

focus

Technical Data Sheet

August 2003

OVERVIEW

The Ambiflex focus has been designed with the smaller commercial property in mind.

It has a range of pre-engineered applications for conventional heating systems. It features fully integrated control of up to two boilers or more if a 0..10V boiler sequencer is added, hot water services (direct fired or boiler linked) and a variable temperature circuit; with many other options to choose from, including: night set back, room averaging (max of three room sensors), direct boiler compensation, room reset, optimisation, boiler sequencing or fixed control.

There are a possible three time channels to be utilised, one for the main heating circuit, one for hot water and one as an option available in certain applications for an independent time channel, eg. lighting.

Each of the control routines can be used independently or integrated together.

Easy installation and operation are of paramount importance on the focus. There are six basic applications which can be chosen. When one has been picked to match the project, the system will then self-configure to the chosen application, including default parameters and time schedule. Finally, after the installation has been completed and checked, only the time and date need to be programmed for the focus to start controlling.

There are four pushbuttons on the right of the controller for the use of Heating Extension, Hot Water Extension, Summer Switch and Holiday Switch.

Additionally, there is capacity for a remote Heating Extension, Hot Water Extension and Maintenance Override.

There is an Event Review button, which when pressed pulls up a list of alarms or events which the controller has recorded.

Subsequent adjustments of the controller settings can be made by following the prompts on the display.

The focus is password protected and there are three levels of access, each with its own user programmable, six digit PIN number.

UserLevel: Protected adjustments available to end user.

Service: Control parameter adjustments for service engineers

Install: Configuration switches and adjustments for installation and commissioning engineers.

For further information please refer to the relevant manual:

- focus User Guide
- focus Service Manual
- focus Installation Manual

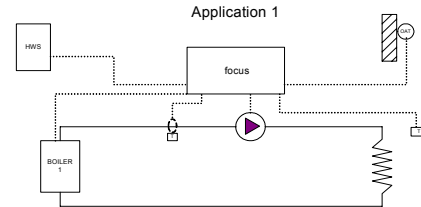
FEATURES

- ❑ Standalone / Communicating / Networking
- ❑ One / Two Boiler Control
- ❑ Self-learning
- ❑ Optimum Start / Optimum Stop
- ❑ Multiple Time Channels
- ❑ Valve Compensation / Boiler Compensation
- ❑ Room Reset of Compensated Setpoint
- ❑ Remote Inputs for Overrides and Plant Fail
- ❑ Multiple Stage Frost Protection
- ❑ Day & Outside Air Economy
- ❑ Optimisation Log & Data Logs
- ❑ Pump / Valve Exercise
- ❑ Pump Run On
- ❑ Calendar Schedules
- ❑ Automatic BST / GMT Clock Change
- ❑ Laptop Port
- ❑ Alarms On Sensor Faults
- ❑ Equalised Run Time On Boilers
- ❑ Boiler Sequencing / Fixed
- ❑ Gradual Changeover From Day / Night Mode
- ❑ Variable Minimum Off Time (VMOT) For Boilers

APPLICATIONS

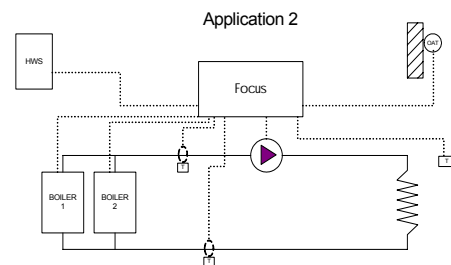
Application 1

This scheme allows for optimisation, direct compensation of the boiler and HWS time control. Options available are room averaging, HWS temperature control, boiler sequencer for multiple boilers (run through Analog Output 1), night depression and an independent time channel. (Sensor Pack 1)



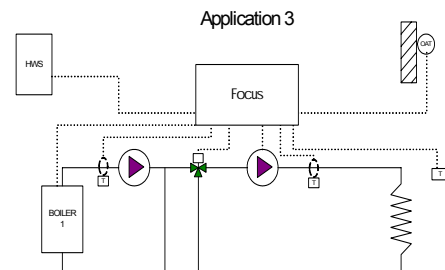
Application 2

This scheme allows for optimisation, direct compensation of the boilers and HWS time control. Options available are room averaging, HWS temperature control, boiler sequencer for multiple boilers (run through Analog Output 1) and night depression. (Sensor Pack 1)



