GSK_N7

PLC connection manual

Contents

1 Overview

GSK controller N7 series Anybus system, PLC connection manual.

1-1 Connectable communication

GSK standard communication is MNET, but the expansion connector CN14
It is possible to correspond to various networks by setting the Anubus-S board.

Set to CN14 connector board	PLC type	I / O size
disconnected	M-NET	Unit input / output signal only
Anybus-S board	Devicenet CC-Link Profinet-IO etc	Unit input / output signal and Anybus dedicated signal

1-2 Anybus board set

Remove the GSK control cover and take the Anybus board to the CN14 connector.
GSK reads the ID of Anybus board and operates according to the board type.
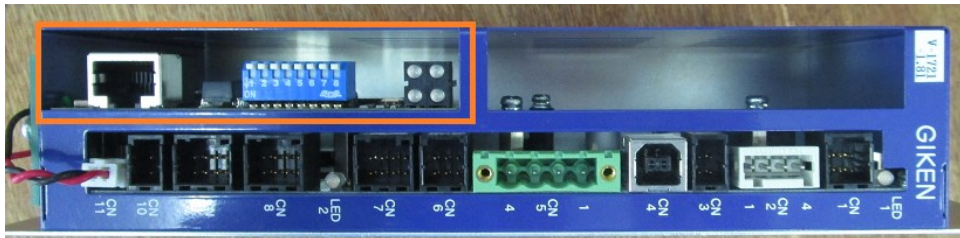
2 PLC connection setting

The setting of PLC connection can be done from GSK setting software or controller 7 segment.

2-1 Connection using GSK setting software

Start GSK setting software and open main menu ⇒ option ⇒ PLC setting.
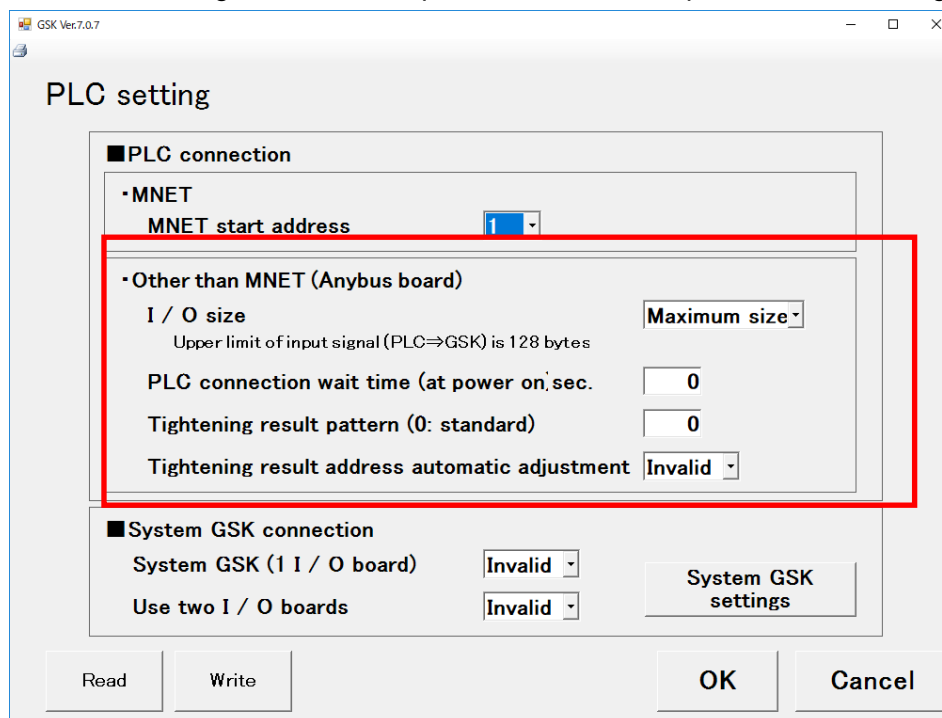
2-1-1 I/O size

I/O size	PLC Output (PLC⇒IF) Bytes (HEX)	PLC Input (IF⇒PLC) Bytes(HEX)	Remarks
Maximum size	128 (80h)	Maximum size	Maximum size varies by board Refer to the specifications of each board
64Byte	64 (40h)	64 (40h)	Unit 5 is upper limit
128Byte	128 (80h)	128 (80h)	
256Byte	128 (80h)	256 (100h)	PLC output size remains at 128 bytes

2-1-2 PLC connection wait time

It is the connection waiting time of sequencer and GSKIF at startup.
The time specified from power ON always waits for PLC connection.
During this time GSKIF does not receive any action.
Depending on the type of PLC, once connected with the PLC immediately after power ON You may establish and immediately disconnect → reconnect.
By setting the PLC connection wait time, it is possible to prevent
PLC connection errors from occurring in this case as well.

