

Minebea

CC-Link

DIGITAL INDICATOR

CC-Link Interface

CSD-903-73

Instruction Manual

MINEBEA Co., Ltd.
Measuring Components Business Unit

EN294-1499

FOREWORD

Thank you very much for your purchasing Minebea's Digital Indicator, model CSD-903-73.

This manual explains the handling procedures and the notes when it would be used. Make use of it properly after reading through the manual carefully.

Be sure to deliver the manual to the end user. Moreover, the end user should keep the manual at hand after reading it over.

This manual is intended for the technical experts to read. When you read this instruction manual, the program basic knowledge of Mitsubishi general-purpose sequencer and the CC-Link interface are needed.

Marks and arrangements used in this manual

The following marks are attached to the explanation on the matters that indicate "Don't do this.", "Take care" and "For reference".

Be sure to read these items where these marks are attached.



Warning

Warning may cause injury or accident that may harm to the operator.
Don't do these things described here.



Caution

It is a description when the occurrence only of assumption of danger by which the user owes injury when handling is mistaken, and material damage is assumed.



Caution during operation and working.
Be sure to read the item to prevent malfunction.

About the view of this book

This instruction manual explains the connection method and use of the CC-Link interface specification of the option for CSD-903. Please see the CSD-903 instruction manual about the other functions and a basic method of handling and notes.

CSD-903 instruction manual (DRW NO. EN294-1492*)

Moreover, please refer to the instruction manual of sequencer and its CC-Link interface for the sequencer program and CC-Link.

- CC-Link is an abbreviation of “Control & Communication Link”

Divisional history

Date	Instruction manual No.	Details of revised point
2011/02	DRW. NO.EN294-1499	First Version

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1. General

This unit is a remote device station of CC-Link Ver.1.10.

This unit can be connected with the mastering station of CC-Link Ver.1.10.

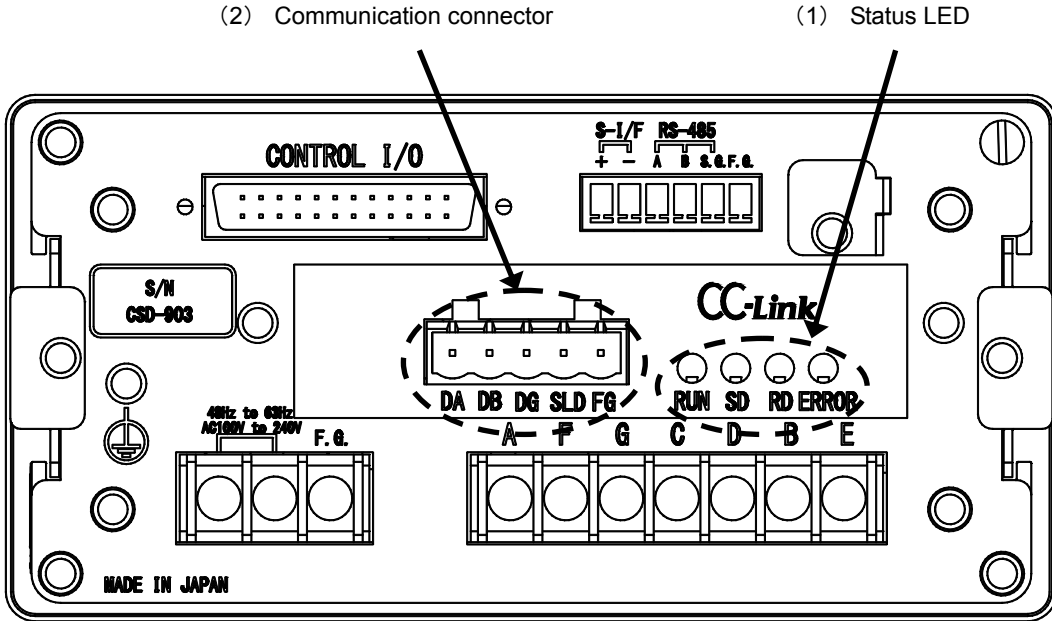
1-1.Features

Main features for CSD-903-73 are as follows:

- (1) This unit can be controlled by using remote I/O and register of the sequencer, so the program volume of the sequencer can be reduced.
- (2) The wiring with the sequencer can be reduced.

2. Name and function of each point

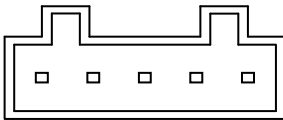
2-1.Rear panel for CC-Link I/F



(1) Communication connector

Connector type terminal block for CC-Link interface.

Connector pin configuration for communication is as follows.



DA DB DG SL FG

Pin No.	Signal name	Contents
1	DA	Signal line DA side
2	DB	Signal line DB side
3	DG	Signal line ground
4	SLD	Shield
5	FG	Frame ground

※ Suitable plug : MSTB 2,5-ST-5,08 AU by PHOENIX CONTACT. ※to be attached.

※ "SLD" and "FG" are connected inside.

※ The internal circuit and photo coupler are insulated.

(2) Status LED

The communication status is expressed with four LED.

LED Name	Light on	Light off	Light on/off
RUN	•Normal	•In the reset •No communication	—
SD	•Transmitting	—	—
RD	•Receiving	—	—
ERR	•Setting error •CRC error •Trouble	•Normal	•When setting changes

3. Connecting method

3-1.Connector pin configuration for communication

Refer to 2-1. Rear panel for CC-Link I/F (1) Connector for communication.

3-2.Notes of Connection

- When the wiring, be sure to the instrument power supply is OFF.
- Do not supply the AC power until complete the installation. This instrument does not have power switch (ON/OFF).
- Do not fell or make a strong impact on this instrument rear panel terminal block because it is made of resin.
- Striped electrical cable tip length is 6 mm.
- The tightening torque of terminal screws on the terminal block is 0.6 N·m.
- Cables which connecting this instrument isolate from noise sources, for example, power supply line and I/O for control's as much as possible.
- Be sure to connect the ground wire must be D single ground. Do not common the ground with a kind of power supply.
- For CC-Link cable connection, use twist pear cable wire with shield (Cable for CC-link) and connect the shield in terminal block's SLD terminal or F.G.terminal.



