HITACHI PROGRAMMABLE CONTROLLER

EH-150

PROFIBUS-DP MASTER MODULE 2 (EH-RMP2) APPLICATION MANUAL

(SERVICE MANUAL)



O Warranty period and coverage

The warranty period is the shorter period either 18 months from the data of manufacture or 12 months from the date of installation.

However within the warranty period, the warranty will be void if the fault is due to;

- (1) Incorrect use as directed in this manual and the application manual.
- (2) Malfunction or failure of external other devices than this unit.
- (3) Attempted repair by unauthorized personnel.
- (4) Natural disasters.

The warranty is for the PLC only, any damage caused to third party equipment by malfunction of the PLC is not covered by the warranty.

O Repair

Any examination or repair after the warranty period is not covered. And within the warranty period ant repair and examination which results in information showing the fault was caused by ant of the items mentioned above, the repair and examination cost are not covered. If you have ant questions regarding the warranty please contact with your supplier or the local Hitachi Distributor. (Depending on failure part, examination might be impossible.)

O Ordering parts or asking questions

When contacting us for repair, ordering parts or inquiring about other items, please have the following details ready before contacting the place of purchase.

- (1) Model
- (2) Manufacturing number (MFG.No.)
- (3) Details of the malfunction

O Reader of this manual

This manual is described for the following person.

- \cdot Person considering the introduction of PLC
- PLC system engineer
- Person handling PLC
- Manager after installing PLC

Warning

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- (2) The content of this document may be changed without notice.
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Safety Precautions

Read this manual and related documents thoroughly before installing, operating, performing preventive maintenance or performing inspection, and be sure to use the unit correctly. Use this product after acquiring adequate knowledge of the unit, all safety information, and all cautionary information. Also, make sure this manual enters the possession of the chief person in charge of safety maintenance.

Safety caution items are classifies as "Danger" and "Caution" in this document.



: Identifies information about practice or circumstances, which may lead to personal injury or death, property damage, or economic loss.



: Identifies information about practice or circumstances, which may lead to personal injury, property damage, or economic loss.

However, depending on the circumstances, items marked with



may result in major accidents.

The both marks show important information. Be sure to follow the instructions.

Icons for prohibited items and required items are shown below:



1. Installation

- Use this product in an environment as described in the catalog or this document. If this product is used in an environment subject to high temperature, high humidity, excessive dust, corrosive gases, vibration or shock, it may result in electric shock, fire or malfunction.
- Be sure to install the PLC according to this manual. Failure to do so could result in damage by falling off, failure or malfunction.
- Do not allow foreign objects such as wire chips to enter the unit. They may become the cause of fire, malfunction or failure.

2. Wiring

REQUIRED

• The PLC must be grounded (FE terminal).

Failure to do so could result in injury to personnel or causing it to malfunction.

▲ CAUTION

• Always use the power supply voltage listed in specifications. Using other voltage may damage the equipment or present a risk of fire.

• The wiring operation should be performed by a qualified personnel. Failure to do so could result in fire, damage or electric shock.

3. Precautions when using the unit

DANGER

• Do not touch the terminals while the power is on. There is a risk of electric shock.

• Appropriate emergency stop circuit, interlock circuitry and similar safety measures should be added to the PLC system to ensure safety in the event of incorrect, missing or abnormal signals caused by broken signal lines, momentary power interruptions or other causes. Do not share the power supply of relay output module and interlock circuitry because relay output might not work properly due to switching noise from interlock circuitry.

- When performing program change, forced output, RUN, STOP, etc., while the unit is running, be sure to check system safety carefully. Failure to do so could lead to damage to equipment.
- Supply power according to the power–up order. Failure to do so could lead to damage to equipment or malfunction.

USE POWER SUPPLY UNIT OF EH-PS SERIES FOR SUPPLYING ELECTRIC POWER.

4. Preventive maintenance

DANGER

• Do not connect the _{+/-} of the battery in reverse polarity. Do not recharge, disassemble, heat, place in fire, or short circuit the battery. There is a risk of explosion or fire.

• Do not attempt to disassemble, repair or modify any part of the PLC. Electric shock, malfunction or failure may result.

• Turn off power to the PLC before mounting or dismounting the module Electric shock, malfunction or failure may result.

Revision History

No.	Description of revision	Date of revision	Manual number
1	The first edition	Oct. 2014	NJI-621(X)

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Chapter 1 Introduction

1.1 Before use

Thank you very much for choosing Hitachi Programmable Controller (hereinafter referred to as PLC), EH-150 series. This manual explains how to use the PROFIBUS-DP master module 2 with the Hitachi EH-150 series Programmable Controller. Read this manual thoroughly and keep for installation operations, maintenance checks and other procedures. The following documentation related to PLC is also available and should be used together with this manual.

Items		Title of document	Manual number
EHV+ series Main system of EHV+		IEC 61131-3 Compliant PLC	NJI-564*(X)
		EHV+ APPLICATION MANUAL	
	Main system of EHV	EH-150 EHV-CPU APPLICATION MANUAL	NJI-481*(X)
	Wall system of ETTV	EH-150 EHV-CPU PROGRAMMING MANUAL	NJI-482*(X)
EUV sorias	Programming software	EH-150 EHV series Ladder Programming software	NJI-537*(X)
Env selles	(Standard edition)	Control Editor INSTRUCTION MANUAL	
	Programming software	EH-150 EHV series Ladder Programming software	NJI-486*(X)
	(Variable Name Edition)	Control Editor INSTRUCTION MANUAL	
	Main system of EH-150	EH-150 APPLICATION MANUAL	NJI-280*(X)
EH-150 series	D	LADDER EDITOR for Windows®	NJI-206*(X)
	riogramming software	INSTRUCTION MANUAL	

* The alphabet between the number and (X) means version (A,B...) and the space means the first edition.

1.2 Item packaged with the module

Great care has been taken in the manufacture of this product, but we advise that the following points are checked immediately after purchase.

- 1. Is the model the same one that you ordered?
- 2. Has the product been damaged in any way?
- 3. Are any of the accessories listed in Table 1.2-1 missing?

Table 1.2-1 List of accessories	s supplied with the EH-RMP2
---------------------------------	-----------------------------

No.	Product name	Model name	Appearance	Quantity	Remarks
1	PROFIBUS Master module 2	EH-RMP2		1	
2	Instruction manual	NJI-617*(X)		1	
3	Ferrite Core	SFC-10		2	For applying CE marking (EMC direction). Please refer to 3.3 Wiring.

1.3 System configurations

EH-RMP2 is master module on PROFIBUS-DP protocol of industrial network. EH-RMP2 is helpful as master controller of PROFIBUS system. Example of system configuration is shown below.



Figure 1.3-1 Example of system configurations

1.4 Difference between EH-RMP2 and EH-RMP

There are some differences between EH-RMP2 and EH-RMP.

- (1) Configuration tool
 - EH-RMP : Sycon

EH-RMP2 : SYCON.net

(2) Configuration cable

EH-RMP : Exclusive serial cable

EH-RMP2 : USB cable (The cable currently used in EHV series can be used.)

(3) Bus Termination

EH-RMP : Built-in

EH-RMP2 : Not built-in (Please use a connector which has a termination switch.)

EH-RMP2 expands the input and output size to use in PROFIBUS network in comparison with					
EH-RMP. For this reason, the input data of the PROFIBUS network may be rarely affected under n					
environment. As measures method under the noise environment, we recommend the following					
measures.					
(1) PROFIBUS cable and signal cables of various input and output modules must be routed in metal					
duct separated from power cables.					
(2) The shield wire of PROFIBUS cable must be grounded both ends.					
(3) By increasing the capacity of the power supply for the input and output signals, reduce the voltage					
fluctuation due to noise.					

