Panasonic®

PROGRAMMABLE CONTROLLER

FP DATA ACCESS UNIT
Operation Manual

FP DATA ACCESS UNIT Operation Manual
ACG-M0061-3 '04.1

Matsushita Electric Works, Ltd.

Safety Precautions

Observe the following notices to ensure personal safety or to prevent accidents.
To ensure that you use this product correctly, read this User's Manual thoroughly before use.
Make sure that you fully understand the product and information on safe.
This manual uses two safety flags to indicate different levels of danger.

WARNING

If critical situations that could lead to user's death or serious injury is assumed by mishandling of the product.

-Always take precautions to ensure the overall safety of your system, so that the whole system remains safe in the event of failure of this product or other external factor.
-Do not use this product in areas with inflammable gas. It could lead to an explosion.
-Exposing this product to excessive heat or open flames could cause damage to the lithium battery or other electronic parts.

CAUTION

If critical situations that could lead to user's injury or only property damage is assumed by mishandling of the product.

-To prevent abnormal exothermic heat or smoke generation, use this product at the values less than the maximum of the characteristics and performance that are assure in these specifications.
-Do not dismantle or remodel the product. It could lead to abnormal exothermic heat or smoke generation.
-Do not touch the terminal while turning on electricity. It could lead to an electric shock..
-Use the external devices to function the emergency stop and interlock circuit.
-Connect the wires or connectors securely.
The loose connection might cause abnormal exothermic heat or smoke generation
-Do not allow foreign matters such as liquid, flammable materials, metals to go into the inside of the product. It might cause exothermic heat or smoke generation.
-Do not undertake construction (such as connection and disconnection) while the power supply is on.

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Precautions Before Use

1. Applicable Models

- The FP data access unit can be used with any of the following programmable controllers.
  FP-M
  FP1
  FP-C
  FP3
  FP5
  FP10S
  FP10

- The peripheral cables can be used to connect the FP data access unit to a programmable controller.

Model	Peripheral cable	
FP1	Cable length: 50 cm/19.685 in.	AFP15205
	Cable length: 3 m/9.843 ft.	AFP1523
FP3 FP5 FP10S FP10	Cable length: 50 cm/19.685 in.	AFP5520
	Cable length: 3 m/9.843 ft.	AFP5523
FP-M FP-C	Cable length: 1 m/3.281 ft.	AFC8521
	Cable length: 3 m/9.843 ft.	AFC8523

- When the programmable controller is protected with a password, you cannot carry out read and write operations for the timer or counter.

Changes :Product number

Some character codes were changed due to the production stoppage of liquid crystal screen.
"K" will be added to new Product No. for identification.
Old product: AFP1682
Mew product: AFP1682K

2. Memory Areas

The number and range of memory areas that can be designated vary in models and types. Be sure to designate a number that is within the range.
If the designated number is outside the range, an error may be generated.

- FP1: C14 and C16 series

Data register	DT0 to DT255
Timer	TM0 to TM99 (See note.)
Counter	CT100 to CT127 (See note.)

- FP1: C24 and C40 series, FP-M: 2.7 k type

Data register	DT0 to DT1659
Timer	TM0 to TM99 (See note.)
Counter	CT100 to CT143 (See note.)

- FP1: C56 and C72 series, FP-M: 5 k type

Data register	DT0 to DT6143
Timer	TM0 to TM99 (See note.)
Counter	CT100 to CT143 (See note.)

- FP-C, FP3 and FP5

Data register	DT0 to DT2047
Timer	TM0 to TM199 (See note.)
Counter	CT200 to CT255 (See note.)

- FP10S and FP10

Data register	DT0 to DT10239
Timer	TM0 to TM1999 (See note.)
Counter	CT2000 to CT2047 (See note.)

Note:

- The ranges of the timer and counter can be changed by resetting system register 5 of the programmable controller. The above are default settings.
  For more details, refer to the section on setting the system register in the programming manual of the applicable programmable controller.

3. Possible Input Range

Limit the data register storage values and timer and counter set values to the following ranges.

Data register		K-32,768 to K32,767 H0 to HFFFF
Timer	**0.01 s units timer**	0.01 to 327.67 s
	0.1 s units timer	0.1 to 3276.7 s
	1 s units timer	1 to 32767 s
Counter		1 to 32,767

CHAPTER 1

FEATURES AND SPECIFICATIONS

1-1. Features

- The FP data access unit is a monitoring device that checks the operating condition of the programmable controller. It is equipped with a memory area access function and message display function.

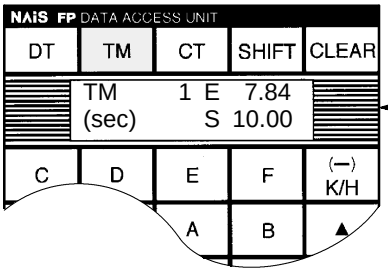
1. Memory Area Access Function

- Can be used to monitor or change the elapsed value (E), set value (S) of the timer and counter and content of the data register.
- The memory area registration limit function allows the designation of sections for monitoring and rewriting data to prevent the accidental rewriting of data. (See page 34.)
- An optional setting allows a unit of measurement to be added to the data being monitored, or allows access with a binary indication. The accessed data can also be provided with a comment. (See page 66, 67, 72 to 79.)
- See page 12 for details of the memory area access function.

■ For monitoring and changing data stored in the data registers

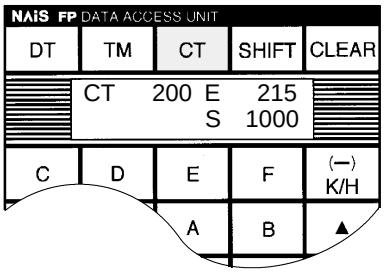
Used to change between K (decimal) and H (hexadecimal).

■ For monitoring and changing the elapsed value (E) and set value (S) of the timer

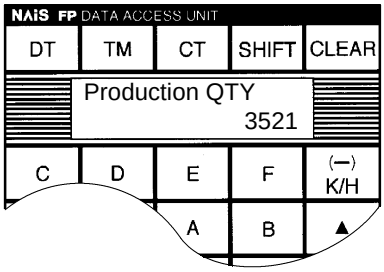


Displayed in seconds.

■ For monitoring and changing the elapsed value (E) and set value (S) of the counter

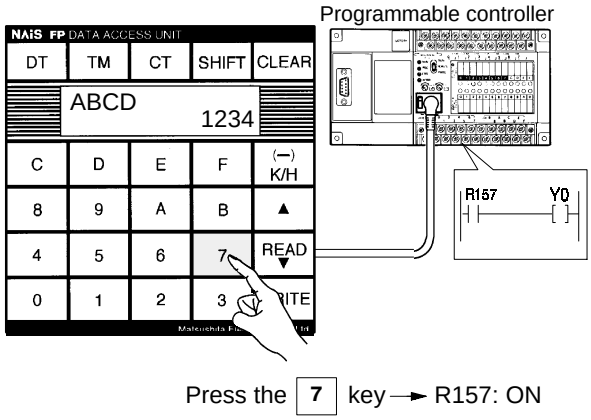


2. Message Display Function



- An alphanumeric message (16 characters × 2 lines) can be displayed.
- A message entered in the data registers of the connected programmable controller can be read by the FP data access unit for display.
- Continually changing numerical values can be monitored during RUN mode.
- Can be used to provide instructions to the operator or to display the machine condition.
- See page 50 for details of the message display function.

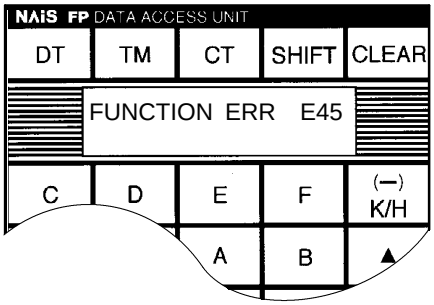
3. Internal Relay Switching Function



Press the 7 key → R157: ON

- The numeric keys (0 to 9) and alphabet keys (A to F) can be used to turn the internal relays ON and OFF.
- Combined with the message display function, the FP data access unit can be used as a simplified operation/display panel.
- See page 58 for details of the internal relay switching function.

4. Self-diagnostic Error Display Function



- Displays the error description when the connected programmable controller generates a self-diagnostic error.
- See page 86 for details of the self-diagnostic error display function.

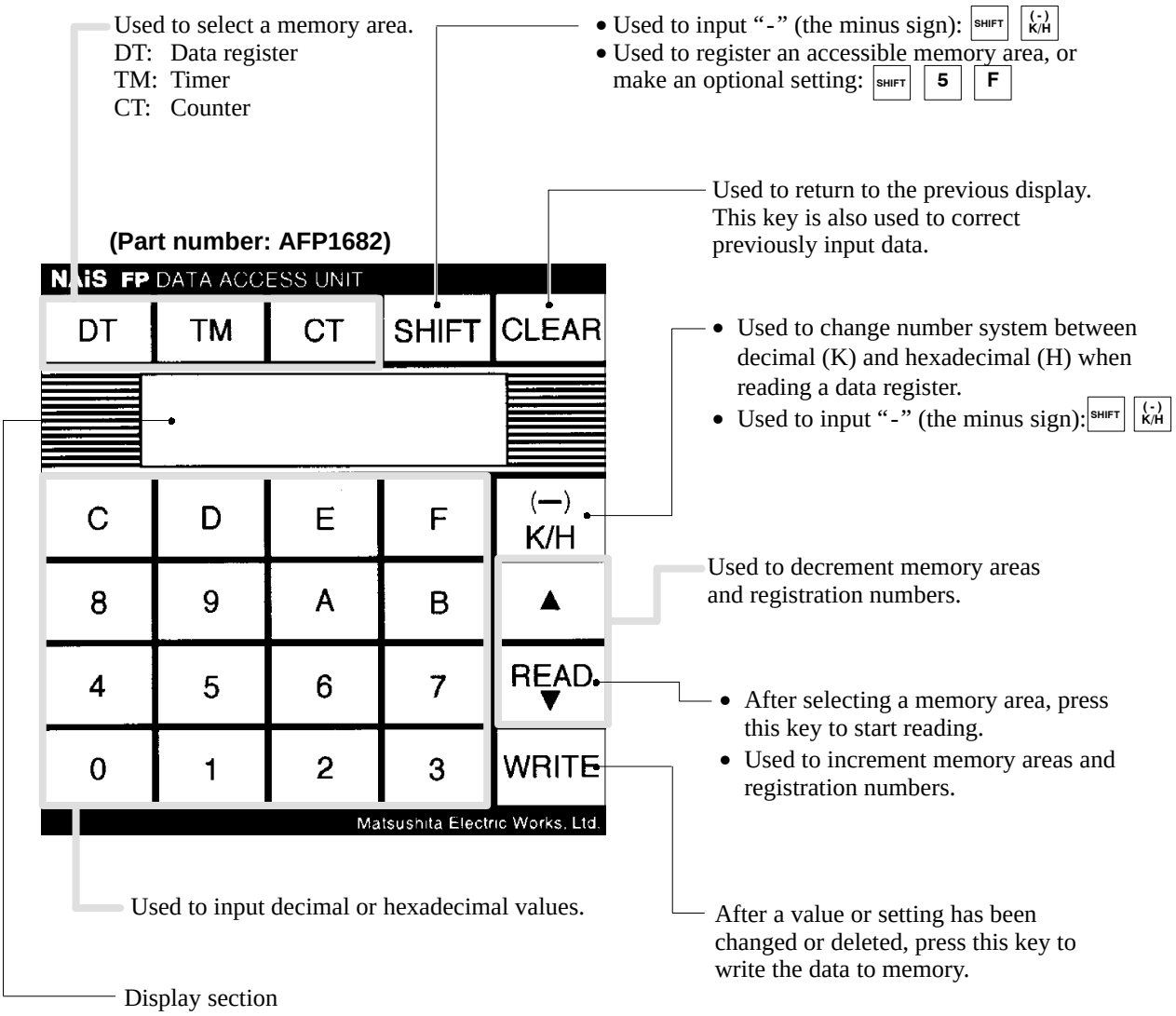
1-2. General Specifications

Item	Specification
Ambient temperature	0°C to +50°C / 32°F to 122°F
Ambient humidity	30% to 85% RH (non-condensation)
Storage temperature	-20°C to +60°C / -4°F to +140°F
Storage humidity	30% to 85% RH (non-condensation)
Vibration resistance	10 Hz to 55 Hz, 1 cycle/min: double amplitude of 0.75 mm (0.03 in), 20 min on 3 axes
Shock resistance	Shock of 98 m/s^2 (10G) or more, four times on 3 axes
Noise immunity	Min. 1000 V with pulse width 1 μs or 50 ns (based on in-house measurements)
Operating conditions	Free of corrosive gases and excessive dust
Consumption current	Max. 110 mA (at 5 V)
Surface panel material	Polyester
Weight	Approx. 170 g / 0.375 lbs. (approx. 180 g / 0.397 lbs. with mounting clamps)

CHAPTER 2

PARTS TERMINOLOGY AND INSTALLATION

2-1. Parts Terminology

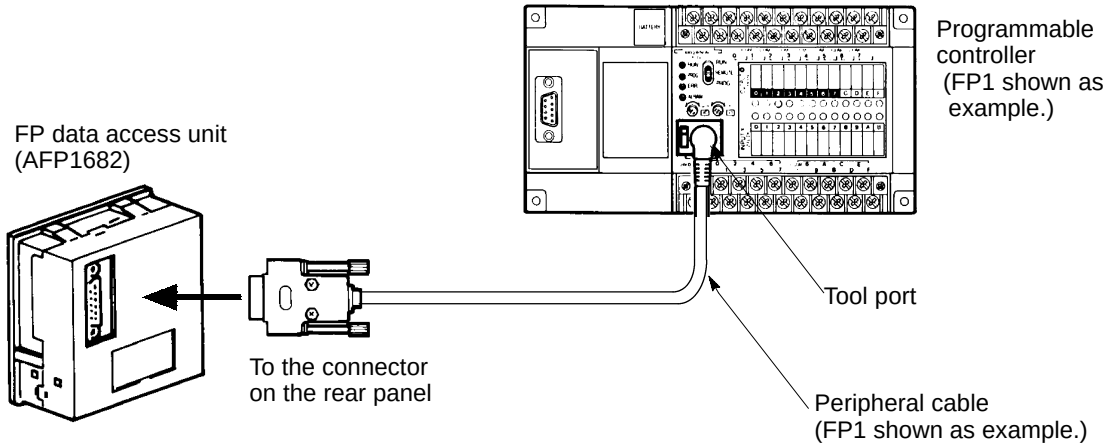


- See the following chapters for the operating procedure.
- When the keys are properly pressed, a short beep is produced. Two short beeps indicate that the input operation contained an error. When this occurs, repeat the procedure correctly.

Note:

- When entering the password (SHIFT 5 F) to register an accessible memory area or make an optional setting, two short beeps are produced, but this does not indicate an input error.

2-2. Connection



- Use the peripheral cable to connect the FP data access unit to the programmable controller.

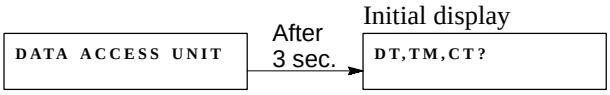
Model	Peripheral cable	
FP1	Cable length: 50 cm/ 19.685 in.	AFP15205
	Cable length: 3 m/ 9.843 ft.	AFP1523
FP3 FP5 FP10S FP10	Cable length: 50 cm/ 19.685 in.	AFP5520
	Cable length: 3 m/ 9.843 ft.	AFP5523
FP-M FP-C	Cable length: 1 m/ 3.281 ft.	AFC8521
	Cable length: 3 m/ 9.843 ft.	AFC8523

- There is no need to manually set the communication parameters. The FP data access unit automatically checks and sets the communication parameters of the programmable controller at start-up from one of the following four patterns.

  Communication parameters:
  - 19,200 bps, 8 bits, Odd parity, 1 stop bit
  - 9,600 bps, 8 bits, Odd parity, 1 stop bit
  - 19,200 bps, 7 bits, Odd parity, 1 stop bit
  - 9,600 bps, 7 bits, Odd parity, 1 stop bit

- Do not touch the connector terminals with your fingers. Touching them with your fingers can lead to faulty contact, or damage from static electricity.

- If the connected programmable controller is turned ON, the display of the FP data access unit will show the following message.
  When the programmable controller is turned ON or connected

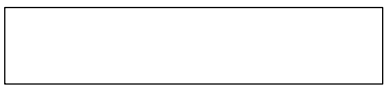


  When the display shows this message, it is ready for use.

Notes:

- When a message has been input, the characters and numbers of the message are displayed. See Chapter 5 regarding the message display.
- For the FP10S and FP10, when the programmable controller is turned ON with the mode selector in the RUN, or the mode selector is changed from PROG. to RUN, the display may show "NO RESPONSE." However, the initial display will appear in several seconds.

- The following conditions indicate that the programmable controller is not properly connected. Please locate the cause.



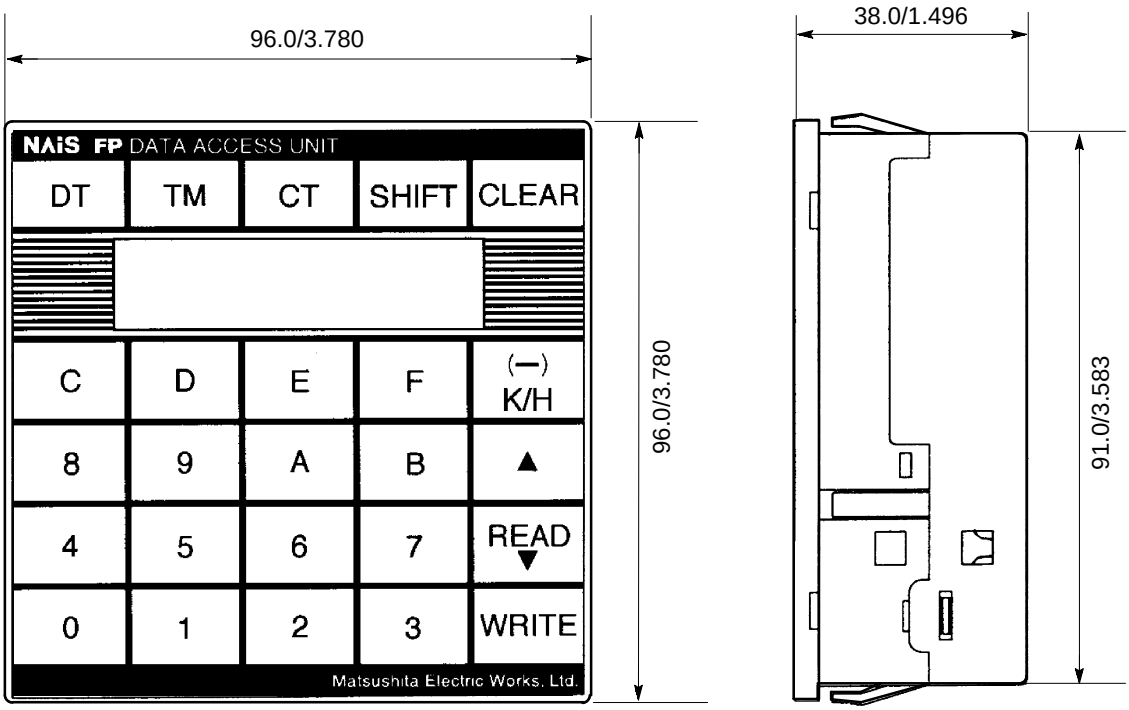
Display: No message
Cause: Faulty or disconnected cable

Display: "NO RESPONSE"
Cause: Faulty cable or malfunction in the programmable controller

2-3. Installation

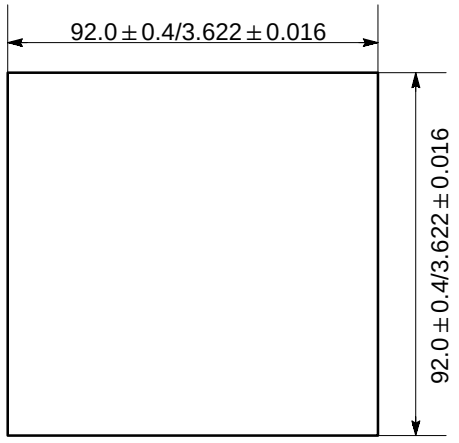
1. Dimensions

■ External dimensions



(unit: mm/in.)

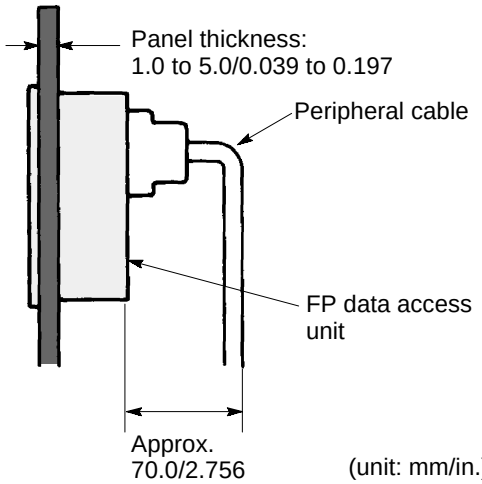
■ Mounting hole dimensions



(unit: mm/in.)

■ Necessary depth for installation

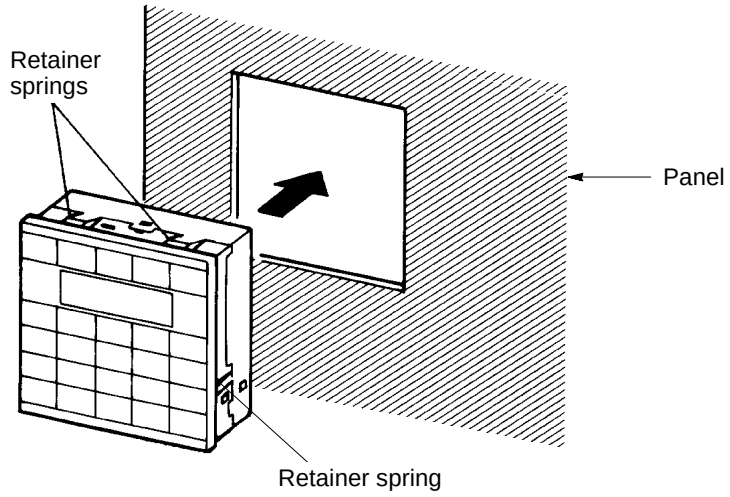
- The space must be sufficient to accommodate the depth of the FP data access unit plus extra space for connecting the peripheral cable. Please refer to the diagram below.



(unit: mm/in.)

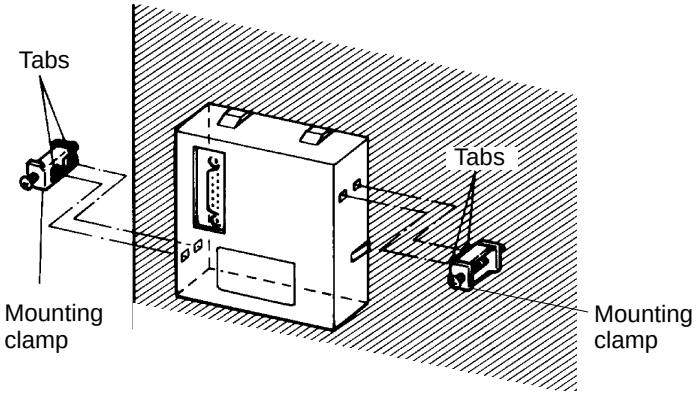
2. Installation

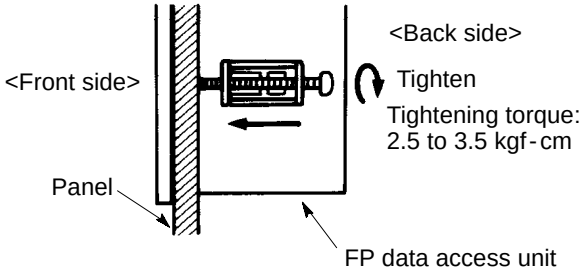
Mount the FP data access unit into the panel in the direction indicated by the arrow in the diagram below.
The retainer springs keep the unit in position.



■ Using mounting clamps

If the unit is to be used in a place that is subject to vibration, or if it must be secured firmly in place, attach the two provided clamps to the unit from the back side of the panel, and tighten the screws.





3. Notes on Installation

- Make sure the installation site of the FP data access unit is within the range of the general specifications. (See page 4.)
- Do not touch the connector terminals with your fingers. Touching them with your fingers can lead to faulty contact, or damage from static electricity.
- To prevent interference noise, install the unit as far away as possible from high-voltage cables, high-voltage equipment, power lines, motors, equipment with a radio-wave transmitting function such as a citizens band radio, and any equipment that generates a large switching surge.

