Ambiflex

MF620
USER GUIDE

1st August 2001

AMBIFLEX MF620 - USER GUIDE

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MF620 PRODUCT OVERVIEW

The MF620 is an intelligent standalone management system with features normally available only in much more expensive systems.

It has been designed with override and adjustment facilities for the non technical user.

The MF620 incorporates a separate PSU board with field connection terminals which connects to the front panel/CPU via a ribbon cable. This means site installation can be carried out without the risk of damaging the front panel/CPU which can be fitted at the commissioning stage.

The front panel has a Keypad/LCD display which can show temperatures, run hours, alarms etc. at the 'User' level and can be used for commissioning at the 'Engineer' level. There are two user levels and two engineer levels. All levels except the lowest user level are password protected.

A modem may be plugged directly into the RS232 port of the PSU allowing automatic dial-out of alarm messages to a PC or standard off the shelf fax machine.
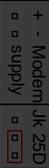
MF620 CONNECTION DETAILS

MF620 PSU

●	1	L 220/240V
●	2	N 50HZ
●	3	E SUPPLY
●	4	AI COMMON
●	5	AI 1
●	6	AI 2
●	7	AI 3
●	8	AI 4
●	9	AI 5
●	10	AI 6
●	11	AI 7
●	12	AI 8
●	13	AO COMMON
●	14	AO 1
●	15	AO 2
●	16	DO 1
●	17	
●	18	
●	19	DO 2
●	20	
●	21	
●	22	DO 3
●	23	
●	24	
●	25	DO 4
●	26	
●	27	
●	28	DO 5
●	29	
●	30	
●	31	DO 6
●	32	
●	33	
●	34	DI COMMON
●	35	DI 1
●	36	DI 2
●	37	DI 3
●	38	DI 4
●	39	VEN

All Analog Inputs, Digital
Inputs and Analog Outputs
should be in screened cable.

Digital Inputs should be volt
free contacts.

+ - Modem Jk 25D
supply

Ribbon Cable

25 Pin Modem Port

TECHNICAL SPECIFICATION

MF620 Inputs

8 -   Analog Inputs (Temperature, RH etc).

4 -   Programmable digital inputs for alarm monitoring, special overrides, utility metering etc.

4 -   Dedicated Inputs on front panel for setting extension timers, summer/winter selection and holiday operation selection.

1 -   Dedicated Alarm Mute input on front panel.

MF620 Outputs

6 -   SPDT output relays. Contacts/track rated 8/10 amp 230V ac resistive.

2 -   0…10V dc analog outputs.

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.

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

Energy Management

6 Independent Time Channels, each supporting:

> fixed start/stop time
> optimum start/stop time - heating
> optimum start time - cooling
> duty cycling proportional to load
> each day of the week independently programmable

Minimum on/off/step time delays for boiler control.

Integrated demand boiler control.

Control

12 setpoint generators for weather compensation, cascade control etc.

4 P + I control output loops
> Loops 1 & 2 via on board relays
> Loops 3 & 4 via 0 … 10V onboard outputs

Boiler sequencing of up to 3 boilers with optional equalised run time (ERT).

Monitoring

3 Data logs (trend logs)

> one energy log with degree days, consumption etc.
> two temperature logs, 8 temperatures/calculated temperatures plus time/date.

Event (alarm) recording.

STANDBY DISPLAY

With the MF620 in its normal 'locked' mode, the display reverts to standby mode whenever the [9] 'escape' key is pressed or approximately 20 minutes after the last keystroke by the user. The following information is shown in the standby mode.

