Magnescale®

PROFINET RT インターフェイスユニット メインモジュール /
PROFINET RT Interface unit Main module

MG70-PN

お買い上げいただき、ありがとうございます。
ご使用の前に、この取扱説明書を必ずお読みください。
ご使用に際しては、この取扱説明書どおりお使いください。
お読みになった後は、後日お役に立つこともございますので、必ず保管してください。

Read all the instructions in the manual carefully before use and strictly follow them.
Keep the manual for future references.

取扱説明書 / Instruction Manual

SAFETY PRECAUTIONS

● **Definition of Precautionary Information**

⚠ **Caution**	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

● **Cautions**

⚠ **Caution**
Do not attempt to take any unit apart while the power is being supplied. Doing so may result in electric shock. 
Do not attempt to disassemble, repair, or modify any units. Any attempt to do so may result in electric shock. 
● Do not use the product at voltages other than the specified power voltage. This could result in a fire or electric shock. ● Do not perform installation work with wet hands. This could result in an electric shock. ● Do not disassemble or modify the product. This could result in a burn or other injury. Disassembling or modifying the product will void the warranty. ● Do not damage, modify, excessively bend, pull on, place heavy objects on or heat the cable. This could damage the cable and result in a fire or electric shock. 

PRECAUTIONS FOR SAFE USE

- Take all possible safety measures when mounting the product and operating a mounted device.
- When connecting and disconnecting a signal cable, be sure to grasp by the plug section, not the cable.
- The product does not have an explosion-proof structure. Therefore, do not use the unit in an atmosphere containing flammable gas. This could result in a fire.
- If anything unusual (smoke, sound, smell, etc.) occurs during installation or operation, immediately unplug connection cables and contact the Service Center. Continued usage in this situation can result in a fire, electric shock, or breakdown.

PRECAUTIONS FOR CORRECT USE

- Connect cables to the unit property as shown in the instruction manual. Not doing so may result in a failure of the unit.
- Do not install the unit in the following places:
  - Locations subject to direct sunlight
  - Locations subject to temperatures or humidity outside the range specified in the specifications
  - Locations subject to condensation as the result of severe changes in temperature
  - Locations subject to corrosive or flammable gases
  - Locations subject to dust (especially iron dust) or salts
  - Locations subject to exposure to water, acid, oil, or chemicals
  - Locations subject to shock or vibration
- Take appropriate and sufficient countermeasures when using the unit in the following locations:
  - Locations subject to static electricity or other forms of noise
  - Locations subject to strong electromagnetic fields
  - Locations subject to possible exposure to radioactivity
  - Locations close to power supplies
- Do not drop the product to the ground or expose to excessive vibration or mechanical shocks. The product may be damaged and may not function properly.
- Use a dedicated packing box to transport the unit. Avoid excessive shock or vibration during transportation.
- Wire the unit properly as shown in the instruction manual.

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1. Introduction

The MG70-PN is a PROFINET RT Interface unit Main module created by Bernecker + Rainer Industrie Elektronik (hereafter, B&R) and sold by Magnescale Co., Ltd.

This manual describes the operation necessary in each company's development environment (B&R: Automation Studio, Siemens: SIMATIC STEP 7) when introducing the MG70-PN and MG71-CM digital gauges.

For information concerning the MG70-PN and MG71-CM, refer to the corresponding device specifications available on the B&R website.

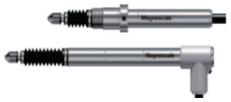
Also, for information concerning each company's development environment, refer to the corresponding manual of each company and Help function of each company's development environment.

2. Basic Information

This section shows the slave (MG70-PN) side components used in the descriptions in this manual, and the connection configuration of the various equipment.

2.1. Equipment used

Table 2-1 List of equipment used on the slave side

Magnescale model name	B&R model number	Description	Appearance	Qty.
MG70-PN	X20BC00E3 ×1 X20BB80 ×1 X20PS9400 ×1 X20TB12 ×1	PROFINET RT Interface unit Main module (slave)		1
MG71-CM	X20DC11A6 ×1 X20BM11 ×1 X20TB12 ×1	Counter module		1
		Supplied cable used to connect a Counter module and a digital gauge * When shipped from the factory, the loose wire side of the supplied cable is connected to the Counter module.		1
DK800S Series or DK10/25/50/100 Series		Digital Gauge - DK800S Series		1
		Digital Gauge - DK10/25/50/100 Series		

2.2. Equipment connection configuration

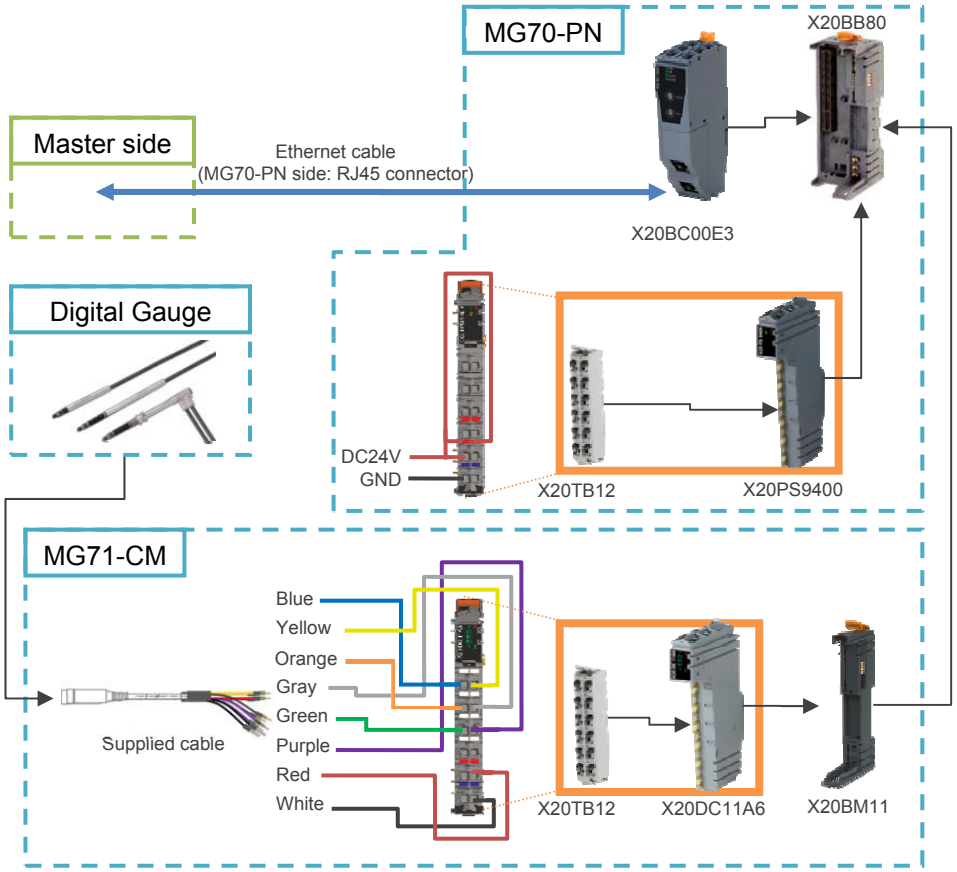


Fig 2-1　Slave side connection diagram

The Ethernet cable used to connect the master side and the MG70-PN should be shielded in accordance with the operating environment. Use a shielded RJ45 (8P8C) connector as the MG70-PN side connector.

3. Downloading the necessary files

1. Access the B&R website (http://www.br-automation.com/), and select:
   "Downloads"
   → "Product Groups: Networks and fieldbus modules"
   → "Networks and fieldbus modules: PROFINET"
   → "PROFINET: Bus controllers"
   → "Bus controllers: X20BC00E3"
   Download "Profinet Buscontroller GSD Package".

2. Save the downloaded file in the appropriate location, and extract the file using file extraction software.

4. B&R: Operations to be performed using Automation Studio

The description in this section uses the B&R "Automation Studio V4.2.3.159" as the development environment.

This description also uses the B&R X20CP3585(CPU), X20IF10E1-1 (PROFINET RT master) as the network element. The network is constructed locally, and the IP address of each element is set as a static IP address as shown in the table below.

Table 4-1 IP address settings of various equipment used in the B&R Automation Studio introduction

Equipment name	IP address	Subnet mask value
Development computer	192.168.0.1	255.255.255.0
X20CP3585 (CPU)	192.168.0.11	
X20IF10E1-1 (PROFINET RT master)	192.168.0.20	
X20BC00E3 (PROFINET RT slave)	192.168.0.101	

4.1. Importing the GSDML file

1. Start up Automation Studio, and select "Tools" → "Import DTM Device…" from the menu.
   After that, a file-selection window will be displayed.

