



**MITSUBISHI**  
Programmable Controller

**COMPLIMENT MANUAL**

**DATA ACCESS AND REAL-TIME CLOCK UNIT**

**F - 20DU<sub>2</sub> - E**

**MITSUBISHI ELECTRIC CORPORATION**

## APPENDIX: ADDITIONS OF F-20DU<sub>2</sub> OVER F-20DU

**Introduction :** The F-20DU<sub>2</sub>-E real-time clock and data access unit is basically an F-20DU-E with the addition of some real time clock functions.

Inside the F-20DU<sub>2</sub>-E, there is a calendar real-time clock that caters for leap years for up to the year 2079. It operates from the power from the PC and is backed-up by a lithium battery. Clock data is continuously transferred to pre-determined data registers of the PC so that they can be used by the user's program in the PC to perform controls that relate to the calendar day and time.

The life of the lithium battery will vary depending on its usage period but a replacement is recommended for every 5 years. ( guaranteed for the battery is one year ).

**NOTE :** Since the battery is required for the support of the real-time clock function, data backup capacitor has become redundant and is not fitted with the F-20DU<sub>2</sub>-E.

**F-20DU<sub>2</sub>-E-SET :** F-20DU<sub>2</sub>-E : Real-time clock and data access unit.

**INCLUDES**      F-20DF      : Interface unit with cable to PC.  
                     F<sub>2</sub>-40BL     : Lithium battery.

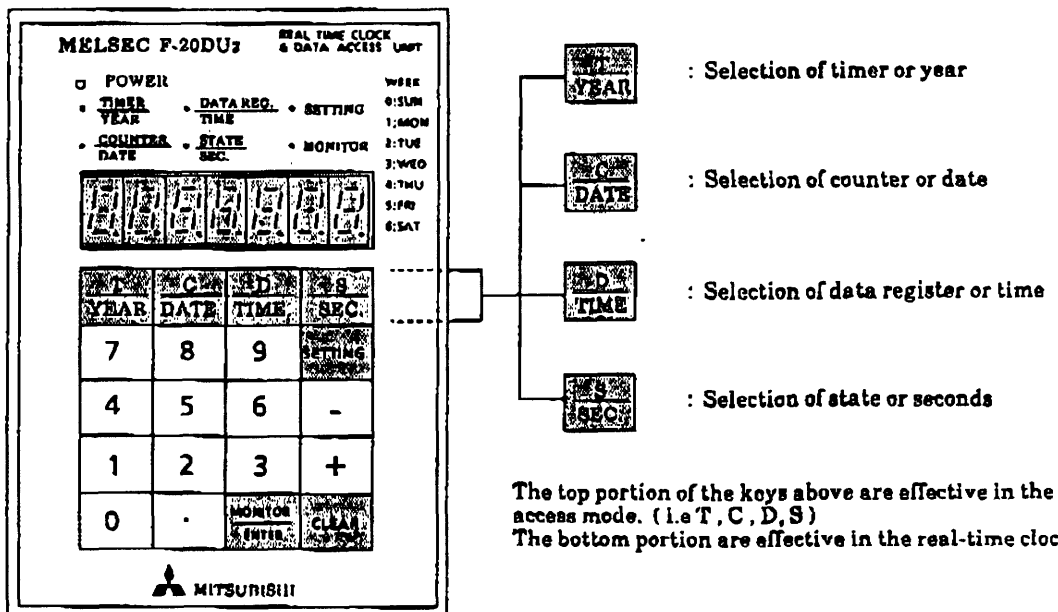
### SUITABLE PC'S

Suitable PC's for the use with the real-time clock function are as follows :

- (1) Enhanced F<sub>2</sub>-series.
- (2) F<sub>1</sub>-series ( except F<sub>1</sub>-12M )

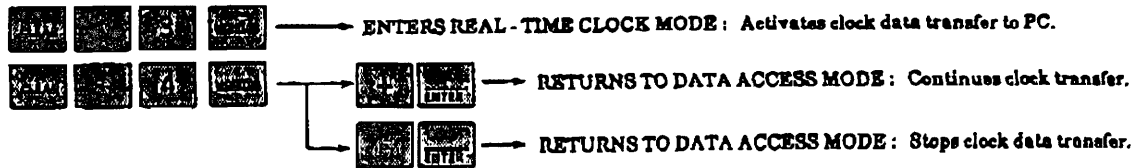
### FUNCTIONS :

- (1) All F-20DU-E data access functions.
- (2) Calendar, time display and setting.
- (3) Calendar, time data transfer to PC.



