MITSUBISHI ELECTRIC

Numerical Protection Relay

MELPRO™-D Series

COMMUNICATION CARD (CC-Link)

MODEL

CC-COM

INSTRUCTION MANUAL (MODEL-SPECIFIC INFORMATION)

Request

Ensure that this Instruction Manual is delivered to the end users and the maintenance manager.

- Introduction -

Thank you for your purchasing MITSUBISHI ELECTRIC MELPRO–D Series Protection Relay Communication Board.

Please read this book carefully before putting the product into operation to be familiar with the functions and performances enough to use the product properly.

Please note that end user is required to be provided with this operation manual.

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Manual information

The manual indicated in the table below is prepared relating to this product.

Using the table, please order the manual if required:

Related manual

Title of manual	Document No.
MELPRO–D Series Protection Relay CC-COM Communication Card (CC-Link) Operation Manual (general information)	JEP0-IL9417

1 Use of this manual

1.1 About this manual

This manual describes model-specific information necessary for setting and displaying data relating to the communication function specification stated in the MELPRO–D Series Protection Relay CC-COM Communication Card Operation Manual.

1.2 How to use this manual

1.2.1 Common items

The common items are needed to set or monitor setting values and shared by all the protection relay models.

1.2.2 Model-specific information

Information required by each model is described in this manual. The following explains how to use this information by setting item:

(1) Setting

Information necessary for selecting setting values. See the setting value set command described in the operation manual stated above.

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier

(2) Measurement

Information necessary for obtaining measurements. See the real-time monitoring command described in the operation manual stated above.

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)

(3) Forced operation

Information necessary for setting forced operation. See the forced operation set command described in the operation manual stated above.

Channel No.	Item
00H	Contact X_0
01H	Contact X_1

(4) Waveform

Information necessary for monitoring waveform. See the waveform monitoring command described in the operation manual stated above.

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)

(5) Operation element

Information necessary for monitoring the operation elements. See the operation element monitoring command described in the operation manual stated above.

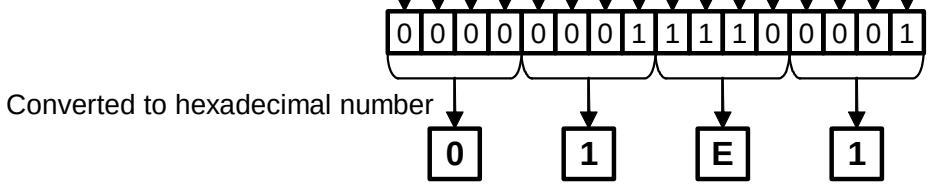
bit	Item
0	Phase fault time-delayed A
1	Phase fault time-delayed B

(6) Contact arrangement

To set or monitor setting values, you need to configure a contact arrangement. The data is expressed in the form of one word (16 bits) to make up data to be transmitted from or to the master station. The setting items should be specified and displayed according to the bit allocation pattern specific to each setting item. When a bit in a word is set to “1”, “OR” of the corresponding item will be allocated to the contact. The following shows a sample configuration. Put “0” if the corresponding contact item box is blank.

<Example>

Bit	Contact item	Input	
		0	1
0	Contact hold	Reset	Hold
1	Phase fault time-delayed A	Off	On
2	Phase fault time-delayed B	Off	On
3	Phase fault time-delayed C	Off	On
4	Earth fault time-delayed	Off	On
5	Phase fault instantaneous A	Off	On
6	Phase fault instantaneous B	Off	On
7	Phase fault instantaneous C	Off	On
8	Earth fault instantaneous	Off	On
9			
A			
B			
C			
D			
E			
F			



Converted to hexadecimal number

To input data for the bit allocation pattern shown above, enter “01E1H” in the high/low order word of the setting value set command.

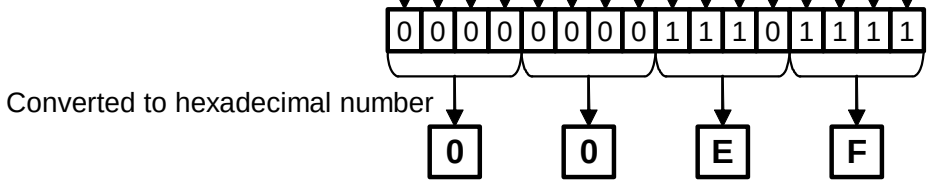
(7) Operation indicator LED hold

To set or monitor setting values, you need to specify contact hold pattern. The data is expressed in the form of one word (16 bits) to make up data to be transmitted from or to the master station. The setting items should be specified and displayed according to the bit allocation pattern specific to each setting item. When a bit in a word is set to “1”, the corresponding contact will self-hold. When it is set to “0”, the corresponding contact will automatically be reset. The following shows a sample configuration.

Put “0” if the corresponding contact item box is blank.

<Example>

Bit	Contact item	Input	
		0	1
0	Trip	Reset	Hold
1	Phase fault time-delayed A	Reset	Hold
2	Phase fault time-delayed B	Reset	Hold
3	Phase fault time-delayed C	Reset	Hold
4	Earth fault time-delayed	Reset	Hold
5	Phase fault instantaneous A	Reset	Hold
6	Phase fault instantaneous B	Reset	Hold
7	Phase fault instantaneous C	Reset	Hold
8	Earth fault instantaneous	Reset	Hold
9			
A			
B			
C			
D			
E			
F			



Converted to hexadecimal number

To input data for the bit allocation pattern shown above, enter “00EFH” in the high/low order word of the setting value set command.

(8) RX information (relay operating element)

This is RX information sent from each remote station. For further information, see MELPRO-D Series Protection Relay CC-COM Communication Card Operation Manual (General Information) (JEP0-IL9417).

<Example>

Bit	Contact item	Reading	
		0	1
0	Self-diagnosis result (fixed)	Normal	Abnormal
1	Data readout permission flag (fixed)	-	Operating
2	Trip	-	Operating
3		-	Operating
4		-	Operating
5	Phase fault time-delayed A	-	Operating
6	Phase fault time-delayed B	-	Operating
7	Phase fault time-delayed C	-	Operating
8	Earth fault time-delayed	-	Operating
9		-	Operating
A	Phase fault instantaneous A	-	Operating
B	Phase fault instantaneous B	-	Operating
C	Phase fault instantaneous C	-	Operating
D	Earth fault instantaneous	-	Operating
E		-	Operating

The allocation patterns only for the bits after bit “2” are indicated in the RX information tables prepared for individual models.

2 Common items

(1) Operation characteristics

Data to be written in or read from the high/low order bits of data.

High/low order of data	Description	High/low order of data	Description
0	Normal inverse time-delayed 01	6	Extremely inverse time-delayed 11
1	Normal inverse time-delayed 11	7	Extremely inverse time-delayed 12
2	Normal inverse time-delayed 21	8	Long inverse time-delayed 01
3	Very inverse time-delayed 01	9	Long inverse time-delayed 02
4	Very inverse time-delayed 21	10	Long inverse time-delayed 21
5	Extremely inverse time-delayed 01	11	Definite time-delayed 01

(2) Reset characteristics

Data to be written in or read from the high/low order bits of data.

High/low order of data	Description
0	200 ms
1	Normal inverse time-lag
2	50 ms

(3) UV test

Data	Description
0	OFF
1	AB phase
2	BC phase
3	CA phase

(4) Other setting items than those above

a. To set data:

Write the value 100 times the setting value indicated in the MELPRO-D protection relay operation manual in the high/low order bits.

<Note> However, regarding set data of the df/dt element of the following types of relay, apply 100 times instead of 1000 times. Also, apply divided by 1000 instead of divided by 100 for the monitor data of the df/dt element of the following types of relay.

CPP1-A11D2, CPP1-A12D2, CPP3-A11D2, CPP3-A01D2

b. To monitor data:

Read the setting value to divide the data by 100.

(5) CT and VT ratios

a. To set data:

Write the value 10 times the setting value indicated in the MELPRO-D protection relay operation manual in the high/medium/low order bits.

b. To monitor data:

Read the setting value to divide the data by 100.

3 Model-specific information

3.1 COC1-A01D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Overcurrent time-delayed operation current (A)
01H	Overcurrent time-delayed operation time multiplier
02H	Overcurrent time-delayed operation characteristics
03H	Overcurrent time-delyaed reset characteristics
04H	Overcurrent instantaneous operation current (A)
05H	Overcurrent instantaneous operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	CT primary (A)

(2) Measurement

Channel No.	Item
10H	Current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	Current (A)

(5) Operation element

Bit	Item
0	Time-delayed
1	
2	
3	
4	Instantaneous
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Time-delayed
6	
7	
8	
9	
A	Instantaneous
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Time-delayed
2	
3	
4	
5	Instantaneous
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Time-delayed
2	
3	
4	
5	Instantaneous
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

3.2 COC1-A02D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Overcurrent time-delayed operation current (A)
01H	Overcurrent time-delayed operation time multiplier
02H	Overcurrent time-delayed operation characteristics
03H	Overcurrent time-delayed reset characteristics
04H	Overcurrent instantaneous operation current (A)
05H	Overcurrent instantaneous operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	CT primary (A)

(2) Measurement

Channel No.	Item
10H	Current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A4H	Current (A)

(5) Operation element

Bit	Item
0	
1	
2	
3	Time-delayed
4	
5	
6	
7	Instantaneous
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Time-delayed
6	
7	
8	
9	
A	Instantaneous
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	
4	Time-delayed
5	
6	
7	
8	Instantaneous
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	
4	Time-delayed
5	
6	
7	
8	Instantaneous
9	
A	
B	
C	
D	
E	
F	

3.3 COC2-A01D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Overcurrent time-delayed operation current (A)
01H	Overcurrent time-delayed operation time multiplier
02H	Overcurrent time-delayed operation characteristics
03H	Overcurrent time-delayed reset characteristics
04H	Overcurrent instantaneous operation current (A)
05H	Overcurrent instantaneous operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	CT primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A3H	C-phase current (A)