1.5 Replacement from EH-RMP

Cautions of replacement from EH-RMP are shown below.

Table 1.5-1 Cautions of replacement from EH-RMP

No.	Item	EH-RMP	EH-RMP2	Action
1	Configuration tool	Sycon	SYCON.net	Configurations file is not compatible between
				EH-RMP and EH-RMP2. Please reconfigure
				with use of SYCON.net.
2	Configuration cable	D-sub 9 pin	Type-B USB cable	Please prepare the type-B USB cable.
		serial connector		Type-B USB cable is same as cable of using
				in EHV / EHV+ series.
3	Link parameter of	Sending data area	Sending data area	Please change parameter
	CPU module	is WLx000 to WLx0FF	is WLx000 to WLx1FF	with use of the programming tool.
4	Terminator	Build-in	Not Build-in	Please use a connector
				which has a termination switch.
5	Rotary switch	-	The input / output sizes	Please set rotary switch to "0".
			of PROFIBUS network	
6	Side DIP switch	Output hol	d selecting	Please set same settings.
7	Start-up time	5 second	10 second	Please change user program.
8	LED indications	RDY, RUN, STATUS,	RDY, RUN, ERR,	Please check each application manual.
		ERR, TOKEN	STATUS, REM	



Chapter 2 Specifications

2.1 General Specifications

General specifications are shown in Table 2.1-1. These specifications are common in EH-150 series.

Item	Specifications
Operating ambient temperature	0 to 55 °C
Storage ambient temperature	-10 to 75 °C
Operating ambient humidity	5 to 95 % RH (no condensation)
Storage ambient humidity	5 to 95 % RH (no condensation)
Vibration resistance	Conforms to IEC 60068-2-6
Noise resistance	 Noise voltage 1,500 Vpp Noise pulse width 100 ns, 1μ (Noise created by the noise simulator is applied across the power supply modules input terminals. This is determined by this company's measuring method.) Based on IEC61131-2 Static noise: 3,000V at metal exposed area
Insulation resistance	20 M Ω or more between the AC external and case ground (FE) terminal (based on 500 V DC)
Dielectric withstand voltage	1,500 V AC for 1 minute between the AC external terminal and case ground (FE) terminal
Grounding	Class D grounding (ground with power supply module)
Usage environment	No corrosive gases, no excessive dust
Structure	Open, wall-mount type
Cooling	Natural air cooling

Table 2.1-1	General	specifications
	Conorai	opoonioutionio

2.2 **Functional Specifications**

Functional specifications are shown in Table 2.2-1.

			Specifications			
	Item		EH-RMP2 (This product)	EH-RMP (Existing model)		
	Communication protocol					
	Communication protocol		0 to 125: Setting by	PROFIBUS-DP V0		
	Mayimum I/O		Input: 512 words, output: 512 words	Input: 256 words, output: 256 words		
	Maximum I/O	size	(Setting by rotary switch)	Input: 256 words, output: 256 words		
	Connector		(Setting by fotary switch)	9 nin		
	Tanla		D-sub			
s	Communicatio	n achla	DDOEIDI			
tion	Communicatio					
fica	Transmit space	n, d	9.0 KOPS	: 1,200 m		
peci	Transmit speed	u	19.2 KOPS 93.75 kbps	: 1,200 m		
s uc	95.75 K0ps : 1,200 m		: 1,200 m			
cati			500 kbps	: 400 m		
iuni			1500 kbps : 200 m			
nmo			3 Mbp	s : 100 m		
ŭ			6 Mbp	s : 100 m		
			12 Mbp	s : 100 m		
	Maximum connectable number of slaves		125 slaves			
	Output hold		Supported (Clear mode, Freeze mode, Copy mode*1)			
	Termination		Not built-in	Built-in		
	Configuration	tool	SYCON.net	SyCon		
	Support CPU 1	module	EH-CPU316A/516/548, EHV-CPU16/32/64/128, EHV-CPU1025/1102			
su	I/O assignmen	t	LINK			
atio	Number of	EH-CPU	2 modules / CPU			
cific	modules	EHV-CPU	8 module	s / CPU		
spe	Self-check			WDT check		
onal			WD1 check	System memory check		
nctic	Error indicatio	n	LED			
Fui	Current consur	mption	780 mA	600 mA		
	Standard compliant		CE, C-Tick*2	UL, CE, C-Tick		

Table 2.2-1 Funct	ional spe	ecifications
-------------------	-----------	--------------

*1 When using EH-CPU316A, this mode is effective in case that EH-CPU316A ROM version is 02 or higher. *2 UL is not supported. Contact your local supplier for further information.

2.3 Name and function of each part



Description of Connector

Connector	Symbol	Indication		Details					
PROFIBUS			D-sub 9 pin connector. Terminal layouts are shown below.						
$\langle \bigcirc \rangle$				Pin No.	Details				
				1	NC				
	PROFIBUS	Communication connector		2	NC				
				3	B-Line				
				4	NC	1			
			5 6 7 8				5	GND	
				6	+5 V DC	1			
				7	NC	1			
				8	A-Line				
				9	NC]			

Description of LED display

LED	LED name	Indication	Details				
			Display EH-RMP2 hardware status.				
		H 1 <i>i i i</i>	State Details				
			Off Hardware error				
	RDY	(Green / Red)	Power supply error				
		(Green / Red)	Flash in green or red Initialization				
			Lit in red Hardware error				
			Lit in green No error				
			Display the EH-RMP2 system status.				
			State Details				
			Off Power supply error				
			Flash in red Internal error				
		C at a second state of	Lit in red WDT error				
	STATUS	System status (Green / Red)	Fifth-flash in green Side DIP switch setting error				
			Forth-flash in green Link parameter error				
			Triple-flash in green Configuration data error				
RDY RUN ERR			Double-flash in green CPU module error				
STATUS REM			Single-flash in green Initialization				
			Lit in green No error				
			Display PROFIBUS network status.				
		.	State Details				
	RUN	Network status	Off No communication established				
		(Green)	Blinking Under communication establishment				
			On Communication established				
			Display PROFIBUS error status.				
			State Details				
	EDD	Error status	Off No error				
	EKK	(Red)	Blinking Slave units at least one are not established.				
			On*1 All slave units are not established				
	REM	Operating mode (Green)	No use. It is always off.				



In establishing all slave units, Error status LED is lighting for a moment but it is no problem.

The state of LED is indicated below.



Description of Rotary switch

Rotary switch	Symbol	Meaning	Details of setting			
		MODEInput / OutputThe input / output sizes of PRFOBUS network is setValueNetwork sizeInput size0Variable size512 words mathematical164W / 64W fixed64 words2128W / 128W fixed128 words3256W / 256W fixed256 words4512W / 512W fixed512 words5677Variable size512 words mathematical88512 words mathematical	The input /	output sizes of PRFOBU	JS network is set by	rotary switch.
			Value	Network size	Input size	Output size
			0	Variable size	512 words max	512 words max
			1	64W / 64W fixed	64 words	64 words
$MODE \begin{pmatrix} 6 & 7 & 8 \\ 5 & 0 \\ 4 & 1 \\ 3 & 2 \end{pmatrix}$			128W / 128W fixed	128 words	128 words	
	9 0 1 1 1 1 1 1 1 1		3	256W / 256W fixed	256 words	256 words
			4	512W / 512W fixed	512 words	512 words
			5	-		
[Default setting: 0]			6			
			512 words max	max 512 words max		
			9			

Please set rotary switch to 0 if you use auto addressing function with use of the SYCON.net. If you map each slave I/O address including offset address, please set rotary switch value 1, 2, 3 or 4. When actual input / output sizes exceed setting sizes, EH-RMP2 detects error.