## MODES OF THE F - 20DU2 - E

The setting and display of the real - time clock is managed as a separate mode to the data access mode . Note that the correct mode is necessary in that data access functions cannot be operated in real - time clock mode . Entries and exits are made by the methods below :



### CLOCK MODE DISPLAYS

- (1) REAL - TIME CLOCK MODE



- (2) REAL - TIME CLOCK DATA TRANSFER IN DATA ACCESS MODE



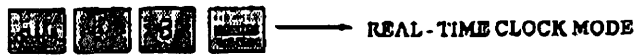
( displayed when returning to Data Access Mode from Real - time clock mode. )

- (3) CLOCK DATA TRANSFER DISABLED. DATA ACCESS MODE



( displayed when clock data transfer is stopped when returning to Data Access Mode. )

### REAL - TIME CLOCK FUNCTIONS



REAL - TIME CLOCK MODE

#### DISPLAY OF YEAR



(1990)

#### DISPLAY OF DATE



( Mon. 5th of March )

WEEK 0:SUN 1:MON 2:TUE 3:WED 4:THU 5:FRI 6:SAT

#### DISPLAY OF TIME (24hr display only)



( 14hr 8mins. )

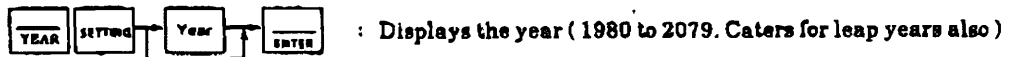
Flashes every second (0.5s ON, 0.5s OFF)

#### DISPLAY OF SECONDS



( 14hr 8mins 46 seconds )

#### SETTING THE YEAR



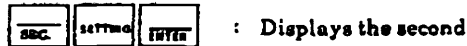
#### SETTING THE DAY



#### SETTING THE TIME



#### SETTING THE SECOND



When "ENTER" is pressed, rounding to the nearest minute occurs. 0-29s : round down. 30-59s :

## TRANSFERRING TIME DATA TO THE PC

### TRANSFERRING TIME DATA TO THE PC

Real-time clock data is stored in the following shown format. D750 to D755 are automatically selected as the area of storage in the PC.

Transfer of clock data to the PC from the F-20DU<sub>2</sub>-E unit is automatically made at every minute at the minute when data transfer is initiated by entering into the real-time clock mode.

Write protect switches SW1, SW2 of the F-20DU<sub>2</sub>-E do not have any effect on the transfer of the real-time clock data.

Example :

Thursday	D750		transfer flag
March 15th	D751		days of the week (Thu.)
7hr 33mins.	D752		minute
	D753		hour
	D754		day
	D755		month

### TRANSFER FLAG :

D750 is a flag to indicate that data is being updated and real-time clock data should not be read until the update has been completed.

D750 = "1" when update is in progress.

D750 = "0" when update is over and reading may be resumed.

### NOTE :

As an indicator to the operator, while data is transferred continuously to the PC from the F-20DU<sub>2</sub>-E, the decimal point of the rightmost digit will flash 0.5s ON, 0.5s OFF.

If this decimal point does not flash, it indicates that the transfer of real-time clock data has been terminated.

### PASSWORD :

With the registration of the password, all operations on the F-20DU<sub>2</sub>-E may be prohibited upon power ON. Under such a case, the F-20DU<sub>2</sub>-E will continue to operate as it had done before power was turned OFF.

### CLOCK ACCURACY :

Worst case  $\pm 45$ sec. per month at 25 °C.

Although the correct time has been set by the factory, the user is requested to set it again when installing for use.

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The specifications and designs are  
subject to change without notice.