Machine Type   Time, Date & Day

```
9 MF620/49      10:14 22/03/99           Monday

[0] = Info   [#0] = Adjust
```
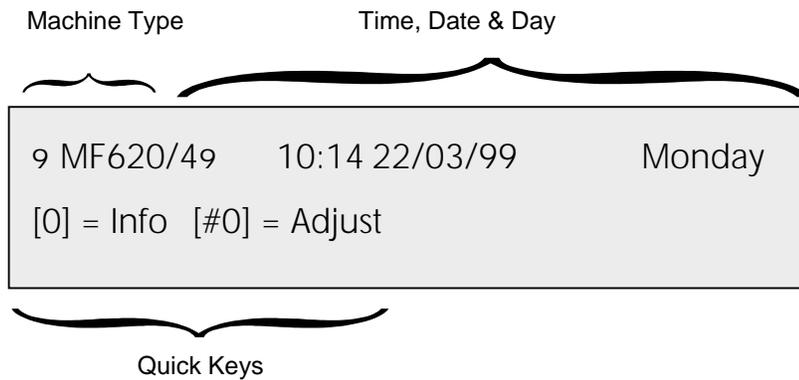
Quick Keys

Machine Type   Machine type and revision number.

Time, Date, Day   Time is in 24 hour format.

                        The date is always displayed in the Day/Month/Year format.

Quick Keys   The keys to press (shown in brackets) which will take the user directly to that part of the program.

USER FACILITIES

In addition to the standby display three additional facilities are available to the MF620 User in the locked mode. These are:

Display   Where temperature values and system status condition may be displayed.

User Adjusts   Where preprogrammed controlled temperature adjustments may be made for up to six temperatures.

Action (override)   Where pre-programmed override actions may be selectively implemented.

These fall into two groups which are those carried out by pressing any of the four black user override buttons:
① ② ③ ④
and those carried out by pressing keys   to

All buttons and keys provide override functions only if preprogrammed to do so. Where keys and buttons have not been preprogrammed, the words 'not currently in use' will normally be displayed.   Otherwise words describing the specific override function will appear in the display window.

STATUS DISPLAY MODE

With the MF620 locked [0] takes the user into **User Display** mode.

The user can go directly to any of the status display pages from the standby display, in the locked mode by pressing [0] which goes to the first page, i.e.

		:	Measured temperatures
[5]	goes to	:	Time channel status
[5]	again to	:	Relay status
[5]	again to	:	Analog out values
[5]	again to	:	Accumulator values
[5]	again to	:	Loop target temperatures
[5]	again to	:	Measured temperatures

MEASURED TEMPERATURES

A wider range of information regarding the status of the MF620 can be displayed in more detail whilst the machine is locked as follows:

$\boxed{5}$ The display will change to:

User	Display	Measured temperatures
[#] = view	[5] = Channel status	[9] = escape

From here each of the eight measured temperatures in °C can be displayed by repeat pressing $\boxed{\#}$

These appear on the bottom line with the name on the left, and the value of the right, e.g.:

Nursery   21.3

With the cursor flashing on 'M' of Measured Temperatures, other status information can be selected for display by pressing $\boxed{5}$

Alternatively, to escape to the default display press $\boxed{9}$.

TIME CHANNELS

[5] the display will change to:

User	Display	Time channel status
[#] = view	[5] = Relay status	[9] = escape

The cursor will be flashing on 'C' of channel.

To review the Time Channel status of each of the 6 channels [#]

The display will change to:

Time channel name	Status	occy status
	lmsw:	

Time channel name	is the name given to the time channel e.g. 'Zone 1', 'Nursery' etc.

Status	**On**	**occy**	on during occupancy time
	On	**ovrd on**	overridden on
	Off	**occy**	off during occupancy time etc.

lmsw:	**Off** time	The limit switch action has switched the channel off, e.g. on high temperature.
	On time	The limit switch action has switched the channel on, e.g. on low temperature.

[#] again and the display will show the above information for the next time channel.

[#] Repeat until all channels have been viewed.

From:

User	Display	Time channel status

with the cursor flashing on 'T' of Time, other status information can be selected for display by pressing [5] as follows.

RELAY STATUS

5   again and the next display 'page' will appear, i.e.

User	Display	Relay status
[#] = view	[5] = Analog outputs	[9] = escape

N.B.   The Relay Status display details are used primarily by commissioning or service engineers. The detail is not normally of interest to the day to day user.

