print Board 166HC	IX5902	IX5902	IX5902	IX5902	IX5902	IX5902
System fan	IX4201	IX4201	IX4201	IH4206	IX4207	IX4207
NTC Cable sensor set	GX3928	GX3928	GX3928	GX3928	GX3928	GX3928
Flue sensor	IX3925	IX3925	IX3925	IX3925	IX3925	IX3925
Air pressure switch	IX3932	IX3932	IX3932	IX3932	IX3932	IX3932
Gasket set	GA6730	GA6730	GA6731	GA6731	GA6731	GA6731
Burner isolation plate	GA6700	GA6700	GA6704	GA6704	GA6704	GA6704

	HR80	HR100	HR120
Burner HR for nat. gas	GA3208	GA3210	GA3212
Burner for Propane	GA3254	GA3256	GA3258
Ignition/Ionisation electrode set	GA3460	GA3460	GA3460
Premix fan Torin	IX4522	IX4522	IX4522
Gas control SIT SIGMA 848	IX3000	IX3000	IX3000
Control Print Board 166HC	IX5902	IX5902	IX5902
System fan	IH4206	IX4207	IX4207
NTC Cable sensor set	GA3928	GA3928	GA3928
Flue sensor	IX3925	IX3925	IX3925
Air pressure switch	IX3932	IX3932	IX3932
Gasket set	GA6731	GA6731	GA6731
Burner isolation plate	GA6704	GA6704	GA6704

12 Examples electrical installation

12.1 Thermostat cable



In all cases the communication between the heater and the thermostat is based on a two wire, low-voltage connection. In the appliance the wire for the thermostat has to be connected to connection 4 and 5 (see also electrical wiring diagram).

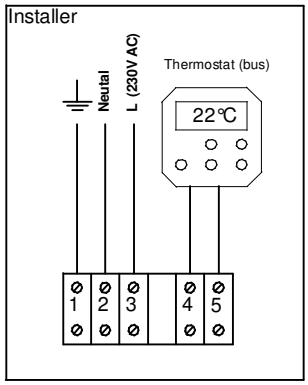
Cable specification: signal cable, 1x2x0,8 (shielded and twisted)
Maximum length 200m.

If the cable is chosen too thin, the signal will become too poor. If the cable is not shielded and twisted the signal me become disturbed in an EMC unfriendly environment.
Keep the thermostat cable separated from mains cables. Connect the earth shield of the cable only to the earth terminal in the heater.

If these guidelines are not followed it may result in malfunction of the installation or worse, it could damage the thermostat or the electronics in the heater.

Never mount the thermostat near aerials of internal communication networks. These emit radiation that could lead to disturbance of the thermostat. Always keep some meters distance.

12.2 Installation with modulating room thermostat



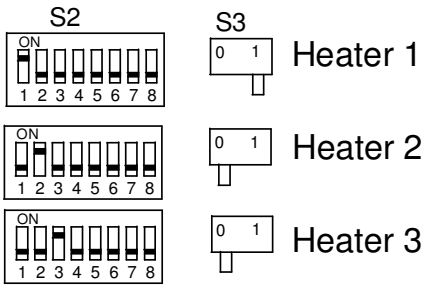
- Connect the heater to 230Vac
- Connect the thermostat to the terminals according to the diagram. (terminal 4 and 5)



- On the print the switches S2 and S3 need to be set as follows: S2 switch 1 at the ON position, and S3 at 1.

The change of these switches need to be performed without power on the Heater, otherwise these settings take no effect.

