FIRECLASS

FC490ST Loop Service Tool

From Software version 1.0

User Manual

120.515.079

Doc. version 1
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Contents

1   Guide through this manual

1.1   Keywords and symbols

This documentation uses special notations that you can use for better orientation. Symbols in the margins indicate warnings, infos or instructions. You find an explanation of these symbols in table 1.

Keyword	Symbol	Explanation
DANGER	⚠	Warning. Imminent danger. Death or severe injury when disregarded.
WARNING	⚠	Warning. Potentially dangerous situation. Death or severe injury possible when disregarded.
CAUTION	⚠	Warning. Potentially dangerous situation. Minor injury possible when disregarded.

Table 1: Keywords and symbols in this documentation

Keyword	Symbol	Explanation
NOTICE	⚠	Warning. Potentially dangerous situation. Material damage possible when disregarded.
	ℹ	Helpful information.

Table 1: Keywords and symbols in this documentation (cont.)

1.2   Helpful information

ℹ **Choose a command via the menu**

This documentation explains how you can choose commands in instructions via the menus of the menu bar.

1.3   Who this guide is for

This guide is aimed at technicians who have to install a FireClass fire detection system. They should already have been given training.

2   Introduction

Fig. 1: FC490ST Loop Service Tool
1 – µP (not used)
2 – PC Connector (not used)
3 – AUX Connector

The FC490ST Loop Service Tool is used to program the loop address into FireClass addressable devices. (Refer to "Functional Reference Table" on page 15). It's easy-to-navigate options capture user requirements in an intuitive manner.

The FC490ST displays information and performs tests on devices. It has a 32 character backlit LCD alphanumeric display, arranged in 2 rows of 16 characters and four 'softkeys', F1, F2, F3 and F4. (The display format is shown in Fig. 6).

Power for the FC490ST is derived from 4 AA size nickel metal hydride rechargeable batteries. It may be run from an unregulated +12V DC input, i.e, car cigarette lighter connection, or regulated +12V DC110/230V AC universal mains adaptor, both of which will recharge the batteries as well. The FC490ST consists of the following:

■ Loop Service Tool

■ Service Tool to ancillary connector lead

■ 110/230V AC universal mains adaptor plus lead

■ 4 x rechargeable AA size Nickel Metal Hydride batteries.

2.1   Key Functions and Features

The FC490ST is designed to be used as a desktop unit, clipped to a trouser belt or be carried with a shoulder strap. The FC490ST has four external connections:

■ DC IN +12 V - External connection from the car cigarette lighter or 110/230 V AC universal mains adaptor.

■ AUX - External connection from the Ancillary connection port.

■ PC - PC connection port (not used).

■ µP - Microprocessor Connector (not used).

Detectors are programmed by placing the detector onto the FC490ST and turning clockwise until fully engaged.

Ancillaries are programmed via the AUX port on the FC490ST. The ancillary programming cable consists of an RJ11 connector at one end and a custom moulded connector at the other end.

2.2   Technical Specifications

2.2.1   Mechanical Specifications

Parameter	Value
Dimensions: HWD	48 x 200 x 112 mm
Weight: ■ FC490ST Loop Service Tool: ■ FC490ST Loop Service Tool + batteries:	0.36 kg 0.5 kg
Materials: ■ Top: ■ Bottom:	FR ABS Dark Blue FR ABS Dark Blue

Table 2: Mechanical Specifications

2.2.2   Electrical Specifications

The FC490ST can be operated with the LCD backlight OFF or momentarily ON.

The AC adaptor is required when testing high current address able devices, including the FC430SAM/SAB.

Parameter	Value
Batteries:	4 x rechargeable AA size Nickel Metal Hydride
Operating Time (Batteries only)	Up to 15 hours (dependent on battery charge and usage)

Table 3: Electrical Specifications

2.2.3   Environmental Specifications

Parameter	Value
Operating Temperature	0°C to +45°C
Storage Temperature	0°C to +50°C
Relative Humidity	90% (non-condensing)
Battery Disposal	Should be disposed of in accordance with local regulations.

