Ambiflex

MF820
USER GUIDE

July 2001

AMBIFLEX MF820 - USER GUIDE

CONTENTS

MF820 PRODUCT OVERVIEW

The MF820 is an intelligent standalone/networking building management system.

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

The MF820 system has a minimum hardware configuration of a separate master control unit with user display, adjust and override facilities with one field input/output module.

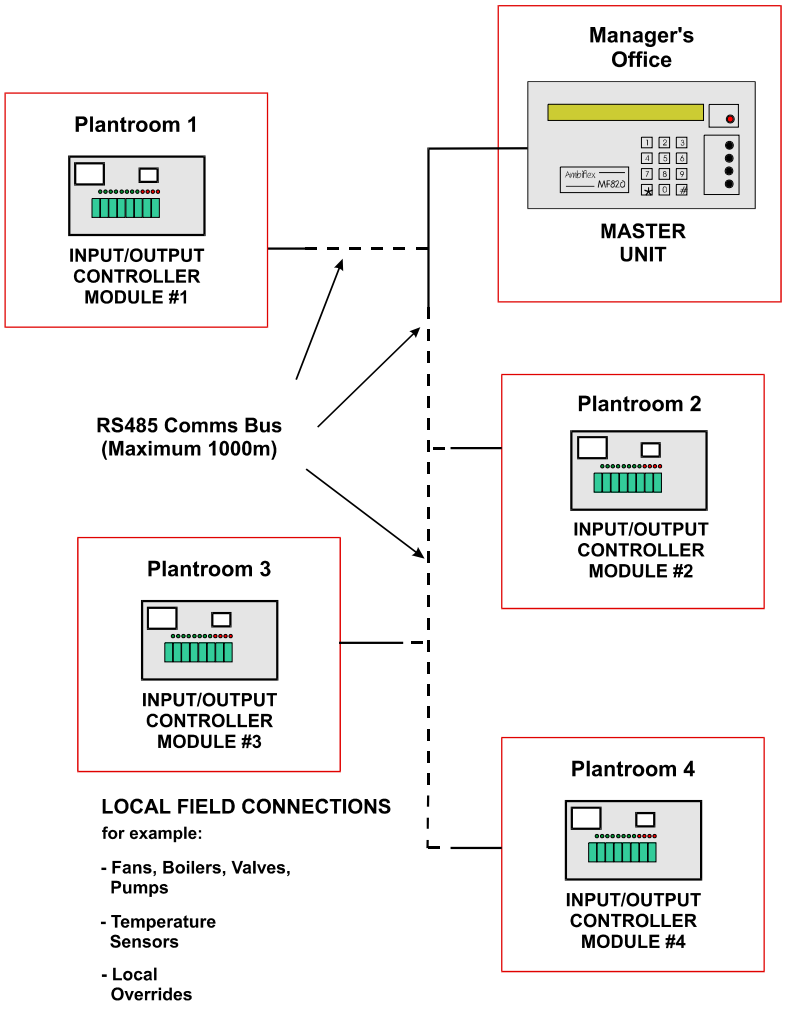
Local expansion options (see page 3) could include up to three further field input/output modules before networking more MF820 BMS.

The LCD display on the MF820 can show temperatures, occupancy, plant status, run hours and alarms 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.