(5) Operation element

Bit	Item
0	Time-delayed A
1	
2	Time-delayed C
3	
4	Phase fault instantaneous A
5	
6	Phase fault instantaneous C
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Time-delayed A
4	
5	
6	Time-delayed C
7	
8	
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous C
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Time-delayed A
2	
3	Time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Time-delayed A
2	
3	Time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

3.4 COC3-A01D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Overcurrent time-delayed operation current (A)
01H	Overcurrent time-delayed operation time multiplier
02H	Overcurrent time-delayed operation characteristics
03H	Overcurrent time-delayed reset characteristics
04H	Overcurrent instantaneous operation current (A)
05H	Overcurrent instantaneous operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	CT primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)

(5) Operation element

Bit	Item
0	Time-delayed A
1	Time-delayed B
2	Time-delayed C
3	
4	Instantaneous A
5	Instantaneous B
6	Instantaneous C
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Time-delayed A
6	Time-delayed B
7	Time-delayed C
8	
9	
A	Instantaneous A
B	Instantaneous B
C	Instantaneous C
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Time-delayed A
2	Time-delayed B
3	Time-delayed C
4	
5	Instantaneous A
6	Instantaneous B
7	Instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Time-delayed A
2	Time-delayed B
3	Time-delayed C
4	
5	Instantaneous A
6	Instantaneous B
7	Instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

3.5 COC3-A02D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault time-delayed operation current (A)
07H	Earth fault time-delayed operation time multiplier
08H	Earth fault time-delayed operation characteristics
09H	Earth fault time-delayed reset characteristics
0AH	Earth fault instantaneous operation current (A)
0BH	Earth fault instantaneous operation time (sec.)
0CH	Contact arrangement (contact X_0) (Note 1)
0DH	Contact arrangement (contact X_1) (Note 1)
0EH	Contact arrangement (contact X_2) (Note 1)
0FH	Contact arrangement (contact X_3) (Note 1)
10H	Contact arrangement (contact X_4) (Note 1)
11H	Contact arrangement (contact X_5) (Note 1)
12H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT Zero-phase primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	
2	Phase fault time-delayed C
3	Earth fault time-delayed
4	Phase fault instantaneous A
5	
6	Phase fault instantaneous C
7	Earth fault instantaneous
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed C
7	Earth fault time-delayed
8	
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous C
C	Earth fault instantaneous
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

3.6 COC4-A01D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault time-delayed operation current (A)
07H	Earth fault time-delayed operation time multiplier
08H	Earth fault time-delayed operation characteristics
09H	Earth fault time-delayed reset characteristics
0AH	Earth fault instantaneous operation current (A)
0BH	Earth fault instantaneous operation time (sec.)
0CH	Contact arrangement (contact X_0) (Note 1)
0DH	Contact arrangement (contact X_1) (Note 1)
0EH	Contact arrangement (contact X_2) (Note 1)
0FH	Contact arrangement (contact X_3) (Note 1)
10H	Contact arrangement (contact X_4) (Note 1)
11H	Contact arrangement (contact X_5) (Note 1)
12H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT Zero-phase primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	Zero-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	Phase fault time-delayed B
2	Phase fault time-delayed C
3	Earth fault time-delayed
4	Phase fault instantaneous A
5	Phase fault instantaneous B
6	Phase fault instantaneous C
7	Earth fault instantaneous
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed B
7	Phase fault time-delayed C
8	Earth fault time-delayed
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous B
C	Phase fault instantaneous C
D	Earth fault instantaneous
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

3.7 COC4-A02D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault time-delayed operation current (A)
07H	Earth fault time-delayed operation time multiplier
08H	Earth fault time-delayed operation characteristics
09H	Earth fault time-delayed reset characteristics
0AH	Earth fault instantaneous operation current (A)
0BH	Earth fault instantaneous operation time (sec.)
0CH	Contact arrangement (contact X_0) (Note 1)
0DH	Contact arrangement (contact X_1) (Note 1)
0EH	Contact arrangement (contact X_2) (Note 1)
0FH	Contact arrangement (contact X_3) (Note 1)
10H	Contact arrangement (contact X_4) (Note 1)
11H	Contact arrangement (contact X_5) (Note 1)
12H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT Zero-phase primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	Zero-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	Phase fault time-delayed B
2	Phase fault time-delayed C
3	Earth fault time-delayed
4	Phase fault instantaneous A
5	Phase fault instantaneous B
6	Phase fault instantaneous C
7	Earth fault instantaneous
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed B
7	Phase fault time-delayed C
8	Earth fault time-delayed
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous B
C	Phase fault instantaneous C
D	Earth fault instantaneous
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

3.8 COV1-A01D1 (Overvoltage relay)

(1) Setting

Channel No.	Item
00H	Overvoltage operation voltage (V)
01H	Overvoltage operation time (sec.)
02H	Contact arrangement (contact X_0) (Note 1)
03H	Contact arrangement (contact X_1) (Note 1)
04H	Contact arrangement (contact X_2) (Note 1)
05H	Contact arrangement (contact X_3) (Note 1)
06H	Contact arrangement (contact X_4) (Note 1)
07H	Contact arrangement (contact X_5) (Note 1)
08H	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	Voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	Voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	
3	
4	Overvoltage
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Overvoltage
6	
7	
8	
9	
A	
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	
4	
5	Overvoltage
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	
4	
5	Overvoltage
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

3.9 COV3-A01D1 (Overvoltage relay)

(1) Setting

Channel No.	Item
00H	Overvoltage operation voltage (V)
01H	Overvoltage operation time (sec.)
02H	Contact arrangement (contact X_0) (Note 1)
03H	Contact arrangement (contact X_1) (Note 1)
04H	Contact arrangement (contact X_2) (Note 1)
05H	Contact arrangement (contact X_3) (Note 1)
06H	Contact arrangement (contact X_4) (Note 1)
07H	Contact arrangement (contact X_5) (Note 1)
08H	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	BC phase voltage (V)
12H	CA phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
A3H	CA phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	
3	
4	Overvoltage AB
5	Overvoltage BC
6	Overvoltage CA
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Overvoltage AB
6	Overvoltage BC
7	Overvoltage CA
8	
9	
A	
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	
4	
5	Overvoltage AB
6	Overvoltage BC
7	Overvoltage CA
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	
4	
5	Overvoltage AB
6	Overvoltage BC
7	Overvoltage CA
8	
9	
A	
B	
C	
D	
E	
F	

3.10 CUV1-A01D1 (Undervoltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	Contact arrangement (contact X_0) (Note 1)
03H	Contact arrangement (contact X_1) (Note 1)
04H	Contact arrangement (contact X_2) (Note 1)
05H	Contact arrangement (contact X_3) (Note 1)
06H	Contact arrangement (contact X_4) (Note 1)
07H	Contact arrangement (contact X_5) (Note 1)
08H	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	Voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	Voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Undervoltage
6	
7	
8	
9	
A	
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

3.11 CUV3-A01D1 (Undervoltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	UV test
03H	Contact arrangement (contact X_0) (Note 1)
04H	Contact arrangement (contact X_1) (Note 1)
05H	Contact arrangement (contact X_2) (Note 1)
06H	Contact arrangement (contact X_3) (Note 1)
07H	Contact arrangement (contact X_4) (Note 1)
08H	Contact arrangement (contact X_5) (Note 1)
09H	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	BC phase voltage (V)
12H	CA phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
A3H	CA phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage AB
1	Undervoltage BC
2	Undervoltage CA
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	UV test
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	UV-TEST
4	
5	Undervoltage AB
6	Undervoltage BC
7	Undervoltage CA
8	
9	
A	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

3.12 CBV1-A01D1 (Voltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	Earth fault overvoltage operation voltage (V)
03H	Earth fault overvoltage operation time (sec.)
04H	Contact arrangement (contact X_0) (Note 1)
05H	Contact arrangement (contact X_1) (Note 1)
06H	Contact arrangement (contact X_2) (Note 1)
07H	Contact arrangement (contact X_3) (Note 1)
08H	Contact arrangement (contact X_4) (Note 1)
09H	Contact arrangement (contact X_5) (Note 1)
0AH	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)
02H	EVT primary (V)
03H	EVT ternary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	Zero-phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage
1	
2	
3	
4	
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Undervoltage
6	
7	
8	
9	
A	Earth fault overvoltage
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage
2	
3	
4	
5	
6	
7	
8	Earth fault overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage
2	
3	
4	
5	
6	
7	
8	Earth fault overvoltage
9	
A	
B	
C	
D	
E	
F	

3.13 CBV2-A01D1 (Voltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	UV test
03H	Overvoltage operation voltage (V)
04H	Overvoltage operation time (sec.)
05H	Contact arrangement (contact X_0) (Note 1)
06H	Contact arrangement (contact X_1) (Note 1)
07H	Contact arrangement (contact X_2) (Note 1)
08H	Contact arrangement (contact X_3) (Note 1)
09H	Contact arrangement (contact X_4) (Note 1)
0AH	Contact arrangement (contact X_5) (Note 1)
0BH	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	BC phase voltage (V)
12H	CA phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
A3H	CA phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage AB
1	Undervoltage BC
2	Undervoltage CA
3	
4	Overvoltage AB
5	Overvoltage BC
6	Overvoltage CA
7	
8	
9	
A	
B	
C	UV test
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	UV-TEST
4	
5	Undervoltage AB
6	Undervoltage BC
7	Undervoltage CA
8	
9	
A	Overvoltage AB
B	Overvoltage BC
C	Overvoltage CA
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	Overvoltage AB
6	Overvoltage BC
7	Overvoltage CA
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	Overvoltage AB
6	Overvoltage BC
7	Overvoltage CA
8	
9	
A	
B	
C	
D	
E	
F	