【Reference】

・DevciceNet is 20sec

・0 seconds other than above

(It will be in communication immediately after the connection with PLC is established)

2-1-3 Tightening result pattern

Change the notification result of tightening result.
 For more information
 Refer to "3-4-2 Pattern switching of tightening result data".

2-1-4 Tightening result address automatic adjustment

An area of unused unit output signal is assigned as a tightening result.
For example, in the case of equipment using only a maximum of 4 units,
the beginning (+ 34h) of unit 5 is
Since it becomes the top address of the tightening result, the result area slightly increases.
Use when you want to increase the number of screws resulting from tightening

The start address can be changed by the number of units
As it changes, the PLC side needs to pay attention to the reference address.

2-2 Connection using GSK setting software

Connection method using control 7 segmentFn6-12 or Fn6-15 Setting can be done without using the setting PC by changing.

※ Please refer to the separate sheet "GSK controller instruction manual" for the operation method of 7 segments.

Indicates the parameter (Fn6) related to PLC connection.

Number	Contents
Fn6-12 (HEX)	PLC setting Specify IO map etc. of PLC using Anybus board.

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
IO Size		Reserve	Result ADR adjustment	Tightening result notification pattern			

[Bit7-6]　IO Size Maximum setting

B7 B6 Value	PLC Output (PLC⇒IF) Bytes (HEX)	PLC Input (IF⇒PLC) Bytes(HEX)	Remarks
00 （MAX）	128　(80h)	Maximum size	Maximum size varies by board Refer to the specifications of each board
01 (64Byte)	64　(40h)	64　(40h)	Unit 5 is upper limit
10 (128Byte)	128　(80h)	128　(80h)	
11 (256Byte)	128　(80h)	256　(100h)	PLC output size remains at 128 bytes

Match the IO size to the PLC side.
If the PLC input size is small, the notification size of the tightening result will be reduced.
　　　　　※ Do not specify beyond the maximum size of the board
　　　　　※ CC-LINK board can not be resized.

[Bit5] Reserve

[Bit4] Automatic adjustment of tightening result address (0: OFF 1: ON)
　　A region of unused unit output signals is assigned as a result of tightening.
　　For example, in the case of equipment using only a maximum of 4 units, the beginning (+ 34h) of unit 5 is
　　As it becomes the top address of the tightening result, the result area slightly increases.
　　Use this when you want to increase the number of screws for tightening results, but since the start address changes depending on the number of units, the PLC side needs to be careful about the reference address.

[Bit3-0] Change the notification pattern of tightening result.
　　For more information, refer to "Notice of tightening results". |

Fn6-15 (HEX)	PLC setting 2 Specify the connection settings of PLC using Anybus board.

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Reserve	Reserve	PLC startup wait time					

[Bit7] Reserve

[Bit6] Reserve

[Bit5-0] PLC startup wait time (1～50sec、 0 is the default sec)
    It is a connection waiting timer of sequencer and GSKIF at startup.
    The time specified from power ON always waits for PLC connection.
    GSKIF does not accept any action during this time.

    [Example] Operation when setting is 20 sec
    ・When connected to PLC in 10 seconds after power on
      ⇒GSK GSKIF will be available after 20 seconds.
    ・When connected to PLC in 30 seconds after power on
        ⇒GSKIF will be available after 30 seconds.

    Depending on the type of PLC, the connection with the
    PLC is made immediately after the power is turned on
    You may establish and immediately disconnect → reconnect.
    : By setting the PLC connection wait time, it is possible to prevent
    PLC connection errors from occurring in this case as well.