Table 4: Environmental Specifications

2.2.4   EMC Specifications

The FC490ST meets the requirements of the EU EMC Directive 89/336/EEC.

3 Operating Instructions

3.1 Charging Batteries

How to Install/Replace the batteries:

1 Unscrew the two screws on the base of the FC490ST, using a cross-point screw driver, holding the battery compartment cover whilst removing it.

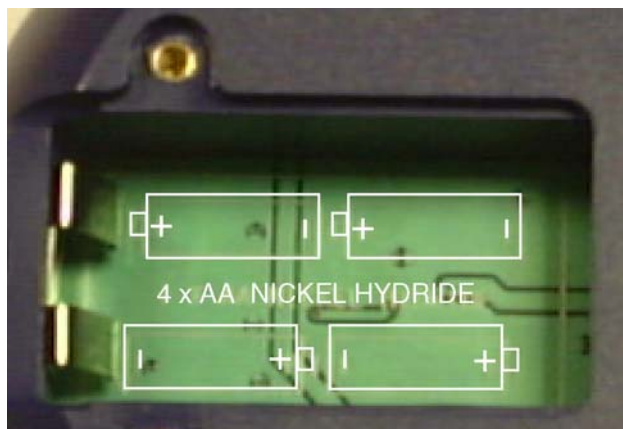2 Insert the batteries ensuring correct polarity marked on the PCB.

Fig. 2: Battery compartment

3 Replace the battery compartment cover and screw down.

CAUTION

Battery Status:

- Ensure that only CEL specified Nickel metal hydride rechargeable batteries are used and fully charged before use.
- Fully charge the batteries for 10 hours before using for the first time.
- Do not open the battery lid while the unit is switched on, or charging.

Charging and Mains Use

The FC490ST has its own built-in charging circuit, powered by the mains adaptor. The batteries are boost-charged for 4-5 hours and reach full charge within 10 hours. It can also be powered from the mains supply using the mains adaptor. If batteries are installed, this allows them to be charged at the same time. (Refer to "LOW BATTERY" on page 13).

3.2 Password Protection

The FC490ST is switched ON/OFF by pressing any button for more than 3 seconds. The following example screen showing the software revision number, is displayed for 2 seconds when the FC490ST is switched on:

Note that the 'E' displayed stands for English version (appropriate letters are used for other languages). The FC490ST then displays the screen below:

Password Protection

The following information on Password Protection is CRUCIAL to the operation of the FC490ST.

The FC490ST requires a 6-digit password to be entered. The password uses only the digits 1 to 4, and may be entered by pressing the corresponding buttons F1 to F4; example, button F1 to enter 1, button F2 to enter 2, etc. The password is **121234**.

CAUTION

Failure to enter the correct password at the fourth attempt will result in the FC490ST switching off and allowing only one attempt on subsequent powering of the unit.

On successful entry of the password, the main screen is displayed as shown in Fig. 5.

3.3 Connecting to a device

Detectors are inserted as shown below. Use the marking on the FC490ST (above F1 button) to align the detector. Place detector in position 1 to engage and then twist clockwise to position 2 to lock.
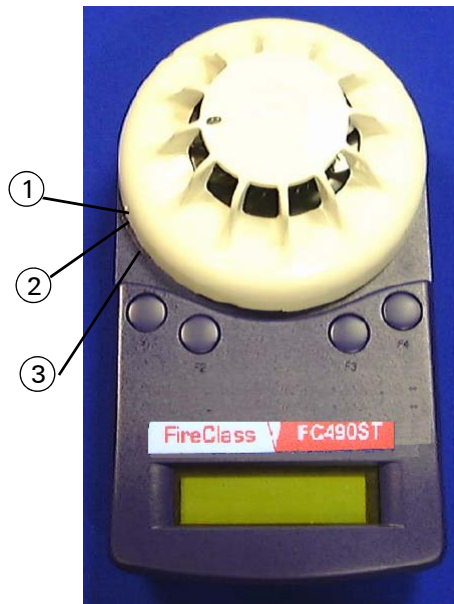
Fig. 3: Connecting to a detector
1 – Marking
2 – Position 2
3 – Position 1

Ancillaries are connected to the 'AUX' socket using the ancillary connector lead.