3.14 CBV2-A02D1 (Voltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	UV test
03H	Overvoltage operation voltage (V)
04H	Overvoltage operation time (sec.)
05H	Contact arrangement (contact X_0) (Note 1)
06H	Contact arrangement (contact X_1) (Note 1)
07H	Contact arrangement (contact X_2) (Note 1)
08H	Contact arrangement (contact X_3) (Note 1)
09H	Contact arrangement (contact X_4) (Note 1)
0AH	Contact arrangement (contact X_5) (Note 1)
0BH	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	BC phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage AB
1	Undervoltage BC
2	
3	
4	Overvoltage AB
5	
6	
7	
8	
9	
A	
B	
C	UV test
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	UV-TEST
4	
5	Undervoltage AB
6	Undervoltage BC
7	
8	
9	
A	Overvoltage AB
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage AB
2	Undervoltage BC
3	
4	
5	Overvoltage AB
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage AB
2	Undervoltage BC
3	
4	
5	Overvoltage AB
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

3.15 CBV3-A01D1 (Voltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	Overvoltage operation voltage (V)
03H	Overvoltage operation time (sec.)
04H	Earth fault overvoltage operation voltage (V)
05H	Earth fault overvoltage operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)
02H	EVT primary (V)
03H	EVT ternary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (V)
11H	Zero-phase voltage (V)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage
1	
2	
3	
4	Overvoltage
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Undervoltage
6	Overvoltage
7	
8	
9	
A	Earth fault overvoltage
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage
2	
3	
4	
5	Overvoltage
6	
7	
8	Earth fault overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage
2	
3	
4	
5	Overvoltage
6	
7	
8	Earth fault overvoltage
9	
A	
B	
C	
D	
E	
F	

3.16 CBV4-A01D1 (Voltage relay)

(1) Setting

Channel No.	Item
00H	Undervoltage operation voltage (V)
01H	Undervoltage operation time (sec.)
02H	UV test
03H	Earth fault overvoltage (1) operation voltage (V)
04H	Earth fault overvoltage (1) operation time (sec.)
05H	Earth fault overvoltage (2) operation voltage (V)
06H	Earth fault overvoltage (2) operation time (sec.)
07H	Contact arrangement (contact X_0) (Note 1)
08H	Contact arrangement (contact X_1) (Note 1)
09H	Contact arrangement (contact X_2) (Note 1)
0AH	Contact arrangement (contact X_3) (Note 1)
0BH	Contact arrangement (contact X_4) (Note 1)
0CH	Contact arrangement (contact X_5) (Note 1)
0DH	Operation indicator LED hold (Note 2)
00H	VT primary (V)
01H	VT secondary (V)
01H	EVT primary (V)
10H	EVT ternary (V)

(2) Measurement

Channel No.	Item
10H	AB phase voltage (A)
11H	BC phase voltage (A)
12H	CA phase voltage (A)
13H	Zero-phase voltage (V)
14H	Phase

Each of 10 - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
A3H	CA phase voltage (V)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Undervoltage AB
1	Undervoltage BC
2	Undervoltage CA
3	
4	
5	
6	
7	Earth fault overvoltage (1)
8	Earth fault overvoltage (2)
9	
A	
B	
C	UV test
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	UV-TEST
4	
5	Undervoltage AB
6	Undervoltage BC
7	Undervoltage CA
8	
9	
A	Earth fault overvoltage (1)
B	Earth fault overvoltage (2)
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	
6	
7	
8	Earth fault overvoltage (1)
9	Earth fault overvoltage (2)
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Undervoltage AB
2	Undervoltage BC
3	Undervoltage CA
4	
5	
6	
7	
8	Earth fault overvoltage (1)
9	Earth fault overvoltage (2)
A	
B	
C	
D	
E	
F	

3.17 CFP1-A01D1 (Line protection relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault directional operation current (mA)
07H	Earth fault directional operation voltage (V)
08H	Earth fault directional operation time (sec.)
09H	Characteristic angle (°)
0AH	Contact arrangement (contact X_0) (Note 1)
0BH	Contact arrangement (contact X_1) (Note 1)
0CH	Contact arrangement (contact X_2) (Note 1)
0DH	Contact arrangement (contact X_3) (Note 1)
0EH	Contact arrangement (contact X_4) (Note 1)
0FH	Contact arrangement (contact X_5) (Note 1)
10H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	EVT primary (V)
02H	EVT ternary (V)
03H	ZCT error correction ON/OFF (Note 3)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)
13H	Zero-phase voltage (V)
14H	Phase (Note 4)

Each of 10 - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	Zero-phase current (A)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	
2	Phase fault time-delayed C
3	
4	Phase fault instantaneous A
5	
6	Phase fault instantaneous C
7	
8	Earth fault directional
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed C
7	Earth fault directional
8	
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous C
C	
D	
E	

voltage.

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 3) ON/OFF ZCT-ERR.

[ON] : 1, [OFF] : 0

(Note 4) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the "CC-COM communication card operation manual (general)" is not applicable, just only to read the original receiving data. 10000 is output when there is no current or

3.18 CFP1-A02D1 (Line protection relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault directional operation current (mA)
07H	Earth fault directional operation voltage (V)
08H	Earth fault directional operation time (sec.)
09H	Chrematistics angle (°)
0AH	Contact arrangement (contact X_0) (Note 1)
0BH	Contact arrangement (contact X_1) (Note 1)
0CH	Contact arrangement (contact X_2) (Note 1)
0DH	Contact arrangement (contact X_3) (Note 1)
0EH	Contact arrangement (contact X_4) (Note 1)
0FH	Contact arrangement (contact X_5) (Note 1)
10H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	EVT primary (V)
02H	EVT ternary (V)
03H	ZCT error correction ON/OFF (Note 3)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)
13H	Zero-phase voltage (V)
14H	Phase (Note 4)

Each of 10 - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	Zero-phase current (A)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	
2	Phase fault time-delayed C
3	
4	Phase fault instantaneous A
5	
6	Phase fault instantaneous C
7	
8	Earth fault directional
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed C
7	Earth fault directional
8	
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous C
C	
D	
E	

voltage.

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 3) Line voltage

For 6.6 kV line: “0”

For 3.3 kV line: “1”

(Note 4) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the “CC-COM communication card operation manual (general)” is not applicable, just only to read the original receiving data. 10000 is output when there is no current or

3.19 CFP1-A03D1 (Line protection relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault directional operation current (A)
07H	Earth fault directional operation voltage (%)
08H	Earth fault directional operation time (sec.)
09H	Characteristics angle (°)
0AH	Line voltage (kV) (Note 3)
0BH	Contact arrangement (contact X_0) (Note 1)
0CH	Contact arrangement (contact X_1) (Note 1)
0DH	Contact arrangement (contact X_2) (Note 1)
0EH	Contact arrangement (contact X_3) (Note 1)
0FH	Contact arrangement (contact X_4) (Note 1)
10H	Contact arrangement (contact X_5) (Note 1)
11H	Operation indicator LED hold (Note 2)
00H	VT primary (V)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)
13H	Zero-phase voltage (V)
14H	Phase (Note 4)

Each of 10 - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	Zero-phase current (A)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	
2	Phase fault time-delayed C
3	
4	Phase fault instantaneous A
5	
6	Phase fault instantaneous C
7	
8	Earth fault directional
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed C
7	Earth fault directional
8	
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous C
C	
D	
E	

voltage.

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	
3	Phase fault time-delayed C
4	
5	Phase fault instantaneous A
6	
7	Phase fault instantaneous C
8	
9	Earth fault directional
A	
B	
C	
D	
E	
F	

(Note 3) Line voltage

For 6.6 kV line: “0”

For 3.3 kV line: “1”

(Note 4) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the “CC-COM communication card operation manual (general)” is not applicable, just only to read the original receiving data. 10000 is output when there is no current or

3.20 CAC1-A01D2 (Biased differential relay)

(1) Setting

Channel No.	Item
00H	Matching tap primary current (A)
01H	Matching tap secondary current (A)
02H	Biased differential operation current (%)
03H	Bias (%)
04H	DIF test
05H	2nd harmonic restraint ratio (%)
06H	Differential overcurrent operation current (×)
07H	Contact arrangement (contact X_0) (Note 1)
08H	Contact arrangement (contact X_1) (Note 1)
09H	Contact arrangement (contact X_2) (Note 1)
0AH	Contact arrangement (contact X_3) (Note 1)
0BH	Contact arrangement (contact X_4) (Note 1)
0CH	Contact arrangement (contact X_5) (Note 1)
0DH	Operation indicator LED hold (Note 2)

(2) Measurement (Note 3)

Channel No.	Item
10H	A-phase restraining current
11H	A-phase differential current
12H	A-phase If2/If1
20H	B-phase restraining current
21H	B-phase differential current
22H	B-phase If2/If1
30H	C-phase restraining current
31H	C-phase differential current
32H	C-phase If2/If1

There is not the maximum record of 2f/1f.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase primary current (A)
A2H	A-phase secondary current (A)
B1H	B-phase primary current (A)
B2H	B-phase secondary current (A)
C1H	C-phase primary current (A)
C2H	C-phase secondary current (A)

(5) Operation element

Bit	Item
0	Biased differential A
1	Biased differential B
2	Biased differential C
3	Differential overcurrent A
4	Differential overcurrent B
5	Differential overcurrent C
6	2nd harmonic restraint A
7	2nd harmonic restraint B
8	2nd harmonic restraint C
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	DIF test
4	Biased differential A
5	Biased differential B
6	Biased differential C
7	Differential overcurrent A
8	Differential overcurrent B
9	Differential overcurrent C
A	2nd harmonic restraint A
B	2nd harmonic restraint B
C	2nd harmonic restraint C
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	Differential overcurrent A
5	Differential overcurrent B
6	Differential overcurrent C
7	2nd harmonic restraint A
8	2nd harmonic restraint B
9	2nd harmonic restraint C
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	Differential overcurrent A
5	Differential overcurrent B
6	Differential overcurrent C
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 3) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the "CC-COM communication card operation manual (general)" is not applicable. It just only read the original receiving data.