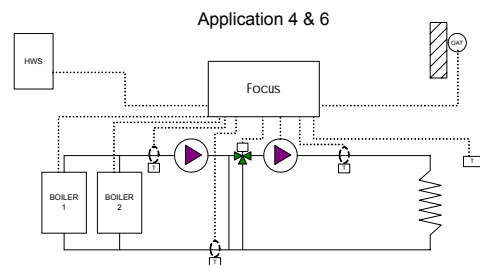
Applications 3/5

This scheme allows for optimisation, boiler and valve compensation and HWS time control. Options available are room averaging, HWS temperature control, boiler sequencer for multiple boilers (run through Analog Output 1), night depression and an independent time channel. Application 3 controls the three port mixing valve through Analog Output 2, 0..10V (A/O), and application 5 provides raise/lower valve control via relay outputs. (Sensor Pack 2)



Applications 4/6

This scheme allows for optimisation, boiler and valve compensation, boiler control of two boilers and HWS time control. Options available include room averaging, night setback and HWS temperature control. Application 4 controls the three port mixing valve through Analog Output 2, 0..10V (A/O), and application 6 provides raise/lower valve control via relay outputs. (Sensor Pack 2)



APPLICATION CONFIGURATION SWITCHES

Switch Name	Switch OFF Name	Switch ON Name	App'n
DHW-plant setup	OFF-no DHW	ON-with DHW	1,2,3,4,5,6
DHW-control	OFF-with time only	ON-with time & temp	1,2,3,4,5,6
DHW-heat source	OFF-independent heater	ON-with link to boiler	1,2,3,4,5,6
DHW-secondary pump	OFF-no pump	ON-slaved with R6	5,6
Sensor-room sensor 1	OFF-not required	ON-included	1,2,3,4,5,6
Sensor-room sensor 2	OFF-not required	ON-included	1,2,3,4,5,6
Sensor-room sensor 3	OFF-not required	ON-included	1,2,3,4,5,6
Sensor-averaging	OFF	ON	1,2,3,4,5,6
Sensor-boiler return	OFF-not required	ON-included	1,2,3,4,5,6
Heating-MV override	OFF-not required	ON-included	3,4,5,6
Heating-setback	OFF	ON	1,2,3,4,5,6
Heating-optimisation	OFF	ON	1,2,3,4,5,6
Heating-flow target	OFF-no room reset	ON-with room reset	1,2,3,4,5,6
Heating-reset ratio	OFF-room:flow ratio 1:5	ON-room:flow ratio 1:2	1,2,3,4,5,6
Ch 2-ind, timer	OFF	ON	1,3,5
Ch 2-link to heating	OFF-no link	ON-works with heating	1,3,5
Ch 2-link to DHW	OFF-no link	ON-works with DHW	1,3,5
Boiler-control setup	OFF-single boiler	ON-0..10V sequencer	1,3,5
Boiler-firing	OFF-sequence rotates	ON-fixed firing	2,4,6
Boiler-rotation	OFF-equal run time	ON-weekly rotation	2,4,6
DHW-cylinder control	OFF-no control valve	ON-with control valve	1,2,3,4,5,6
DHW:htg.primary pump	OFF-no pump control	ON-with pump control	1,2,3,4
Not currently in use	Not currently in use	Not currently in use	N/A
Sensor-monitoring	OFF	ON	1,2,3,4,5,6

The above switches, accessed through the focus keypad, allow the engineer to configure a basic application to suit the project. The configuration switches are accessed at installer level and most options are available with all the standard applications. If switches are not available with the application chosen, the phrase 'not currently in use' will appear. The configuration switches deal with hot water control; room sensors; heating; room-flow influence; independent time channel; boiler control and pump control.

The engineer simply chooses to either have a switch ON or OFF and the switches will automatically configure the controller for that function.

For example if a sequencer needs to be used for multiple boiler control only applications 1,3 and 5 can be used, then the engineer would go to the boiler control section and have that configuration switch ON.

The time and date must be entered for the focus to start controlling, all other switches, settings and time schedules have defaults for ease of set up within each application and may not need to be changed (please refer to the manual for further details).

APPLICATION USER ADJUSTS

User Adjust Name	Min	Max	Default	Access Level	App'n
Room day target	16°	30°	21°	Free	1,2,3,4,5,6
Room night target	16°	30°	21°	Free	1,2,3,4,5,6
Hot water target	35°	60°	55°	Free	1,2,3,4,5,6
Off above-outdr temp	-10°	36°	35°	User	1,2,3,4,5,6
Outdr @ high VT temp	20°	20°	-2°	Installer	1,2,3,4,5,6
Normal high VT temp	20°	80°	80°	Installer	1,2,3,4,5,6
Outdr @ low VT temp	0°	20°	18°	Installer	1,2,3,4,5,6
Normal low VT temp	15°	80°	20°	Installer	1,2,3,4,5,6
VT parallel shift	-25°	20°	0°	Service	1,2,3,4,5,6
VT night shift	-25°	0°	-10°	Service	1,2,3,4,5,6
Max VT flow limit	50°	83°	80°	Service	1,2,3,4,5,6
Min VT flow limit	15°	80°	30°	Service	1,2,3,4,5,6
Maximum boiler flow	50°	87°	83°	Service	1,2,3,4,5,6
Minimum boiler flow	35°	87°	50°	Service	1,2,3,4,5,6
Room FROST cut in	5°	20°	12°	Installer	1,2,3,4,5,6
Pump outdoor FROST cut in	0°	8°	2°	Installer	1,2,3,4,5,6
Boiler return FROST cut in	5°	25°	8°	Installer	1,2,3,4,5,6
Low retn MV ovrdr- SP	20°	60°	20°	Service	3,4,5,6
OFF above room-SP	0°	5°	2°	User	1,2,3,4,5,6

