M I T S U B I S H I

Electronic Multi-Measuring Instrument

ME110SR-C

Programming Manual（CC-Link）

LAN040503

CONTENTS

1. General Description

This manual describes the programming methods that should be created by the user for monitoring measurement value of the Electronic Multi-Measuring Instrument (ME110SR-C) with the PC CPU through Control & Communication Link (abbreviated as CC-Link from here on).

In programming, read the following related manuals in addition to this manual.

Related Manuals

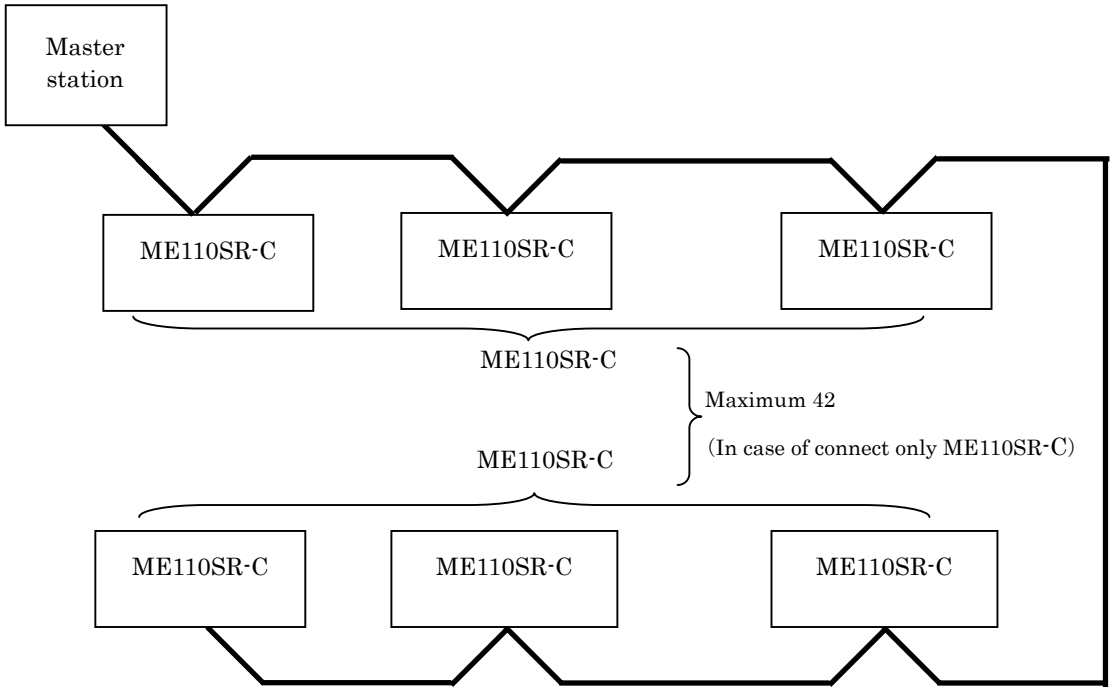
Manual Name	Manual No. (Type code)
AJ61BT11/A1SJ61BT11 CC-Link System Master-Local Module User's Manual	IB-66721 (13J872)
AJ61QBT11/A1SJ61QBT11 CC-Link System Master-Local Module User's Manual	IB-66722 (13J873)
User's Manual for ME110SR-C	Supplied with Product

2. Specification

ME110SR-C specification is shown in table 2.1.

Table 2.1 ME110SR-C specification

Item	Specification
Station type	Remote device station
Number of occupied stations	1 station
Maximum number of stations per one master station	42 stations (In case of connect only remote device station occupied 1 station.)
Transmission speed	156kbps/625kbps/2.5Mbps/5Mbps/10Mbps
RX, RY	each 32 points
RWw, RWr	each 4 points



System Configuration (CC-Link)

3. Configuration Conditions of CC-Link System

A total of 64 remote I/O stations, remote device stations, or local stations can be connected for one master station. Station type of ME110SR-C is remote device station, and the number of occupied stations is 1 station. However, the following conditions must be satisfied:

(1) $\{(1\times a) + (2\times b) + (3\times c) + (4\times d)\} \leqq 64$

a : Number of modules occupying 1 station (ME110SR-C is applied.)

b : Number of modules occupying 2 stations

c : Number of modules occupying 3 stations

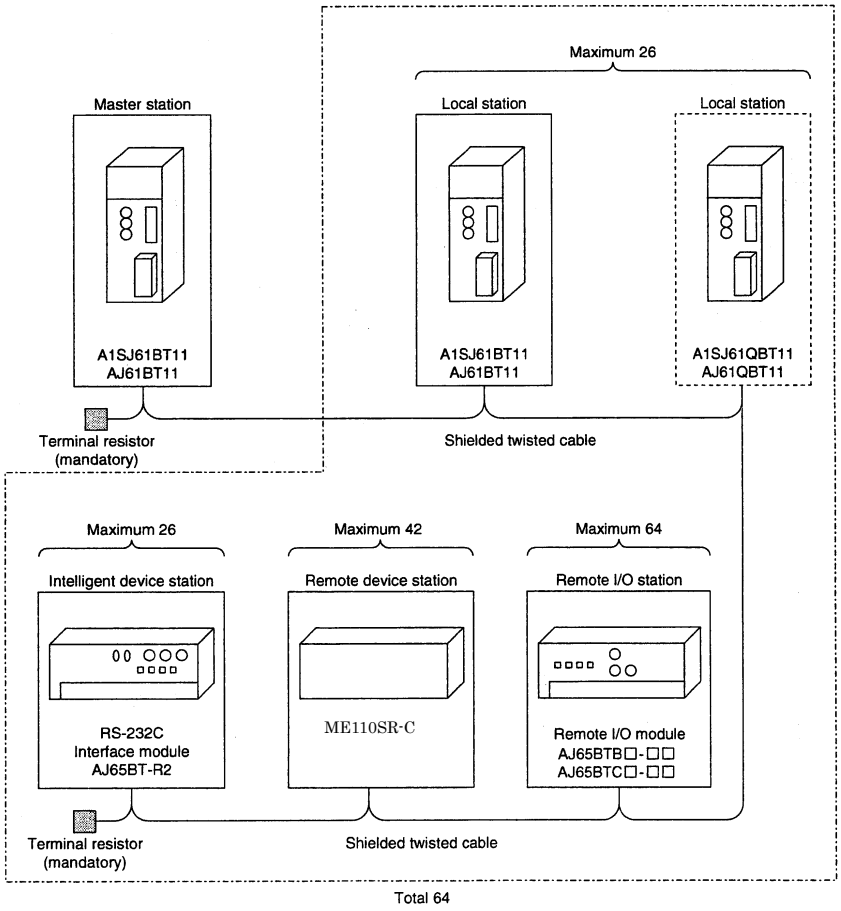
d : Number of modules occupying 4 stations

(2) $\{(16\times A) + (54\times B) + (88\times C)\} \leqq 2304$

A : Number of remote I/O stations $\leqq 64$

B : Number of remote device stations (ME110SR-C is applied.) $\leqq 42$

C : Number of local stations, standby master stations, intelligent device stations $\leqq 26$



4. Parameter Setting at the master station

The parameter setting necessary to perform data link with CC-Link is described.

4.1 Procedure form Parameter Setting to Data Link Startup

The flow from setting the parameters to starting the data link is described.

4.1.1 Relationship between buffer memory, EEPROM and internal memory

The relationship between the master station buffer memory, EEPROM and the internal memory is described.

（1） Buffer memory

This is a temporary storage area to write the parameter information to EEPROM or internal memory. When the module power is turned off, the parameter information is erased.

（2） EEPROM

By just turning on the data-link start request by the EEPROM parameters (Yn8), data link can be started.

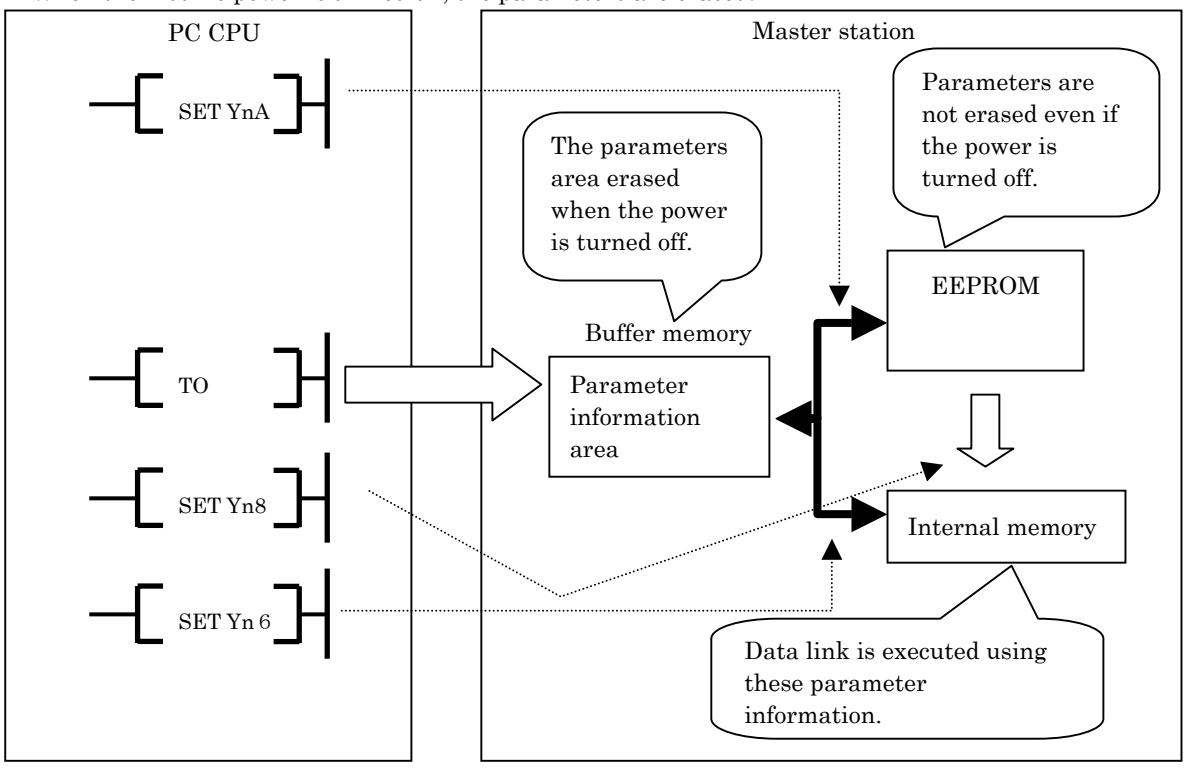
This eliminates having to write parameters to the buffer memory every time when starting up the master station.

However, the parameters must be stored in EEPROM by the parameter storage request to EEPROM (YnA) beforehand.

（3） Internal memory

Data link is executed using the parameter information stored in the internal memory.

When the module power is turned off, the parameters are erased.

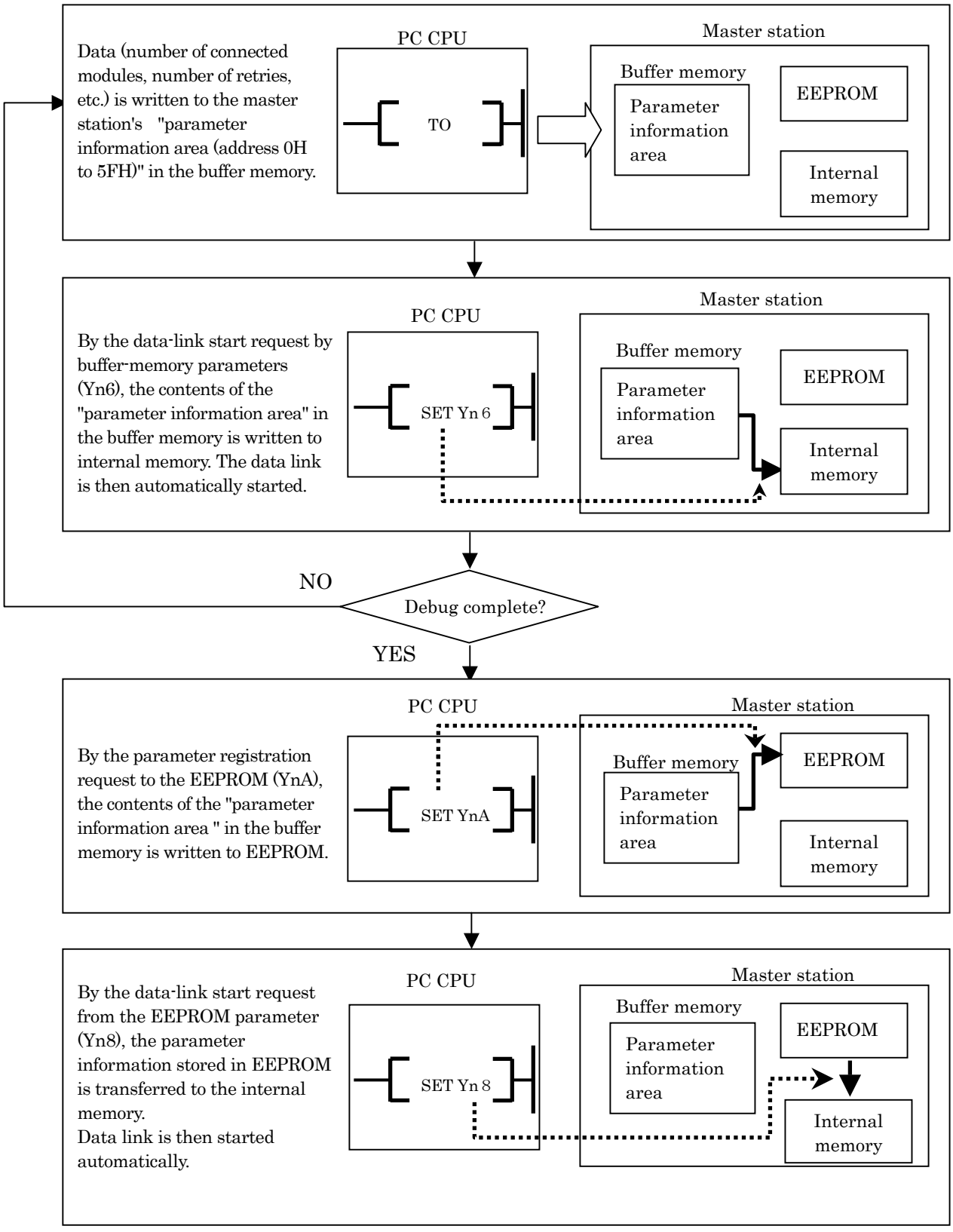


Point

"Data link by buffer-memory parameters" is recommended for starting system debugging, and "data link by EEPROM parameters " is recommended for the operation after debugging. Therefore, the number of steps in the operation program can be reduced (thus, shortens the scan time).

4.1.2 Procedure form parameter setting to data link start

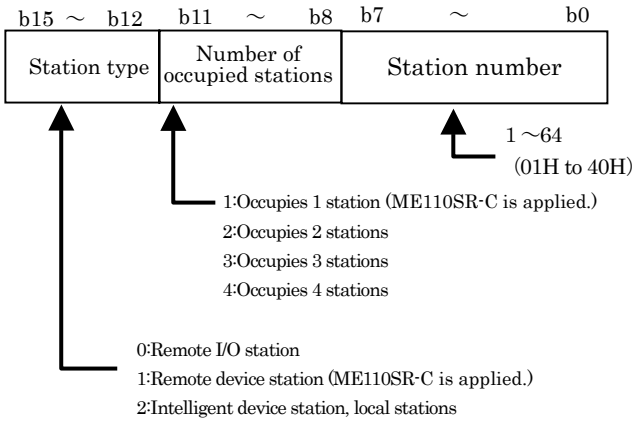
Follow the procedure below:



4.2 Parameter Settings

The items to set in the master station's "parameter information area (address 0H to 5FH)" in the buffer memory are shown in Table 4.1.

Table 4.1

Setting Item	Description	Buffer memory address
Number of connected units	Sets the number of remote and local station units connected to the master station (including reserved stations) Default : 64 (units) Setting range : 1 to 64 (units)	1H
Number of retries	Sets the number of retries when there is a communication error. Default : 3 (times) Setting range : 1 to 7 (times)	2H
Number of automatic return units	Sets the number of remote and local stations that can be recovered with one link scan. Default : 1 (units) Setting range : 1 to 10 (units)	3H
Operation specification when CPU is down	Specifies the data-link status when the master station PC CPU has an error. Default : 0 (stop) Setting range : 0 (stop) 1(continue)	6H
Reserved station specification	Specifies reserved stations. Default : 0 (no setting) Setting range : Turn on the bit corresponding to the station number.	10H to13H
Invalid station specification	Specifies invalid stations. Default : 0 (no setting) Setting range :Turn on the bit corresponding to the station number.	14H to 17H
Station information	Sets the connected remote and local station type. Setting range : As follows.  Note: ME110SR-C is remote device station, and it occupies 1 station. So station information is 11XXH("XX" is station number).	20H(1st station) to 5FH(64th station)

5. Communication between the Master Station and ME110SR-C

5.1 Communication Guideline

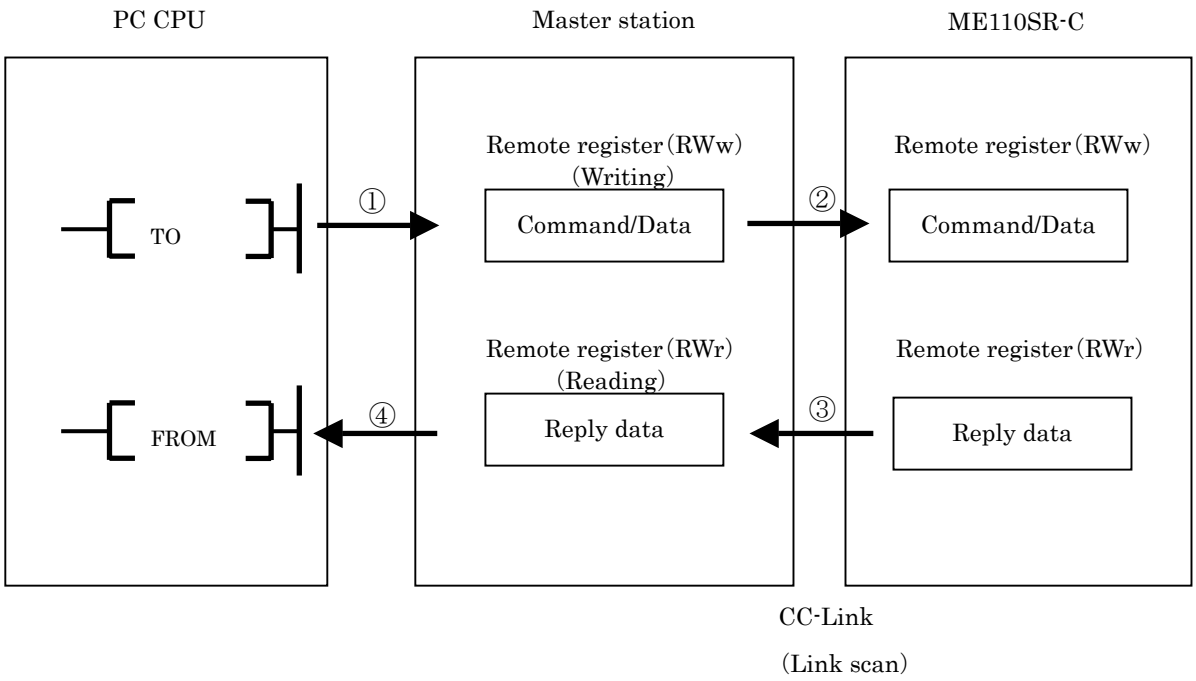
There are three communication statuses (Initial Communication, Normally Communication, Error Communication) between the PC CPU and ME110SR-C.

The following can be performed at normally communication.

・Monitoring the measurement values such as the current, voltage and energy.