3.21 CPP1-A01D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Overvoltage operation voltage (V)
03H	Overvoltage operation time (sec.)
04H	Undervoltage operation voltage (V)
05H	Undervoltage operation time (sec.)
06H	Undervoltage UV test
07H	Phase fault directional L operation current (%)
08H	Phase fault directional L operation time (sec.)
09H	Phase fault directional H operation current (%)
0AH	Phase fault directional H operation time (sec.)
0BH	Directional phase fault UV (V)
0CH	Directional phase fault DS test
0DH	Under frequency operation frequency (H_Z)
0EH	Under frequency operation time (sec.)
0FH	Reverse power operation current (A)
10H	Reverse power operation time (sec.)
11H	Over frequency operation frequency (H_Z)
12H	Over frequency operation time (sec.)
13H	Under power operation current (%)
14H	Under power operation time (sec.)
15H	Under power open circuit detection lock
16H	Lock at un-interconnected condition (sec.)
17H	Contact arrangement (contact X_0) (Note 1)
18H	Contact arrangement (contact X_1) (Note 1)
19H	Contact arrangement (contact X_2) (Note 1)
1AH	Contact arrangement (contact X_3) (Note 1)
1BH	Contact arrangement (contact X_4) (Note 1)
1CH	Contact arrangement (contact X_5) (Note 1)
1DH	Contact arrangement (contact X_6) (Note 1)
1EH	Contact arrangement (contact X_7) (Note 1)
1FH	Contact arrangement (contact X_8) (Note 1)
20H	Contact arrangement (contact X_9) (Note 1)
21H	Contact arrangement (contact X_a) (Note 1)
22H	Contact arrangement (contact X_b) (Note 1)
23H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT primary (V)
04H	EVT tertiary (V)

(2) Measurement(Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (V)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (H_Z)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault directional
1	Undervoltage
2	Reverse power
3	Under power
4	Over frequency
5	Under frequency
6	Earth fault overvoltage
7	Overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	Trip
3	Test
4	Undervoltage for phase fault directional
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Overvoltage
8	Undervoltage
9	Directional phase fault
A	
B	Under frequency
C	Reverse power
D	Over frequency
E	Under power

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.22 CPP1-A02D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (%)
01H	Earth fault overvoltage operation time (sec.)
02H	Overvoltage operation voltage (V)
03H	Overvoltage operation time (sec.)
04H	Undervoltage operation voltage (V)
05H	Undervoltage operation time (sec.)
06H	Undervoltage UV test
07H	Phase fault directional L operation current (%)
08H	Phase fault directional L operation time (sec.)
09H	Phase fault directional H operation current (%)
0AH	Phase fault directional H operation time (sec.)
0BH	Phase fault directional UV (V)
0CH	Phase fault directional DS test
0DH	Under frequency operation frequency (Hz)
0EH	Under frequency operation time (sec.)
0FH	Reverse power operation current (%)
10H	Reverse power operation time (sec.)
11H	Over frequency operation frequency (Hz)
12H	Over frequency operation time (sec.)
13H	Under power operation current (%)
14H	Under power operation time (sec.)
15H	Under power open circuit detection lock
16H	Lock at un-interconnected condition (sec.)
17H	Contact arrangement (contact X_0) (Note 1)
18H	Contact arrangement (contact X_1) (Note 1)
19H	Contact arrangement (contact X_2) (Note 1)
1AH	Contact arrangement (contact X_3) (Note 1)
1BH	Contact arrangement (contact X_4) (Note 1)
1CH	Contact arrangement (contact X_5) (Note 1)
1DH	Contact arrangement (contact X_6) (Note 1)
1EH	Contact arrangement (contact X_7) (Note 1)
1FH	Contact arrangement (contact X_8) (Note 1)
20H	Contact arrangement (contact X_9) (Note 1)
21H	Contact arrangement (contact X_a) (Note 1)
22H	Contact arrangement (contact X_b) (Note 1)
23H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	System voltage (KV)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault directional
1	Undervoltage
2	Reverse power
3	Under power
4	Over frequency
5	Under frequency
6	Earth fault overvoltage
7	Overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Test
4	Undervoltage for phase fault directional
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Overvoltage
8	Undervoltage
9	Directional phase fault
A	
B	Under frequency
C	Reverse power
D	Over frequency
E	Under power

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.23 CPP1-A11D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Overvoltage operation voltage (V)
03H	Overvoltage operation time (sec.)
04H	Undervoltage operation voltage (V)
05H	Undervoltage operation time (sec.)
06H	Undervoltage UV test
07H	Phase fault directional L operation current (%)
08H	Phase fault directional L operation time (sec.)
09H	Phase fault directional H operation current (%)
0AH	Phase fault directional H operation time (sec.)
0BH	Phase fault directional UV (V)
0CH	Phase fault directional DS test
0DH	Under frequency operation frequency (Hz)
0EH	Under frequency operation time (sec.)
0FH	Reverse power operation current (%)
10H	Reverse power operation time (sec.)
11H	Over frequency operation frequency (Hz)
12H	Over frequency operation time (sec.)
13H	Under power operation current (%)
14H	Under power operation time (sec.)
15H	Under power open circuit detection lock
16H	Lock at un-interconnected condition (sec.)
17H	Islanding detection Rate of change of operation frequency (Hz/s)
18H	Islanding detection operation time (sec.)
19H	Contact arrangement (contact X_0) (Note 1)
1AH	Contact arrangement (contact X_1) (Note 1)
1BH	Contact arrangement (contact X_2) (Note 1)
1CH	Contact arrangement (contact X_3) (Note 1)
1DH	Contact arrangement (contact X_4) (Note 1)
1EH	Contact arrangement (contact X_5) (Note 1)
1FH	Contact arrangement (contact X_6) (Note 1)
20H	Contact arrangement (contact X_7) (Note 1)
21H	Contact arrangement (contact X_8) (Note 1)
22H	Contact arrangement (contact X_9) (Note 1)
23H	Contact arrangement (contact X_a) (Note 1)
24H	Contact arrangement (contact X_b) (Note 1)
25H	Contact arrangement (contact X_c) (Note 1)
26H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT primary (V)
04H	EVT tertiary (V)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (V)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b
0CH	Contact X_c

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault directional
1	Undervoltage
2	Reverse power
3	Under power
4	Over frequency
5	Under frequency
6	Earth fault overvoltage
7	Overvoltage
8	Islanding detection
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Test
4	Undervoltage for phase fault directional
5	Lock at an-interconnected condition
6	Earth fault overvoltage
7	Overvoltage
8	Undervoltage
9	Directional phase fault
A	Islanding detection
B	Under frequency
C	Reverse power
D	Over frequency
E	Under power

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.24 CPP1-A12D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (%)
01H	Earth fault overvoltage operation time (sec.)
02H	Overvoltage operation voltage (V)
03H	Overvoltage operation time (sec.)
04H	Undervoltage operation voltage (V)
05H	Undervoltage operation time (sec.)
06H	Undervoltage UV test
07H	Phase fault directional L operation current (%)
08H	Phase fault directional L operation time (sec.)
09H	Phase fault directional H operation current (%)
0AH	Phase fault directional H operation time (sec.)
0BH	Phase fault directional UV (V)
0CH	Phase fault directional DS test (V)
0DH	Under frequency operation frequency (Hz)
0EH	Under frequency operation time (sec.)
0FH	Reverse power operation current (%)
10H	Reverse power operation time (sec.)
11H	Over frequency operation frequency (Hz)
12H	Over frequency operation time (sec.)
13H	Under power operation current (%)
14H	Under power operation time (sec.)
15H	Under power open circuit detection lock
16H	Lock at an-interconnected condition (sec.)
17H	Islanding detection Rate of change of operation frequency (Hz/s)
18H	Islanding detection operation time (sec.)
19H	Contact arrangement (contact X_0) (Note 1)
1AH	Contact arrangement (contact X_1) (Note 1)
1BH	Contact arrangement (contact X_2) (Note 1)
1CH	Contact arrangement (contact X_3) (Note 1)
1DH	Contact arrangement (contact X_4) (Note 1)
1EH	Contact arrangement (contact X_5) (Note 1)
1FH	Contact arrangement (contact X_6) (Note 1)
20H	Contact arrangement (contact X_7) (Note 1)
21H	Contact arrangement (contact X_8) (Note 1)
22H	Contact arrangement (contact X_9) (Note 1)
23H	Contact arrangement (contact X_a) (Note 1)
24H	Contact arrangement (contact X_b) (Note 1)
25H	Contact arrangement (contact X_c) (Note 1)
26H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	System voltage (KV)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b
0CH	Contact X_c

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Phase fault directional
1	Undervoltage
2	Reverse power
3	Under power
4	Over frequency
5	Under frequency
6	Earth fault overvoltage
7	Overvoltage
8	Islanding detection
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Test
4	Undervoltage for phase fault directional
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Overvoltage
8	Undervoltage
9	Directional phase fault
A	Islanding detection
B	Under frequency
C	Reverse power
D	Over frequency
E	Under power