Fig. 4: Connecting to an ancillary

Preferable Connections

It is good practice to:

- Connect only a detector or an ancillary at any one time. However, the FC490ST is equipped with a port interlock feature. When the ancillary lead is connected to the 'AUX' socket, communication with the detector will be disabled. When the ancillary lead is removed, the detector will be able to communicate.

- The FC490ST may be connected to an ancillary device that is also connected to and powered from the addressable loop. However, a 'No Response' fault for that device may be generated at the Control Panel under these conditions.

WARNING

Danger from electric shock

Special care must be taken when connecting to a device on the addrsesable loop to prevent unwanted action in other equipment, for example, extinguishing systems.

3.4   Button Operation

The screen displays the start of the main menu as shown in Fig. 5.
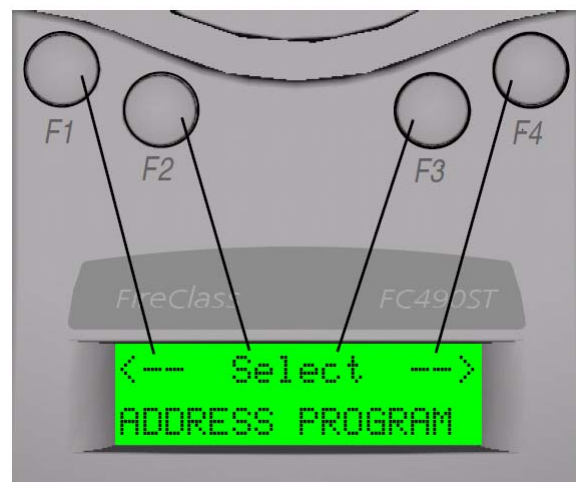
Fig. 5: First Display Screen of the main menu

The main menu can always be identified by the word **Select** between two arrows on the top line of the display. The bottom line of the main menu displays the option.

The top line position of text is always shown in relation to the F1-F4 buttons above. In the Main Menu:

- F1 scrolls left through the main menu options
- F2 or F3 select the menu option displayed
- F4 scrolls right through the main menu options

When an option is selected from the main menu, the display uses the format shown in Fig. 6:

The **bottom line** displays information to the user. The **top line** displays the available options.
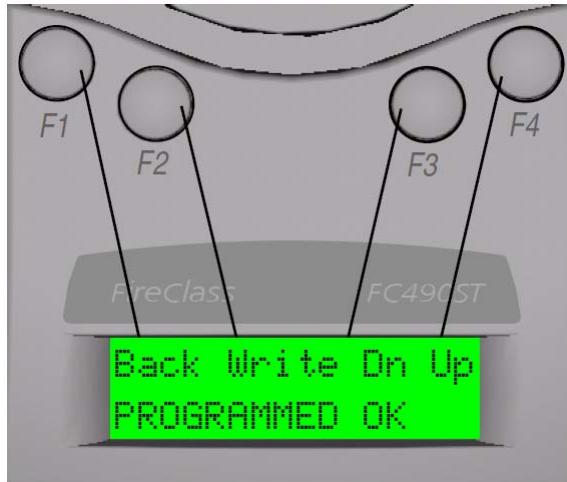
Fig. 6: Example of Writing an address
F1: Selecting 'Back
F2 :Selecting 'Write'
F3 :Selecting 'Dn' (for down)
F4: Selecting 'Up'

In some cases there may be fewer options available.

Fig. 7: Example of Reading an address
F1: Selecting 'Menu'
F2: Selecting 'Write'
F3 :No action
F4: Clear used memory map

In Fig. 8 pressing F1 selects the 'Menu'.