12.3 Installation of more heaters on one thermostat

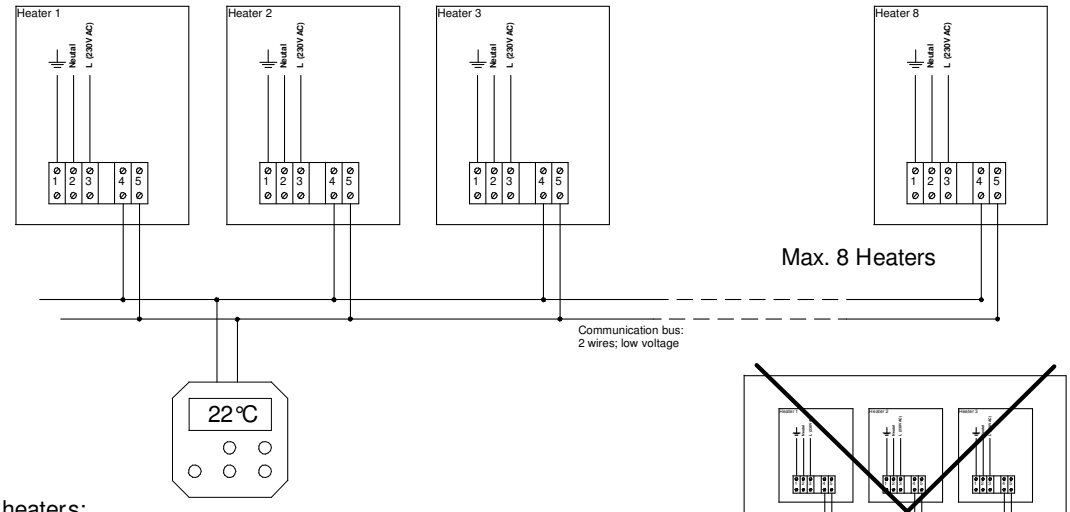


One room thermostat can control 8 heaters. To connect the heaters is very simple. The two wires for the thermostat can be connected to heater one, from heater one to heater two , from heater two to heater three etc. etc. Connect always on terminal 4 and 5. See also the diagram.
Standard factory setting: switch 1 “on”.

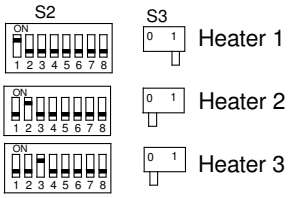
Each heater needs his own unique number to recognise the heater by the room thermostat. The number of the heater can be set by the micro switch on the heater control HC in the heater. The number at the upper position of the switch is the given number for that heater. Make sure that each heater has is own unique number. If more than one heater have the same number the system does not work.

The change of these switches need to be performed without power on the Heater, otherwise these settings take no effect.

Diagram for more heaters on one thermostat

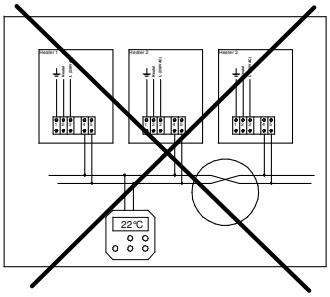


in heaters:
micro switch on printboard.