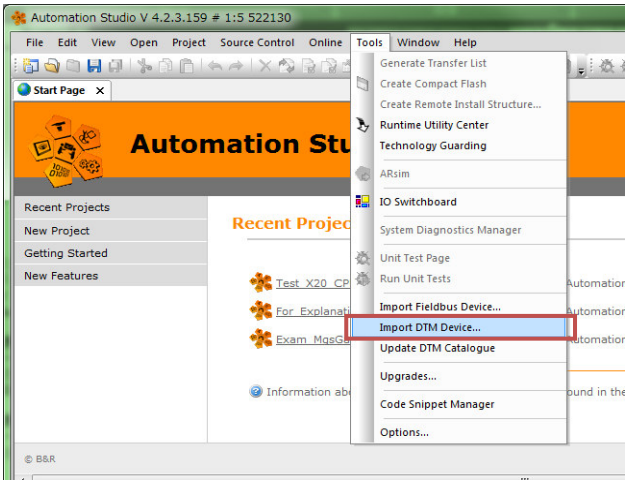


Fig 4-1 Automation Studio -- Importing the GSDML file -- No.1

2. Select the GSDML file (GSDML-V2.25-BR-X20BC00E3-20160415.xml) downloaded in section 3 above.

3. A window will open asking whether to execute the DTM catalog update. Click "Yes".

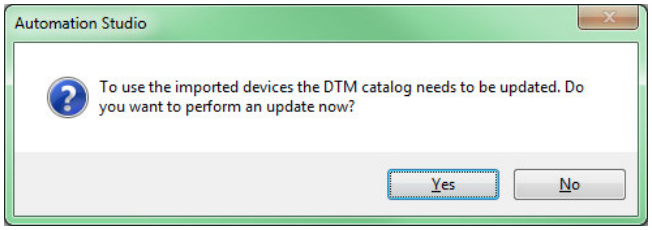


Fig 4-2 Automation Studio -- Importing the GSDML file -- No.2

4. The DTM catalog update will start. Wait until the update is complete.

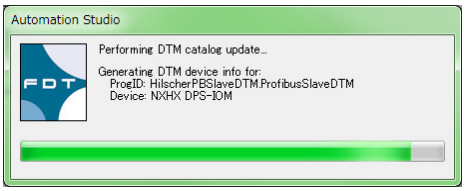


Fig 4-3 Automation Studio -- Importing the GSDML file -- No.3

5. The update is complete when the message "DTM catalog update successfully finished…" appears in the "Output" pane.

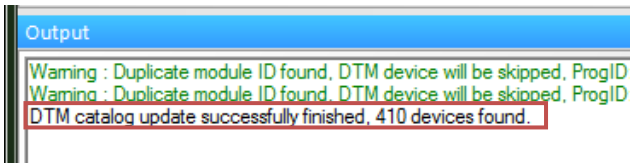


Fig 4-4 Automation Studio -- Importing the GSDML file -- No.4

6. "X20BC00E3" can now be selected from the "Catalog" tab of the "Hardware Catalog" pane.

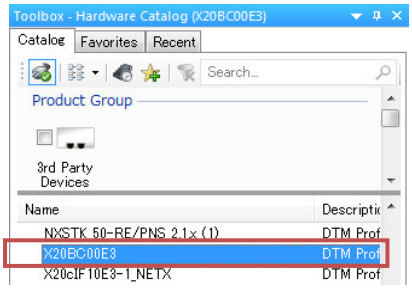


Fig 4-5 Automation Studio -- Importing the GSDML file -- No.5

4.2. Setting the IP address and the device name

Static IP address and device name settings must be made for both the main unit side and the project side.

The main unit side and project side settings are both made by Automation Studio.

4.2.1. Main unit side

Check the following items before making the settings.

- The number of nodes switch of the X20BC00E3 should be set to "0x00" before supplying power to the X20BC00E3.
- The development computer and the X20BC00E3 should be connected.

1. Add X20BC00E3 under "Profinet (DTM)" on "Physical View" in the Automation Studio.
   * This manual describes the process when using X20CP3585 as a controller, and X20IF10E1-1 as a PROFINET RT I/F module (master).

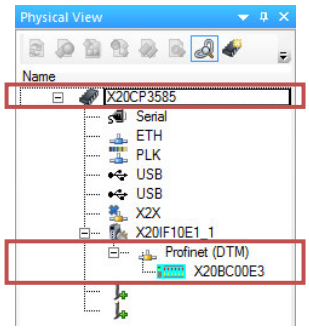


Fig 4-6 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.1

2. Right-click "Profinet (DTM)" displayed below X20IF10E1-1, and select "Device Configuration".

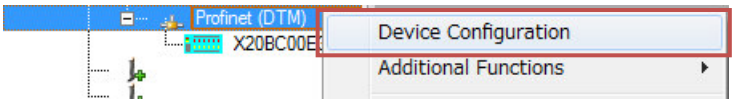


Fig 4-7 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.2

3. A new tab will open. After the tab opens, it appears as shown below. Check that "Navigation Area" is "Controller Network Settings". The "Network Settings" displayed here are the settings for X20IF10E1-1.

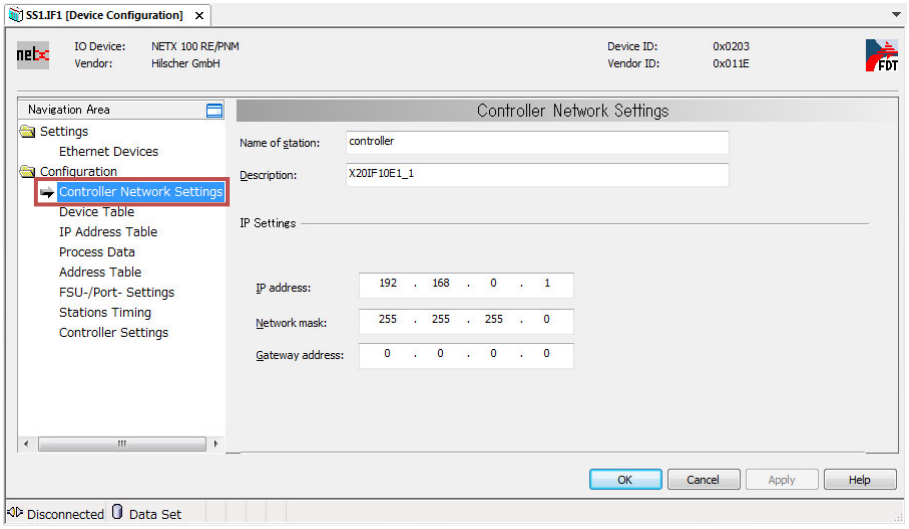


Fig 4-8 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.3

4. Set "IP address" and "Network mask" of X20IF10E1-1 to the desired values (the values to be used with the actual network), and click "Apply".
   * In the example in this manual, "IP address" is set to "192.168.0.20" and "Network mask" is set to "255.255.255.0".
   When using a router, set "Gateway address" to the IP address of the router.

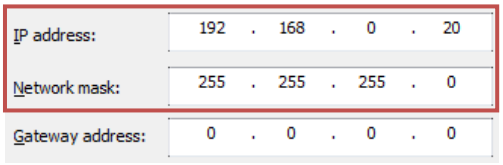


Fig 4-9 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.4

5. Select "Ethernet Devices" from "Navigation Area".
   At this point, the Ethernet devices present on the development computer will be displayed in the "Use Network Connections for Scan" list.

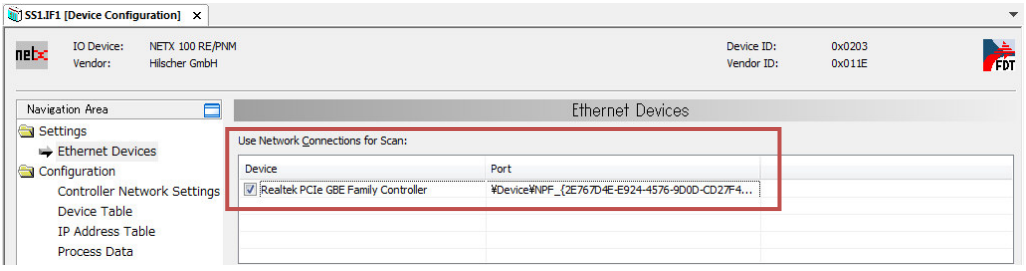


Fig 4-10 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.5

6. Place check marks in the "Device" checkboxes of the Ethernet devices connected to the X20BC00E3.

7. Click “Search Devices”.
   The active devices on the Ethernet device network that have check marks will be listed in “Devices Online”.
   Of the displayed devices, the device with “B&R PN Bus Controller” displayed as the “Device Type” is the X20BC00E3.
   * To reliably identify the X20BC00E3, check that the “MAC Address” value matches the MAC address value printed on the main unit.

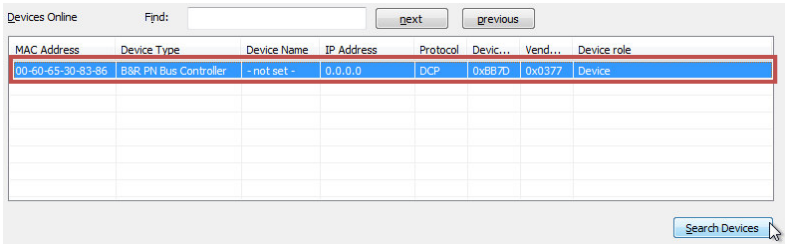


Fig 4-11 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.6

8. At the default setting, the X20BC00E3 device name is not set.
   Enter an appropriate character string to “New device name” in the “Set Name” tab, and click “Set Name”.
   *In the example in this manual, “New device name” is set to “brpn001”.

   The X20BC00E3 device name will be set.

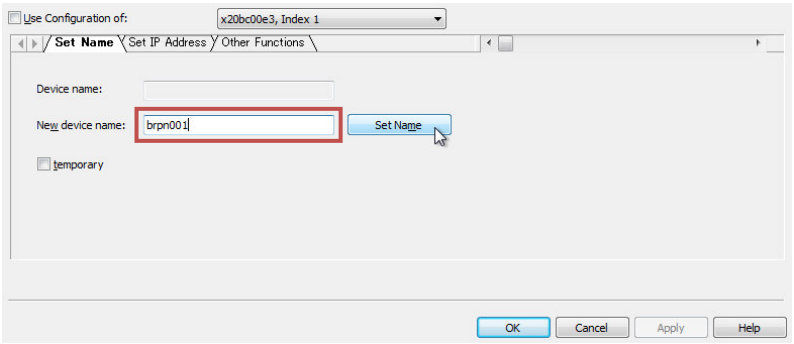


Fig 4-12 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.7

9. At the default setting, the IP address is not set.
   Select “Set IP Address” tab, set “IP Address” and “Subnet mask” with “Use static IP Address” to the desired values (the values to be used with the actual network), and click “Set Address”.
   * In the example in this manual, “IP Address” is set to “192.168.0.101” and “Subnet mask” is set to “255.255.255.0” .
   When using a router, set “Gateway” to the IP address of the router.

   The IP address of the X20BC00E3 will be set.