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault directional
2	Undervoltage
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	Overvoltage
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.25 CPP2-A01D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Under frequency operation frequency (Hz)
03H	Under frequency operation time (sec.)
04H	Reverse power operation current (%)
05H	Reverse power operation time (sec.)
06H	Over frequency operation frequency (Hz)
07H	Over frequency operation time (sec.)
08H	Under power operation current (%)
09H	Under power operation time (sec.)
0AH	Under power open circuit detection lock
0BH	Lock at un-interconnected condition (sec.)
0CH	Contact arrangement (contact X_0) (Note 1)
0DH	Contact arrangement (contact X_1) (Note 1)
0EH	Contact arrangement (contact X_2) (Note 1)
0FH	Contact arrangement (contact X_3) (Note 1)
10H	Contact arrangement (contact X_4) (Note 1)
11H	Contact arrangement (contact X_5) (Note 1)
12H	Contact arrangement (contact X_6) (Note 1)
13H	Contact arrangement (contact X_7) (Note 1)
14H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT primary (V)
04H	EVT tertiary (V)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (V)
17H	Active power (KW)
18H	Reverse active power (KW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.26 CPP2-A02D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (%)
01H	Earth fault overvoltage operation time (sec.)
02H	Under frequency operation frequency (Hz)
03H	Under frequency operation time (sec.)
04H	Reverse power operation current (%)
05H	Reverse power operation time (sec.)
06H	Over frequency operation frequency (Hz)
07H	Over frequency operation time (sec.)
08H	Under power operation current (%)
09H	Under power operation time (sec.)
0AH	Under power open circuit detection lock
0BH	Lock at un-interconnected condition (sec.)
0CH	Contact arrangement (contact X_0) (Note 1)
0DH	Contact arrangement (contact X_1) (Note 1)
0EH	Contact arrangement (contact X_2) (Note 1)
0FH	Contact arrangement (contact X_3) (Note 1)
10H	Contact arrangement (contact X_4) (Note 1)
11H	Contact arrangement (contact X_5) (Note 1)
12H	Contact arrangement (contact X_6) (Note 1)
13H	Contact arrangement (contact X_7) (Note 1)
14H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	System voltage (KV)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (KW)
18H	Reverse active power (KW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H- 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	Over frequency
6	Under frequency
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.27 CPP3-A01D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Reverse power operation current (%)
03H	Reverse power operation time (sec.)
04H	Under power operation current (%)
05H	Under power operation time (sec.)
06H	Under power open circuit detection lock
07H	Lock at un-interconnected condition (sec.)
08H	Contact arrangement (contact X_0) (Note 1)
09H	Contact arrangement (contact X_1) (Note 1)
0AH	Contact arrangement (contact X_2) (Note 1)
0BH	Contact arrangement (contact X_3) (Note 1)
0CH	Contact arrangement (contact X_4) (Note 1)
0DH	Contact arrangement (contact X_5) (Note 1)
0EH	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT primary (V)
04H	EVT tertiary (V)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (H_Z)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	Reverse power
3	Under power
4	
5	
6	Earth fault overvoltage
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	Trip
3	
4	
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Reverse power
8	Under power
9	
A	
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.28 CPP3-A02D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Reverse power operation current (%)
03H	Reverse power operation time (sec.)
04H	Under power operation current (%)
05H	Under power operation time (sec.)
06H	Under power open circuit detection lock
07H	Lock at un-interconnected condition (sec.)
08H	Contact arrangement (contact X_0) (Note 1)
09H	Contact arrangement (contact X_1) (Note 1)
0AH	Contact arrangement (contact X_2) (Note 1)
0BH	Contact arrangement (contact X_3) (Note 1)
0CH	Contact arrangement (contact X_4) (Note 1)
0DH	Contact arrangement (contact X_5) (Note 1)
0EH	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	System voltage (KV)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (Hz)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	Reverse power
3	Under power
4	
5	
6	Earth fault overvoltage
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	Trip
3	
4	
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Reverse power
8	Under power
9	
A	
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.29 CPP3-A11D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (V)
01H	Earth fault overvoltage operation time (sec.)
02H	Reverse power operation current (%)
03H	Reverse power operation time (sec.)
04H	Under power operation current (%)
05H	Under power operation time (sec.)
06H	Under power open circuit detection lock
07H	Lock at un-interconnected condition (sec.)
08H	Islanding detection Rate of change of operation frequency (H_Z/s)
09H	Islanding detection operation time (sec.)
0AH	Contact arrangement (contact X_0) (Note 1)
0BH	Contact arrangement (contact X_1) (Note 1)
0CH	Contact arrangement (contact X_2) (Note 1)
0DH	Contact arrangement (contact X_3) (Note 1)
0EH	Contact arrangement (contact X_4) (Note 1)
0FH	Contact arrangement (contact X_5) (Note 1)
10H	Contact arrangement (contact X_6) (Note 1)
11H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT primary (V)
04H	EVT tertiary (V)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Factor
1AH	Frequency (H_Z)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	Reverse power
3	Under power
4	
5	
6	Earth fault overvoltage
7	
8	Islanding detection
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	Trip
3	
4	
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Reverse power
8	Under power
9	
A	Islanding detection
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.30 CPP3-A12D2 (Interconnection protection relay)

(1) Setting

Channel No.	Item
00H	Earth fault overvoltage operation voltage (%)
01H	Earth fault overvoltage operation time (sec.)
02H	Reverse power operation current (%)
03H	Reverse power operation time (sec.)
04H	Under power operation current (%)
05H	Under power operation time (sec.)
06H	Under power open circuit detection lock
07H	Lock at un-interconnected condition (sec.)
08H	Islanding detection Rate of change of operation frequency (H_Z/s)
09H	Islanding detection operation time (sec.)
0AH	Contact arrangement (contact X_0) (Note 1)
0BH	Contact arrangement (contact X_1) (Note 1)
0CH	Contact arrangement (contact X_2) (Note 1)
0DH	Contact arrangement (contact X_3) (Note 1)
0EH	Contact arrangement (contact X_4) (Note 1)
0FH	Contact arrangement (contact X_5) (Note 1)
10H	Contact arrangement (contact X_6) (Note 1)
11H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	System voltage (KV)

(2) Measurement (Note3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase voltage (%)
17H	Active power (kW)
18H	Reverse active power (kW)
19H	Power factor
1AH	Frequency (H_Z)

Each of 10H - 18H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	AB phase voltage (V)
A4H	BC phase voltage (V)
B1H	B-phase current (A)
B2H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	
1	
2	Reverse power
3	Under power
4	
5	
6	Earth fault overvoltage
7	
8	Islanding detection
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
0	
1	
2	Trip
3	
4	
5	Lock at un-interconnected condition
6	Earth fault overvoltage
7	Reverse power
8	Under power
9	
A	Islanding detection
B	
C	
D	
E	

(7) DI

Bit	Item
1	System interconnection condition

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	
2	
3	Reverse power
4	Under power
5	
6	
7	Earth fault overvoltage
8	
9	Islanding detection
A	
B	
C	
D	
E	
F	

(Note3) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.31 CMP1-A01D1 (Motor protection relay)

(1) Setting

Channel No.	Item
00H	Motor rated current (A)
01H	Overload operation current (%)
02H	Overload operation time setting
03H	Overload negative-sequence heat multiplying factor
04H	Overload characteristic changeover
05H	Overcurrent instantaneous operation current (A)
06H	Overcurrent instantaneous operation time (sec.)
07H	Overcurrent time-delayed operation current (%)
08H	Overcurrent time-delayed operation time setting
09H	Negative-sequence overcurrent operation current (×)
0AH	Negative-sequence overcurrent operation time (sec.)
0BH	Earth fault directional operation current (mA)
0CH	Earth fault directional operation voltage (V)
0DH	Earth fault directional operation time (sec.)
0EH	Earth fault directional characteristic angle (°)
0FH	Undercurrent operation current (A)
10H	Undercurrent operation time (sec.)
11H	Number of start-up times
12H	Start-up time (sec.)
13H	Countdown rate of start-up time counter
14H	Contact arrangement (contact X_0) (Note 1)
15H	Contact arrangement (contact X_1) (Note 1)
16H	Contact arrangement (contact X_2) (Note 1)
17H	Contact arrangement (contact X_3) (Note 1)
18H	Contact arrangement (contact X_4) (Note 1)
19H	Contact arrangement (contact X_5) (Note 1)
1AH	Contact arrangement (contact X_6) (Note 1)
1BH	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	EVT primary (V)
02H	EVT tertiary (V)
03H	ZCT error correction ON／OFF

(2) Measurement (Note 3)

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)
13H	Zero-phase voltage (V)
14H	Phase (Note 3)
15H	Negative-sequence current (A)

Each of 10H - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	Zero-phase current (A)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Overload
1	Overcurrent instantaneous A
2	
3	Overcurrent instantaneous C
4	Overcurrent time-delayed A
5	
6	Overcurrent time-lag C
7	Negative-sequence overcurrent
8	Earth fault directional
9	Undercurrent A
A	
B	Undercurrent C
C	Limit of he number of start-up times
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Overload
4	Overcurrent instantaneous A, C
5	Overcurrent time-delayed A, C
6	Negative-sequence overcurrent
7	Earth fault directional
8	Undercurrent A, C
9	Limit of the number of start-up times
A	
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Overload
2	Overcurrent instantaneous A
3	
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	
7	Overcurrent time-lag C
8	Negative-sequence overcurrent
9	Earth fault directional
A	Undercurrent A
B	
C	Undercurrent C
D	Limit of the number of start-up times
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Overload
2	Overcurrent instantaneous A
3	
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	
7	Overcurrent time-lag C
8	Negative-sequence overcurrent
9	Earth fault directional
A	Undercurrent A
B	
C	Undercurrent C
D	Limit of the number of start-up times
E	
F	

(Note 3) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the "CC-COM communication card operation manual (general)" is not applicable, just only to read the original receiving data. 10000 is output when there is no current or voltage.

3.32 CMP1-A01D2 (Motor protection relay)

(1) Setting

Channel No.	Item
00H	Motor rated current (A)
01H	Overload operation current (%)
02H	Overload operation time setting
03H	Overload negative-sequence heat multiplying factor
04H	Overload characteristic changeover
05H	Overcurrent instantaneous operation current (A)
06H	Overcurrent instantaneous operation time (sec.)
07H	Overcurrent time-delayed operation current (%)
08H	Overcurrent time-delayed operation time setting
09H	Negative-sequence overcurrent operation current (×)
0AH	Negative-sequence overcurrent operation time (sec.)
0BH	Earth fault directional operation current (mA)
0CH	Earth fault directional operation voltage (V)
0DH	Earth fault directional operation time (sec.)
0EH	Earth fault directional characteristic angle (°)
0FH	Undercurrent operation current (A)
10H	Undercurrent operation time (sec.)
11H	Limit of the number of start-up times
12H	Start-up time (sec.)
13H	Countdown rate of start-up time counter
14H	Contact arrangement (contact X_0) (Note 1)
15H	Contact arrangement (contact X_1) (Note 1)
16H	Contact arrangement (contact X_2) (Note 1)
17H	Contact arrangement (contact X_3) (Note 1)
18H	Contact arrangement (contact X_4) (Note 1)
19H	Contact arrangement (contact X_5) (Note 1)
1AH	Contact arrangement (contact X_6) (Note 1)
1BH	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	EVT primary (V)
02H	EVT tertiary (V)
03H	ZCT error correction ON／OFF

(2) Measurement (Note 3)