Description of Side DIP switch



No.	Setting description				Details
1	No use	Please kee	ep off.		
	Default setting: OFF]				
2	No use	Please kee	ep off.		
			-		
	[Default setting: OFF]				
3,4	Output hold selecting	When the	CPU is s	witched from RUN to	STOP position, it can select output status.
	\downarrow $\stackrel{4}{\square}$ $\stackrel{3}{\square}$ $\stackrel{2}{\square}$ $\stackrel{1}{\square}$	Bit4	Bit3	Position	Output hold function selection
	[Default setting: OFF]	OFF	OFF		Clear mode. When the CPU is switched from RUN to STOP position, EH-RMP2 outputs the zero data to PROFIBUS. But the link area (WL) is not cleared.
		OFF	ON		Freeze mode. When the CPU is switched from RUN to STOP position, EH-RMP2 holds output data that is last data received.
		ON	OFF		Copy mode. When the CPU is switched from RUN to STOP position, EH-RMP2 continues to copy in the link area. When using EH-CPU316A, this mode is effective in case that EH-CPU316A ROM version is 02 or higher.
		ON	ON		Don't care.

Chapter 3 Installation

3.1 Mounting Module

(1) Mounting



Figure 3.1-1 Mounting Module

- 1] Hook the lower part of the module to the hole in the base.
- 2] Press in the upper side of the module until it clicks.
- Note 1: Make sure the module is mounted securely.
- Note 2: Slot position of power supply module is fixed as 1st slot of base unit.
- Note 3: Slot position of CPU module is fixed as 2nd slot of base unit.

Modules can be fixed firmly by M4 \times 10mm screws.

(2) Removing



Figure 3.1-2 Removing Module

- 1] Press the lock button.
- 2] With the lock button pressed, pull the top of the module.
- 3] Pull the unit away from the base unit.
- Note: Press the lock button for a power supply module.

3.2 Mountable slots for EH-RMP2

The mounting position of EH-RMP2 is restricted according to CPU module. EH-RMP2 cannot be on expansion base unit regardless of CPU module.

(1) If you use EHV-CPU16/32/64/128 in CPU module.

Maximum 8 link modules (EH-RMP2) can be on base unit. Mountable slot numbers are 0 to 7 as shown in Figure 3.2-1. Please note that EHV-CPU16/32/64/128 cannot mount on old model base unit (EH-BS3, EH-BS5, EH-BS8).



Figure 3.2-1 Mountable slots for EH-RMP2 (EHV-16/32/64/128)

(2) If you use EHV-CPU1025/1102 in CPU module.

Maximum 8 link modules (EH-RMP2) can be on base unit. Mountable slot numbers are 0 to 7 as shown in Figure 3.2-2. Please note that EHV-CPU1025/1102 cannot mount on old model base units (EH-BS3, EH-BS5, EH-BS8).



Figure 3.2-2 Mountable slots for EH-RMP2 (EHV-CPU1025/1102)

(3) If you use EH-CPU516/548 in CPU module.

Maximum 2 link modules (EH-RMP2) can be on base unit. Mountable slot numbers are 0 to 7 as shown in Figure 3.2-3.



Figure 3.2-3 Mountable slots for EH-RMP2 (EH-CPU516/548)

If base unit is old model base units (EH-BS3, EH-BS5, EH-BS8), mountable slot numbers are 0 to 2.

(4) If you use EH-CPU316A in CPU module.

Maximum 2 link modules (EH-RMP2) can be on base unit. Mountable slot numbers are 0 to 7 as shown in Figure 3.2-4.



Figure 3.2-4 Mountable slots for EH-RMP2 (EH-CPU316A)

3.3 Wiring

For information about installation of the PROFIBUS DP fieldbus, please refer to the document *Installation Guideline for PROFIBUS-DP/FMS* from PNO, Order No. 2.112.

PROFIBUS homepage: http://www.profibus.com

3.3.1 PROFIBUS port

EH-RMP2 has D-sub 9 pin female connector for PROFIBUS port.

Terminal layouts are shown below.

Pin No.	Details
1	NC
2	NC
3	B-Line
4	NC
5	GND
6	+5 V DC
7	NC
8	A-Line
9	NC

Table 3.3.1-1 Terminal layouts of EH-RMP2

+5V DC and GND are used for bus termination. Some devices, like optical transceivers (RS-485 to fiber optics) might require external power supply from these pins. In normal applications, PROFIBUS-DP is only used A-Line and B-Line.

3.3.2 Recommended connectors

Recommended connectors of EH-RMP2 are shown below.

Table 3.3.2-1 Recommende	d connectors of EH-RMP2
--------------------------	-------------------------

Manufacturer	Model name	Description
PHOENIX CONTACT	PROFIB/SC2	Angle type
	PROFIB/AX/SC	Straight type



Figure 3.3.2-1 The connector type for EH-RMP2

3.3.3 Cable parameters

The bus cable is specified in EN 50170 part 8-2 as "Cable Type A", and should comply with the parameters in the table below. Cable type B, which is also described in EN 50170, is outdated and should no longer be used.

Parameter	Cable type A	
Characteristic impedance	135 to 165 Ω at a frequency of 3 to 20MHz	
Operating capacity	< 30 pF/m	
Loop resistance	<= 100 Ω/km	
Core diameter	> 0.64 mm	
Core cross-section*1	> 0.34mm ²	

Table 3.3.3-1 Cable parameters

*1 The cable cross-sections used should be compatible with the mechanical specifications of the bus interface connector.

3.3.4 Maximum length of bus segment

Maximum length of bus segment is shown below.

Tabla 2 2 1 1	Movimum	coblo	longthe	nor	cogmont
1 able 5.5.4-1	IVIAXIIIIUIII	Cable	lengins	per	Sequient

	Data transfer rate (kbit/s)								
	9.6	19.2	93.75	187.5	500	1500	3000	6000	12000
Max segment length (m)	1200	1200	1200	1000	400	200	100	100	100





19.0 x 19.0 x 30.0mm

Figure 3.3.4-1 Use ferrite core



Chapter 4 Operation

4.1 Start up

To operation this module normally, the making a setup which is shown in the following figure is necessary.

- 1] Set up the DIP switch. Refer to section 4.1.1.
- 2] Set up the Rotary switch. Refer to section 4.1.2.
- 3] Set up the configuration data from configurator. Refer to section 4.1.3.
- 4] Set up the LINK parameter from the programming tool. Refer to section 4.1.4.

4.1.1 DIP switch

EH-RMP2 can be configured to run in different modes depending on the requirements.

The configuration is accomplished by the switch placed on the left side of EH-RMP2.



Figure 4.1.1-1 Side DIP switch

1] The configurations will affect the behavior of the output area when the CPU is turned
from RUN to STOP. The input area are the same in all modes, the entire input area are always copied.
2] Don't operate this switch while EH-RMP2 is working.

(1) Clear mode

When the CPU is switched from RUN to STOP position, EH-RMP2 outputs the zero data to PROFIBUS. But the link area (WL) is not cleared.

Switch	Position	
1	Don't care	4321
2	Don't care	
3	OFF (default)	Z
4	OFF (default)	

Figure 4.1.1-2 Clear mode

(2) Freeze mode

When the CPU is switched from RUN to STOP position, EH-RMP2 holds output data that is last data received.

Switch	Position	
1	Don't care	4321
2	Don't care	
3	ON	6 🗖
4	OFF	

Figure 4.1.1-3 Freeze mode

When the CPU is switched from RUN to STOP position, EH-RMP2 continues to copy in the link area.

This mode is effective when using the EH-150 EH-CPU 308 / 316 ROM version 02 or later.