The above user adjustable settings allows the engineer to set the correct temperature settings and parameters for the building and get the comfort conditions right for the occupants. The first three user adjusts are available to the user without an access number; the rest of the user adjusts require access at a higher level.

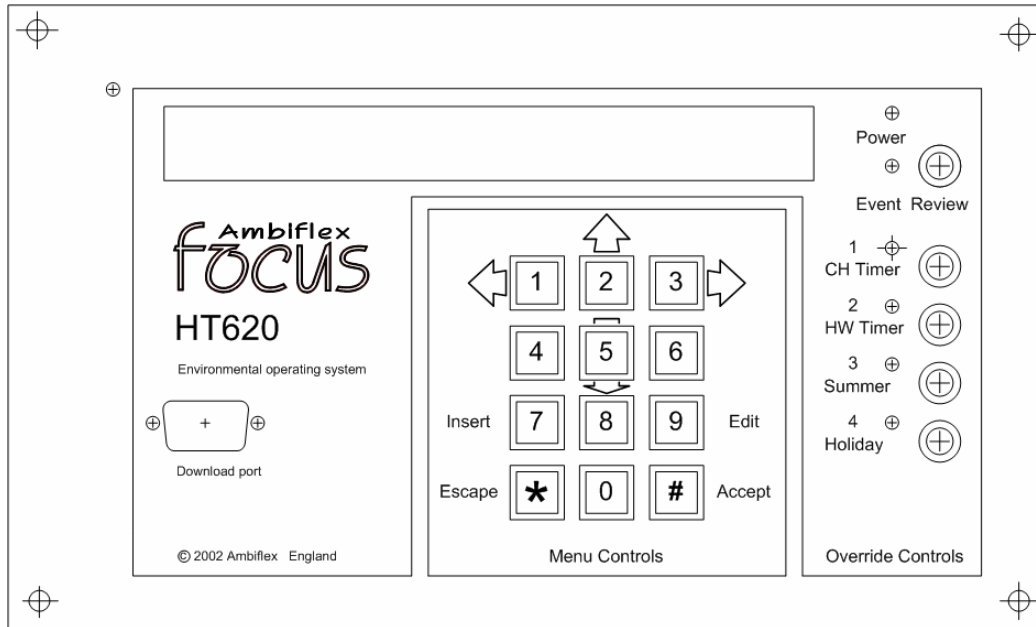
A user adjust is a simple process for inputting temperature targets and parameters. They deal with day and night targets; hot water temperature control; outside economy off function; parameters for a Variable Temperature circuit (including a parallel shift option on the slope); boiler control; frost settings; a low boiler return setpoint for overriding the VT mixing valve and room high limit.

The user adjusts on the focus will read as above unless they are not required because of the configuration switch settings or application, whereupon the phrase 'not currently in use' will appear.

For example if night setback has not been selected then the user adjusts related to that will not be in use.

Please refer to the manual for further description and details concerning the User Adjusts.

focusCENTRAL PROCESSING UNIT (CPU)



The focus comprises of a Central Processing Unit (CPU) and a Power Supply Unit (PSU) linked by a ribbon cable. The CPU board incorporates all electronics, LCD display, keypad and 9 pin engineers RS232 port.

Dimensions: 250mm x 150mm x 35mm (W x H x D) approx.

LCD Display: 40 character, 2 line display

LED's: Flashing when active alarm/extension/override

Pushbuttons: Extensions/overrides for Heating, Hot Water, Summer, Holiday

Keypad Cursor Keys: 1=left, 2=up, 3=right, 5=down

RS232 Port: Laptop communication (9pin male to 9pin female lead and software required)