Pressing # the bottom line will display the status of **relay 1**, typically as follows:

User	Display	Relay status
Boiler 1		de-en On

This means that the relay is **de-energised** and the device controlled by it is **ON**, i.e. the fail ON condition.

Repeat   #   to display the status of the other five relays.

ANALOG OUTPUTS

The next page of displays, accessed by pressing ⑤ shows the status of the two **analog outputs** as follows:

User	Display	Analog out values
[#] = view	[5] = Accumulators	[9] = escape

Pressing #️⃣ the bottom line will display the output voltage of analog output 1 as follows:

User	Display	Analog out values
Analog out 1		3.5

where the value shown is a DC voltage in the range 0.0 …10.0V.

#️⃣ to display analog output 2.

ACCUMULATOR VALUES

again and the next display 'page' will appear, i.e.

> User   Display   Accumulator values
>
> [#] = view   [5] = Loop targets   [9] = escape

In this section the user can typically view boiler run hours, pump run hours by pressing the   [#] key to view.

> User   Display   Accumulator values
>
> Boiler 1   000008

LOOP TARGET TEMPERATURES

[5] again and the display 'page' will change to:

```
User           Display          Loop target temps

[#] = view    [5] = Temperatures   [9 ] = escape
```

In this section the user can view actual temperatures versus controller calculated temperatures by pressing the [#] key to view.

```
L1 : Rl 1-3   Sp :77.0  Boiler Target

        Process :       76.7   Boiler Flow
```

Repeat [#] to display the status of the other three control loops.

[5] again and the display will return to Measured temperatures.

USER ADJUSTS

From the default display press $\boxed{\#}$ hold and press $\boxed{0}$ These keys pressed together will take the user directly to this screen.

User	Adjust	Setpt 1
19.0	STATION TEMPS	[9] = Change

To change this

$\boxed{9}$ and the bottom line of the display changes to:

    19.0   [2 = Up   5 = Down   0 = Reset   # = OK]

$\boxed{2}$ takes the temperature up by half a degree.

$\boxed{5}$ takes the temperature down by half degree.

$\boxed{0}$ takes the temperature to the default programmed in.

$\boxed{\#}$ accepts the changes made.

$\boxed{\#}$ again to return to normal display.

When the cursor is flashing over Setpt 1, $\boxed{5}$ will move the cursor to Setpt 2.
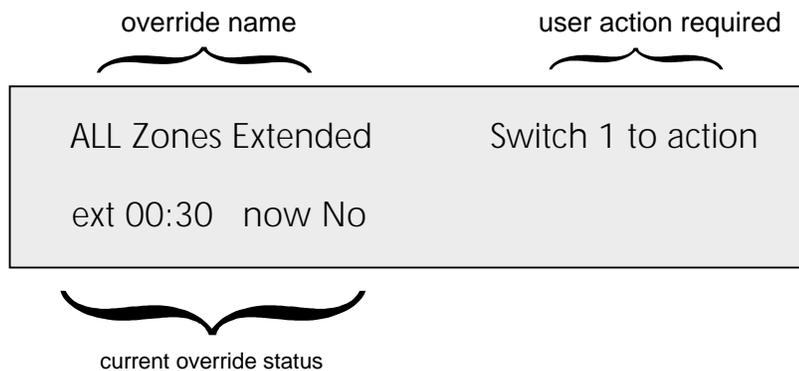
OVERRIDE ACTIONS
- DEDICATED PUSHBUTTONS

These override actions are accessed via black pushbuttons. The four pushbuttons are normally used for:

Heating day extension	PB Switch ①
Hot water day extension	PB Switch ②
Summer mode	PB Switch ③
Holiday mode	PB Switch ④

However, the functions **may** be changed by the programmer, if necessary. In this case a label may be placed over the printed name, and the name of the programmed override function will be shown in the top left hand side of the display screen.

Assuming the four buttons have been programmed as printed, they will work as follows; at any time when the MF620 is locked (⟨o⟩ does not need to be pushed first).