Switch	Position	
1	Don't care	432
2	Don't care	
3	OFF	6
4	ON	

Figure 4.1.1-4 Copy mode

4.1.2 Rotary switch

The input / output sizes of PRFOBUS network is set by rotary switch.

Value	Network size	Input size	Output size	
0	Variable size	512 words max	512 words max	
1	64W / 64W fixed	64 words	64 words	
2	128W / 128W fixed	128 words	128 words	
3	256W / 256W fixed	256 words	256 words	
4	512W / 512W fixed	512 words	512 words	
5				
6				
7	Variable size	512 words max	512 words max	
8				
9				

Table 4.1.2-1 The input / output sizes of PRFOBUS network

Please set rotary switch to 0 if you use auto addressing function with use of the SYCON.net. If you map each slave I/O address including offset address, please set rotary switch value 1, 2, 3 or 4. When actual input / output sizes exceed setting sizes, EH-RMP2 detects error. (For the offset address, please refer to "4.3 Offset address".)

4.1.3 Configuration from configurator

The configuration of EH-RMP2 is accomplished by the configurator called SYCON.net.

For general information about the configurator, please refer to the manual for this configurator.

PC (Installed SYCON.net)

Figure 4.1.3-1 Configuration from configurator

Online Configuration

Please set up the I/O assignment from a programming tool before configuration.

(1) Set up as shown in Figure 4.1.3-1, turn on power to the EH-RMP2 and connect the USB cable to config port.

(If a power supply is turned ON, with a USB cable connected, it will be detected as a device unknown at Windows.)

(2) Drag the [Profibus DPV0] - [Master] - [NETX 100DP/DPM] to the gray colored bus.

(When coming to the right position, the mouse pointer will change from \bigotimes to \Bbbk_{+} .)

Double click the "netX".

Hereafter the following figure screen is called as main screen.



(3) Configuration dialog appears. Select the "Driver". Check the "netX Driver" and click the "OK" button.

💦 net Device – Confi	guration N	IETX_100_DP_DPM[NETX 10	00 DP/DPM]<1>(#1)			
IO Device: Vendor:	NETX 100 Hilscher () DP/DPM SmbH			Device ID: Vendor ID:	0x0849 0x011E
Navigation Area		СК		Driver		
Driver		Driver	Vers	ion	ID	
netX Driver		3SGateway Driver for net	X (V3.x) 0.9.	1.2	{787CD3A9-4CF6-4259-8E4D-1	09B6A6BEA91}
Device Assign Firmware Down Licensing	nent [netX Driver	1.10)3.2.7743	{B54C8CC7+F333-4135-8405-6	E12FC88EE62}
Coreirsnig Configuration Bus Parameter Process Data Address Table Station Table Master Settings	3 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	@Check				
					3clic	k
Ab Discoursested					ОКСа	ancel Apply Help
NC Disconnected	ata pet					,

(4) Double-click the "netX" in the main screen and select the "Device Assignment" on the same dialog as (3).Wait to complete Scan progress.

Select device selection as "all". Then, device appears. Check the device and click the "OK" button.

🛃 netDevice – Configuratio	on NET	X_100_DP_DPM[I	NETX 100 DP/DPM]<1	>(#1)					
IO Device: NETX Vendor: Hilsd	(100 DP) her GmbH	/DPM ②W	ait to complet	e Scan	progres	S. v	evice ID: endor ID:	0x0B49 0x011E	For
Navigation Area 🗖	/				Device A				
Settings	Scan p	rogress: 3/3 Device	s (Current device: -)						
netX Driver Device Assignment Firmware Download	D <u>e</u> vice	selection:		- 3Se	elect "all	"			
Licensing		Device	Hardware Port 0/1/2/3	Slot nu	Serial number	Driver	Channel Protoc	ol	Access path
Configuration		Device Class (- - - -	n/a	5	netX Driver	PROFIBUS-DP N	4aster	¥COM4_cifX0
Process Data									
Address Table									
Station Table		(4)Check							
Master Settings		Geneek							
							0		
							5Click	ζ	
	Access	path:	(B54C8CC7-F333-4135-840	5-6E12FC88E	E62}¥COM4 cif	X0 Ch0	1		
							-		
							OK Car	ncel App	ly Help
t]⊳ Disconnected 🕕 Data Set									

(5) Right-click the "netX" in the main screen and click the "Network Scan". Then connected modules are found. Click the "Create Devices" button.

Period Antice - Scan Response of Device: NETX_	100_DP_DPM[NETX 100 DP/DPM]K	1>(#1) Channel: /Profibus	
The following hardware-devices have been found during net Please check automatic selection of corresponding devices for	twork-scan. ound in device catalog in column 'DTM Devic	es' before creating devices.	
Station Addr Device Type ID Sub Device Ty	pe DTM to Use Device Class	DTM Device	Quality Action
▶ 2 3684 (0x00000e64) n/a	Hilscher generic DT Not Specified	EH-IOCP2	[3] Generic four Add
	Information of hardware devic	a Infor	mation from DTM
Device		EH-TOCP2	
DTM ProgId		GSDDTM.DTMDev.1	
Station Address	2		
Vendor	- 0 (0×00000000)	Hitachi-IES	
Device Type ID	3684 (0×00000e64)	3684 (0×00000e64)	
Sub Device Type	n/a	n/a	
DTM to Use		Not Specified	
Generic DTM		Yes	
Creation Mode: Use Hilscher generic DTMs if avai	lable	Creat	e Devices Cancel

(6) The following dialog appears after the network scan, click the "OK" button.

netDevice - Upload EH-	IOCP2[EH-IOCP2]<2>	_ 0
Configuration Data:	50 60 00 00 00 00 00 00 00 00 00 00 00 00	0 00 00 00
Available Modules:		
Module name	Module Configuration Identifier	
Empty slot	0x00	
16 Digital Input (X16)	0x50	
32 Digital Input (X32)	0x51	
64 Digital Input (X64)	0x53	
16 Digital Output (Y16)	0x60	
32 Digital Output (Y32)	0x61	
64 Digital Output (Y64)	0x63	
Configured Modules:	Insert	Append
S Module name	Module Configuration Identifier	
1 16 Digital Input (X16)	0x50	
2 16 Digital Output (Y16)	0x60	
3 Empty slot	0x00	
4 Empty slot	0x00	
5 Empty slot	0x00	
5 Empty slot	0.00	
7 Empty slot	0000	
.ength of input/output data:	4 bytes (max. 416 bytes)	Bemove
ength of input data:	2 bytes (max. 244 bytes)	
ength of output data:	2 bytes (max. 244 bytes)	
Number of modules:	22 (max. 22)	
	. ,	
	OK Cancel Apply	Help

NOTE) If network scan is executed when configration is not executed, slots over mountable position are displayed as "Empty". In addition, since "4 Analog Input (X4W)" is recognized as "64 Digital Input (X64)", remove "64 Digital Input (X64)" and add "4 Analog Input (X4W)". (7) The scanned result is displayed in the main screen.

NETY 100 D		1
	EH-IOCP2[EH-IOCP2]<2>	

- (8) Right-click the "netX" in the main screen and click the "Download".
- The message that the communication between master and slaves stops appears.

Make sure if it's no problem and click the "Yes" button.



Download of configuration is started to netX.

The following screen appears. When downloading is completed, this dialog disappears.

netDevice
Device: NETX_100_DP_DPM[NETX 100 DP/DPM]<1>(#1)
Download active, device performs initialisation
99 % complete
99%
Cancel

NOTE) Upload function is not supported by EH-RMP2.

_	_	-	
N	ETX_100_DP_DPM[NETX]	1(
п	el y		
	Connect		
-	Disconnect		
	Start Debug Mode		
	Download Upload		This is not supported.