ME110SR-C has a special-purpose command for each measurement item. It becomes possible to monitor measurement value by writing the command into the remote register RWw of the master station.

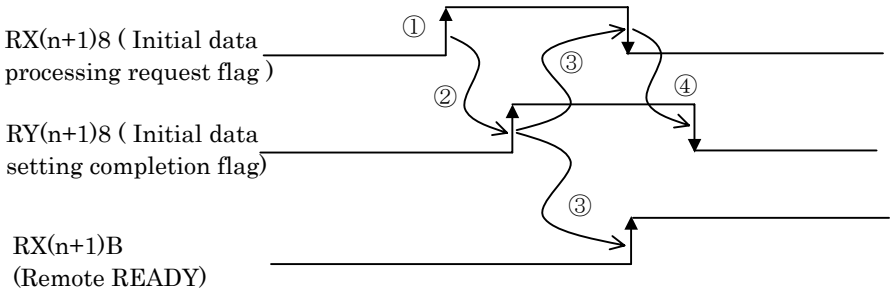
Communication between the master station and ME110SR-C



① By the TO instruction, write command and related data to the remote register (RWw).
② By the link scan, the command and related data are sent to ME110SR-C's remote register(RWw).
③ By the link scan, reply data is sent to the master station's remote register (RWr).
④ By the FROM instruction, read the reply data from the remote register (RWr).

5.2 Initial Communication

Initial communication is performed to the beginning after the power supply is turned on or a hardware reset.



①After the power supply is turned on, or a hardware reset, the initial data processing request flag is turned on by ME110SR -C.

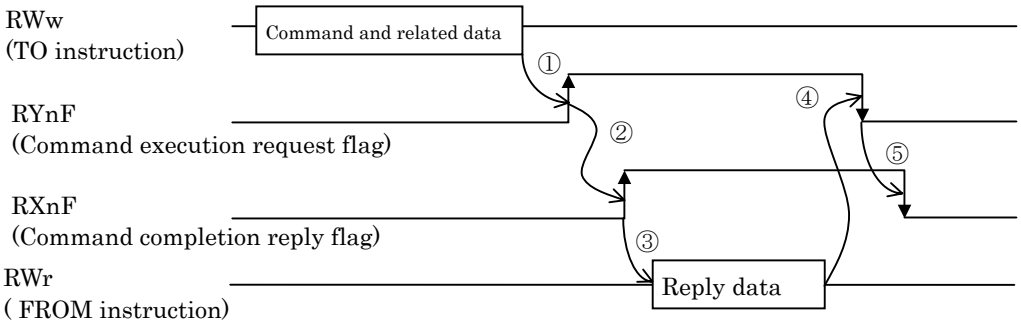
②After the initial data processing request flag is turned on, turn on the initial data setting completion flag.

③After the initial data setting completion flag is turned on, the initial data processing request flag is turned off and the remote READY is turned on.

④After the initial data processing request flag is turned off, turned off the initial data setting completion flag.

5.3 Normally Communication

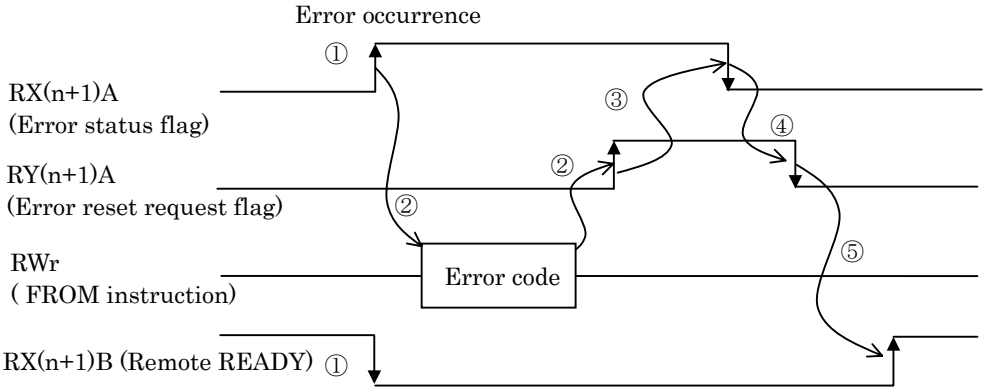
After initial data processing is complete, the normally communication is performed to monitor the measurement values and to set the parameters.



①After writing the command and related data into the remote register RWw, turned on the command execution request flag.
②After receiving the reply data corresponding to the command, the command completion reply flag turned on.
③After the command completion reply flag turned on, read the reply data form the remote register RWw.
④After reading the reply data, cancel the command execution request by turning off the command execution request flag.
⑤After the command execution request flag turned off, the command completion reply flag turned off.

Note : When sending commands successively, repeat ① to ⑤ above.
The command can be sending only when the remote READY is ON.

5.4 Error communication



①When an error occurs in ME110SR-C, the error status flag turned on and the remote READY turned off.
②When the error status flag turned on, read the error code form the remote register RWr. Eliminate the cause of the error while referring to the read error code. When resuming communication with ME110SR -C, turned on the error reset request flag.
③After the error reset request flag turned on, the error status flag turned off.
④After the error status flag turned off, turn off the error reset request flag.
⑤After the error reset request flag turned off, the remote READY turned on and usually communication is resumed.
Note : Refer to " 6.2.3 About error occurrence" for error code.

6. Remote I/O and Remote Register

6.1 Remote input RX、Remote output RY

The remote input RX and remote output RY are used to communicate bit data between the master station and ME110SR-C.

6.1.1 Remote input RX

The allocation of the remote input RX of ME110SR-C is shown in the table below.

Device No.	Signal name	Description		Note
		OFF(0)	ON (1)	
RXn0	Unusable	—	—	
RXn1	Unusable	—	—	
RXn2	Alarm of Demand current	Non-Alarm state	Alarm state	*2
RXn3	Alarm of Demand Active power	Non-Alarm state	Alarm state	*2
RXn4	Unusable	—	—	
RXn5	Alarm (total)	Non-Alarm state	Alarm state	*2
RXn6	Unusable	—	—	
RXn7	Unusable	—	—	
RXn8	Alarm of Voltage	Non-Alarm state	Alarm state	*2
RXn9	Alarm of Current	Non-Alarm state	Alarm state	*2
RXnA	Alarm of Active power	Non-Alarm state	Alarm state	*2
RXnB	Alarm of Reactive power	Non-Alarm state	Alarm state	*2
RXnC	Alarm of Frequency	Non-Alarm state	Alarm state	*2
RXnD	Alarm of Power factor	Non-Alarm state	Alarm state	*2
RXnE	Alarm of T.H.D (Voltage)	Non-Alarm state	Alarm state	*2
RXnF	Command completion reply flag	Not received the reply data	Received the reply data	* 1
RX(n+1)0	Unusable	—	—	
RX(n+1)1	Unusable	—	—	
RX(n+1)2	Unusable	—	—	
RX(n+1)3	Unusable	—	—	
RX(n+1)4	Unusable	—	—	
RX(n+1)5	Unusable	—	—	
RX(n+1)6	Unusable	—	—	
RX(n+1)7	Unusable	—	—	
RX(n+1)8	Initial data processing request flag	At the time of power OFF, remote READY ON or error status flag ON	At the time of the power supply is turned on or a hardware reset	* 1
RX(n+1)9	Unusable	—	—	
RX(n+1)A	Error status flag	No error occurrence	Error occurrence	* 1
RX(n+1)B	Remote READY	Command sending not possible	Normally communication status (Command sending possible)	* 1
RX(n+1)C	Unusable	—	—	
RX(n+1)D	Unusable	—	—	
RX(n+1)E	Unusable	—	—	
RX(n+1)F	Unusable	—	—	

n : Address allocated to the master module by the station number setting.

*1: For the details, refer to "5. Communication between the Master Station and ME110SR-C".
*2: "1" shows the state where the upper limit or the lower limit was exceeded.
*3: The numbers of alarms which can monitor are four items set up at ME110SR-C.
*4: Alarm of T.H.D (Current) can not be shown by Remote input RX.

6.1.2 Remote output RY

The allocation of the remote output RY of ME110SR-C is shown in the table below.

Device No.	Signal name	Description		Note
		ON (1) →OFF (0)	OFF (0) →ON (1)	
RYn0	Unusable	−	−	
RYn1	Unusable	−	−	
RYn2	Unusable	−	−	
RYn3	Unusable	−	−	
RYn4	Unusable	−	−	
RYn5	Unusable	−	−	
RYn6	Unusable	−	−	
RYn7	Unusable	−	−	
RYn8	Unusable	−	−	
RYn9	Unusable	−	−	
RYnA	Unusable	−	−	
RYnB	Unusable	−	−	
RYnC	Unusable	−	−	
RYnD	Unusable	−	−	
RYnE	Unusable	−	−	
RYnF	Command execution request flag	Cancel command request	Command request	*1
RY(n+1) 0	Unusable	−	−	
RY(n+1) 1	Unusable	−	−	
RY(n+1) 2	Unusable	−	−	
RY(n+1) 3	Unusable	−	−	
RY(n+1) 4	Unusable	−	−	
RY(n+1) 5	Unusable	−	−	
RY(n+1) 6	Unusable	−	−	
RY(n+1) 7	Unusable	−	−	
RY(n+1) 8	Initial data setting completion flag	Cancel normally communication request	Normally communication request	*1
RY(n+1) 9	Unusable	−	−	
RY(n+1)A	Error reset request flag	Cancel error reset request	Error reset request	*1
RY(n+1)B	Unusable	−	−	
RY(n+1)C	Unusable	−	−	
RY(n+1)D	Unusable	−	−	
RY(n+1)E	Unusable	−	−	
RY(n+1)F	Unusable	−	−	

n : Address allocated to the master module by the station number setting.

*1 : For the details, refer to "5. Communication between the Master Station and ME110SR-C".

Point

Do not read/write to unusable remote registers. If read/write is performed, the functions of ME110SR-C are not guaranteed.

6.2 Remote register RWr、RWw

The remote register RWr and RWw are used to communicate word data between the master station and ME110SR-C. Because ME110SR-C occupiers 1 station, the remote registers RWr and RWw each have 4 words in length.

ME110SR-C has a special-purpose command for each measurement item and setting item. It becomes possible to monitor each measurement value or set each parameter by writing into the remote register RWw of the master station the command and the related data allocated to the item you want to monitor or set.

6.2.1 Supported Command

The commands supported by ME110SR-C are listed in the table below. For the details of each command, refer to "6.2.2 Details of command".

Table 6.1 Supported Command

Command	name	Description	Remarks
1H	Data Monitor	For monitoring measurement.	
2H	Data Set	For setting measurement.	

*1: The command can be sending only when the remote READY is ON.

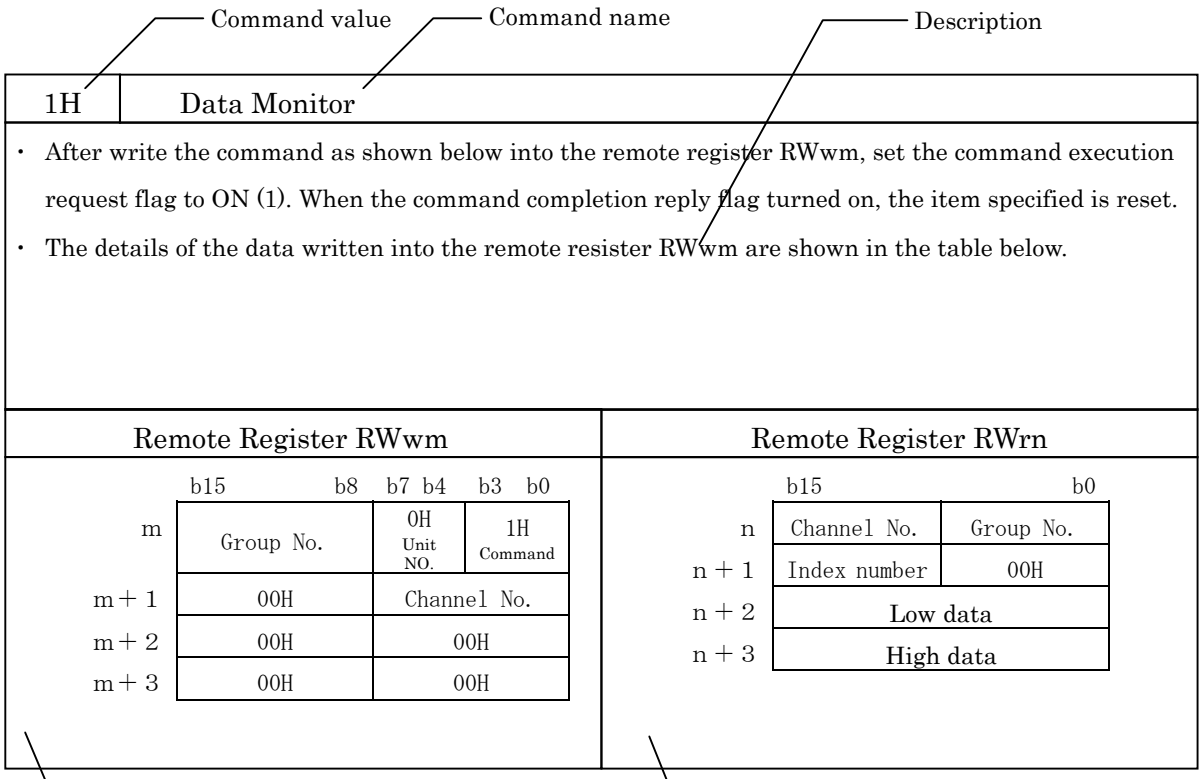
*2: The command execution request flag and command completion reply flag are used to send the command and receive the reply data. For the details of each flag, refer to "5.3 Normally Communication".

*3: In case of monitoring the present value and its maximum continuously, according to the renewal data timing of ME110SR-C, the maximum may be smaller than the present value.

6.2.2 Details of command

The details of the command and reply data supported by ME110SR-C are described here.

Shown below is how to view the details of each command described on the following page.



m, n : Address allocated to the master module by the station number setting.

Contents of the resister sent from the master station to the remote device station (ME110SR)
The command value should be stored in the 1st byte of the resister to be transmitted.
Because the length of transmission data is fixed to 4 words, 00H should be stored in areas in which no data is contained.

Contents of the resister received by the master station from the remote device station (ME110SR)
Because the length of receive data is fixed to 4 words, 00H is stored in areas in which no reply data is contained.

(1) Data Monitor Command (1H)

1H	Data Monitor

- After write the command as shown below into the remote register RWwm, set the command execution request flag to ON (1). When the command completion reply flag turned on, the item specified is reset.
- The details of the data written into the remote resister RWwm are shown in the table 6.2, 6.3 and 6.4.
- The item which can carry out a monitor changes with phase and wiring types. (Refer to table 6.2)

Remote Register RWwm

	b15 b8	b7 b4	b3 b0
m	Group No.	0H Unit NO.	1H Command
m＋1	00H	Channel No.	
m＋2	00H	00H	
m＋3	00H	00H	

Remote Register RWrn

	b15	b0
n	Channel No.	Group No.
n＋1	Index number	00H
n＋2	Low data	
n＋3	High data	

Note：

ME110 SR-C can monitor the data of the measurement item which is not displayed.

To monitor frequency, voltage harmonics or current harmonics becomes an error if there is no voltage input. (Refer to 6.2.3)

Table 6.2 Group Channel List (1/3)

Unit No.	Group (h)	Ch. (h)	Name of Channel			Data Type	Note
0	F0	2	Model code			⑤	
0	E0	11	Primary current			④	
0	E0	12	Primary voltage(L-L)			④	＊1
0	E0	1B	Primary voltage(L-N)			④	＊2
0	E0	1C	Secondary voltage(L-N)			④	＊2
0	E0	13	Phase & Wiring			⑤	
0	E0	18	Alarm Items			⑥	
0	E0	19	Byte monitor			⑤	
0	E0	1A	reserved				
0	2	E0	Time constant for DA	sec.		⑤	
0	8	E0	Time constant for DW	sec.		⑤	
0	1	1	Average current	A	Inst.	①	＊2
0	1	21	Phase 1 current	A	Inst.	①	
0	1	41	Phase 2 current	A	Inst.	①	
0	1	61	Phase 3 current	A	Inst.	①	
0	1	81	Phase N current	A	Inst.	①	＊2
0	1	2	Average current	A	max.	①	＊2
0	1	22	Phase 1 current	A	max.	①	
0	1	42	Phase 2 current	A	max.	①	
0	1	62	Phase 3 current	A	max.	①	
0	1	82	Phase N current	A	max.	①	＊2
0	1	5	Average current	A	min.	①	＊2
0	1	25	Phase 1 current	A	min.	①	
0	1	45	Phase 2 current	A	min.	①	
0	1	65	Phase 3 current	A	min.	①	
0	1	85	Phase N current	A	min.	①	＊2
0	2	1	Average current demand	A	Inst.	①	＊2
0	2	21	Phase 1 current demand	A	Inst.	①	
0	2	41	Phase 2 current demand	A	Inst.	①	
0	2	61	Phase 3 current demand	A	Inst.	①	
0	2	81	Phase N current demand	A	Inst.	①	＊2
0	2	2	Average current demand	A	max.	①	＊2
0	2	22	Phase 1 current demand	A	max.	①	
0	2	42	Phase 2 current demand	A	max.	①	
0	2	62	Phase 3 current demand	A	max.	①	
0	2	82	Phase N current demand	A	max.	①	＊2
0	2	5	Average current demand	A	min.	①	＊2
0	2	25	Phase 1 current demand	A	min.	①	
0	2	45	Phase 2 current demand	A	min.	①	
0	2	65	Phase 3 current demand	A	min.	①	
0	2	85	Phase N current demand	A	min.	①	＊2
0	5	1	Average L-L voltage	V	Inst.	①	＊2
0	5	21	1-2 voltage	V	Inst.	①	
0	5	41	2-3 voltage	V	Inst.	①	
0	5	61	3-1 voltage	V	Inst.	①	
0	5	2	Average L-L voltage	V	max.	①	＊2
0	5	22	1-2 voltage	V	max.	①	
0	5	42	2-3 voltage	V	max.	①	
0	5	62	3-1 voltage	V	max.	①	
0	5	5	Average L-L voltage	V	min.	①	＊2
0	5	25	1-2 voltage	V	min.	①	
0	5	45	2-3 voltage	V	min.	①	
0	5	65	3-1 voltage	V	min.	①	

Unit No.	Group (h)	Ch. (h)	Name of Channel			Data Type	Note
0	3	1	Average L-N voltage	V	Inst.	①	＊2
0	3	21	1-N voltage	V	Inst.	①	＊2
0	3	41	2-N voltage	V	Inst.	①	＊2
0	3	61	3-N voltage	V	Inst.	①	＊2
0	3	2	Average L-N voltage	V	max.	①	＊2
0	3	22	1-N voltage	V	max.	①	＊2
0	3	42	2-N voltage	V	max.	①	＊2
0	3	62	3-N voltage	V	max.	①	＊2
0	3	5	Average L-N voltage	V	min.	①	＊2
0	3	25	1-N voltage	V	min.	①	＊2
0	3	45	2-N voltage	V	min.	①	＊2
0	3	65	3-N voltage	V	min.	①	＊2
0	7	1	Total active power	kW	Inst.	①	
0	7	21	1-N active power	kW	Inst.	①	＊2
0	7	41	2-N active power	kW	Inst.	①	＊2
0	7	61	3-N active power	kW	Inst.	①	＊2
0	7	2	Total active power	kW	max.	①	
0	7	22	1-N active power	kW	max.	①	＊2
0	7	42	2-N active power	kW	max.	①	＊2
0	7	62	3-N active power	kW	max.	①	＊2
0	7	5	Total active power	kW	min.	①	
0	7	25	1-N active power	kW	min.	①	＊2
0	7	45	2-N active power	kW	min.	①	＊2
0	7	65	3-N active power	kW	min.	①	＊2
0	8	1	Total active power	kW	Inst.	①	
0	8	21	1-N active power demand	kW	Inst.	①	＊2
0	8	41	2-N active power demand	kW	Inst.	①	＊2
0	8	61	3-N active power demand	kW	Inst.	①	＊2
0	8	2	Total active power	kW	max.	①	
0	8	22	1-N active power demand	kW	max.	①	＊2
0	8	42	2-N active power demand	kW	max.	①	＊2
0	8	62	3-N active power demand	kW	max.	①	＊2
0	8	5	Total active power	kW	min.	①	
0	8	25	1-N active power demand	kW	min.	①	＊2
0	8	45	2-N active power demand	kW	min.	①	＊2
0	8	65	3-N active power demand	kW	min.	①	＊2
0	9	1	Total reactive power	kvar	Inst.	①	
0	9	21	1-N reactive power	kvar	Inst.	①	＊2
0	9	41	2-N reactive power	kvar	Inst.	①	＊2
0	9	61	3-N reactive power	kvar	Inst.	①	＊2
0	9	2	Total reactive power	kvar	max.	①	
0	9	22	1-N reactive power	kvar	max.	①	＊2
0	9	42	2-N reactive power	kvar	max.	①	＊2
0	9	62	3-N reactive power	kvar	max.	①	＊2
0	9	5	Total reactive power	kvar	min.	①	
0	9	25	1-N reactive power	kvar	min.	①	＊2
0	9	45	2-N reactive power	kvar	min.	①	＊2
0	9	65	3-N reactive power	kvar	min.	①	＊2
1	0B	1	Total apparent power	kVA	Inst.	①	＊2
1	0B	21	1-N apparent power	kVA	Inst.	①	＊2
1	0B	41	2-N apparent power	kVA	Inst.	①	＊2
1	0B	61	3-N apparent power	kVA	Inst.	①	＊2

＊1：It cannot be used by 3P4W.
＊2：It can be used only by 3P4W.