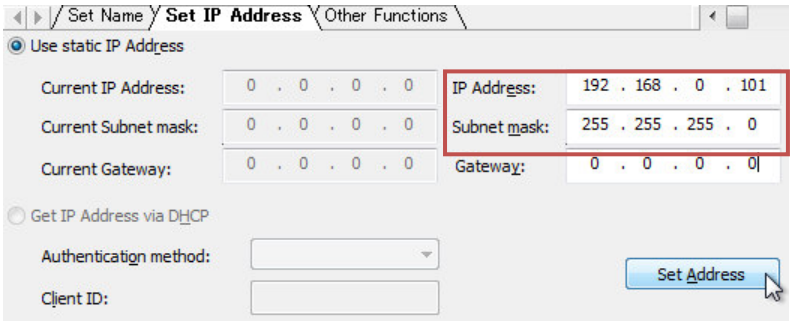
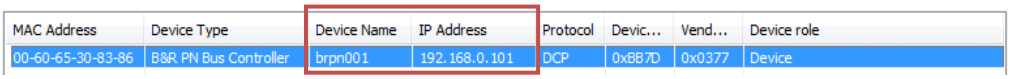


Fig 4-13 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.8

10. Click “Search Devices” again and check that the device name and the IP address are set correctly.



MAC Address	Device Type	Device Name	IP Address	Protocol	Devic...	Vend...	Device role
00-60-65-30-83-86	B&R PN Bus Controller	brpn001	192.168.0.101	DCP	0xBB7D	0x0377	Device

Fig 4-14 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.9

This can also be checked by opening the Web browser, entering the set IP address in the URL field, and accessing the X20BC00E3 Web server.

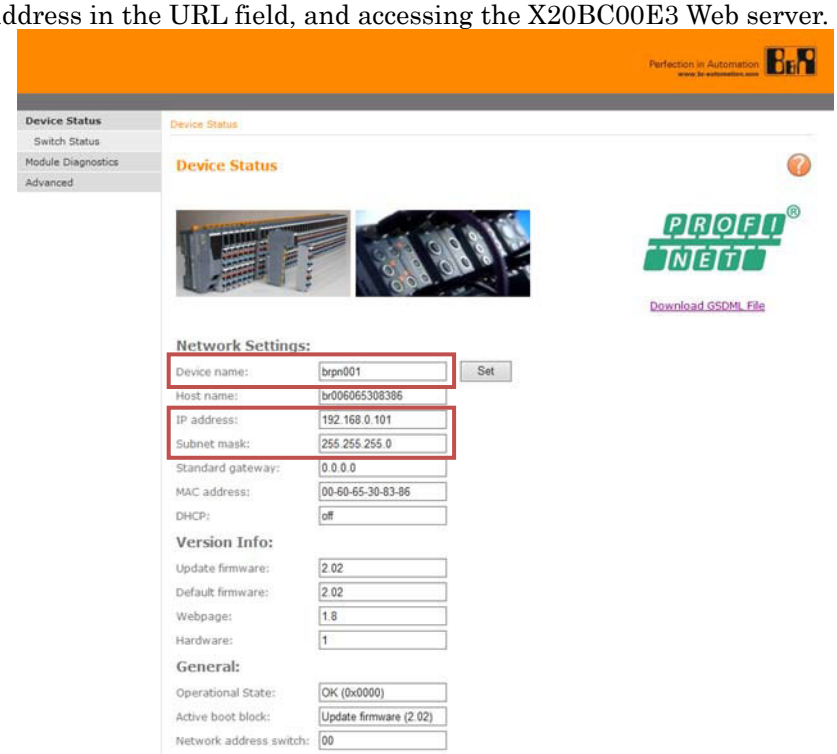


Fig 4-15 Automation Studio -- Setting the IP address and the device name (main unit side) -- No.10

4.2.2. Project side

1. Open “Device Configuration” of “Profinet (DTM)” under X20IF10E1-1, and select “Device Table” from “Navigation Area”.
   Of the displayed devices, the device with “Device” set to “X20BC00E3” is the X20BC00E3. Set “Name of station” to the value set in step 8 of section 4.2.1 above, and click “Apply”.

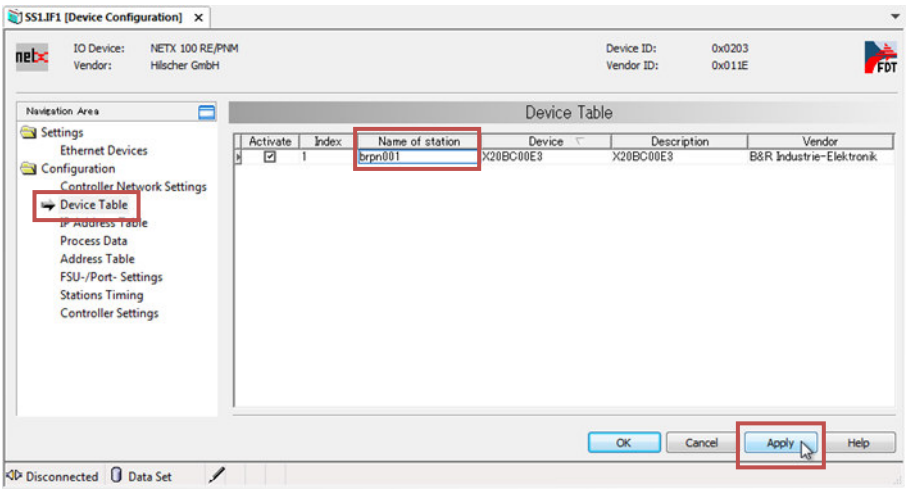


Fig 4-16 Automation Studio -- Setting the IP address and the device name (project side) -- No.1

2. Select “IP Address Table” from “Navigation Area”.
   Of the displayed devices, the device with “Name of station” set to the character string set in step 1 above is the X20BC00E3.

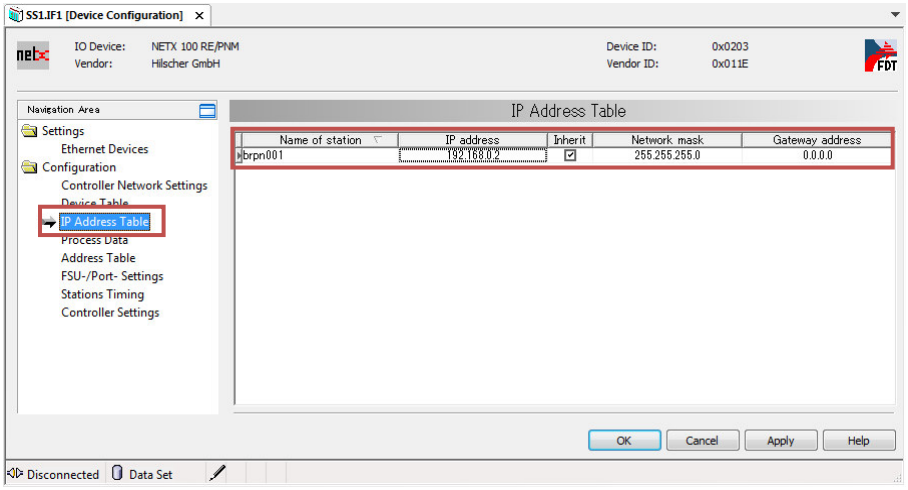


Fig 4-17 Automation Studio -- Setting the IP address and the device name (project side) -- No.2

3. Set “IP address” of X20BC00E3 to the value set in step 9 of section 4.2.1 above, and click “OK”.

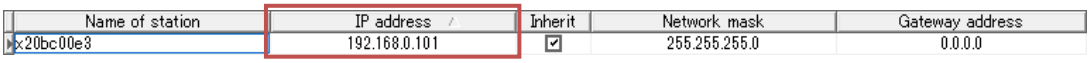


Fig 4-18 Automation Studio -- Setting the IP address and the device name (project side) -- No.3

4.3. Configuration setting for MG71-CM

The X20BC00E3 that can be located in “Physical View” by the operation in section 4.1 above is the configuration up to the MG70-PN. The following task must be performed to set the configuration up to the MG71-CM part.

1. Right-click X20BC00E3 in “Physical View”, and select “Device Configuration” from the displayed menu.

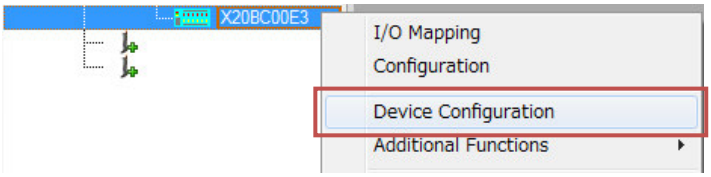


Fig 4-19 Automation Studio -- Configuration setting for MG71-CM -- No.1

2. A new tab will open. After the tab opens, it appears as shown below. Check that “Modules” is selected in “Navigation Area”.

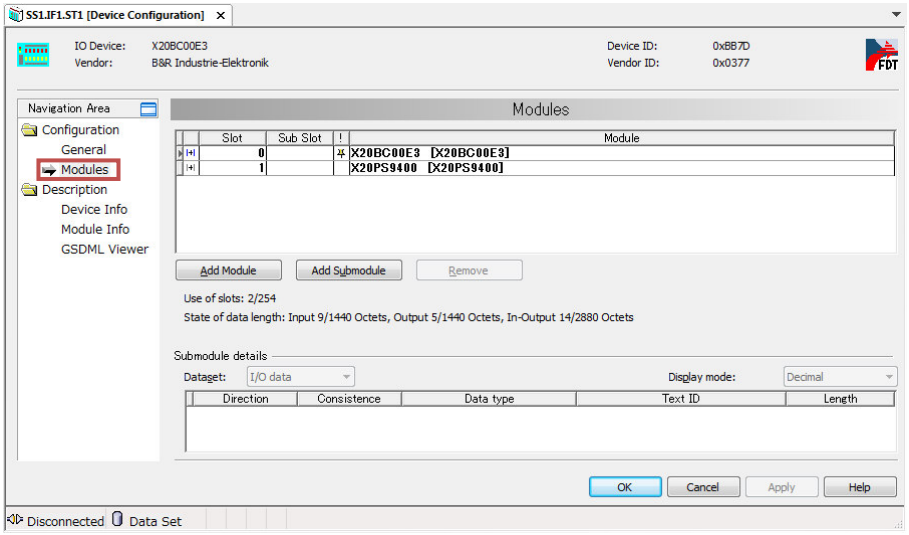


Fig 4-20 Automation Studio -- Configuration setting for MG71-CM -- No.2

3. Click “Add Module”.
   This makes it possible to add a module.
   * This manual describes the process when adding only one module, but perform the add operation in accordance with the number of MG71-CM to be used.