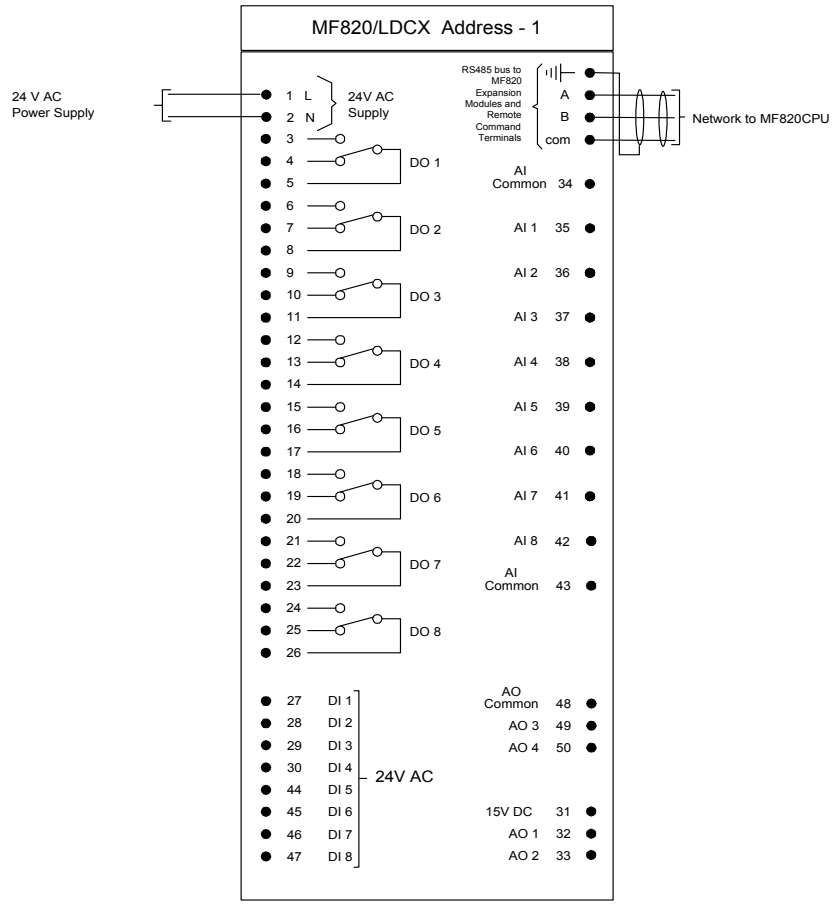
A modem may be plugged directly into the RS232 port allowing automatic dial-out of alarm messages to a PC or standard off the shelf fax machine.

Ambiflex MF820

Typical Arrangement



MF820 CONNECTION DETAILS



Ambiflex Ltd 1 Roebuck Lane Sale Cheshire M33 7SY Tel : 0161 610 7737 Fax : 0161 610 8836	**Project**	**Rev**	**Description**	**Date**
	Customer			
		MF820/LDCX	**Sheet No 1 of 1**	

TECHNICAL SPECIFICATION

MF820 Inputs and Outputs

The MF820 Master Control Unit has no field connected inputs or outputs; it has 4 built-in dedicated push button inputs acting as:

- Extension timers for heating, hot water etc.
- Override switches for summer/winter and holiday/auto selection

The MF820 can support **four** field input/output modules **each** of which has:

8 - Analog Inputs for Ambiflex sensors or other sensors providing linear 0…10V or 4…20mA signals.

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

8 - Digital Output Relays with single pole changeover contacts

4 - Analog Outputs providing a linear 0…10V signal

TECHNICAL SPECIFICATION (continued)

Energy Management

12 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

40 setpoint generators for weather compensation, cascade control etc.

16 P + I control output loops

Boiler sequencing for up to 4 boilers with optional equalised run time (ERT)

Monitoring

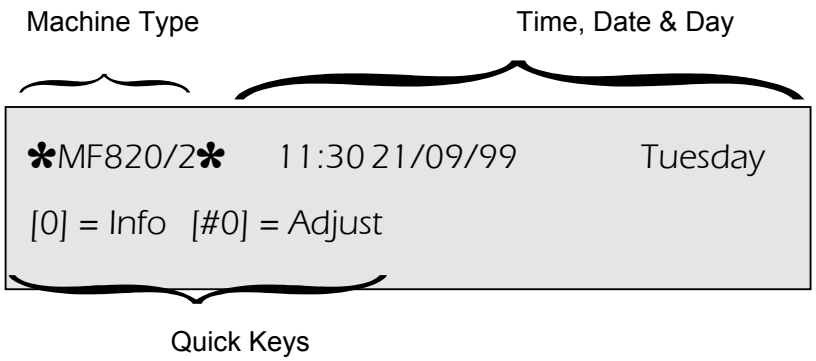
6 Data Logs (trend logs)

