High-Tech Range

FT1- Timer Delay Relay
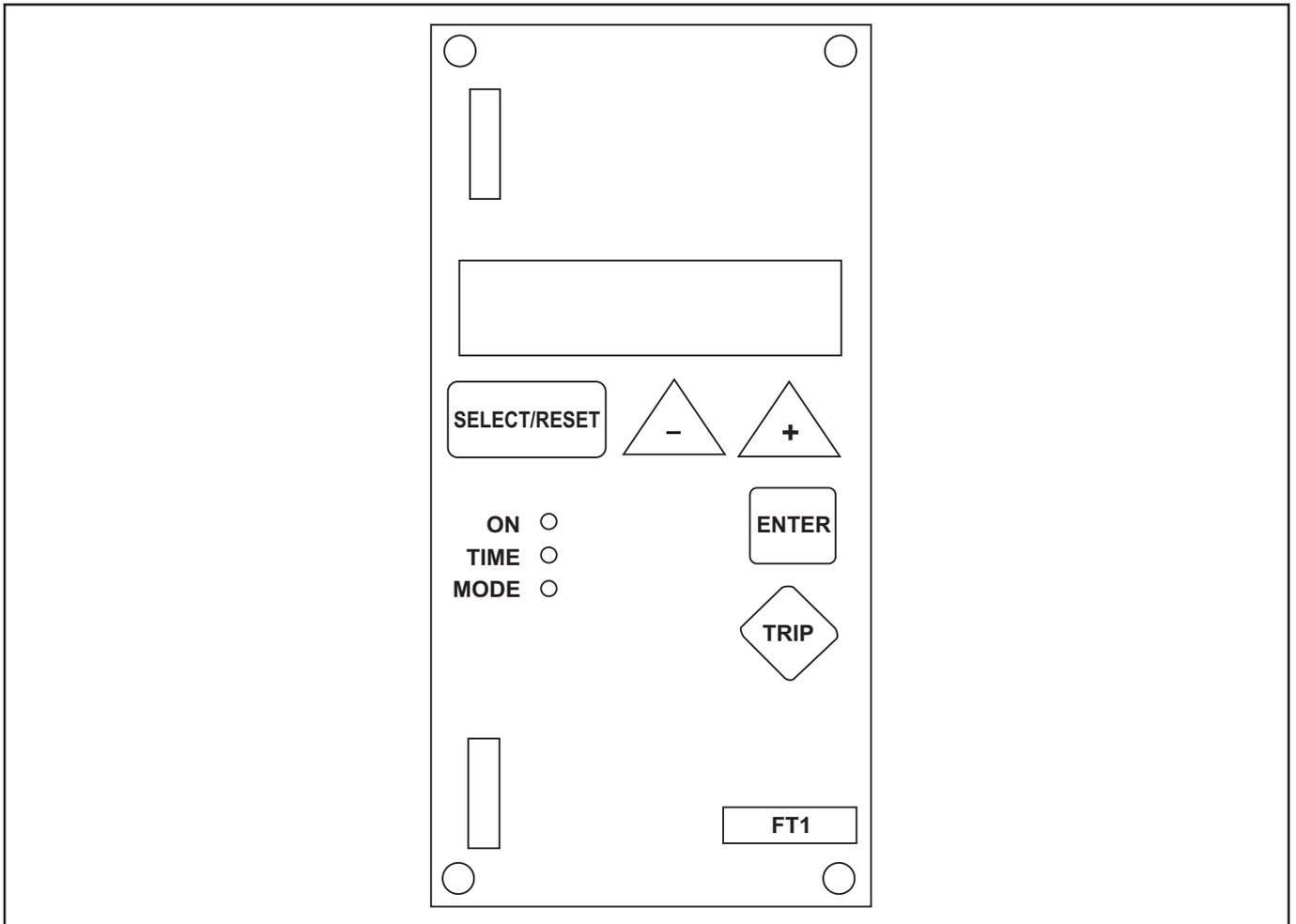
CSPC

SELECT/RESET

− +

ON ○
TIME ○
MODE ○

ENTER

TRIP

FT1

C&S
Controls & Switchgear
Group

C&S Protection & Control Ltd.

Contents

1.   Introduction & Application

Time Delay Relays Type-**FT1** are based on micro-controller technology to achieve timing precision, repeatability, dual functions and user friendliness.