(9) After download is completed, save the project file by choosing [File] - [Save as ...]. Comfiguration is completed.

■Offline Configuration

The offline configuration sets a network scan part of the online configuration by manual operation. Please set up the I/O assignment from a programming tool before configuration.

(1) Drag the [Profibus DPV0] - [Master] - [NETX 100DP/DPM] to the gray colored bus.

(If it becomes a position which can be arranged, a mouse pointer will change from \bigotimes to $\stackrel{\triangleright}{\vdash}$.)

Double click the "netX". Hereafter the following figure screen is called as main screen.

SYCON.net - [Untitled.spj]		
<u> F</u> ile <u>V</u> iew <u>D</u> evice Ne <u>t</u> work E _X	tras <u>H</u> elp	
□ ⊯ ⊑ Q ≝ ≝ ;	1. 💿 🖪 3. 3. 3.	
netProject 🔺 🗴	netDevice	× *
Project: Untitled	NETX 100_DP_DPM[NETX 100 DP/DPM]<1>(#1)	AS-i CANopen CC-Link CompoNet Co-Link CompoNet DeviceNet EtherCAT Modbus RTU POWERLINK POWERLINK POWERLINK Gateway / Stand-Alone Slave Master CIFX DP/DPM Gateway / Stand-Alone Slave Master Master NHIST-T100-DP/DPM NHIST-T100-DP/DPM NHIST-T100-DP/DPM NHIST-T100-DP/DPM NHIST-T100-DP/DPM NHIC-C100-DP PEICIDTM Slave Fieldbus / Vendor DTM Class
O A A P P STCONnet (netDev		
Ready		Administrator CAP NUM //.

(2) Click the [Vendor] tab and drag the [Hitachi-IES] - [Slave] - [EH-IOCP2] to the pink colored bus.

SYCON.net - [Untitled.spj]			
<u>File View D</u> evice Ne <u>t</u> work	E <u>x</u> tras <u>H</u> elp		
🗅 🖨 🔚 🔍 갈 갈 🔕	<u></u>		
netProject 🔺 🗙	netDevice		_ ×
Project: Untitled		<u> </u>	
EH-IOCP2[EH-IOC			Hilscher Gesellschaft f• Systemautor
	NETX_100_DP_DPM[NETX 100 DP/DPM]	<1>(#1)	Hilscher GmbH
	netx 🔸		i⊟ in Hitachi-IES
			EH-IOCP2
	EH-IOCP2[EH-IOCP2]<2>	②Drag	
	1000		
			Delick
		•	Fieldbus Vendor / DTM Class F
×			
t Win			
SYCON net /net	Device /		
Ready		Administra	itor NUM
,			

(3) Double-click the "EH-IOCP2" in the main screen. Configuration dialog appears, click the "Modules". Next, select the modules that are mounted in EH-IOCP2 base from the "Available Modules", and then click the "Insert" button, please add to the "Configured Modules". Click the "OK" button at the end. It is possible to select the 22 modules maximum, select the "Empty slot" in empty slot part.

(The figure below shows an example that slot 0 is 16 points input, slot 1 is 16 points output.)

🕐 net Device – Configurati	ion EH-IOCP2[EH-IOCP2]<2>						<u>- 🗆 ×</u>
IO Device; EH-	IOCP2				Device ID:	0x0E64	
Vendor: Hita	achi-IES	Ocalest			Vendor ID:	-	FDT
ſ	Click	Select					
Neuliesties Area		/		Ma dula a			
				Modules			
Configuration	Available Modules:						
Modules	Module	Inputs	Outputs	In/Out		Identifier	▲
Signal Configuration	_li∔i Emptyslot 🔰	0 0	0	0>	<00		
Parameters	+ 16 Digital Input (X16)	2 0	0	0>	<50		
Groups	III 32 Digital Input (X32)	4 U	U	0	<51 		
Extensions	Life 16 Digital Dutout (X16)	0 U 0 2	0	0	×00 ×60		
DPV1	III 32 Digital Output (Y32)	0 4	0	0	x61	(3)Clia	:k
DPV2	I+I 64 Digital Output (Y64)	0 8	0	0>	<63		
Redundancy	+ 16/16 Digital In/Output (B1/	0 0	2	0>	<70		-
Device Description		(A) A ddit	ion				
Device	Configured Modules:	Auun	IOII			Insert	Append
GSD	Slot Module	Inputs	Output:	s In/Out	t (Identifier	
	▶ 🕂 1 16 Digital Input (×16)	2	0	0	0×50		
	16 Digital Output (Y1	6) 0	2	0	0×60		
	_ I+I 3 Empty slot	0	0	0	0×00		
	HI 4 Empty slot	U	U	U	U×UU 0×00		
	Lit 6 Empty slot	0	0	0	0×00		
	I+I 7 Empty slot	ů	0	ů 0	0×00		
		Abuta (may Atch					
	Length of input/output data:	4 bytes (max. 416 t	oytes)				<u>R</u> emove
	Length of input data:	2 bytes (max, 244)	ytes)		(5)Click		
	Number of modules:	22 (max, 22)	y cesy			L	
							1
					OK	Cancel Apply	Help
⊲t Disconnected 🚺 Data Se	et 🖉						

(4) Set up as shown in Figure 4.1.3-1. After turning on the power of EH-RMP2, connect the USB cable to config port. (If a power supply is turned ON, with a USB cable connected, it will be detected as a device unknown at Windows.)

(5) Double-click the "netX" in the main screen and click the "Driver".

Check the "netX Driver" and click the "OK" button.

PnetDevice - Config	uration NET	X_100_DP_DPM[NETX 100 DP/DPM]<1>	(#1)		_ [] ×
IO Device: Vendor:	NETX 100 DP Hilscher Gmb	јорм Н		Device ID: Vendor ID:	0x0849 0x011E
Navigation Area			Drive		
Settings		Driver	Version	ID	
netX Driver		3SGateway Driver for netX (V3.x)	0.9.1.2	{787CD3A9-4CF6-4259-8E4D	109B6A6BEA91}
Device Assignm	ent 🗹	netX Driver	1.103.2.7743	{B54C8CC7-F333-4135-8405-	6E12FC88EE62}
Firmware Downl	oad 💦 🤻				
Licensing		Chook			
Bus Parameters		2 CHECK			
Process Data					
Address Table					
Master Settings					
				(3)Clic	C
				— <u> </u>	
					·
				ОК	Cancel Apply Help
📢 🕻 Disconnected 🚺 Da	ita Set	/			

(6) Double-click the "netX" in the main screen and select the "Device Assignment" on the same dialog as (5).

Wait to complete Scan progress.

Select device selection as "all". Then, device appears. Check the device and click the "OK" button.

PetDevice - Configurat ID Device: NE Vendor: Hill	TX 100 DP/D scher GmbH	_100_DP_DPM[I PM ②W	NETX 100 DP/DPM]<1	>(#1) te Scan	progres	s.	Device ID: Vendor ID:	0x0B49 0x011E	
Navigation Area Settings Settings Driver netX Driver ⇒ Device Assignment Firmware Download	Scan pro	gress: 3/3 Device election: a	s (Current device: -)	- 3Se	Device A	ssignment			Scan
Licensing Configuration Bus Parameters Process Data Address Table Station Table Master Settings		Device Device Class ((1) Check	Hardware Port 0/1/2/3 -/-/-/-	Slot nu	Serial number	Driver netX Driver	Channel Proto	col Master	Access path
(h. Discomposited IQ Date S	Access p	ath:	(854C8CC7+7333-4135-840	95-6E12FC88E	E62}¥COM4_cif	xo_cho	5Clic	k ncel App	ly Help

(7) Right-click the "netX" in the main screen and click the "Download".

The message that the communication between master and slaves stops appears.

