

# Operating Instructions

## FM/1 Series Time Switches



### TECHNICAL DATA

- Supply Voltage: 24, 120 and 240VAC, 60Hz models  
Quartz: 24V AC/DC, 120 and 240VAC 50/60 Hz
- Switch Type: SPDT
- Switch Rating: 21A/250VAC resistive  
1350 watt tungsten  
1HP @ 125VAC  
2HP @ 240VAC
- Power Consumption: **24V:** 0.1VA; **120V:** 0.5VA; **240V:** 1.0VA
- Ambient Temp. Range: -40°F to 180°F, synchronous units  
-20°F to 140°F, quartz units
- Terminals: 1/4" spade terminals
- Reserve Carryover: 7 days for quartz units
- Weight: Approximately 3 oz.

**NOTE:** 24V quartz unit will operate on 6VDC, 12VDC, or 24VDC

### APPLICATIONS

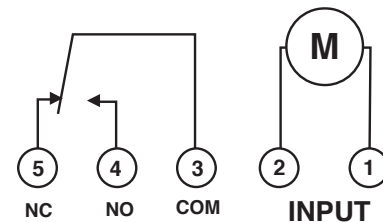
The FM/1 series of time switches are designed for control of heating, ventilating, air conditioning, refrigeration, lighting, security, circulating pumps, spas or any electrical load requiring 24-hour or 7-day scheduling.

### WIRING

Verify input voltage stated on back of unit. Use 1/4" quick connects and make connections in accordance with the wiring diagram shown and applicable code requirements. When using 24V units, it is important to use transformers that will supply the required 24 volts AC to terminals 1 & 2.

### Terminal Connections

Contacts shown in "Off" position (trippers pushed inward)  
"On" position (trippers pushed outward) will close contacts 3 & 4

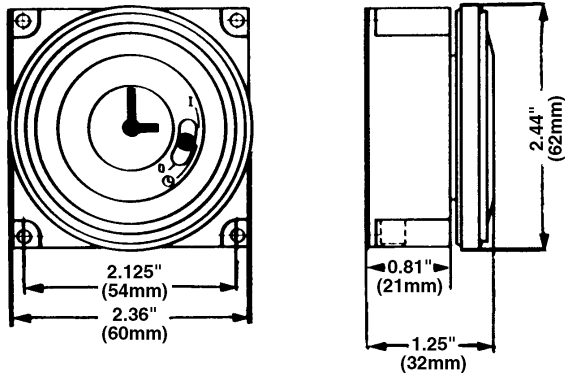


### MOUNTING

The standard FM/1 units can be flush mounted (mounting kit with screws available) or surface mounted inside a panel. A printed circuit board mounting base is also available. An indoor or outdoor enclosure is available for stand-alone mounting. In addition, unit is also available in DIN housing for flush or surface mounting (see MIL72, Digi 20 or Digi 42 data sheets). Optional clear plastic dust cover is available.

## Dimensions

FM/1 synchronous/quartz



## TIME SETTING

**TO SET THE CURRENT TIME (AND DAY OF WEEK ON 7 DAY UNITS), TURN THE MINUTE HAND CLOCKWISE. DO NOT SET THE TIME BY ROTATING "OUTER" DIAL.**

Turn the minute hand clockwise until the day of the week (7-day timer) and the time of day on the outer dial is aligned with the triangle marker on the inner dial (two o'clock position).

Example for 7-day program dial Monday 10:30 AM. Turn the minute hand clockwise until Monday 10:30 AM is aligned with the triangle on the inner dial. The hour and minute hand will show exactly 10:30.

Example for 24-hour program dial 10:30 AM. Turn the minute hand clockwise until 10:30 AM is aligned with the triangle on the inner dial. The hour and the minute dial will show exactly 10:30.

## PROGRAMMING

### 7-Day (SW, QRW Models)

The weekly program dial reflects the seven days of the week and AM/PM imprints for each day.

The time switch is programmed by pushing the captive trippers to the outer ring position for the entire period that the load is to be turned "ON", i.e., two hours for each tripper on the 7-Day dial. When the tripper is pushed to the inside, the switch is in the "OFF" position.

### 24-Hour (ST, QRT Models)

The 24-Hour dial has quarter-hour divisions and AM/PM indications.

The time switch is programmed by pushing the captive trippers to the outer ring position for the entire period that the load is to be turned "ON", i.e., fifteen minutes for each tripper on the 24-Hour dial. When the tripper is pushed to the inside, the switch is in the "OFF" position.

## PROGRAMMING WITH MANUAL OVERRIDE SWITCH

### AUTOMATIC MODE

In order to operate the time switch module in the automatic mode, the manual switch must be in the center position (automatic) - see diagram.