FT1 can be configured to function in **"ON"** delay mode or **"OFF"** delay mode. User-friendly four-key keypad and a four-digit display offer a setting accuracy of 0.1 sec. and a setting rangeliafy 999.9 seconds. Mode of operation is selectable from the keypad.

FT1 requires an auxiliary supply voltage. It accepts a very wide range of AC/DC Voltages for auxiliary supply.

2.   Application

FT1 is suitable for applications requiring precise timing and repeatability and where timing is initiated by external potential free contacts in off delay as well as on delay modes. It has two output relays each with two c/o contacts to handle tripping, warning etc.

3.   Design
3.1 Connections

Connections are as shown in connection diagram. Terminals are as marked on the rear panel of the relay.

3.2 Front Panel

Three LED's have been provided on the front panel of FT1.

a) LED marked **"ON"** glows when supply is present.

b) Second LED marked **"TIME"** is a bicolor LED. When its color is red, it indicates that FT1 is ready. When it flashes in red color, it means that FT1 timer has been started by external contacts. When LED glows in green color, it means time value can be edited, the 7-segment display shows current set value.

c) Third LED indicates that the mode can be edited. When this LED glows green, the 7-segment display shows current mode (ON/OFF).
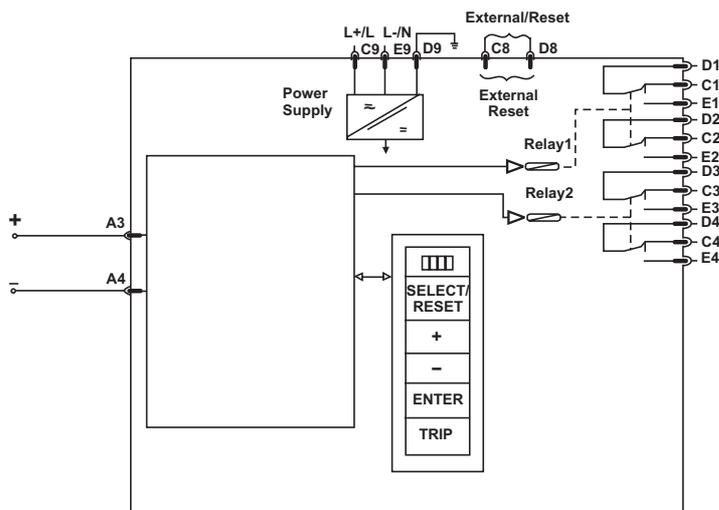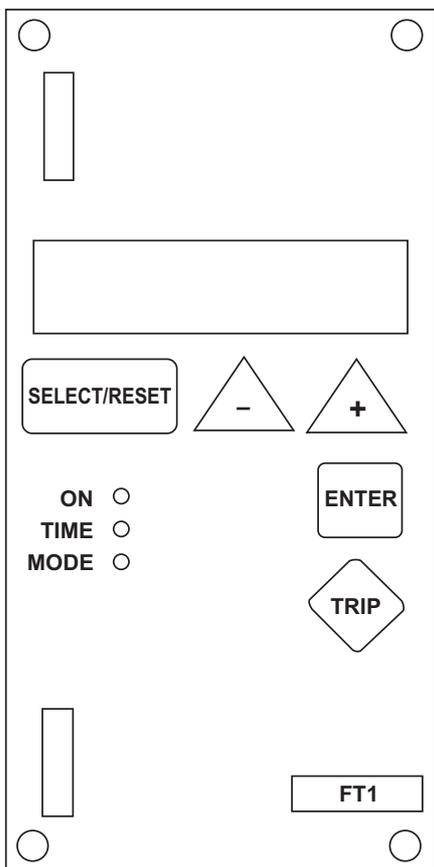
d) There are five push buttons. **"SELECT"; "-", "+"** and **"ENTER"** buttons are meant for editing mode and time. **"TRIP"** button is meant for simulating trip condition and checking LED's. **"SELECT"** button also serves to reset the relays.

4. Operations and Setting Procedure

4.1 FT1 Operates in one of the two modes:

a)   ON DELAY mode

b)   OFF DELAY mode.