- one energy log with degree days, consumption etc.
- five temperature logs, 8 real/calculated temperatures plus time/date

Event (alarm) recording

STANDBY DISPLAY

With the MF820 in its normal 'locked' mode, the display reverts to standby mode whenever the ✻ scape' 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 MF820 revision 2

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 MF820 User in the locked mode. These are:

Status Display Mode Where temperature values and system status conditions may be displayed.

User Adjusts Where preprogrammed temperature control adjustments may be made for up to sixteen temperatures.

Override Actions Where pre-programmed override actions may be selectively implemented.

These fall into two groups: those carried out by pressing any of the four black user override buttons
① ② ③ ④
and those carried out by pressing keys [1] to [9]

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 MF820 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 Temps
[5]	again to	:	Measured Temperatures

MEASURED TEMPERATURES

A wider range of information regarding the status of the MF820 can be displayed in more detail whilst the machine is locked as follows:

With the MF820 locked [0] takes the user into **User Display** mode.

User	Display	Measured temps
[#] = view	[5] = Channel status	[*] = escape

From here each of the measured temperatures can be displayed in °C by pressing [#] repeatedly.

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

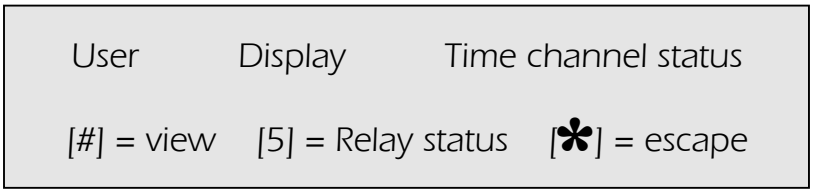
Room **21.3**

With the cursor flashing on the 'M' of Measured Temperatures, other status information can be selected for display by pressing [5].

Alternatively, to escape to the default display press [*]

TIME CHANNELS

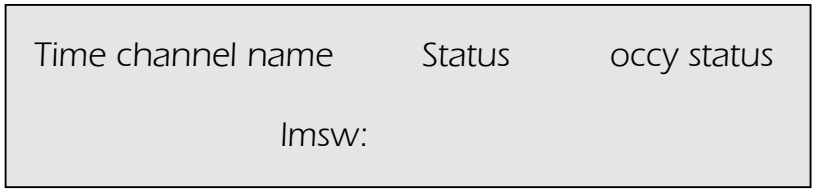
Key [5] and the display will change to:



The cursor will be flashing on 'T' of Time.

To review the status of the Time Channels (Time clocks) press [#]

The display will change to:



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.

Off The limit switch action has switched

Imsw: the time channel off, e.g. on high temperature.

On The limit switch action has switched the time 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	[✱] = 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 relays.

ANALOG OUTPUTS

The next page of displays, accessed by pressing [5] shows the status of the four analog outputs as follows:

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

If [#] is pressed 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 etc.

ACCUMULATOR VALUES

Key [5] to change the display 'page' to:

User	Display	Accumulator values
[#] = view	[5] = Temperatures	[✻] = escape

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

User	Display	Accumulator values
Boiler 1		000008

LOOP TARGET TEMPERATURES

Key [5] again and the display 'page' will appear as:

User	Display	Loop target temps
[#] = view	[5] = Temperatures	[✻] = escape

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

L1 : RI 1-3 Sp :	77.0	Boiler Target
Process :	76.7	Boiler Flow

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

Key [5] again and the display will return to Measured temperatures or to return to the standby display press [✻]

USER ADJUSTS

From the default display press [#] hold and press [0]. These keys pressed together will take the user directly to this screen.