    [Example]
    ・DevciceNet is 20sec
    ・0 seconds other than above
    (It will be in communication immediately after the connection with PLC is established)

3 Operation specifications common to Anybus boards

3-1 Common IO signal map for Anybus board

It is "IO map to use other than CC-LINK".

3-1-1 PLC output signal map (PLC ⇒ GSK)

Address		Size[Bytes]		Signal name	IO Size (Fn6-12 Bit7-6)			
HEX (bit conversion)	Decimal	HEX	Decimal (Bytes)		64	128	256	Maximum
+0h (0h)	+0	12h	18(144)	GSKinput signal : Unit 1	○	○	○	○※
+12h (+90h)	+18	Ah	10(80)	GSKinput signal : Unit 2	○	○	○	
+1Ch (+E0h)	+28	Ah	10(80)	GSKinput signal : Unit 3	○	○	○	
+26h (+130h)	+38	Ah	10(80)	GSKinput signal : Unit 4	○	○	○	
+30h (+130h)	+48	Ah	10(80)	GSKinput signal : Unit 5	○	○	○	
+3Ah (+1D0h)	+58	Ah	10(80)	GSKinput signal : Unit 6		○	○	
+44h (+1D0h)	+68	Ah	10(80)	GSKinput signal : Unit 7		○	○	
+4Eh (+270h)	+78	8h	8	Engine number		○	○	
+56h (+2B0h)	+86	10h	16	WorkID		○	○	
+66h (+330h)	+102	1Ah	26	Blank		○	○	
+80h	+128	80h	128	Blank			○	
+100h～ +1FF	+256	100h	256	Blank				

※ Maximum size varies depending on Anybus board. Check the specifications of each board

GSK input signal has the same mapping as M-NET.

(PLC⇒GSK)　mapping ※ All Anybus common

Operation ready	AUTO / MANU	Start	Inching start	Determination reset	Alarm reset	QL input	QL mode
Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6		GSK reset
XJOG+	XJOG-	YJOG+	YJOG-	INX 1	INX 2	INY 1	INY 2
cylinder1 returned	cylinder1 advanceed	X return signal	Y return signal	WAIT 1	WAIT 2		JOG start
Position1 signal	Position2 signal	Position4 signal	Position8 signal	Position16 signal	Position32 signal	Position64 signal	Position128 signal
IN	WAIT 3	WAIT 4			ZJOG rise	ZJOG descent	Tightening sampling start
Retightening signal	Retightening mode						
Height 1	Height 2	Height 3	Height 4	Height 5	Height 6	Height 7	Height 8
Height 9	Height 10	Height 11	Height 12	Height 13	Height 14	Height 15	Height 16
Axis off1	Axis off2	Axis off3	Axis off4	Axis off5	Axis off6	Axis off7	Axis off8
Axis off9	Axis off10	Axis off11	Axis off12	Axis off13	Axis off14	Axis off15	Axis off16
Axis off17	Axis off18	Axis off19	Axis off20	Axis off21	Axis off22	Axis off23	Axis off24
Axis off25	Axis off26	Axis off27	Axis off28	Axis off29	Axis off30		

3-1-2 PLC input signal map (GSK ⇒ PLC)

Address			Size[Bytes]		Signal name	IO Size (Fn6-12 Bit7-6) Decimal			
HEX (bit conversion)	Decimal		HEX	Decimal (Bytes)		64	128	256	
+0h (+0h)	+0		18h	2 4 (192)	GSKinput signal：Unit 1	○	○	○	○※
+18h (+C0h)	+24		Ah	10(80)	GSKinput signal：Unit 2	○	○	○	
+22h (+110h)	+34		Ah	10(80)	GSKinput signal：Unit 3	○	○	○	
+2Ch (+160h)	+44		Ah	10(80)	GSKinput signal：Unit 4	○	○	○	
+36h (+1B0h)	+54		Ah	10(80)	GSKinput signal：Unit 5	○	○	○	
+40h (+200h)	+64		Ah	10(80)	GSKinput signal：Unit 6		○	○	
+4Ah (+250h)	+74		Ah	10(80)	GSKinput signal：Unit 7		○	○	
+54h (+2A0h)	+84		2Ch	44	Tightening result ※See tightening result notification		○	○	
+80h	+128		80h	128	Tightening result (cont.)			○	
+100h～ +1FF	+256		100h	256	Tightening result (cont.)				