CHAPTER 3

MEMORY AREA ACCESS FUNCTION

3-1. Outline of the Memory Area Access Function

1. Reading from a Memory Area

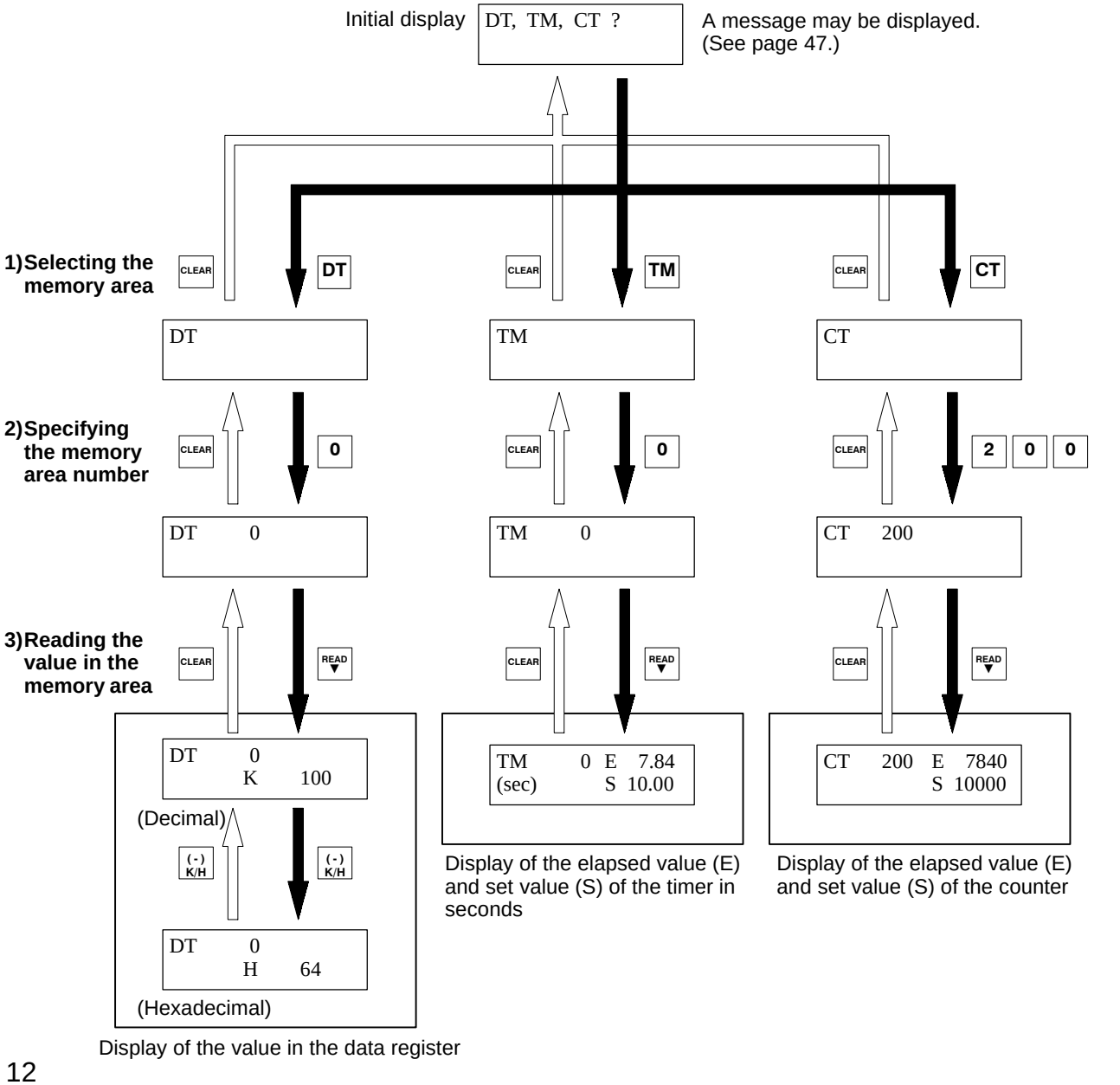
■ Reading the value stored in a memory area

< Procedure >

1) Selecting the memory area
   Select the type of memory area from either data register (DT), timer (TM) or counter (CT).
2) Specifying the memory area number
   Specify the number of the selected memory area.
3) Reading the value stored in the memory area
   Press the [READ ▼] key. The value stored in the selected memory area is then displayed on the screen.

Note:

- To change the input, press the [CLEAR] key. The screen then returns to the previous display.



Display of the value in the data register

Display of the elapsed value (E) and set value (S) of the timer in seconds

Display of the elapsed value (E) and set value (S) of the counter

■ Reading the values in memory areas in sequence

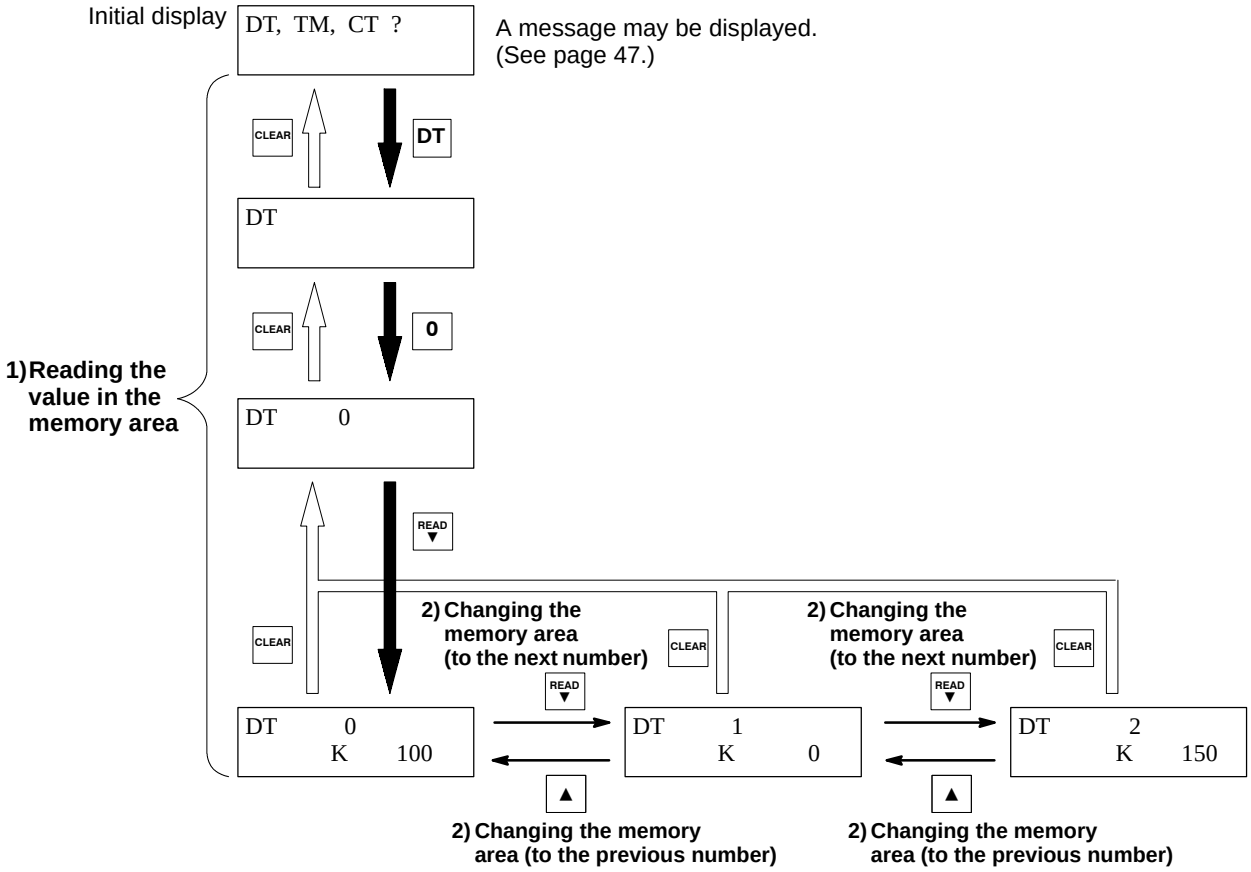
< Procedure >

1) Reading the value in the memory area
   Specify the type and number of the memory area, and read the stored value. (See the previous page.)
2) Changing the memory area number
   When the [READ ▼] key is pressed, the value stored in the memory area of the next number is read and displayed.
   When the [▲] key is pressed, the value stored in the memory area of the previous number is read and displayed.

Note:

- To change the input, press the [CLEAR] key. The screen then returns to the previous display.

Example: Reading a data register

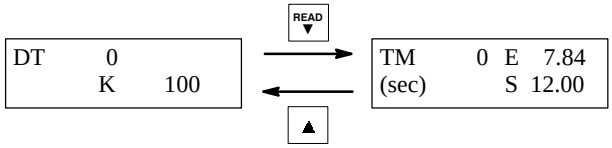


■ Optional setting for memory access

- Set the limit of the range allowed for access. (See page 34.)

  Example:

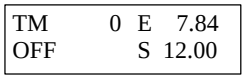
  The accessible range is set to data register DT0 and timer TMX0.



- A three-character comment can be entered into memory areas. (See page 72.)

  Example:

  A message, “OFF,” is added to timer TMX0.

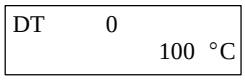


- A unit indication can be attached to the value (binary decimal system) of a data register. (See page 66.)

  Example:

  The unit indication “°C” is attached to the value of data register DT0.

  The values of timers and counters cannot be given a unit indication.

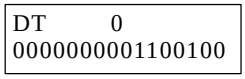


- The value of a data register can be read or written in bits. (See page 77.)

  Example:

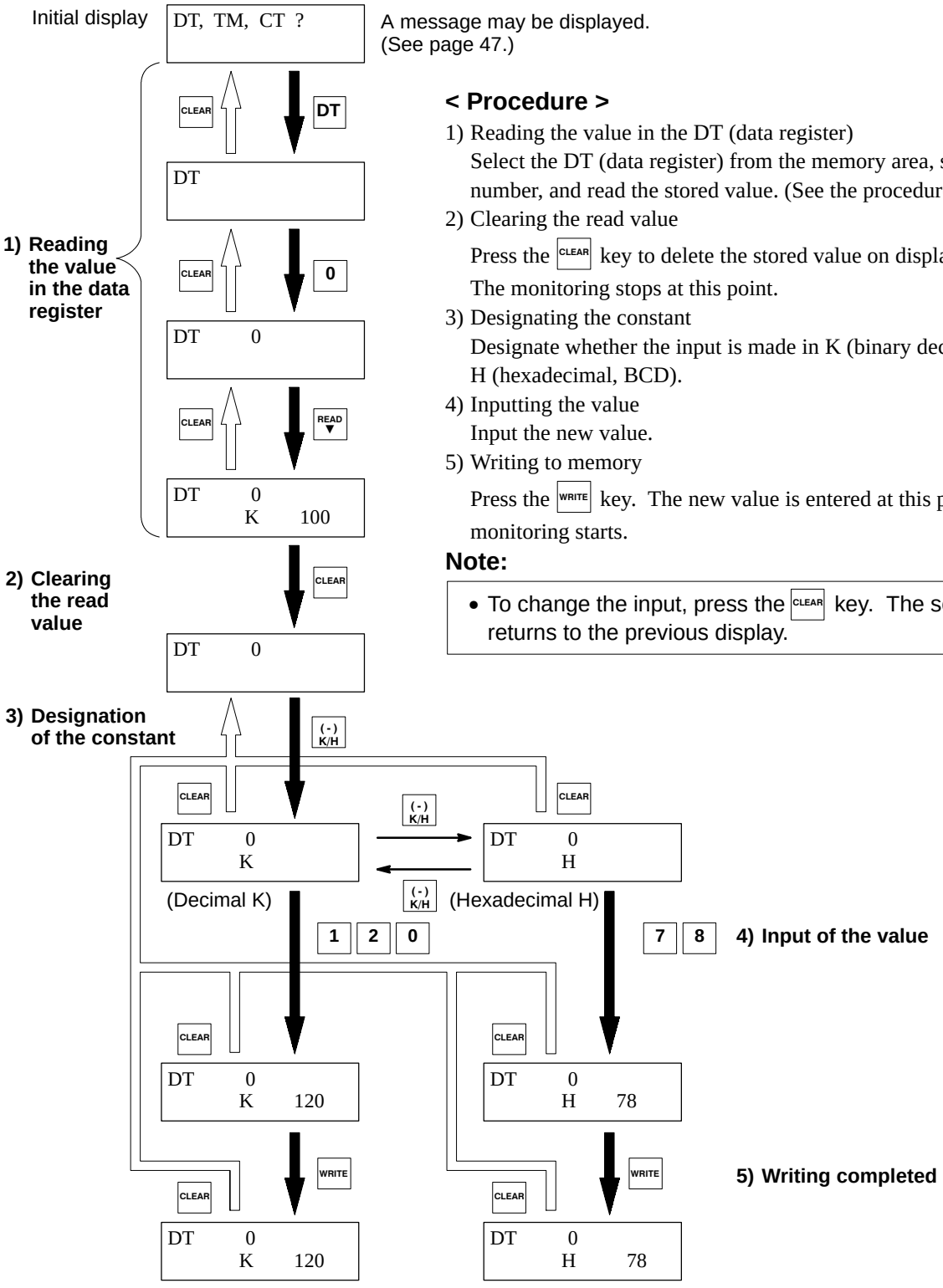
  The value of data register DT0 is read in bits.

  The value of each bit can be changed between 0 and 1 with the numeric key corresponding to the bit.



2. Writing to a Memory Area

■ Rewriting the value stored in a DT (data register)



< Procedure >

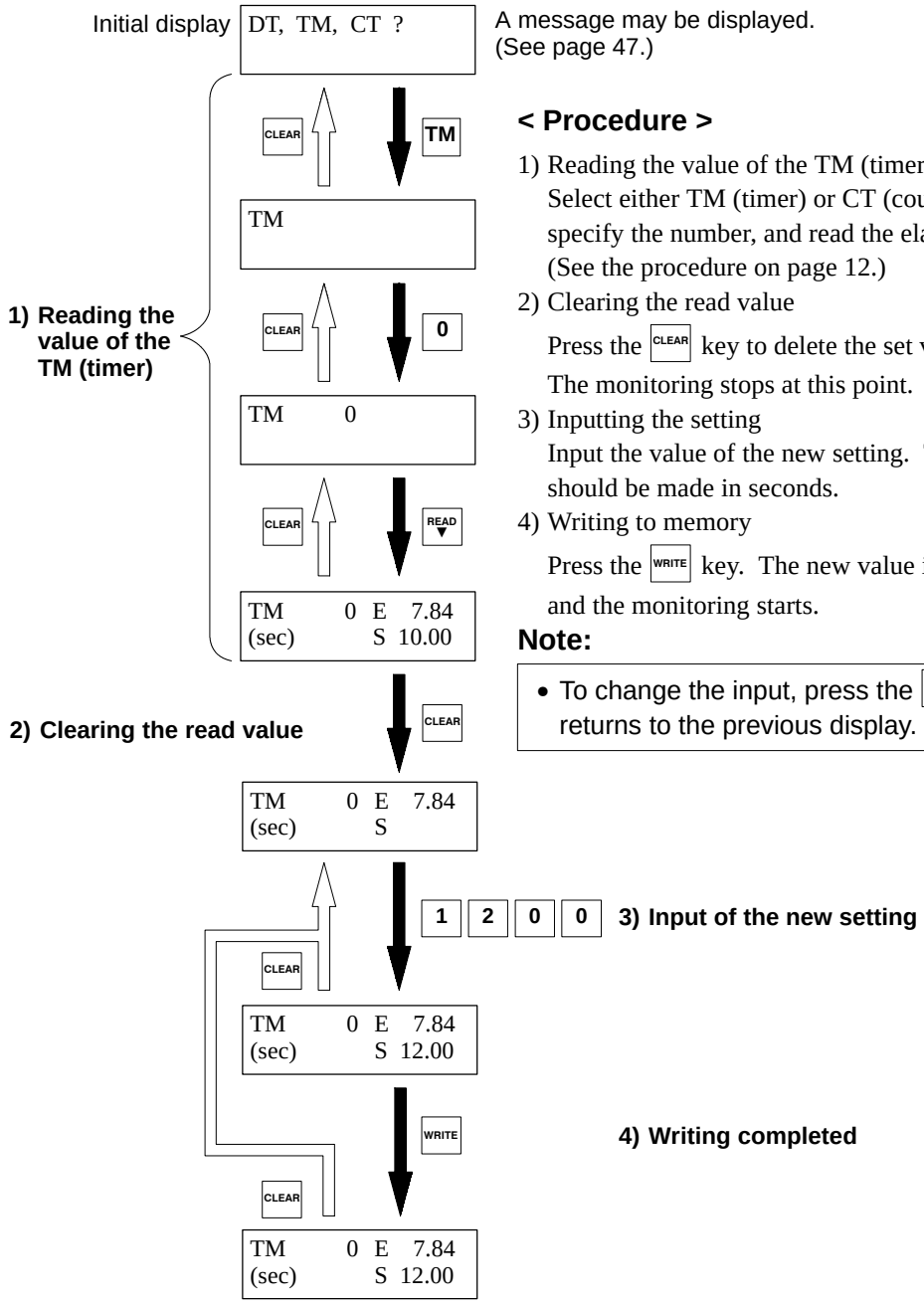
1) Reading the value in the DT (data register)
   Select the DT (data register) from the memory area, specify the number, and read the stored value. (See the procedure on page 12.)
2) Clearing the read value
   Press the CLEAR key to delete the stored value on display.
   The monitoring stops at this point.
3) Designating the constant
   Designate whether the input is made in K (binary decimal) or H (hexadecimal, BCD).
4) Inputting the value
   Input the new value.
5) Writing to memory
   Press the WRITE key. The new value is entered at this point, and the monitoring starts.

Note:

- To change the input, press the CLEAR key. The screen then returns to the previous display.

■ Rewriting the settings of a TM (timer) and CT (counter)

Example: Rewriting the set value of a timer



A message may be displayed.
(See page 47.)

< Procedure >

1) Reading the value of the TM (timer) or CT (counter)
   Select either TM (timer) or CT (counter) from the memory area, specify the number, and read the elapsed value (E) and set value (S).
   (See the procedure on page 12.)
2) Clearing the read value
   Press the CLEAR key to delete the set value (S) on display.
   The monitoring stops at this point.
3) Inputting the setting
   Input the value of the new setting. The settings of TMs (timers) should be made in seconds.
4) Writing to memory
   Press the WRITE key. The new value is entered at this point, and the monitoring starts.

Note:

- To change the input, press the CLEAR key. The screen then returns to the previous display.

3-2. Accessing a Data Register (DT)

1. Reading a Data Register Value

Data register display

Data register address

```
DT        0
          K        10
```

This is the value stored in DT0.

- The value can be displayed in decimal or hexadecimal (see page 18).
- To change (overwrite) the value, see page 20.

- Optional settings also allow the following type of display.

```
DT        0
OUT              10°C
```

A comment can be added (see page 72).

The unit of measurement can be displayed (see page 66).

When the unit of measurement is displayed, values can be displayed only in decimal numbers.

Procedure

Example : To read the value of the data register DT0.

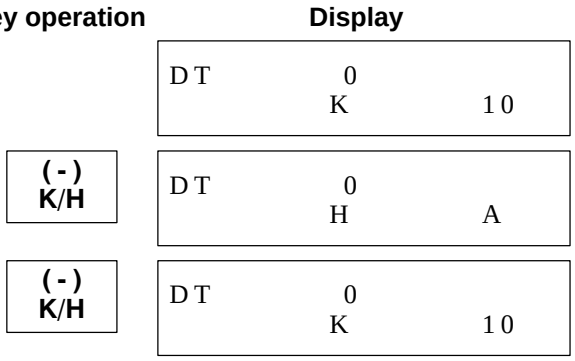
Key operation	Display	
	DT,TM,CT ?	
DT	DT	Press the DT key to select a data register.
0	DT 0	Press the 0 key to specify the data register address DT0.
READ ▼	DT 0 K 10	Press the READ ▼ key to read the value of DT0.

Note:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.

1) Changing the display between decimal and hexadecimal

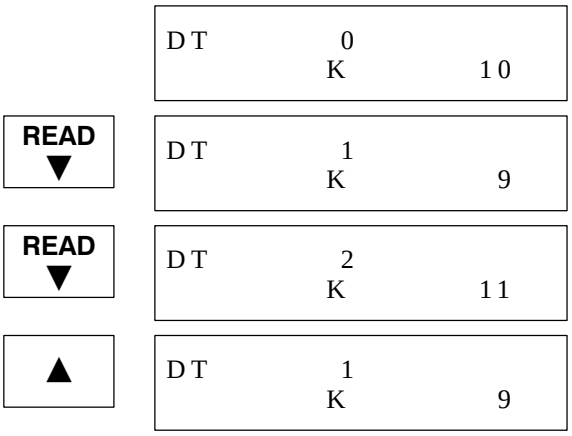
Example : To change the DT0 value from decimal (K10) to hexadecimal (HA).



Press the [(-) K/H] key to change the display from K (decimal) to H (hexadecimal).
Then check the display to confirm the change.
Conversely, the display can also be changed from H (hexadecimal) to K (decimal) by pressing the [(-) K/H] key.
Check the display to confirm the change.

2) Reading a different data register

Method 1: Changing the register address using the [READ ▼] and [▲] keys.



Press the [READ ▼] key to increment the address (to read the value of DT1).

Press the [READ ▼] key to increment the address again (to read the value of DT2).

Press the [▲] key to decrement the address (to read the value of DT1).

Note:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.

Method 2: Designating another data register

Example : Changing from DT9 to DT2 and reading the value.

Key operation	Display	
	D T 9 K 1 3	
CLEAR	D T 9	Press the CLEAR key once. (The value disappears.)
CLEAR	D T	Press the CLEAR key once again. (The number disappears.)
2	D T 2	Designate the desired address (for example, 2).
READ ▼	D T 2 K 1 1	Press the READ ▼ key to read the value of DT2.

2. Writing a Data Register Value

Example : Changing the value of DT1 from “K9” to “K10.”

Key operation	Display	
	DT,TM,CT ?	
DT	DT	Press the DT key to select a data register.
1	DT 1	Press the 1 key to specify the data register address DT1.
READ ▼	DT 1 K 9	Press the READ ▼ key to read the value of DT1.
CLEAR	DT 1	Press the CLEAR key once. (The value disappears and the read operation stops.)
(-) K/H	DT 1 K	Press the (-) K/H key to select K (decimal) or H (hexadecimal). Then check the display to confirm.
1	DT 1 K 1	Input the value from the highest digit.
0	DT 1 K 10	Input the lowest digit of the value.
WRITE	DT 1 K 10	Press the WRITE key. The programmed value is then overwritten, and the read operation begins.

3. Canceling Access to a Data Register

Example : To cancel access to a data register, and read a timer TM1.

Key operation	Display	
	DT 0 K 10	
CLEAR	DT 0	Press the CLEAR key once. (The value disappears.)
CLEAR	DT	Press the CLEAR key once again. (The number disappears.)
CLEAR	DT,TM,CT ?	Press the CLEAR key once again. (The display returns to the initial display or message display.) **At this point, access to the data register is canceled.** Once you have returned to the initial display, you can read a different memory area or make one of the optional settings. See page 64 for the optional settings.
TM	TM	To access a timer, press the TM key.
1	TM 1	Designate the timer instruction number (for example, 1).
READ ▼	TM 1E 7.84 (sec) S 10.00	Press the READ ▼ key to read the value for TM1.

3-3. Accessing a Timer (TM)

1. Reading the Set Value and Elapsed Value of a Timer

Timer display

Timer instruction number

This is the elapsed value of TM1.

```
TM        1E     7.84
(sec)      S    10.00
```

This is the set value of TM1.

- To change (overwrite) the set value, see page 24.

When the specified timer instruction is used in the program, the unit of measurement is displayed. (See page 25.)

- Using an optional setting, the following display is also possible.

```
TM        1E     7.84
ABC        S    10.00
```

A comment can be added (see page 72).
[When a comment is registered, the (sec) indication is not displayed.]

Procedure

This is an example of reading the timer TM1.

Key operation	Display	
	DT,TM,CT ?	
TM	TM	Press the TM key to select a timer.
1	TM 1	Press the 1 key to specify the timer instruction number TM1.
READ ▼	TM 1E 7.84 (sec) S 10.00	Press the READ ▼ key to read the value of TM1.

Notes:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.
- When the programmable controller is password-protected, the timer (TM) cannot be accessed. When the protect switch is used for protection, however, access is possible.

1) Reading a different timer value

Method 1 : Use the READ ▼ and ▲ keys to increment or decrement the number.

Key operation	Display	
	TM 1E 7.84 (sec) S 10.00	
READ ▼	TM 2E 0.00 (sec) S 8.00	Press the READ ▼ key to increment the number, then read the value for TM2.
READ ▼	TM 3E 3.56 (sec) S 5.00	Press the READ ▼ key to increment the number, then read the value for TM3.
▲	TM 2E 0.00 (sec) S 8.00	Press the ▲ key to decrement the number.

Note:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.

Method 2 : Change the designation of the timer instruction number.

Example : Changing from TM1 to TM9 and reading the value.

Key operation	Display	
	TM 1E 7.84 (sec) S 10.00	
CLEAR	TM 1E 7.84 (sec) S	Press the CLEAR key once. (The set value disappears.)
CLEAR	TM	Press the CLEAR key once again. (The number disappears.)
9	TM 9	Designate the number you wish to read (for example, 9).
READ ▼	TM 9E 3.53 (sec) S 5.00	Press the READ ▼ key to read the value for TM9.

2. Writing a Set Value for a Timer

Example : Changing the value of TM1 from “10.00” to “3.50.”

Key operation	Display	
	DT,TM,CT ?	
TM	TM	Press the TM key to select a timer.
1	TM 1	Press the 1 key to specify the timer instruction number.
READ ▼	TM 1E 0.00 (sec) S 10.00	Press the READ ▼ key to read the value of TM1.
CLEAR	TM 1E 0.00 (sec) S	Press the CLEAR key once. (The set value disappears and the read operation stops.)
3	TM 1E 0.00 (sec) S .3	Input the value from the highest digit.
5	TM 1E 0.00 (sec) S .35	Input the next digit of the value.
0	TM 1E 0.00 (sec) S 3.50	Input the third digit of the value.
WRITE	TM 1E 0.00 (sec) S 3.50	Press the WRITE key. The set value is then overwritten, and the read operation begins.

Note:

- Be sure to read “3-5. Precautions for Writing Set Values for Timers and Counters” on page 31.

Unit of measurement indications for set values and elapsed values

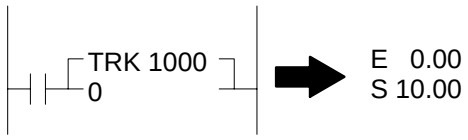
- In the program for the programmable controller, the set time is determined as follows.