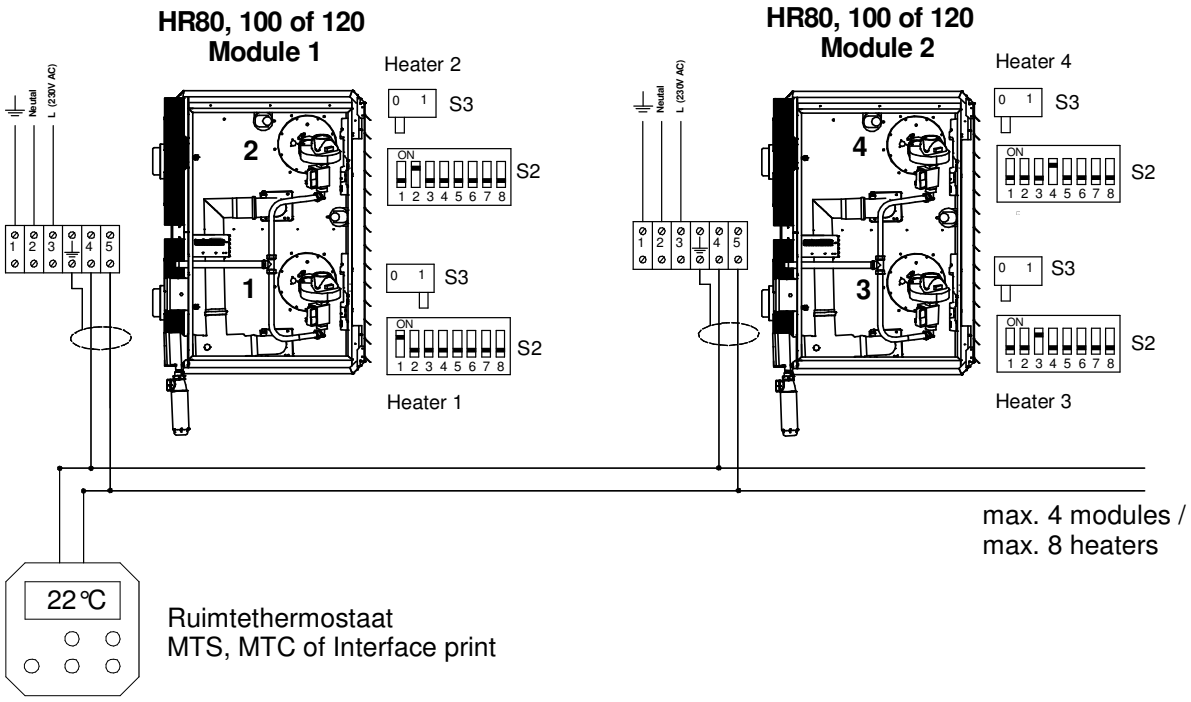


Important:

Whem more heaters on one thermostat, each next heater must have its own number (2 til 8).
Only in heater nr 1 S3 to ON, other heaters S3 to 0.
Do not change clamb 4 with 5 between the heaters.