H.A: Current Harmonics
H.V: Voltage Harmonics

D.ratio: Distortion ratio
Inst.: Instantaneous value

Table 6.2 Group Channel List (2/3)

Unit No.	Group (h)	Ch. (h)	Name of Channel				Data Type	Note
1	0B	2	Total apparent power	kVA	max.		①	＊2
1	0B	22	1-N apparent power	kVA	max.		①	＊2
1	0B	42	2-N apparent power	kVA	max.		①	＊2
1	0B	62	3-N apparent power	kVA	max.		①	＊2
1	0B	5	Total apparent power	kVA	min.		①	＊2
1	0B	25	1-N apparent power	kVA	min.		①	＊2
1	0B	45	2-N apparent power	kVA	min.		①	＊2
1	0B	65	3-N apparent power	kVA	min.		①	＊2
0	0D	1	Total power factor	%	Inst.		①	
0	0D	21	Phase 1 power factor	%	Inst.		①	＊2
0	0D	41	Phase 2 power factor	%	Inst.		①	＊2
0	0D	61	Phase 3 power factor	%	Inst.		①	＊2
0	0D	2	Total power factor	%	max.		①	
0	0D	22	Phase 1 power factor	%	max.		①	＊2
0	0D	42	Phase 2 power factor	%	max.		①	＊2
0	0D	62	Phase 3 power factor	%	max.		①	＊2
0	0D	5	Total power factor	%	min.		①	
0	0D	25	Phase 1 power factor	%	min.		①	＊2
0	0D	45	Phase 2 power factor	%	min.		①	＊2
0	0D	65	Phase 3 power factor	%	min.		①	＊2
0	0F	1	Frequency	Hz	Inst.		①	
0	0F	2	Frequency	Hz	max.		①	
0	0F	5	Frequency	Hz	min.		①	
0	63	21	1-2 H.V	V	Inst.	Total	①	＊1
0	4D	21	1-2 H.V	V	Inst.	row 1	①	＊1
0	4F	21	1-2 H.V	V	Inst.	row 3	①	＊1
0	51	21	1-2 H.V	V	Inst.	row 5	①	＊1
0	53	21	1-2 H.V	V	Inst.	row 7	①	＊1
0	55	21	1-2 H.V	V	Inst.	row 9	①	＊1
0	57	21	1-2 H.V	V	Inst.	row 11	①	＊1
0	59	21	1-2 H.V	V	Inst.	row 13	①	＊1
0	76	86	1-2 H.V D. ratio	%	Inst.	Total	①	＊1
0	76	73	1-2 H.V D. ratio	%	Inst.	row 3	①	＊1
0	76	75	1-2 H.V D. ratio	%	Inst.	row 5	①	＊1
0	76	77	1-2 H.V D. ratio	%	Inst.	row 7	①	＊1
0	76	79	1-2 H.V D. ratio	%	Inst.	row 9	①	＊1
0	76	7B	1-2 H.V D. ratio	%	Inst.	row 11	①	＊1
0	76	7D	1-2 H.V D. ratio	%	Inst.	row 13	①	＊1
0	63	41	2-3 H.V	V	Inst.	Total	①	＊1
0	4D	41	2-3 H.V	V	Inst.	row 1	①	＊1
0	4F	41	2-3 H.V	V	Inst.	row 3	①	＊1
0	51	41	2-3 H.V	V	Inst.	row 5	①	＊1
0	53	41	2-3 H.V	V	Inst.	row 7	①	＊1
0	55	41	2-3 H.V	V	Inst.	row 9	①	＊1
0	57	41	2-3 H.V	V	Inst.	row 11	①	＊1
0	59	41	2-3 H.V	V	Inst.	row 13	①	＊1
0	76	9C	2-3 H.V D. ratio	%	Inst.	Total	①	＊1
0	76	89	2-3 H.V D. ratio	%	Inst.	row 3	①	＊1
0	76	8B	2-3 H.V D. ratio	%	Inst.	row 5	①	＊1
0	76	8D	2-3 H.V D. ratio	%	Inst.	row 7	①	＊1
0	76	8F	2-3 H.V D. ratio	%	Inst.	row 9	①	＊1
0	76	91	2-3 H.V D. ratio	%	Inst.	row 11	①	＊1
0	76	93	2-3 H.V D. ratio	%	Inst.	row 13	①	＊1
0	76	DE	L-L H.V D. ratio	%	max.	Total	①	＊1
0	4D	A2	L-L H.V	V	max.	row 1	①	＊1
0	76	CB	L-L H.V D. ratio	%	max.	row 3	①	＊1
0	76	CD	L-L H.V D. ratio	%	max.	row 5	①	＊1
0	76	CF	L-L H.V D. ratio	%	max.	row 7	①	＊1
0	76	D1	L-L H.V D. ratio	%	max.	row 9	①	＊1
0	76	D3	L-L H.V D. ratio	%	max.	row 11	①	＊1
0	76	D5	L-L H.V D. ratio	%	max.	row 13	①	＊1
0	4B	21	1-N H.V	V	Inst.	Total	①	＊2
0	35	21	1-N H.V	V	Inst.	row 1	①	＊2
1	37	21	1-N H.V	V	Inst.	row 3	①	＊2
1	39	21	1-N H.V	V	Inst.	row 5	①	＊2
1	3B	21	1-N H.V	V	Inst.	row 7	①	＊2
1	3D	21	1-N H.V	V	Inst.	row 9	①	＊2
1	3F	21	1-N H.V	V	Inst.	row 11	①	＊2
1	41	21	1-N H.V	V	Inst.	row 7	①	＊2
0	77	86	1-N H.V D. ratio	%	Inst.	Total	①	＊2
0	77	73	1-N H.V D. ratio	%	Inst.	row 3	①	＊2
0	77	75	1-N H.V D. ratio	%	Inst.	row 5	①	＊2
0	77	77	1-N H.V D. ratio	%	Inst.	row 7	①	＊2
0	77	79	1-N H.V D. ratio	%	Inst.	row 9	①	＊2
0	77	7B	1-N H.V D. ratio	%	Inst.	row 11	①	＊2
0	77	7D	1-N H.V D. ratio	%	Inst.	row 13	①	＊2
0	4B	41	2-N H.V	V	Inst.	Total	①	＊2
0	35	41	2-N H.V	V	Inst.	row 1	①	＊2
1	37	41	2-N H.V	V	Inst.	row 3	①	＊2
1	39	41	2-N H.V	V	Inst.	row 5	①	＊2
1	3B	41	2-N H.V	V	Inst.	row 7	①	＊2
1	3D	41	2-N H.V	V	Inst.	row 9	①	＊2
1	3F	41	2-N H.V	V	Inst.	row 11	①	＊2
1	41	41	2-N H.V	V	Inst.	row 7	①	＊2
0	77	9C	2-N H.V D. ratio	%	Inst.	Total	①	＊2
0	77	89	2-N H.V D. ratio	%	Inst.	row 3	①	＊2
0	77	8B	2-N H.V D. ratio	%	Inst.	row 5	①	＊2
0	77	8D	2-N H.V D. ratio	%	Inst.	row 7	①	＊2
0	77	8F	2-N H.V D. ratio	%	Inst.	row 9	①	＊2
0	77	91	2-N H.V D. ratio	%	Inst.	row 11	①	＊2
0	77	93	2-N H.V D. ratio	%	Inst.	row 13	①	＊2
0	4B	61	3-N H.V	V	Inst.	Total	①	＊2
0	35	61	3-N H.V	V	Inst.	row 1	①	＊2
1	37	61	3-N H.V	V	Inst.	row 3	①	＊2
1	39	61	3-N H.V	V	Inst.	row 5	①	＊2
1	3B	61	3-N H.V	V	Inst.	row 7	①	＊2
1	3D	61	3-N H.V	V	Inst.	row 9	①	＊2
1	3F	61	3-N H.V	V	Inst.	row 11	①	＊2
1	41	61	3-N H.V	V	Inst.	row 7	①	＊2
0	77	B2	3-N H.V D. ratio	%	Inst.	Total	①	＊2
0	77	9F	3-N H.V D. ratio	%	Inst.	row 3	①	＊2
0	77	A1	3-N H.V D. ratio	%	Inst.	row 5	①	＊2
0	77	A3	3-N H.V D. ratio	%	Inst.	row 7	①	＊2
0	77	A5	3-N H.V D. ratio	%	Inst.	row 9	①	＊2
0	77	A7	3-N H.V D. ratio	%	Inst.	row 11	①	＊2
0	77	A9	3-N H.V D. ratio	%	Inst.	row 13	①	＊2

＊1:It cannot be used by 3P4W.
＊2:It can be used only by 3P4W.

H.A: Current Harmonics
H.V: Voltage Harmonics

D.ratio: Distortion ratio
Inst.: Instantaneous value

Table 6.2 Group Channel List (3/3)

Unit No.	Group (h)	Ch. (h)	Name of Channel				Data Type	Note
0	77	DE	PhaseH.V D. ratio	%	max.	Total	①	＊2
0	35	A2	PhaseH.V	V	max.	row 1	①	＊2
0	77	CB	PhaseH.V D. ratio	%	max.	row 3	①	＊2
0	77	CD	PhaseH.V D. ratio	%	max.	row 5	①	＊2
0	77	CF	PhaseH.V D. ratio	%	max.	row 7	①	＊2
0	77	D1	PhaseH.V D. ratio	%	max.	row 9	①	＊2
0	77	D3	PhaseH.V D. ratio	%	max.	row 11	①	＊2
0	77	D5	PhaseH.V D. ratio	%	max.	row 13	①	＊2
0	33	21	Phase 1 H.A	A	Inst.	Total	①	
0	1D	21	Phase 1 H.A	A	Inst.	row 1	①	
0	1F	21	Phase 1 H.A	A	Inst.	row 3	①	
0	21	21	Phase 1 H.A	A	Inst.	row 5	①	
0	23	21	Phase 1 H.A	A	Inst.	row 7	①	
0	25	21	Phase 1 H.A	A	Inst.	row 9	①	
0	27	21	Phase 1 H.A	A	Inst.	row 11	①	
0	29	21	Phase 1 H.A	A	Inst.	row 13	①	
0	75	86	Phase 1 H.A D. ratio	%	Inst.	Total	①	
1	75	73	Phase 1 H.A D. ratio	%	Inst.	row 3	①	
1	75	75	Phase 1 H.A D. ratio	%	Inst.	row 5	①	
1	75	77	Phase 1 H.A D. ratio	%	Inst.	row 7	①	
1	75	79	Phase 1 H.A D. ratio	%	Inst.	row 9	①	
1	75	7B	Phase 1 H.A D. ratio	%	Inst.	row 11	①	
1	75	7D	Phase 1 H.A D. ratio	%	Inst.	row 13	①	
0	33	41	Phase 2 H.A	A	Inst.	Total	①	＊2
0	1D	41	Phase 2 H.A	A	Inst.	row 1	①	＊2
0	1F	41	Phase 2 H.A	A	Inst.	row 3	①	＊2
0	21	41	Phase 2 H.A	A	Inst.	row 5	①	＊2
0	23	41	Phase 2 H.A	A	Inst.	row 7	①	＊2
0	25	41	Phase 2 H.A	A	Inst.	row 9	①	＊2
0	27	41	Phase 2 H.A	A	Inst.	row 11	①	＊2
0	29	41	Phase 2 H.A	A	Inst.	row 13	①	＊2
0	75	9C	Phase 2 H.A D. ratio	%	Inst.	Total	①	＊2
1	75	89	Phase 2 H.A D. ratio	%	Inst.	row 3	①	＊2
1	75	8B	Phase 2 H.A D. ratio	%	Inst.	row 5	①	＊2
1	75	8D	Phase 2 H.A D. ratio	%	Inst.	row 7	①	＊2
1	75	8F	Phase 2 H.A D. ratio	%	Inst.	row 9	①	＊2
1	75	91	Phase 2 H.A D. ratio	%	Inst.	row 11	①	＊2
1	75	93	Phase 2 H.A D. ratio	%	Inst.	row 13	①	＊2
0	33	61	Phase 3 H.A	A	Inst.	Total	①	
0	1D	61	Phase 3 H.A	A	Inst.	row 1	①	
0	1F	61	Phase 3 H.A	A	Inst.	row 3	①	
0	21	61	Phase 3 H.A	A	Inst.	row 5	①	
0	23	61	Phase 3 H.A	A	Inst.	row 7	①	
0	25	61	Phase 3 H.A	A	Inst.	row 9	①	
0	27	61	Phase 3 H.A	A	Inst.	row 11	①	
0	29	61	Phase 3 H.A	A	Inst.	row 13	①	
0	75	B2	Phase 3 H.A D. ratio	%	Inst.	Total	①	
1	75	9F	Phase 3 H.A D. ratio	%	Inst.	row 3	①	
1	75	A1	Phase 3 H.A D. ratio	%	Inst.	row 5	①	
1	75	A3	Phase 3 H.A D. ratio	%	Inst.	row 7	①	
1	75	A5	Phase 3 H.A D. ratio	%	Inst.	row 9	①	
1	75	A7	Phase 3 H.A D. ratio	%	Inst.	row 11	①	
1	75	A9	Phase 3 H.A D. ratio	%	Inst.	row 13	①	

Unit No.	Group (h)	Ch. (h)	Name of Channel				Data Type	Note
0	33	81	Phase N H.A	A	Inst.	Total	①	＊2
0	1D	81	Phase N H.A	A	Inst.	row 1	①	＊2
0	1F	81	Phase N H.A	A	Inst.	row 3	①	＊2
0	21	81	Phase N H.A	A	Inst.	row 5	①	＊2
0	23	81	Phase N H.A	A	Inst.	row 7	①	＊2
0	25	81	Phase N H.A	A	Inst.	row 9	①	＊2
0	27	81	Phase N H.A	A	Inst.	row 11	①	＊2
0	29	81	Phase N H.A	A	Inst.	row 13	①	＊2
0	75	C8	Phase N H.A D. ratio	%	Inst.	Total	①	＊2
1	75	B5	Phase N H.A D. ratio	%	Inst.	row 3	①	＊2
1	75	B7	Phase N H.A D. ratio	%	Inst.	row 5	①	＊2
1	75	B9	Phase N H.A D. ratio	%	Inst.	row 7	①	＊2
1	75	BB	Phase N H.A D. ratio	%	Inst.	row 9	①	＊2
1	75	BD	Phase N H.A D. ratio	%	Inst.	row 11	①	＊2
1	75	BF	Phase N H.A D. ratio	%	Inst.	row 13	①	＊2
0	33	A2	H.A	A	max.	Total	①	
0	1D	A2	H.A	A	max.	row 1	①	
0	1F	A2	H.A	A	max.	row 3	①	
0	21	A2	H.A	A	max.	row 5	①	
0	23	A2	H.A	A	max.	row 7	①	
0	25	A2	H.A	A	max.	row 9	①	
0	27	A2	H.A	A	max.	row 11	①	
0	29	A2	H.A	A	max.	row 13	①	
0	80	1	active energy import	kWh	count		②	
0	80	63	active energy export	kWh	count		②	
0	80	64	active energy import	kWh	count	expand	②	
0	80	65	active energy export	kWh	count	expand	②	
0	81	1	reactive energy import lag	kvar	count		②	
0	81	63	reactive energy export lag	kvar	count		②	
0	81	64	reactive energy import	kvar	count		②	
0	81	65	reactive energy export lag	kvar	count		②	
0	81	66	reactive energy import lag	kvar	count	expand	②	
0	81	67	reactive energy export lag	kvar	count	expand	②	
0	81	68	reactive energy import	kvar	count	expand	②	
0	81	69	reactive energy export lag	kvar	count	expand	②	
0								
0	1	14	current upper limit	A	Alarm		①	
0	1	15	current lower limit	A	Alarm		①	
0	2	14	current demand upper limit	A	Alarm		①	
0	2	15	current demand lower limit	A	Alarm		①	
0	5	14	voltage upper limit (L-L)	V	Alarm		①	
0	5	15	voltage lower limit (L-L)	V	Alarm		①	
0	3	14	voltage upper limit (Phase)	V	Alarm		①	＊2
0	3	15	voltage lower limit (Phase)	V	Alarm		①	＊2
0	7	14	active power upper limit	kW	Alarm		①	
0	7	15	active power lower limit	kW	Alarm		①	
0	8	14	active power demand upper limit	kW	Alarm		①	
0	8	15	active power demand lower limit	kW	Alarm		①	
0	9	14	reactive power upper limit	kvar	Alarm		①	
0	9	15	reactive power lower limit	kvar	Alarm		①	
0	0D	14	power factor upper limit	%	Alarm		①	
0	0D	15	power factor lower limit	%	Alarm		①	
0	0F	14	Frequency upper limit	Hz	Alarm		①	
0	0F	15	Frequency lower limit	Hz	Alarm		①	
0	77	E1	H.V(L-N) upper limit	%	Alarm	Total	①	＊2
0	76	E1	H.V(L-L) upper limit	%	Alarm	Total	①	＊1
0	75	E1	H.A upper limit	%	Alarm	Total	①	
0	A0	31	Alarm state		Alarm		③	

＊1 : It cannot be used by 3P4W.
＊2 : It can be used only by 3P4W.

H.A: Current Harmonics
H.V: Voltage Harmonics

D.ratio: Distortion ratio
Inst.: Instantaneous value

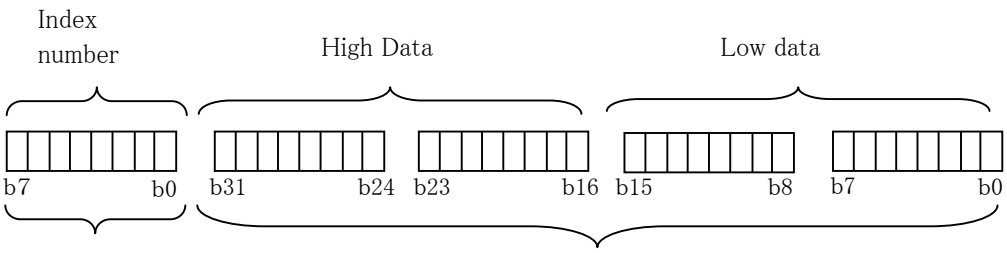
Table 6.3 Data Format (1/6)

Data	Data Format ①

Measurement Items

Voltage
Current
Active power
Reactive power
Apparent power
Power factor
Frequency

Format ①



Multiplicand

Numeric value：32-bit integer with a sign
-2147483648～2147483647
(80000000H～7FFFFFFFH)

＜Multiplicand＞

Multiplicand is fixed for every item according to primary current, primary voltage and phase-wiring. (Refer to table 6.4)

Index number＝03H: The actual value is 1000 times the numeric value.