Channel No.	Item
10H	A-phase current (A)
11H	C-phase current (A)
12H	Zero-phase current (A)
13H	Zero-phase voltage (V)
14H	Phase (Note 3)
15H	Negative-sequence current (A)

Each of 10H - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	C-phase current (A)
A3H	Zero-phase current (A)
A4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Overload
1	Overcurrent instantaneous A
2	
3	Overcurrent instantaneous C
4	Overcurrent time-delayed A
5	
6	Overcurrent time-lag C
7	Negative-sequence overcurrent
8	Earth fault directional
9	Undercurrent A
A	
B	Undercurrent C
C	Limit of the number of start-up times
D	DI (1)
E	DI (2)
F	

(6) RX information

Bit	Item
2	Trip
3	Overload
4	Overcurrent instantaneous A, C
5	Overcurrent time-ldelayedA, C
6	Negative-sequence overcurrent
7	Earth fault directional
8	Undercurrent A, C
9	Limit of the number of start-up times
A	DI (1)
B	DI (2)
C	
D	
E	

(7) DI

Bit	Item
1	DI (1)
2	DI (2)

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Overload
2	Overcurrent instantaneous A
3	
4	Overcurrent instantaneous C
5	Overcurrent time-delayed
6	
7	Overcurrent time-lag C
8	Negative-sequence overcurrent
9	Earth fault directional
A	Undercurrent A
B	
C	Undercurrent C
D	Limit of the number of start-up times
E	DI (1)
F	DI (2)

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Overload
2	Overcurrent instantaneous A
3	
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	
7	Overcurrent time-lag C
8	Negative-sequence overcurrent
9	Earth fault directional
A	Undercurrent A
B	
C	Undercurrent C
D	Limit of the number of start-up times
E	DI (1)
F	DI (2)

(Note 3) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the "CC-COM communication card operation manual (general)" is not applicable, just only to read the original receiving data. 10000 is output when there is no current or voltage.

3.33 CMP1-A02D1 (Motor protection relay)

(1) Setting

Channel No.	Item
00H	Motor rated current (A)
01H	Overload operation current (%)
02H	Overload operation time setting
03H	Overload negative-sequence heat multiplying factor
04H	Overload characteristic changeover
05H	Overcurrent instantaneous operation current (A)
06H	Overcurrent instantaneous operation time (sec.)
07H	Overcurrent time-delayed operation current (%)
08H	Overcurrent time-delayed operation time setting
09H	Negative-sequence overcurrent operation current (×)
0AH	Negative-sequence overcurrent operation time (sec.)
0BH	Earth fault overcurrent operation current (A)
0CH	Earth fault overcurrent operation time (sec.)
0DH	Undercurrent operation current (A)
0EH	Undercurrent operation time (sec.)
0FH	Number of start-up times
10H	Start-up time (sec.)
11H	Countdown rate of start-up time counter
12H	Contact arrangement (contact X_0) (Note 1)
13H	Contact arrangement (contact X_1) (Note 1)
14H	Contact arrangement (contact X_2) (Note 1)
15H	Contact arrangement (contact X_3) (Note 1)
16H	Contact arrangement (contact X_4) (Note 1)
17H	Contact arrangement (contact X_5) (Note 1)
18H	Contact arrangement (contact X_6) (Note 1)
19H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT zero-phase primary (A)

(2) Measurement (Note 3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	Zero-phase current (A)
14H	Negative-sequence current (A)

Each of 10H - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Overload
1	Overcurrent instantaneous A
2	Overcurrent instantaneous B
3	Overcurrent instantaneous C
4	Overcurrent time- delayed A
5	Overcurrent time- delayed B
6	Overcurrent time- delayed C
7	Negative-sequence overcurrent
8	Earth fault overcurrent
9	Undercurrent A
A	Undercurrent B
B	Undercurrent C
C	Limit of he number of start-up times
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	Overload
4	Overcurrent instantaneous A, B, C
5	Overcurrent time-delayed A, B, C
6	Negative-sequence overcurrent
7	Earth fault overcurrent
8	Undercurrent A, B, C
9	Limit of the number of start-up times
A	
B	
C	
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Overload
2	Overcurrent instantaneous A
3	Overcurrent instantaneous B
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	Overcurrent time-delayed B
7	Overcurrent time-delayed C
8	Negative-sequence overcurrent
9	Earth fault overcurrent
A	Undercurrent A
B	Undercurrent B
C	Undercurrent C
D	Limit of the number of start-up times
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Overload
2	Overcurrent instantaneous A
3	Overcurrent instantaneous B
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	Overcurrent time-delayed B
7	Overcurrent time-delayed C
8	Negative-sequence overcurrent
9	Earth fault overcurrent
A	Undercurrent A
B	Undercurrent B
C	Undercurrent C
D	Limit of the number of start-up times
E	
F	

3.34 CMP1-A02D2 (Motor protection relay)

(1) Setting

Channel No.	Item
00H	Motor rated current (A)
01H	Overload operation current (%)
02H	Overload operation time setting
03H	Overload negative-sequence heat multiplying factor
04H	Overload characteristic changeover
05H	Overcurrent instantaneous operation current (A)
06H	Overcurrent instantaneous operation time (sec.)
07H	Overcurrent time-delayed operation current (%)
08H	Overcurrent time-delayed operation time setting
09H	Negative-sequence overcurrent operation current (×)
0AH	Negative-sequence overcurrent operation time (sec.)
0BH	Earth fault overcurrent operation current (A)
0CH	Earth fault overcurrent operation time (sec.)
0DH	Undercurrent operation current (A)
0EH	Undercurrent operation time (sec.)
0FH	Number of start-up times
10H	Start-up time (sec.)
11H	Countdown rate of start-up time counter
12H	Contact arrangement (contact X_0) (Note 1)
13H	Contact arrangement (contact X_1) (Note 1)
14H	Contact arrangement (contact X_2) (Note 1)
15H	Contact arrangement (contact X_3) (Note 1)
16H	Contact arrangement (contact X_4) (Note 1)
17H	Contact arrangement (contact X_5) (Note 1)
18H	Contact arrangement (contact X_6) (Note 1)
19H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT zero-phase primary (A)

(2) Measurement (Note 3)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	Zero-phase current (A)
14H	Negative-sequence current (A)

Each of 10H - 13H reads the maximum record.

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Overload
1	Overcurrent instantaneous A
2	Overcurrent instantaneous B
3	Overcurrent instantaneous C
4	Overcurrent time-delayed A
5	Overcurrent time-delayed B
6	Overcurrent time-delayed C
7	Negative-sequence overcurrent
8	Earth fault overcurrent
9	Undercurrent A
A	Undercurrent B
B	Undercurrent C
C	Limit of the number of start-up times
D	DI (1)
E	DI (2)
F	

(6) RX information

Bit	Item
2	Trip
3	Overload
4	Overcurrent instantaneous A, B, C
5	Overcurrent time-delayed A, B, C
6	Negative-sequence overcurrent
7	Earth fault overcurrent
8	Undercurrent A, B, C
9	Limit of the number of start-up times
A	DI (1)
B	DI (2)
C	
D	
E	

(7) DI

Bit	Item
1	DI (1)
2	DI (2)

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Overload
2	Overcurrent instantaneous A
3	Overcurrent instantaneous B
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	Overcurrent time-delayed B
7	Overcurrent time-delayed C
8	Negative-sequence overcurrent
9	Earth fault overcurrent
A	Undercurrent A
B	Undercurrent B
C	Undercurrent C
D	Limit of the number of start-up times
E	DI (1)
F	DI (2)

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Overload
2	Overcurrent instantaneous A
3	Overcurrent instantaneous B
4	Overcurrent instantaneous C
5	Overcurrent time-delayed A
6	Overcurrent time-delayed B
7	Overcurrent time-delayed C
8	Negative-sequence overcurrent
9	Earth fault overcurrent
A	Undercurrent A
B	Undercurrent B
C	Undercurrent C
D	Limit of the number of start-up times
E	DI (1)
F	DI (2)

3.35 COC3-A03D1 (Overcurrent relay)

(1) Setting

Channel No.	Item
00H	Overcurrent time-delayed operation current (A)
01H	Overcurrent time-delayed operation time multiplier
02H	Overcurrent time-delayed operation characteristics
03H	Phase fault time-delayed reset characteristics
04H	Overcurrent instantaneous operation current (A)
05H	Overcurrent instantaneous operation time (sec.)
06H	Contact arrangement (contact X_0) (Note 1)
07H	Contact arrangement (contact X_1) (Note 1)
08H	Contact arrangement (contact X_2) (Note 1)
09H	Contact arrangement (contact X_3) (Note 1)
0AH	Contact arrangement (contact X_4) (Note 1)
0BH	Contact arrangement (contact X_5) (Note 1)
0CH	Operation indicator LED hold (Note 2)
00H	CT primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)

(5) Operation element

Bit	Item
0	Time-delayed A
1	Time-delayed B
2	Time-delayed C
3	
4	Instantaneous A
5	Instantaneous B
6	Instantaneous C
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Time-delayed A
6	Time-delayed B
7	Time-delayed C
8	
9	
A	Instantaneous A
B	Instantaneous B
C	Instantaneous C
D	
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Time-delayed A
2	Time-delayed B
3	Time-delayed C
4	
5	Instantaneous A
6	Instantaneous B
7	Instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Time-delayed A
2	Time-delayed B
3	Time-delayed C
4	
5	Instantaneous A
6	Instantaneous B
7	Instantaneous C
8	
9	
A	
B	
C	
D	
E	
F	