Installation diagram one room thermostat for more HR80, 100 & 120

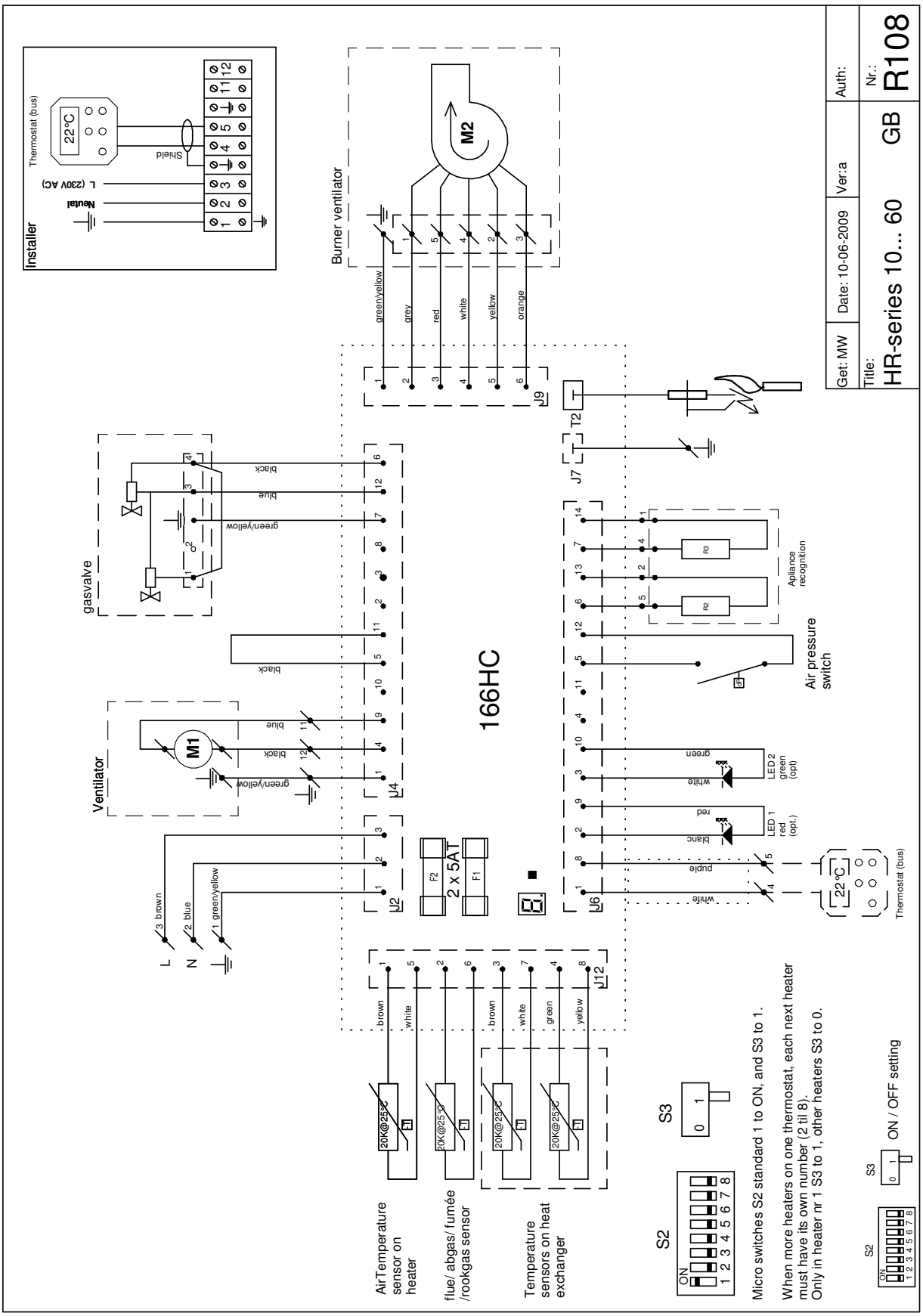


At the first HR80, 100 of 120 the dipswitches S2 en switch S3 are been set standard ex works:
Heater 1: S2 ➔ **1** en S3 ➔ **1**
Heater 2: S2 ➔ **2** en S3 ➔ **0**

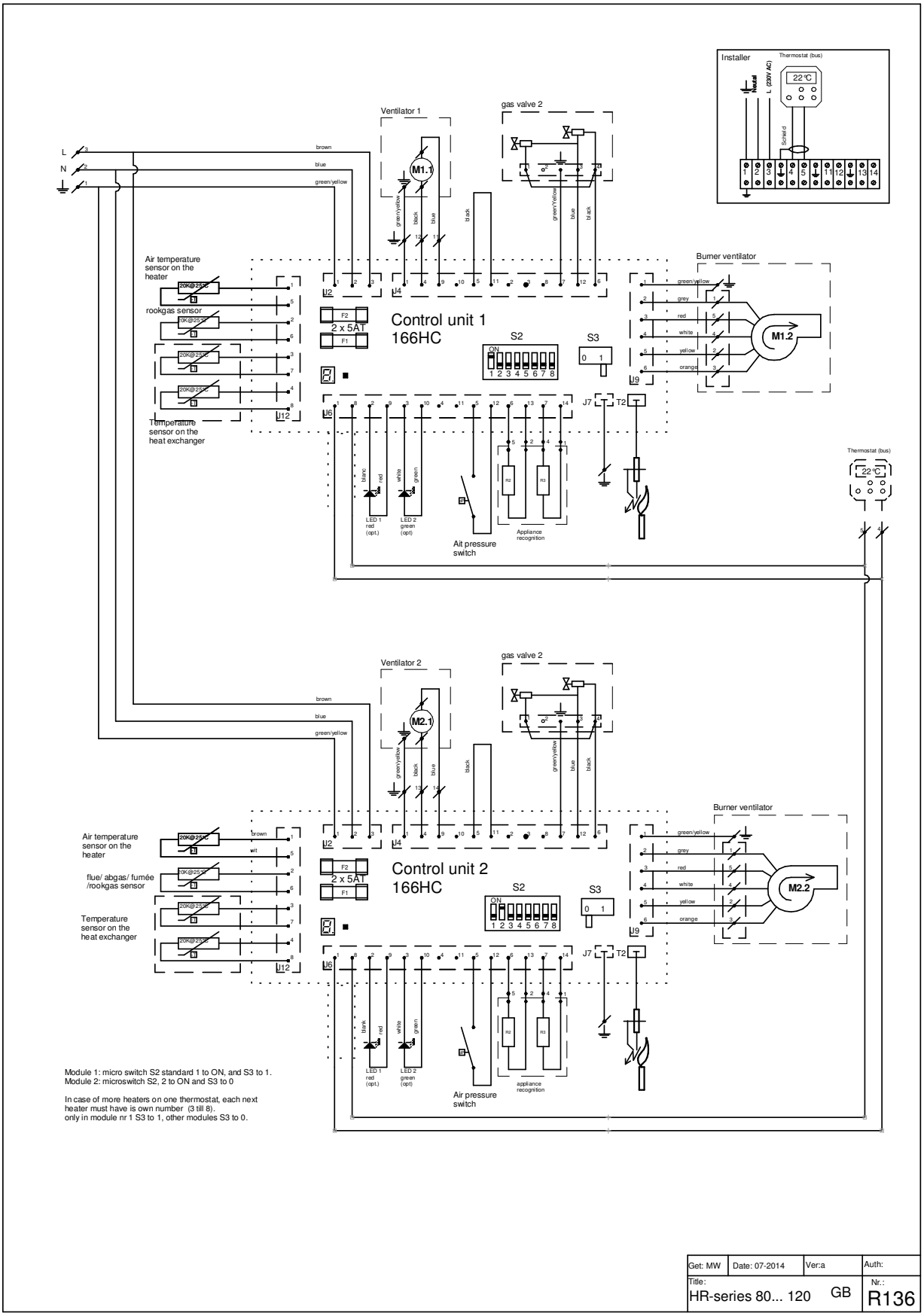
In case of more heaters on 1 room thermostat (max. 4 HR80, 100 of 120 heaters) the dipswitches S2 en switches S3 has to been set on:
Heater 1: S2 ➔ **1** en S3 ➔ **1**
Heater 2 up to 8: S2 resp. **2** up to **8** en S3 ➔ **0**.