(Timer time unit) × (Set value)

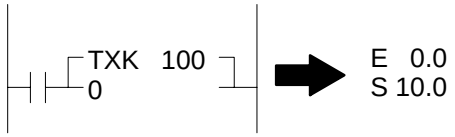
- Program constant
- SV area value
- R (0.01-sec unit)
- X (0.1-sec unit)
- Y (1-sec unit)

Example:

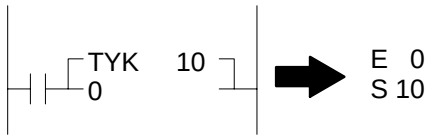
- 0.01-sec unit



- 0.1-sec unit



- 1-sec unit



- The FP data access unit converts the value to a 1-sec unit and displays the result.

■ Precaution when inputting a timer set value

- When inputting a timer set value, the value input through FP data access unit differs depending upon the timer time unit written in the program. Be sure to input the desired set value referring to the display unit as follows:

Example: Inputting 10 seconds.

Using a 1-sec unit

Key operation	Display
1	S 1
0	S 10

Using a 0.1-sec unit

Key operation	Display
1	S .1
0	S 1.0
0	S 10.0

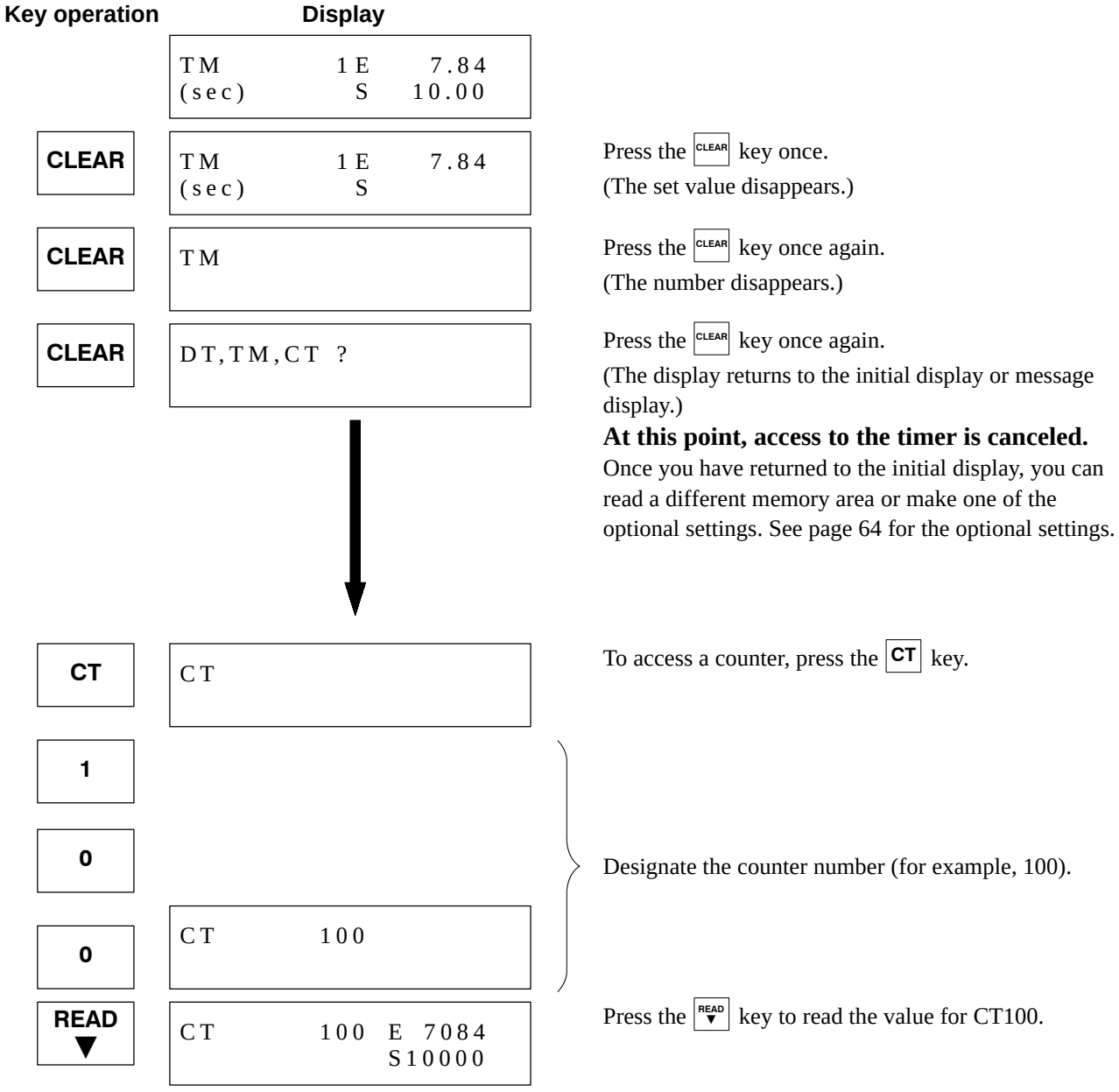
Using a 0.01-sec unit

Key operation	Display
1	S . 1
0	S .10
0	S 1.00
0	S 10.00

- Be sure to confirm the result on the display as you input the value.

3. Canceling Access to a Timer

Example : To cancel access to a timer, and read a counter.



3-4. Accessing a Counter (CT)

1. Reading the Set Value and Elapsed Value of a Counter

Counter display

Counter instruction number — This is the elapsed value of CT100.

```
CT        100  E  7084
               S10000
```

This is the set value of CT100.

- To change (overwrite) the set value, see page 29.

- Using an optional setting, the following display is also possible.

```
CT        100  E  7084
ABC            S10000
```

A comment can be added (see page 72).

Procedure

This is an example of reading the counter CT100.

Key operation	Display	
	DT,TM,CT ?	
CT	CT	Press the CT key to select a counter.
1		Press the 1, 0, 0 keys to specify the counter instruction number CT100.
0		
0	CT 100	
READ ▼	CT 100 E 7084 S10000	Press the READ ▼ key to read the value of CT100.

Notes:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.
- When the programmable controller is password-protected, the counter (CT) cannot be accessed. When the protect switch is used for protection, however, access is possible.

1) Reading a different counter value

Method 1 : Use the READ ▼ and ▲ keys to increment or decrement the number.

Key operation	Display	
	CT 100 E 7084 S10000	
READ ▼	CT 101 E 6015 S 8000	Press the READ ▼ key to increment the instruction number, then read the value for CT101.
READ ▼	CT 102 E 3056 S 5000	Press the READ ▼ key to increment the instruction number, then read the value for CT102.
▲	CT 101 E 6015 S 8000	Press the ▲ key to decrement the instruction number.

Note:

- When accessible areas have been registered by single-area registration method (see page 40) or range registration method (see page 35), only memory areas registered will be accepted.

Method 2 : Change the designation of the counter instruction number.

Example : Changing from CT100 to CT109 and reading the value.

Key operation	Display	
	CT 100 E 7084 S10000	
CLEAR	CT 100 E 7084 S	Press the CLEAR key once. (The set value disappears.)
CLEAR	CT	Press the CLEAR key once again. (The instruction number disappears.)
1		Designate the instruction number you wish to read (for example, 109).
0		
9	CT 109	
READ ▼	CT 109 E 3053 S 5000	Press the READ ▼ key to read the value for CT109.

2. Writing a Set Value for a Counter

Example : Changing the value of CT100 from “10000” to “3050.”

Key operation	Display	
	DT,TM,CT ?	
CT	CT	Press the CT key to select a counter.
1		Press the 1, 0, 0 keys to specify the counter number CT100.
0		
0	CT 100	
READ ▼	CT 100 E 7084 S10000	Press the READ ▼ key to read the value of CT100.
CLEAR	CT 100 E 7084 S	Press the CLEAR key once. (The set value disappears and the read operation stops.)
3		Input the value (for example, 3050).
0		
5		
0	CT 100 E 7084 S 3050	
WRITE	CT 100 E 2053 S 3050	Press the WRITE key. The set value is then overwritten, and the read operation begins.

Note:

- Be sure to read “3-5. Precautions for Writing Set Values for Timers and Counters” on page 31.

3. Canceling Access to a Counter

Example : To cancel access to a counter, and read a data register.

Key operation	Display	
	CT 100 E 7084 S10000	
CLEAR	CT 100 E 7084 S	Press the CLEAR key once. (The set value disappears.)
CLEAR	CT	Press the CLEAR key once again. (The number disappears.)
CLEAR	DT,TM,CT ?	Press the CLEAR key once again. (The display returns to the initial display or message display.) **At this point, access to the counter is canceled.** Once you have returned to the initial display, you can read a different memory area or make one of the optional settings. See page 64 for the optional settings.
DT	DT	To access a data register, press the DT key.
0	DT 0	Designate the data register address (for example, 0).
READ ▼	DT 0 K 10	Press the READ ▼ key to read the value for DT0.

3-5. Precautions for Writing Set Values for Timers and Counters

When you write a set value for a timer or counter using the FP data access unit, you can overwrite the constant in the program at the same time as you overwrite the SV in the set value area even while in the RUN mode. (See note 1.) However, there are situations where you cannot overwrite the constant in the program, such as when an external memory device is attached or when you are using certain models. This is shown in the following table.

(○: Can write, ×: Cannot write)

Set value in program	Model		CPU mode	Set value area SV	Constant in program	Remark
Designating a constant	FP1 C14 series C16 series		PROG.	○	○	————
			RUN	○	×	(See note 2.)
	FP-M FP1 C24 series C40 series C56 series C72 series FP-C FP3 FP5 FP10S FP10	RAM operation	PROG.	○	○	————
			RUN	○	○	————
		Optional memory operation (ROM, memory unit, IC memory card)	PROG.	○	×	(See note 3.)
			RUN	○	×	(See note 2.)
Designating a set value area SV	FP-M FP1 C14 series C16 series C24 series C40 series C56 series C72 series FP-C FP3 FP5 FP10S FP10		PROG.	○	————	————
			RUN	○	————	————

Notes:

1. When the programmable controller is switched from PROG. to RUN, the constant in the program is sent to the set value area SV. The timer/counter operation is then based on this SV. For details, see the “Programming Manual” for the respective model.
2. The content changed in RUN mode is reset when the unit is switched from RUN to PROG. or when the power is turned OFF. The next time the unit is switched from PROG. to RUN, the timer/counter operation is performed with the constant in the program.
3. When the programmable controller is switched from PROG. to RUN, the content is replaced with the constant in the program, voiding the write operation.

CHAPTER 4

MEMORY AREA ACCESS FUNCTION OF OPTIONAL SETTINGS

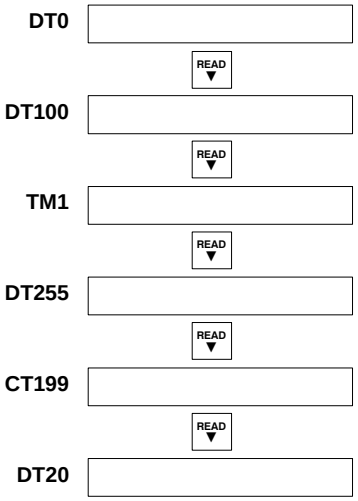
4-1. Memory Area Registration Limit Function

1. Outline of the Memory Area Registration Limit Function

When you register memory areas, you make only those areas accessible. No other areas are accessible for reading or writing. This function is especially convenient in the following cases.

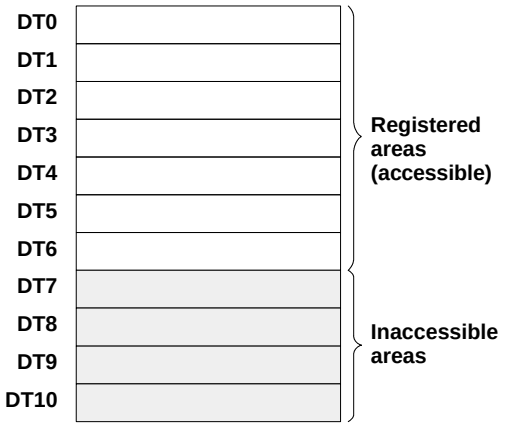
Example 1:

- This function is used to quickly select and access the stored values of designated data registers and timers.
  Registration should be made with the single-area registration method. (See page 40.)



Example 2:

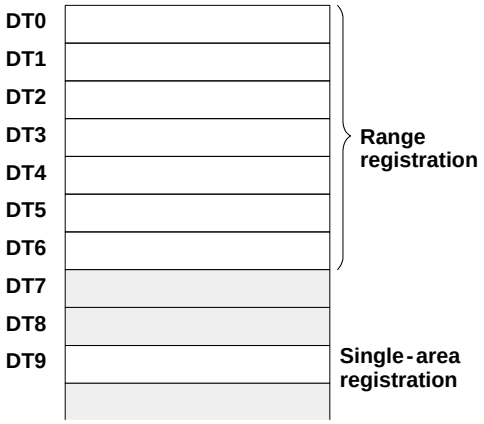
- To separate areas into two groups, i.e., areas that allow writing, and areas that do not allow writing, in order to prevent accidental overwriting of data.
  Registration should be made either with the single-area registration method (see page 40) or the range registration method (see page 35).



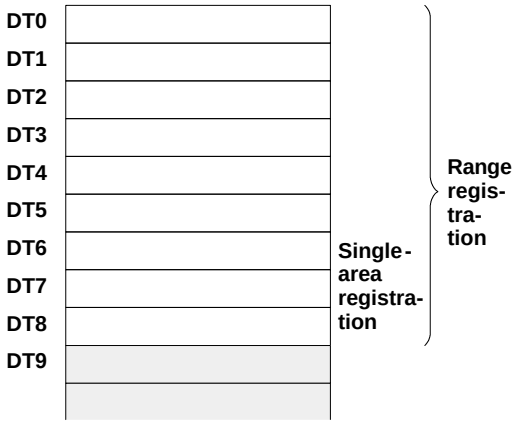
2. Cautions for Using the Memory Area Registration Limit Function

- The registered data is stored in the EEPROM of the FP data access unit, and remains intact even when the power is turned OFF.
- Both single-area and range registrations can be registered.

Example 1:



Example 2:



- Registration of even a single area prevents reading of the rest of the memory areas regardless of the type.
- Changes and additions to the registration data can be made individually.
- To delete all registered data, use “INITIALIZE” (page 80).
  Be careful when using “INITIALIZE,” as this operation initializes not only the “single-area registration” and “range registration” content but all other optional settings as well.

3. Range Registration Method

This lets you register memory areas block by block.

- There is no limit to the number of memory areas in one block. Designate the range of memory areas to be used for each unit.
- Up to 5 blocks can be designated for data registers, timers and counters.
- Use the registration list provided in the appendix section.

1) Registering a memory area range to read

Procedure

Example : Registering “DT1” through “DT3.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
0	DEF.RANGE 1	Press the 0 key to select range registration “DEF.RANGE.”
DT	DEF.RANGE 1 DT ->DT	Select the memory area to be registered.
1	DEF.RANGE 1 DT 1->DT	Specify the starting number of the range to be registered.
READ ▼	DEF.RANGE 1 DT 1->DT	Press the READ ▼ key to register the starting number of the range.
3	DEF.RANGE 1 DT 1->DT 3	Specify the ending number of the range to be registered.
READ ▼	DEF.RANGE 2	Press the READ ▼ key to register the ending number of the range. The DT1 to DT3 blocks are now registered. The display automatically changes to the next number. Register other blocks in the same way.

■ To end the registration procedure

Key operation	Display	
	DEF.RANGE 1 DT 1->DT 3	
CLEAR	DEF.RANGE 1	Press the CLEAR key.
CLEAR	DEFINE (0-2)	Press the CLEAR key. (In this condition, the mode changes to single-area registration “DEF.INDIV.” when the 1 key is pressed.)
CLEAR	CUSTOMIZE (0-5)	Press the CLEAR key.
CLEAR	DT,TM,CT ?	Press the CLEAR key.

Reading and writing are possible for registered memory areas. (See page 38.)

■ To change a registration

Example : Changing the data in “DEF.RANGE (1)” from “DT1 to DT3” to “TM1 to TM3.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key.
0	DEF.RANGE 1 DT 1->DT 3	Press the 0 key.
CLEAR	DEF.RANGE 1	Press the CLEAR key.
TM	DEF.RANGE 1 TM ->TM	Select the new memory area to be registered.
1	DEF.RANGE 1 TM 1->TM	Specify the starting number of the range to be registered.
READ ▼	DEF.RANGE 1 TM 1->TM	Press the READ ▼ key.
3	DEF.RANGE 1 TM 1->TM 3	Specify the ending number of the range to be registered.
READ ▼	DEF.RANGE 2	Press the READ ▼ key. The new data is registered. The display automatically changes to the next number.

2) Accessing an area registered by range registration “DEF.RANGE.”

When areas are registered by DEF.RANGE, they can be accessed in the same way as when no data is registered.

Procedure

Example : When “DT1 to DT3” is registered in “DEF.RANGE (1).”

Key operation	Display	
	DT,TM,CT ?	
DT	DT	Press the DT key to specify the data register.
1	DT 1	Press the 1 key to specify “DT1.”
READ ▼	DT 1 K 9	Press the READ ▼ key to read the value of DT1.
READ ▼	DT 2 K 11	Press the READ ▼ key to read the value of DT2.
READ ▼	DT 3 K 13	Press the READ ▼ key to read the value of DT3.
READ ▼	DT 4	Press the READ ▼ key. (Because the DT4 value is not registered, no value is displayed.)

Note:

- If an unregistered area is designated on the initial display, a beeping sound will be produced, and the entry will not be accepted.

3) Canceling registration

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key.
0	DEF.RANGE 1 DT 10->DT 20	Press the 0 key.
CLEAR	DEF.RANGE 1	Press the CLEAR key.
WRITE	DEF.RANGE 2	Press the WRITE key to erase the data registered in "DEF.RANGE 1." The display automatically changes to the next number.

Notes:

- To cancel all registration, use the procedure described in page 80, 6-6. Initializing Registrations or Settings. Be careful when using "INITIALIZE," as this operation initializes not only the contents of range registration "DEF.RANGE" but also the contents of single-area registration "DEF.INDIV." and all other optional settings.

4. Single-area Registration Method

This lets you register memory areas individually.

- Only the registered memory areas can be automatically displayed and accessed.
- Up to 10 areas can be designated for data registers, timers and counters.
- Use the registration list provided in the appendix section.

1) Registering memory areas for reading

Registration procedure

Example : Registering “DT10” and “TM15.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
1	DEF.INDIV. 1	Press the 1 key to select single-area registration “DEF.INDIV.”
DT	DEF.INDIV. 1 DT	Select the memory area to be registered.
1		Specify the number to be registered (for example, 10).
0	DEF.INDIV. 1 DT 10	
READ ▼	DEF.INDIV. 2	Press the READ ▼ key. “DT10” is defined in registration No. 1 of “DEF.INDIV.” The display automatically changes to the next number.

(Continued on the next page)

(Continued from the previous page)

TM	DEF.INDIV. 2 TM	Select the next memory area to be registered.
1		Specify the number to be registered (for example, 15).
5	DEF.INDIV. 2 TM 15	
READ ▼	DEF.INDIV. 3	Press the READ ▼ key. Continue registering memory areas using the above procedure.

■ **End of registration procedure**

Key operation	**Display**	
	DEF.INDIV. 1 DT 10	
CLEAR	DEF.INDIV. 1	Press the CLEAR key.
CLEAR	DEFINE (0-2)	Press the CLEAR key. (In this condition, the mode changes to “DEF.RANGE” when the **0** key is pressed, and to “COMMENT” when the **2** key is pressed.)
CLEAR	CUSTOMIZE (0-5)	Press the CLEAR key.
CLEAR	DT,TM,CT ?	Press the CLEAR key.

Reading and writing are possible for registered memory areas. (See page 43.)

■ To change the registration

Example : Changing the data in “DEF.INDIV. (1)” from “DT10” to “TM20.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
1	DEF.INDIV. 1 DT 10	Press the 1 key to select “DEF.INDIV.”
CLEAR	DEF.INDIV. 1	Press the CLEAR key.
TM	DEF.INDIV. 1 TM	Select the new memory area to be registered.
2		Specify the new number to be registered (for example, 20).
0	DEF.INDIV. 1 TM 20	
READ ▼	DEF.INDIV. 2 TM 15	Press the READ ▼ key. The new data is registered. The display automatically changes to the next number.

2) Accessing an area registered by single-area registration "DEF.INDIV."

The areas registered by DEF.INDIV. can be automatically displayed and accessed.

Procedure (1)

Press the READ ▼ key at the initial display. The registered number data is displayed in order, from smallest to largest.
Example : When "DT10" is registered in "DEF.INDIV. (1)", and "TM15" in "DEF.INDIV. (2)."

Key operation	Display	
	DT,TM,CT ?	
READ ▼	DT 10 K 10	Press the READ ▼ key to read the value of DT10.
READ ▼	TM 15 E 7.84 (sec) S 10.00	Press the READ ▼ key to read the value of TM15.
▲	DT 10 K 10	Press the ▲ key to read the value of DT10 again.

Procedure (2)

Similar to the accessing operation when no data is registered, a memory area can be specified for reading and writing.
Example : When "DT10" is registered.

Key operation	Display	
	DT,TM,CT ?	
DT	DT	Specify the data register by pressing the DT key.
1		Specify "DT10" by pressing the 1 and 0 keys.
0	DT 10	
READ ▼	DT 10 K 10	Press the READ ▼ key to read the value of DT10.
▲	DT 9	Display the next lower number by pressing the ▲. When an area is not registered, the value will not be displayed.

Note:

- If an unregistered area is specified at the initial display, a beeping sound will be produced, and the entry will not be accepted.

3) Canceling registration

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key.
1	DEF.INDIV. 1 DT 10	Press the 1 key.
CLEAR	DEF.INDIV. 1	Press the CLEAR key.
WRITE	DEF.INDIV. 2 TM 15	Press the WRITE key to delete the data in "DEF.INDIV. 1." The display automatically changes to the next number.

Notes:

- To cancel all the registrations, use the procedure described in page 80, 6-6. Initializing Registrations or Settings.
  Be careful when using "INITIALIZE," as this operation initializes not only the contents of single-area registration "DEF.INDIV." but also the contents of range registration "DEF.RANGE" and all other optional settings.

CHAPTER 5

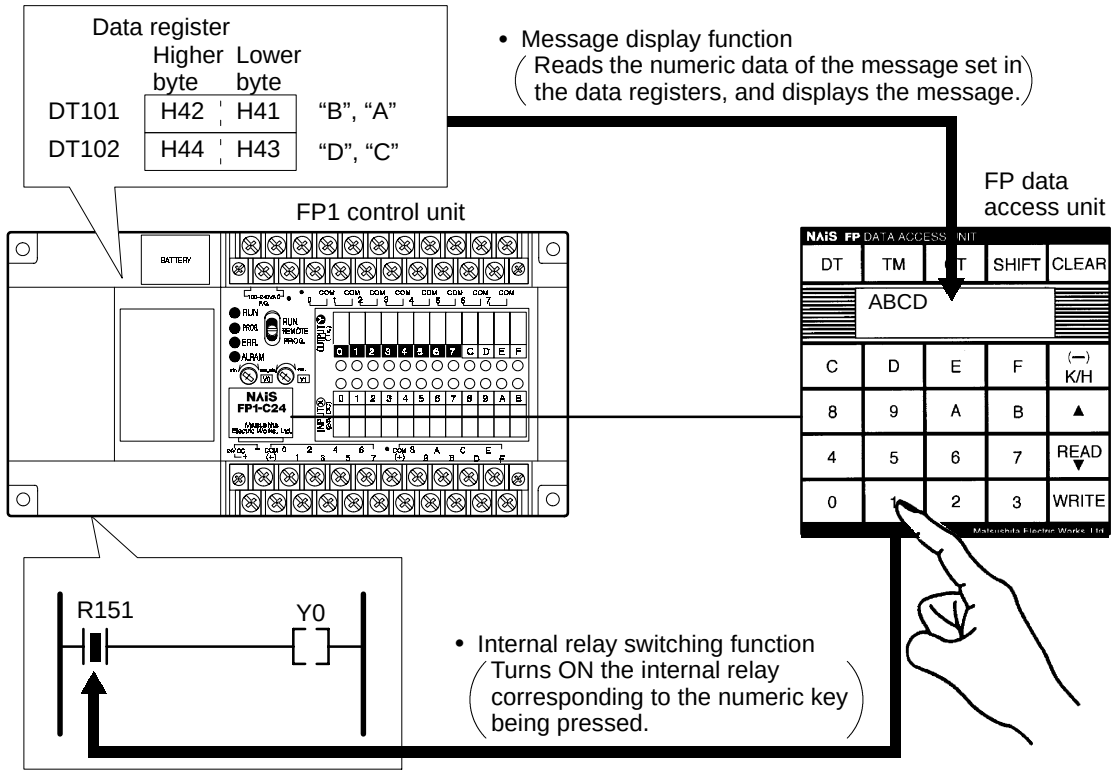
MESSAGE DISPLAY AND INTERNAL RELAY SWITCHING FUNCTION

5-1. Simplified Operation Display Unit Using the Message Display and Internal Relay Switching Function

1. Simplified Operation Display Unit

- The FP data access unit can serve as a simplified operation display unit by using the message display function that shows characters and data stored in memory areas and the internal relay switching function that allows ON/OFF operation of internal relays with the numeric keys.
- To use the message display function, select and register data registers of 16 words. Then write character codes of the message to be displayed. The entered message (2 lines of 16 characters each) appears on the initial display, replacing the "DT, TM, CT?" indication.
- To use the internal relay switching function, select and register internal relays of 1 word (16 points). When this function is set, an internal relay can be turned ON by pressing the numeric key of the number corresponding to the rightmost digit of the relay number. The relay remains ON while the numeric key is being pressed.