Index number＝02H: The actual value is 100 times the numeric value.

Index number＝01H: The actual value is 10 times the numeric value.

Index number＝00H: The actual value is the numeric value.

Index number＝FFH: The actual value is 1/10 times the numeric value.

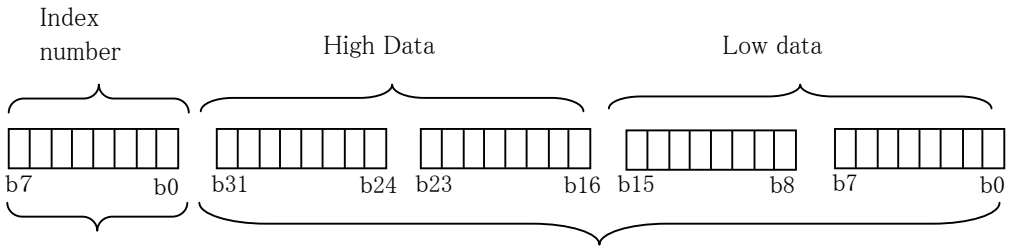
Index number＝FEH: The actual value is 1/100 times the numeric value.

Index number＝FDH: The actual value is 1/1000 times the numeric value.

＜Example：Active power＞

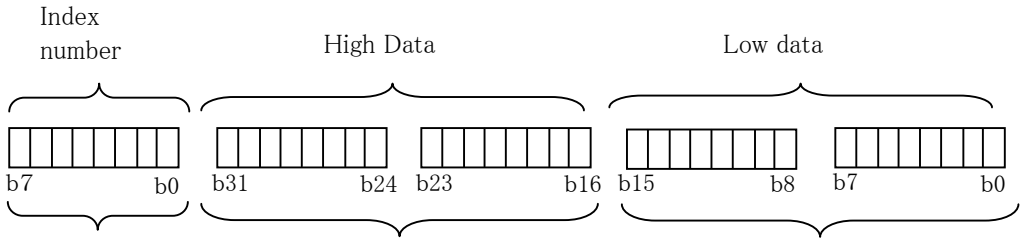
Data	Multiplicand	Numeric value	Actual value
FF000000FFH	FFH⇒1/10	000000FFH⇒255	255×1/10＝25.5[kW]
00000000FF	00H⇒1	000000FFH⇒255	255×1＝255[kW]
FFFFFFFF01	FFH⇒1/10	FFFFFF01H⇒-255	-255×1/10＝-25.5[kW]
00FFFFFF01	00H⇒1	FFFFFF01H⇒-255	-255×1＝-255[kW]

Table 6.3 Data Format (2/6)

Data	Data Format ②
Measurement Item (Active energy Reactive energy) Format ②	 Multiplicand　　Numeric value：32-bit integer with a sign However, the effective numerical value range is 0～999999. (0～F423FH) ＜Multiplicand＞ Multiplicand is fixed for every item according to primary current, primary voltage and phase-wiring. (Refer to table 6.4) Index number＝03H: The actual value is 1000 times the numeric value. Index number＝02H: The actual value is 100 times the numeric value. Index number＝01H: The actual value is 10 times the numeric value. Index number＝00H: The actual value is 1 times the numeric value. Index number＝FFH: The actual value is 1/10 times the numeric value. Index number＝FEH: The actual value is 1/100 times the numeric value. Index number＝FDH: The actual value is 1/1000 times the numeric value. Index number＝FCH: The actual value is 1/10000 times the numeric value. Index number＝FBH: The actual value is 1/100000 times the numeric value. ＜Example：Active energy＞

Data	Multiplicand	Numeric value	Actual value
FF000000FFH	FFH⇒1/10	000000FFH⇒255	255×1/10＝25.5[kWh]
00000000FF	00H⇒1	000000FFH⇒255	255×1＝255[kWh]

Table 6.3 Data Format (3/6)

Data	Data Format ③
Alarm state Format ③	 Multiplicand (= 00H (fixed)) Alarm state 0000H (fixed)

＜The allocation of the alarm state＞

bit	Data		
	Content	OFF(0)	ON (1)
b16	Unusable	—	—
b17	Unusable	—	—
b18	Alarm of Demand current *2	Non-Alarm	Alarm
b19	Alarm of Demand Active power *2	Non-Alarm	Alarm
b20	Unusable	—	—
b21	Alarm (total) *2	Non-Alarm	Alarm
b22	Unusable	—	—
b23	Unusable	—	—
b24	Alarm of Voltage *2	Non-Alarm	Alarm
b25	Alarm of Current *2	Non-Alarm	Alarm
b26	Alarm of Active power *2	Non-Alarm	Alarm
b27	Alarm of Reactive power *2	Non-Alarm	Alarm
b28	Alarm of Frequency *2	Non-Alarm	Alarm
b29	Alarm of Power factor *2	Non-Alarm	Alarm
b30	Alarm of T.H.D (Voltage) *3	Non-Alarm	Alarm
b31	Alarm of T.H.D (Current) *3	Non-Alarm	Alarm

*1: The numbers of alarms which can monitor are four items set up at ME110SR-C.
*2: "1" shows the state where the upper limit or the lower limit was exceeded.
*3: T.H.D means Total Harmonics Distortion.

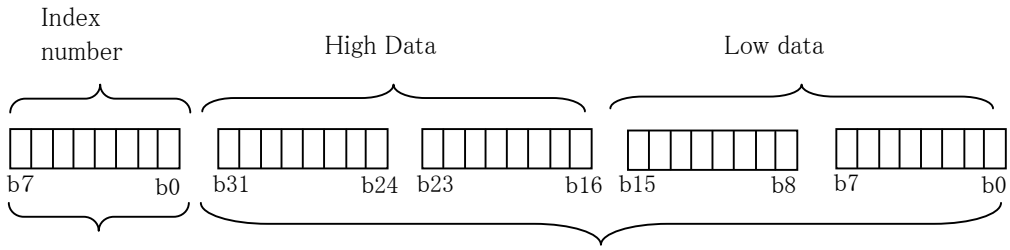
Alarm judging items for 3P3W

	Upper Limit	Lower Limit
Current (Demand)	Phase 1,2,3	Phase 1,2,3
Voltage	Phase 1-2, 2-3,3-1	Phase 1-2, 2-3,3-1
Voltage Harmonics	Phase 1-2, 2-3	—
Current Harmonics	Phase 1,3	—

Alarm judging items for 3P4W

		Upper Limit	Lower Limit
Current (Demand)		Phase 1,2,3,N	Phase 1,2,3
Voltage	L-N display	Phase 1-N, 2-N, 3-N	Phase 1-N, 2-N, 3-N
	L-L display	Phase 1-2, 2-3,3-1	Phase 1-2, 2-3,3-1
Voltage Harmonics	L-N display	Phase 1-N, 2-N, 3-N	—
	L-L display	Phase 1-N, 2-N, 3-N	—
Current Harmonics		Phase 1,2,3,N	—

Table 6.3 Data Format (4/6)

Data	Data Format ④
Set-up Primary current Primary voltage (L-L) Primary voltage (L-N) Secondary voltage (L-N) Format ④	 Multiplicand Numeric value:32-bit integer with a sign -2147483648～2147483647 (80000000H～7FFFFFFFH) ＜Multiplicand＞ Multiplicand is fixed for every item according to primary current, primary voltage and phase-wiring. (Refer to table 6.4) Index number＝01H: The actual value is 10 times the numeric value. Index number＝00H: The actual value is 1 times the numeric value. Index number＝FFH: The actual value is 1/10 times the numeric value. ＜Example:Primary current, Primary voltage＞

Data	Multiplicand	value	Numeric value
Set-up value＝100. 0A (Effective range ＝Down to one decimal place)	1/10 times⇒FFH	1000⇒03E8H	FF000003E8H
Set-up value＝400A (Effective range＝Integer)	1 time ⇒00H	400⇒0190H	0000000190H
Set-up value＝110. 0V (Effective range ＝Down to one decimal place)	1/10 times⇒FFH	1100⇒044CH	FF0000044CH
Set-up value＝3300V (Effective range＝10 time digit)	10 times⇒01H	330⇒014A	010000014A

Table 6.3 Data Format (5/6)

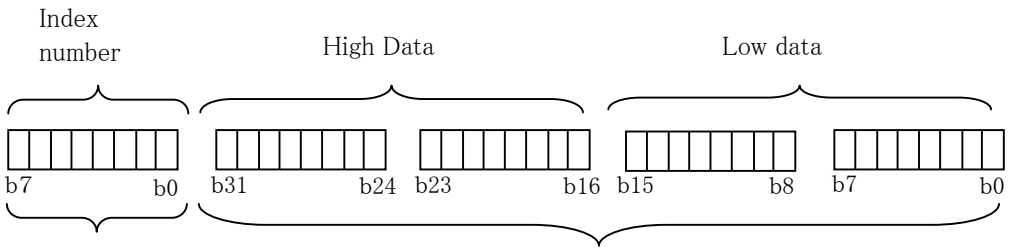
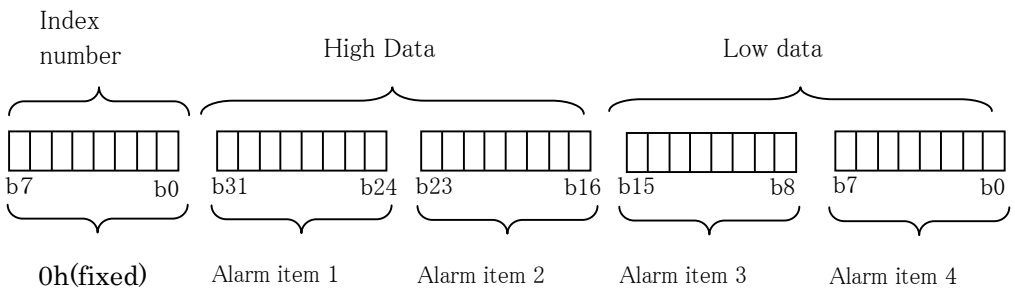
Data	Data Format ⑤
Set-up Phase & Wiring Time constant for DA Time constant for DW Model code 16bit set register Format ⑤	 Multiplicand 00H(fixed) Numeric value:32-bit integer with a sign -2147483648～2147483647 (80000000H～7FFFFFFFH) ＜Data(Numeric value)＞ **Phase & Wiring**:Single-phase 2-wire(1P2W) ＝1(01H) :Single-phase 3-wire(1P3W, RNT) ＝2(02H) :Three-phase 3-wire(3P3W) ＝3(03H) :Three-phase 4-wire(3P4W) ＝4(04H) :Single-phase 3-wire(1P3W, RNS) ＝5(05H) ※b31－8:0fixed Notes:You can't set up Three-phase 4-wire.(It can carry out a monitor.) **Time constant for demand**: The range of 0 (＝0H) to 1800 seconds(＝708H) can be set up per second. **Model code** : 10H←ME110SR-C(Fixed data) ※b31－8:0 fixed **16bit set register** b17:All values are reset. (It is the same as performing b18 and b30.) b18:Maximum and minimum values are reset. (without energy) b30:The counting of all energy is reset. Other bits are invalid.

Table 6.3 Data Format (6/6)

Data	Data Format ⑥
Set-up Alarm item Format ⑥	 NOTE: The numbers of alarms which can monitor are four items. ＜Content of alarm items＞

Data		Explanation
DEC.	HEX.	
00	00	No alarm
01	01	The upper limit alarm of current
02	02	The lower limit alarm of current
09	09	The upper limit alarm of current demand
10	0A	The lower limit alarm of current demand
17	11	The upper limit alarm of voltage
18	12	The lower limit alarm of voltage
21	15	The upper limit alarm of active power
22	16	The lower limit alarm of active power
23	17	The upper limit alarm of active power demand
24	18	The lower limit alarm of active power demand
25	19	The upper limit alarm of reactive power
26	1A	The lower limit alarm of reactive power
27	1B	The upper limit alarm of power factor
28	1C	The lower limit alarm of power factor
29	1D	The upper limit alarm of frequency
30	1E	The lower limit alarm of frequency
31	1F	The upper limit alarm of current harmonics
32	20	The upper limit alarm of voltage harmonic

Table 6.4 Effective range and Multiplicand (1/7)

① Active power, Active power demand, Reactive power, Apparent power (1/2)

Column : Primary current, Row : Primary voltage, Phase and wiring

Phase Wire	1P2W					1P3W	3P3W							
V / A	110	220	440	3300	6600	220	110	220	440	3300	6600	11000	22000	33000
5	0.001	0.001	0.01	0.1	0.1	0.01	0.001	0.01	0.01	0.1	0.1	x1	x1	x1
6	0.001	0.001	0.01	0.1	0.1	0.01	0.001	0.01	0.01	0.1	0.1	x1	x1	x1
7.5	0.001	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
8	0.001	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
10	0.001	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
12	0.001	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
15	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	x1	x1	x1	x1
20	0.01	0.01	0.01	0.1	x1	0.01	0.01	0.01	0.1	0.1	x1	x1	x1	x1
25	0.01	0.01	0.01	0.1	x1	0.01	0.01	0.01	0.1	x1	x1	x1	x1	x1
30	0.01	0.01	0.1	0.1	x1	0.01	0.01	0.01	0.1	x1	x1	x1	x1	x1
40	0.01	0.01	0.1	x1	x1	0.1	0.01	0.1	0.1	x1	x1	x1	x1	x1
50	0.01	0.01	0.1	x1	x1	0.1	0.01	0.1	0.1	x1	x1	x1	x1	x1
60	0.01	0.1	0.1	x1	x1	0.1	0.01	0.1	0.1	x1	x1	x1	x1	x1
75	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x1	x1	x1
80	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x1	x1	x1
100	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x1	x1	x1
120	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x1	x1	x1
150	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x1	x1	x1
200	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	x1	x1	x1	x1	x1	x1
250	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	x1	x1	x1	x1	x1	x10
300	0.1	0.1	x1	x1	x1	0.1	0.1	0.1	x1	x1	x1	x1	x1	x10
400	0.1	0.1	x1	x1	x1	x1	0.1	x1	x1	x1	x1	x1	x10	x10
500	0.1	0.1	x1	x1	x1	x1	0.1	x1	x1	x1	x1	x1	x10	x10
600	0.1	x1	x1	x1	x1	x1	0.1	x1	x1	x1	x1	x1	x10	x10
750	0.1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10
800	0.1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10
1000	0.1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10
1200	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10
1500	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10	x10
1600	x1	x1	x1	x1	x1	x1	x1	x1	x1	x1	x10	x10	x10	x10
2000	x1	x1	x1	x1	x10	x1	x1	x1	x1	x1	x10	x10	x10	x10
2500	x1	x1	x1	x1	x10	x1	x1	x1	x1	x10	x10	x10	x10	—
3000	x1	x1	x1	x1	x10	x1	x1	x1	x1	x10	x10	x10	x10	—
4000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x10	—	—
5000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x10	—	—
6000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x10	—	—
7500	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	—	—	—
8000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	—	—	—
10000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	—	—	—
12000	x1	x1	x1	x10	—	x1	x1	x1	x1	x10	—	—	—	—
20000	x1	x1	x1	—	—	x1	x1	x1	x10	x10	—	—	—	—
25000	x1	x1	x1	—	—	x1	x1	x1	x10	—	—	—	—	—
30000	x1	x1	x10	—	—	x1	x1	x1	x10	—	—	—	—	—

NOTE: Multiplicand changes by rated power.

0 - 1.2kW(var)	: 1/1000 (0.001)	120 - 12000kW(var)	: 1
1.2 - 12kW(var)	: 1/100 (0.01)	12000 - 120000kW(var)	: 10
12 - 120kW(var)	: 1/10 (0.1)	120000 - 1200000kW(var)	: 100

Table 6.4 Effective range and Multiplicand (2/7)

① Active power, Active power demand, Reactive power, Apparent power (2/2)

Column : Primary current, Row : Primary voltage (L-N), Phase and wiring

Phase Wire	3P4W				
V / A	110/√3	190/√3	380/√3	415/√3	440/√3
5	0.0001	0.001	0.001	0.001	0.001
6	0.0001	0.001	0.001	0.001	0.001
7.5	0.001	0.001	0.001	0.001	0.001
8	0.001	0.001	0.001	0.001	0.001
10	0.001	0.001	0.001	0.001	0.001
12	0.001	0.001	0.001	0.001	0.001
15	0.001	0.001	0.001	0.001	0.001
20	0.001	0.001	0.01	0.01	0.01
25	0.001	0.001	0.01	0.01	0.01
30	0.001	0.001	0.01	0.01	0.01
40	0.001	0.01	0.01	0.01	0.01
50	0.001	0.01	0.01	0.01	0.01
60	0.001	0.01	0.01	0.01	0.01
75	0.01	0.01	0.01	0.01	0.01
80	0.01	0.01	0.01	0.01	0.01
100	0.01	0.01	0.01	0.01	0.01
120	0.01	0.01	0.01	0.01	0.01
150	0.01	0.01	0.01	0.01	0.01
200	0.01	0.01	0.1	0.1	0.1
250	0.01	0.01	0.1	0.1	0.1
300	0.01	0.01	0.1	0.1	0.1
400	0.01	0.1	0.1	0.1	0.1
500	0.01	0.1	0.1	0.1	0.1
600	0.01	0.1	0.1	0.1	0.1
750	0.1	0.1	0.1	0.1	0.1
800	0.1	0.1	0.1	0.1	0.1
1000	0.1	0.1	0.1	0.1	0.1
1200	0.1	0.1	0.1	0.1	0.1
1500	0.1	0.1	0.1	0.1	0.1
1600	0.1	0.1	0.1	0.1	x1
2000	0.1	0.1	x1	x1	x1
2500	0.1	0.1	x1	x1	x1
3000	0.1	0.1	x1	x1	x1
4000	0.1	x1	x1	x1	x1
5000	0.1	x1	x1	x1	x1
6000	0.1	x1	x1	x1	x1
7500	x1	x1	x1	x1	x1
8000	x1	x1	x1	x1	x1
10000	x1	x1	x1	x1	x1
12000	x1	x1	x1	x1	x1
20000	x1	x1	x10	x10	x10
25000	x1	x1	x10	x10	x10
30000	x1	x1	x10	x10	x10

NOTE: Multiplicand changes by rated power.

0 - 1.2kW(var)	: 1/10000 (0.0001)	1200 - 12000kW(var)	: 1
1.2 - 12kW(var)	: 1/1000 (0.001)	12000 - 120000kW(var)	: 10
12 - 120kW(var)	: 1/100 (0.01)	120000 - 1200000kW(var)	: 100
120 - 1200kW(var)	: 1/10 (0.1)		

Table 6. 4 Effective range and Multiplicand (3/7)

② Current, Current demand, Current Harmonics

Column : Primary current

Primary Current (A)	Multiplicand	Primary Current (A)	Multiplicand
5	0.01	400	x1
6	0.01	500	x1
7.5	0.01	600	x1
8	0.01	750	x1
10	0.01	800	x1
12	0.01	1000	x1
15	0.01	1200	x1
20	0.01	1500	x1
25	0.01	1600	x1
30	0.01	2000	x1
40	0.1	2500	x1
50	0.1	3000	x1
60	0.1	4000	x10
75	0.1	5000	x10
80	0.1	6000	x10
100	0.1	7500	x10
120	0.1	8000	x10
150	0.1	10000	x10
200	0.1	12000	x10
250	0.1	20000	x10
300	0.1	25000	x10
		30000	x10

Table 6.4 Effective range and Multiplicand (4/7)

③ Voltage, Voltage Harmonics

Column : Primary Voltage

<Voltage>

Primary Voltage(V) NOTE1	3P4W(L-L)	Multiplicand
110 : 439	63.5 : 253	0.1
440 : 3290	254 : 1900	×1
3300 : 113000	1910 : 65700	×10
114000 : 550000 : 750000 NOTE2	65800 : : 750000	×100

<Voltage Harmonics>

Primary Voltage(V) NOTE1	Multiplicand
110 : 439	0.1
440 : 3290	×1
3300 : 131000	×10
132000 : 550000 : 750000 NOTE 3	×100

NOTE 1 : At 3 P4W, it is L-N voltage.