13 Electrical diagram

HR10 - 60



HR80-120



Module 1: micro switch S2 standard 1 to ON, and S3 to 1.
Module 2: microswitch S2, 2 to ON and S3 to 0

In case of more heaters on one thermostat, each next heater must have is own number (3 till 8).
only in module nr 1 S3 to 1, other modules S3 to 0.

Get: MW	Date: 07-2014	Ver:a	Auth:
Title: HR-series 80... 120 GB			Nr.: R136

Certificate

kiwa
Partner for progress

Number	62713/03	Replaces	62713/02
Issued	22-05-2015	Scope	2009/142/EC
Report number	176156/5	Contract number	E 0450
PIN	00063BO3156		

EC TYPE EXAMINATION CERTIFICATE

Kiwa hereby declares that the **gas fired air heaters**, types

Winterwarm
XR10, XR20, XR30, XR40, XR50, XR60
HR10, HR20, HR30, HR35, HR40, HR50, HR60,
HR80, HR100, HR120

manufactured by **Winterwarm B.V.**
Winterswijk, The Netherlands

meet the essential requirements as described in the
Directive 2009/142/EC relating to appliances burning gaseous fuels.

Appliance types : B23, C13, C33, C53, C63
Appliance categories : I2ELL, I2ELwLs*, I2L, I2H, I2EK, I2Esi, I2E(S), I2E(R), I2R, I2Er, I3P, I3B/P
*) *Ls is not valid for models XR60, HR60 and HR120*

Countries:

Albania	Finland	Lithuania	Romania
Austria	France	Luxembourg	Serbia
Belarus	Germany	Macedonia	Slovakia
Belgium	Greece	Malta	Slovenia
Bosnia-Herzegovina	Hungary	Moldavia	Spain
Bulgaria	Iceland	Montenegro	Sweden
Croatia	Ireland	Netherlands, the	Switzerland
Cyprus	Italy	Norway	Turkey
Czech Republic	Latvia	Poland	Ukraine
Denmark	Liechtenstein	Portugal	United Kingdom
Estonia			

Bouke Meekma
Kiwa

kiwa Approved EC Directive EC TYPE EXAMINATION 2009/142/EC GASTEC

CE 0063

Kiwa Nederland B.V.
Wilmersdorf 50
P.O. Box 137
7300 AC APELDOORN
The Netherlands
www.1kiwa.com

GASTEC

PRODUCTS RvA C 002

CE

Winterwarm
heating solutions

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P.O.Box 36
NL-7100 AA Winterswijk
The Netherlands

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Fax +31 (0)543 546 310
info@winterwarm.nl
www.winterwarm.nl

DECLARATION OF COMPLIANCE

Winterwarm Heating Solutions B.V.
Industrieweg 8
7102 DZ Winterswijk
The Netherlands

Declares that air heaters types:

HR 10, 20, 30, 40, 50, 60, 80, 100 and 120
CE PIN: 0063BO3156

Are in accordance with the essential requirements of the relevant EU directives being:

- Gas Appliances Directive	2009/142/EC
- Low Voltage Directive	2006/95/EC
- Electromagnetic Compatibility Directive	2004/108/EC
- Machinery Directive	2006/42/EC

Goods should be installed and used in accordance with our instructions and with the local and international rules in force. Installation should be done by a skilled and registered person for the relevant work.

Winterswijk, 05 June 2015

ir. M. Fiselier
Manager Research and Development

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VAT registration nr. NL853363316B01 commercial register 59198516