3.36 COC4-A03D1 (Overcurrent with 2f lock relay)

(1) Setting

Channel No.	Item
00H	Phase fault time-delayed operation current (A)
01H	Phase fault time-delayed operation time multiplier
02H	Phase fault time-delayed operation characteristics
03H	Phase fault time-lag reset characteristics
04H	Phase fault instantaneous operation current (A)
05H	Phase fault instantaneous operation time (sec.)
06H	Earth fault time-delayed operation current (A)
07H	Earth fault time-delayed operation time multiplier
08H	Earth fault time-delayed operation characteristics
09H	Earth fault time-delayed reset characteristics
0AH	Earth fault instantaneous operation current (A)
0BH	Earth fault instantaneous operation time (sec.)
0CH	2nd harmonic restraint ratio (%)
0DH	Contact arrangement (contact X_0) (Note 1)
0EH	Contact arrangement (contact X_1) (Note 1)
0FH	Contact arrangement (contact X_2) (Note 1)
10H	Contact arrangement (contact X_3) (Note 1)
11H	Contact arrangement (contact X_4) (Note 1)
12H	Contact arrangement (contact X_5) (Note 1)
13H	Operation indicator LED hold (Note 2)
00H	CT primary (A)
01H	CT zero-phase primary (A)

(2) Measurement

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	Zero-phase current (A)
14H	A-phase If2/If1 (%)
15H	B-phase If2/If1 (%)
16H	C-phase If2/If1 (%)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5

(4) Waveform

Channel No.	Item
A1H	A-phase current (A)
A2H	B-phase current (A)
A3H	C-phase current (A)
A4H	Zero-phase current (A)

(5) Operation element

Bit	Item
0	Phase fault time-delayed A
1	Phase fault time-delayed B
2	Phase fault time-delayed C
3	Earth fault time-delayed
4	Phase fault instantaneous A
5	Phase fault instantaneous B
6	Phase fault instantaneous C
7	Earth fault instantaneous
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Phase fault time-delayed A
6	Phase fault time-delayed B
7	Phase fault time-delayed C
8	Earth fault time-delayed
9	
A	Phase fault instantaneous A
B	Phase fault instantaneous B
C	Phase fault instantaneous C
D	Earth fault instantaneous
E	

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Phase fault time-delayed A
2	Phase fault time-delayed B
3	Phase fault time-delayed C
4	Earth fault time-delayed
5	Phase fault instantaneous A
6	Phase fault instantaneous B
7	Phase fault instantaneous C
8	Earth fault instantaneous
9	
A	
B	
C	
D	
E	
F	

3.37 CGP1-A01D2 (Generator protection relay)

(1) Setting

Channel No.	Item
00H	Generator rated current (A)
01H	Over current time-lag operation current (A)
02H	Over current time-lag operation time multiplier
03H	Over current time-lag operation characteristics
04H	Over current instantaneous operation current (A)
05H	Over current instantaneous operation time (sec.)
06H	Unbalance current1 operation current (A)
07H	Unbalance current1 operation time multiplier
08H	Unbalance current2 operation current(%)
09H	Unbalance current2 operation time(s)
0AH	Voltage detecting operation voltage(V)
0BH	Voltage detecting operation time(s)
0CH	Over voltage operation voltage(V)
0DH	Over voltage operation time(s)
0EH	Under voltage operation volage(V)
0FH	Under voltage operation time(s)
10H	Under voltage UV test
11H	Under frequency operation frequency(Hz)
12H	Under frequency operation time(s)
13H	Over frequency operation frequency(Hz)
14H	Over frequency operation time(s)
15H	Reverse power operation current(%)
16H	Reverse power operation time(s)
17H	Earth fault direction Io operation current(mA)
18H	Earth fault direction Vo operation voltage(V)
19H	Earth fault direction operation time(s)
1AH	Earth fault direction MAX. sensitivity angle(°)
1BH	Earth fault over voltage operation voltage(V)
1CH	Earth fault over voltage operation time(s)
1DH	Contact arrangement (contact X_0) (Note 1)
1EH	Contact arrangement (contact X_1) (Note 1)
1FH	Contact arrangement (contact X_2) (Note 1)
20H	Contact arrangement (contact X_3) (Note 1)
21H	Contact arrangement (contact X_4) (Note 1)
22H	Contact arrangement (contact X_5) (Note 1)
23H	Contact arrangement (contact X_6) (Note 1)
24H	Contact arrangement (contact X_7) (Note 1)
25H	Contact arrangement (contact X_8) (Note 1)
26H	Contact arrangement (contact X_9) (Note 1)
27H	Contact arrangement (contact X_a) (Note 1)
28H	Contact arrangement (contact X_b) (Note 1)
29H	Contact arrangement (contact X_c) (Note 1)
2AH	Operation indicator LED hold (Note 2)
2BH	DI 1 operation lock function(Note 3)
2CH	DI 2 operation lock function(Note 3)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	EVT praimary (V)
04H	EVT tertiary (V)
05H	ZCT error correction ON/OFF (Note 4)

(2) Measurement (Note 6)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	B-phase current (A)
16H	Zero-phase current (A)
17H	Zero-phase voltage (V)
18H	Power (kW)
19H	Reverse power (kW)
1AH	Power factor
1BH	Frequency (Hz)
1CH	Phase (°) (Note 5)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b
0CH	Contact X_c

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
B1H	A-phase current (A)
B2H	C-phase current (A)
B3H	Zero-phase current (A)
B4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	Earth fault directional
4	Over frequency
5	Under frequency
6	Earth fault over voltage
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	
C	
D	Unbalance current 2
E	
F	

(6) RX information

Bit	Item
2	Trip
3	TEST
4	Voltage detecting
5	Over current
6	Unbalance current 1
7	Unbalance current 2
8	Over voltage
9	Under voltage
A	Under frequency
B	Over frequency
C	Reverse power
D	Earth fault directional
E	Earth fault over voltage
F	

(7) DI

Bit	Item
1	DI1
2	DI2

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Voltage detecting
2	Under voltage
3	Reverse power
4	Earth fault directional
5	Over frequency
6	Under frequency
7	Earth fault over voltage
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	
D	
E	Unbalance current 2
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Voltage detecting
2	Under voltage
3	Reverse power
4	Earth fault directional
5	Over frequency
6	Under frequency
7	Earth fault over voltage
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	
D	
E	Unbalance current 2
F	

(Note 3) DI operation lock function

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	Earth fault directional
4	Over frequency
5	Under frequency
6	Earth fault over voltage
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	
C	
D	Unbalance current 2
E	
F	

(Note 4) ON/OFF ZCT-ERR.

[ON] : 1, [OFF] : 0

(Note 5) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the「CC-COM communication card operation manual (general)」is not applicable, just only to read the original receiving data. 10000 is output when there is no current or voltage.

(Note6) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.38 CGP1-A02D2 (Generator protection relay)

(1) Setting

Channel No.	Item
00H	Generator rated current (A)
01H	Over current time-lag operation current (A)
02H	Over current time-lag operation time multiplier
03H	Over current time-lag operation characteristics
04H	Over current instantaneous operation current (A)
05H	Over current instantaneous operation time (sec.)
06H	Unbalance current1 operation current (A)
07H	Unbalance current1 operation time multiplier
08H	Unbalance current2 operation current(%)
09H	Unbalance current2 operation time(s)
0AH	Voltage detecting operation voltage(V)
0BH	Voltage detecting operation time(s)
0CH	Over voltage operation voltage(V)
0DH	Over voltage operation time(s)
0EH	Under voltage operation volage(V)
0FH	Under voltage operation time(s)
10H	Under voltage UV test
11H	Under frequency operation frequency(Hz)
12H	Under frequency operation time(s)
13H	Over frequency operation frequency(Hz)
14H	Over frequency operation time(s)
15H	Reverse power operation current(%)
16H	Reverse power operation time(s)
17H	Earth fault direction Io operation current(mA)
18H	Earth fault direction Vo operation voltage(V)
19H	Earth fault direction operation time(s)
1AH	Earth fault direction MAX. sensitivity angle(°)
1BH	Earth fault over voltage operation voltage(%)
1CH	Earth fault over voltage operation time(s)
1DH	Contact arrangement (contact X_0) (Note 1)
1EH	Contact arrangement (contact X_1) (Note 1)
1FH	Contact arrangement (contact X_2) (Note 1)
20H	Contact arrangement (contact X_3) (Note 1)
21H	Contact arrangement (contact X_4) (Note 1)
22H	Contact arrangement (contact X_5) (Note 1)
23H	Contact arrangement (contact X_6) (Note 1)
24H	Contact arrangement (contact X_7) (Note 1)
25H	Contact arrangement (contact X_8) (Note 1)
26H	Contact arrangement (contact X_9) (Note 1)
27H	Contact arrangement (contact X_a) (Note 1)
28H	Contact arrangement (contact X_b) (Note 1)
29H	Contact arrangement (contact X_c) (Note 1)
2AH	Operation indicator LED hold (Note 2)
2BH	DI 1 operation lock function(Note 3)
2CH	DI 2 operation lock function(Note 3)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)
03H	Line voltage (kV) (Note 4)

(2) Measurement (Note 6)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	B-phase current (A)
16H	Zero-phase current (A)
17H	Zero-phase voltage (V)
18H	Power (kW)
19H	Reverse power (kW)
1AH	Power factor
1BH	Frequency (Hz)
1CH	Phase (°) (Note 5)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b
0CH	Contact X_c

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
B1H	A-phase current (A)
B2H	C-phase current (A)
B3H	Zero-phase current (A)
B4H	Zero-phase voltage (V)

(5) Operation element

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	Earth fault directional
4	Over frequency
5	Under frequency
6	Earth fault over voltage
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	
C	
D	Unbalance current 2
E	
F	

(6) RX information

Bit	Item
2	Trip
3	TEST
4	Voltage detecting
5	Over current
6	Unbalance current 1
7	Unbalance current 2
8	Over voltage
9	Under voltage
A	Under frequency
B	Over frequency
C	Reverse power
D	Earth fault directional
E	Earth fault over voltage
F	

(7) DI

Bit	Item
1	DI1
2	DI2

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Voltage detecting
2	Under voltage
3	Reverse power
4	Earth fault directional
5	Over frequency
6	Under frequency
7	Earth fault over voltage
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	
D	
E	Unbalance current 2
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Voltage detecting
2	Under voltage
3	Reverse power
4	Earth fault directional
5	Over frequency
6	Under frequency
7	Earth fault over voltage
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	
D	
E	Unbalance current 2
F	

(Note 3) DI operation lock function

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	Earth fault directional
4	Over frequency
5	Under frequency
6	Earth fault over voltage
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	
C	
D	Unbalance current 2
E	
F	

(Note 4) Line voltage

For 6.6 kV line: “0”

For 3.3 kV line: “1”

(Note 5) Receiving data of measurement value

For this relay, the processing model of command 83H specified in the「CC-COM communication card operation manual (general)」is not applicable, just only to read the original receiving data. 10000 is output when there is no current or voltage.