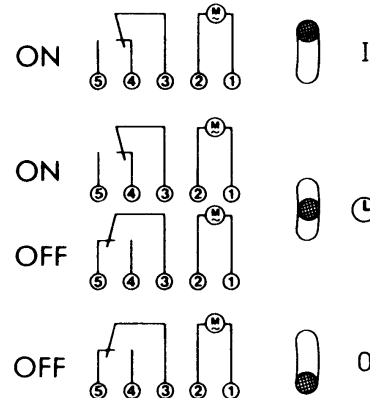
### MANUAL MODE

With the manual switch selector lever the selected programs can be overridden. In the lower position, marked "O", terminals 3 and 5 are permanently closed. In the upper position, marked "I", terminals 3 and 4 are permanently closed (see diagram).

## Override Mode

3-way manual  
override switch

I = permanent ON  
⌚ = automatic  
O = permanent OFF



## PROGRAMMING SHEET

## 7 Day analogue timeswitches

### Set time and day



Fig. 1

Rotate the outer dial **slowly** in a clockwise direction, until the right corresponding day segment on the dial is approaching the **arrowhead** printed on the inside edge of the dial. **Do not** attempt to rotate the dial or the clock hands in an anti-clockwise direction.

Now rotate the minute hand with your finger, in a clockwise direction, so that you set the correct time within the day segment. Note that the clock hands are set within a 12-hour printed ring, and the outer dial is printed with the 24 hour clock. The illustrations show the clock set at 6:00 a.m. (fig. 1) and 6:00 p.m. (fig. 2) on Monday. Ensure that you are setting current time accurately with regard to the outer 24 hour dial.



Fig. 2

### Setting switching times

Tappets should be pushed to the outer edge of the dial for a programmed ON instruction, and left set to the inner edge of the dial for a programmed OFF instruction. **All** tappets between the desired ON and OFF times must be pushed to the outer edge of the dial. Each tappet switches the output for a two-hour period. Figure 3 shows the timeswitch set for 8:00a.m. ON – 18:00 (6:00p.m.) OFF Monday – Saturday and no switching programmed on Sunday.

### Manual override



Fig. 3

There is a **three-position switch** built in to the face of the dial.

For automatic timed control, governed by the tappet settings, the switch should be left in the middle position (as illustrated). The output can be switched ON at any time, by moving the switch lever to the top position, marked with "I" on the dial. Alternatively, the output can be switched OFF at any time, by moving the switch lever to the lower position, marked with "0" on the dial. The manual override is a **fixed** selection – the output will remain ON or OFF (as selected), until the switch lever is moved back to the middle timed position, marked with a ⌚ on the dial.

# Mechanical Timer Modules

## FM/1 Series 24-Hour, 7-Day

### Applications:

The FM/1 series mechanical timer modules are designed to be placed inside a machine control panel, circuit board, or other equipment. It offers up to 21 Amp switching designed for control of heating, ventilating, air conditioning, refrigeration, lighting, security, circulating pumps, spas or any electrical load requiring 24-hour or 7-day scheduling.

### Specifications:

**Size:** 3.25 in. H x 3.25 in. W x 2.25 in. D

**Supply Voltage:** 24, 120, 240 VAC

**Power Consumption:** 1 VA

**Switch Rating:** SPDT

**Resistive:** 21 Amp

**Tungsten:** 1350 W

**Inductive:** 1 HP, 125 VAC; 2 HP, 240 VAC

**Wiring Connections:** ¼ in. quick-connect terminals

**Operating Temperature Range:** "S" models -40°F to 185°F (-40°C to 85°C)  
"Q" models -20°F to 131°F (-20°C to 55°C)

**Installation:** Stand alone or with Indoor/Outdoor enclosure

**Panel:** Surface mounting

Model Number	Override	Switch Program	Battery Backup	Min ON/OFF Time	Volts AC	Switch Output Type/Amps
FM1STUZ-120U	No	24 Hr.	No	15 Minutes	120	SPDT/21
FM1STUZ-24U	No	24 Hr.	No	15 Minutes	24	SPDT/21
FM1STUZ-240U	No	24 Hr.	No	15 Minutes	240	SPDT/21
FM1SWUZ-120U	No	7 Day	No	2 Hours	120	SPDT/21
FM1SWUZ-24U	No	7 Day	No	2 Hours	24	SPDT/21
FM1SWUZ-240U	No	7 Day	No	2 Hours	240	SPDT/21
FM1STUZH-120U	Yes	24 Hr.	No	15 Minutes	120	SPDT/21
FM1STUZH-24U	Yes	24 Hr.	No	15 Minutes	24	SPDT/21
FM1STUZH-240U	Yes	24 Hr.	No	15 Minutes	240	SPDT/21
FM1SWUZH-120U	Yes	7 Day	No	2 Hours	120	SPDT/21
FM1SWUZH-24U	Yes	7 Day	No	2 Hours	24	SPDT/21
FM1SWUZH-240U	Yes	7 Day	No	2 Hours	240	SPDT/21
FM1QTUZH-120U	Yes	24 Hr.	Yes	15 Minutes	120	SPDT/21
FM1QTUZH-24U	Yes	24 Hr.	Yes	15 Minutes	24	SPDT/21
FM1QTUZH-240U	No	24 Hr.	Yes	15 Minutes	120	SPDT/21
FM1QTUZ-24U	No	24 Hr.	Yes	15 Minutes	24	SPDT/21
FM1QTUZ-240U	No	24 Hr.	Yes	15 Minutes	240	SPDT/21
FM1QWUZ-120U	No	7 day	Yes	2 Hours	120	SPDT/21
FM1QWUZ-240U	No	7 day	Yes	2 Hours	240	SPDT/21
FM1QWUZH-120U	Yes	7 Day	Yes	2 Hours	120	SPDT/21
FM1QWUZH-240U	Yes	7 day	Yes	2 Hours	240	SPDT/21
FM1QWUZH-BW-24U	Yes	7 day	Yes	2 Hours	24	SPDT/21
FM1STUZH220/50	Yes	24 Hr.	No	15 Minutes	220 (50 Hz)	SPDT/21
FM1STUZ220/50	No	24 Hr.	No	15 Minutes	220 (50 Hz)	SPDT/21