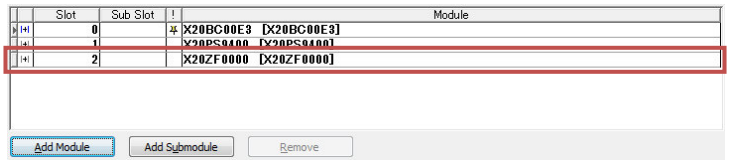


Fig 4-21 Automation Studio -- Configuration setting for MG71-CM -- No.3

4. Select the addedd module, and select “X20DC11A6_C1”.
   * Note that “X20DC11A6_C1” is located at the bottom of the list.

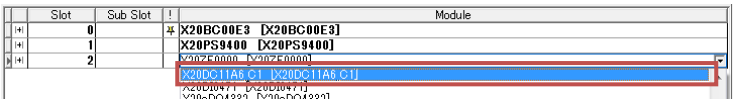


Fig 4-22 Automation Studio -- Configuration setting for MG71-CM -- No.4

5. To use the X20DC11A6 latch function or other functions, expand “X20DC11A6_C1” and select the displayed line. “Submodule details” will become active, so set “Dataset” to “Parameter”.
   The parameters that can be set will be displayed in a list. For a description of the parameters (registers), refer to the X20DC11A6 data sheet and the B&R “PROFINET RT User’s manual”.

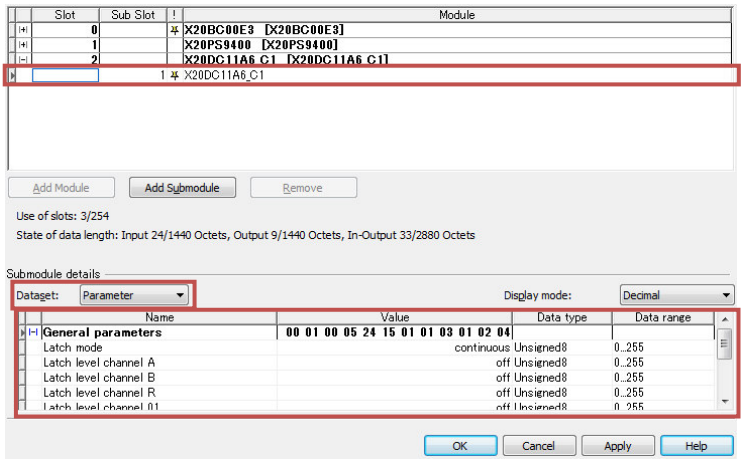


Fig 4-23 Automation Studio -- Configuration setting for MG71-CM -- No.5

6. Click “OK” or “Apply”.
   The “X20BC00E3” located in “Physical View” will become the MG70-PN and MG71-CM configuration.

4.4. Communication settings

In order to correctly acquire data, it is necessary to set only one of the combinations of master and slave settings to little-endian. If both are big-endian or both are little-endian, the MSB/LSB of the acquired data will be inverted.

4.4.1. Master side

Open “Device Configuration” of “Profinet (DTM)” under X20IF10E1-1, and select “Controller Settings” from “Navigation Area”.

The big-endian/little-endian setting on the master side can be switched by “Process image storage format”. After switching the setting, click “OK” or “Apply”.

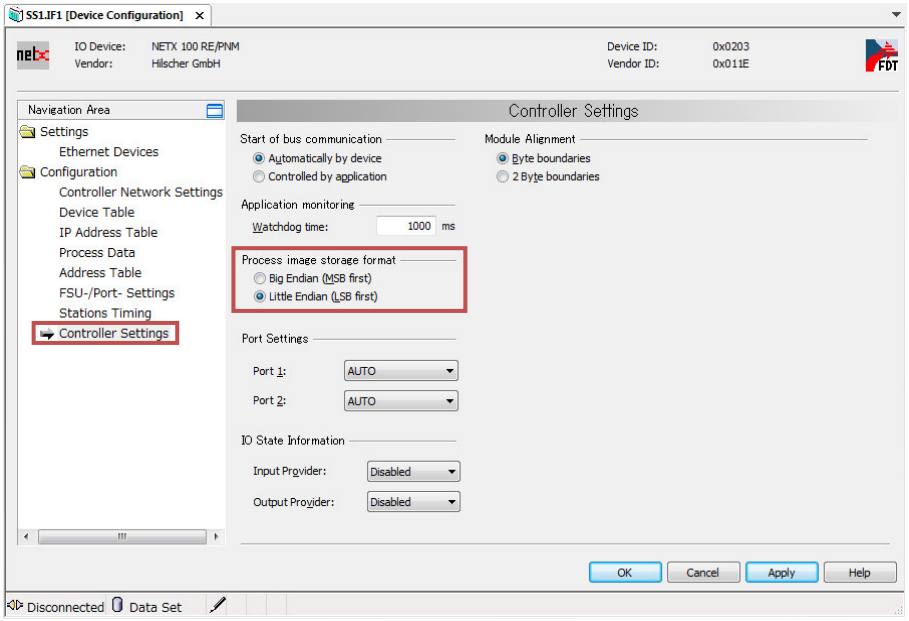


Fig 4-24 Automation Studio -- Communication settings (master side)

4.4.2. Slave side

Open “Device Configuration” of X20BC00E3 under “Profinet (DTM)”, and select “Modules” from “Navigation Area”.

Expand X20BC00E3, select the displayed line (the line displayed as “X20BC00E3”), and set “Dataset” to “Parameter”.

The big-endian/little-endian setting on the slave side can be switched by “IO Endian Format” within the displayed items. After switching the setting, click “OK” or “Apply”.

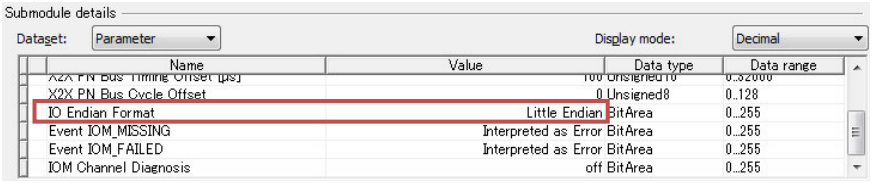


Fig 4-25 Automation Studio -- Communication settings (slave side)

5. Siemens: Operations to be performed using SIMATIC STEP 7

The description in this section uses the Siemens "SIMATIC STEP 7 Basic V13 SP1 Update 9" as the development environment.

This description also uses the Siemens SIMATIC S7-1200 CPU1211C (CPU, PROFINET RT master) as the network element. The network is constructed locally, and the IP address of each element is set as a static IP address as shown below.

Table 5-1 Siemens: IP address settings of various equipment used in the description of SIMATIC STEP 7 introduction

Equipment name	IP address	Subnet mask value
Development computer	192.168.0.1	255.255.255.0
CPU1211C (CPU, PROFINET RT master)	192.168.0.12	
X20BC00E3 (PROFINET RT slave)	192.168.0.101	

5.1. Importing the GSDML file

1. Start up SIMATIC STEP 7, and select "Options" → "Manage general station description files (GSD)" from the "Project view" menu.

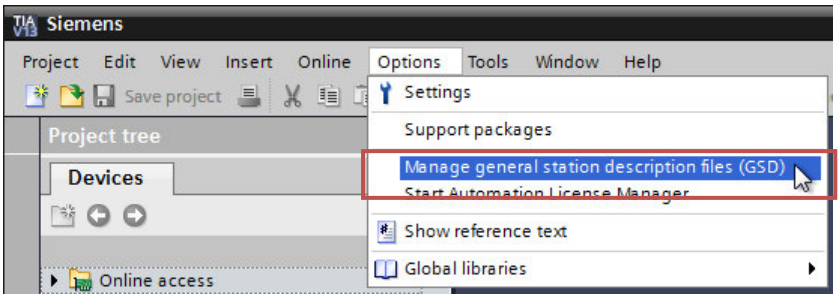


Fig. 5-1 SIMATIC STEP 7 -- Importing the GSDML file -- No.1

2. Select the folder in the displayed window that contains the GSDML file downloaded in section 3 above.
After that, select "GSDML-V2.25-BR-X20BC00E3-20160415.xml" from "Content of imported path", and click "Install".