※ Maximum size varies depending on Anybus board. Check the specifications of each board

GSK output signal has the same mapping as M-NET.

(GSK⇒PLC)　　mapping　※ All Anybus common

Operation ready completed	NR unit OK	Battery OK	Total OK	Total NG	NR running	QL COMP.	Program running
Program bit 1	Program bit 2	Program bit 3	Program bit 4	Program bit 5	Program bit 6	Output enabled	Z axis home return complete
Tightening total OK	Tightening total NG	X axis home return complete	Y axis home return complete	ZERO/GAIN OK	ZERO/GAIN NG	Cycle stop	OUT
SYNC/MARK waiting	Retightening		Z axis Pressing	Z Up Lmt	Z Down Lmt	Tightening block OK	Tightening block NG
Block 1 end	Block 2 end	Block 4 end	Block 8 end	Block 16 end	Block 32 end	Position locator running	Z axis moving
Position1 output	Position2 output	Position4 output	Position8 output	Position16 output	Position32 output	Position64 output	Position128 output
X extent output1	X extent output2	Y extent output1	Y extent output2	Interference fault	Position locator fault	cylinder1 advance	cylinder1 return
Z output range	Z_UP1	Z_UP2	Z Down position				
Screw 1 OK	Screw 2 OK	Screw 3 OK	Screw 4 OK	Screw 5 OK	Screw 6 OK	Screw 7 OK	Screw 8 OK
Screw 9 OK	Screw 10 OK	Screw 11 OK	Screw 12 OK	Screw 13 OK	Screw 14 OK	Screw 15 OK	Screw 16 OK
Screw 17 OK	Screw 18 OK	Screw 19 OK	Screw 20 OK	Screw 21 OK	Screw 22 OK	Screw 23 OK	Screw 24 OK
Screw 25 OK	Screw 26 OK	Screw 27 OK	Screw 28 OK	Screw 29 OK	Screw 30 OK	Screw 31 OK	Screw 32 OK
Screw 33 OK	Screw 34 OK	Screw 35 OK	Screw 36 OK	Screw 37 OK	Screw 38 OK	Screw 39 OK	Screw 40 OK
Screw 41 OK	Screw 42 OK	Screw 43 OK	Screw 44 OK	Screw 45 OK	Screw 46 OK	Screw 47 OK	Screw 48 OK
Screw 49 OK	Screw 50 OK	Screw 51 OK	Screw 52 OK	Screw 53 OK	Screw 54 OK	Screw 55 OK	Screw 56 OK
Screw 57 OK	Screw 58 OK	Screw 59 OK	Screw 60 OK	Transferring results	Adjustment mode	Protection warning	Lifetime warning
Loose complete	Loose waiting	Retightening NG				Automatic operation	During Axis off
Work integration warning	Screw integration warning						

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3-2 Engine number

The engine number is used in the same meaning as the engine number notified from the ID controller.

When connected to ID controller, ID controller number has priority (this signal is not used)

Address (Bit conversion)	Contents
+4Eh (+270h〜)	Spare (0 fixed)
+51h (+278h〜)	Engine number 7 digit ASCII numbers
+50h (+280h〜)	Engine number 6 digit ASCII numbers
+51h (+288h〜)	Engine number 5 digit ASCII numbers
+52h (+290h〜)	Engine number 4 digit ASCII numbers
+53h (+298h〜)	Engine number 3 digit ASCII numbers
+54h (+2A0h〜)	Engine number 2 digit ASCII numbers
+55h (+2A8h〜)	Engine number 1 digit ASCII numbers

Specify 7-digit decimal number. (Maximum 9999999)

Specify with ASCII numbers (30h to 39h). If it is not a number, GSK treats it as "0".

GSKIF refers to the engine number when the start signal is ON.

It does not change even if it switches during automatic operation.

3-3 WORK ID

WORK ID is information added when saving history to the SD card.

It will not be reflected in online results.

Address (Bit conversion)	Contents
+56h (+2B0h〜)	WORK ID 1st character ASCII character
+57h (+2B8h〜)	WORK ID 2st character
〜	〜
+65h (+328h〜)	WORK ID 16st character

The number of characters is variable.