Make sure if it's no problem and click the "Yes" button.



Download of configuration is started to netX.

The following screen appears. When downloading is completed, this dialog disappears.

netDevice					
Device: NETX_100_DP_DPM[NETX 100 DP/DPM]<1>(#1)					
Download active, device performs initialisation					
99 % complete					
99%					
Cancel					

NOTE) Upload function is not supported by EH-RMP2.

	_
NETX_100_DP_DPM[NETX]	1
Connect Disconnect	
Start Debug Mode	
Download Upload	— This is not supported.

(8) After download is completed, save the project file by choosing [File] - [Save as ...]. Comfiguration is completed.

	1] When EH-RMP2 is power on while connect to PC, PC indicates "unknown USB device".
CAUTION	2] EH-IOCP can't be supported auto module configuration.

4.1.4 Configuration from programming tool

EH-RMP2 operates in the EH-150 system as a link module. The link area of EH-RMP2 is allocated from one nearer to CPU module.

The output area of EH-RMP2 must be fixed 512 words and the output area start address must be fixed 0.

The link parameter is set by programming tool which is different depending on CPU module.

Operation Parameter	×
Operation Control	Transmission Mode in Error Condition
C Definition of Input(E)	Remote I/O Assign(R): Not Transmit 💌
Input I/O No.(D):	Remote Substation Error(C): Not Transmit 💌
Delay Check Time Setting Value(): 10 X10ms	CPU Link Parameter
Operation Mode in Error Condition	Top Assign No.(S) WL 0 Last Assign No.(E) WL 1FF
Add Unit Error(U): Not Operate	Vo.2 Link(2) Top Assign No.(A) WL
Remote Error(<u>M</u>): Not Operate 💌	Last Assign No.(<u>N)</u> WL 11FF
	Execute(X) Cancel

Figure 4.1.4-1 The link parameter setting by LADDER EDITOR

Send data	From	To	Clear at RUN/STOP
🔽 No.1 Link(<u>1</u>)	WL 0 0	WL 0 1FF	Clear
No.2 Link(<u>2</u>)	WL 1	WL 1	Clear
No.3 Link(<u>3</u>)	WL 2	WL 2	Clear
No.4 Link(4)	WL 3	WL 3	Clear
No.5 Link(5)	WL 4	WL 4	Clear
No.6 Link(6)	WL 5	WL 5	Clear
No.7 Link(<u>7</u>)	WL 6	WL 6	Clear
No.8 Link(<u>8</u>)	WL 7	WL 7	Clear

Figure 4.1.4-2 The link parameter setting by Control Editor

H-LNK Configuration EH-LNK I/O Map	ping Status	Informatio	n		
Parameter	Туре	Value	Default Value	Unit	Description
🔷 🏟 LINK area %MW-address	WORD	0	0		LINK memory can be accessed by %M var
Writing area %MW-address	WORD	0	0		Beginning from this address module is acc
🖗 Writing area size	WORD	512	0		Size of module memory which is accessib

Figure 4.1.4-3 The link parameter setting by EHV-CODESYS

Input area and output area are used from 0 to 512 words.



Figure 4.1.4-4 Using area of EH-RMP2 in the link area

4.2 Data format

The data format of EH-RMP2 outputs in PROFIBUS network is shown below.



Figure 4.2-1 Byte data format for byte oriented slave module





netDevice - Configuration NE	ETX_100_DP_DPM[NETX 100 DP/DPM]<				
IO Device: NETX 100 Vendor: Hilscher (0 DP/DPM GmbH		Device ID: Vendor ID:	0x0B49 0x011E	Tda
Navigation Area 🗖		Master Settings			
 Settings Driver netX Driver Device Assignment Firmware Download Configuration Bus Parameters Process Data Address Table Station Table Master Settings 	Start of bus communication Image: Automatically by device Controlled by application Application monitoring Watchdog time: 1000 ms Process image storage format Image: Big Endian (MSB first) Cutter Endian (LSB first) Advanced Image: Enable configuration download during net Device status offset Image: Automatic calculation	Module Alignment			
	C Static: Starts 0 by Current offset address is: 0	tes after last input data			
			ОК	Cancel App	ly Help
∜⊳ Disconnected 0 Data Set					

If you want to swap I/O data, change parameter "Process image storage format" with use of the SYCON.net.

Figure 4.2-3 Byte swap

4.3 Offset address

EH-RMP2 can use offset address with use of the SYCON.net.



Figure 4.3-1 Offset address

If you want to include offset address, change address table with use of the SYCON.net.

- Remove the check of Auto addressing
- Change the address in slave

Vendor: Hilscher	00 DP/DPM GmbH		Device I Vendor i	D: 0x0B4 ID: 0x011	ю Е
Navigation Area		Addre	ess Table		
Settings	✓ <u>A</u> uto addressing	Displa	ay mode: Decima	al 💌	<u>C</u> SV Export
netX Driver Device Assignment Firmware Download Configuration Bus Parameters Process Data	Station AddDev 2 EH-IDCP2 9 2 EH-IDCP2 9 3 Hitachi SJ300/1	ice Name EH-IOCP2 EH-IOCP2 .800P Inverter Hitachi SJ300/L300P Ir	Module 1 word input I 2 word input I 2 word input I	Type Le W W W	ngth Address 1 2 2 2
Address Table					
Address Table Station Table	Outputs:				
Address Table Station Table Master Settings	Outputs:	ice Name	Module	Туре	Length Address
Address Table Station Table Master Settings	Outputs: Station Add Dev EH-IOCP2	ice Name EH-IOCP2	Module 1 word o	Type	Length Address
➡ Address Table Station Table Master Settings	Outputs: Station Add2eH-IOCP2 3 Hitachi SJ300/I	ice Name EH-IOCP2 .300P Inverter Hitachi SJ300/L300P Ir	Module 1 word d werter 2 word d	Type output QW output QW	Length Address

Figure 4.3-2 Address table setting

Chapter 5 Indications

The EH-RMP2 can give indications to the user in two different ways. The first way is via the four indications LED at the top of the module and the second way is via the special internal output of EH-CPU / EHV-CPU or use function block for EHV+, where detailed information about the PROFIBUS-DP network is available for the PLC programmer.

5.1 LED Indications

The LED indications are placed at the top of this module.



Figure 5.1-1 LED indications

5.1.1 RDY LED

The RDY LED will give information about the hardware state of the EH-RMP2

The LED will flash red or green different times depending on the hardware status indicated.

(a) No error.

When the EH-RMP2 is initialized, the RDY LED is constantly lit in green.

Color: Green



(b) Hardware error.

When the EH-RMP2 broke, the RDY LED is constantly lit in red. If hardware error occurred, please change EH-RMP2 to spare module.

Color: Red



(c) Power supply error.

As it is possible that EH-RMP2 is not being supplied power, please check power supply. If EH-EMP2 had been supplied power, EH-RMP2 may be hardware error. Please change EH-RMP2 to spare module. Color: -

5.1.2 STATUS LED

The STATUS LED will give information about the system status of EH-RMP2.

The LED will flash red or green different times depending on the status indicated.

(a) No error.

When the EH-RMP2 is normal operation, the STATUS LED is constantly lit in green.

Color: Green



(b) Initialization.

When EH-RMP2 has not finished initialization, the STATUS LED is single-flash in green. Set the I/O assignment of the CPU module.

Color: Green



(c) CPU module error.

When the CPU module detects errors, the STATUS LED is double-flash in green. Clear errors of the CPU module.

Color: Green



(d) Configuration data error.

When the configuration data of EH-RMP2 is not matched between set data and actual network data, the STATUS LED is triple-flash in green. Configure correct data with use of the SYCON.net.

Color: Green



(e) Link parameter error.