- **Connect the termination to the CC-Link connector to electrical termination which is far from PLC as possible.**
- **Use the connecting cable for CC-Link.**
- **Refer to the “Construction and specification of network system” from the latest version of CC-Link Cable Wiring Manual published by CC-Link Partner Association about communication speed and cable length**

4. Setting of CC-Link connecting

Please set the following when you use CC-LINK interface.

4-1. Changeover to Function mode

Change from the standard measurement mode to the function mode by the following operations.

- 1) Press the **SET** key.
- 2) The display becomes "FUNC", and press the **F** key.
- 3) Select function number which you want to change.

Refer to clause 7-1 of the CSD-903 instruction manual (DRW No.EN294-1492) for "Setting method of the function mode".

4-2. Items of CC-Link setting

Item	Function No.	Setting value	Contents
CC-Link The number of occupied stations	F-84	0	1 station occupied
		1	2 stations occupied
		●2	4 stations occupied
CC-Link Setting of the stations	F-85	01~64 ●01	F-84=0 : selectable from station No. 01 to 64. F-84=1 : selectable from station No. 01 to 63. F-84=2 : selectable from station No. 01 to 61.
CC-Link Setting of baud rate	F-86	●0	156 kbps
		1	625 kbps
		2	2.5 Mbps
		3	5 Mbps
		4	10 Mbps
CC-Link 32 bits data expression method	F-87	●0	Expression of standard binary
		1	Highest bit sign The left end digit "8" fixation at "Negative (minus)"

● : This sign means a default setting.

(1) The number of occupied stations (F-84)

Number of occupied stations are set.
Selectable from [1 station], [2stations], [4 stations].
Default has set as [4 stations].

(2) Setting of the stations (F-85)

Execute the setting of the station No.

When 1 station is occupied : selectable from station No.01 to 64.

When 2 stations are occupied : selectable from station No.01 to 63

When 4 stations are occupied : selectable from station No.01 to 61.

The occupied station of this instrument is 1, 2, 4 stations.

□ When 2 stations are occupied, and station No. is set as "01", 01 to 02 stations are occupied.

※ When 4 stations are occupied, and station No. is set as "01", 01 to 04 stations are occupied.

Therefore, the station number must not overlap.

Default has set as [01].

(3) Setting of baud rate (F-86)

Communication speed (unit: bps) is set.

Selectable from [156k], [625k], [2.5M], [5M] or [10M].

Default has set as [156k].

(4) Signed data indication method (F-87)

32 bits data indication method is set.

Selectable from [Expression of standard binary] or [Highest bit sign].

Default has set as [Expression of standard binary].

Load value	32 bits data expression method	Upper 16 bit	Lower 16 bit
-1	Expression of standard binary	FFFFH	FFFFH
	Highest bit sign	8000H	0001H
-10	Expression of standard binary	FFFFH	FFF6H
	Highest bit sign	8000H	000AH
-99999	Expression of standard binary	FFFEH	7961H
	Highest bit sign	8001H	869FH

5. PLC memory explanation

5-1.Address

A remote I/O(RX/RX:Bit handling register) and a remote register(RWw/RWr:Word handling register) secures the zone in the master station depends on the occupied station number. As shown in the table below in case of this unit.

Type		Occupied station number			Remarks
		4 stations occupied	2 stations occupied	1 station occupied	
Remote input		128points	64points	32points	I/O for each 16 points is occupied as a system area.
Remote output		128points	64points	32points	
Remote register	Master→Remote	16points	8points	4points	
	Remote→Master	16points	8points	4points	

The address number of the remote station allocated to the mastering station is as shown in the table below.

Station No.	Remote input	Remote output	Remote register		Remarks
			Master→Remote	Remote→Master	
0	-----	-----	-----	-----	Specify the master station
1	RX0000	RY0000	RWw0000	RWr0000	
2	RX0020	RY0020	RWw0004	RWr0004	
3	RX0040	RY0040	RWw0008	RWr0008	
~	~	~	~	~	
10	RX0120	RY0120	RWw0024	RWr0024	
~	~	~	~	~	
64	RX07E0	RY07E0	RWw00FC	RWr00FC	

5-2.Address map

5-2-1.Data detail

1) Batch/Discharge mode Remote register

4 stations occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	①Final (24 bit)	Special data area
	RWwn+1		
	RWwn+2	①Preliminary 2 (32 bit)	
	RWwn+3		
2	RWwn+4	①Preliminary 1 (16 bit)	
	RWwn+5	①Free Fall (16 bit)	
	RWwn+6	①Over (16 bit)	
	RWwn+7	①Under (16 bit)	
3	RWwn+8	①Full (32 bit)	
	RWwn+9		
	RWwn+A	①Near zero (32 bit)	
RWwn+B			
4	RWwn+C	②General data area	
	RWwn+D		
	RWwn+E	③Command No. (Return)	
	RWwn+F	④Operating mode (Return)	

n : Value decided by setting of station No.

2 stations occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	①Final (32 bit)	Special data area
	RWwn+1		
	RWwn+2	Undefined (16 bit)	
	RWwn+3	①Free Fall (16 bit)	
2	RWwn+4	②General data area	
	RWwn+5		
	RWwn+6	③Command No. (Return)	
	RWwn+7	④Operating mode (Return)	

n : Value decided by setting of station No.

1 station occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	Undefined	
	RWwn+1		
	RWwn+2		
	RWwn+3		

n : Value decided by setting of station No.

① Special data area (4 stations, 2 stations)

When the set value is registered by using the set value writing request (request 1), the set value is set in each area.

Details of each set value are shown as follows;

	Data type	Setting range
Final	32 bit binary with sign	0 ~ 999999
Preliminary 2	32 bit binary with sign	0 ~ 999999
Preliminary 1	16 bit binary with sign	0 ~ 32767
Free Fall	16 bit binary with sign	-32768 ~ 32767
Over	16 bit binary with sign	0 ~ 32767
Under	16 bit binary with sign	0 ~ 32767
Full	32 bit binary with sign	0 ~ 999999
Near zero	32 bit binary with sign	0 ~ 999999

② General data area (4 stations, 2 stations)

When the set value or data is registered by using the general command request (request 2), the set value is set in this area

Data type : 32 bit binary with sign
 Setting range : Depends on the set value.