Example: Outline of the simplified operation display unit using the FP data access unit and FP1 control unit

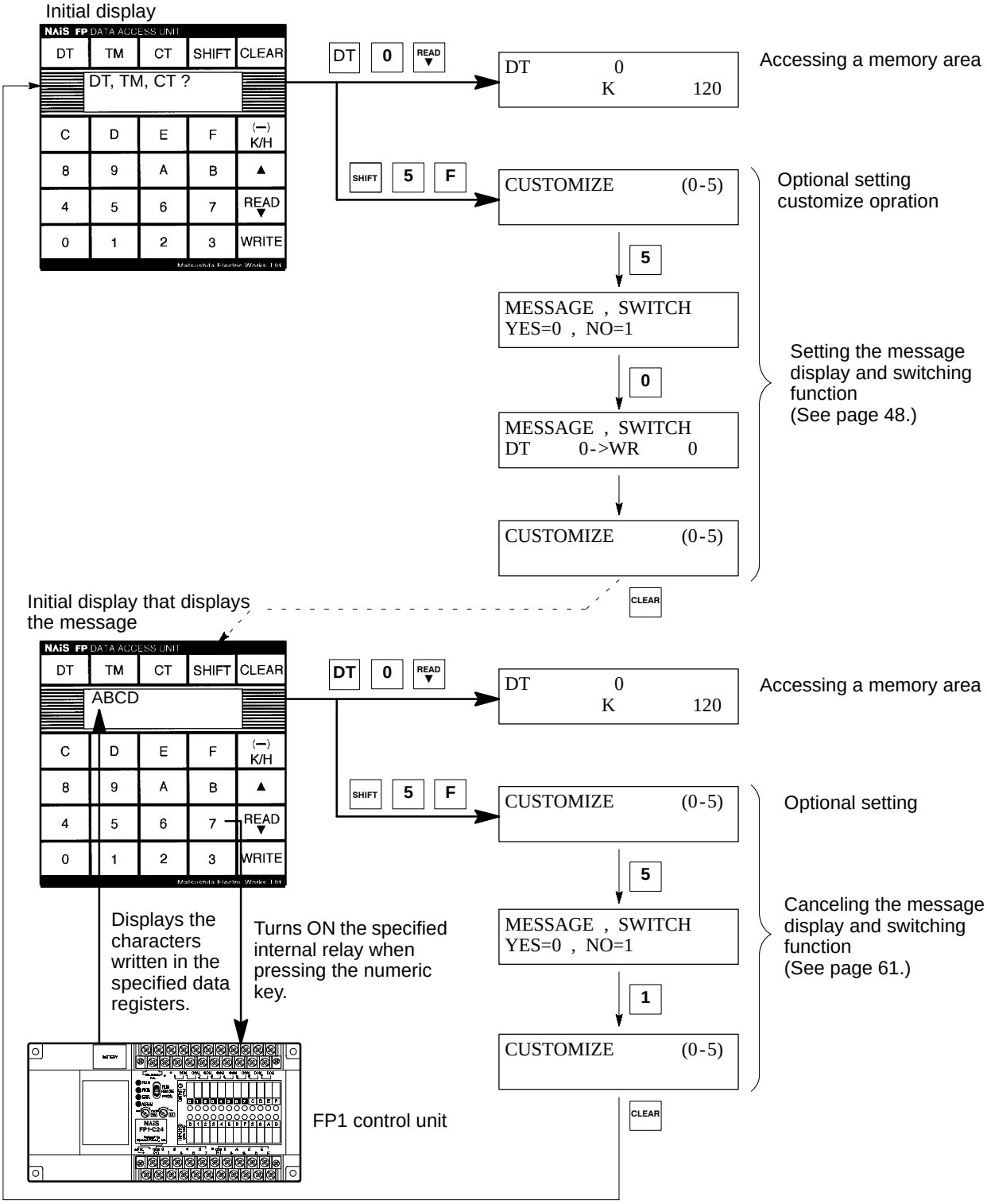


Notes:

- When using the message display and internal switching function, set to "MESSAGE, SWITCH" on the optional setting screen. Then register the data registers to write a message in and the internal relays for which the numeric keys are used for ON/OFF control.
- The message display and internal relay switching function are executed simultaneously. They cannot be executed separately.
- Once the settings are made, they cannot be cleared unless the cancellation operation (pressing the CLEAR key) is performed. Even if the FP data access unit is disconnected, the power switch of the controller is turned OFF, or the unit is re-connected, the message display is still executed.
- For setting details, see page 48, "2. Setting the Message Display and Internal Relay Switching Function."

■ Changing the screen

< Procedure for changing the screen >



Notes:

- Once the message display and internal relay switching function are set, the settings cannot be cleared unless the cancellation operation is performed. Use the cancellation operation to return the display to the initial display.
- Even while the message is displayed, the memory access and optional setting procedures are the same as those of the initial display.

2. Setting the Message Display and Internal Relay Switching Function

- Follow the procedure below to register 16 data registers to write the message to be displayed on the initial display and 16 points of internal relays to turn ON and OFF with the numeric keys.

Procedure

This example uses data registers DT101 to DT116 for the message display and internal relays R150 to R15F for the switching input.

Key operation	Display	
	DT,TM,CT ?	If no characters or numeric values are set for display, the initial display is as shown on the left.
SHIFT	DT,TM,CT ?	Press the [SHIFT], [5] and [F] keys in sequence. (The display remains unchanged until the [F] key is pressed.) (The unit makes a beeping sound, but this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
5	MESSAGE, SWITCH YES=0 , NO=1	Press the [5] key to select "MESSAGE, SWITCH."
0	MESSAGE, SWITCH DT 0->WR 0	**Executing the message display and switching function** To execute the message display and switching function, press the [0] key (YES). The current setting is displayed.
1		**Registering data registers for the message display** Input the first number of the data registers of 16 words to be selected. For example, when data registers DT101 to DT116 are selected, input [1] [0] [1]. If an error is made in the input, press the [CLEAR] key to cancel the input, then re-enter the input.
0		
1	MESSAGE, SWITCH DT 101->WR 0	
READ ▼	MESSAGE, SWITCH DT 101->WR 0	Press the [READ ▼] key. This registers data registers DT101 to DT116 for storing the message to be displayed on the initial display.

(Continued on the next page)

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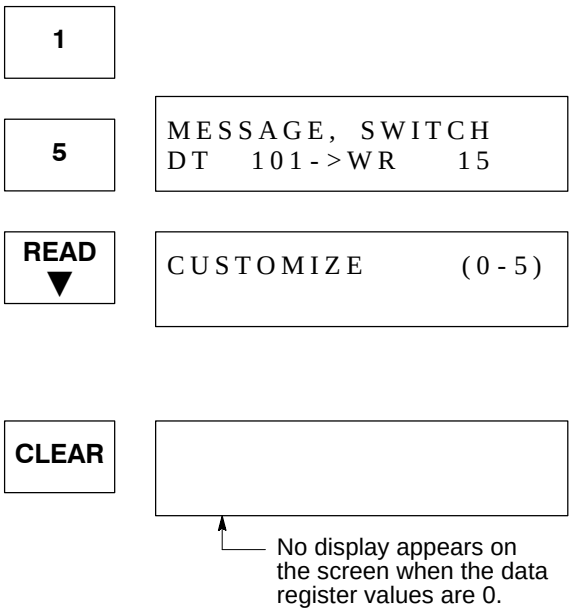


Registering internal relays

Input the word number of the internal relays to be selected. For example, to select WR15, input [1] [5]. If an error is made in the input, press the [CLEAR] key to cancel the input, then re-enter.

Press the [READ ▼] key. The selected internal relays are registered. This allocates R150 to R15F to the numeric keys. After registering the internal relays, the "MESSAGE, SWITCH" setting screen automatically ends.

Press the [CLEAR] key to return to the initial display. The values stored in the data registers are read as character codes, and the message is displayed. Also, by pressing the numeric keys, [0] to [F], the corresponding internal relays, R150 to R15F, can be turned ON.

Note:

- Please note that the registered internal relays all turn OFF when the display returns to the initial display.

Notes:

1. Data registers

- Sixteen data registers, starting from the number selected, are registered for the message display.
- Choose numbers that are not used in the program.
- If hold-type data registers are selected, once a message is written, there is no need to rewrite the message every time the unit is turned ON or set to the RUN mode.

2. Internal relays

- The internal relays to be set for ON/OFF control are specified by the word number. For example, to select R10 to R1F, register "WR1."
- When using the message display function but not the internal relay switching function, select and register internal relays that are not used in the program.

3. Message display and internal relay switching function

- The data registers and internal relay numbers set for the message display and internal relay switching function are stored in the FP data access unit.
- When connecting to a programmable controller, check to see if the set data registers and internal relay numbers are used by the controller for the message display and internal relay switching function. The numbers stored in the FP data access unit can be displayed by doing the setting operation and pressing "YES = 0" on the "MESSAGE, SWITCH" screen. After checking the information, press the [CLEAR] key to return to the initial display.
- To change the specified numbers for the message display and internal relay switching function, conduct the setting again from the beginning. Changes cannot be made only for the data register numbers or relay numbers. If a change is made only for one function, input the same data again for the other function.
- Execution of the function and registration of data registers and internal relays must be completed without an interruption. If the [CLEAR] key is pressed to return to the previous screen before the inputs are completed, all the inputs must be entered from the beginning again.

5-2. Using the Message Display Function

1. Writing a Display Message

1) Producing a message

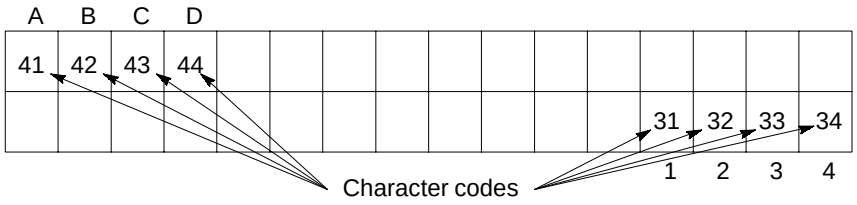
- To display a message of up to 16 characters by 2 lines, convert the message characters to character codes (2-digit binary values), and write them in the data registers of 16 words specified by the optional settings (customize operation No. 5).
- The display location and data register have a 1:1 correspondence. Select the data registers according to the display location, and write the character codes.
- Alphanumeric characters can be used for the message display.

< Procedure for writing a message >

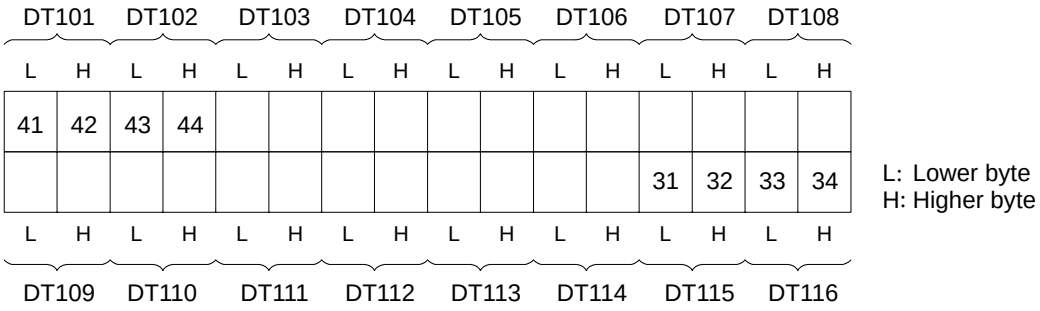
1. Write a message of up to 16 characters by 2 lines (Example: ABCD 1234)

A	B	C	D												
												1	2	3	4

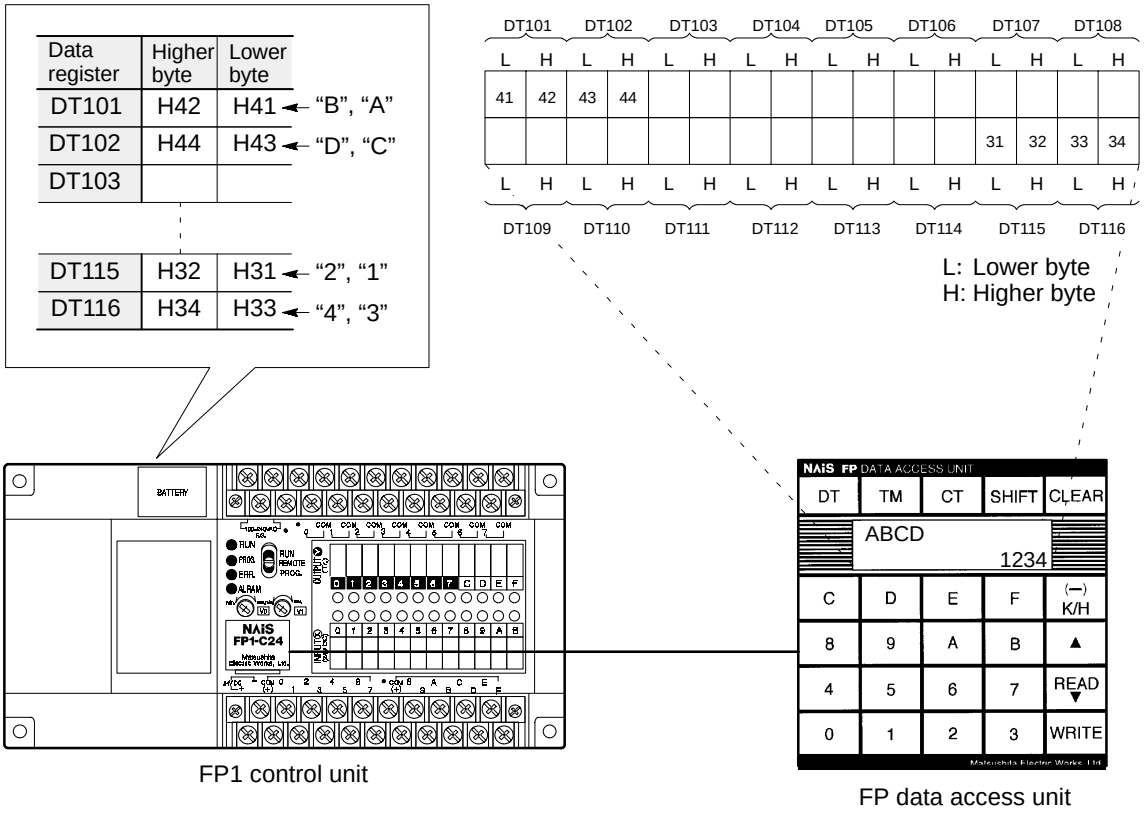
2. Convert each character to character code.
   For the character codes, see page 96, “8-1. Character Code Table”.



3. Designate the data register numbers for the display locations of the character codes.
   In the example below, data registers DT101 to DT116 are set for the message display.



4. Write each character code to the data register. (See pages 52 to 55 for the writing method.)



- The following shows the display characters and corresponding character codes.

Display character	Character Code	Display character	Character Code	Display character	Character Code	Display character	Character Code	Display character	Character Code
0	30	/	2F	O	4F	k	6B	!	21
1	31	*	2A	P	50	l	6C	’	27
2	32	=	3D	Q	51	m	6D	”	22
3	33	>	3E	R	52	n	6E	_	5F
4	34	<	3C	S	53	o	6F	|	7C
5	35	≧	12	T	54	p	70	(	28
6	36	≦	13	U	55	q	71	)	29
7	37	≡	10	V	56	r	72	{	7B
8	38	A	41	W	57	s	73	}	7D
9	39	B	42	X	58	t	74	[	5B
%	25	C	43	Y	59	u	75	]	5D
#	23	D	44	Z	5A	v	76	↓	1F
μ	E4	E	45	a	61	w	77	↑	1E
Ω	F4	F	46	b	62	x	78	→	7E
I	49	G	47	c	63	y	79	←	7F
II	1A	H	48	d	64	z	7A	α	E0
III	1B	I	49	e	65	&	26	β	E2
V	56	J	4A	f	66	:	3A		
X	58	K	4B	g	67	;	3B		
+	2B	L	4C	h	68	,	2C		
□	2D	M	4D	i	69	.	2E		
±	11	N	4E	j	6A	?	3F		

Note:

- The main characters are shown here. For a full list of applicable characters, see page 96, “8-1. Character Code Table” in the appendix.

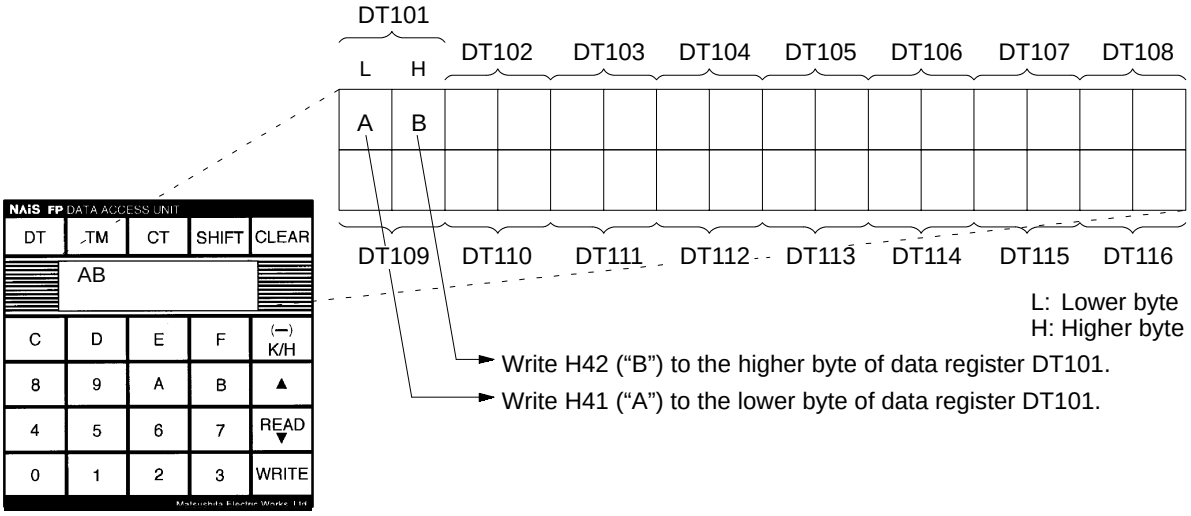
2) Writing character codes

■ Writing with the FP data access unit

- Set the character codes to the data registers using the memory access function of the FP data access unit.

Example:

- In this example, data registers DT101 to DT116 are set by using customize operation No. 5 of the optional settings for the display of "AB" on the screen.



FP data access unit

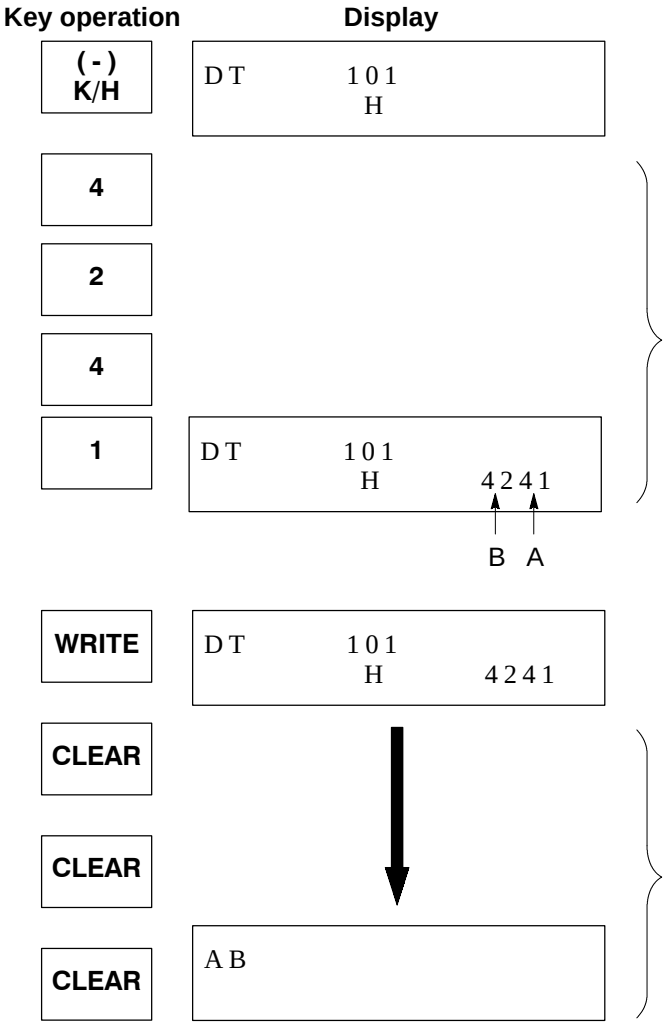
Procedure

Example: Data registers DT101 to DT116 are selected using customize operation No. 5.

Key operation	Display	
		Initial display When the data register values are 0, nothing is displayed.
DT	D T	Press the DT key. The display changes to the data register access screen.
1		
0		
1	D T 1 0 1	Press the 1, 0 and 1 keys in sequence to designate DT101.
READ ▼	D T 1 0 1 K 0	Press the READ ▼ key. The value of DT101 is monitored on the screen.
CLEAR	D T 1 0 1	Press the CLEAR key once. The displayed value disappears, and monitoring stops.

(Continued on the next page)

(Continued from the previous page)



Press the (-) K/H key, and select H (hexadecimal).
(Check the screen to make sure "H" is displayed.)

Input the character codes: H41 for "A" and H42 for "B."

Notes:

- Two character codes can be input in a data register of one word.
- Of the two characters, write the character to be displayed on the right in the higher byte, and the character on the left to the lower byte.
- See page 51 for the character codes.

When the WRITE key is pressed, the values in the data registers are overwritten, and monitoring starts.

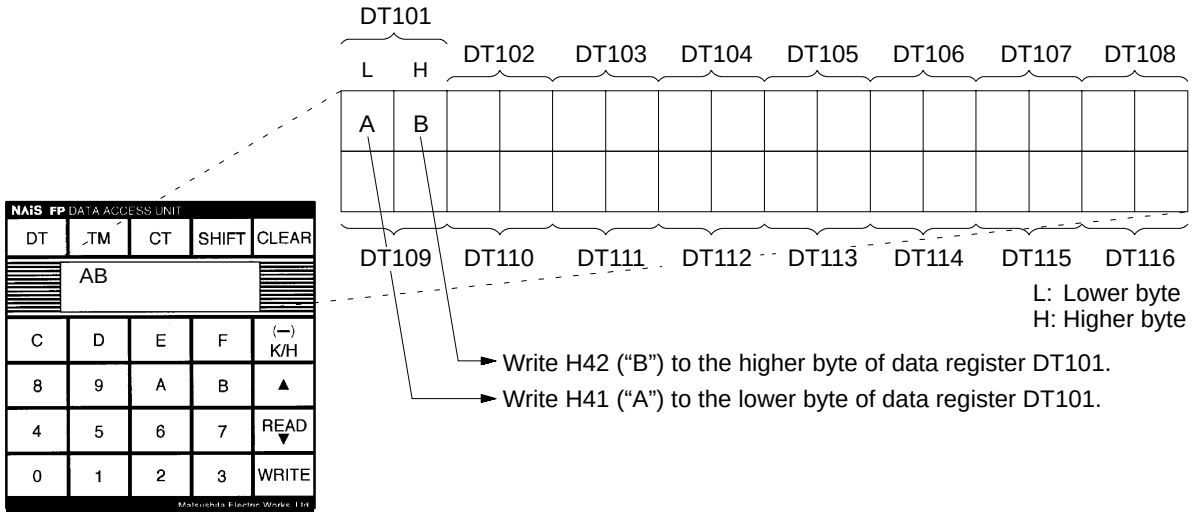
Press the CLEAR key three times to return to the initial display.
The screen displays the characters set with the character codes.

■ Writing with F0 (MV) and F1 (DMV) high-level instructions

- Use F0 (MV) and F1 (DMV) high-level instructions to set the character codes to the data registers.
- When transferring data by F0 (MV) and F1 (DMV) instructions, the display message can be easily switched by transferring a different character code according to the appropriate conditions.
- See the FP-M/FP1 and FP3/FP5 Programming Manuals for F0 (MV) and F1 (DMV) instructions.

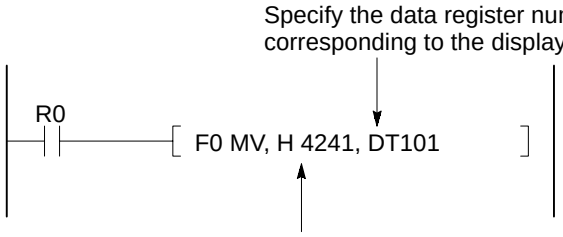
Example:

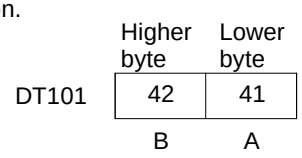
- In this example, data registers DT101 to DT116 are set by customize operation No. 5 of the optional settings for the display of "AB" at the upper left corner of the screen.



FP data access unit

Program example: Writing with the F0 (MV) instruction

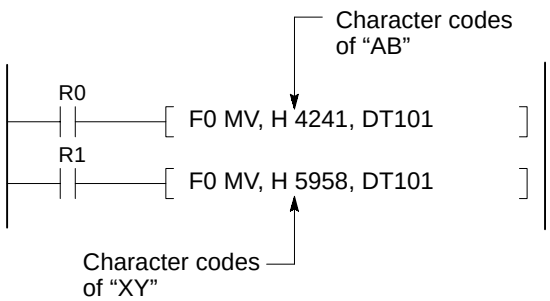


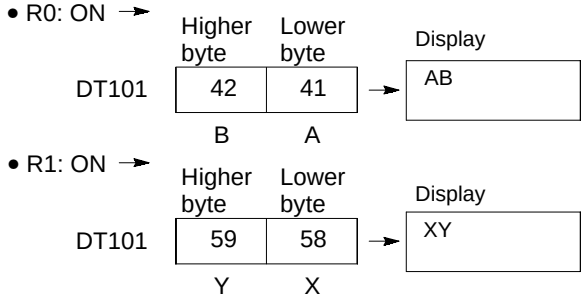


Notes:

- Character codes of two characters can be written with F0 (M), and four characters with F1 (DMV).
- See page 51 for the character codes.