① The display will show:

override name   user action required

```
 ALL Zones Extended        Switch 1 to action

 ext 00:30   now No
```

current override status

Where 'Switch 1 to action' means press ① to increment day extension times for all zones by 30 min.

When ① is pressed once, **'now No'** will change to **'now Yes'**
    and **'Switch 1 to action'** changes to **'Switch 1 steptime'**
    ① again and **'+00:30'** changes to **'+01:00'**
    ① again and **'+01:00'** changes to **'+01:30'**

Once the extension timer has started to 'run back' the time remaining is updated to show this. The green LED alongside flashes.

Repeat pressing ① increases the extension time until the preprogrammed limit is reached and with the next press, the display changes to **'00:30 now No'** and the LED stops flashing, i.e. the override action has been cancelled.

Alternatively, the override action can be cancelled at any time by holding ① down for a minimum of 3 seconds.

The maximum extension time available and the incremental increase for each press will depend on what values the programmer of the MF620 has set.

Please note the extension timer can be programmed three different ways:

e.g.   a)   to time out immediately.
        b)   to time out after the end of the current time channel ON time.
        c)   to time out for a fixed period from the time programmed by the user.

②   Is normally used to extend the Hot Water On time and the operation is identical to ①.

③   The display will normally show:

Summer Heating OFF	Switch 3 to action
	now NO

③   again and **'nowNO'** changes to **'nowYES'** and the green light alongside flashes. All heating will be switched off but not hot water.

③   Again will cancel the summer condition and the display bottom line will change to **'nowNO'**.

④   The display will normally show:

```
Holiday ALL OFF              Switch 4 to action


                 now NO
```

④   again and **'nowNO'** will change to **'nowYES'** and all the heating will be switched off. The green light alongside will flash.

④   Again will cancel the holiday condition and the display bottom line will change to **'nowNO'**.

N.B.   During summer and holiday shutdown frost protection remains active. Also pushbutton switches will remain functional; i.e. it is possible to bring the heating and/or hot water on for whatever extension time has been set.

OVERRIDE ACTIONS - KEYPAD

Additional override facilities activated by front panel keys [1] … [9] **may** have been provided by the programme depending on your requirements (See Page 5).

If additional overrides have been programmed into the controller the default display will typically show:

```
  9 MF6209 11:17      22/03/99   Monday

[0]= Info     [#0] = Adjust     [5] = Override
```

By pressing the quick key [5] the display changes automatically to:

```
    User        Action      Extend

    [# = Yes]                ext 00:30 nowNo
```

[#] once and the bottom line changes to:

   [# = step time]   ext 00:30 nowNo

[#] again and '+00:30' changes to '01:00'

Continued pressing of [#] will increase the extension time in increments until the programmed limit and the bottom line will change to:

   [#] = YES   +00:30 nowNO

ALARMS/EVENTLIST

If critical alarms are being monitored by the MF620 they may either:

Bring on the alarm red light

Operate the inbuilt sounder

Send out an alarm message via a modem built into the MF620

or any combination of all three.

To silence the alarm sounder, or stop the red light flashing:

Ⓐ Press the red alarm push button. The display will change to:

```
N]   Node #nn          Message

A  _  on @  hh:mm    dd/mm
```

N]	is the number of the most recent alarm on the list.
Node # nn	is the internal condition number assigned to that alarm.
A	denotes it is an alarm event.
on@ hh:mm dd/mm	is the time and date when the alarm occurred.

If the alarm condition had cleared, the bottom lime would read:

A _ on @ hh:mm dd/mm clr @ hh:mm dd/mm

When **clr @ hh:mm dd/mm** indicates the time and date at which the alarm condition cleared.

Repeat Ⓐ and the display will step through the alarm list until the last event has been displayed and the screen will show:

Alarm review – No more incidents

Press [Alarm] to accept

You **must** now Ⓐ again to accept and return to the default display. Once accepted the sounder will mute and the red flashing light will become steady.

Further information can be found in the MF620 Operators Manual.

USER NOTES

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