③ Command No. (4 stations, 2 stations)

When the set value or data is registered by using the general command request (request 2), the command No. is set in this area.

The content of the general data area is set depending on the command set in this command area.

Data type : 8 bit binary
 Setting range : 0 ~ 255

④ Operation mode (4 stations, 2 stations)

When the operation mode is changed by using the operation mode changeover request (request 3), the mode number is set in this area.

This function is prepared for future expansion.

Data type : 8 bit binary
 Setting range : 0 ~ 255

2) Remote register of 4 steps comparator mode

4 stations occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	①S1 (32 bit)	Special data area
	RWwn+1		
	RWwn+2	①S2 (32 bit)	
	RWwn+3		
2	RWwn+4	①S3 (32 bit)	
	RWwn+5		
	RWwn+6	①S4 (32 bit)	
	RWwn+7		
3	RWwn+8	①Full (32 bit)	
	RWwn+9		
	RWwn+A	①Near zero (32 bit)	
	RWwn+B		
4	RWwn+C	②General data area	
	RWwn+D		
	RWwn+E	③Command No. (Return)	
	RWwn+F	④Operating mode (Return)	

n : Value decided by setting of station No.

2 stations occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	①S1 (32 bit)	Special data area
	RWwn+1		
	RWwn+2	①S2 (32 bit)	
	RWwn+3		
2	RWwn+4	②General data area	
	RWwn+5		
	RWwn+6	③Command No. (Return)	
	RWwn+7	④Operating mode (Return)	

n : Value decided by setting of station No.

1 station occupied (Master→Instrument)			
Station	Remote register	Contents	Remarks
1	RWwn	Undefined	
	RWwn+1		
	RWwn+2		
	RWwn+3		

n : Value decided by setting of station No.

① Special data area (4 stations, 2 stations)

When the set value is registered by using the Setting value writing request (request 1), the set value is set in each area.

Details of each set value are shown as follows;

	Data type	Setting range
S1	32 bit binary with sign	-999999 ~ 999999
S2	32 bit binary with sign	-999999 ~ 999999
S3	32 bit binary with sign	-999999 ~ 999999
S4	32 bit binary with sign	-999999 ~ 999999
Full	32 bit binary with sign	0 ~ 999999
Near zero	32 bit binary with sign	0 ~ 999999

② General data area (4 stations, 2 stations)

When the set value or data is registered by using the general command request (request 2), the set value is set in this area

Data type : 32 bit binary with sign
Setting range : Depends on the set value.

③ Command No. (4 stations, 2 stations)

When the set value or data is registered by using the general command request (request 2), the command No. is set in this area.

The content of the general data area is set depending on the command set in this command area.

Data type : 8 bit binary
Setting range : 0 ~ 255

④ Operation mode (4 stations, 2 stations)

When the operation mode is changed by using the operation mode changeover request (request 3), the mode number is set in this area.

This function is prepared for future expansion.

Data type : 8 bit binary
Setting range : 0 ~ 255

3) Command list

The command No. and the value which is set in General data area when the command order is executed by using the general command request (request 2) are shown in the next page.

Writing set value and command order (Writing/reading selection = Writing [OFF])

Setting value or command order	Command No. (RWwnE)	General data area (RWwnC~RWwnD)
Undefined	1	
Undefined	2	
Undefined	3	
Undefined	4	
Undefined	5	
Final /S1	6	
Free fall /S4	7	
Preliminary 1 /S3	8	
Preliminary 2 /S2	9	
Over /S0	10	
Under	11	
Near zero	12	
Full	13	
Preset Tare	14	
Supplementary time	15	
Waiting time for judge after supplementary flow	16	
Automatic free fall compensation	17	
Undefined	18	
Undefined	19	
Accumulation value	20	
Accumulation times	21	
Undefined	60	
Undefined	61	
Undefined	62	
Undefined	63	
Undefined	64	
Zero	0	1
Zero clear	0	2
Tare	0	3
Tare clear	0	4
Batch start	0	5
Discharge start	0	7
Accumulation command	0	10
Clear the last accumulated data	0	11
Emergency stop	0	12
Undefined	0	13
Accumulation clear	0	14
Undefined	0	15
Error reset	0	21
Print command	0	22
Net display	0	23
Gross display	0	24

Reading set value (Writing/reading selection = Reading [OFF])

Setting value or command order	Command No. (RWwnE)	General data area (RWrnC~RWrnD)
Undefined	1	
Undefined	2	
Undefined	3	
Undefined	4	
Undefined	5	
Final /S1	6	
Free fall /S4	7	
Preliminary 1 /S3	8	
Preliminary 2 /S2	9	
Over	10	
Under	11	
Near zero	12	
Full	13	
Tare	14	
Supplementary time	15	
Waiting time for judge after supplementary flow	16	
Automatic free fall compensation	17	
Undefined	18	
Undefined	19	
Accumulation value	20	
Accumulation times	21	
Undefined	32	
Undefined	57	
Undefined	60	
Undefined	61	
Undefined	62	
Undefined	63	
Undefined	64	
Undefined	65	
Undefined	66	
Undefined	67	
Undefined	68	
Undefined	69	

4) Remote register (Instrument→Master)

4 stations occupied			
Station	Remote register	Contents	Remarks
1	RWrn	①Net value	
	RWrn+1		
	RWrn+2	②Gross value	
	RWrn+3		
2	RWrn+4	③Accumulation value	
	RWrn+5		
	RWrn+6	④Error code	
	RWrn+7	⑤Error assistance code	
3	RWrn+8	Undefined	
	RWrn+9		
	RWrn+A		
	RWrn+B		
4	RWrn+C	⑥General data area	
	RWrn+D		
	RWrn+E	⑦Command No.(Response)	
	RWrn+F	⑧Operation mode(Response)	

n : Value decided by setting of station No.

2 stations occupied			
Station	Remote register	Contents	Remarks
1	RWrn	⑨Indicate value (Net value/Gross value)	
	RWrn+1		
	RWrn+2	④Error code	
	RWrn+3	⑤Error assistance code	
2	RWrn+4	⑥General data area	
	RWrn+5		
	RWrn+6	⑦Command No.(Response)	
	RWrn+7	⑧Operation mode(Response)	

n : Value decided by setting of station No.