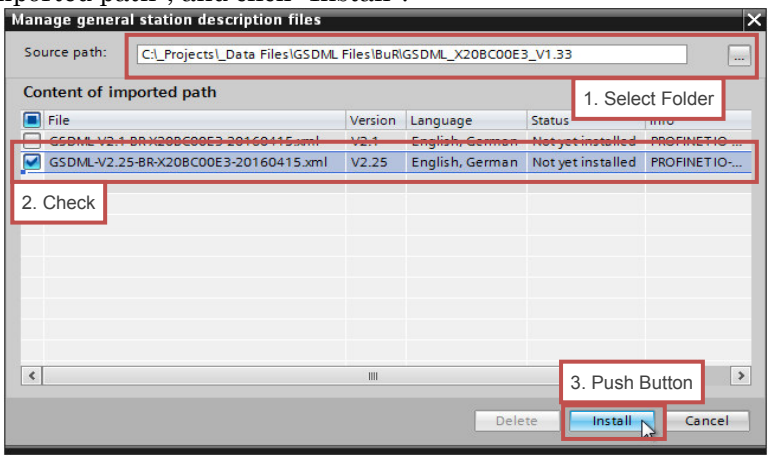


Fig. 5-2 SIMATIC STEP 7 -- Importing the GSDML file -- No.2

3. Wait until GSDML file import is complete.
   When import is complete, a window will be displayed. Click “Close”.

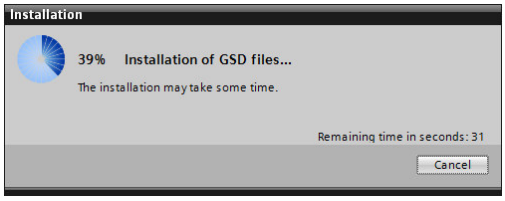


Fig. 5-3 SIMATIC STEP 7 -- Importing the GSDML file -- No.3

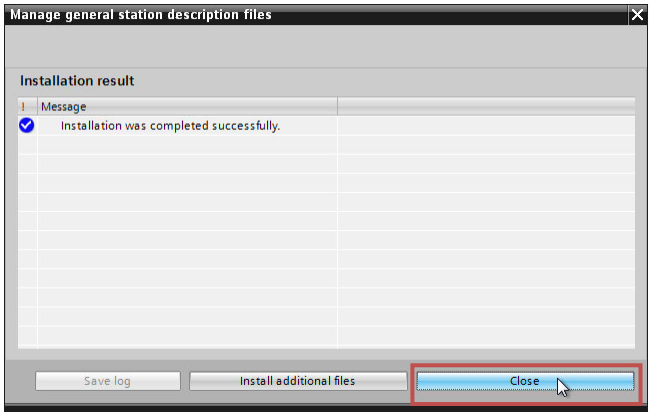


Fig. 5-4 SIMATIC STEP 7 -- Importing the GSDML file -- No.4

4. The hardware catalog will be automatically updated. Wait until the update is complete.

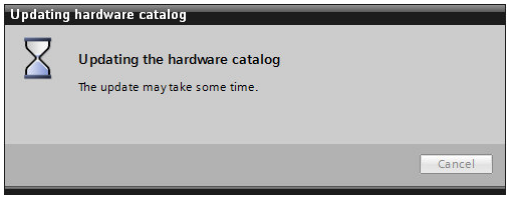


Fig. 5-5 SIMATIC STEP 7 -- Importing the GSDML file -- No.5

5. “X20BC00E3” can be selected from the “Hardware catalog” pane in “Devices & networks”.

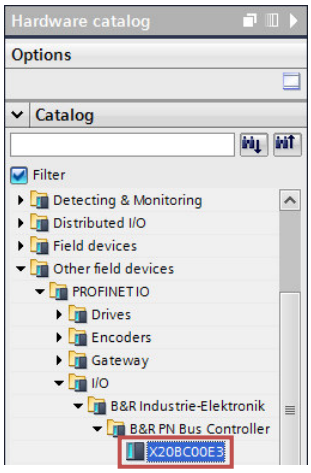


Fig. 5-6 SIMATIC STEP 7 -- Importing the GSDML file -- No.6

5.2. Setting the IP address and the device name

Static IP address and device name settings must be made for both the main unit side and the project side.

Both the main unit and project side settings are made using SIMATIC STEP 7.

5.2.1. Main unit side

Check the following items before making the settings.

- The number of nodes switch of the X20BC00E3 should be set to "0x00" before supplying power to the X20BC00E3.
- The development computer and the X20BC00E3 should be connected.

1. Start up SIMATIC STEP 7, expand "Online access" with "Project view", further expand the Ethernet interface on the side of the development computer connected to the X20BC00E3, and double-click "Update accessible devices".

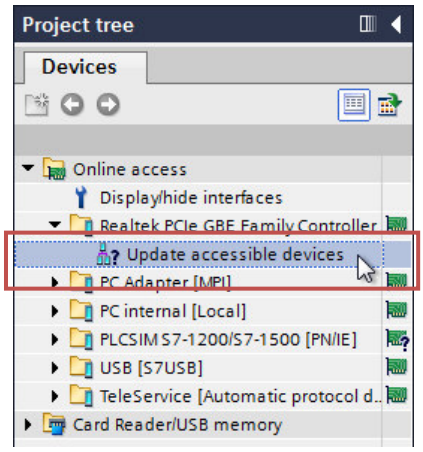


Fig. 5-7 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.1

2. If the X20BC00E3 is detected normally, "Accessible device [MAC Address]" will be added. Expand "Accessible device [MAC Address]", and double-click "Online & diagnostics".

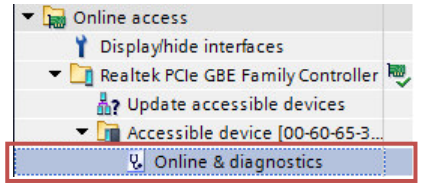


Fig. 5-8 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.2

3. Select “Assign IP address” from the left menu of the opened page.
   At the factory default, the IP address is not set.
   Set “IP address” and “Subnet mask” to the desired values (the values to be used with the actual network), and click “Assign IP address”.
   * In the example in this manual, “IP address” is set to “192.168.0.101” and “Subnet mask” is set to “255.255.255.0”.
   When using a router, place a check mark in the “Use router” checkbox, and set “Router address” to the IP address of the router.

   The X20BC00E3 IP address will be set.

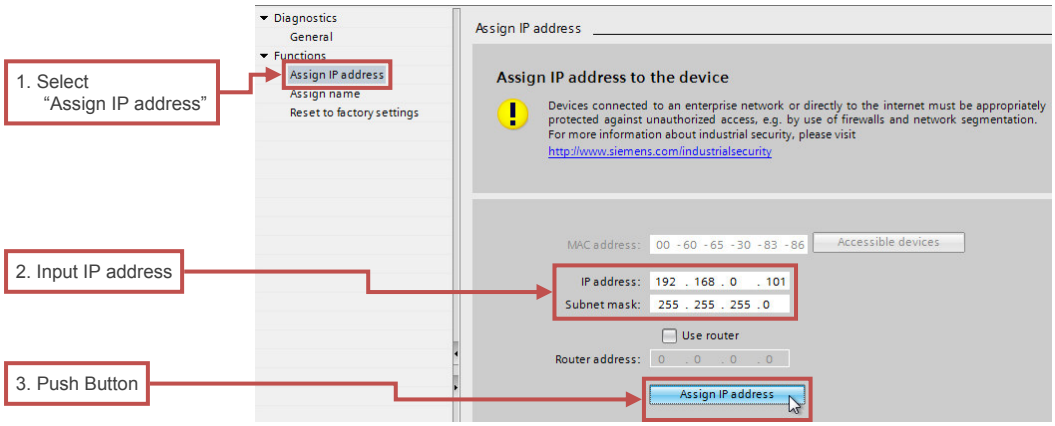


Fig. 5-9 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.3

4. The X20BC00E3 device name is also not set at the factory default, so this setting must be made.
   Select “Assign name” from the left menu, set “PROFINET device name” to an appropriate character string, and click “Assign name”.
   * In the example in this manual, “PROFINET device name” is set to “brpn001”.

   The X20BC00E3 device name will be set.

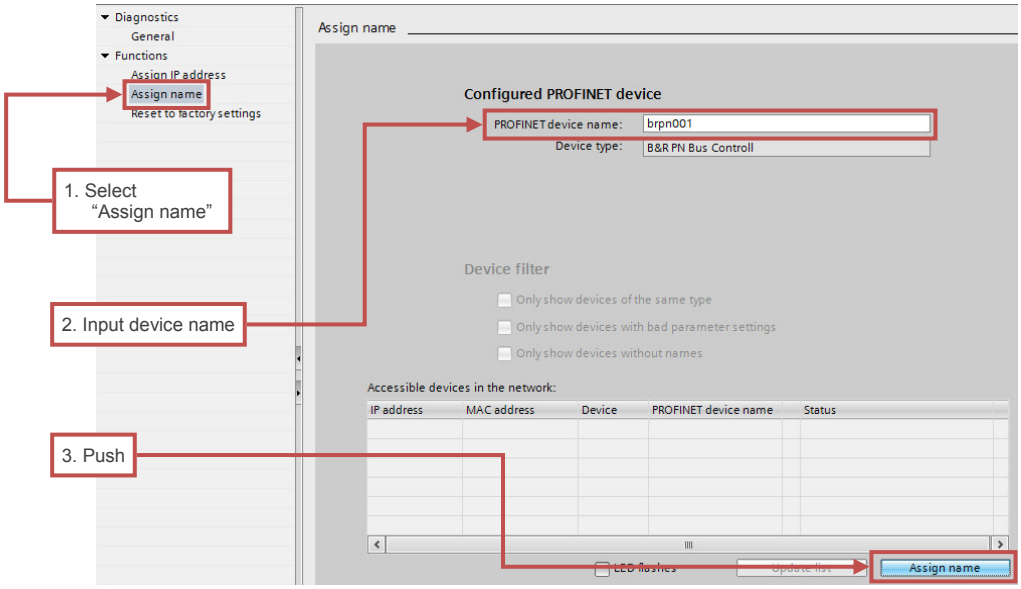


Fig. 5-10 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.4

5. Double-click “Update accessible devices” again, and check that a device with the device name and IP address set in steps 3 and 4 above has been added.

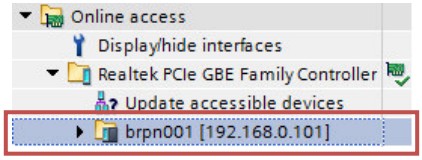


Fig. 5-11 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.5

This can also be checked by opening the Web browser, entering the set IP address in the URL field, and accessing the X20BC00E3 Web server.