Only ASCII characters terminated by 0 (NULL) are valid.

Do not use "," for ASCII characters. (Alphanumeric only recommended)

GSKIF refers to the engine number when the start signal is ON.

It does not change even if it switches during automatic operation.

3-4 Tightening results

Report the result of screw tightening.

3-4-1 IO map of tightening results

The content of notification of tightening results varies depending on settings.
The following shows a standard example

Address	Contents	
54h + 00h	Screw 1 NG code	Result of screw 1
+ 02h	Screw 1 Time	
+ 04h	Screw 1 Angle	
+ 06h	Screw 1 Torque(Minimum unit: 0.1 Nm)	
+ 08h	Screw 2 NG code	Result of screw 2
+ 0Ah	Screw 2 Time	
+ 0Ch	Screw 2 Angle	
・	Screw 2 Torque(Minimum unit: 0.1 Nm)	
・	・	
・	・	
upper limit	Maximum size of each board or Specified IO size　※Refer to Fn 6-12 [Bit 7-6]	

Items to be notified vary depending on the tightening result notification pattern number specified in Fn6-12.
Select the notification pattern and IO size according to the PLC specifications.

Result data whose screw number is out of range is not output.
All result data of screw which does not work is 0000.

3-4-2 Pattern switching of tightening result data

The content of the tightening result notified per screw is specified by the tightening result pattern.
- Items to be notified are in 2 byte (1 word) unit.
- If there are many items per screw, the maximum screw number that can be notified decreases.
- Select a notification pattern according to the PLC request.

[Content of notification pattern of tightening result]

Pattern number Setting PC: decimal Fn 6-12: (HEX)	Number of bytes per screw	Offset	Contents	
0	8	+0	NG code	
		+2	Time	※1
(00h)		+4	Angle	
		+6	Torque	
1	6	+0	NG code	--
		+2	Angle	※1
(01h)		+4	Torque	
2	20	+0	NG code	--
		+2	PRE.T Time	--
(02h)		+4	PRE.T Angle	--
		+6	PRE.T Torque	--
		+8	PRE.T Area size	--
		+10	REA.T Time	--
		+12	REA.T Angle	--
		+14	REA.T Torque	--
		+16	REA.T Area size	--
		+18	REA.T Snag Torque	--
3	8	+0	NG code	--
		+2	Snag Torque	--
(03h)		+4	Angle	※1
		+6	Torque	
4	4	+0	Angle	※1
(04h)		+2	Torque	
5	12	+0	NG code	--
(05h)		+2	Alarm	--
		+4	SOC.T Torque	--
		+6	Snag Torque	--
		+8	Angle	※1
		+10	Torque	
6 (06h)	2	+0	Torque	--
7 (07h)	2	+0	Snag Torque	--
8 (08h)	4	+0	NG code	--
		+2	Torque	--
9 (09h)	4	+0	NG code	--
		+2	Snag Torque	--
(～F)	Reserve			

※1 Result data by priority
The result data will output the result of one operation even if there are multiple operations in the same block.
If two or more operations are executed in the same block, the last operation result is output

The priority order is as follows
Priority order　　(Hight)　1th：REA.T
　　　　　　　　　　　　　2th：REV.T
　　　　　　　　　　　　　3th：PRE.T
　　　　　　　(Low)　4th：SOC.T

Unit of each data

Item	Unit	Remarks
Time	1ms	
Angle	0.1deg	
Torque	0.1Nm	
Area size	1Nm・deg	
NG code	HEX 4 digits	It will be FFFF if the operation is interrupted without an alarm. When the operation is interrupted by the occurrence of the alarm **, the NG code becomes FF**. (Example) In the case of alarm C4, FFC4
Alarm	HEX 4 digits	The first 2digits will be IF Alarm　／ The last 2digits will be controller Alarm

3-4-3 Number of screws that can be notified

It can be calculated by the following formula.