1 station occupied			
Station	Remote register	Contents	Remarks
1	RWrn	⑨Indicate value (Net value/Gross value)	
	RWrn+1		
	RWrn+2	④Error code	
	RWrn+3	⑤Error assistance code	

n : Value decided by setting of station No.

① Net value (4 stations)

Area for displaying the net value

Data type : 32 bit binary with sign

Setting range : -999999 ~ 999999

② Gross value (4 stations)

Area for displaying the gross value

Data type : 32 bit binary with sign

Setting range : -999999 ~ 999999

③ Accumulation value (4 stations)

Area for displaying the accumulation value

Data type : 32 bit binary with sign

Setting range : -99999999 ~ 99999999

④ Error code (4 stations, 2 stations, 1 station)

Area for displaying the error generating in the main body of the indicator

Refer to below table of error assistance code too.

Data type : 16 bits binary

Setting range : 0~255

⑤ Error assistance code (4 stations, 2 stations, 1 station)

Area for displaying the error No. generating in the main body of the indicator

Data type : 16 bits binary

Setting range : 0~255

Error code	Error assistance code	Contents
0	0	No error
1 (Weighing sequence error)	1	SQERR 0 : When measurement is stopped by inputting the Emergency stop while weighing.
	3	SQEER 2 : When the load value is under even if the supplementary flow is executed.
	4	SQEER 3 : When there is contradiction in the amount of the comparison value.
	5	SQEER 4 : When the batching time exceeds the limited time.
	6	SQERR 5 : When the discharging time exceeds the limited time.
	7	SQERR 6 : When the gross value < Final in discharge control.
	8	SQERR 7 : When the net value > fixed value in the start.
	10	SQERR 9 : The measurement begins in the condition that START ABOVE Near zero is [VALID], however the container is not put on the measuring section.
2 (Zero set error)	1	Zero set error In case of execute ZERO out of range of zero
	2	A/Z error In case of execute TARE out of range of tare.
3 (Other error)	3	A/D conversion error.
	31	EEPROM writing error.
	32	EEPROM reading error.
99 (Setting error)	99	Except for the measurement mode.
	0	Receiving undefined command When undefined data is set at command No.
	1	Setting range error
	2	Read-only state In case of during measurement, calibration and writing data.



• Refer to Error display in main body instruction manual about the contents of Error code.

⑥ General data area (4 stations, 2 stations)

When the set value reading out command is ordered by using the general command request (Request 2), this area represents the set value.

Data type : 32 bit binary with sign

⑦ Command No. (Response) (4 stations, 2 stations)

When the command order is executed by the general command request (Request 2), this area represents that command No.

Data type : 8 bit binary

⑧ Operation mode (Response) (4 stations, 2 stations)

When the operation mode is changed by the operation mode changeover request (request 3), this area represents that command No.

This function is prepared for future expansion.

Data type : 8 bit binary

⑨ Indicate value (Net value/Gross value) (2 stations, 1 station)

It is area which showing the Net value or Gross value by specified bit.

Data type : 32 bit binary with sign

Setting range : -999999 ~ 999999

5-3.Relay zone

1) Remote input (Master→Instrument)

4 stations occupied		
Device No.	Contents	Classification
RYn0	①Setting value writing request (Request 1)	Communication
RYn1		
RYn2	②General command request (Request 2)	
RYn3	③Selection of writing/Reading out. (R/W)	
RYn4	④Operation mode changeover request (Request 3)	
RYn5		
RYn6		
RYn7		
RYn8		
RYn9		
RYnA		
RYnB		
RYnC		
RYnD		
RYnE		
RYnF		
RY(n+1)0	⑤Zero	
RY(n+1)1	⑥Zero clear	
RY(n+1)2	⑦Tare	
RY(n+1)3	⑧Tare clear	
RY(n+1)4	⑨Hold	
RY(n+1)5	⑩Net display	
RY(n+1)6	⑪Gross display	
RY(n+1)7		
RY(n+1)8	⑫Accumulation signal	
RY(n+1)9	⑬Accumulation clear	
RY(n+1)A	⑭Error cancellation request flag	
RY(n+1)B		
RY(n+1)C		
RY(n+1)D		
RY(n+1)E		
RY(n+1)F		System reservation zone
RY(n+2)0		
RY(n+2)1		
RY(n+2)2		
RY(n+2)3		
RY(n+2)4		
RY(n+2)5		
RY(n+6)6		
RY(n+6)7		
~		
RY(n+7)0		
RY(n+7)1		
RY(n+7)2		
RY(n+7)3		
RY(n+7)4		
RY(n+7)5		
RY(n+7)6		
RY(n+7)7		
RY(n+7)8		
RY(n+7)9	⑮Initialed data setting request flag	
RY(n+7)A	⑯Error reset requesting flag	
RY(n+7)B		
RY(n+7)C		
RY(n+7)D		
RY(n+7)E		
RY(n+7)F		

n : Value decided by setting of station No.

2 stations occupied		
Device No.	Contents	Classification
RYn0	①Setting value writing request (Request 1)	Communication
RYn1		
RYn2	②General command request (Request 2)	
RYn3	③Selection of writing/Reading out. (R/W)	
RYn4	④Operation mode changeover request (Request 3)	
RYn5		
RYn6		
RYn7		
RYn8		
RYn9		
RYnA		
RYnB		
RYnC		
RYnD		
RYnE		
RYnF		
RY(n+1)0	⑤Zero	Control signal
RY(n+1)1	⑥Zero clear	
RY(n+1)2	⑦Tare	
RY(n+1)3	⑧Tare clear	
RY(n+1)4	⑨Hold	
RY(n+1)5	⑩Net display	
RY(n+1)6	⑪Gross display	
RY(n+1)7		
RY(n+1)8	⑫Accumulation signal	
RY(n+1)9	⑬Accumulation clear	
RY(n+1)A	⑭Error cancellation request flag	
RY(n+1)B		
RY(n+1)C		
RY(n+1)D		
RY(n+1)E		
RY(n+1)F	⑰Indicate value changeover flag (Net value/ Gross value)	
RY(n+2)0		
RY(n+2)1		
RY(n+2)2		
RY(n+2)3		
RY(n+2)4		
RY(n+2)5		
RY(n+2)6		
RY(n+2)7		
~		
RY(n+3)0	System reservation zone	
RY(n+3)1		
RY(n+3)2		
RY(n+3)3		
RY(n+3)4		
RY(n+3)5		
RY(n+3)6		
RY(n+3)7		
RY(n+3)8		
RY(n+3)9		⑱Initialed data setting request flag
RY(n+3)A	⑲Error reset requesting flag	
RY(n+3)B		
RY(n+3)C		
RY(n+3)D		
RY(n+3)E		
RY(n+3)F		

n : Value decided by setting of station No.