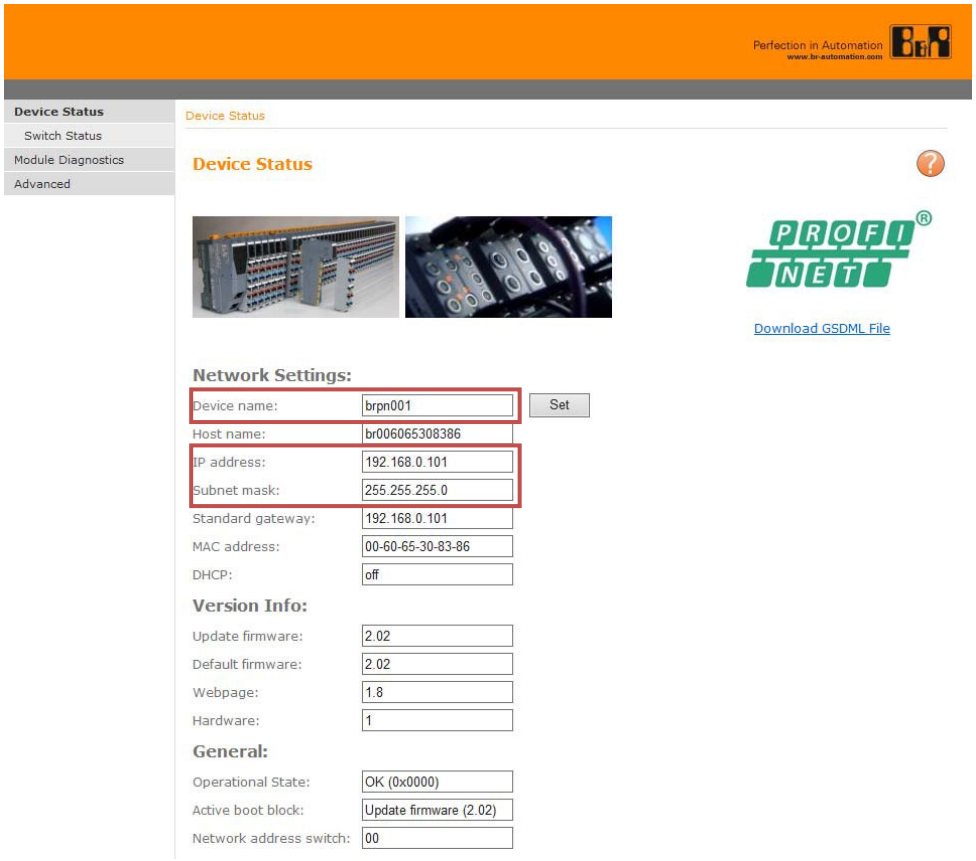


Fig. 5-12 SIMATIC STEP 7 -- Setting the IP address and the device name (main unit side) -- No.6

5.2.2. Project side

1. Add the X20BC00E3 as a new device, and open “Device Configuration”.

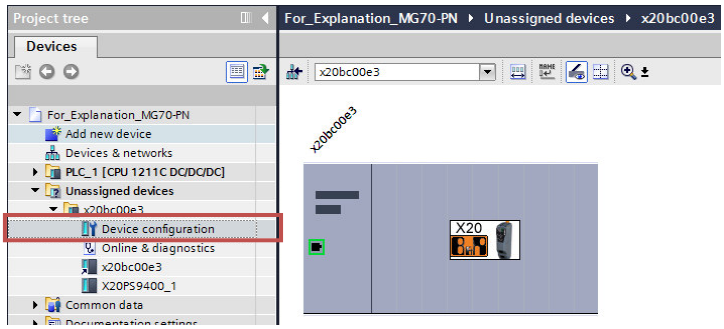


Fig. 5-13 SIMATIC STEP 7 -- Setting the IP address and the device name (project side) -- No.1

2. Select X20BC00E3 in “Device view”, display the “Properties” tab, and select “Ethernet addresses” from the left menu.
   Set “IP address” of “IP protocol” in the “Properties” tab to the value set in step 3 of section 5.2.1 above.
   In addition, remove the check from the “Generate PROFINET device name automatically” checkbox of “PROFINET”, and set “PROFINET device name” to the device name set in step 4 of section 5.2.1 above.

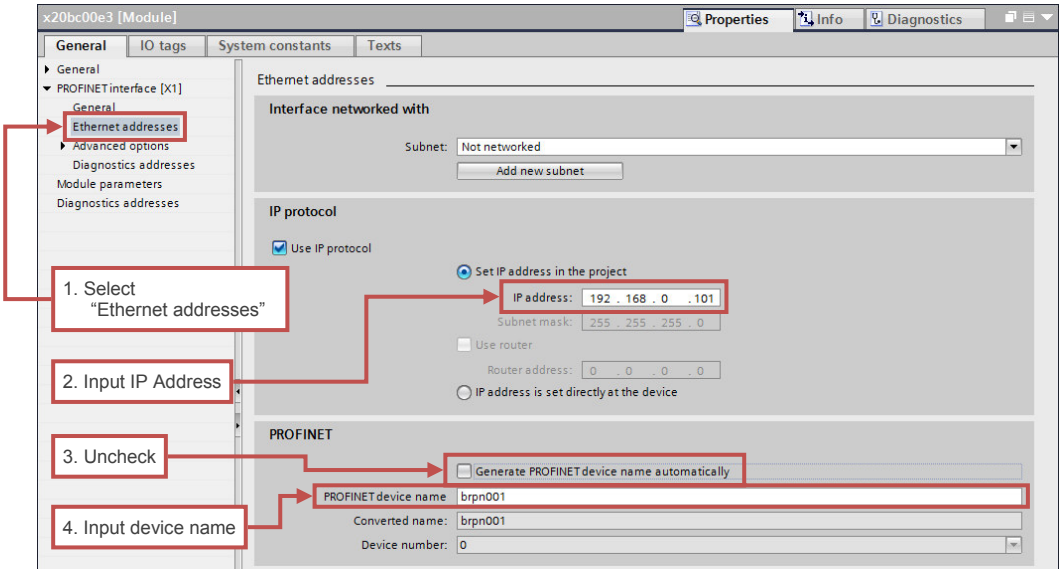


Fig. 5-14 SIMATIC STEP 7 -- Setting the IP address and the device name (project side) -- No.2

5.3. Configuration setting for MG71-CM

The X20BC00E3 that could be located in “Devices & networks” by the operation in section 5.1 above is the configuration up to the MG70-PN part. The following task must be performed to set the configuration up to the MG71-CM part.

1. Open “Devices & networks” and select the X20BC00E3 from “Device View”.

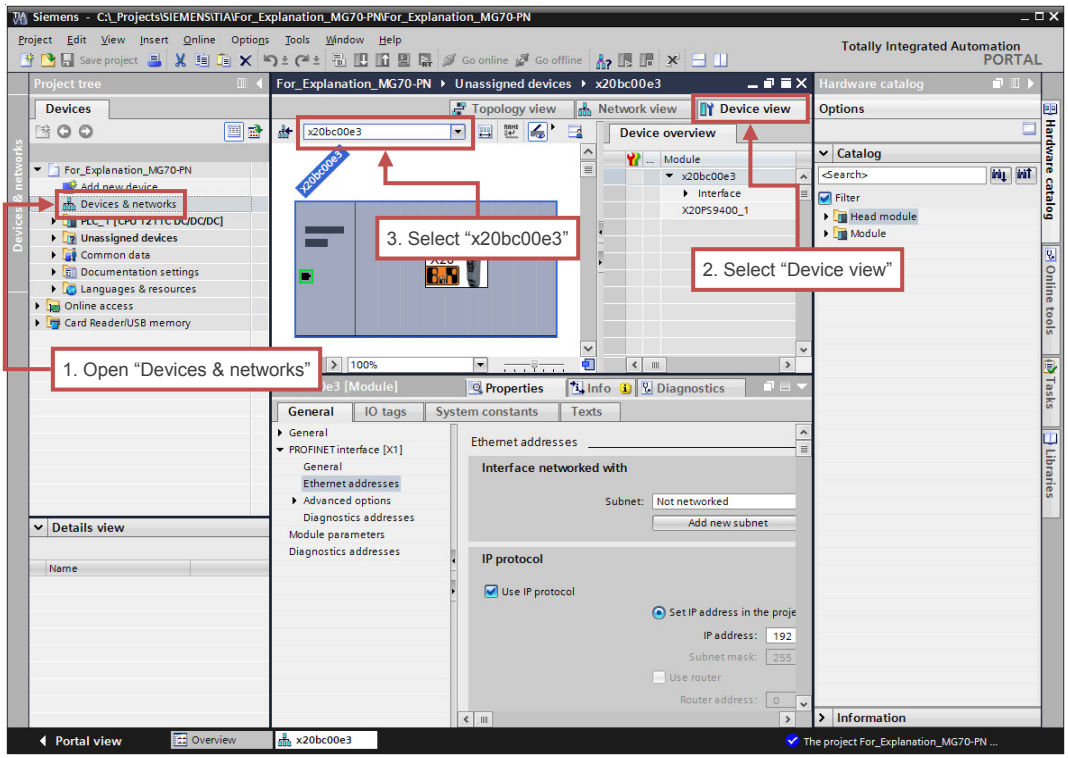


Fig. 5-15 SIMATIC STEP 7 -- Configuration setting for MG71-CM -- No.1

2. Find and double-click “X20DC11A6_C1” from the “Hardware catalog” pane. The MG71-CM (X20DC11A6) can be added.
   * While this manual describes adding only one MG71-CM, the add task should be performed in accordance with the number of MG71-CM to be used.

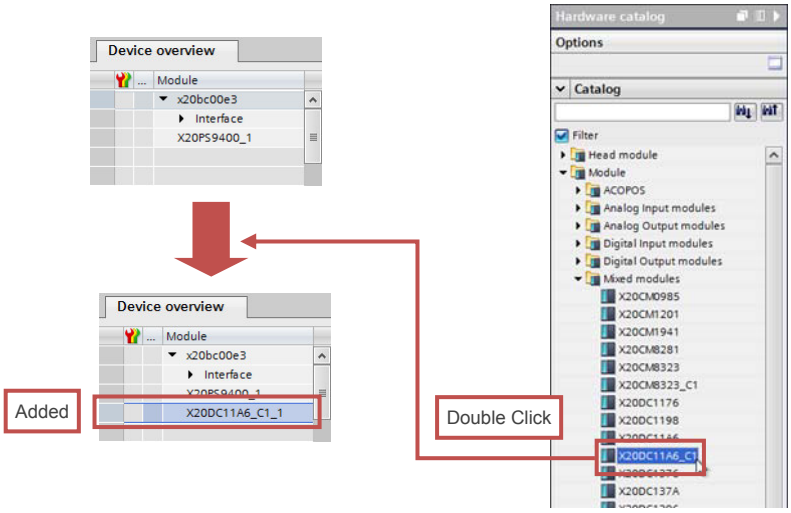


Fig. 5-16 SIMATIC STEP 7 -- Configuration setting for MG71-CM -- No.2

3. To use the X20DC11A6 latch or other functions, select “X20DC11A6_C1”, open the “Properties” tab, and open “Module parameters” from the left menu.
The various parameters can be edited from this page. For a description of the parameters (registers), refer to the X20DC11A6 data sheet and the B&R “PROFINET RT User’s manual”.