Timer starts when initiating signal is activated. Initiating signal is activated by shorting (ON delay) or opening (OFF delay) initiating contacts (terminals C8 & D8).

a) ON DELAY mode :

Timing starts whenever initiating contacts are shorted. The time left is displayed continuously on 7-segment display. LED marked **"TIME"** starts flashing. As soon as set time elapses the output relays are energized, red LED marked **"TIME"** stars glowing steadily and display shows **"trIP"**. If contacts C8 & D8 are opened before tripping, the display reverts to preset value of time.

b) OFF DELAY mode :

Timing starts whenever initiating contacts are opened. The time left is displayed continuously on 7-segment display. LED marked **"TIME"** starts flashing. As soon as set time elapses the output relays are energized, red LED marked **"TIME"** stars glowing steadily and display shows **"trIP"** If contacts C8 & D8 are closed before tripping, the display reverts to preset value of time.

4.2 Reset

Relay is reset whenever initiating signal is deactivated.

If **"SELECT"** key is pressed for 3 seconds while relay is in tripped state then relay is reset and resumes count down operation if initiating signal is active.

4.3 Setting Procedure

When relay is powered up LED marked **"TIME"** glows in red color and preset value of time is displayed. Press **"SELECT"** key once. **"TIME"** LED glows in green color. BY pressing **"+"** or **"-"** keys user can change the displayed value. User may either wish to store the changed value or discard it. To discard the change (to retain original value) press **"SELECT"** key again. Two things happen : original value is retained and **"MODE"** LED starts glowing while the display shows present mode i.e. **"ON"** or "OFF". Press either **"+"** or **"-"** key. Mode display will toggle between "ON" or "OFF". To discard the change press **"SELECT"** key again. Display will change to **"CPAS"** to indicate that the user may change password. If change of password is not desired then press **"SELECT"** key again. Display will start showing remaining time and **"TIME"** LED will glow red.

Saving Change :

To save change in time or mode, press **"ENTER"** key. Display will change to **"PASS"**. Enter password. Entering password means pressing keys in a particular sequence. Only four key closures are permitted. If correct password is entered then display changes to **"dOnE"** for a brief period of time during which the new value will be saved in nonvolatile memory.

Changing and Saving Password :

When **"CPAS"** is displayed as discussed above then press **"ENTER"**. Display will change to **"PASS"**. Then enter correct password. If password is correct then display changes to **"nPAS"**. Now press keys as you wish. After for key closures you have the new password. Your new password is the sequence in which you pressed the keys. You may press any key any no of times. But remember that you are allowed only four key closures. Thus there are 256 possible passwords.

The process is completed with the display showing **"dOnE"** for a brief period. Therafter display starts showing the remaining time.

4.4 Abort

If user is confused at any point he/she may press the **"SELECT"** key for three seconds, this will abort current operation and reset the relay to original state of power up.

4.5 Editing During TRIP condition

If user wants to edit time or mode, while relay is in tripped state, user should press **"ENTER"** key once. Edit mode will now become available as described above. At the end of edit sequence display will show **"trIP"** if the relay is sill in tripped state.

4.6 Testing of output relays

NOTE :

Prior to commencing this test interrupt output circuit which can cause operation of external devices during this test, if such operation is not desired.

When **"TRIP"** push button is pressed, display changes to **"PASS"** Enter correct password; the two LED's marked **"TIME"** and **"MODE"** glow one by one for a brief period. Therafter relays trip, but LED's don't glow. Relays remain tripped and display shows **"TRIP"** until reset by holding down **"SELECT/RESET"** push button for three seconds. Editing is not allowed when relays are tripped in this way.

5. Technical Data

5.1 Auxillary Voltage

Rated Auxilliary Voltage	: 16-270V AC/
	16-360V DC

5.2 Output Relay

Max breaking capacity (AC voltage)	: 250VAC/1000CA/continious current 6A

5.3 System Data

Storage temprature range	: -40^{0}C to +85^{0}C
Operating temprature range	: -20^{0}C to +70^{0}C
Insulation test voltage, input and outputs between themselves and to the relay frame as per IS 8686	: 2.5KV / 1MHz.
Weight	: Aprox. 1.0 Kg

BASIC RANGE

- Micro-controller based compact economical design
- DIN rail mounted
- Status indication via LED
- Step-less settings through front potentiometer

FUNCTIONAL RANGE

- Genset Supervision & Control
- Auto Synchroniser
- Load Balancing & Control
- Related Protection

INTEGERATED RANGE

- Complete numeric protection, solution for sub-station in association with TEAM-ARTECHE, Spain
- Distance protection
- Comprehensive transformer protection –
  a. Three winding transformer
  b. Two winding transformer
- Multi-functional relay: variety of protection combination

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