NOTE 2 : At 3P4W, it can set up to 750000 k V.

Table 6. 4 Effective range and Multiplicand (5/7)

④ Active energy, and Reactive energy (1/3)

Column : Primary current, Row : Primary voltage, Phase and wiring

Phase Wiring	1P2W					1P3W	3P3W							
V / A	110	220	440	3300	6600	220	110	220	440	3300	6600	11000	22000	33000
5	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.1	x1	x1
6	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
7.5	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
8	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	x1	x1	x1
10	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	x1	x1	x1	x1
12	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.01	0.1	x1	x1	x1	x1
15	0.01	0.01	0.01	0.1	0.1	0.01	0.01	0.01	0.1	0.1	x1	x1	x1	x1
20	0.01	0.01	0.01	0.1	x1	0.01	0.01	0.01	0.1	x1	x1	x1	x1	x10
25	0.01	0.01	0.1	0.1	x1	0.01	0.01	0.01	0.1	x1	x1	x1	x1	x10
30	0.01	0.01	0.1	0.1	x1	0.01	0.01	0.1	0.1	x1	x1	x1	x10	x10
40	0.01	0.01	0.1	x1	x1	0.01	0.01	0.1	0.1	x1	x1	x1	x10	x10
50	0.01	0.1	0.1	x1	x1	0.1	0.01	0.1	0.1	x1	x1	x1	x10	x1
60	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x10	x10	x10
75	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x10	x10	x10
80	0.01	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x1	x10	x10	x10
100	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x10	x10	x10	x10
120	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	0.1	x1	x10	x10	x10	x10
150	0.1	0.1	0.1	x1	x1	0.1	0.1	0.1	x1	x1	x10	x10	x10	x10
200	0.1	0.1	0.1	x1	x10	0.1	0.1	0.1	x1	x10	x10	x10	x10	x100
250	0.1	0.1	x1	x1	x10	0.1	0.1	0.1	x1	x10	x10	x10	x100	x100
300	0.1	0.1	x1	x1	x10	0.1	0.1	x1	x1	x10	x10	x10	x100	x100
400	0.1	0.1	x1	x10	x10	0.1	0.1	x1	x1	x10	x10	x10	x100	x100
500	0.1	x1	x1	x10	x10	x1	0.1	x1	x1	x10	x10	x10	x100	x100
600	0.1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x100	x100	x100
750	0.1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x100	x100	x100
800	0.1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x10	x100	x100	x100
1000	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x100	x100	x100	x100
1200	x1	x1	x1	x10	x10	x1	x1	x1	x1	x10	x100	x100	x100	x100
1500	x1	x1	x1	x10	x10	x1	x1	x1	x10	x10	x100	x100	x100	x100
1600	x1	x1	x1	x10	x100	x1	x1	x1	x10	x10	x100	x100	x100	x100
2000	x1	x1	x1	x10	x100	x1	x1	x1	x10	x100	x100	x100	x100	x1000
2500	x1	x1	x10	x10	x100	x1	x1	x1	x10	x100	x100	x100	x100	—
3000	x1	x1	x10	x10	x100	x1	x1	x10	x10	x100	x100	x100	x1000	—
4000	x1	x1	x10	x100	x100	x1	x1	x10	x10	x100	x100	x100	—	—
5000	x1	x10	x10	x100	x100	x10	x1	x10	x10	x100	x100	x100	—	—
6000	x1	x10	x10	x100	x100	x10	x10	x10	x10	x100	x100	x1000	—	—
7500	x1	x10	x10	x100	x100	x10	x10	x10	x10	x100	x100	—	—	—
8000	x1	x10	x10	x100	x100	x10	x10	x10	x10	x100	x100	—	—	—
10000	x10	x10	x10	x100	x100	x10	x10	x10	x10	x100	x1000	—	—	—
12000	x10	x10	x10	x100	—	x10	x10	x10	x10	x100	—	—	—	—
20000	x10	x10	x10	—	—	x10	x10	x10	x100	x1000	—	—	—	—
25000	x10	x10	x100	—	—	x10	x10	x10	x100	—	—	—	—	—
30000	x10	x10	x100	—	—	x10	x10	x100	x100	—	—	—	—	—

NOTE: Multiplicand changes by rated power.

0～9999.99kWh	: 0.01	0～9999990kWh	: x 10
0～99999.9kWh	: 0.1	0～99999900kWh	: x 100
0～999999kWh	: x 1	0～999999000kWh	: x 1000

Table 6. 4 Effective range and Multiplicand (6/7)

④ Active energy, and Reactive energy (2/3)

Column : Primary current, Row : Primary voltage, Phase and wiring

Phase Wiring	3P4W				
V / A	110/√3	190/√3	380/√3	415/√3	440/√3
5	0.01	0.01	0.01	0.01	0.01
6	0.01	0.01	0.01	0.01	0.01
7.5	0.01	0.01	0.01	0.01	0.01
8	0.01	0.01	0.01	0.01	0.01
10	0.01	0.01	0.01	0.01	0.01
12	0.01	0.01	0.01	0.01	0.01
15	0.01	0.01	0.01	0.1	0.1
20	0.01	0.01	0.1	0.1	0.1
25	0.01	0.01	0.1	0.1	0.1
30	0.01	0.01	0.1	0.1	0.1
40	0.01	0.1	0.1	0.1	0.1
50	0.01	0.1	0.1	0.1	0.1
60	0.1	0.1	0.1	0.1	0.1
75	0.1	0.1	0.1	0.1	0.1
80	0.1	0.1	0.1	0.1	0.1
100	0.1	0.1	0.1	0.1	0.1
120	0.1	0.1	0.1	0.1	0.1
150	0.1	0.1	0.1	x1	x1
200	0.1	0.1	x1	x1	x1
250	0.1	0.1	x1	x1	x1
300	0.1	0.1	x1	x1	x1
400	0.1	x1	x1	x1	x1
500	0.1	x1	x1	x1	x1
600	x1	x1	x1	x1	x1
750	x1	x1	x1	x1	x1
800	x1	x1	x1	x1	x1
1000	x1	x1	x1	x1	x1
1200	x1	x1	x1	x1	x1
1500	x1	x1	x1	x10	x10
1600	x1	x1	x10	x10	x10
2000	x1	x1	x10	x10	x10
2500	x1	x1	x10	x10	x10
3000	x1	x1	x10	x10	x10
4000	x1	x10	x10	x10	x10
5000	x1	x10	x10	x10	x10
6000	x10	x10	x10	x10	x10
7500	x10	x10	x10	x10	x10
8000	x10	x10	x10	x10	x10
10000	x10	x10	x10	x10	x10
12000	x10	x10	x10	x10	x10
20000	x10	x10	x100	x100	x100
25000	x10	x10	x100	x100	x100
30000	x10	x10	x100	x100	x100

NOTE: Multiplicand changes by rated power.

0～9999.99kWh : 0.01
0～99999.9kWh : 0.1
0～999999kWh : x 1
0～9999990kWh : x 10
0～99999900kWh : x 100
0～999999000kWh : x 1000

Table 6. 4 Effective range and Multiplicand (7/7)

④ Active energy, and Reactive energy (3/3)

NOTE

How to calculate rated power.

$$\text{Rated power [kW]} = \frac{\alpha \times (\text{Primary Voltage}) \times (\text{Primary Current})}{1000}$$

α : 1 at 1P2W

2 at 1P3W (Primary voltage is 110V.)

$\sqrt{3}$ at 3P3W

3 at 3P4W (Primary voltage is phase to neutral voltage.)

Rated power [kW]	Multiplicand	Effective range
Less than 10	0.01	0～9999.99kWh
Less than 100	0.1	0～99999.9kWh
Less than 1000	×1	0～999999kWh
Less than 10000	×10	0～9999990kWh
Less than 100000	×100	0～99999900kWh
100000 or more	×1000	0～999999000kWh

(2) Data Set command (2H)

2H	Data Set

- After write the command as shown below into the remote register RWwm, set the command execution request flag to ON (1). When the command completion reply flag turned on, the item specified is reset.
- The details of the data written into the remote resister RWwm are shown in the table 6.3 ,6.4 and 6.5.
- The item which can carry out set-up changes with phase and wiring types. (Refer to table 6.5)

Remote Register RWwm

	b15 – b8	b7 b4	b3 b0
m	Group No.	0H Unit NO.	1H Command
m＋1	Index number	Channel No.	
m＋2	Low data		
m＋3	High data		

Remote Register RWrn

	b15 – b8	b7 – b0
n	Channel No.	Group No.
n＋1	00H	00H
n＋2	00H	00H
n＋3	00H	00H

m, n : Address allocated to the master module by the station number setting.

Table 6.5　List of group and channel for set-up

Hex.		Content name	Range	Setting unit	Table 6.3
Group	Channel				
E 0	1 1	Primary current	(NOTE1)	—	④
E 0	1 2	Primary voltage(L-L)	(NOTE2　1P2W,1P3W,3P3W 用)	—	④
E 0	1 B	Primary voltage (L-N)	(NOTE3　3P4W 専用)	—	④
E 0	1 C	Secondary voltage (L-N)	(NOTE4　3P4W 専用)	—	④
E 0	1 3	Phase and wiring	1 : 1P2W　　3 : 3P3W 2 : 1P3W(RNT)　　5 : 1P3W(RNS) ※3P4W can not be set up.	—	⑤
0 2	E 0	Time constant for DA	0～1 8 0 0 s	(NOTE5)	⑤
0 8	E 0	Time constant for DW	0～1 8 0 0 s	(NOTE5)	⑤
0 1	1 4	Current upper limit	5 - 100% of the maximum scale	1% Initial value: 100%	①
0 1	1 5	Current lower limit	3～95% of the maximum scale	1% Initial value: 3%	①
0 2	1 4	Current demand upper limit	5～100% of the maximum scale	1% Initial value: 100%	①
0 2	1 5	Current demand lower limit	3～95% of the maximum scale	1% Initial value: 3%	①
8 0	0 1	Active energy　import	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
8 0	6 3	Active energy　export	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
8 1	0 1	Reactive energy import Lag	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
8 1	6 3	Reactive energy import Lead	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
8 1	6 4	Reactive energy export Lag	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
8 1	6 5	Reactive energy export Lead	0～999999×Multiplicand (refer to table 6.4)	1×Multiplicand	②
0 5	1 4	Voltage upper limit	15～100% of the maximum scale 20～140% of the rated value (at 3P4W)	1% Initial value: 100%	①
0 5	1 5	Voltage lower limit	10～95% of the maximum scale 15～135% of the rated value (at 3P4W)	1% Initial value: 50%	①
0 7	1 4	Active power upper limit	Single : 5～100% of the maximum scale Both　: -95～100% of the maximum scale	1% Initial value: 100%	①
0 7	1 5	Active power lower limit	Single : 3～95% of the maximum scale Both　: -100～95% of the maximum scale	1% Initial value: 3%	①
0 8	1 4	Active power demand upper limit	Single : 5～100% of the maximum scale Both　: -95～100% of the maximum scale	1% Initial value: 100%	①
0 8	1 5	Active power demand lower limit	Single : 3～95% of the maximum scale Both　: -100～95% of the maximum scale	1% Initial value: 3%	①
0 9	1 4	Reactive power demand upper limit	-95～100% of the maximum scale	1% Initial value: 100%	①
0 9	1 5	Reactive power demand lower limit	-100～95% of the maximum scale	1% Initial value: 3%	①
0 D	1 4	Power factor upper limit	-0.5～1～0.5	0.05 Initial value: 0.5	①
0 D	1 5	Power factor lower limit	-0.5～1～0.5	0.05 Initial value: 0.5	①
0 F	1 4	Frequency upper limit	45～65Hz	1Hz Initial value: 65Hz	①
0 F	1 5	Frequency lower limit	45～65Hz	1Hz Initial value: 45Hz	①
7 5	E 1	Current Harmonics (T.H.D) upper limit	5～100%	1% Initial value: 35%	①
7 6	E 1	Voltage L-L Harmonics(T.H.D) upper limit	0.5～20%	0.5% Initial value: 3.5%	①
7 7	E 1	Voltage L-N Harmonics(T.H.D) upper limit	0.5～20%	0.5% Initial value: 3.5%	①
A 1	3 A	16bit set register	b17 : All values are reset. b18 : Maximum and minimum values are reset. (without energy) b30 : The counting of all energy is reset. Other bits are invalid. ON:1、OFF:0	—	⑤

NOTE1 : Effective value for primary current

●At 1P2W and 3P3W

5A:6A:7.5A:8A:10A:12A:15A:20A:25A:30A:40A:50A:60A:75A:80A:100A:120A:150A:200A:
250A:300A:400A:500A:600A:750A:800A:1000A:1200A:1500A:1600A:2000A:2500A:
3000A:4000A:5000A:6000A:7500A:8000A:10000A:12000A:20000A:25000A:30000A

※The current value to which rated power exceeds 122.5MW cannot be set up.

※A change of unit can not be performed via communication. Please set from setup menu of the instrument.
(A → kA)

●At 3P4W

From the most significant digit to 3 figures can be freely set up in the range of 5A to 30000A.

※A change of unit can not be performed via communication. Please set from setup menu of the instrument.
(A → kA)

NOTE2 : Effective value for primary voltage (Phase to phase) (At 3P4W, it cannot set up phase to phase voltage.)

●At 1P2W／3P3W

◆Effective range : 110V、220V～550000V

◆Unit :

・220V～999V ・・・・・・・・・・1V
・1000V～9990V ・・・・・・・・10V
・10000V～99900V ・・・・・・100V
・100000V～550000V ・・・・1000V

※If you set 220V, the setup content is 220V direct.

●At 1P3W

◆Effective range : 220V fixed

NOTE3 : Effective value for primary voltage (Phase to neutral) (It can set only at 3P4W.)

●No using VT (direct input)

◆Choose from 63.5V, 110V, 220V, 240V and 254V.

◆If you set from 255V to 750000V, the setup content is changed into "using VT" from "direct input".

●Using VT

◆From the most significant digit to 3 figures can be freely set up in the range of 255V to750000V.

◆If you set 63.5V, 110V, 220V, 240V or 254V, the setup content is changed into "direct input" from "using VT".

NOTE4 : Effective value for secondary voltage (Phase to neutral) (It can set only at 3P4W.)

◆Choose from 63.5V, 100V, 110V, 115V and 120V.

◆If you set the value in the condition of " direct input", the setup content is changed from " direct input " to " using VT " and Primary voltage value is changed.

NOTE5 : Effective value for Time constant (DA, DW)

Choose from the following values;
0s, 10s, 20s, 30s, 40s, 50s, 1min, 2min, 3min, 4min, 5min, 6min, 7min, 8min, 9min, 10min, 15min, 20min, 25min, 30min

6.2.3 About error occurrence

When the command and related data transmitted to ME110SR-C is improper or ME110SR-C is in H/W error, the error code shown in Table 6.11 is returned as reply data.

Table 6.11 Error code

Error description	Error code (Hex)
Undefined command	01H
Frequency, voltage harmonics or current harmonics is out of range.	17H
(Frequency and harmonics measurement need a voltage input.)	E0H
Illegal command or packet length	40H
Invalid group number	41H
Invalid channel number	42H
ME110SR-C is in SET-UP MODE.	43H
	44H
Invalid data for set-up	51H
It is not set the item of alarm.	55H
H/W error	C0H

If an error occurs, the error code is written into the RWrn as shown in the figure below, RX(n+1)A (error status flag) turned on (error occurrence) and RX(n+1)B (remote READY) turned off (Normally communication stop). For the error resetting method, refer to "5.4 Error communication".

Remote Register RWrn

	b15	b0
n	Channel No.	Group No.
n + 1	00H	00H
n + 2	00H	Error code
n + 3	00H	00H

n : Address allocated to the master module by the station number setting.

Caution

When an error occurs in ME110SR (RX(n+1)A is ON), RXn2, RXn6 and RXn7 are not changed.

7. Abbreviations and Special Terms

Abbreviations and special terms used in this manual are shown below:

Abbreviation and special term	Description
Master station	Station which controls remote stations and local stations. One station is required for one system.
Local station	Station with the CPU which can communicate with master station and other local stations.
Remote I/O station	Remote station which deals with bit information only.
Remote device station	Remote station which deals with bit information and word information.
Remote station	General name for remote I/O station and remote device station. Controlled by a master station.
Intelligent device station	Station that can perform transient transmission.
RX	Remote input
RY	Remote output
RWw	Remote resister (write area)
RWr	Remote resister （read area）
Energy ／hour	Hourly active energy from the hour (00 minute, 00 second) to the hour (00 minute, 00 second) calculated based on the time data in ME110SR-C.
Demand value	The demand value is an approximate average value during the demand time period.　When it is set to 0 [minute], each demand present value becomes equivalent to the present value.
Command	Identification code allocated to items to be monitored or set. ME110SR-C uses a special-purpose command that is transmitted to monitor each measurement value or set each parameter.

Program example

Example of sequence program using CC-Link system

（Reference data）

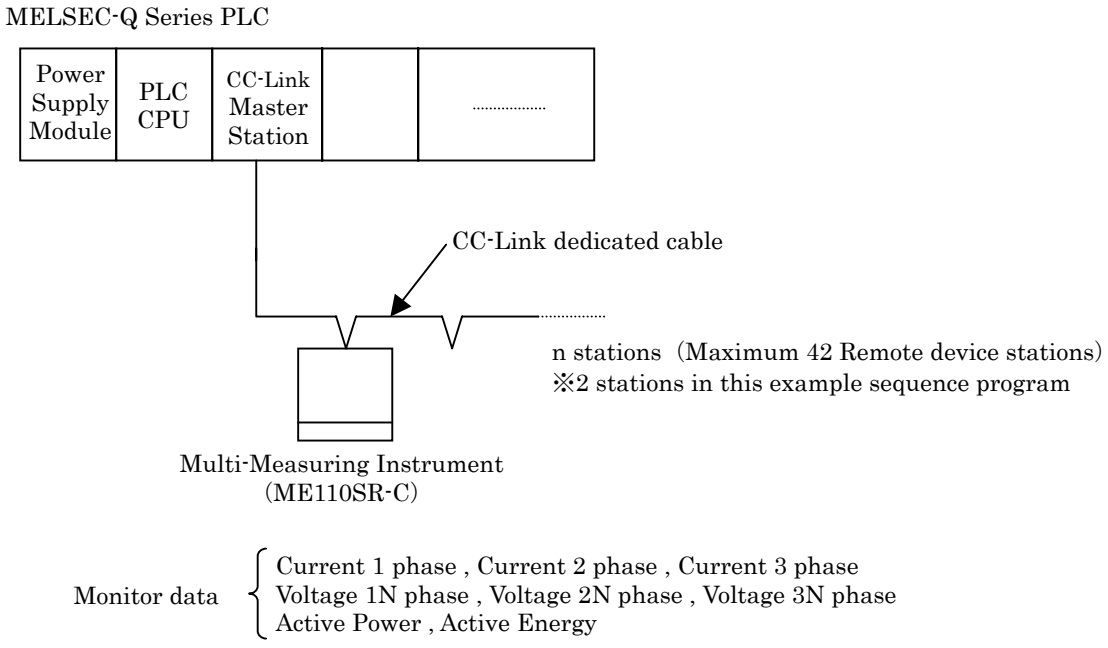
Create a sequence program with reference to Channel lists and Program example of ME110SR-C.

