

# MF620 TECHNICAL SPECIFICATION

The MF620 is a micro-processor based controller capable of operating standalone or as part of a network. All BMS features of energy management, control, data logging, alarm/event monitoring and remote communications are resident within the MF620.

The MF620 is freely programmable with pre-engineered blocks for standard applications accessed from a series of menus. Programming can be directly from its built-in keypad & display or from a local or remote PC via either of the RS232 ports.

## MF620 Inputs

- 8 - Analog Inputs (Ambiflex 'Advance' NTC Temperature Sensors, 0...10vdc, 4...20mA).
- 4 - Programmable digital inputs for alarm monitoring, special overrides, utility metering etc.
- 4 - Dedicated Push Button Inputs on front panel for setting extension timers, summer/winter selection and holiday operation selection (default) or other programmable overrides.
- 1 - Dedicated Push Button for Alarm Mute/List Review on front panel.

## MF620 Outputs

- 6 - SPDT output relays. Contacts/track rated 8/10 amp, 230V ac resistive.
- 2 - 0...10V dc analog outputs.

N.B. Each 0...10V output can be converted into two SPDT relay outputs by using an ADM102 converter module. This would increase the maximum number of SPDT outputs from 6 to 10. The ADM102 provides a range of easily set control modes; e.g. individual relay control, two stage boiler sequencing, 3 point incremental control of a mixing valve etc.

Alternatively, a 0...10V output can be used to control a sequencer module, such as the NSQ 8023 eight stage sequencer, for the control of multiple modular boilers, electric re-heater, etc.

For systems requiring greater input/output capacity than that provided by the MF620, the MF820 is a fully expandable system.

## Physical Characteristics

The MF620 comprises of a Power Supply Unit (PSU) board incorporating output relays, two-part, 2.5mm<sup>2</sup> pluggable terminals and 25 pin, RS232 port connection for a modem. The Central Processing Unit (CPU) board incorporates all electronics, LCD display, keypad and 9 pin engineers RS232 port connection for a laptop/PC. A ribbon cable links the two boards.

## Dimensions

PSU	245mm x 90mm x 40mm approx.
CPU	250mm x 150mm x 40mm approx.
Ribbon Cables	1000mm or 360mm approx. (Optional long or short)
Surface Mount Enclosure	290mm x 220mm x 145mm approx. (Optional)

N.B. Where a modem is plugged into the MF620 a minimum of 125mm must be allowed above the top edge of the PSU card.

## LCD Display

The LCD is a 40 character x 2 line backlit display.

## Keypad

The 12 key telephone type keypad allows users to navigate around the system menus.

All aspects of the system settings can be accessed, reviewed and edited via the keypad. Some two-key combinations provide short cuts and additional features useful for the practiced user.

## Power Supply

The power supply to the MF620 is 230/240v 50Hz, 10VA approx. The on-board RAM memory is backed up with 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 approx. 3 years or up to 10 years data retention only if the clock is turned off.

## Access

In addition to the 'User' facilities available in the open access mode, i.e. while the MF620 remains 'locked', there are four levels of access, each with its own user programmable, six digit PIN number:

Low Level	- limited access to revise time schedules
Mid Level	- access to operational settings and some control adjustments
High Level	- access to all settings except master level PIN
Remote Logon	- Additional PIN required to open communications via modem or local RS232 link.

An additional manufacturers override PIN is built in to the system firmware. This is non-programmable and enables access at any level.

## Energy Management

Integrated system control is central to Energy Management within the MF620.

Additionally the MF620 features six independent time channels, each supporting multiple time based commands:

fixed start/stop time	)	
optimum start/stop time – heating	)	Maximum number of start/stop commands over all channels = 44
optimum start/stop time – cooling	)	
duty cycling proportional to load	)	

Each time channel also supports high/low limit switching, automatic economy functions, calendar scheduling and BST/GMT changeover.

**12 Limit Switches** for frost settings, automatic economy functions, room high/low limit etc.

## Control

The MF620 features the following control functions:

**12 Setpoint Generators** for weather compensation, room reset, cascade control etc.

**16 User Setpoint Adjustment** with programmable maximum, minimum and reset mode.

**56 Programmable Logic Nodes** incorporating inputs with AND, OR, NOT-AND and NOT-OR statements. On and off delay timers and latching conditions can be set. Real and calculated analog points may also be incorporated. (maximum inputs = 72)

**4 P + I Control Output Loops** for control of boiler sequencing, modulating valves, dampers, etc.

Loops 1 & 2 via on board relays  
Loops 3 & 4 via 0 ... 10V onboard outputs

Loops 1 & 2 feature pre-engineered blocks for boiler sequencing and Velocity Module Incremental control (VMI – the speed of the regulating device is proportional to the deviation from setpoint) of modulating valves/dampers.

Boiler sequencing control of up to 3 boilers on loops 1 & 2 incorporates equalised run time (ERT) of boiler modules and variable minimum off time (VMOT), i.e. the off time between stages is varied proportionally to the differential between the calculated boiler target temperature and the measured boiler return temperature.

More than 3 boilers could be controlled either by using both loops 1 & 2 interlocked with the alternating duty/auto changeover facility or by utilising one of the 0...10V analog outputs to control a sequencer module, such as the Ambiflex NSQ 8023.