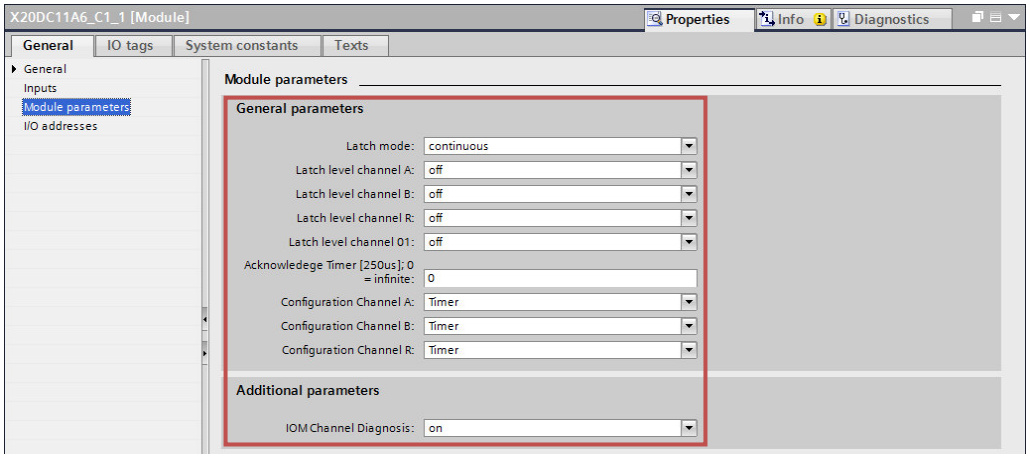


Fig. 5-17 SIMATIC STEP 7 -- Configuration setting for MG71-CM -- No.3

6. I/O Data address map

This section describes the address map of the I/O data of each element (the elements defined in the GSDML file) used in this manual.

For a description of each I/O data, refer to the X20PS9400 and X20DC11A6 data sheets or the B&R "PROFINET RT User's manual".

※1 address = 1Byte

Address notation: x,y … I/O data address position offset
* Assign(ed) according to the development environment

0.0 …Bit "0" of address "0"

x[0] … Bit "0" of address "x"

x[8..0] … Bit "8" to bit "0" of address "x" (8 Bit = 1 Byte)

6.1. X20PS9400

Table 6-1 Address map of I/O data of X20PS9400 defined in GSDML file

I/O	I/O data name		Data type	Address
	Group name	Name		
I		ModuleOK	Unsigned8	x + 0
	Inputs_X20PS9400_a	StatusInput01	Bool	x + 1.0
		StatusInput02	Bool	x + 1.2
		SupplyCurrent	Unsigned8	x + 2
		SupplyVoltage	Unsigned8	x + 3

Ex.) Starting address of the input data: 256

- ModuleOK : 256[8..0]
- StatusInput01 : 257[0]
- StatusInput02 : 257[2]
- SupplyCurrent : 258[8..0]
- SupplyVoltage : 259[8..0]

6.2. X20DC11A6_C1

Table 6-2 Address map of I/O data of X20PS9400 defined in GSDML file

I/O	I/O data name		Data type	Address
	Group name	Name		
I		ModuleOK	Unsigned8	x + 0
	Inputs_X20DC11A6_C1_a	PowerSupply01	Bool	x + 1.0
		PowerSupply02	Bool	x + 1.1
	Inputs_X20DC11A6_C1_b	BW_Channel_A	Bool	x + 2.0
		BW_Channel_B	Bool	x + 2.1
		BW_Channel_R	Bool	x + 2.2
	Inputs_X20DC11A6_C1_c	Encoder01_A	Bool	x + 3.0
		Encoder01_B	Bool	x + 3.1
		Encoder01_R	Bool	x + 3.2
		DigitalInput01	Bool	x + 3.4
		DigitalInput02	Bool	x + 3.5
I		Encoder01LatchCount	Integer8	x + 4
		Encoder01	Integer32	x + 5
		Encoder01Latch	Integer32	x + 9
O	Outputs_X20DC11A6_C1_a	BW_QuitChannel_A	Bool	y + 0.0
		BW_QuitChannel_B	Bool	y + 0.1
		BW_QuitChannel_R	Bool	y + 0.2
	Outputs_X20DC11A6_C1_b	Encoder01Reset	Bool	y + 1.0
		Encoder01LatchEnable	Bool	y + 1.1

Ex.) Starting address of the input data: 260; Starting address of the output data: 256

- ModuleOK : 260[8..0]
- PowerSupply01 : 261[0]
- PowerSupply02 : 261[1]
- BW_Channel_A : 262[0]
- BW_Channel_B : 262[1]
- BW_Channel_R : 262[2]
- Encoder01_A : 263[0]
- Encoder01_B : 263[1]
- Encoder01_R : 263[2]
- DigitalInput01 : 263[4]
- DigitalInput02 : 263[5]
- Encoder01LatchCount : 264[8..0]
- Encoder01 : 268[8..0], 267[8..0], 266[8..0], 265[8..0]
- Encoder01Latch : 272[8..0], 271[8..0], 270[8..0], 269[8..0]

- BW_QuitChannel_A : 256[0]
- BW_QuitChannel_B : 256[1]
- BW_QuitChannel_R : 256[2]
- Encoder01Reset : 257[0]
- Encoder01LatchEnable : 257[1]

日本からの輸出時における注意

本製品(および技術)は輸出令別表第1の16の項(外為令別表16の項)に該当します。キャッチオール規制による経済産業省の許可要否につきましては、輸出者様にてご確認ください。

For foreign customers

Note: This product (or technology) may be restricted by the government in your country. Please make sure that end-use, end user and country of destination of this product do not violate your local government regulation.

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MG70-PN
2-A02-326-0A

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Magnescale®

PROFINET RT インターフェイスユニット メインモジュール
PROFINET RT Interface unit Main module

MG70-PN

補足説明書 / Supplement

お買い上げいただき、ありがとうございます。

安全にご使用いただくために、本紙と各取扱説明書を必ずお読みください。

取扱説明書は当社ホームページからダウンロードいただくか、最寄りの営業所にお問い合わせください。

ご使用に際しては、本紙と取扱説明書どおりにお使いください。

お読みになった後は、後日お役に立つこともございますので、必ず保管してください。

Thank you for purchasing this product.

To ensure safe operation, please be sure to read this document and each instruction manual carefully.

To obtain the instruction manuals, download them from the website of Magnescale Co., Ltd. or contact your nearest sales representative.

Be sure to operate the product according to the descriptions in this document and the instruction manuals.

Be sure to keep this document and all instruction manuals in a safe and readily available location for future reference.

概要

MG70-PN は、Bernecker + Rainer Industrie Elektronik（以下、B&R と記載）の PROFINET RT インターフェイスユニット メインモジュールを (株)マグネスケールが販売するものです。

MG70-PN の基本的な仕様に関しては、以下に示す B&R 製品の資料をご覧ください。

Magnescale モデル番号	B&R モデル番号	説明	B&R Web リンク
MG70-PN	X20BC00E3	PROFINET RT バス・コントローラ (スレーブ)	http://www.br-automation.com/en/products/io-systems/x20-system/bus-controllers/x20bc00e3/
	X20BB80	バス・コントローラ用ベース・モジュール	http://www.br-automation.com/en/products/io-systems/x20-system/system-modules-for-bus-controllers/x20bb80/
	X20PS9400	電源モジュール	http://www.br-automation.com/en/products/io-systems/x20-system/system-modules-for-bus-controllers/x20ps9400/
	X20TB12	端子台	http://www.br-automation.com/en/products/io-systems/x20-system/terminal-blocks/x20tb12/

MG70-PN を使用するにあたり、GSDML（General Station Description Markup Language）ファイルが必要となります。このファイルは B&R の X20BC00E3 の製品情報ページにアクセスすることでダウンロードできます。

取扱説明書

弊社ホームページ
http://www.magnescale.com/mgs/product
Digital Gauge カテゴリ内

安全上の注意

●注意表示の意味

⚠ 注意	正しい取扱いをしなければ、この危険のために、時に軽症・中程度の傷害を負ったり、あるいは物的損害を受ける恐れがあります。

●注意表示

⚠ 注意

通電中は、端子部に触れたり、本製品を分解して内部に触れたりしないでください。感電の恐れがあります。

本製品を分解して修理や改造はしないでください。感電の恐れがあります。

- 規定された電源電圧以外での電圧で使用しないでください。火災や感電の原因となる恐れがあります。
- 濡れた手での取付作業はしないでください。感電の原因となります。
- 本製品を分解、改造しないでください。火傷やケガの恐れがあります。分解・改造された製品は保証できません。
- ケーブルを傷つけたり、加工したり、無理に曲げたり、引張ったりしないでください。また、重いものをのせたり、熱したりしないでください。ケーブルが破損し、火災や感電の原因となる恐れがあります。

- 本製品の取付作業を行なう際や、取付けた装置を動作させる場合には、充分な安全を確保してください。
- 信号ケーブルの抜き差しの際は、ケーブルでなく必ずプラグの部分を持って行なってください。
- 本製品は防爆構造になっていませんので、可燃性ガスの雰囲気中では使用しないでください。火災の原因となることがあります。
- 設置中や操作中に異常（煙・音・匂いなど）が発生した場合、すぐに接続ケーブルを外して、サービスにご連絡ください。そのまま使用すると火災や感電、故障の原因となります。

使用上の注意

- 取扱説明書に示すとおり、正しく接続してください。正しく接続しないと、故障する恐れがあります。
- 次のような環境には設置しないでください。
  - 日光が直接当たる場所
  - 周囲温度や相対湿度が仕様値の範囲を超える場所
  - 温度の変化が急激で結露するような場所
  - 腐食性ガス、可燃性ガスのある場所
  - ちり、ほこり、塩分、鉄粉が多い場所
  - 水、酸、油、薬品などの飛沫がかかる場所
  - 本体に直接振動や衝撃が伝わる場所
- 次のような場所で使用する際は、遮蔽対策を充分に行なってください。
  - 静電気などによるノイズが発生する場所
  - 強い電界や磁界が生じる場所
  - 放射能を被曝する恐れのある場所
  - 電源線や動力線が近くを通る場所
- 製品を落下させたり異常な振動や衝撃を加えたりしないでください。故障や誤動作の原因となります。
- 本製品を輸送するときは、専用の梱包箱を使用してください。また、輸送中に過度な振動や衝撃が加わらないように注意してください。
- 取扱説明書に示すとおり、正しく配線してください。

Overview

The MG70-PN is a PROFINET RT Interface unit Main module created by Bernecker + Rainer Industrie Elektronik (hereafter, B&R) and sold by Magnescale Co., Ltd.