Application program example: Changing the display message from "AB" to "XY"



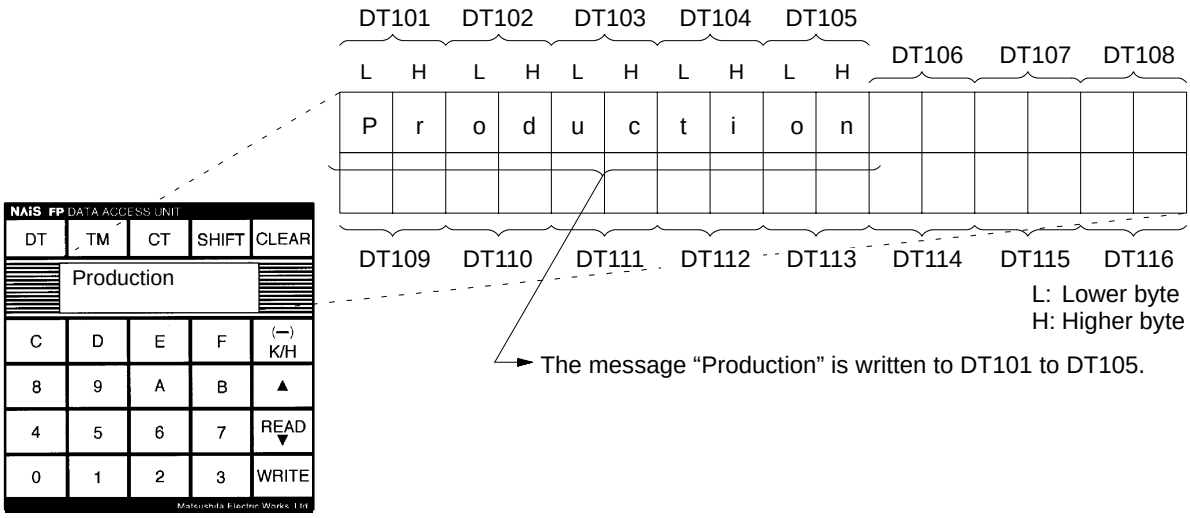


■ Writing with the F95 (ASC) high-level instruction

- By using the F95 (ASC) high-level instruction, the computer keyboard can be used to input characters to data registers.
- Programming is possible only with NPST-GR software.

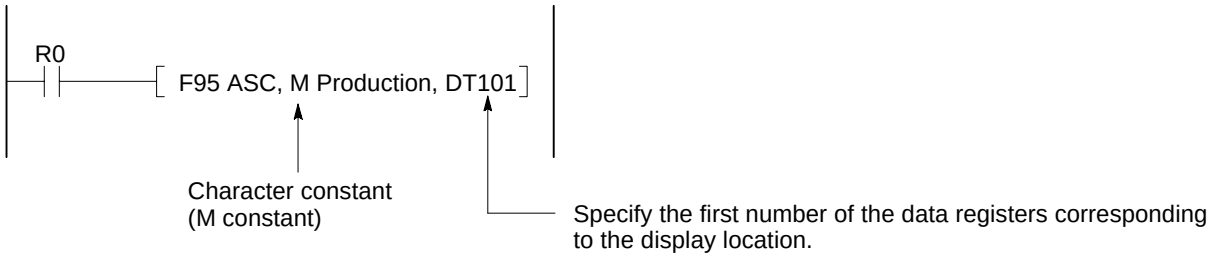
Example:

- In this example, data registers DT101 to DT116 are set by customize operation No. 5 of the optional settings for the display of "Production" at the upper left corner of the screen.

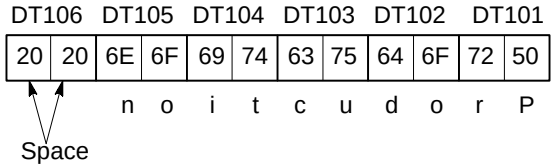


FP data access unit

Program example:



- In this program example, when the F95 (ASC) instruction is executed, character codes are written into DT101 to DT106 (6 words), as shown below.



- In this case, the F95 (ASC) instruction eliminates the need for converting the ten characters to character codes and writing into the program.
- The F95 (ASC) instruction converts up to 12 characters (6 words) together.

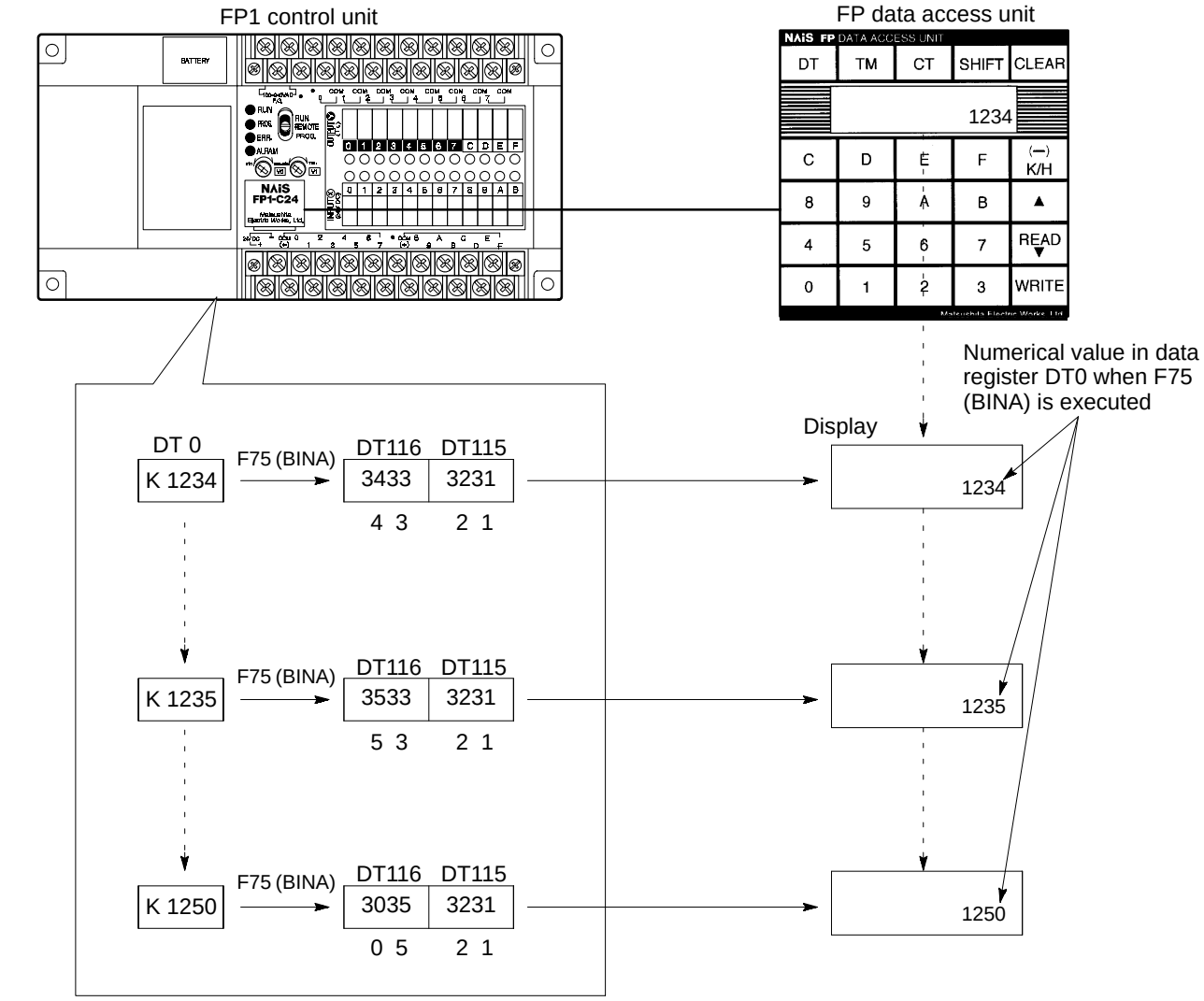
Notes:

- The following shows the characters that can be input from the computer keyboard.
  0 to 9, A to Z and a to z. The characters that can be input vary according to the computers.
- See the programming manual of each CPU for the F95 (ASC) instruction.

2. Displaying Numerical Data

- If the numerical data [binary decimal (K constant)] stored in the memory area is converted to character codes and transferred to data registers by a program using the F75 (BINA) or F77 (DBIA) instruction, the change of the numerical data during the RUN mode can be monitored.

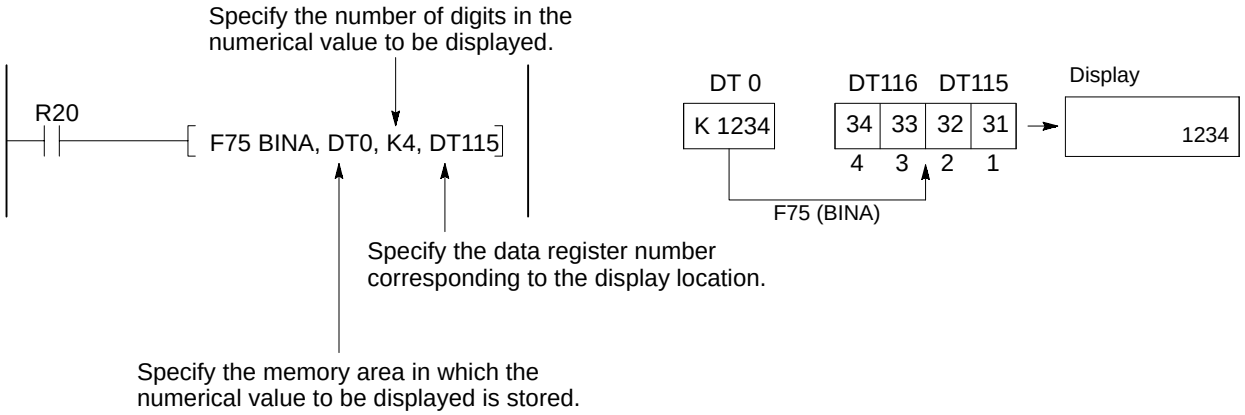
Example:



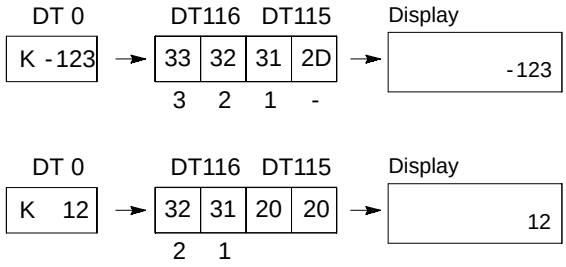
■ Display of binary decimal (K constant)

- Convert binary decimal values (K constant) to character codes using the F75 (BINA) (1-word data) or F77 (DBIA) (2-word data) instruction.
- With F75 and F77 instructions, the number of digits in the numerical value to be displayed must be specified in advance. In case of a negative value, count the minus sign (-) as one digit.

Program example:



Example: Character codes for the display of 2-digit and 4-digit numerical values

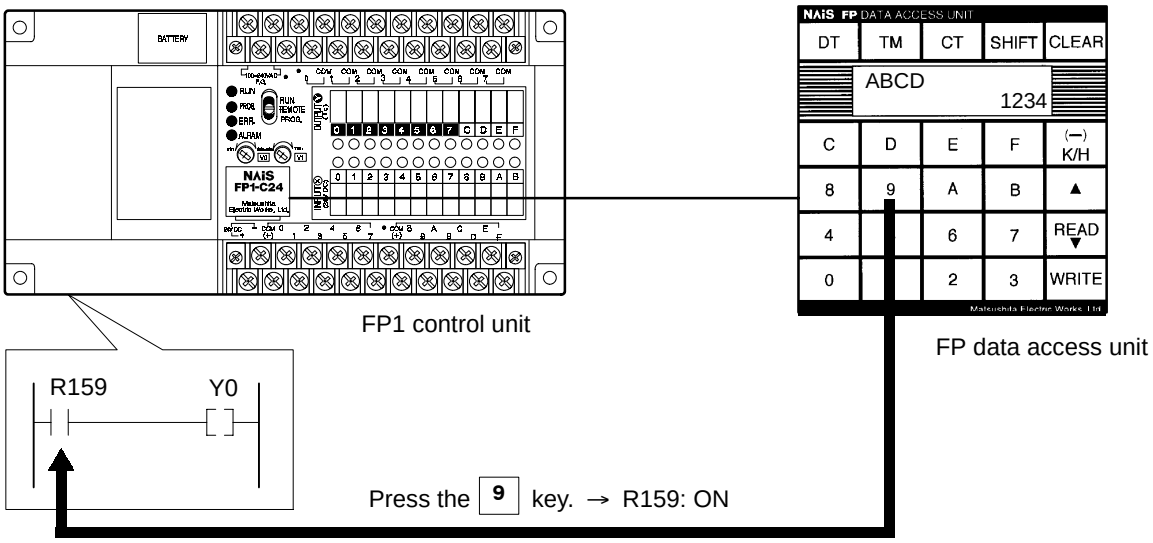


Notes:

- Character codes are stored consecutively from the upper address direction. The screen display stores from the right end.
- Empty spaces take a blank (H20).
- See the programming manual of each CPU for details of F75 (BINA) and F77 (DBIA) instructions.

5-3. Using the Internal Relay Switching Function

1. Operating the Internal Relays with the Numeric Keys



- By pressing the numeric key of the number of the rightmost digit of the internal relay number registered by customize operation No. 5 of the optional settings, the internal relay turns ON while the key is being pressed. When the key is released, the internal relay turns OFF.
- Two or more internal relays cannot be turned ON simultaneously by pressing two or more numeric keys at the same time.

■ Numeric keys and corresponding internal relays

When WR□ is set by customize operation No. 5, the internal relays that correspond to the numeric keys are as follows.

Numeric key	Internal relay (□ indicates the word number)
0	R□0
1	R□1
2	R□2
3	R□3
4	R□4
5	R□5
6	R□6
7	R□7
8	R□8
9	R□9
A	R□A
B	R□B
C	R□C
D	R□D
E	R□E
F	R□F

Example 1: When WR0 is set

When the 0 key is pressed → R0 turns ON.

When the 1 key is pressed → R1 turns ON.

Example 2: When WR15 is set

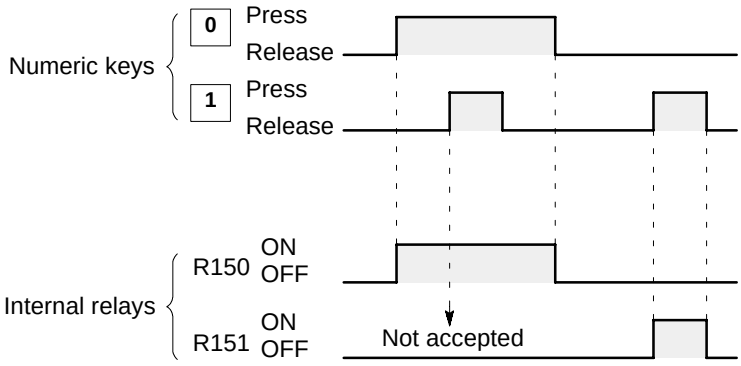
When the 0 key is pressed → R150 turns ON.

When the 1 key is pressed → R151 turns ON.

When the 2 key is pressed → R152 turns ON.

■ **Time chart for switch input**

In this example, WR15 is specified for the internal relays.



2. Cautions for Using the Switching Function

Since pressing a numeric key turns ON and OFF the corresponding internal relay, the following cautions should be exercised in using the switching function.

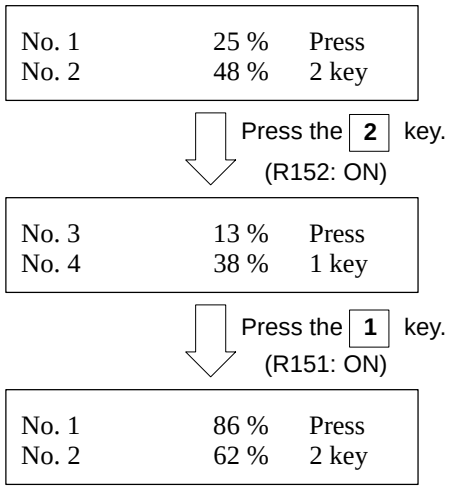
- Avoid using any program that will execute an unintended operation when a numeric key is pressed accidentally.
- Do not install the unit where the numeric keys may be accidentally pressed.
- Please note that when the switching function is used, all the specified internal relays turn OFF when the power is turned ON. Even if the programmable controller's system register No. 7 is used to set the internal relays to hold, all the internal relays will turn OFF.

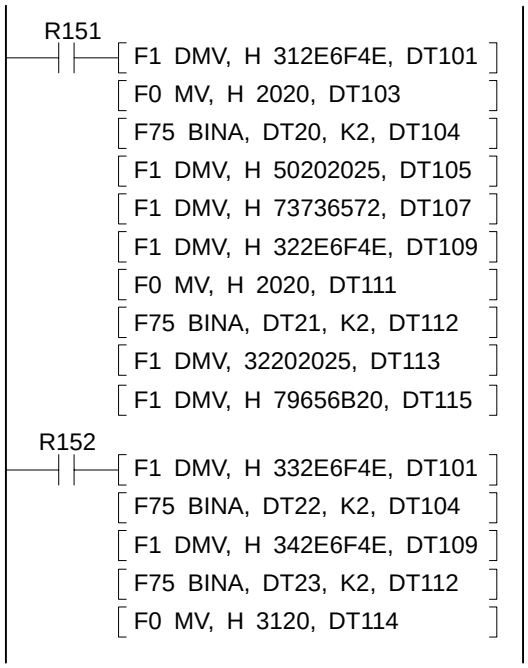
5-4. Application Hints

Using the message display function and internal relay switching function, the data access unit can display messages and switch internal relays ON and OFF.

Example :
Using customize operation No. 5, the data registers for message display are allocated from DT101 to DT115. The internal relays for switch input are set to WR15 (R150 to R15F).

Sample program :
In this program, massages No. 1 and No. 2 will be come up when the [2] key is pressed, and massages No. 3 and No. 4 will be switched when the [1] key is pressed.





5-5. Canceling the Message Display and Internal Relay Switching Function

- When you wish to stop using the message display and switching function, follow the procedure below to cancel the setting.

Procedure

Key operation	Display	
	ABCD	Initial display with a message display.
SHIFT	ABCD	Press the SHIFT, 5 and F keys in sequence. (The display remains unchanged until the F key is pressed.) (The unit makes a beeping sound, but this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
5	MESSAGE, SWITCH YES=0 , NO=1	Press the 5 key to select "MESSAGE, SWITCH."
1	CUSTOMIZE (0-5)	To stop the message display and switching function, press the 1 key (NO). The "MESSAGE, SWITCH" screen ends.
CLEAR	DT,TM,CT ?	Press the CLEAR key to return to the initial display. When the message display and switching function have been canceled, the display returns to the initial display.

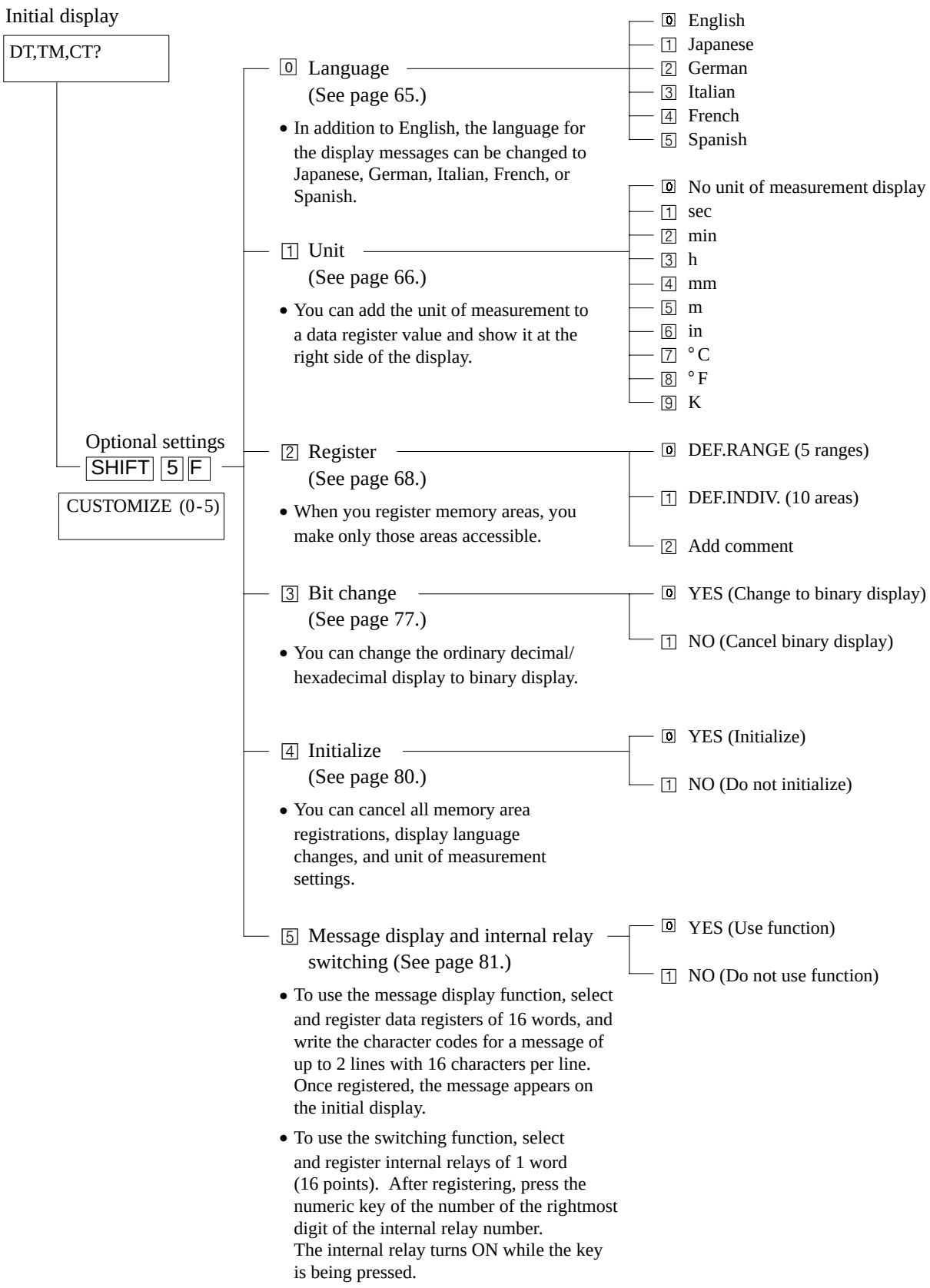
Notes:

- To execute the message display and switching function again after they have been canceled, re-input the settings.
- It is not possible to cancel only the message display or only the switching function. If one is canceled, both functions become inactive.
- The setting can also be canceled by the "Initializing the option setting" command of customize operation No. 4. However, please note that all other optional settings, such as the access range designation and unit display, return to default when initialized.
  See page 80, "6-6. Initializing Registrations or Settings (customize operation No. 4)" .

CHAPTER 6

OPTIONAL SETTINGS (CUSTOMIZE OPERATION No. 0 to No. 5)

6-1. Outline of Customize Operation



6-2. Selecting the Display Language (Customize Operation No. 0)

- In addition to English, the language for the display messages can be changed to Japanese, German, Italian, French, or Spanish. Use the following procedure to make the change.
- See page 97 to 102, “8-2. Operating Menu in Each Language” and page 103, “8-3. Messages in Each Language”.

Procedure

Example : Changing the display language from English to German.

Key operation **Display**

SHIFT

```
DT,TM,CT ?
```

5

F

```
CUSTOMIZE        (0-5)
```

Press the SHIFT, 5 and F keys consecutively.
(The display does not change until the F key is pressed.)
(A beeping sound will be produced; however, this does not indicate an error.)

0

```
LANGUAGE         (0-5)
ENGLISH            (0)
```

English display

Press the 0 key to select “LANGUAGE.”

2

```
LANGUAGE         (0-5)
DEUTSCH            (2)
```

German display

Press the number key corresponding to the language you wish to change to.

0	English	3	Italian
1	Japanese	4	French
2	German	5	Spanish

In this example, you should press the number 2 key to select German.

WRITE

```
VORGABEN         (0-5)
```

German

Press the WRITE key.
The display then changes to the selected language, and the LANGUAGE display is automatically canceled.

CLEAR

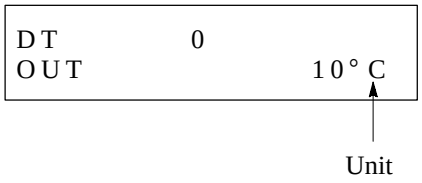
```
DT,TM,CT ?
```

Press the CLEAR key.
All further display messages will be in the German language.

6-3. Adding the Unit of Measurement to a Data Register (Customize Operation No. 1)

You can add the unit of measurement to a data register value and show it at the right side of the display.

Example : To add the °C unit to the display.



The display type is fixed as decimal. The decimal symbol [K] will not be displayed.

- All data registers which are read will display the same unit of measurement. If you want some data registers not to display the unit, or if you want to change the unit for certain data registers, use the comment function described on page 72.
- Conversions will not be made for the unit of measurement. Be sure to program the data so that the value corresponds to the unit of measurement displayed.
- Once the unit of measurement has been added, the display type is fixed as decimal. It cannot be changed to hexadecimal.
- When the value is read in bit units (see page 77), the unit of measurement is not displayed.

1. The Unit of Measurement

Procedure

Example : Adding the °C unit to a data register.