（In addition , since this program example is created as a case that terminal station numbers (terminal address) are consecutive numbers from 1,create it carefully）

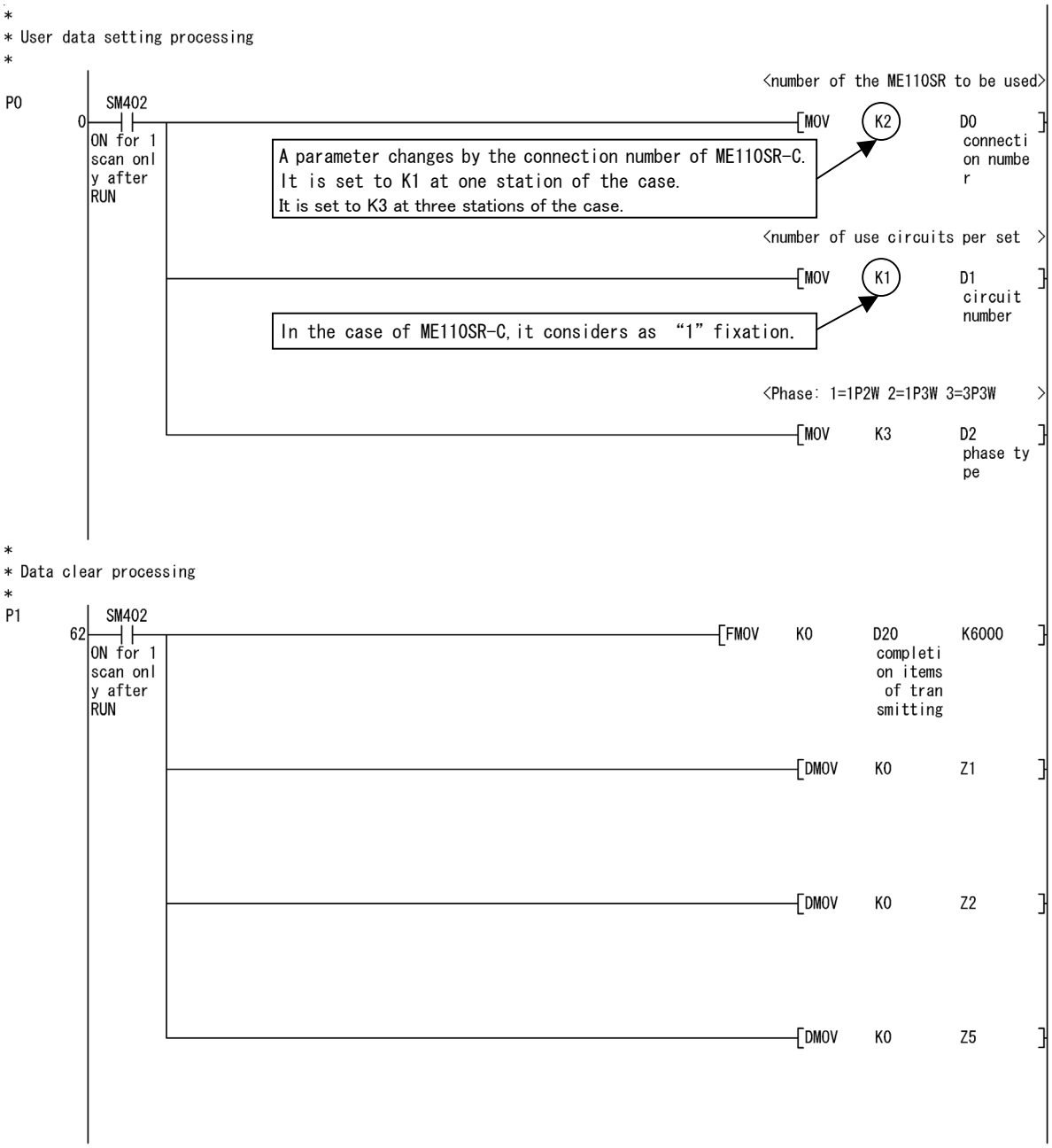
This program is an example using MELSEC-Q series PLC CPUS.

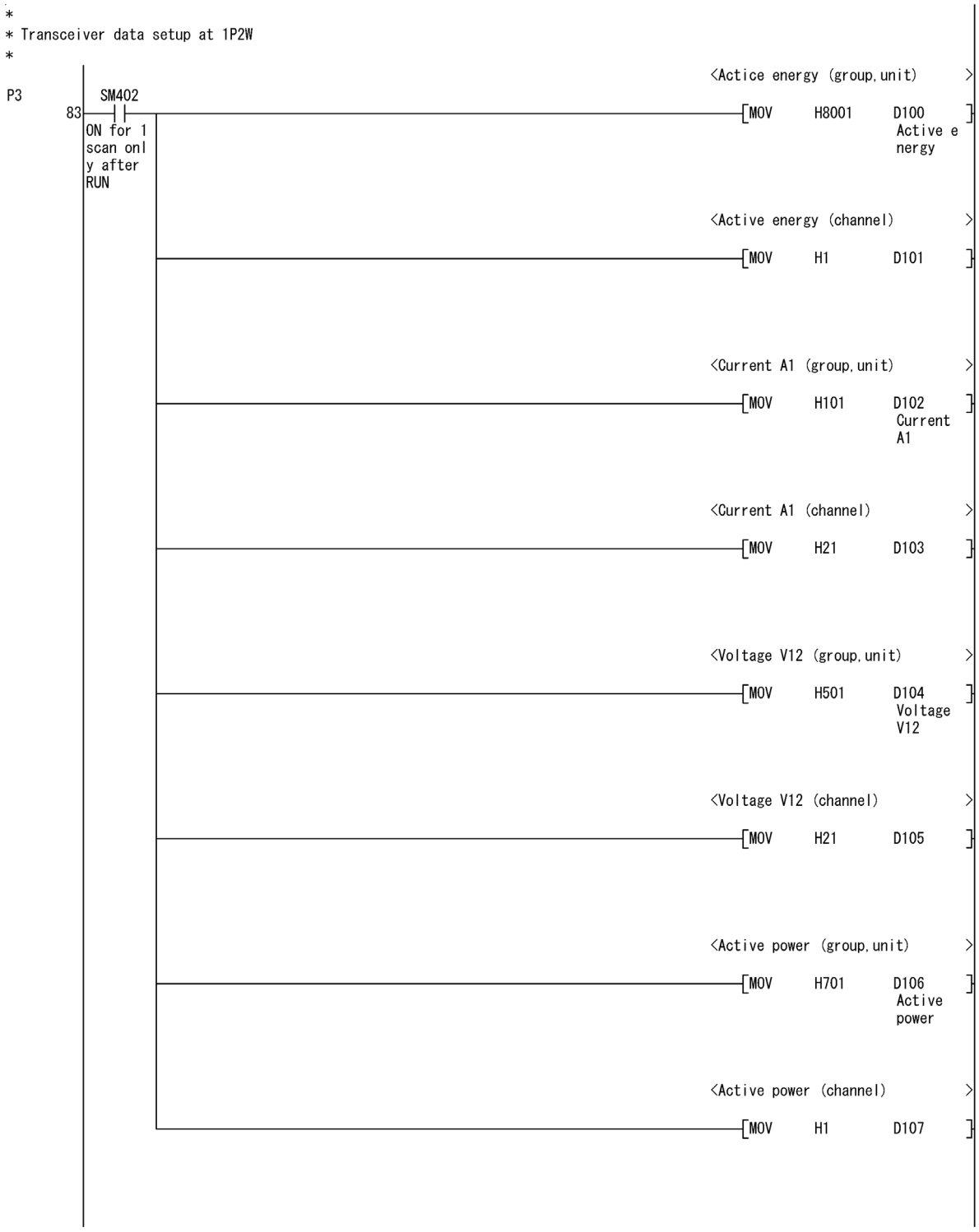
（1） Example of sequence program

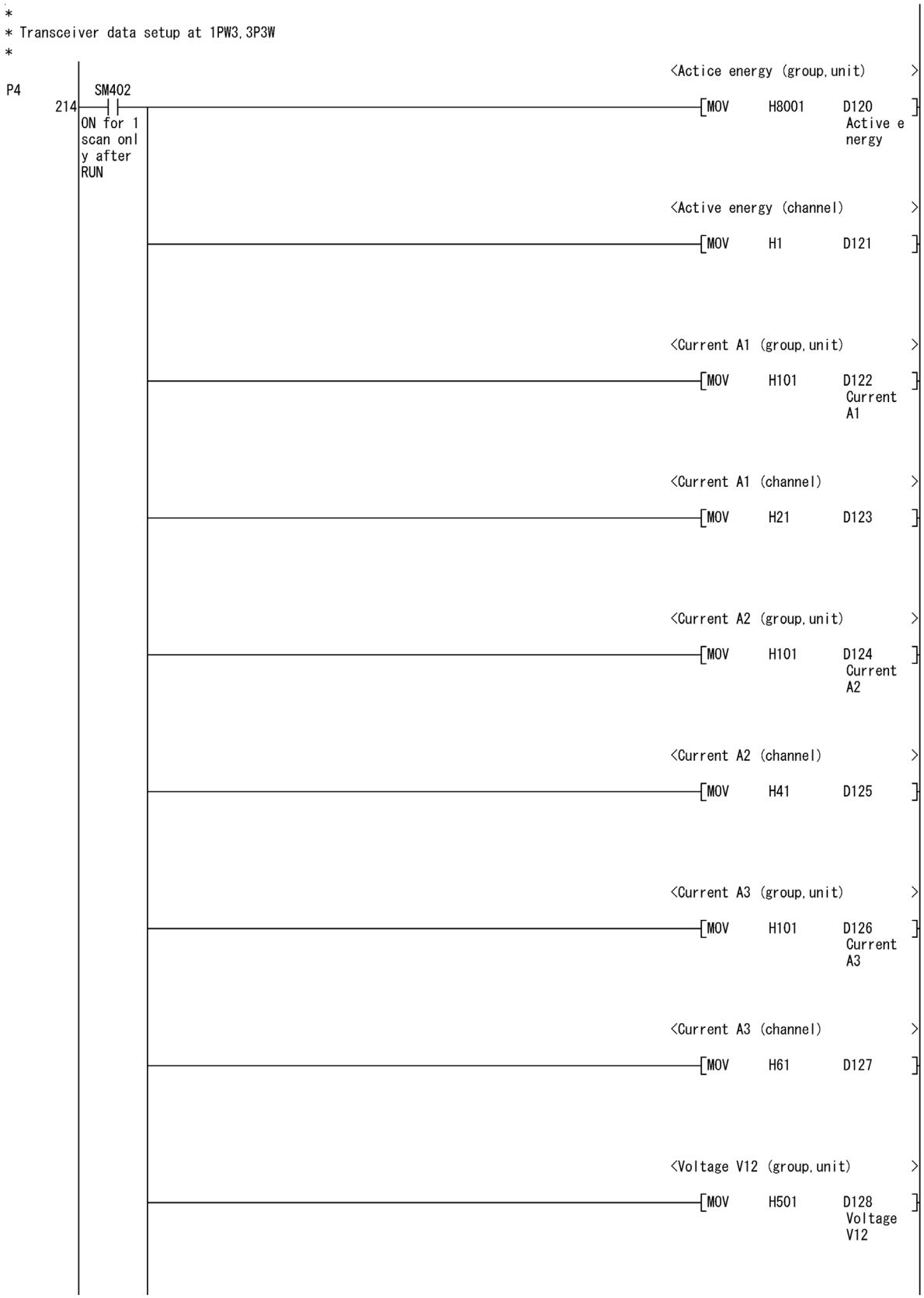
［System］

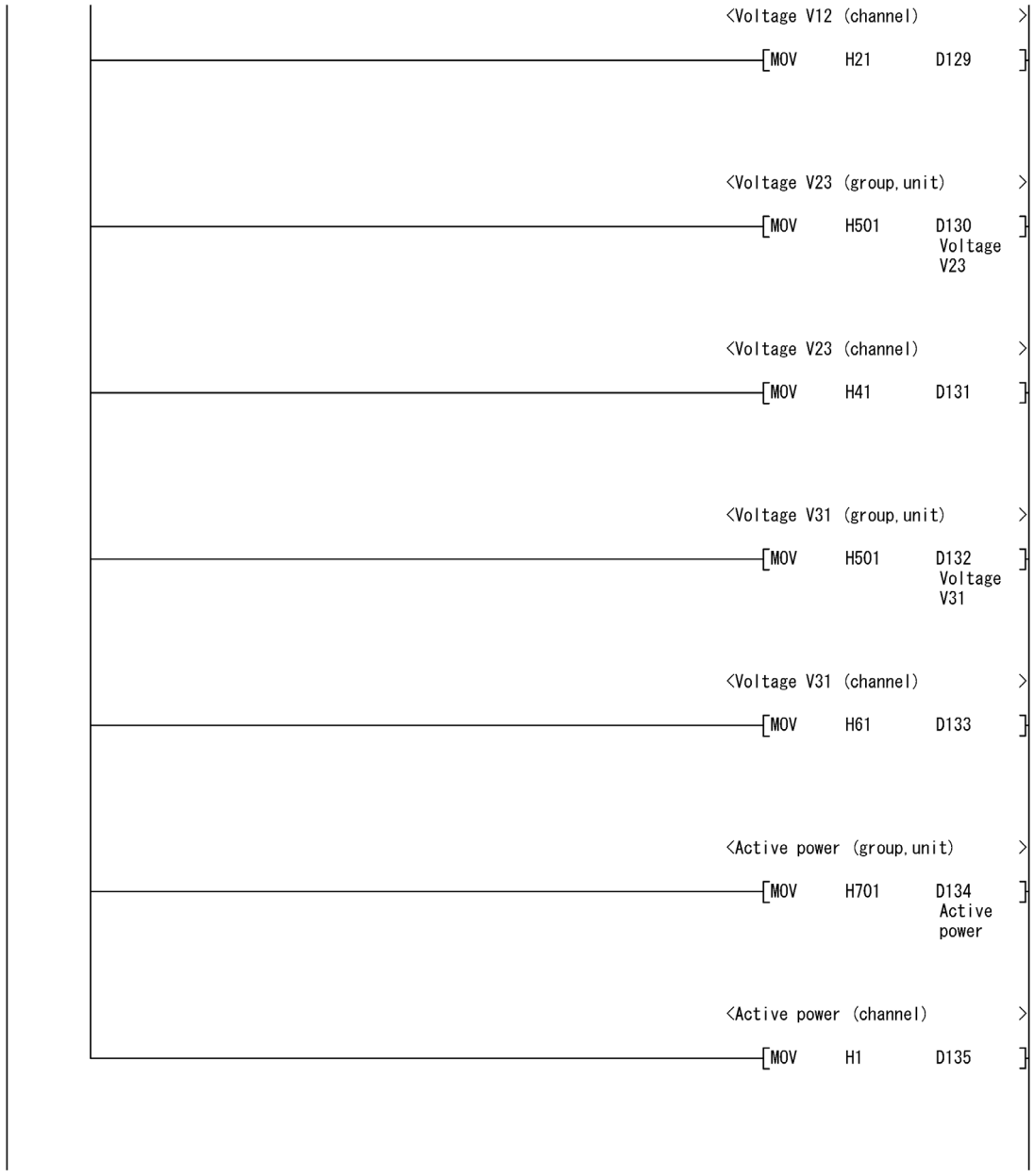


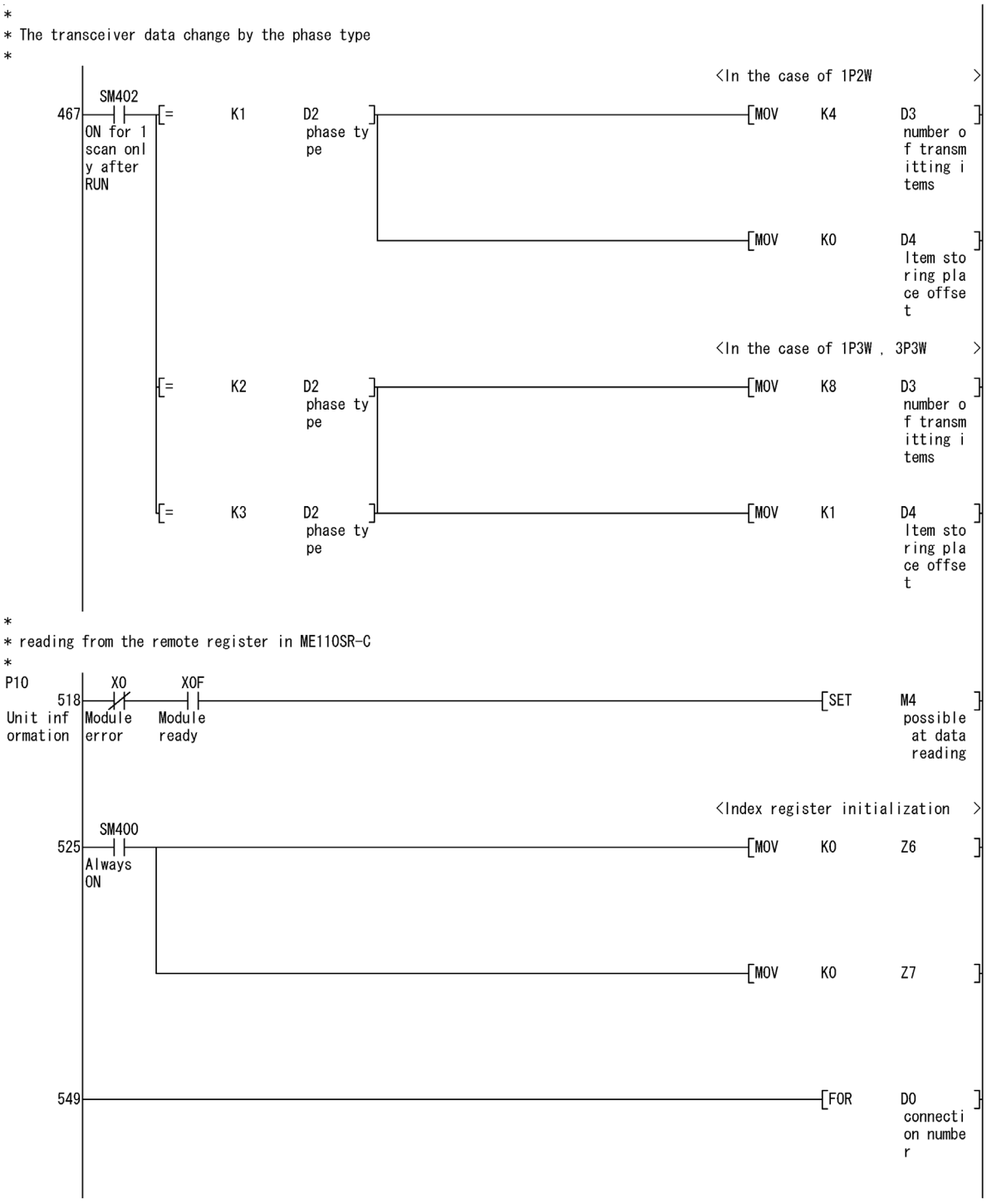
Monitor data
- Current 1 phase , Current 2 phase , Current 3 phase
- Voltage 1N phase , Voltage 2N phase , Voltage 3N phase
- Active Power , Active Energy