1 station occupied		
Device No.	Contents	Classification
RYn0	⑤Zero	Control signal
RYn1	⑥Zero clear	
RYn2	⑦Tare	
RYn3	⑧Tare clear	
RYn4	⑨Hold	
RYn5	⑫Accumulation signal	
RYn6	⑬Accumulation clear	
RYn7	⑰Indicate value changeover flag (Net value/ Gross value)	
RYn8		
RYn9		
RYnA		
RYnB		
RYnC		
RYnD		
RYnE		
RYnF		
RY(n+1)0	System reservation zone	
RY(n+1)1		
RY(n+1)2		
RY(n+1)3		
RY(n+1)4		
RY(n+1)5		
RY(n+1)6		
RY(n+1)7		
RY(n+1)8		
RY(n+1)9	⑮Initialed data setting request flag	
RY(n+1)A	⑯Error reset requesting flag	
RY(n+1)B		
RY(n+1)C		
RY(n+1)D		
RY(n+1)E		
RY(n+1)F		

n : Value decided by setting of station No.

※Error reset is operated by main body side because Error cancellation request flag is not defined when
1 occupied station
(Synchronize with reset of the main body)

① Setting value writing request (Request 1)

Writing of the data set in special data area (RWwn0~RWwnB) is requested.

ON : In the request of writing

OFF : After confirming "Setting value writing response (Response 1)".

② General command request (Request 2)

Writing or reading out is requested by the command order.

Use with selection of writing or reading out (R/W) at the same time.

ON : In the request of writing/reading out

OFF : After confirming "Setting value writing response (Response 2)".

③ Selection of writing or reading out(R/W)

Writing or reading out is selected by the command order.

Writing the data set in General data area (RWwnC~RWwnD) is ordered for writing by command No. (RWwnE).

Reading out the data set in General data area (RWrnC~RWrnD) is ordered for reading out by command No. (RWwnE).

ON : Reading out

OFF : Writing

④ Operation mode changeover request (Request 3)

Writing of the data set in operation mode (RWwnF) is requested.

This function is prepared for future expansion.

ON : In the request of writing request.

OFF : After confirming "Operation mode changeover response (Response 3)"

⑤ Zero

Zero set is executed.

ON : In requesting the execution of Zero set. (Operated by OFF→ON)

OFF : Normal

⑥ Zero clear

Zero clear is executed.

ON : In requesting the execution of Zero clear. (Operated by OFF→ON)

OFF : Normal

⑦ Tare

Tare is executed.

ON : In requesting the execution of Tare. (Operated by OFF→ON)

OFF : Normal

⑧ Tare clear

Tare clear is executed.

ON : In requesting the execution of Tare clear. (Operated by OFF→ON)

OFF : Normal

- ⑨ Hold
A measurement value of the display is maintained.
- ON : Hold display (Level input)
 - OFF : Hold release
- ⑩ Net display
The display is changed to Net value.
- ON : In requesting the execution of Net display. (Operated by OFF→ON)
 - OFF : Normal
- ⑪ Gross display
The display is changed to Gross value.
- ON : In requesting the execution of Gross display. (Operated by OFF→ON)
 - OFF : Normal
- ⑫ Accumulation signal
Accumulation is executed.
- ON : Turning on the Accumulation signal. (Operated by OFF→ON)
 - OFF : Normal
- ⑬ Accumulation clear
Accumulation clear is executed.
- ON : In requesting the execution of Accumulation clear. (Operated by OFF→ON)
 - OFF : Normal
- ⑭ Error cancellation request flag
Sequence error, Zero set error, A/Z error is canceled with Error condition flag .
And Error code is cleared to "0".
- ON : In requesting the execution of Error cancellation. (Operated by OFF→ON)
 - OFF : Normal
- ⑮ Initialed data setting request flag
The initialization of the instrument is requested.
- ON : In the requesting initialization.
 - OFF : Normal
- ⑯ Error reset requesting flag
Error reset is requested when the occurrent error is notified with Error condition flag (RX(n+7)A).
- ON : In the requesting of clear (Operated by OFF→ON)
 - OFF : Normal
- ⑰ Indicate value NET value/GROSS value command
Indication value set in remote resistor area is selected as follows, when the station occupied 1 or 2.
- ON : Net value (Same as Net value of remote resistor when 4 stations occupied.)
 - OFF : Gross value (Same as Gross value of remote resistor when 4 stations occupied.)

2) Remote output (Instrument→Master)

4 stations occupied		
Device No.	Contents	Classification
RXn0	①Setting value writing response (Response 1)	Communication
RXn1		
RXn2	②General command response (Response 2)	
RXn3	③Writing/reading out selection response (R/W response)	
RXn4	④Operation mode changeover response(Response 3)	
RXn5		
RXn6	⑤CPU normal operation	
RXn7		
RXn8	⑥Decimal point position 1	
RXn9	⑥Decimal point position 2	
RXnA	⑥Decimal point position 4	
RXnB		
RXnC		
RXnD		
RXnE		
RXnF		
RX(n+1)0	⑦Near Zero	Control output
RX(n+1)1	⑦F.Flow/S1	
RX(n+1)2	⑦M.Flow/S2	
RX(n+1)3	⑦D.Flow/S3	
RX(n+1)4	⑦Over/S4	
RX(n+1)5	⑦OK/S0	
RX(n+1)6	⑦Under	
RX(n+1)7	⑦Stable	
RX(n+1)8	⑦Finish	
RX(n+1)9	⑧Weighing value over	
RX(n+1)A	⑨During hold	
RX(n+1)B	⑦Full	
RX(n+1)C		
RX(n+1)D	⑩Discharge (Gate open)	
RX(n+1)E	⑪Sequence error	
RX(n+1)F	⑫Abnormal weight	
RX(n+2)0		
RX(n+2)1		
RX(n+2)2		
RX(n+2)3		
RX(n+2)4		
RX(n+2)5		
RX(n+2)6		
RX(n+2)7		
~		
RX(n+7)0	System reservation zone	
RX(n+7)1		
RX(n+7)2		
RX(n+7)3		
RX(n+7)4		
RX(n+7)5		
RX(n+7)6		
RX(n+7)7		
RX(n+7)8		
RX(n+7)9	⑬Initialed data setting complete flag	
RX(n+7)A	⑭Error condition flag	
RX(n+7)B	⑮Remote READY	
RX(n+7)C		
RX(n+7)D		
RX(n+7)E		
RX(n+7)F		

n : Value decided by setting of station No.