Fig. 8: Example of Single Option
F1: Selecting 'Menu'
F2-F4 are redundant here

4   Functionality

4.1   ADDRESS PROGRAM

The main menu starts with **ADDRESS PROGRAM**.

```
<--   Select   -->
ADDRESS PROGRAM
```

Press buttons F2 or F3 to choose 'Select' and the address of the device is displayed (for example, address 4).
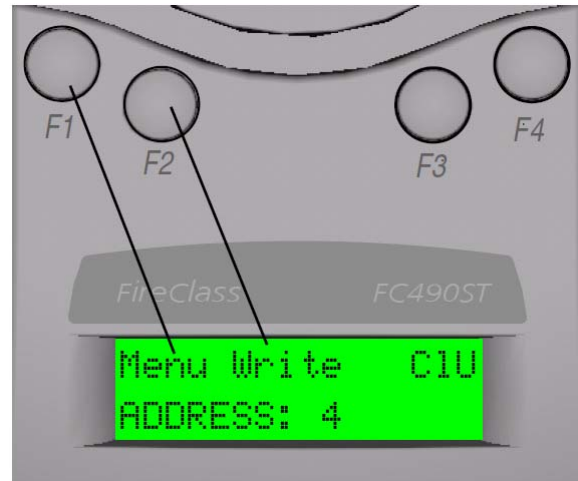
```
Menu Write     ClU
ADDRESS:4
```

- Use 'Write' to program the device with a new address.
- 'Menu' to return to the main menu.
- ClU to clear the memory map of used addresses.

> **i** **Menu Display**
> Whenever 'Menu' appears on the display, this always returns to the main menu.

The FC490ST saves a memory map of the addresses that have been programmed. To erase this, press the button F4, and select 'Yes' to CONFIRM ACTION. The screen is displayed as 'USED MAP CLEAR'.

If 'Write' is selected, the following screen is displayed:

```
Back Write Dn Up
ADD:4
```

- Use 'Up' to increase the address number
- 'Dn' to decrease it
- 'Write' to program the address displayed
- 'Back' to return to the previous screen

If 'Write' is selected then the following message will appear for 2 seconds:

```
Back Write Dn Up
PROGRAMMED OK
```

This is followed by:

```
Back Write Dn Up
ADD:5
```

Having programmed an address, the FC490ST moves to the next unused sequential address.

If an address has already been used, the FC490ST indicates:

```
Back Write Dn Up
ADD:6         USED
```

If the user then decides to use a previously used address, the following screen is displayed:

```
Back  Write
ADD.USED:6
```

Press **Write** and the FC490ST displays **PROGRAMMED OK** briefly and then displays the next available sequential address.

4.1.1   ANALOGUE VALUES

ANALOGUE VALUES displays the analogue values of the attached device.

```
Menu
VAL:27   87   XX
```
CHANNEL 1 CHANNEL 2

The above example shows a device with 2 channels, for example, an Optical/Heat detector, where channel 1 is the optical value and channel 2 is the heat value. Press **Menu** to return to the main menu.

> **i** **Channel Values**
> - The value 'XX' is displayed only if channel 3 is used on a device, for example, a CO/Optical/ Heat detector.
> - These are the values that the device would transmit to the control panel. The values do NOT include any calibration or correction factors.

4.1.2 MEASURE TEMP

This feature measures temperature in degrees Celsius and degrees Fahrenheit, but is only available on detectors which have a temperature sensing element, for example, Heat only, Optical & Heat and CO & Heat detectors. A typical display is shown in b):

a)

```
<--    Select    -->
MEASURE TEMP
```

b)

```
Menu
T:   23 C   75 F
```

4.1.3 MEASURE CO LEVEL

This option is only available for detectors with a CO sensing element. It indicates values for CO levels in the measuring environment. The normal value is zero PPM (parts-per-million).

```
<--    Select    -->
MEASURE CO LEVEL
```

```
Menu
CO:  0   PPM
```

4.1.4 TEST ALL

This option combines a test on the detector R1 and L2 terminals and tests the detector's sensor circuitry for units which have this facility.