(Note6) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.39 CGP1-A03D2 (Generator protection relay)

(1) Setting

Channel No.	Item
00H	Generator rated current (A)
01H	Over current time-lag operation current (A)
02H	Over current time-lag operation time multiplier
03H	Over current time-lag operation characteristics
04H	Over current instantaneous operation current (A)
05H	Over current instantaneous operation time (sec.)
06H	Unbalance current1 operation current (A)
07H	Unbalance current1 operation time multiplier
08H	Unbalance current2 operation current(%)
09H	Unbalance current2 operation time(s)
0AH	Voltage detecting operation voltage(V)
0BH	Voltage detecting operation time(s)
0CH	Over voltage operation voltage(V)
0DH	Over voltage operation time(s)
0EH	Under voltage operation volage(V)
0FH	Under voltage operation time(s)
10H	Under voltage UV test
11H	Under frequency operation frequency(Hz)
12H	Under frequency operation time(s)
13H	Over frequency operation frequency(Hz)
14H	Over frequency operation time(s)
15H	Reverse power operation current(%)
16H	Reverse power operation time(s)
17H	Earth fault overcurrent operation current (A)
18H	Earth fault overcurrent operation time (s)
19H	Contact arrangement (contact X_0) (Note 1)
1AH	Contact arrangement (contact X_1) (Note 1)
1BH	Contact arrangement (contact X_2) (Note 1)
1CH	Contact arrangement (contact X_3) (Note 1)
1DH	Contact arrangement (contact X_4) (Note 1)
1EH	Contact arrangement (contact X_5) (Note 1)
1FH	Contact arrangement (contact X_6) (Note 1)
20H	Contact arrangement (contact X_7) (Note 1)
21H	Contact arrangement (contact X_8) (Note 1)
22H	Contact arrangement (contact X_9) (Note 1)
23H	Contact arrangement (contact X_a) (Note 1)
24H	Contact arrangement (contact X_b) (Note 1)
25H	Contact arrangement (contact X_c) (Note 1)
26H	Operation indicator LED hold (Note 2)
27H	DI 1 operation lock function(Note 3)
28H	DI 2 operation lock function(Note 3)
00H	CT primary (A)
01H	Zero phase CT primary(A)
02H	VT primary (V)
03H	VT secondary (V)

(2) Measurement (Note 4)

Channel No.	Item
10H	A-phase current (A)
11H	B-phase current (A)
12H	C-phase current (A)
13H	AB phase voltage (V)
14H	BC phase voltage (V)
15H	CA phase voltage (V)
16H	Zero-phase current (A)
17H	Power (kW)
18H	Reverse power (kW)
19H	Power factor
1AH	Frequency (Hz)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6
07H	Contact X_7
08H	Contact X_8
09H	Contact X_9
0AH	Contact X_a
0BH	Contact X_b
0CH	Contact X_c

(4) Waveform

Channel No.	Item
A1H	AB phase voltage (V)
A2H	BC phase voltage (V)
B1H	A-phase current (A)
B2H	C-phase current (A)
B3H	Zero-phase current (A)
B4H	B-phase current (A)

(5) Operation element

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	
4	Over frequency
5	Under frequency
6	
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	Earth fault over current
C	
D	Unbalance current 2
E	
F	

(6) RX information

Bit	Item
2	Trip
3	TEST
4	Voltage detecting
5	Over current time-lag
6	Over current instantaneous
7	Unbalance current 1
8	Unbalance current 2
9	Over voltage
A	Under voltage
B	Under frequency
C	Over frequency
D	Reverse power
E	Earth fault over current
F	

(7) DI

Bit	Item
1	DI1
2	DI2

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Voltage detecting
2	Under voltage
3	Reverse power
4	
5	Over frequency
6	Under frequency
7	
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	Earth fault over current
D	
E	Unbalance current 2
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Voltage detecting
2	Under voltage
3	Reverse power
4	
5	Over frequency
6	Under frequency
7	
8	Over voltage
9	Unbalance current 1
A	Over current instantaneous
B	Over current time-lag
C	Earth fault over current
D	
E	Unbalance current 2
F	

(Note 3) DI operation lock function

Bit	Item
0	Voltage detecting
1	Under voltage
2	Reverse power
3	
4	Over frequency
5	Under frequency
6	
7	Over voltage
8	Unbalance current 1
9	Over current instantaneous
A	Over current time-lag
B	Earth fault over current
C	
D	Unbalance current 2
E	
F	

(Note4) For the measurement item, note the followings about power factor and frequency.

#1 Power factor : When the voltage is 5.5V or less, power factor 1 is output.

#2 Frequency: When the voltage is 35V or less, 0 Hz is output.

3.40 CGP2-A01D2 (Generator protection relay)

(1) Setting

Channel No.	Item
00H	Biased differential・Operation current(A)
01H	Biased differential・Bias(%)
02H	Biased differential・Operation time(s)
03H	Loss of excitation・Impedance ZF(ohm)
04H	Loss of excitation・Impedance ZB(ohm)
05H	Loss of excitation: Operation time(s)
06H	DI1 operation lock・Lock time(s)
07H	DI2 operation lock・Lock time(s)
08H	Contact arrangement (contact X_0) (Note 1)
09H	Contact arrangement (contact X_1) (Note 1)
0AH	Contact arrangement (contact X_2) (Note 1)
0BH	Contact arrangement (contact X_3) (Note 1)
0CH	Contact arrangement (contact X_4) (Note 1)
0DH	Contact arrangement (contact X_5) (Note 1)
0EH	Contact arrangement (contact X_6) (Note 1)
0FH	Operation indicator LED hold (Note 2)
10H	DI 1 operation lock function (Note 3)
11H	DI 2 operation lock function (Note 3)
00H	CT primary (A)
01H	VT primary (V)
02H	VT secondary (V)

(2) Measurement (Note 4)

Channel No.	Item
10H	IA (A) (Output side CT)
11H	IB (A) (Output side CT)
12H	IC (A) (Output side CT)
13H	IA (A) (Differential current)
14H	IB (A) (Differential current)
15H	IC (A) (Differential current)
16H	VAB (V)
17H	Phase IA-VAB(°)
18H	Phase IB-VAB(°)
19H	Frequency (Hz)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	IA (A) (Output side CT)
A2H	IA (A) (Neutral side CT)
A3H	IC (A) (Output side CT)
A4H	IC (A) (Neutral side CT)
B2H	VAB (V)
B3H	IB (A) (Output side CT)
B4H	IB (A) (Neutral side CT)

(5) Operation element

Bit	Item
0	Biased differential A
1	Biased differential B
2	Biased differential C
3	Loss of excitation
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Biased differential A
6	Biased differential B
7	Biased differential C
8	
9	Loss of excitation
A	Differential current check
B	
C	
D	
E	
F	

(7) DI

Bit	Item
1	DI1
2	DI2

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	Loss of excitation
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	Loss of excitation
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 3) DI operation lock function

Bit	Item
0	Biased differential A
1	Biased differential B
2	Biased differential C
3	Loss of excitation
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note4) For the measurement item, note the followings about phase and frequency.

#1 Phase: When the voltage is 2.0V or less, or when the current is 0.4A or less, 10000 is output.

#2 Frequency: When the voltage is 30V or less, 0 Hz is output.

3.41 CGP2-A02D2 (Generator protection relay)

(1) Setting

Channel No.	Item
00H	Biased differential・Operation current(A)
01H	Biased differential・Bias(%)
02H	Biased differential・Operation time(s)
03H	DI1 operation lock・Lock time(s)
04H	DI2 operation lock・Lock time(s)
05H	Contact arrangement (contact X_0) (Note 1)
06H	Contact arrangement (contact X_1) (Note 1)
07H	Contact arrangement (contact X_2) (Note 1)
08H	Contact arrangement (contact X_3) (Note 1)
09H	Contact arrangement (contact X_4) (Note 1)
0AH	Contact arrangement (contact X_5) (Note 1)
0BH	Contact arrangement (contact X_6) (Note 1)
0CH	Operation indicator LED hold (Note 2)
0DH	DI 1 operation lock function (Note 3)
0EH	DI 2 operation lock function (Note 3)
00H	CT primary (A)

(2) Measurement (Note 4)

Channel No.	Item
10H	IA (A) (Output side CT)
11H	IB (A) (Output side CT)
12H	IC (A) (Output side CT)
13H	IA (A) (Differential current)
14H	IB (A) (Differential current)
15H	IC (A) (Differential current)

(3) Forced operation

Channel No.	Item
00H	Contact X_0
01H	Contact X_1
02H	Contact X_2
03H	Contact X_3
04H	Contact X_4
05H	Contact X_5
06H	Contact X_6

(4) Waveform

Channel No.	Item
A1H	IA (A) (Output side CT)
A2H	IA (A) (Neutral side CT)
A3H	IC (A) (Output side CT)
A4H	IC (A) (Neutral side CT)
B3H	IB (A) (Output side CT)
B4H	IB (A) (Neutral side CT)

(5) Operation element

Bit	Item
0	Biased differential A
1	Biased differential B
2	Biased differential C
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(6) RX information

Bit	Item
2	Trip
3	
4	
5	Biased differential A
6	Biased differential B
7	Biased differential C
8	
9	
A	Differential current check
B	
C	
D	
E	
F	

(7) DI

Bit	Item
1	DI1
2	DI2

(Note 1) Contact arrangement

Bit	Item
0	Contact hold
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 2) Operation indicator LED hold

Bit	Item
0	Trip
1	Biased differential A
2	Biased differential B
3	Biased differential C
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

(Note 3) DI operation lock function

Bit	Item
0	Biased differential A
1	Biased differential B
2	Biased differential C
3	
4	
5	
6	
7	
8	
9	
A	
B	
C	
D	
E	
F	

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