When the CPU module link parameter is not correct, the STATUS LED is forth-flash in green. Set the address in the CPU module link output area to 0 to 512(H00 to H1FF)

Color: Green



(f) Side DIP switch error

When the setting of side DIP switch of EH-RMP2 is wrong, the STATUS LED is fifth-flash in green. Please set EH-RMP2 side DIP switch to correct setting

Color: Green



(g) WDT error.

When EH-RMP2 detects WDT error, the STATUS LED is lit in red. Please change EH-RMP2 to spare module. Color: Red



(h) Internal error.

When EH-RMP2 detects internal error, the STATUS LED is flash in red. Please change EH-RMP2 to spare module.

Color: Red

(i) Power supply error.

As it is possible that EH-RMP2 is not being supplied power, please check power supply. If EH-EMP2 had been supplied power, EH-RMP2 might detect hardware error. Please change EH-RMP2 to spare module. Color: -



Color: Green



(b) Checking PRFOIBUS-DP network.

The RUN LED is blinking during checking PROFIBUS-DP network.

Color: Green



(c) No communication established.

When slave units at least one are not established, the RUN LED is OFF.

Color: Green

5.1.4 ERR LED

(a) No error.

When all slave units are established, the ERR LED is OFF.

Color: Red

(b) Slave units at least one are not established.

When slave units at least one are not established, the ERR LED is blinking.

Color: Red



(c) All slave units are not established.

When all slave units are not established, the ERR LED is lit in red.

Color: Red



5.2 Link information flag area

In the Link information flag area, programming tool can get valuable information about the PROFIBUS-DP fieldbus.

The method to get information is different depending on programming tool.

5.2.1 Get link information

(1) If you use LADDER EDITOR (CPU module is EH-CPU316A/516/548).

The LADDER EDITOR can get the link information with use of special internal output.

OFFSET address (word)

Start address of LINK No.1: WRF0E0

Start address of LINK No.2: WRF140

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0 Reserved Error code Error code +01 Reserved +02 Reserved +02 Main state of master system Global error bits +04 Reserved +04 15 16 <td col<="" th=""></td>	
Reserved +00 Reserved +01 Reserved +02 Reserved +01 Main state of master system Global error bits +04 Reserved Reserved +03 Main state of master system Global error bits +04 Reserved Reserved +05 Heavy bus error count +06 +07 Reserved +07 Reserved +06 Reserved +08 +07 Reserved +07 Reserved +08 Reserved +08 -07 Reserved +08 Reserved +00 -0 +00 Reserved +08 Reserved +00 -0 +00 15 Image: Reserved +00 -0 +00 -0 -0 63 Image: Reserved -00 -0 -0 -0 -0 79 Image: Reserved Image: Reserved Image: Reserved -1112 -1126 -0 -114	
Reserved +02 Reserved +03 Main state of master system Global error bits +04 Reserved Reserved +05 Heavy bus error count Reserved +06 Number of rejected PROFIBUS telegrams +07 Reserved +08 Reserved +08 Reserved +08 Reserved +09 Reserved +08 Reserved +00 Reserved +08 15 0 0 63 Slave Config 48 95 64 95 0 44 111 0 44 126 32 46 63 Slave State 48 417 1111 32 46	
Reserved Hoad Hoad Main state of master system Global error bits +03 Reserved Reserved +05 Heavy bus error count Reserved +05 Number of rejected PROFIBUS telegrams +07 Reserved +09 Reserved +08 Reserved +09 Reserved +04 Reserved +04 Reserved +04 Reserved +04 Reserved +04 Reserved +04 15 0 0 +07 Reserved +08 0 +00 31 0 0 0 +02 63 0 Slave Config 48 +07 79 0 0 0 +112 +13 15 0 0 0 +14 10 112 +13 111 0 0 0 +14 112 +13	
Main state of master system Global error bits +04 Reserved Reserved +05 Heavy bus error count Reserved +07 Reserved +07 +08 Reserved +07 +08 Reserved +07 +08 Reserved +00 +00 Reserved +04 +08 15 Image: Config to the state	
Reserved Reserved +06 Number of rejected PROFIBUS telegrams +07 Reserved +08 15 0 0 31 0 0 431 0 0 63 Slave Config 48 +07 79 64 +10 95 80 +11 111 12 +13 15 0 +14 31 0 +14 111 0 +112 - 126	
Heavy bus error count How ros How ros Number of rejected PROFIBUS telegrams +07 Reserved +09 Reserved +09 Reserved +00 Reserved +00 Reserved +00 15 0 0 14 0 0 15 0 0 14 0 16 15 0 0 15 0 0 16 0 48 17 0 0 48 16 0 48 40F 79 0 0 48 40F 95 0 0 112 413 11 0 0 0 112 413 15 0 0 0 112 413 16 0 0 112 413 112 414 31 0 0 0 14	
Number of rejected PROFIBUS telegrams 407 Reserved 408 Reserved 409 Reserved 409 Reserved 400 Reserved 410 Reserved	
Reserved +08 Reserved +09 Reserved +09 Reserved +08 Reserved +09 Reserved +08 Reserved +08 Reserved +09 Reserved +08 15 0 0 47 0 0 47 0 0 63 0 Slave Config 48 79 0 0 64 95 0 0 0 412 - 126 0 112 413 15 0 0 0 44 31 0 0 0 44 31 0 0 0 44 31 0 0 0 44 31 0 0 0 44 31 0 0 0 44 95 0 0 0<	
Reserved +09 Reserved +0A Reserved +0B 15 0 0 31 0 0 +0C 47 0 0 0 63 0 Slave Config 48 +0F 79 0 0 64 +10 95 0 0 0 64 +11 111 0 0 64 +10 96 +12 - 126 0 0 0 +14 31 0 0 0 +14 15 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 16 32 0 0 0 +14 179 0	
Reserved +0A Reserved +0B 15 0 0 +0C 31 0 0 16 +0D 47 0 16 +0D 32 +0E 63 0 Slave Config 48 +0F 79 0 0 64 +10 95 0 0 64 +11 111 0 0 64 +10 95 0 0 112 +13 15 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14 31 0 0 0 +14	
Reserved +0B 15 0 +0C 31 16 +0D 47 32 +0E 63 Slave Config 48 +0F 79 64 +10 95 80 +11 111 96 +12 - 126 112 +13 15 0 +14 31 0 +14 31 0 +14 31 0 +14 31 32 +16 63 Slave State	
15 0 0 +0C 31 0 0 +0C 47 0 0 32 +0E 63 0 Slave Config 0 48 +0F 79 0 0 64 +10 96 +11 111 0 0 48 +0F 96 +12 - 126 0 0 112 +13 15 0 0 0 +14 112 +13 15 0 0 0 +14 16 +15 47 0 0 0 +14 16 +15 47 0 0 0 +14 16 +15 47 0 0 0 0 +14 16 +15 47 0 0 0 0 64 +18 95 0 0 64 +18 95 0 0 0 0 0 64 +18 95 0 0	
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Reserved +1E Reserved +1F Reserved +20 Reserved +21 Reserved +22 Reserved +23 Reserved +23	
Reserved+11Reserved+20Reserved+21Reserved+22Reserved+23Reserved+23	
Reserved+20Reserved+21Reserved+22Reserved+23Reserved+23	
Reserved +21 Reserved +22 Reserved +23	
Reserved +22 Reserved +22	
Description 125	
DENELVE(I) ±74	
Reserved +25	
Reserved +26	
Device error Reserved +27	
Reserved	
Refreshing time max (ms) +5D	
Refreshing time min (ms) +5E	

Table 5.2.1-1 Contents in the LINK information flag area

(2) If you use Control Editor (CPU module is EHV-CPU16/32/64/128).