- The Test R1 terminal tests the remote indicator output.
- The Test L2 terminal tests the functional base interface output.
- The Selftest tests the sensor input circuitry. Completion of the Selftest may require a maximum of 30 seconds.

Following the completion of all three tests, a test report is displayed on the LCD. Each test can result in a **PASS**, **FAIL** or **NOT AVALABLE** report message.

To start a new test, select the **TEST ALL** menu to begin.

WAIT is displayed until all tests are completed.

When the tests are complete, the test results are reported on three alternating displays:

```
Menu        TEST R1:
            PASS
```

```
Menu        TEST L2:
            PASS
```

```
Menu        SELFTEST:
            PASS
```

Self Test is available only on the following types of detector:

- FC400PH Optical + Heat (Optical sensing element only).
- FC460PH Optical + Heat (Optical sensing element only)

Selftest

Self test is NOT available for the heat sensing channels of these detectors.

4.1.5 DIRTINESS

This option is only available for detectors with an optical sensing element. Indicates the contamination level of the optical chamber. Compares the current optical analogue value as a percentage where 0% would indicate that the analogue value has not changed since manufacture, 100% would indicate that the analogue value has risen to its maximum allowable value (the point at which it would generate a fault). At 80% or above, the detector should be replaced to avoid the possibility of a fault occurring in the near future.

```
Menu
DIRTINESS%:+6
```

Dirtiness

Dirtiness can be displayed as a negative number if the analogue value has fallen since manufacture.

4.1.6 DEVICE TYPE ID

Device Type ID displays the unique value associated with each addressable device Model Number, for example, for Model No. FC400PH - Type Value 10 is displayed.

```
Menu
Device Type: 10
```

Type Value may be cross-referenced to Model No. by referring to table 5 on page 16.

4.1.7   DIGITAL INPUTS

This menu option displays the status of the digital inputs in binary and as a decimal number between 0 to 255 for all addressable devices. The binary number is aligned with least significant bit on the right as indicated with a small "L" character.

```
Menu
11100011L    227
```

4.1.8   DIGITAL OUTPUTS

The user may set the Digital Output of the addressable device by using the following function buttons, F2 to F4.

```
Menu Tog --> Set
00000000L      0
```

Flashing cursor denotes the digit to be set.

- ▪ −−⟩ moves the cursor one position to the right
- ▪ Tog - toggles between 0 and 1 for each digit
- ▪ Set - prompts the FC490ST to send an instruction to the addressable device
- ▪ Menu - to return to the main menu options

Example, An alarm LED test may be performed on addressable devices using the digital output function. Move the cursor to the eighth bit on the far-right and toggle this bit "1".

```
Menu Tog --> Set
00000001L      1
```

After **Set** is selected, a message will appear asking for confirmation of the action to send the data to the device, as follows:

```
No  Yes
CONFIRM ACTION
```

Select 'Yes' and the LED should illuminate red.

⚠ WARNING

Danger from electric shock

When using the FC490ST on an ancillary device connected to the addressable loop, make safe any attached equipment, for example, extinguishing, plant shutdown etc. unless it is being used specifically for testing the attcahed equipment.

4.1.9   Additional Functions

DEVICE POLLING

In all operations that retrieve data from an attached device, the FC490ST polls the attached device at a pre-determined interval. This interval is 2 seconds for the ADDRESS PROGRAM function and 5 seconds for all other functions.

LOW BATTERY

This is indicated by a flashing symbol in the bottom right of the LCD display.

The batteries must be charged using the mains adaptor with its connecting lead plugged into the FC490ST DC IN 12V socket.

LCD BACKLIGHT

The display can be temporarily illuminated by pressing any two buttons simultaneously at any time.

AUTO POWER OFF

AUTO POWER OFF is designed to save battery life. If there have been no button presses during the last 5 minutes, the FC490ST automatically turns itself off.