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
1	UNIT (0-9) ___(0)	Press the 1 key to select "UNIT."
7	UNIT (0-9) °C (7)	Press the number key that corresponds to the unit you want to display. 1: sec 4: mm 7: °C 2: min 5: m 8: °F 3: h 6: in 9: K To add the unit °C, press the 7 key.
WRITE	CUSTOMIZE (0-5)	Press the WRITE key to register the selected unit. (The UNIT display is then automatically canceled.)
CLEAR	DT,TM,CT ?	Press the CLEAR key. When a data register is accessed, all values displayed will include the °C unit.

Note:

- The procedure is exactly the same for changing the unit of measurement.

2. Deleting the Unit of Measurement

Procedure

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
1	UNIT (0-9) °C (7)	Press the 1 key to select "UNIT."
0	UNIT (0-9) ___(0)	Press the 0 key to select [___ (0)].
WRITE	CUSTOMIZE (0-5)	Press the WRITE key to delete the registration of the unit. (The UNIT display is then automatically canceled.)
CLEAR	DT,TM,CT ?	Press the CLEAR key.

6-4. Registering Accessible Memory Areas (Customize Operation No. 2)

1. Range Registration

- Memory areas to be accessed can be designated and registered in block units using the memory area registration limit function.
- There is no limit to the number of memory areas in one block. Designate the range of memory areas to be used for each unit.
- Up to 5 blocks can be designated for data registers, timers and counters.
- Use the attached registration list in the appendix to record the contents of the registered data.
- For details of the memory area registration limit function, see page 34.

1) Registering a memory area range to read

Procedure

Example : Registering “DT1” through “DT3.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
0	DEF.RANGE 1	Press the 0 key to select “DEF.RANGE.”
DT	DEF.RANGE 1 DT ->DT	Select the memory area to be registered.
1	DEF.RANGE 1 DT 1->DT	Specify the starting number of the range to be registered.
READ ▼	DEF.RANGE 1 DT 1->DT	Press the READ ▼ key to register the starting number of the range.
3	DEF.RANGE 1 DT 1->DT 3	Specify the ending number of the range to be registered.
READ ▼	DEF.RANGE 2	Press the READ ▼ key to register the ending number of the range. The DT1 to DT3 blocks are now registered. The display automatically changes to the next number. Register other blocks in the same way.

■ To end the registration procedure

Key operation	Display	
	DEF.RANGE 1 DT 1->DT 3	
CLEAR	DEF.RANGE 1	Press the CLEAR key.
CLEAR	DEFINE (0-2)	Press the CLEAR key. (In this condition, the mode changes to “DEF.INDIV.” when the 1 key is pressed.)
CLEAR	CUSTOMIZE (0-5)	Press the CLEAR key.
CLEAR	DT,TM,CT ?	Press the CLEAR key.

Reading and writing are possible for registered memory areas. (See page 38.)

2. Single-area Registration

- Memory areas to be accessed can be designated and registered point by point using the memory area registration limit function.
- Only the registered memory areas can be automatically displayed and accessed.
- Up to 10 areas can be designated for data registers, timers and counters.
- Use the attached registration list in the appendix to record the contents of the registered data.
- For details of the memory area registration limit function, see page 34.

1) Registering memory areas for reading

Procedure

Example : Registering “DT10” and “TM15.”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
1	DEF.INDIV. 1	Press the 1 key to select “DEF.INDIV.”
DT	DEF.INDIV. 1 DT	Select the memory area to be registered.
1		Specify the number to be registered.
0	DEF.INDIV. 1 DT 10	
READ ▼	DEF.INDIV. 2	Press the READ ▼ key. “DT10” is defined in Registration No. 1 of “DEF.INDIV.” The display automatically changes to the next number.

(Continued on the next page)

(Continued from the previous page)

TM	DEF.INDIV. 2 TM	Select the next memory area to be registered.
1		Specify the number to be registered.
5	DEF.INDIV. 2 TM 15	
READ ▼	DEF.INDIV. 3	Press the READ ▼ key. Continue registering memory areas using the above procedure.

■ End of registration procedure

Key operation	**Display**	
	DEF.INDIV. 1 DT 10	
CLEAR	DEF.INDIV. 1	Press the CLEAR key.
CLEAR	DEFINE (0-2)	Press the CLEAR key. (In this condition, the mode changes to “DEF.RANGE” when the **0** key is pressed, and to “COMMENT” when the **2** key is pressed.)
CLEAR	CUSTOMIZE (0-5)	Press the CLEAR key.
CLEAR	DT,TM,CT ?	Press the CLEAR key. ⬇ Reading and writing are possible for registered memory areas. (See page 43.)

3. Adding a Comment

A comment of up to three characters can be added to data register, timer, and counter information for display when reading.

Example : Adding the comment "OUT" to data register DT0.

```
DT        0
OUT     K       10
```

Comment

- You can only add comments to the memory areas (maximum 10) which are registered by single-area registration "DEF.INDIV."
- Register the memory areas to which you want to add comments by using single-area registration "DEF.INDIV." (See page 40.)
- Use the character codes to input the comment. See page 51, for information adout the character codes.
- You can also add a comment to data registers for which you have registered the unit of measurement. (See page 66.)
- Do not input a space (character code : 20) for the third character. A space cannot be registered for the third character.

  Example: AB [ ]

  Space (character code : 20)
- To keep the comments, use the registration lists on page 106.

■ Sample comment display

- Data register (displaying unit of measurement)

```
DT        0
OUT             10°C
```

Comment

The unit of measurement can be simultaneously added. (See page 66.)

- Timer

```
TM        0E    7.84
ABC         S   10.00
```

Comment

Note that the "sec" unit is not displayed when a comment is registered.

- Counter

```
CT      100  E 7840
ABC          S10000
```

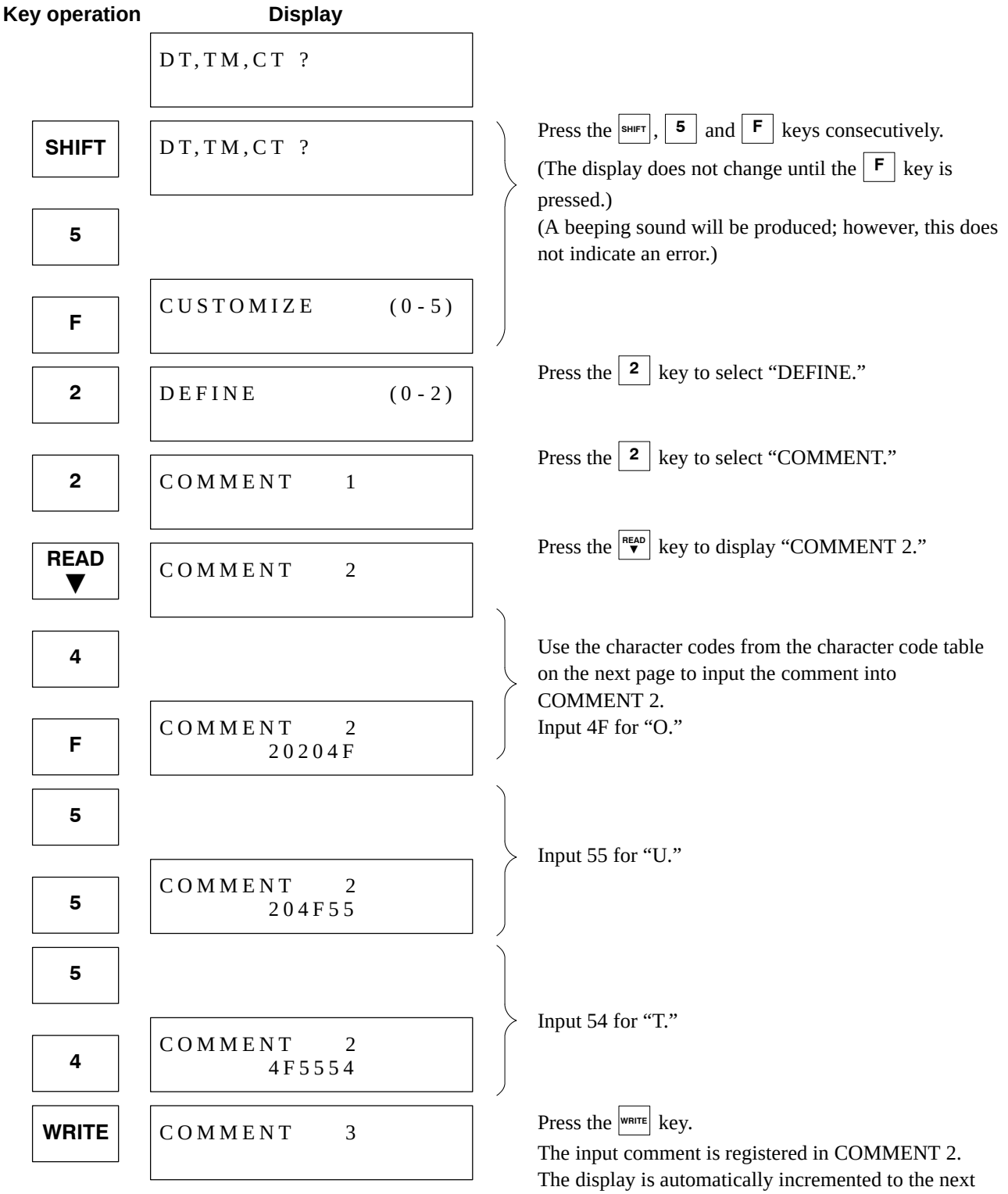
Comment

1) Registering a comment

Procedure

Example : Registering the comment “OUT (character code : 4F5554)” for addition to DT0.

- For this example, we are assuming that DT0 is registered as ”DEF.INDIV.2”



■ To end the registration procedure

Key operation	Display	
	COMMENT 2 4F5554	
CLEAR	COMMENT 2	Press the CLEAR key.
CLEAR	DEFINE (0-2)	Press the CLEAR key.
CLEAR	CUSTOMIZE (0-5)	Press the CLEAR key.
CLEAR	DT,TM,CT ?	Press the CLEAR key.

When you read a memory area that has been registered by single-area registration “DEF.INDIV.”, the comment will be displayed.

2) To change a registered comment

Procedure

Example : Changing the comment “OUT (character code : 4F5554)” to “ABC (character code : 414243).”

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select “DEFINE.”
2	COMMENT 1	Press the 2 key to select “COMMENT.”
READ ▼	COMMENT 2 4F5554	Press the READ ▼ key to increment the display to “COMMENT 2.”
4		Use the character codes to input the new comment “ABC (character code : 414243)” into COMMENT 2. Input 41 for “A.”
1	COMMENT 2 555441	
4		Input 42 for “B.”
2	COMMENT 2 544142	
4		Input 43 for “C.”
3	COMMENT 2 414243	
WRITE	COMMENT 3	Press the WRITE key. The new comment “ABC (character code : 414243)” is registered in COMMENT 2. The display is automatically incremented to the next number.

Note:

- Do not input a space (character code : 20) for the third character. A space cannot be registered for the third character.
  Example : AB [ ] ←Space (character code : 20)

3) To delete a comment

Procedure

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
2	DEFINE (0-2)	Press the 2 key to select "DEFINE."
2	COMMENT 1	Press the 2 key to select "COMMENT."
READ ▼	COMMENT 2 4F5554	Press the READ ▼ key to increment the display to "COMMENT 2."
CLEAR	COMMENT 2	Press the CLEAR key. The character codes which were registered disappear from the display (but are not yet deleted.)
WRITE	COMMENT 3	Press the WRITE key. The character codes which were registered in COMMENT 2 are then deleted. The display is automatically incremented to the next number.

6-5. Accessing a Data Register in Bit Units (Customize Operation No. 3)

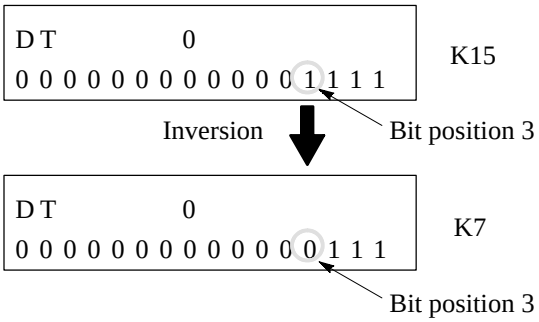
Data registers can also be accessed in bit units (binary). Use the following procedure to change the ordinary decimal/hexadecimal display to binary display.

Notes:

- When the display is set to binary, you cannot use the (-) K/H key to switch between decimal (K) and hexadecimal (H).
- Comments and units of measurement will also not be displayed even if they have been registered.

Example :

Writing the value for DT0 in bit units.



1. Changing to Binary Display

Procedure

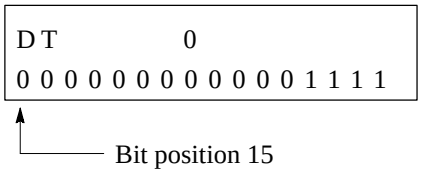
Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
3	BIT CHANGE YES=0 , NO=1	Press the 3 key to select "BIT CHANGE."
0	CUSTOMIZE (0-5)	Press the 0 key to switch to binary display. (The BIT CHANGE display is then automatically canceled.)
CLEAR	DT,TM,CT ?	Press the CLEAR key. Access to a data register will then change to binary display.
DT	DT	Press the DT key.
0	DT 0	Press the number key to specify the data register number. (Example : Press the 0 key.)
READ ▼	DT 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1	Press the READ ▼ key to display the DT0 value as a binary value.

2. Writing a Data Register Value in Bit Units

Procedure

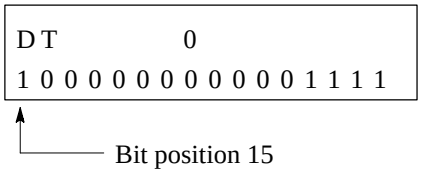
Example : Writing a value into DT0 bit position 15.

Key operation **Display**



Use binary display to read the data register.

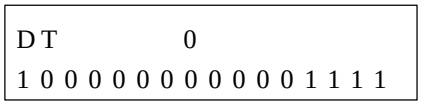
F



Press the key (see table below) that corresponds to the bit position you wish to write to. The value of that bit is then inverted (0→1, 1→0).
The key for each bit position is shown in the following table.

In this example, the F key is pressed and the value for bit position 15 is inverted (0→1).

WRITE



Press the WRITE key. The value is then overwritten, and the read operation resumes.

Notes:

- The key for each bit position is shown below.

Bit position	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Key	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0

- When the display is set to binary, a new value cannot be re-input after deleting the originally displayed value with the CLEAR key.

3. Canceling the Binary Display

Procedure

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
3	BIT CHANGE YES=0 , NO=1	Press the 3 key to select “BIT CHANGE.”
1	CUSTOMIZE (0-5)	Press the 1 key to cancel binary display. (The BIT CHANGE display is then automatically canceled.)
CLEAR	DT,TM,CT ?	Press the CLEAR key. Access to a data register will then change to ordinary decimal/hexadecimal display. (If a unit of measurement has been registered, it will then be displayed together with decimal values.)

6-6. Initializing Registrations or Settings (Customize Operation No. 4)

Use “INITIALIZE” when you want to cancel all memory area registrations (DEF.INDIV., DEF.RANGE), display language changes, and unit of measurement settings.

When “INITIALIZE” is used, the following changes occur.

Optional settings (CUSTOMIZE content)		After using INITIALIZE
Display language		English
Unit of measurement display		None
Memory area registrations	**DEF.INDIV.**	All canceled
	DEF.RANGE	All canceled
Comments		All canceled
Bit (binary) access, decimal/hexadecimal access		Decimal/hexadecimal access
Data register for message function		DT0
Internal relay for switching function		WR0

Procedure

Key operation	Display	
	DT,TM,CT ?	
SHIFT	DT,TM,CT ?	Press the SHIFT, 5 and F keys consecutively. (The display does not change until the F key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
4	INITIALIZE YES=0 , NO=1	Press the 4 key to select “INITIALIZE.” Press the 0 key to initialize. All memory area registrations and settings will then be canceled.
0	DT,TM,CT ?	The INITIALIZE display is then automatically canceled, and the initial display returns.

6-7. Setting the Message Display and Internal Relay Switching Function (Customize Operation No. 5)

- Follow the procedure below to register 16 data registers in order to write a message to be displayed on the initial display and 16 internal relay points to turn ON and OFF with the numeric keys. Both functions must be registered consecutively.

Procedure

This example uses data registers DT101 to DT116 for the message display and internal relays R150 to R15F for the switching input.

Key operation	Display	
	DT,TM,CT ?	If no characters or numeric values are set for display, the initial display is as shown on the left.
SHIFT	DT,TM,CT ?	Press the [SHIFT], and [F] keys consecutively. (The display does not change until the [F] key is pressed.) (A beeping sound will be produced; however, this does not indicate an error.)
5		
F	CUSTOMIZE (0-5)	
5	MESSAGE,SWITCH YES=0 , NO=1	Press the [5] key to select "MESSAGE, SWITCH."
0	MESSAGE,SWITCH DT 0->WR 0	**Executing the message display and switching function** To execute the message display and switching function, press the [0] key (YES). The current setting is displayed.
1		**Registering data registers for the message display** Input the first number of the data registers of 16 words to be selected. For example, when data registers DT101 to DT116 are selected, input "[1] [0] [1]." If an error is made in the input, press the [CLEAR] key to cancel the input, then re-enter the input.
0		
1	MESSAGE,SWITCH DT 101->WR 0	
READ ▼	MESSAGE,SWITCH DT 101->WR 0	Press the [READ ▼] key. This registers data registers DT101 to DT116 for storing the message to be displayed on the initial display.

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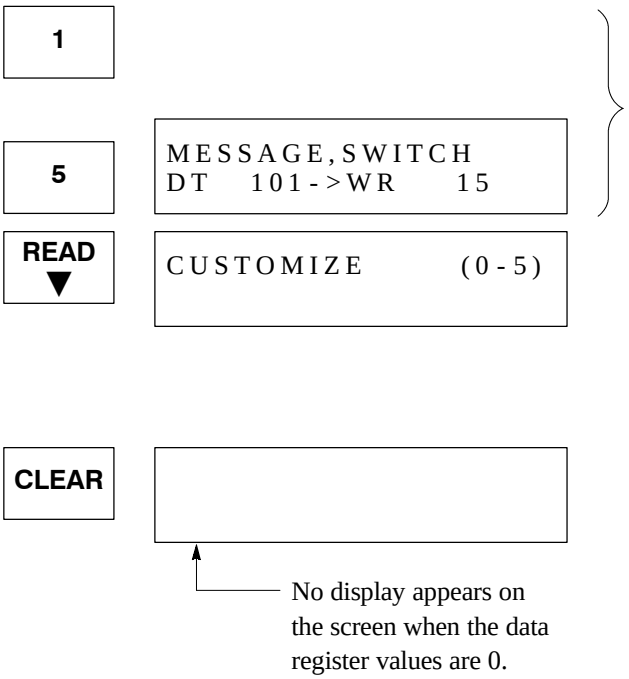


Registering internal relays

Input the word number of the internal relays to be selected. For example, to select WR15, input "1 5." If an error is made in the input, press the CLEAR key to cancel the input, then re-enter.

Press the READ ▼ key. The selected internal relays are registered. This allocates R150 to R15F to the numeric keys. After registering the internal relays, the "MESSAGE, SWITCH" setting screen automatically ends.

Press the CLEAR key to return to the initial display. The values stored in the data registers are read as character codes, and the message is displayed. Also, by pressing the numeric keys, 0 to F, the corresponding internal relays, R150 to R15F, can be turned ON.

Note:

- Please note that the registered internal relays all turn OFF when the display returns to the initial display.

■ Cautions for registering data registers and internal relays

- Please note the following cautions for data registers.
  - Sixteen data registers, starting from the number selected, are registered for the message display.
  - Choose numbers that are not used in the control program.
  - If hold-type data registers are selected, once a message is written, there is no need to rewrite the message every time the unit is turned ON or OFF, or set to the RUN mode.
- Please note the following cautions for internal relays
  - Specify the internal relays to be set for ON/OFF control by the word number. For example, to select R10 to R1F, register "WR1."
  - When using the message display function but not the internal relay switching function, select and register internal relays that are not used in the program.
- Execution of the function and registration of data registers and internal relays must be completed without interruption. If the CLEAR key is pressed to return to the previous screen before the inputs are completed, all the inputs must be entered from the beginning again.

■ Cautions for setting the message display and internal relay switching function

- The data registers and internal relay numbers set for the message display and internal relay switching function are stored in the FP data access unit.
- When connecting to a programmable controller, check to see if the set data registers and internal relay numbers are used by the controller for the message display and internal relay switching function. The numbers stored in the FP data access unit can be displayed by doing the setting operation and selecting "YES = 0" on the "MESSAGE, SWITCH" screen. After checking the information, press the CLEAR key to return to the initial display.
- To change the numbers specified for the message display and internal relay switching function, conduct the setting again from the beginning. The procedure is the same as for the setting.
  Changes cannot be made only for the data register numbers or relay numbers. If a change is made only for one function, input the same data again for the other function.

CHAPTER 7

TROUBLESHOOTING

7-1. Error Alarms

- When an operating error is made, an alarm will sound either twice (beep-beep) or three times (beep-beep-beep), and the key operation will be rejected. You should then refer to the table below and re-do the operation correctly. When done correctly, a single sound (beep) will be made and the key operation will be accepted.
- When the alarm sounds consecutively (beep-beep-beep-beep...) and an error message is displayed, you should follow the instructions of the error message.

  The alarm can be halted by pressing the CLEAR key.

  For a description of the error messages, see page 85, "7-2. Operation Error Messages".

Alarm sound	Cause	Remedy
Beep-beep (twice)	A mistake in the operating procedure. Examples: • A number key was pressed to designate a memory area. • One of the A to F keys was pressed to designate the number of a memory area. • After reading and changing a value, a key other than the WRITE key was pressed. • While reading a value, you tried to use a number key to change the value without pressing the CLEAR key first.	Re-do the operation using the correct procedure. (See Chapter 3.)
	A timer instruction number or counter instruction number was designated which is different from the number in the system register of the programmable controller. Example: • System register 5 (counter start number) is set to 200, but you designated TM200.	Designate the correct timer or counter instruction number. (See "Precautions Before Use" for the initial settings of the programmable controller.)
	When registering an area for access, you designated an unregistered area.	Designate a registered area. (See page 34, "4-1. Memory Area Registration Limit Function.")
Beep-beep-beep (three times)	You tried to write a new value which is outside the possible input range for a value being read. Example: • You input "K99999" for data register DT1, then pressed the WRITE key.	Re-input a value which is within the possible input range. (See "Precautions Before Use".)
	When using a memory area that is registered by range registration "DEF.RANGE," you tried to go from a number within the registered range to one that is outside the registered range.	Do not try to go to numbers that are outside the registered range.
Beep-beep-beep-beep... (consecutively)	An error has been generated between the FP data access unit and the programmable controller.	See page 85, "7-2. Operation Error Messages" and follow the remedy instructions.

7-2. Operation Error Messages

Error message		Cause	Remedy
English	**DATA ERR !61**	When displayed immediately after turning the power ON: There is an error in the setting of the message display and internal relay switching function (customize operation No. 5). The data registers and/or internal relays that you have registered cannot be used by the programmable controller connected to the FP data access unit.	Turn ON the power switch while pressing the SHIFT key, then press the 5 and F keys consecutively, to switch to the customize mode. Re-register new data registers (DT) and internal relays (WR).
Japanese	**データ　エラー !61**		
German	**DATA ERR !61**		
Italian	**DATA ERR !61**		
French	**DATA ERR !61**		
Spanish	**DATA ERR !61**		
		You have designated a data register address that does not exist in the programmable controller. Example: When connected to an FP1 C16 series, you designated DT1600 and pressed the WRITE key.	Re-input an acceptable address. (See “Precautions Before Use”.)
English	**PROTECT ERR !65**	You tried to read a timer or counter when the programmable controller is protected by a password.	Instead of protecting by password, use the protect switch or ROM operation.
Japanese	**プロテクト　エラー !65**		
German	**SCHUTZFEHLER !65**		
Italian	**ERR PROTEZ !65**		
French	**ERR PROTECT !65**		
Spanish	**ERR PROTEGIDO !65**		
English	**NO RESPONSE**	There is a communication problem between the FP data access unit and the programmable controller.	Press the CLEAR key and continue. If this error occurs frequently, check the cable connection, then contact our technical support service. When using the FP10S or FP10, if the power of programmable controller is turned ON while the mode switch of programmable controller is in the RUN position, or if the mode switch of programmable controller is changed from PROG. to RUN, the “NO RESPONSE” message will sometimes be displayed, but this will change to the initial display within a few seconds.
Japanese	**オウトウ　ナシ　エラー**		
German	**KEINE ANTWORT**		
Italian	**NO RISPOSTA**		
French	**NON REPONSSE**		
Spanish	**NO RESPUESTA**		

Note:

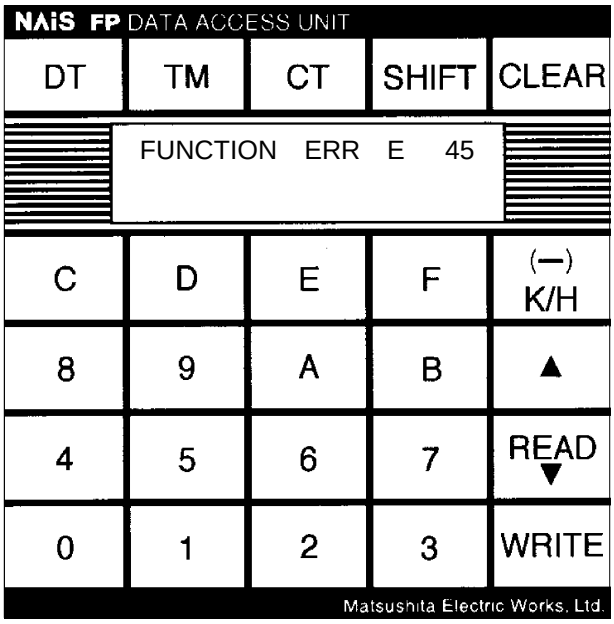
- When the display language is changed, the error messages will be displayed in the selected language. (For details on changing the display language, see page 65, “6-2. Selecting the Display Language”.)