The Control Editor can get the link information with use of special internal output.

OFFSET address (word) Start address of LINK No.1: WRF0E0 Start address of LINK No.2: WRF140 Start address of LINK No.3: WRF1A0 Start address of LINK No.4: WRF200 Start address of LINK No.5: WRF260 Start address of LINK No.6: WRF2C0 Start address of LINK No.7: WRF320 Start address of LINK No.8: WRF380

Table 5.2.1-2 Contents in the LINK information flag area

											-					\sim
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
			Rese	erved			D	Ļ			Error	code				+00
	Reserve						d								+01	
Reserve							d								+02	
Reserve							a		C	1-1-1					+03	
Main state of master system GI							Date Contraction	error bit	s			+04				
Keserved Keserved							+03									
				1	Number	of reject	od DDC	FIBUS	tologra	me						+00
				1	vuinder		Reserve	d d	telegia							+07
							Reserve	d d								+09
							Reserve	d d								+0A
						1	Reserve	d								+0R
15								Ĩ							0	+0C
31															16	+0D
47															32	+0E
63							Slave	Config							48	+0F
79															64	+10
95															80	+11
111															96	+12
-	126														112	+13
15															0	+14
31															16	+15
47															32	+16
63							Slave	e State							48	+17
79															64	+18
95															80	+19
111															96	+1A
-	126														112	+1B
]	Reserve	d								+1C
]	Reserve	d								+1D
							Reserve	d								+1E
							Reserve	<u>d</u>								+1F
						1	Reserve	b								+20
						1	Reserve	- D								+21
							Reserve	d								+22
							Reserve	d d								+25
							Pasarya	d d								+24
						1	Reserve	d d								+25
						1	Reserve	d d								+20 +27
							Reserve	d								121
					F	Refreshi	ng time		s)							+5D
					- I	Refreshi	ng time	min (m	-/ s)							+5E
					F	Refreshi	ng time	now (m	s)							+5F
L							00		-1							

(3) If you use EHV-CODESYS (CPU module is EHV-CPU1025/1102).

The EHV-CODESYS can get the link information with use of function block "GetProfibusInfo".

	GetProfibusInfo	
	-byLinkNo BYTE	BOOL xDone
		BOOL xError
	Profi	<i>busInfo</i> ProfibusInfo
STRUCT ProfibusInfo:	wErrorCode (WORD)	
	byMainState (BYTE)	
	byGlobalErrorBits(BYTE)	
	byErrorNumber (BYTE) <no use=""></no>	
	byErrorRemoteAddress (BYTE) <no td="" u<=""><td>ise></td></no>	ise>
	wHeavyBusErrorCount (WORD)	
	wNumRejectedProfibusTelegrams (WC	ORD)
	wSlaveConfig0_15 (WORD)	
	wSlaveConfig16_31 (WORD)	
	wSlaveConfig32_47 (WORD)	
	wSlaveConfig48_63 (WORD)	
	wSlaveConfig64_79 (WORD)	
	wSlaveConfig80_95 (WORD)	
	wSlaveConfig96_111 (WORD)	
	wSlaveConfig112_127 (WORD)	
	wSlaveState0_15 (WORD)	
	wSlaveState16_31 (WORD)	
	wSlaveState32_47 (WORD)	
	wSlaveState48_63 (WORD)	
	wSlaveState64_79 (WORD)	
	wSlaveState80_95 (WORD)	
	wSlaveState96_111 (WORD)	
	wSlaveState112_127 (WORD)	
	wDeviceError (WORD) <no use=""></no>	
	wRefreshingTimeMax (WORD)	
	wRefreshingTimeMin (WORD)	
	wRefreshingTimeNow (WORD)	
	-	

5.2.2 Detail of each information

The following error codes can be present in this register.

Value	Description
Hex 00	No error
Hex 01	Failed to initialize PROFIBUS-DP master.
Hex 02	Start address of link area in the PLC is not zero.
Hex 03	The link length configured in the PLC is different from 512 words.
Hex 06	Internal Error on PROFIBUS-DP master.

⁽a) Error Code.

(b) Main state of master system.

This register contains information about the state of the master system. The following states can be present.

Value	Description		
Hex 00	Off-line		
Hex 40	Stopped		
Hex 80	Clear		
Hex C0	Operate		

(c) Global error bits.

Details of global error bits are shown below.

Bit number	Description		
7-6	Reserved		
5	1 = HOST is not ready		
	0 = Normal operation		
4	1 =Bus short circuits detected		
	0 = Normal operation		
3	1 = Because of heavy bus error, no further bus communication is possible		
	0 = Normal operation		
2	1 = At least one slave is not in the data exchange mode or reports fatal error		
	0 = Normal operation		
1	1 = The master branched into auto clear mode because of a slave error		
	0 = Normal operation		
0	1 = A parameter error occurred		
	0 = Normal operation		

Table 5.2.2-3 Global error bits

(d) Heavy bus error count.

This register is incremented if there for example is a short circuit on the bus cable.

(e) Number of rejected PROFIBUS telegrams.

(f) Slave Config.

This 16 bytes bit-field indicates if a node is configured in the master or not. Address bit 0 corresponds to node address zero, bit 1 corresponds to node address 1 and so on. If the bit is 1, the corresponding node is configured otherwise the node is not configured.

(g) Slave State.

This 16 bytes bit-field indicates if a node is active in the data exchange or not. Address bit 0 corresponds to node address zero, bit 1 corresponds to node address 1 and so on. If the bit is 1, the corresponding node is active in the data exchange otherwise the node is not active.



Chapter 6 Troubleshooting

6.1 Error indications of EH-RMP2

Error indications of EH-RMP2 are shown below.

LED	Indicate pattern	Description	Actions
RDY PROFIBUS EH-RMP2 RDY RUN ERR STATUS REM	OFF	Hardware error	•Check power of power supply module
		Power supply error	•Replace EH-RMP2
	Lit in red	Hard ware error	•Replace EH-RMP2
STATUS	OFF	Power supply error	Check power of power supply module
	Flash in red	Internal error	Replace EH-RMP2
	Lit in red	WDT error	Replace EH-RMP2
	Fifth-flash in green	Side DIP switch setting error	Check the side DIP switch.
PROFIBUS EH-RMP2	Forth-flash in green	Link parameter error	Set CPU module link output area address to
			0 to 512
	Triple-flash in green	Configuration data error	\cdot Check the connection of the communication
STATUS REM			cable
			\cdot Configure correct data with use of the
			SYCON.net
	Double-flash in green	CPU module error	Clear error of the CPU module
	Single-flash in green	Initialization	Set the I/O assignment of the CPU module.
RUN	OFF		•Check the connection of the communication
PROFIBUS EH-RMP2 RDY RUN ERR STATUS REM		No communication	cable
		established	·Check system and node address and push
			reset switch of EH-RMP2
			•Check the connection of the communication
ERR	Blinking	Slave units at least one are	cable
		not established	·Check system and node address and push
ROFIBUS EH-RMP2 RDY RUN ERR STATUS REM			reset switch of EH-RMP2
	Lit		•Check the connection of the communication
		All slave units are not	cable
		established	·Check system and node address and push
			reset switch of EH-RMP2

6.2 New entry of slave unit to PROFIBUS

New entry of slave unit to PROFIBUS, slave units may fall to enter PROFIBUS communication, when new entry or restarting from communication error.

In this case, reboot the slaves that do not online.

6.3 Startup time of EH-RMP2

It takes approximately 10 seconds until EH-RMP2 starts I/O communication with the slave devices after the initialization since EH-RMP2 can deal with large size input / output data.

Therefore, please not use input / output data of EH-RMP2 until the bits of all using slave state are 1 in the LINK information flag area.