CPU RESET

CPU Reset

This function is not normally used.

If the buttons or display are not responding correctly, the FC490ST may be reset. This is done by pushing a small jewellers type screwdriver into the pinhole on the bottom of the FC490ST to actuate a switch.

When a CPU reset is carried out, the FC490ST will start up as described in 3.2 "Password Protection".

4.1.10 Ordering Information

Accessory Kit : 516.800.923

Consisting of:

- Carry case
- Car lighter adaptor
- Shoulder strap

4.1.11 Spares

- Spare ancillary lead : 516.800.922
- Ancillary lead spare pins (bag of 10) : 516.800.924

5   Appendix

5.1   Additional Information

5.1.1   Menu Functions

MAIN MENU DISPLAY	ACTIONS
Address Program	■ Read/Writes the address of the connected addressable device. ■ Reads the stored address map of used addresses.
Analogue Values	■ Displays the analogue values of the addressable device.
Measure Temp.	■ Measures temperature in degrees C and F (only available on detectors which have a temperature sensing element).
Measure CO level	■ For CO detectors only. Gives values for CO levels in the measuring environment. Normal value is zero PPM (parts-per-million)
Test All	Performs: ■ a self test, if the detector has such a facility ■ remote LED output ■ functional base interface output
Dirtiness	■ Indicates the contamination level of the optical chamber expressed as a percentage, where 100% is the fault level.
Device Type ID	■ Displays the device type identification value.
Digital Inputs	■ Displays the status of the digital inputs in addressable devices.
Digital Outputs	■ Allows the user to set the digital output of the addressable device.

Table 5: Functional Reference Table

■ Low Battery : Indicates Low Battery by using a flashing symbol in the bottom right of the LCD display.

■ CPU Reset : Switch is accessed through a small hole at the rear of the unit near the label.

■ LCD Backlight : The display can also be temporarily illuminated by pressing any two buttons simultaneously at any time.

5.1.2   Device Type IDs

DESCRIPTION	MODEL	TYPE VALUE
Optical Smoke/Heat Detector	FC400PH, FC460PH	10
Optical Smoke Detector	FC400P, FC460P	15
Optical CO Detector	FC460PC	70
Heat Detector	FC400H, FC460H	20
Sounder Module	FC430SAM	80
Loop Powered Beacon	FC430SAB	82
Mini-Input Module	FC410MIM	128
Indoor Callpoint	FC420CP	129
Outdoor Callpoint	FC421CP	130
Single I/O Module	FC410SIO	148
Multi I/O Module 3in/4 out	FC410MIO	194
Contact I/P Module	FC410CIM	145
Detector I/P module	FC410DIM	146
Beam Detector Module	FC410BDM	181
Relay I/F Module	FC410RIM	161
Sounder Output Module	FC410SNM	177
DDM800 Fire &Gas Detector Module	FC410DDM	149
Quad Monitored O/P Module	FC410QMO	166
Quad I/O Module	FC410QIO	195
Quad Relay Module	FC410QRM	167
LP Sounder Red	FC410LPSYR	183
LP Sounder White	FC410LPSYW	183
LP Sounder IP65	FC410LPSY	183
LP Sounder/Beacon White	FC410LPAVW	184
LP Sounder/Beacon IP65	FC410LPAV	184
LP Sounder/Beacon Red	FC410LPAVR	184

Table 6: Type Values

Italy
FIRECLASS
Via Gabbiano 22
Zona Industriale, S. Scolastica
64013 Corropoli (TE)
Italy
FireclassSales@tycoint.com
www.fireclass.co.uk

United Kingdom
FIRECLASS
Hillcrest Business Park
Cinder Bank
Dudley
West Midlands
DY2 9AP
United Kingdom
FireclassSales@tycoint.com
www.fireclass.co.uk

Further information about FIRECLASS can be found on the Internet at www.fireclass.co.uk

Company stamp

FIRECLASS