※Abnormal weight is turned on by the error except the measurement sequence.

2 stations occupied		
Device No.	Contents	Classification
RXn0	①Setting value writing request (Response 1)	Communication
RXn1		
RXn2	②General command response (Response 2)	
RXn3	③Writing/reading out selection response (R/W response)	
RXn4	④Operation mode changeover response(Response 3)	
RXn5		
RXn6	⑤CPU normal operation	
RXn7		
RXn8	⑥Decimal point position 1	
RXn9	⑥Decimal point position 2	
RXnA	⑥Decimal point position 4	
RXnB		
RXnC		
RXnD		
RXnE		
RXnF		
RX(n+1)0	⑦Near Zero	Control output
RX(n+1)1	⑦F.Flow/S1	
RX(n+1)2	⑦M.Flow/S2	
RX(n+1)3	⑦D.Flow/S3	
RX(n+1)4	⑦Over/S4	
RX(n+1)5	⑦OK/S0	
RX(n+1)6	⑦Under	
RX(n+1)7	⑦Stable	
RX(n+1)8	⑦Finish	
RX(n+1)9	⑧Weighing value over	
RX(n+1)A	⑨During hold	
RX(n+1)B	⑦Full	
RX(n+1)C		
RX(n+1)D	⑩Discharge (Gate open)	
RX(n+1)E	⑪Sequence error	
RX(n+1)F	⑫Abnormal weight	
RX(n+2)0		
RX(n+2)1		
RX(n+2)2		
RX(n+2)3		
RX(n+2)4		
RX(n+2)5		
RX(n+2)6		
RX(n+2)7		
~		
RX(n+3)0	System reservation zone	
RX(n+3)1		
RX(n+3)2		
RX(n+3)3		
RX(n+3)4		
RX(n+3)5		
RX(n+3)6		
RX(n+3)7		
RX(n+3)8		
RX(n+3)9		⑬Initialed data setting complete flag
RX(n+3)A	⑭Error condition flag	
RX(n+3)B	⑮Remote READY	
RX(n+3)C		
RX(n+3)D		
RX(n+3)E		
RX(n+3)F		

n : Value decided by setting of station No.

※Abnormal weight is turned on by the error except the measurement sequence.

1 station occupied		
Device No.	Contents	Classification
RXn0	⑦Near Zero	Control output
RXn1	⑦F.Flow/S1	
RXn2	⑦M.Flow/S2	
RXn3	⑦D.Flow/S3	
RXn4	⑦Over/S4	
RXn5	⑦OK/S0	
RXn6	⑦Under	
RXn7	⑦Stable	
RXn8	⑦Finish	
RXn9	⑧Weighing value over	
RXnA	⑨During hold	
RXnB	⑦Full	
RXnC		
RXnD	⑩Discharge (Gate open)	
RXnE	⑪Sequence error	
RXnF	⑫Abnormal weight	
RX(n+1)0	System reservation zone	
RX(n+1)1		
RX(n+1)2		
RX(n+1)3		
RX(n+1)4		
RX(n+1)5		
RX(n+1)6		
RX(n+1)7		
RX(n+1)8		
RX(n+1)9	⑬Initialed data setting complete flag	
RX(n+1)A	⑭Error condition flag	
RX(n+1)B	⑮Remote READY	
RX(n+1)C		
RX(n+1)D		
RX(n+1)E		
RX(n+1)F		

n : Value decided by setting of station No.

※Abnormal weight is turned on by the error except the measurement sequence.

① Setting value writing response (Response 1)

The end of writing by the Setting value writing request (request 1) is notified.

- ON : In completion of writing
- OFF : After confirming OFF of Setting value writing request. (Request 1)

② General command response (Response 2)

The end of the command order by the General command request (request 2) is notified.

- ON : In the completion of command order
- OFF : After confirming OFF of the General command request (Request 2)

③ Writing/Reading out selection response (R/W response)

The status of write/reading out is notified by command order when the General command response (Response 2) is notified.

- ON : Reading out
- OFF : Writing

④ Operation mode changeover response (Response 3)

The end of changing operation mode by the Operation mode changeover request (Request 3) is notified.

- ON : In the completion of the changeover
- OFF : After confirming the OFF of the Operation mode changeover request (Request 3)

⑤ CPU normal operation

CC-Link interface operating normally is notified.

- ON→OFF→ON reversing is notified at 0.5 seconds intervals

⑥ Decimal point position 1, 2, 4

The Decimal point position of the load value is notified by the 3 bits binary.

Position	Decimal point position 1	Decimal point position 2	Decimal point position 4
None	OFF	OFF	OFF
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON

⑦ Near Zero, and the other status

Statuses of Near Zero, F.Flow/S1, M.Flow/S2, D.Flow/S3, Over/S4, OK/S0, Under, Stable, Finish, and Full are notified.

⑧ Weighing value over

The occurrence of abnormal status (OL, OVF, -OL, -OVF) is notified when the status is over range.

- ON : In the occurrence of abnormal status
- OFF : Normal

⑨ During hold

The status of the display is notified.

ON : During hold
OFF : Free running

⑩ Discharge (Gate open)

The Discharge is notified.

ON : During discharge
OFF : Normal

⑪ Sequence error

The occurrence of Sequence error is notified.

ON : In the occurrence of Sequence error
OFF : Normal

⑫ Abnormal weight

Weighing value over or Zero set error are notified.