For the MG70-PN specifications, refer to the B&R product documentation listed below.

Magnescale model number	B&R model number	Description	B&R Web link
MG70-PN	X20BC00E3	PROFINET RT bus controller (Slave)	http://www.br-automation.com/en/products/io-systems/x20-system/bus-controllers/x20bc00e3/
	X20BB80	Base module for bus controller	http://www.br-automation.com/en/products/io-systems/x20-system/system-modules-for-bus-controllers/x20bb80/
	X20PS9400	Power supply module	http://www.br-automation.com/en/products/io-systems/x20-system/system-modules-for-bus-controllers/x20ps9400/
	X20TB12	Terminal block	http://www.br-automation.com/en/products/io-systems/x20-system/terminal-blocks/x20tb12/

A GSDML (General Station Description Markup Language) file is needed to use the MG70-PN. This file can be downloaded by accessing the X20BC00E3 product information page of B&R.

Instruction Manual

Magnescale website
http://www.magnescale.com/mgs/language/english/product/
Under Digital Gauge

Safety Precautions

● Definition of Precautionary Information

⚠ Caution	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

● Cautions

⚠ Caution

Do not attempt to take any unit apart while the power is being supplied. Doing so may result in electric shock.

Do not attempt to disassemble, repair, or modify any units. Any attempt to do so may result in electric shock.

- Do not use the product at voltages other than the specified power voltage. This could result in a fire or electric shock.
- Do not perform installation work with wet hands. This could result in an electric shock.
- Do not disassemble or modify the product. This could result in a burn or other injury. Disassembling or modifying the product will void the warranty.
- Do not damage, modify, excessively bend, pull on, place heavy objects on or heat the cable. This could damage the cable and result in a fire or electric shock.

PRECAUTIONS FOR SAFE USE

- Take all possible safety measures when mounting the product and operating a mounted device.
- When connecting and disconnecting a signal cable, be sure to grasp by the plug section, not the cable.
- The product does not have an explosion-proof structure. Therefore, do not use the unit in an atmosphere containing flammable gas. This could result in a fire.
- If anything unusual (smoke, sound, smell, etc.) occurs during installation or operation, immediately unplug connection cables and contact the Service Center. Continued usage in this situation can result in a fire, electric shock, or breakdown.

PRECAUTIONS FOR CORRECT USE

- Connect cables to the unit property as shown in the instruction manual. Not doing so may result in a failure of the unit.
- Do not install the unit in the following places:
  - Locations subject to direct sunlight
  - Locations subject to temperatures or humidity outside the range specified in the specifications
  - Locations subject to condensation as the result of severe changes in temperature
  - Locations subject to corrosive or flammable gases
  - Locations subject to dust (especially iron dust) or salts
  - Locations subject to exposure to water, acid, oil, or chemicals
  - Locations subject to shock or vibration
- Take appropriate and sufficient countermeasures when using the unit in the following locations:
  - Locations subject to static electricity or other forms of noise
  - Locations subject to strong electromagnetic fields
  - Locations subject to possible exposure to radioactivity
  - Locations close to power supplies
- Do not drop the product to the ground or expose to excessive vibration or mechanical shocks. The product may be damaged and may not function properly.
- Use a dedicated packing box to transport the unit. Avoid excessive shock or vibration during transportation.
- Wire the unit properly as shown in the instruction manual.

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MG70-PN　2016.11
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Magnescale®

カウンタモジュール
Counter module

MG71-CM

補足説明書 / Supplement

お買い上げいただき、ありがとうございます。

安全にご使用いただくために、本紙と各取扱説明書を必ずお読みください。

取扱説明書は当社ホームページからダウンロードいただくか、最寄りの営業所にお問い合わせください。

ご使用に際しては、本紙と取扱説明書どおりにお使いください。

お読みになった後は、後日お役に立つこともございますので、必ず保管してください。

Thank you for purchasing this product.

To ensure safe operation, please be sure to read this document and each instruction manual carefully.

To obtain the instruction manuals, download them from the website of Magnescale Co., Ltd. or contact your nearest sales representative.

Be sure to operate the product according to the descriptions in this document and the instruction manuals.

Be sure to keep this document and all instruction manuals in a safe and readily available location for future reference.

概要

MG71-CM は、Bernecker + Rainer Industrie Elektronik（以下､B&R と記載）のカウンタモジュールを（株)マグネスケールが販売するものです。

MG71-CM の基本的な仕様に関しては、以下に示す B&R 製品の資料をご覧ください。

Magnescale モデル番号	B&R モデル番号	説明	B&R Web リンク
MG71-CM	X20DC11A6	デジタルカウンタ・モジュール	http://www.br-automation.com/en/products/io-systems/x20-system/counter-functions/x20dc11a6/
	X20BM11	デジタルカウンタ・モジュール用ベース・モジュール	http://www.br-automation.com/en/products/io-systems/x20-system/bus-modules/x20bm11/
	X20TB12	端子台	http://www.br-automation.com/en/products/io-systems/x20-system/terminal-blocks/x20tb12/

取扱説明書

弊社ホームページ
http://www.magnescale.com/mgs/product
Digital Gauge カテゴリ内
MG70-EI または MG70-PN

安全上の注意

●注意表示の意味

⚠ 注意	正しい取扱いをしなければ、この危険のために、時に軽症・中程度の傷害を負ったり、あるいは物的損害を受ける恐れがあります。

●注意表示

⚠ 注意

通電中は、端子部に触れたり、本製品を分解して内部に触れたりしないでください。感電の恐れがあります。

本製品を分解して修理や改造はしないでください。感電の恐れがあります。

- 規定された電源電圧以外での電圧で使用しないでください。火災や感電の原因となる恐れがあります。
- 濡れた手での取付作業はしないでください。感電の原因となります。
- 本製品を分解、改造しないでください。火傷やケガの恐れがあります。分解・改造された製品は保証できません。
- ケーブルを傷つけたり、加工したり、無理に曲げたり、引張ったりしないでください。また、重いものをのせたり、熱したりしないでください。ケーブルが破損し、火災や感電の原因となる恐れがあります。

- 本製品の取付作業を行なう際や、取付けた装置を動作させる場合には、充分な安全を確保してください。
- 信号ケーブルの抜き差しの際は、ケーブルでなく必ずプラグの部分を持って行なってください。
- 本製品は防爆構造になっていませんので、可燃性ガスの雰囲気中では使用しないでください。火災の原因となることがあります。
- 設置中や操作中に異常（煙・音・匂いなど）が発生した場合、すぐに接続ケーブルを外して、サービスにご連絡ください。そのまま使用すると火災や感電、故障の原因となります。

使用上の注意

- 取扱説明書に示すとおり、正しく接続してください。正しく接続しないと、故障する恐れがあります。
- 次のような環境には設置しないでください。
  - 日光が直接当たる場所
  - 周囲温度や相対湿度が仕様値の範囲を超える場所
  - 温度の変化が急激で結露するような場所
  - 腐食性ガス、可燃性ガスのある場所
  - ちり、ほこり、塩分、鉄粉が多い場所
  - 水、酸、油、薬品などの飛沫がかかる場所
  - 本体に直接振動や衝撃が伝わる場所
- 次のような場所で使用する際は、遮蔽対策を充分に行なってください。
  - 静電気などによるノイズが発生する場所
  - 強い電界や磁界が生じる場所
  - 放射能を被曝する恐れのある場所
  - 電源線や動力線が近くを通る場所
- 製品を落下させたり異常な振動や衝撃を加えたりしないでください。故障や誤動作の原因となります。
- 本製品を輸送するときは、専用の梱包箱を使用してください。また、輸送中に過度な振動や衝撃が加わらないように注意してください。
- 取扱説明書に示すとおり、正しく配線してください。

Overview

The MG71-CM is a Counter module created by Bernecker + Rainer Industrie Elektronik (hereafter, B&R) and sold by Magnescale Co., Ltd.

For the MG71-CM specifications, refer to the B&R product documentation listed below.

Magnescale model number	B&R model number	Description	B&R Web link
MG71-CM	X20DC11A6	Digital counter module	http://www.br-automation.com/en/products/io-systems/x20-system/counter-functions/x20dc11a6/
	X20BM11	Base module for digital counter module	http://www.br-automation.com/en/products/io-systems/x20-system/bus-modules/x20bm11/
	X20TB12	Terminal block	http://www.br-automation.com/en/products/io-systems/x20-system/terminal-blocks/x20tb12/

Instruction Manual

Magnescale website
http://www.magnescale.com/mgs/language/english/product/
Under Digital Gauge
MG70-EI or MG70-PN

Safety Precautions

● **Definition of Precautionary Information**

⚠ **Caution**	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or property damage.

● **Cautions**

⚠ Caution

Do not attempt to take any unit apart while the power is being supplied. Doing so may result in electric shock.

Do not attempt to disassemble, repair, or modify any units. Any attempt to do so may result in electric shock.

- Do not use the product at voltages other than the specified power voltage. This could result in a fire or electric shock.
- Do not perform installation work with wet hands. This could result in an electric shock.
- Do not disassemble or modify the product. This could result in a burn or other injury. Disassembling or modifying the product will void the warranty.
- Do not damage, modify, excessively bend, pull on, place heavy objects on or heat the cable. This could damage the cable and result in a fire or electric shock.

PRECAUTIONS FOR SAFE USE

- Take all possible safety measures when mounting the product and operating a mounted device.
- When connecting and disconnecting a signal cable, be sure to grasp by the plug section, not the cable.
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