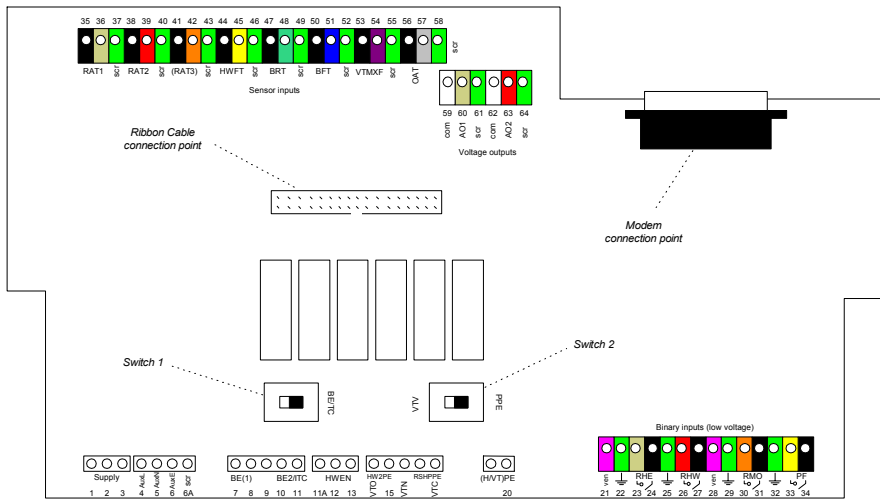
Ribbon cables are available in two lengths, 1000mm or 360mm approx. The standard cable length is 1000mm, unless otherwise requested.

The surface mount enclosure option (please quote RCP2500 when ordering) which houses the CPU & PSU, has dimensions of 290mm x 220mm x 145mm approx. A short ribbon cable will be provided as standard when the surface mount enclosure is ordered.

If the CPU is to be mounted within a control panel the cut-out to be used should have dimensions of 220mm x 122mm (please see the manual for a template).

The on-board RAM memory chip features a built-in Lithium battery. This gives support for operation of the clock and data retention, with the mains supply off, for a total of approximately three years or up to ten years data retention only if the clock is turned off.

focusPOWER SUPPLY UNIT (PSU)



Power Supply Unit (PSU) board incorporating output relays, terminals and 25 pin, RS232 port connection for a modem.

Dimensions: 242mm x 125mm x 40mm (W x H x D) approximately

Ribbon Cable: Standard length 1000mm, also available 360mm

Modem Port: Remote communications available

Relays: SPDT, 8/10 amp, 230Vac resistive

Supply: 230/240V, 50Hz, 10VA

Terminal Connections: Flat blade crimps and bootlace ferrules

Mounting: Din rail mounting or pillar mounting (pillars provided)

Where a modem is plugged into the focus a minimum of 125mm must be allowed above the top edge of the PSU card.

focusInputs:

8 - Temperature Inputs (Ambiflex 'Advance' NTC Temperature Sensors - pre-set)

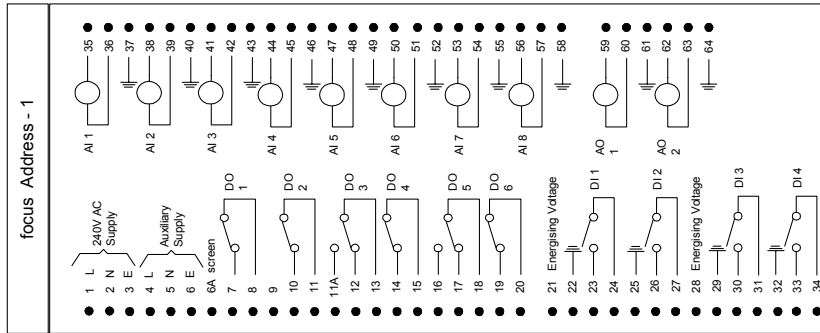
4 - Volt Free Contact Inputs - Digital (pre-set for remote override, plant fault)

focusOutputs:

6 - Relay Outputs (Single pole double throw relay outputs pre-set for individual applications)

2 - Voltage Outputs (0..10V dc pre-set for a VT valve and boiler sequencer)

WIRING INFORMATION



IMPORTANT
All analog inputs, analog outputs and digital inputs must be in screened cable with the screen earthed at the controller end only.
Digital inputs must be volt free contacts.

Terminals 1 – 20 (mains and switched outputs) are designed for flat blade crimps or bootlace ferrules (max 1.0mm)

Terminals 21 – 64 (all inputs and voltage outputs) are designed for bootlace ferrules only (max 1.0mm)

Options and Product Codes

Focus	focusHT620
Enclosure & Short Ribbon Cable	RCP2500
Sensor Pack 1	SP1
Sensor Pack 2	SP2
Room Sensor	RTN3060
Outside Air Sensor	ETN3060
Clamp On Sensor	CTN0120
Immersion Sensor	ITN0120
Brass Pocket	BSP
Data Modem	DFX

Sensor Pack 1 includes 1 RTN3060, 1 ETN3060 and 2 CTN0120.

Sensor Pack 2 includes 1 RTN3060, 1 ETN3060 and 3 CTN0120.

Special discounts are available when ordering sensor packs and bulk orders.

CONTACT DETAILS

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