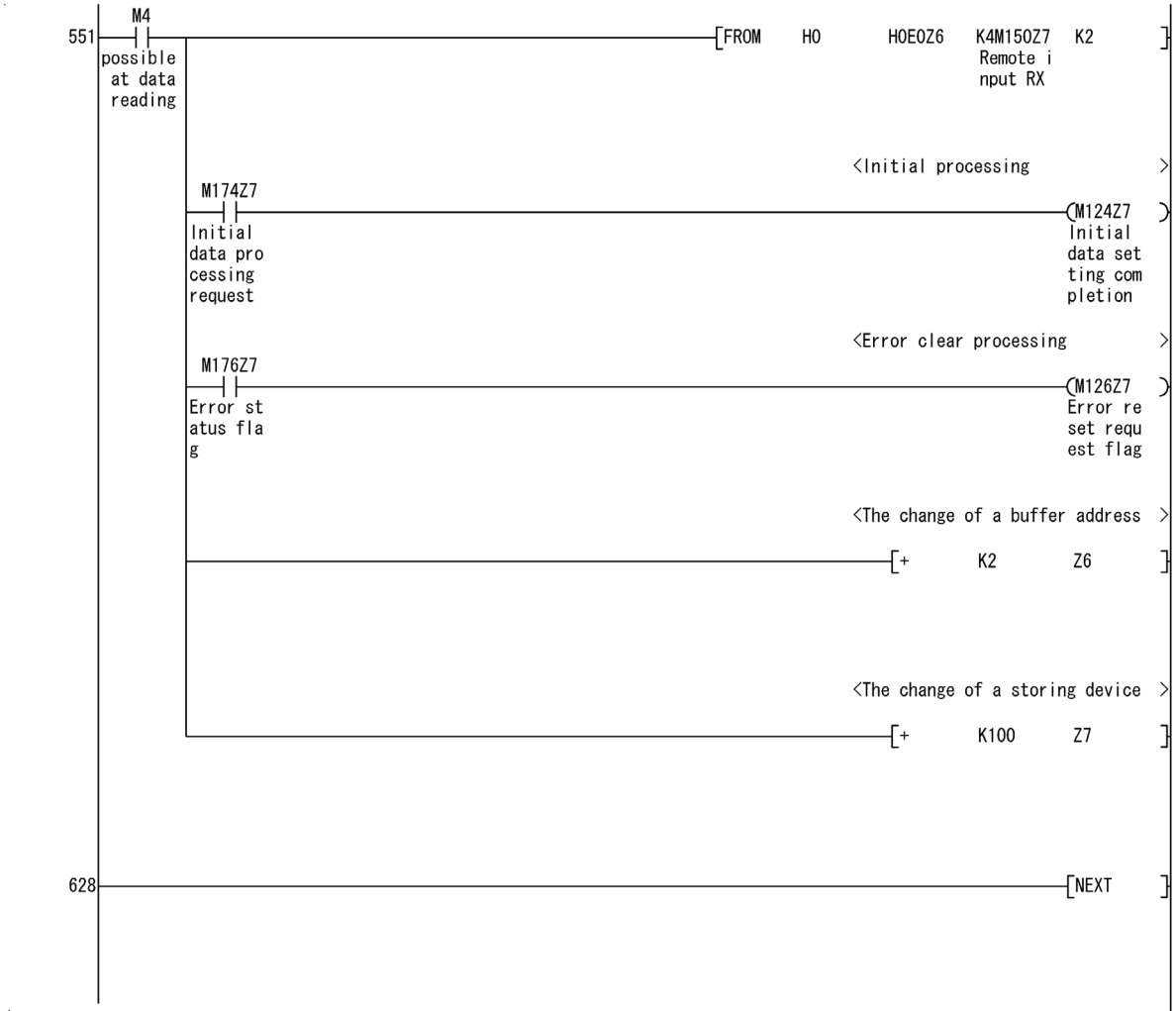

*
* User data setting processing
*
<number of the ME110SR to be used>
P0
SM402
0
ON for 1 scan only after RUN
MOV K2 D0 connection number
A parameter changes by the connection number of ME110SR-C.
It is set to K1 at one station of the case.
It is set to K3 at three stations of the case.
<number of use circuits per set >
MOV K1 D1 circuit number
In the case of ME110SR-C,it considers as “1” fixation.
<Phase: 1=1P2W 2=1P3W 3=3P3W >
MOV K3 D2 phase type
*
* Data clear processing
*
P1
SM402
62
ON for 1 scan only after RUN
FMOV K0 D20 K6000 completion items of transmitting
DMOV K0 Z1
DMOV K0 Z2
DMOV K0 Z5


*
* Transceiver data setup at 1P2W
*
P3
83
SM402
ON for 1 scan only after RUN
<Actice energy (group,unit)
MOV H8001 D100 Active energy
<Active energy (channel)
MOV H1 D101
<Current A1 (group,unit)
MOV H101 D102 Current A1
<Current A1 (channel)
MOV H21 D103
<Voltage V12 (group,unit)
MOV H501 D104 Voltage V12
<Voltage V12 (channel)
MOV H21 D105
<Active power (group,unit)
MOV H701 D106 Active power
<Active power (channel)
MOV H1 D107

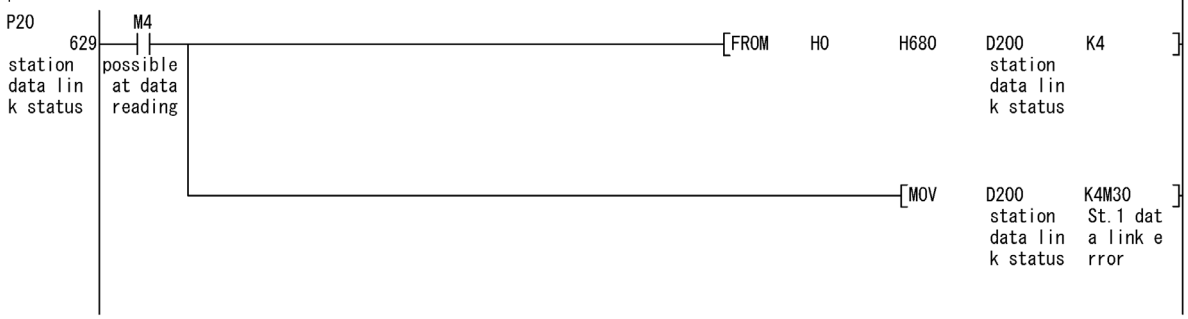

*
* Transceiver data setup at 1PW3,3P3W
*
P4
214
SM402
ON for 1 scan only after RUN
<Actice energy (group,unit)
MOV H8001 D120 Active energy
<Active energy (channel)
MOV H1 D121
<Current A1 (group,unit)
MOV H101 D122 Current A1
<Current A1 (channel)
MOV H21 D123
<Current A2 (group,unit)
MOV H101 D124 Current A2
<Current A2 (channel)
MOV H41 D125
<Current A3 (group,unit)
MOV H101 D126 Current A3
<Current A3 (channel)
MOV H61 D127
<Voltage V12 (group,unit)
MOV H501 D128 Voltage V12

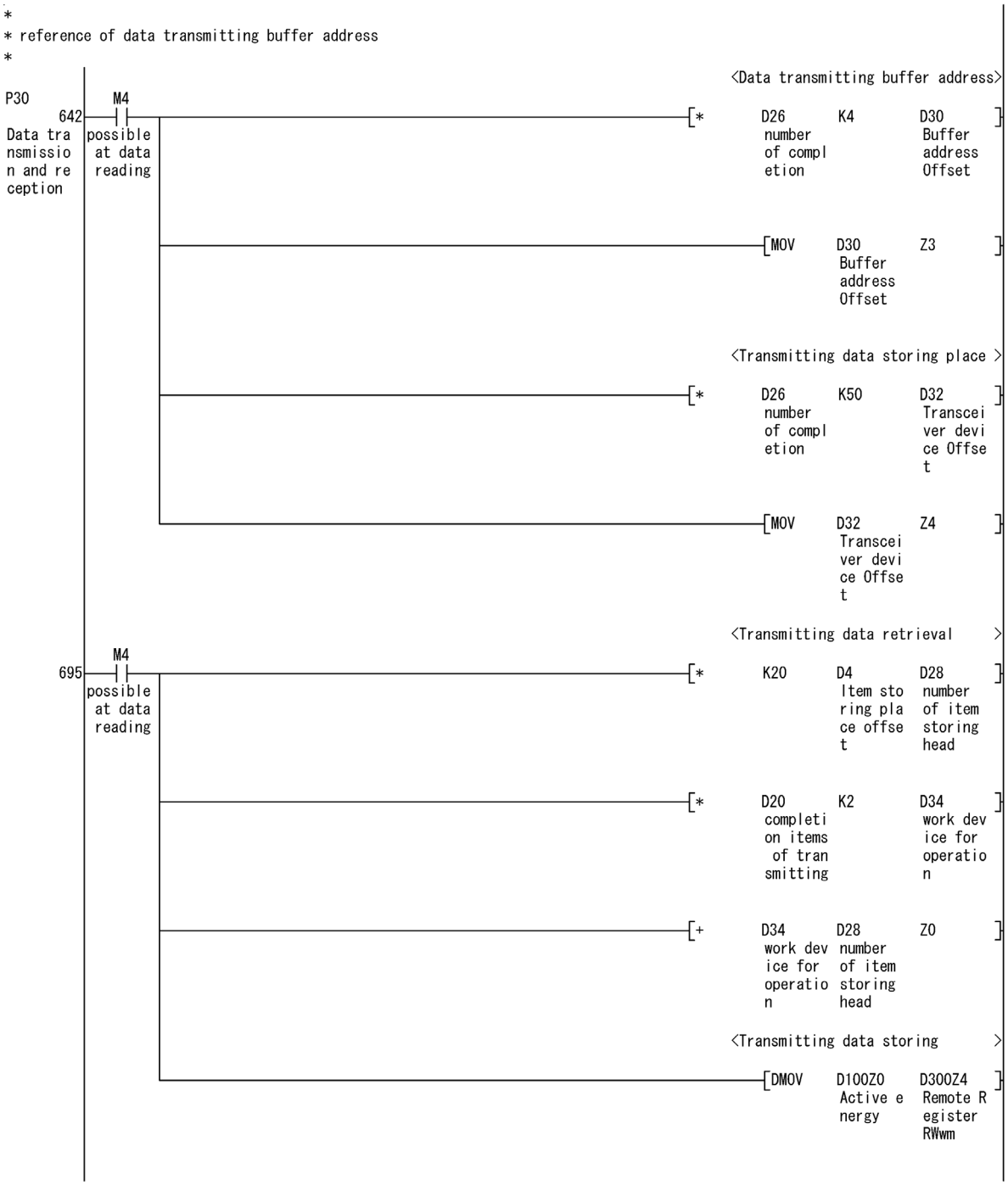

<Voltage V12 (channel)
MOV H21 D129
<Voltage V23 (group,unit)
MOV H501 D130
Voltage V23
<Voltage V23 (channel)
MOV H41 D131
<Voltage V31 (group,unit)
MOV H501 D132
Voltage V31
<Voltage V31 (channel)
MOV H61 D133
<Active power (group,unit)
MOV H701 D134
Active power
<Active power (channel)
MOV H1 D135

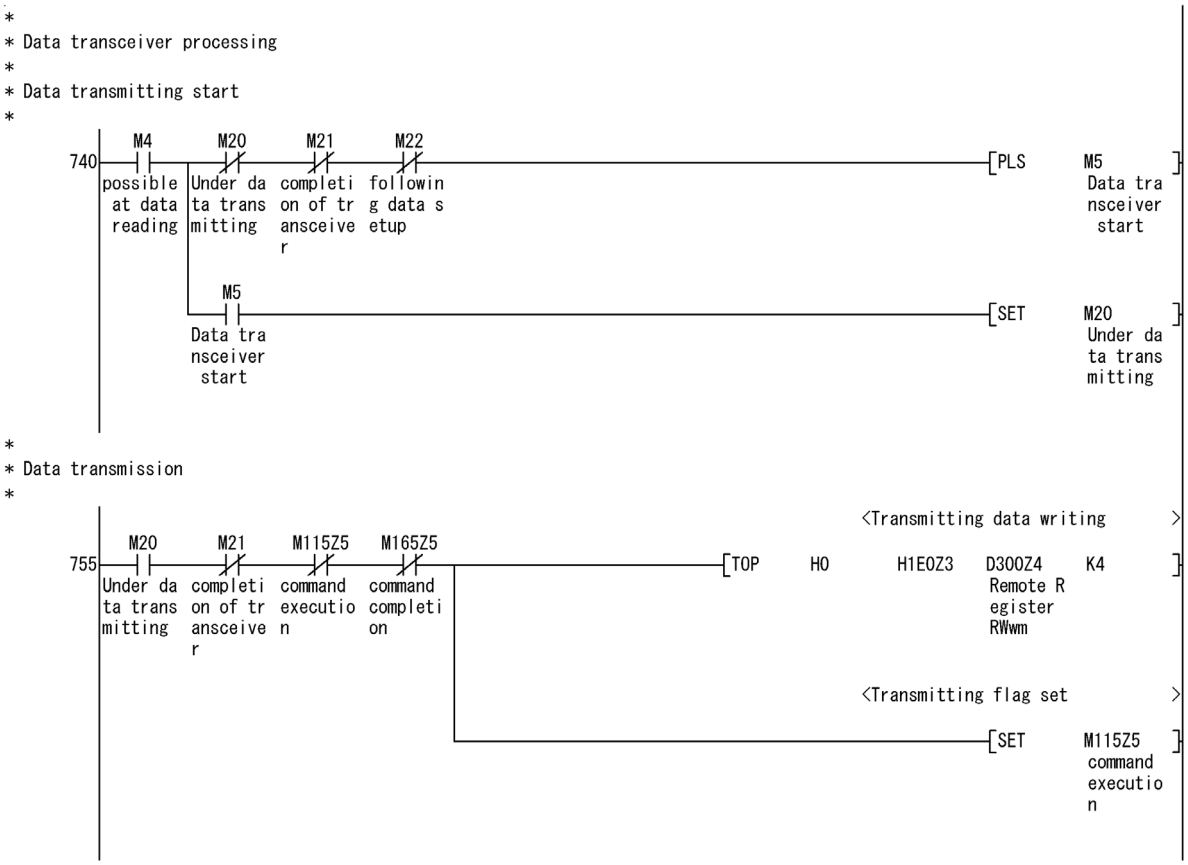

*
* The transceiver data change by the phase type
*
<In the case of 1P2W
SM402
467
ON for 1 scan only after RUN
=
K1
D2
phase type
MOV
K4
D3
number of transmitting items
MOV
K0
D4
Item storing place offset
<In the case of 1P3W , 3P3W
=
K2
D2
phase type
MOV
K8
D3
number of transmitting items
=
K3
D2
phase type
MOV
K1
D4
Item storing place offset
*
* reading from the remote register in ME110SR-C
*
P10
518
Unit information
X0
Module error
X0F
Module ready
SET
M4
possible at data reading
<Index register initialization
SM400
525
Always ON
MOV
K0
Z6
MOV
K0
Z7
549
FOR
D0
connection number

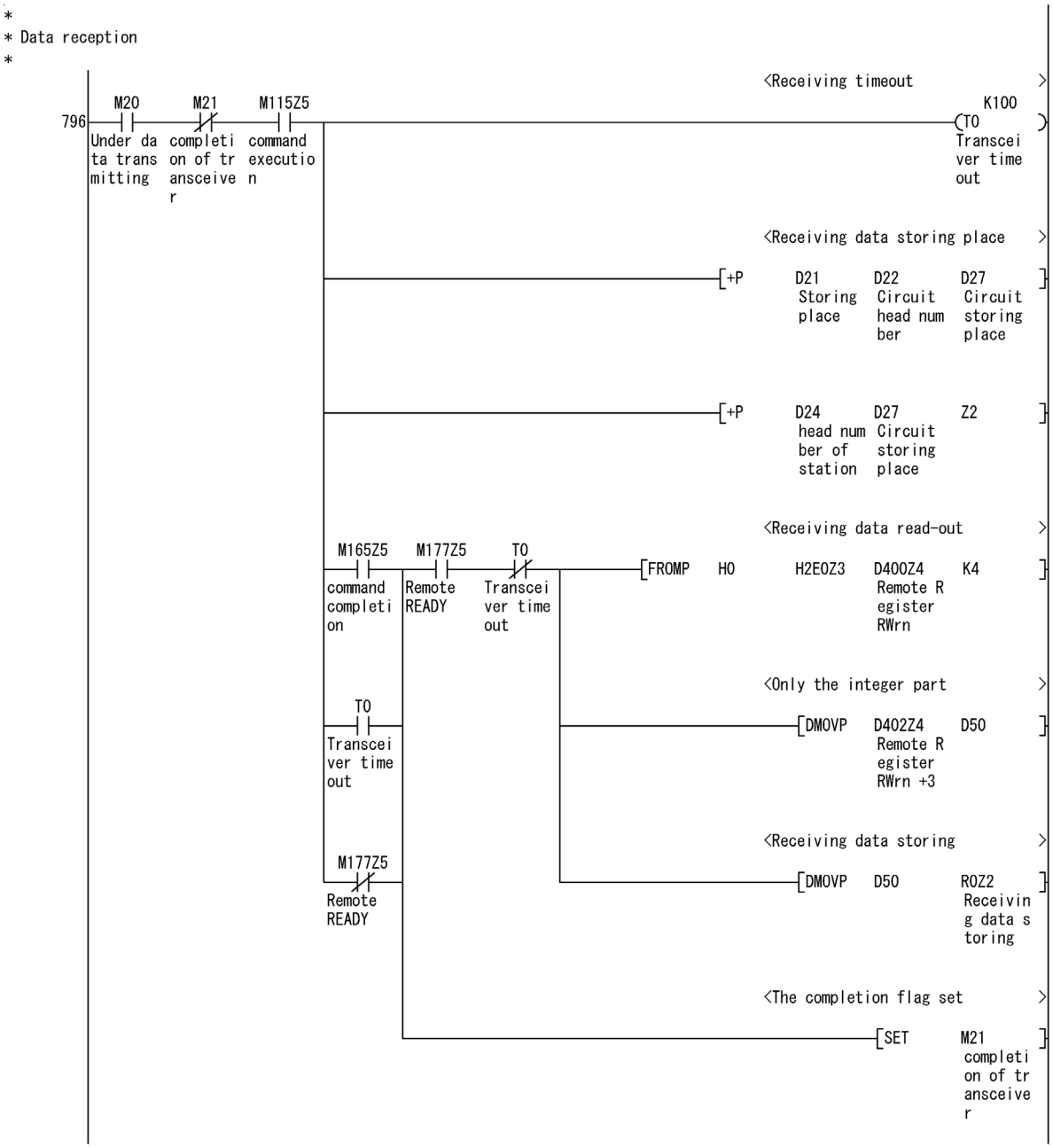


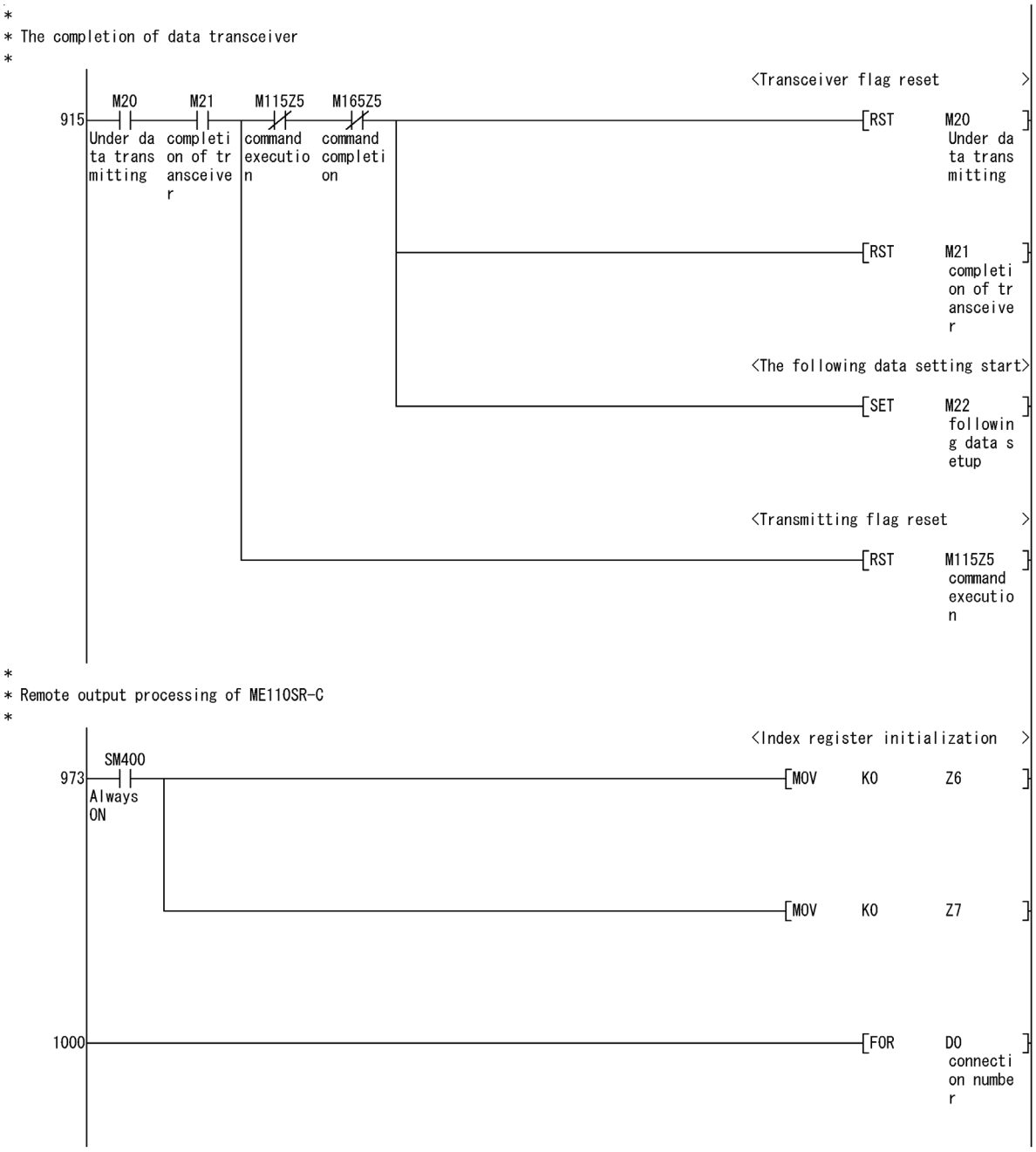

```
*
* reading data link error status
*
```