ON : In the occurrence of abnormal status
OFF : Normal

⑬ Initialed data setting complete flag

The end of initialization when there is a request with initialed data setting request flag (RY(n+7)9) is notified.

ON : In the completion of initialization
OFF : Normal

⑭ Error condition flag

The occurrence of the error in the indicator is notified.

ON : In the occurrence of the error.
OFF : Normal

⑮ Remote READY

Being able to complete initialization and to communicate is notified.

ON : Possible to communicate
OFF : In the initialization

6. Operation method

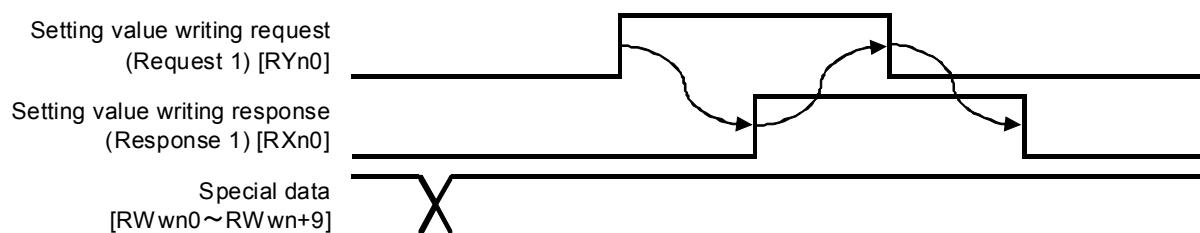
6-1. Writing the set value

Setting value is written by “Setting value writing request (Request 1)” from the Master station.

The instrument recognizes that “Setting value writing request (Request 1) [RYn0]” is turned on, and it writes the data set in “Special data area [RWwn0~RWwn+9]” into the indicator.

It responds to the master station by “Setting value writing response (Response 1)” after writing is completed.

Timing chart



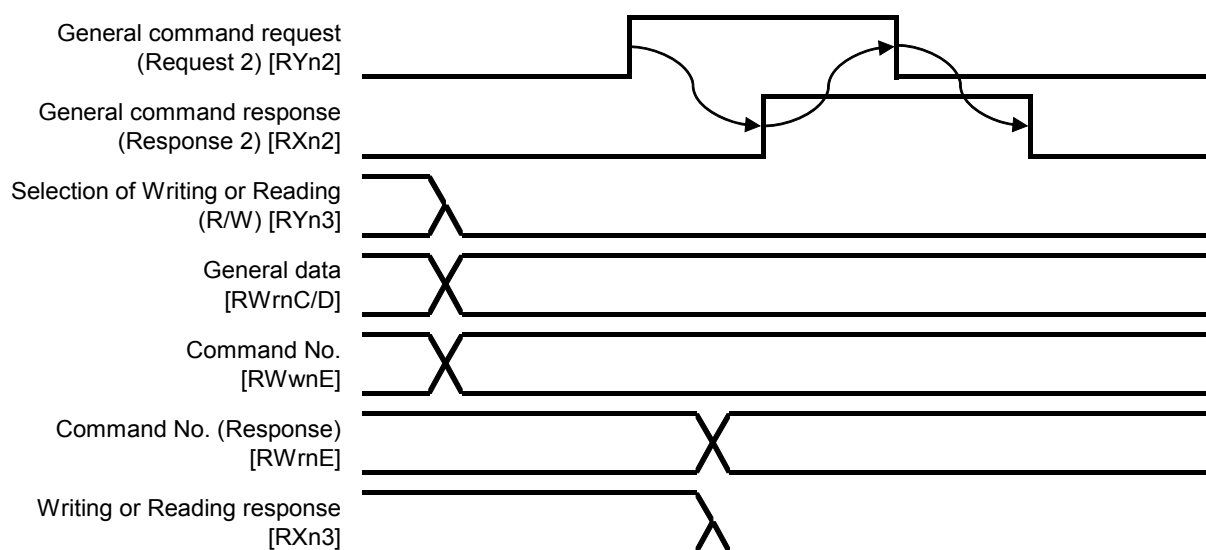
6-2. Writing/Reading by general command

Operation of the command order is executed by “General command request (Request 2) [RYn2]” from the Master station.

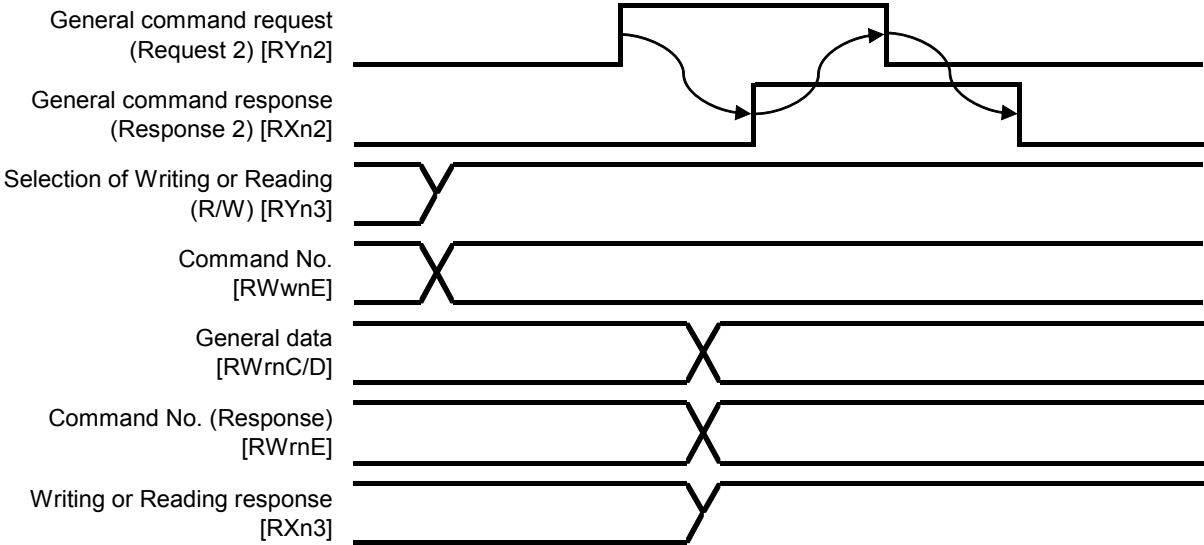
The instrument recognizes that “General command request (Request 2) [RYn2]” was turned on, and it executes to write the data set in “General data area [RWrn+C~D]” or to read the data into “General data area [RWrn+C~D]” to the instrument by “Selection of writing or reading out(R/W) [RYn3]” and “Command No. [RWwn+E]”.