**GRÄSSLIN™**  
by **INTERMATIC®**



### FM1STUZ-120U

#### Features:

- 21A SPDT switch
- 96 Captive Trippers
- ¼ in. quick-connect terminals
- Noise Immune—Ideal for robust applications



C22.2-177  
LR3730  
UL917

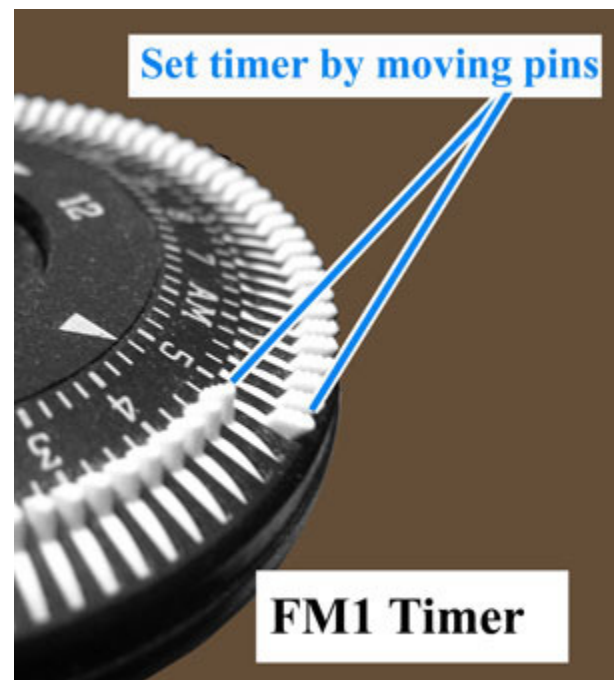
0.25 lbs  
.01 kg

## How to set Intermatic FM1 timers

The FM1 series timer can be wired and programmed for different purposes.

Since the timer has NO NC terminals, the best way to proceed is to 1) wire your timer 2) turn power on 3) move 10 tripper pins outward, 4) leave rest of tripper pins inward. 5) Then manually rotate dial to watch when load turns on-off.

If timer model has manual override button, then move override switch to each of 3 positions and repeat same test. These actions will reveal correct wiring and switch setting for your purpose.

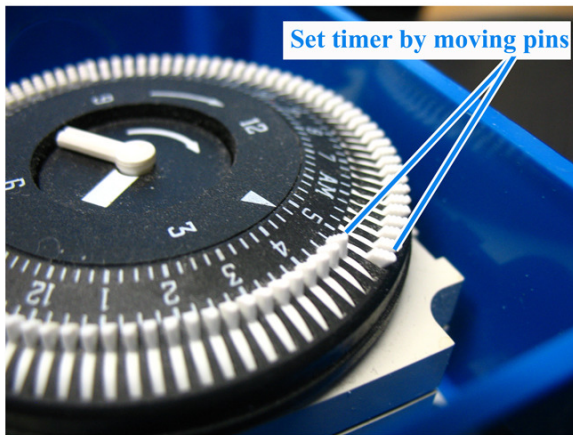


### Other Intermatic Modular timers

<http://waterheatertimer.org/Intermatic-trippers-and-parts.html#PB>



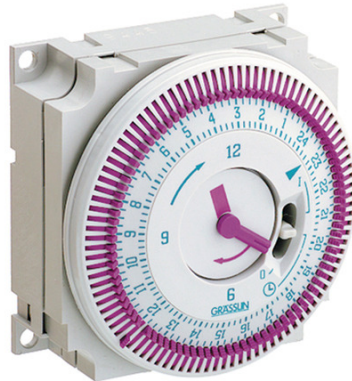
7-day timer dial: each tripper is 2 hours  
24 hour dial: each tripper is 15 minutes



Grasslin FM1 series



7-day time dial



European 24-hour with override