7-3. Self-diagnostic Errors

1. Self-diagnostic Error Messages

- When a self-diagnostic error is generated in the connected programmable controller, the display section of the FP data access unit shows a description of the error and the error code.

Example: The example below shows that a function error (error code E45) has been generated in the programmable controller.



- Check the displayed error code in the table of self-diagnostic error codes, and take the necessary measures.
- To process and cancel a self-diagnostic error, refer to the hardware manual of the unit being used or to the command manual.
- A self-diagnostic error message is displayed when the self-diagnostic function of the programmable controller detects an error. The self-diagnostic function monitors the watchdog timer and detects abnormalities in memory, input and output.
- When a self-diagnostic error is generated, the programmable controller does the following.
  - The ERROR LED of the CPU lights.
  - Depending on the error type and system register setting, the CPU may stop operation.
  - The error code is stored in a special data register, DT9000 (DT90000 for the FP10 and FP10S).
  - The error message remains on the display until the error is canceled. For an abnormality in the backup battery (error code E50), however, pressing the CLEAR key turns OFF the error message without canceling.

2. Table of Self-diagnostic Error Codes

- In the tables, the error code are listed in English, Japanese, German, Italian, French and Spanish in that order.

Error code	Name of error	Program execution	Description	Steps to take
ERR E20	BPU error	Stops	Probably an abnormality in the hardware.	Please contact your dealer.
ERR E20				
ERR E20				
ERR E20				
ERR E20				
ERR E20				
ERR E21	RAM error 1	Stops	Probably an abnormality in the internal RAM.	Please contact your dealer.
ERR E21				
ERR E21				
ERR E21				
ERR E21				
ERR E21				
ERR E22	RAM error 2	Stops	Probably an abnormality in the internal RAM.	Please contact your dealer.
ERR E22				
ERR E22				
ERR E22				
ERR E22				
ERR E22				
ERR E23	RAM error 3	Stops	Probably an abnormality in the internal RAM.	Please contact your dealer.
ERR E23				
ERR E23				
ERR E23				
ERR E23				
ERR E23				
ERR E24	RAM error 4	Stops	Probably an abnormality in the internal RAM.	Please contact your dealer.
ERR E24				
ERR E24				
ERR E24				
ERR E24				
ERR E24				
ERR E25	RAM error 5	Stops	Probably an abnormality in the internal RAM.	Please contact your dealer.
ERR E25				
ERR E25				
ERR E25				
ERR E25				
ERR E25				

Error code	Name of error	Program execution	Description	Steps to take
USER ROM ERR E26 ﾕｰｻﾞｰROM ｴﾗｰ E26 USER ROM ERR E26 USER ROM ERR E26 USER ROM ERR E26 USER ROM ERR E26	ROM error (Availability type: FP-M/FP1/FP-C/FP3/FP5)	Stops	FP1 C14 and C16 series: Probably an abnormality in the internal EEPROM.	Please contact your dealer.
			All FP-Ms and FP1 C24, C40, C56, and C72 series: Probably an abnormality in the memory unit or master memory unit.	Program the memory or master memory unit again and try to operate. If the same error is detected, try to operate with another memory or master memory unit.
			FP-C, FP3 and FP5 series: Probably an abnormality in the EPROM.	Program the EPROM again and try to operate. If the same error is detected, try to operate with another EPROM.
SP UNIT LAY E27 SP ﾕﾆｯﾄ LAY E27 SOND. MOD. SET E27 SP UNIT LAY E27 EXC. UNIT SPE27 SP UNIT LAY E27	Intelligent unit installation error	Stops	Intelligent units installed exceed the limitations [e.g., more than 3 standard link units (MEWNET-P, -W, C-NET C.C.U.) are installed].	Turn OFF the power and configure the intelligent units referring to “Limitation on Unit Installation” on the each manual.
SYSTEM REG. E28 ｼｽﾃﾑ ﾚｼﾞｽﾀｰ E28 SYSTEM REG. E28 REG SISTEMA E28 REG. SYSTEM E28 REG SISTEMA E28	System register error	Stops	Probably an abnormality in the system register.	Set the mode selector of the CPU to PROG. mode and initialize the system register.
ERR E29 ERR E29 ERR E29 ERR E29 ERR E29 ERR E29	System bus time-out error	Stops	A system bus time-out error has occured.	Please contact your dealer.
INT ERR 0 E30 ﾌﾘｺﾐｴﾗｰ0 E30 INT ERR 0 E30 INT ERR 0 E30 INT ERR 0 E30 INT ERR 0 E30	Interrupt error 0	Stops	Probably a hardware abnormality.	Please contact your dealer.
INT ERR 1 E31 ﾌﾘｺﾐｴﾗｰ1 E31 INT ERR 1 E31 INT ERR 1 E31 INT ERR 1 E31 INT ERR 1 E31	Interrupt error 1	Stops	Probably a hardware abnormality or an abnormality caused by noise.	Turn OFF the power and check the surrounding noise level.

Error code	Name of error	Program execution	Description	Steps to take
INT ERR 2 E32	Interrupt error 2	Stops	Probably a hardware abnormality or an abnormality caused by noise.	Turn OFF the power and check the surrounding noise level.
ｸﾘｺﾐｴﾗｰ 2 E32				
INT ERR 2 E32				
INT ERR 2 E32			Probably an **INT** program corresponding to the trigger is missing.	Set the mode selector of the CPU to PROG. mode and make an **INT** program which corresponds to the interruption.
INT ERR 2 E32				
INT ERR 2 E32				
ERR E33	Multi-CPU data unmatch error (CPU2 only)	CPU2 stops.	Occurs when the FP3/FP10S is used as CPU2 for a multi-CPU system.	Please contact your dealer.
ERR E33				
ERR E33				
ERR E33				
ERR E33				
ERR E33				
ERR E34	Abnormal unit error (Availability type: FP-C/FP3/FP5/ FP10S/FP10)	Stops	An abnormal unit is installed on the master backplane.	Check the contents of special data register: - DT9036 for FP-C/FP3/ FP5 - DT90036 for FP10S/FP10 and locate the abnormal unit. Then turn OFF the power and replace the unit with a new one.
ERR E34				
ERR E34				
ERR E34				
ERR E34				
ERR E34				
REMOTE I/O E35	MEWNET-F slave illegal unit error	Stops	A unit, which cannot be installed on the slave station of the MEWNET-F link system, is installed on the slave station (e.g., MEWNET-W link unit is installed).	Remove the illegal unit on the slave station referring to “Limitation on Unit Installation” on the hardware manual.
ﾘﾓｰﾄI/O E35				
REMOTE I/O E35				
REMOTE I/O E35				
REMOTE I/O E35				
REMOTE I/O E35				
REMOTE I/O E36	MEWNET-F slave slot number error	Stops	The number of slots or I/Os used for the MEWNET-F exceeds the limitation.	Re-configure the system so that the number of slots and I/Os is within the specified range referring to the “MEWNET-F (REMOTE I/O) SYSTEM Technical Manual”.
ﾘﾓｰﾄI/O E36				
REMOTE I/O E36				
REMOTE I/O E36				
REMOTE I/O E36				
REMOTE I/O E36				
REMOTE I/O E37	MEWNET-F I/O mapping error	Stops	I/O overlap or I/O setting that is over the range is detected in the allocated I/O and MEWNET-F I/O map.	Set the mode selector of the CPU to PROG. mode and re-configure the I/O maps correctly.
ﾘﾓｰﾄI/O E37				
REMOTE I/O E37				
REMOTE I/O E37				
REMOTE I/O E37				
REMOTE I/O E37				

Error code	Name of error	Program execution	Description	Steps to take
REMOTE I/O E38 **ﾘﾓｰﾄI/O E38** **REMOTE I/O E38** **REMOTE I/O E38** **REMOTE I/O E38** **REMOTE I/O E38**	MEWNET-F slave I/O mapping error	Stops	I/O mapping for MEWNET-F I/O terminal boards, I/O terminal units and I/O link units is not correct.	Set the mode selector of the CPU to PROG. mode and re-configure the I/O mapping for slave stations referring to the I/O points of the slave stations.
ERR E39 **ERR E39** **ERR E39** **ERR E39** **ERR E39** **ERR E39**	IC card read error (Availability type: FP10S/FP10)	Stops	IC card does not exist or program file in the IC card is damaged or is not found when FP10S/FP10 reads the program from the IC card.	Turn OFF the power and properly insert an IC card with the correct program. Then try to read again.
I/O FUSE CUT E40 **I/Oﾋｭｰｽﾞｷﾞﾚ E40** **SICHERUNGDEF E40** **FUSE ROTTO E40** **FUSIBLE DEF E40** **FUSIBLE ROTO E40**	Output unit fuse blow error (Availability type: FP5/FP10)	Selectable (default: stops)	Output unit fuse blow is detected.	Check the contents of special data registers: - DT9002 and DT9003 for FP5 - DT90002 and DT90003 for FP10 and find the unit with the blown fuse. Then replace the fuse. • System register 21: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)
SP UNIT CPU E41 **SP ﾕﾆｯﾄ CPU E41** **SOND. MOD. CPU E41** **SP UNITA CPU E41** **DEF. UNITE SPE41** **SP UNIT CPU E41**	Intelligent unit error (Availability type: FP-C/FP3/FP5/FP10S/FP10)	Selectable (default: stops)	Abnormality in an intelligent unit.	Check the contents of special data registers: - DT9006 and DT9007 for FP-C/FP3/FP5 - DT90006 and DT90007 for FP10S/FP10 and locate the abnormal unit.Then check the unit referring to its manual. • System register 22: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)

Error code		Name of error	Program execution	Description	Steps to take
I/O VERIFY	**E42**	I/O verify error (Availability type: FP-C/FP3/FP5/ FP10S/FP10	Selectable (default: stops)	I/O wiring condition has changed compared to that at the time of power-up.	Check the contents of special data registers: - DT9010 and DT9011 for FP-C/FP3/FP5 - DT90010 and DT90011 for FP10S/FP10 and locate the erroneous unit. Then check the unit and correct the wiring. • System register 23: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)
I/Oｼｮｳｺﾞｳ	**E42**				
EIN/AUS TEST	**E42**				
VERIFICA I/O	**E42**				
VERIF E/S	**E42**				
VERIFICA I/O	**E42**				
WDT TIME UP	**E43**	System watchdog timer error (Availability type: FP5/FP10S/ FP10	Selectable (default: stops)	Scan time required for program execution exceeds the setting of the system watchdog timer.	Check the program and modify it so that FP5/FP10S/ FP10 can execute scan within the specified time. • System register 24: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT) • Using system register 30, you can change the value of system watchdog timer in the range of 10 ms to 81,900 ms.
WDTﾀｲﾑｱｯﾌﾟ	**E43**				
WDT VERGEHEN	**E43**				
TEMPO TRASC	**E43**				
WDT DEPASSE	**E43**				
RETRASO WDT	**E43**				
FUNCTION ERR	**E45**	Operation error (Availability type: FP-M/FP1s with CPU version 2.7 or later/FP-C/ FP3/FP5/FP10S/ FP10	Selectable (default: stops)	An abnormality was detected when a high-level or basic instruction was executed.	Check the contents of special data registers: - DT9017 or DT9018 for FP-M/FP1/FP-C/FP3/FP5 - DT90017 or DT90018 for FP10S/FP10 and you can find the program address where the operation error occurred. Then correct the program referring to the description of the instruction. • System register 26: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)
ﾌｧﾝｸｼｮﾝ ｴﾗｰ	**E45**				
FUNK. FEHLER	**E45**				
ERR FUNZIONE	**E45**				
FONCTION ERR	**E45**				
ERR FUNCTION	**E45**				

Error code	Name of error	Program execution	Description	Steps to take
REMOTE I/O E46 **ﾘﾓｰﾄI/O E46** **REMOTE I/O E46** **REMOTE I/O E46** **REMOTE I/O E46** **REMOTE I/O E46**	MEWNET-F communication error (Availability type: FP-C/FP3/FP5/ FP10S/FP10)	Selectable (default: stops)	A communication abnormality was caused by transmission cable or by slave station's power-down.	Check the contents of special dataregisters: - DT9131 through DT9137 for FP-C/FP3/FP5 - DT90131 through DT90137 for FP10S/FP10 and locate the abnormal slave station. Then recover the slave condition referring to the "MEWNET-F (REMOTE I/O) SYSTEM Technical Manual". • System register 27: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)
REMOTE I/O E47 **ﾘﾓｰﾄI/O E47** **REMOTE I/O E47** **REMOTE I/O E47** **REMOTE I/O E47** **REMOTE I/O E47**	MEWNET-F attribute error (Availability type: FP-C/FP3/FP5/ FP10S/FP10)	Selectable (default: stops)	An abnormality in the unit on the slave station, such as: - missing unit - output unit fuse blow, - abnormal intelligent unit, was detected.	Check the contents of special data registers: - DT9131 through DT9137 for FP-C/FP3/FP5 - DT90131 through DT90137 for FP10S/FP10 and locate the abnormal slave station. Then recover the slave condition referring to the "MEWNET-F (REMOTE I/O) SYSTEM Technical Manual". • System register 28: - to stop execution, set K0 (STOP) - to continue execution, set K1 (CONT)

Error code		Name of error	Program execution	Description	Steps to take
BATTERY ERR	E50	Battery error (Availability type: FP-M/FP1 C24, C40, C56, C72/ FP-C/FP3/FP5/ FP10S/FP10)	Continues	Battery LED turns ON. The voltage of the backup battery dropped or the connector of the backup battery disconnected.	Replace the backup battery. • System register 4: By setting this system register in K1 (NO), you can disregard this error. If you set to disregard, - BATT. LED does not turn ON. - backup battery for FP10S IC card is not detected. System register 4 is available for FP1 C24, C40, C56, and C72 series with CPU version 2.7 or later.
ﾊﾞｯﾃﾘｰ ｴﾗｰ	E50				
BATT. FEHLER	E50				
ERR BATTERIA	E50				
DEFAUT PILE	E50				
ERR BATERIA	E50				
REMOTE I/O	E51	MEWNET-F terminal station error	Continues	Terminal station settings were not properly performed.	Check stations at both ends of communication path, and set them in terminal station using dip switches.
ﾘﾓｰﾄI/O	E51				
REMOTE I/O	E51				
REMOTE I/O	E51				
REMOTE I/O	E51				
REMOTE I/O	E51				
REMOTE I/O	E52	MEWNET-F I/O update synchronous error	Continues	MEWNET-F system error	Set the INITIALIZE/TEST selector to the INITIALIZE position keeping the mode selector at the RUN position. If the same error occurs after this, please contact your dealer.
ﾘﾓｰﾄI/O	E52				
REMOTE I/O	E52				
REMOTE I/O	E52				
REMOTE I/O	E52				
REMOTE I/O	E52				
ERR E53		Multi-CPU I/O registration error (CPU2 only)	Continues	An abnormality detected when the multi-CPU system is used.	Please contact your dealer.
ERR E53					
ERR E53					
ERR E53					
ERR E53					
ERR E53					

Error code	Name of error	Program execution	Description	Steps to take
ERR E54	IC card backup battery error (Availability type: FP10S/FP10	Continues	BATT. LED does not turn ON. The voltage of the backup battery for FP10S/FP10 IC card lowers and the contents of the IC card cannot be guaranteed.	Replace the backup battery as soon as possible. • System register 4: By setting this system register in K1 (NO), you can disregard this error. If you set to disregard, - backup battery for FP10S/FP10 IC card is not detected. - Error code E50 is not detected.
ERR E54				
ERR E54				
ERR E54				
ERR E54				
ERR E54				
ERR E55	IC card backup battery error (Availability type: FP10S/FP10	Continues	BATT. LED does not turn ON. The voltage of the backup battery for FP10S/FP10 IC card lowers.	Replace the backup battery. • System register 4: By setting this system register in K1 (NO), you can disregard this error. If you set to disregard, - backup battery for FP10S/FP10 IC card is not detected. - Error code E50 is not detected.
ERR E55				
ERR E55				
ERR E55				
ERR E55				
ERR E55				
ERR E100 to ERR E199	Self-diagnostic error set by F148 (ERR) instruction (Availability type: FP-M/FP1/FP-C/FP3/FP5/FP10S/FP10	Stops	• The self-diagnostic error specified by the **F148 (ERR)** instruction is transferred to: - DT9000 for FP-M/FP1/FP-C/FP3/FP5. - DT90000 for FP10S/FP10. • The contents of the self-diagnostic error code can be confirmed using the following programming tools. - NPST-GR software: “7. STATUS DISPLAY” in ONLINE mode. - FP programmer II: “OP-110”.	
ERR E200 to ERR E299		Continues		

CHAPTER 8

APPENDIX

8-1. Character Code Table

-The following character codes are stored in the FP data access unit. The shaded character codes do not conform to ASCII code. When using message display function, be sure to choose the correct code in the character code table.
-The characters available for comment registration of the single-area registration “DEF.INDIV”are as follows.

Changes : Some character codes were changed due to the production stoppage of liquid crystal screen.

New Character Codes

upper / Lower	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		Note)		0	@	P	`	p	Note)	●		ー	タ	ミ	α	Note)
1		Note)	!	1	A	Q	a	q	Note)	Note)	。	ア	チ	ム	β	≈
2		Note)	”	2	B	R	b	r	Note)	Note)	「	イ	ツ	メ	Note)	年
3		!!	#	3	C	S	c	s	Note)	Note)	」	ウ	テ	モ	π	月
4		Note)	$	4	D	T	d	t	Note)	√	、	エ	ト	ヤ	Σ	火
5		Note)	%	5	E	U	e	u	Note)	±	・	オ	ナ	ユ	σ	水
6		Note)	&	6	F	V	f	v	Note)	Note)	ヲ	カ	ニ	ヨ	μ	木
7		Note)	’	7	G	W	g	w	Note)	÷	ァ	キ	ヌ	ラ	Note)	金
8		↑	(	8	H	X	h	x	Note)	Note)	ィ	ク	ネ	リ	Note)	土
9		↓	)	9	I	Y	i	y	Note)	Note)	ゥ	ケ	ノ	ル	θ	日
A		Note)	*	:	J	Z	j	z	Note)	Note)	ェ	コ	ハ	レ	Ω	千
B		Note)	+	;	K	[	k	{	Note)	Note)	ォ	サ	ヒ	ロ	Note)	万
C		Note)	,	<	L	¥	l	|	Note)	Note)	ャ	シ	フ	ワ	∞	円
D		Note)	−	=	M	]	m	}	Note)	Note)	ュ	ス	ヘ	ン	Note)	Note)
E		Note)	.	>	N	^	n	→	Note)	Note)	ョ	セ	ホ	゛	ε	Note)
F		Note)	／	?	O	_	o	←	Note)	Note)	ッ	ソ	マ	゜	ρ	■

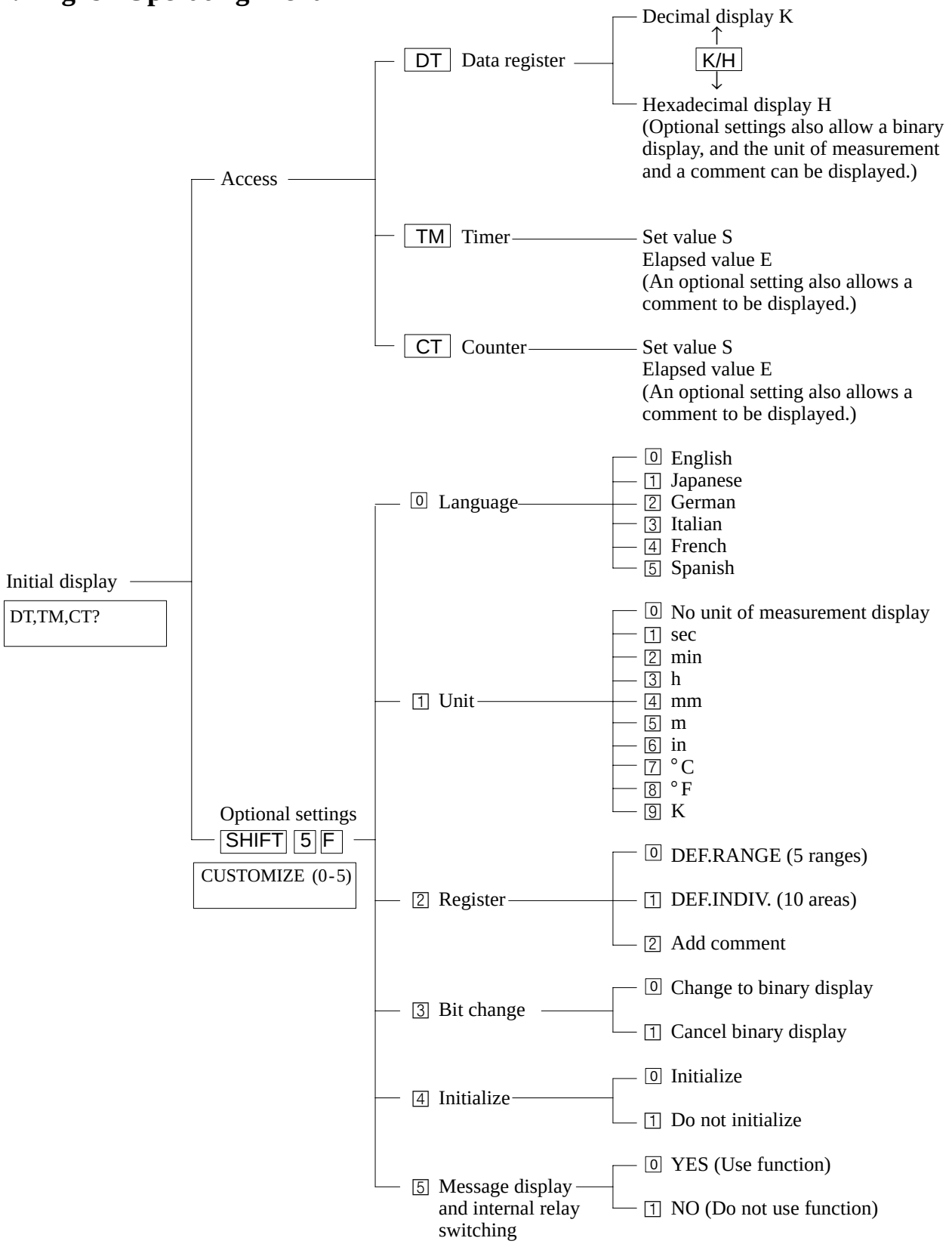
Note) Unreleased characters will be displayed.