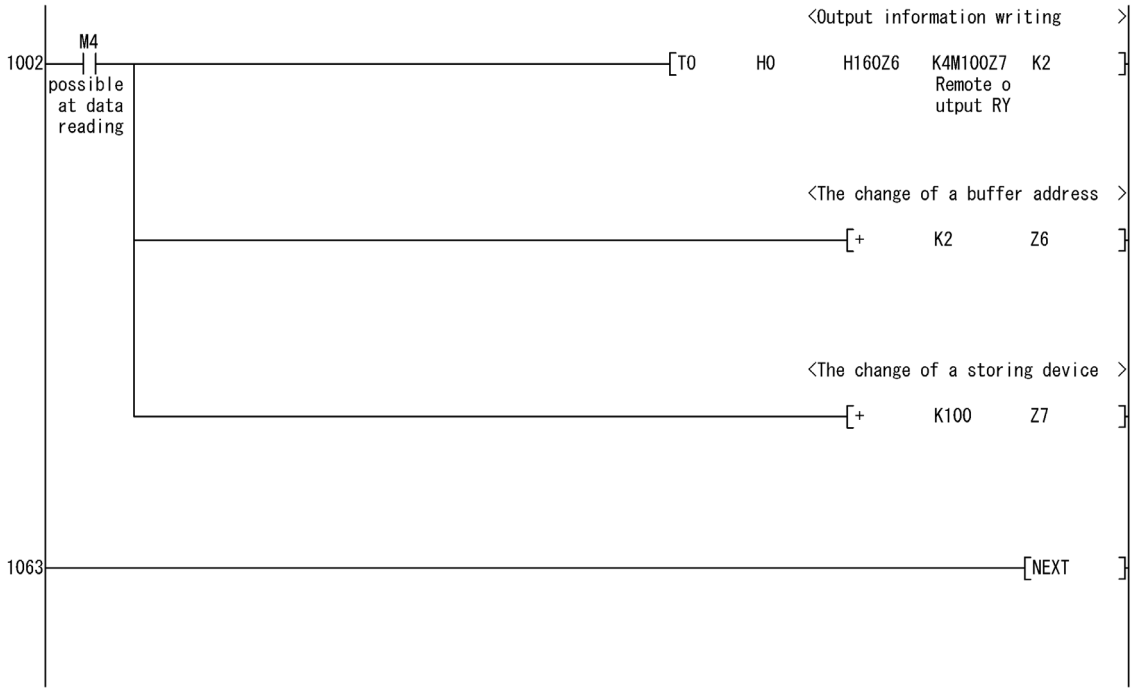


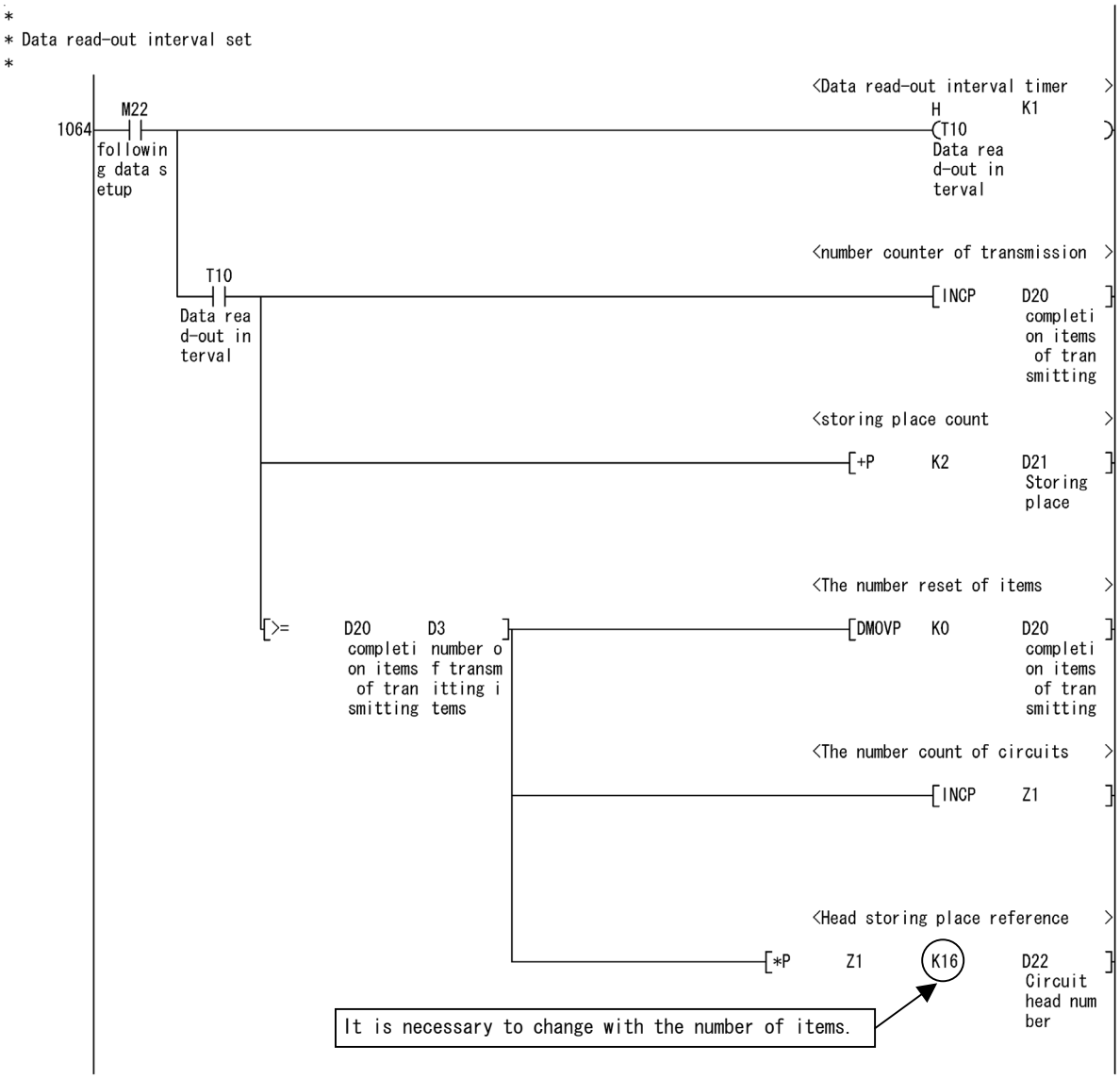

*
* reference of data transmitting buffer address
*
<Data transmitting buffer address>
P30
642
M4
possible at data reading
Data transmission and reception
*
D26 number of completion
K4
D30 Buffer address Offset
MOV
D30 Buffer address Offset
Z3
<Transmitting data storing place >
*
D26 number of completion
K50
D32 Transceiver device Offset
MOV
D32 Transceiver device Offset
Z4
<Transmitting data retrieval >
695
M4
possible at data reading
*
K20
D4 Item storing place offset
D28 number of item storing head
*
D20 completion items of transmitting
K2
D34 work device for operation
+
D34 work device for operation
D28 number of item storing head
Z0
<Transmitting data storing >
DMOV
D100Z0 Active energy
D300Z4 Remote Register RWwm

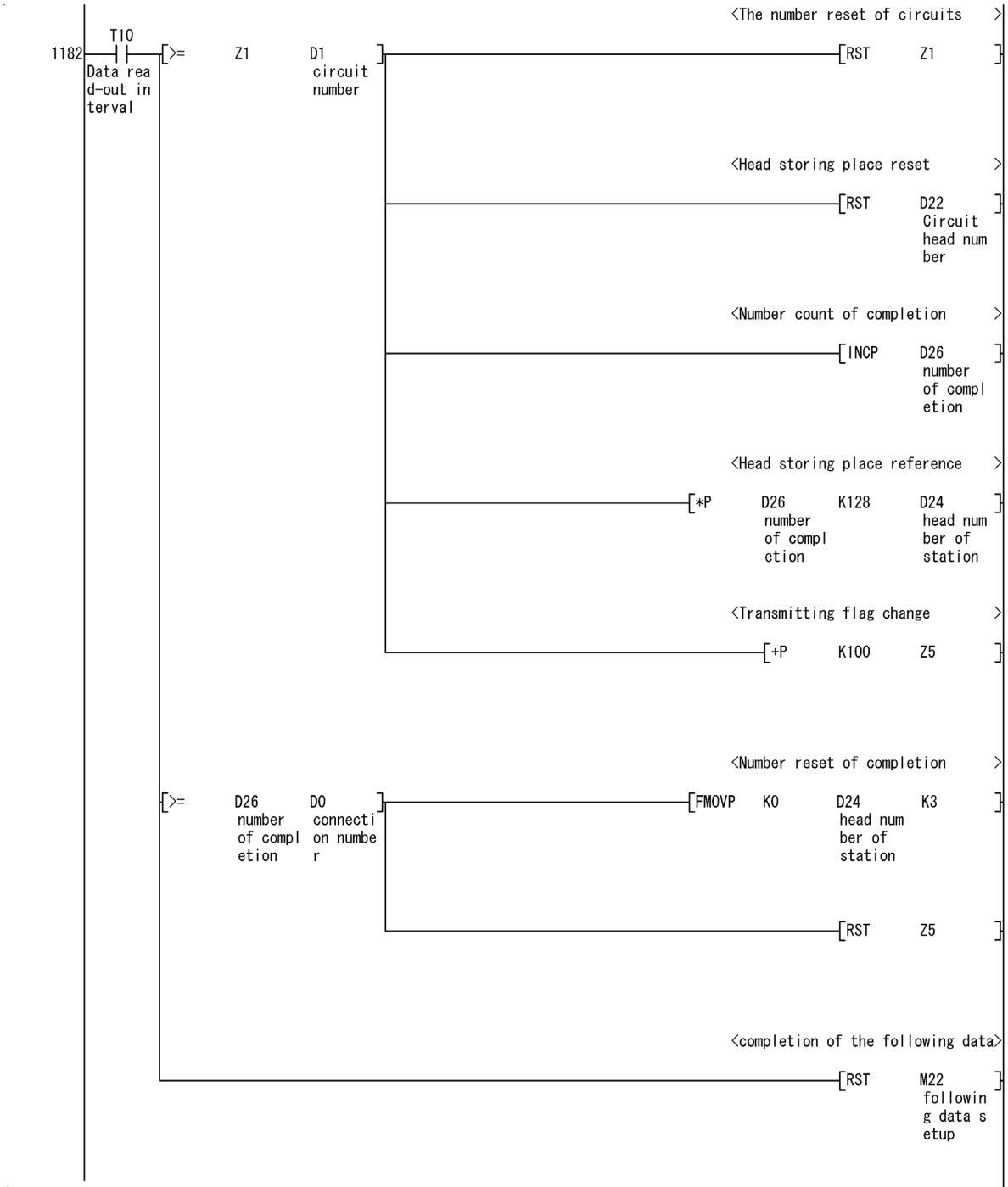

*
* Data transceiver processing
*
* Data transmitting start
*
740
M4
possible at data reading
M20
Under data transmitting
M21
completion of transceiver
M22
following data setup
PLS
M5
Data transceiver start
M5
Data transceiver start
SET
M20
Under data transmitting
*
* Data transmission
*
755
M20
Under data transmitting
M21
completion of transceiver
M115Z5
command execution
M165Z5
command completion
TOP
H0
H1E0Z3
D300Z4
Remote Register RWwm
K4
<Transmitting data writing
<Transmitting flag set
SET
M115Z5
command execution


*
* Data reception
*
<Receiving timeout
M20
M21
M115Z5
796
Under da ta trans mitting
completi on of tr ansceive r
command executio n
K100
T0
Transcei ver time out
<Receiving data storing place
+P
D21
Storing place
D22
Circuit head num ber
D27
Circuit storing place
+P
D24
head num ber of station
D27
Circuit storing place
Z2
<Receiving data read-out
M165Z5
M177Z5
T0
command completi on
Remote READY
Transcei ver time out
FROMP
H0
H2E0Z3
D400Z4
Remote R egister RWrn
K4
<Only the integer part
T0
Transcei ver time out
DMOVP
D402Z4
Remote R egister RWrn +3
D50
<Receiving data storing
M177Z5
Remote READY
DMOVP
D50
R0Z2
Receivin g data s toring
<The completion flag set
SET
M21
completi on of tr ansceive r

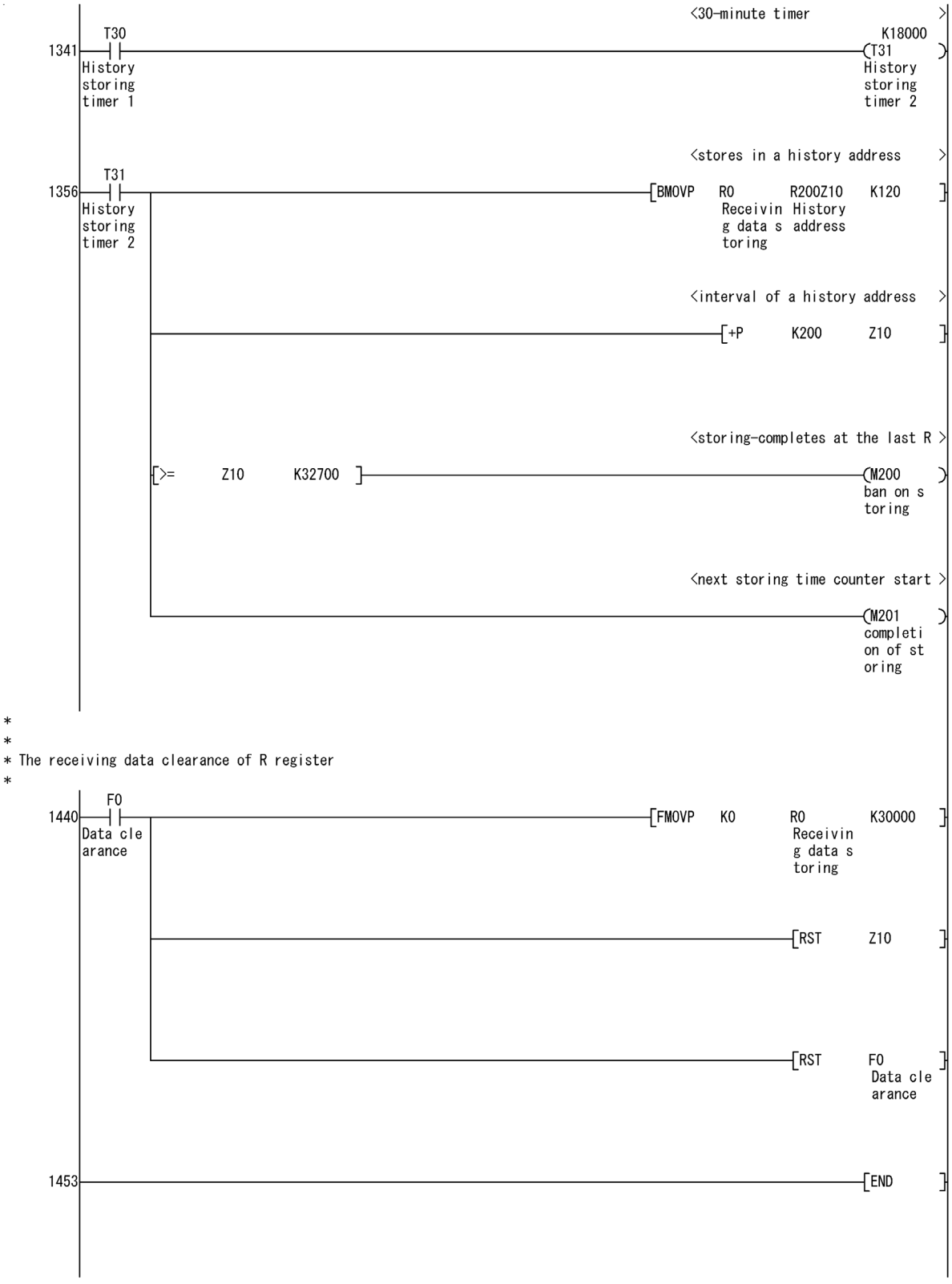

*
* The completion of data transceiver
*
<Transceiver flag reset >
915
M20
Under data transmitting
M21
completion of transceiver
M115Z5
command execution
M165Z5
command completion
RST M20 Under data transmitting
RST M21 completion of transceiver
<The following data setting start>
SET M22 following data setup
<Transmitting flag reset >
RST M115Z5 command execution
*
* Remote output processing of ME110SR-C
*
<Index register initialization >
973
SM400
Always ON
MOV K0 Z6
MOV K0 Z7
1000
FOR D0 connection number


<Output information writing >
M4
1002
possible at data reading
TO H0 H160Z6 K4M100Z7 K2
Remote output RY
<The change of a buffer address >
+ K2 Z6
<The change of a storing device >
+ K100 Z7
1063
NEXT


*
* Data read-out interval set
*
<Data read-out interval timer
M22
1064
following data setup
H
K1
T10
Data read-out interval
<number counter of transmission
T10
Data read-out interval
INCP
D20
completion items of transmitting
<storing place count
+P
K2
D21
Storing place
<The number reset of items
>=
D20
completion items of transmitting
D3
number of transmitting items
DMOVP
K0
D20
completion items of transmitting
<The number count of circuits
INCP
Z1
<Head storing place reference
*P
Z1
K16
D22
Circuit head number
It is necessary to change with the number of items.




```
*
* Henceforth, data is used when taking a history
*  for every time of a certain.
*    At this example, it is every hour.
*
```


<30-minute timer >
T30
1341
History storing timer 1
K18000
T31
History storing timer 2
<stores in a history address >
T31
1356
History storing timer 2
BMOVP R0 R200Z10 K120
Receivin g data s toring
History address
<interval of a history address >
+P K200 Z10
<storing-completes at the last R >
>= Z10 K32700
M200
ban on s toring
<next storing time counter start >
M201
completi on of st oring
*
*
* The receiving data clearance of R register
*
F0
1440
Data cle arance
FMOVP K0 R0 K30000
Receivin g data s toring
RST Z10
RST F0
Data cle arance
1453
END