User	Adjust	Setpt 1
19.0	Room Target	[9] = Change

To change this

[9] and the bottom line of the display changes to:

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

[2] takes the temperature up by half a degree.

[5] takes the temperature down by half degree.

[0] takes the temperature to the default value programmed in.

[#] accepts the changes made.

[#] again to return to normal display.

When the cursor is flashing over Setpt 1, [5] will move the cursor to Setpt 2 etc.

OVERRIDE ACTIONS
- DEDICATED PUSHBUTTONS

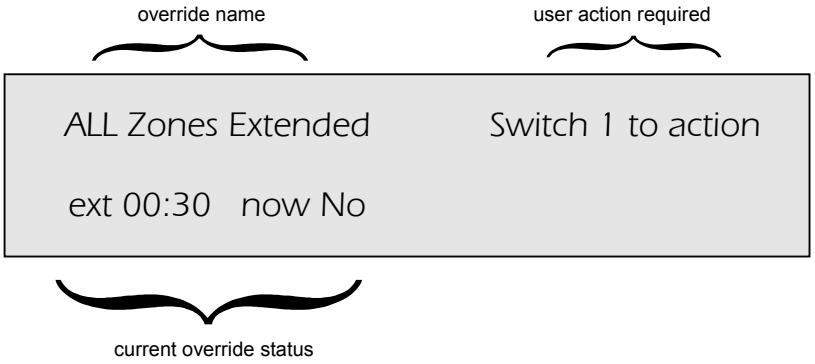
These override actions are accessed via black pushbuttons. The four pushbuttons are normally used for:

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 MF820 is locked (does not need to be pushed first).

Press ① (the first black pushbutton on the controller fascia) and the display will show:



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 the button 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 MF820 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 The second black pushbutton is normally used to extend the Hot Water On time and the operation is identical to ①.

③ If the third black pushbutton is pressed 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 If the fourth black pushbutton is pressed 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 and hot water 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'**.

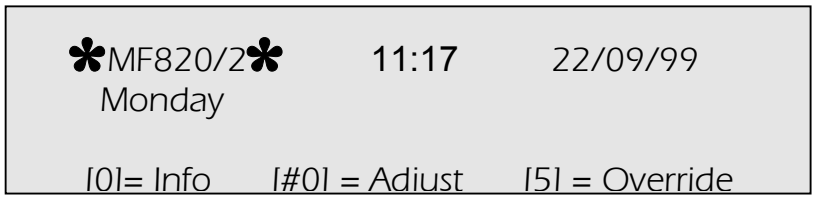
N.B. During summer and holiday shutdown frost protection remains active.

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.

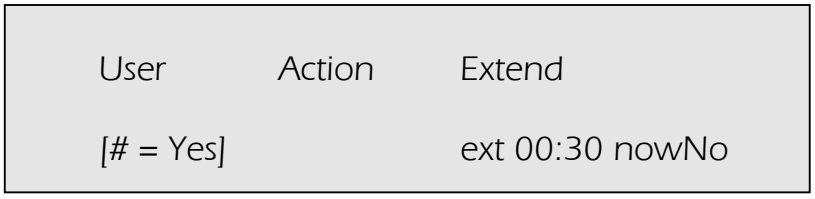
OVERRIDE ACTIONS - KEYPAD

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

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



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



[#] once and the bottom line changes to:

[# = step time] ext 00:30 nowYes

[#] 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 MF820 they may either:

Bring on the alarm red light

Operate the inbuilt sounder

Send out an alarm message via a modem built into the MF820

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 line 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.

Continue to press the red alarm button Ⓐ 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 press Ⓐ again to accept and return to the default display. Once accepted the sounder will mute and the red flashing light will become steady.

The red light will only disappear when the alarm has cleared.

For more information please refer to the MF820 Operators Manual.

USER NOTES