Old Character Codes

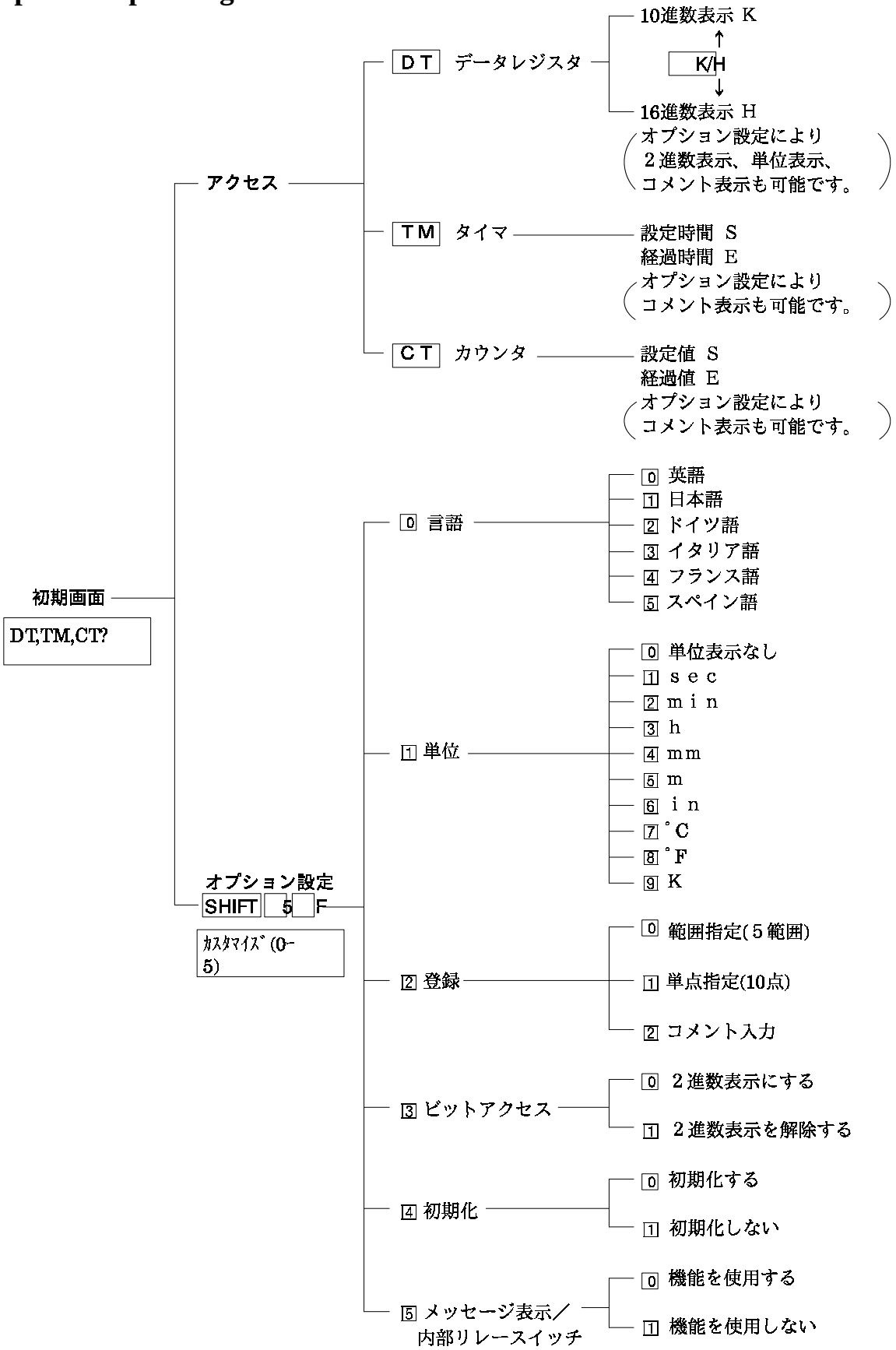
UPPER / LOWER	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		≡		0	@	P	`	p	〒	市		ー	ダ	ミ	α	p
1		±	!	1	A	Q	a	q	一	区	。	ア	チ	ム	ä	q
2		≧	”	2	B	R	b	r	二	丁	「	イ	ツ	メ	β	θ
3		≦	#	3	C	S	c	s	三	目	」	ウ	テ	モ	ε	∞
4		∫	$	4	D	T	d	t	四	大	、	エ	ト	ヤ	μ	Ω
5		∫	%	5	E	U	e	u	五	中	・	オ	ナ	ユ	σ	ü
6		‼	&	6	F	V	f	v	六	小	ヲ	カ	ニ	ヨ	ρ	Σ
7		≈	’	7	G	W	g	w	七	上	ァ	キ	ヌ	ラ	q	π
8		°	(	8	H	X	h	x	八	下	ィ	ク	ネ	リ	√	x
9		•	)	9	I	Y	i	y	九	左	ゥ	ケ	ノ	ル	-1	Ч
A		Ⅱ	*	:	J	Z	j	z	十	右	ェ	コ	ハ	レ	i	千
B		Ⅲ	+	;	K	[	k	{	百	火	ォ	サ	ヒ	ロ	x	万
C		♂	,	<	L	¥	l	|	生	水	ャ	シ	フ	ワ	¢	円
D		♀	−	=	M	]	m	}	年	木	ュ	ス	ヘ	ン	£	÷
E		↑	.	>	N	^	n	→	月	金	ョ	セ	ホ	゛	n	
F		↓	／	?	O	_	o	←	日	土	ッ	ソ	マ	゜	o	■

8-2. Operating Menu in Each Language

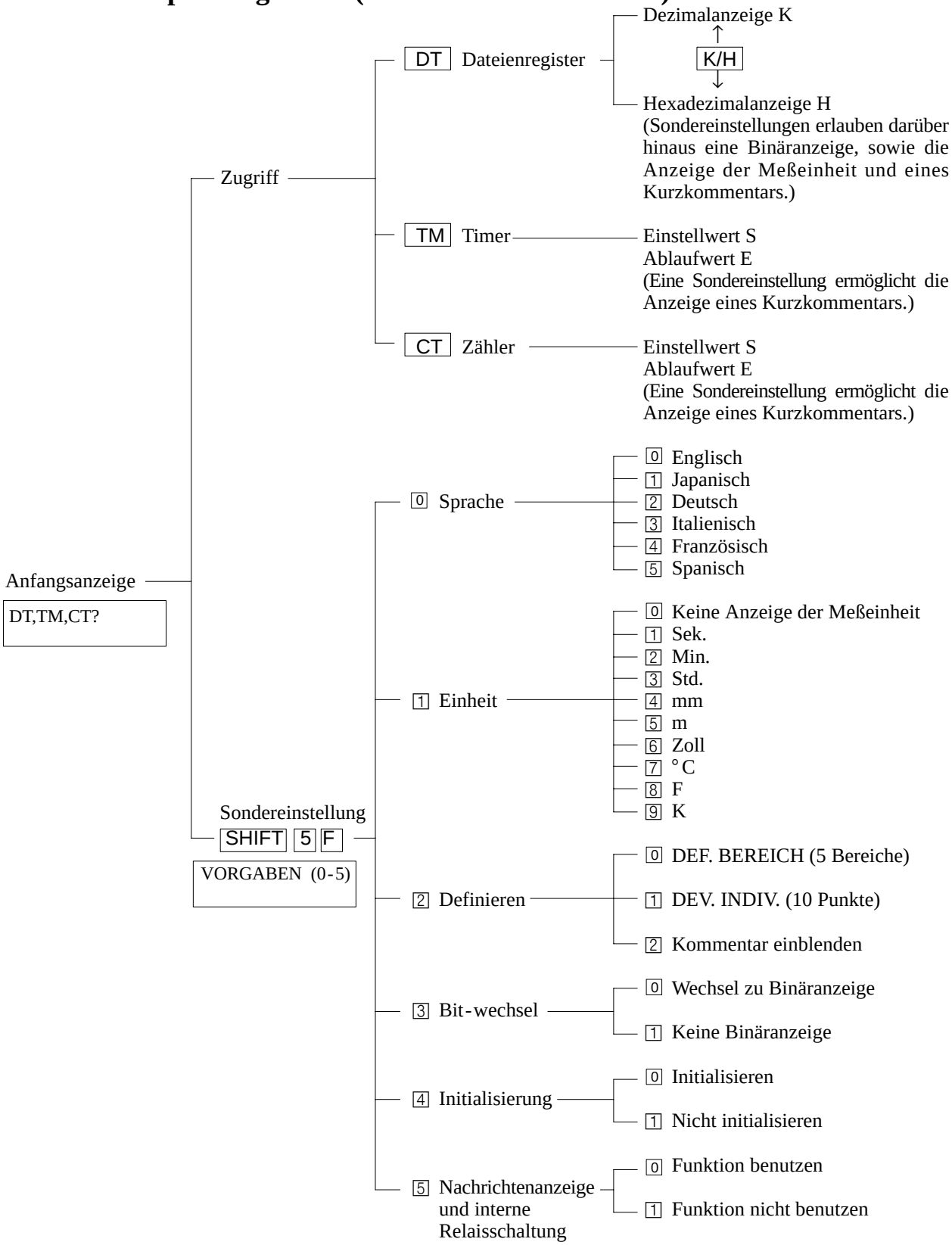
1. English Operating Menu



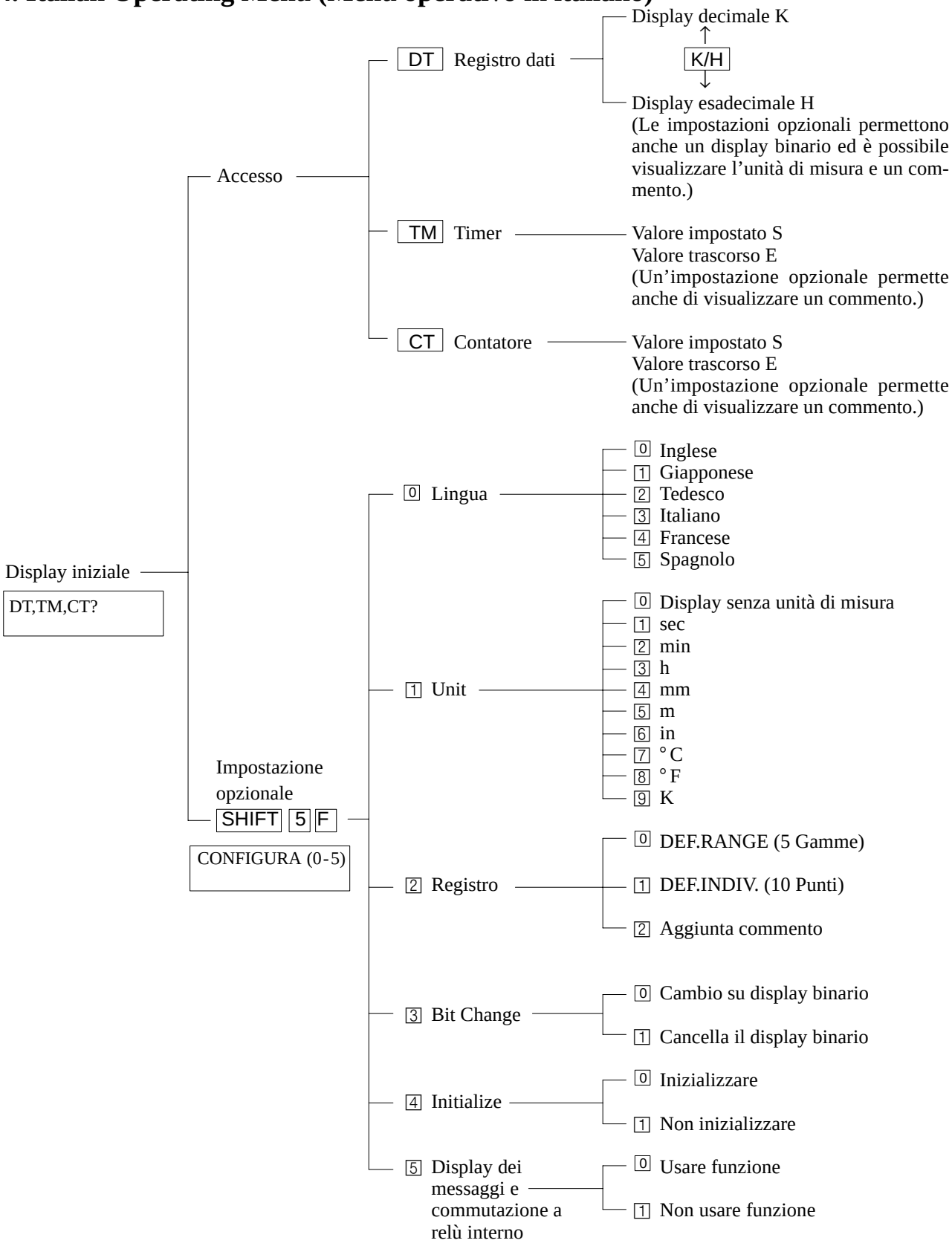
2. Japanese Operating Menu



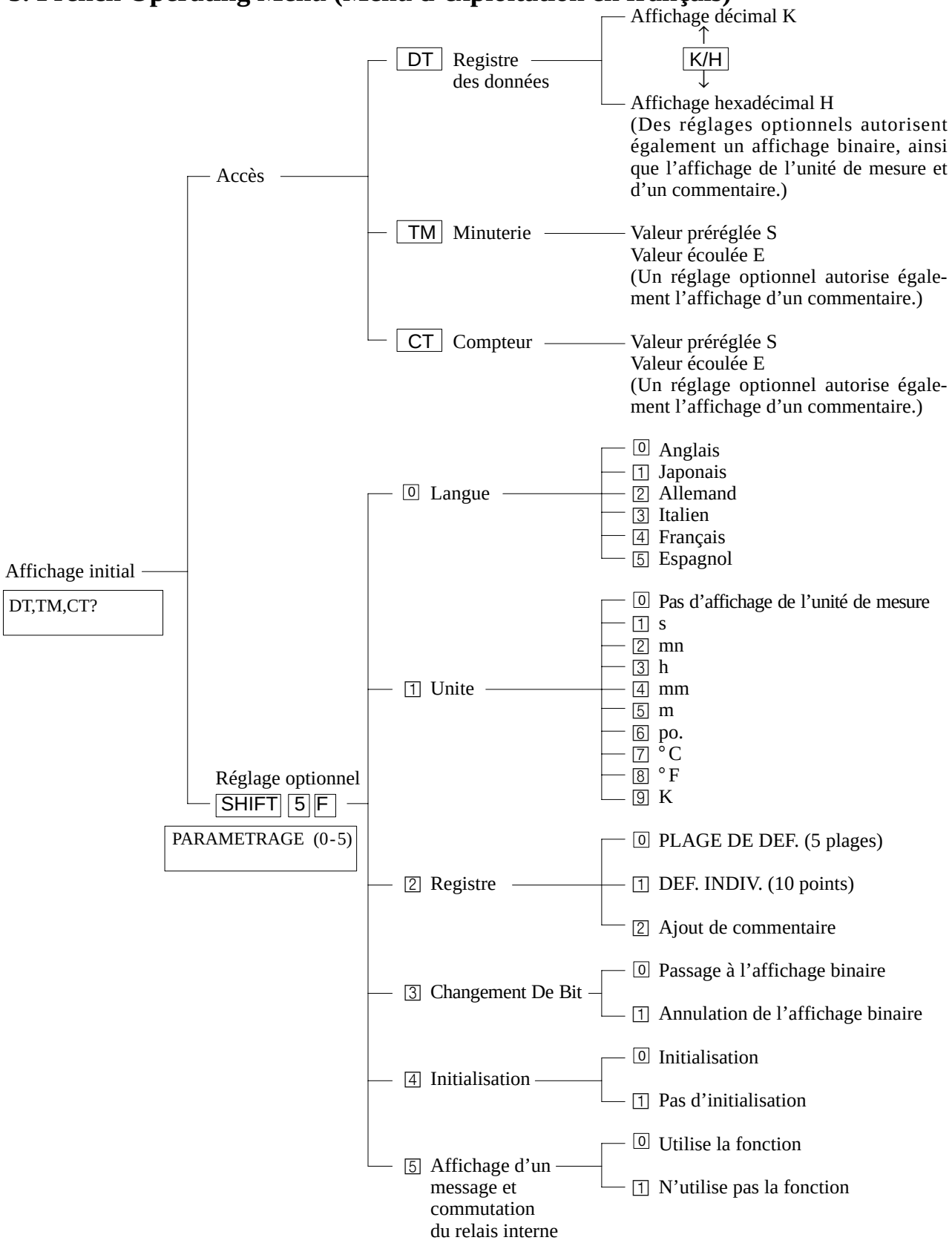
3. German Operating Menu (Deutsches Betriebsmenü)



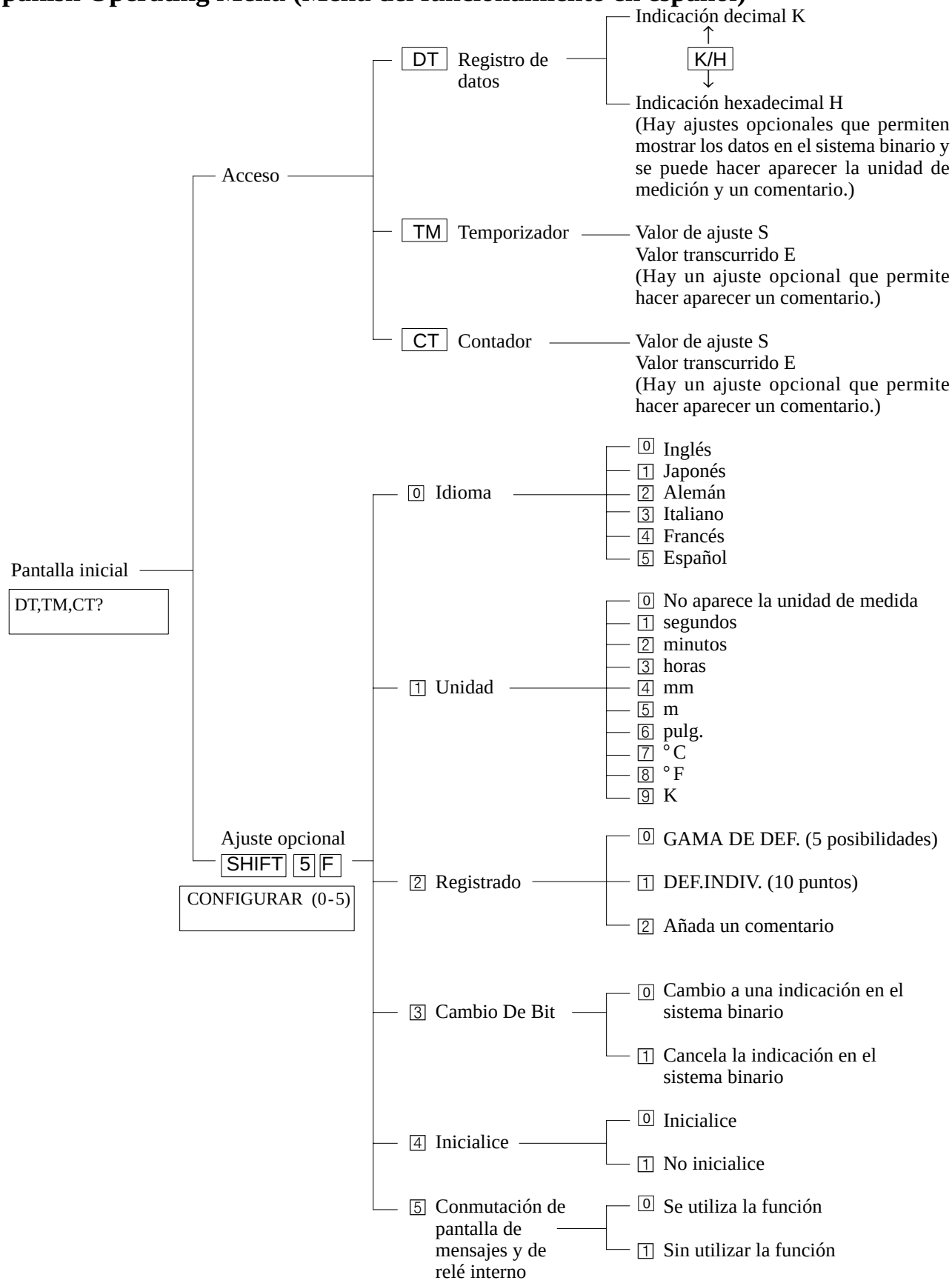
4. Italian Operating Menu (Menu operativo in italiano)



5. French Operating Menu (Menu d'exploitation en français)



6. Spanish Operating Menu (Menú del funcionamiento en español)



8-3. Messages in Each Language

Optional settings

SHIFT 5 F (See page 65.)

English	CUSTOMIZE	(0-5)
Japanese	カスタマイズ	(0-5)
German	VORGABEN	(0-5)
Italian	CONFIGURA	(0-5)
French	PARAMETRAGE	(0-5)
Spanish	CONFIGURAR	(0-5)

0 Language (See page 65.)

English	LANGUAGE	(0-5)
	ENGLISH	(0)
Japanese	ゲンゴ	(0-5)
	JPN, ニホンゴ	(1)
German	SPRACHE	(0-5)
	DEUTSCH	(2)
Italian	LINGUAGGIO	(0-5)
	ITALIANO	(3)
French	LANGUE	(0-5)
	FRANCAIS	(4)
Spanish	IDIOMA	(0-5)
	ESPANOL	(5)

1 Unit (See page 66.)

English	UNIT	(0-9)
Japanese	タンイ	(0-9)
German	EINHEIT	(0-9)
Italian	BASE-TEMPI	(0-9)
French	UNITE	(0-9)
Spanish	UNIDAD	(0-9)

2 Register (See page 68.)

English	DEFINE	(0-2)
Japanese	トウロク	(0-2)
German	DEFINIERE	(0-2)
Italian	DEFINISCI	(0-2)
French	DEFINITION	(0-2)
Spanish	SELECCION	(0-2)

0 DEF.RANGE (1 to 5)

English	DEF.RANGE
Japanese	ハンイ　シテイ
German	BEREICH
Italian	DEF.GAMMA
French	DEF.PLAGE
Spanish	POR RANGO

1 DEF.INDIV. (1 to 10)

English	DEF.INDIV.
Japanese	タンテン　シテイ
German	EINZELN
Italian	DEF.DATO
French	DEF.INDIV
Spanish	INDIVIDUAL

2 Comment (1 to 10)

English	COMMENT
Japanese	タンテン　コメント
German	KOMMENTAR
Italian	COMMENTO
French	COMMENTAIRE
Spanish	COMENTARIOS

(Continued on the next page)

(Continued from the previous page)

3 Bit change (See page 77.)

English	BIT CHANGE
Japanese	ビットアクセス
German	BIT WECHSEL
Italian	VISUALIZZA
French	MODIF EN BINAIRE
Spanish	CAMBIO A BINARIO

4 Initialize (See page 80.)

English	INITIALIZE
Japanese	ショキカ
German	INITIALISIEREN
Italian	INIZIALIZZA
French	INITILALISATION
Spanish	INICIALIZAR

5 Message display and internal relay switching (See page 81.)

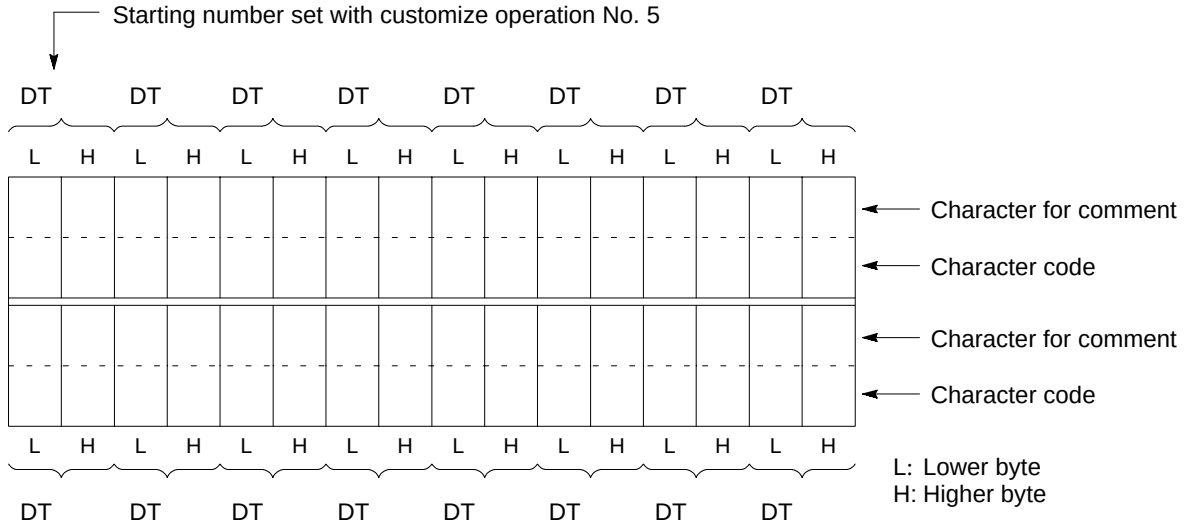
English	MESSAGE, SWITCH
Japanese	メッセージヒョウジ、スイッチ
German	BOTSCHAFT, SCHALT
Italian	MESSAGGIO, INTERR
French	MESAGE, INTERRUPP
Spanish	MENSAJE, INTERUPT

8-4. Setting the Message Display and Internal Relay Switching Function

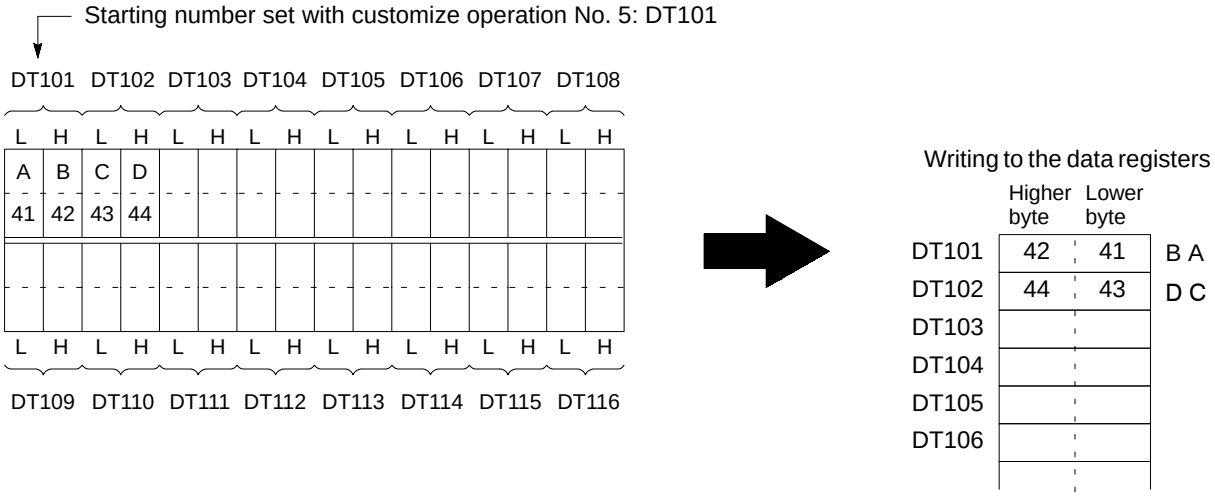
■ Setting with customize operation No. 5

Data registers for message display	16 words starting with this DT
Internal relays for switching input	WR

■ Setting the message



Example:



8-5. Registration List (Please Make Copies and Use)

1. Single-area Designation “DEF.INDIV.”

Registration No.	Memory area	Comment	Description
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

2. Range Designation “DEF.RANGE”

Range No.	Memory area	Description
1	~	
2	~	
3	~	
4	~	
5	~	

8-6. Product Types

Type		Part number	Description	
FP data access unit		AFP1682	A unit for monitoring and changing values of timer/counter/data registers after the programmable controller has been installed to the machine.	
Peripheral cable	**FP1**	AFP15205	Cable length: 50 cm/ 19.685 in.	Cable needed for connection between the FP1 control unit and FP data access unit.
		AFP1523	Cable length: 3 m/ 9.843 ft.	
	FP3 **FP5** **FP10S** **FP10**	AFP5520	Cable length: 50 cm/ 19.685 in.	Cable needed for connection between the FP3/FP5/FP10S/FP10 control unit and FP data access unit.
		AFP5523	Cable length: 3 m/ 9.843 ft.	
	FP-M **FP-C**	AFC8521	Cable length: 1 m/ 3.281 ft.	Cable need for connection between the FP-M/FP-C control board and FP data access unit.
		AFC8523	Cable length: 3 m/ 9.843 ft.	

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RECORD OF CHANGES

ACG No.	Date	Description of Changes
ACG-M0061-1	SEPT. 1994	First edition
ACG-M0061-2	AUG. 1995	2nd edition In version 1.2, the following functions will be newly added. - Message display function - Internal relay switching function - Self-diagnostic error display function
ACG-M0061-3	JAN. 2004	3nd edition : PDFonly Some character codes were changed due to the productionstoppage of liquid crystal screen."K" will be added to new Product No. for identification.