It responds to the master station by “General command response (Response 2) [RXn2]” after writing is completed.

① Writing request



② Reading out request



6-3. Shift to status where it is possible to communicate

Shifting to status where it is possible to communicate is notified after the power supply is turned on or Initial data setting is requested from the master station.

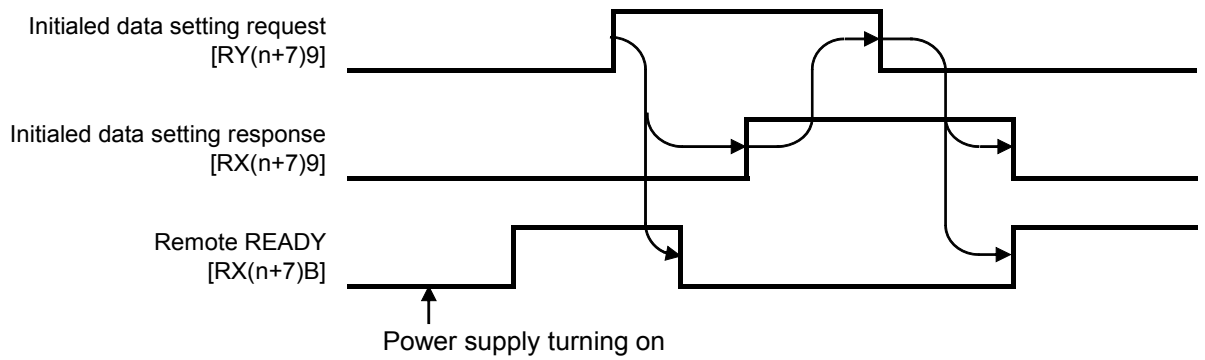
“Remote READY [RX(n+7)B]” is turned on along with the power supply turning on after initialization (set initializing) completion is done and it is assumed the status where it is possible to communicate.

Remote READY is turned off when “Initial data setting request [RY(n+7)9]” transmitted by the master station is turned on, and initialization is executed.

It responds to the master station after initialization is completed by turning on “Initial data setting response [RX(n+7)9]”.

That the master station recognizes turning on “Initial data setting response [RX(n+7)9]”, and “Initial data setting response [RX(n+7)9]” is turned off makes that “Initial data setting request [RY(n+7)9]” is turned off, and remote READY is turned on.

Timing chart



6-4. Error condition/Reset requesting flag

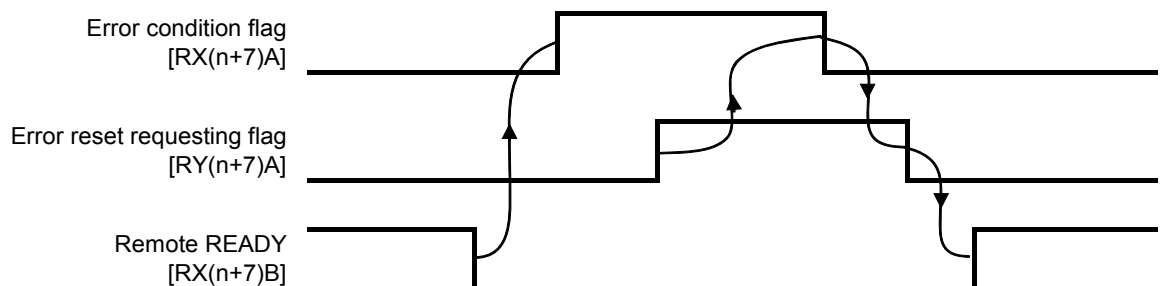
The status sequence when an error is detected and the reset sequence are shown.

The remote READY [RX(n+7)B] is turned off and the Error condition flag [RX(n+7)A] is turn on when an error is detected,

The Error condition flag [RX(n+7)A] is turn off when the Error reset requesting flag [RY(n+7)A] transmitted by the Master station is turned on.

Afterwards, the Remote READY [RX(n+7)B] is turn on when the error reset requesting flag [RY(n+7)A] transmitted by the master station is turned off.

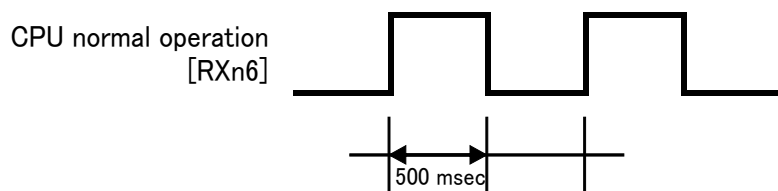
When an error is detected, reset the error as the following sequence.



6-5.CPU normal operation signal

The instrument operating normally is notified to the Master station.

When the instrument operates normally, the condition of “CPU normal operating signal [RXn6]” is reversed at 0.5 seconds interval.



7. Specifications of interface

7-1. Specifications of CC-Link interface

Specifications	Contents
Version	Ver.1.10
The number of occupied stations	Selectable from 1, 2 or 4 stations.
Communication method	Polling method
Synchronous method	Bit synchronization method
Baud rate	Selectable from 156 k, 625 k, 2.5 M, 5 M and 10 Mbps
Transmission path form	RS485 bus
Transmission format	HDLC conforming
Remote station number	In the case of 1 station occupied, No's.01 to 64 can be selectable. In the case of 2 stations occupied, No's.01 to 63 can be selectable. In the case of 4 stations occupied, No's.01 to 61 can be selectable.
Numbers of connection	In the case of 1 station occupied, 64 units at maximum. In the case of 2 stations occupied, 32 units at maximum. In the case of 4 stations occupied, 16units at maximum.
Termination	Resistance externally attached.(110Ω)
Status LED	RUN, ERR, SD, RD

7-2.Accessories

CC-Link Instruction Manual	1 piece
CC-Link communication connector	1 piece (MSTB 2,5-ST-5,08 AU by PHOENIX CONTACT)

- The contents of this manual may subject to change without notice.

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