## Monitoring

### 3 Independent Data logs

- Energy Log - accumulative meter readings & degree day values
  - 1 log at daily intervals (32 samples)
  - 1 log of 13 monthly samples
  
- 2 Performance Logs - 8 actual or calculated temperature values, 208 samples in Data Log 2 and 240 samples in Data Log 3 (this may be less depending on how many fields are used in Data Log 1-Energy Log), 1 min / 2 min / 5 min / 15 min / ½ hour / 1 hour / 2 hour logging intervals can be used

## Event and Alarm Recording

Automatically records up to 24 alarms and specified events set up in the Logic Nodes.

## Communication

Standalone or with modem communications. Communication is via an RS232 port. This is available for:

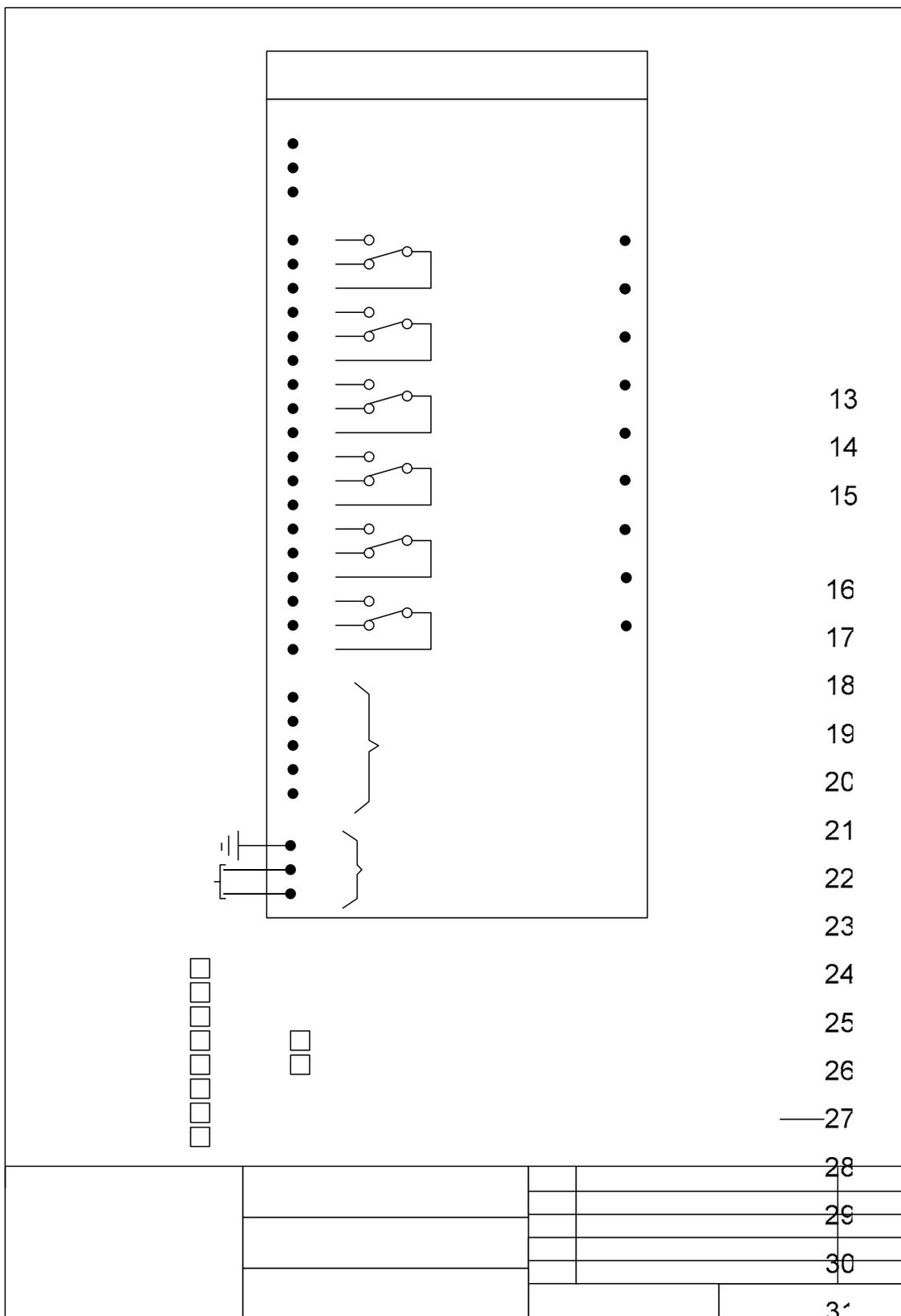
- Direct Connection to a PC.
- Connection to a modem for dial-in/out to a PC via the PSTN.
- Connection to a CLI (Caller Line Identification) modem for dial-in/out to two recognised numbers.
- Connection to a Fax/Data Modem for dial-in/out to a PC via the PSTN or dial-out to a standard fax machine via the PSTN.

Modem connection and power on MF620 PSU, Secondary RS232 communications port on CPU facia for field connection of a laptop.

Ambiflex offers Ambicom a low cost comms software package for the PC end, although the MF620 can be accessed by most standard comms software in terminal mode.

All alarm messages and data logs are sent out in ASCII text format. Alarm messages incorporate the alarm name, time and date of occurrence and clearing in plain text.

# MF620 A



13 AO Common

14 An Out 1

15 An Out 2

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DC  
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DC  
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DC  
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