Notifiable number of screws = (Size-Top) / Number of bytes per screw

How to find Size	[When the maximum specification of IO size (see Fn 6-12) is "00"] Refer to the specifications of each board to check the maximum size. [Maximum specification of IO size (when Fn 6-12 [Bit 7-6] is other than "00")] Select one of 64/128/256 bytes depending on the setting.
How to find Top	Refer to the IO map and check the start address of the tightening result. The start address differs depending on the automatic adjustment of the tightening result address (Fn6-12). [Do not adjust automatically] Use the tightening result address of the IO map table as it is (84) [Automatically adjust] Use the offset value of the next output signal of the unit being used. If you are using up to unit 4, the address of unit 5 = 54
Number of bytes per screw	It depends on the tightening result pattern (Fn 6-12 [Bit 5-0]. Please refer to the table by pattern for details.

【Reference】

As a result of tightening results, the maximum number is as follows(Top=84).

Number of bytes per screw	Maximum number of screws that can be notified by IO size				
	64	128	256 CC-LINK	500 Ether/IP	512 Profi-IO DeviceNet
4 bytes (2 items)	0	11	43	60 (104)	60 (107)
6 bytes (3 items)	0	7	29	60 (69)	60 (71)
8 bytes (4 items)	0	5	21	52	53
10 bytes (5 items)	0	4	17	41	43
12 bytes (6 items)	0	3	14	34	35
20 bytes (10 items)	0	2	8	20	21

() Is the calculated value. The maximum thread number is over 60.

3-4-4 About endian of tightening result

The tightening result is 2-byte data (1 word) data.
There are two types of data order (endian): Big / Little.

Endian		Example: When the data is "1234h"	
		Address + 0	Address + 1
Big	Line up in descending order of digit	12h	34h
Little	Arrange in ascending order of digits	34h	12h

It is up to the board to decide which endian to use.
Check the specifications of each board.

3-4-5 Reading timing of tightening result

Read the result data at the timing when the output signal "total OK (NG)" is 1.
(Wait is not necessary. Result data is also output when the overall judgment becomes 1)
All results are cleared to 0 by "judgment reset" or "ALL reset"

3-5 PLC connection error immediately after power on

Power on, Anybus board and PLC start connection.
・Flashing of LED1 stops while PLC is connected.
・When the connection with the PLC is completed and it becomes operational,
  the LED 1 will blink green.
・When the power can not be connected to the sequencer even after about 50 seconds when the
  power is turned on, a connection error occurs.

PLC connection error alarm immediately after power ON can not be canceled.

3-6 PLC startup waiting time setting (Fn 6-15)

Depending on the PLC model, it may be temporarily disconnected and reconnected immediately
after the connection is completed after the power is turned on.
When GSK detects this disconnection, it will be considered as a PLC connection error and will be
in an alarm state.
Such connection errors can be avoided by setting the PLC startup wait time.
Set a sufficient time in consideration of the PLC reconnection timing.

3-7 PLC connection error during operation

During operation GSKIF constantly monitors the connection with the sequence.
A connection error occurs if the connection can not be made with a sequence of about 1 second.
This alarm can be cleared.
Please input the alarm reset signal from the sequencer to GSK after the connection between the
GSK and the sequencer is restored.

## 4 DeviceNet board (GSK-IFDN) connection specification

4-1 IO Specifications

IO map	Anybus standard IO map
IO maximum size	PLC output signal 128 bytes (80 h) PLC input signal 512 bytes (200 h)
Endianness of tightening result	Little

4-2 Board settings
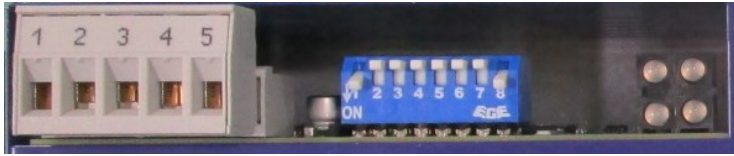
(1) Connect to the DeviceNet connector on the I / F unit panel surface.

Pin	Signal	Description
1	V-	Negative supply voltage
2	CAN_L	CAN_L_bus line
3	SHIELD	Cable shield
4	CAN_H	CAN_H bus line
5	V+	Positive supply voltage
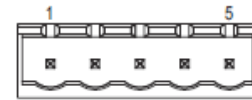
(2) Transmission rate

Set the transmission speed with S1 and S2 of the configuration switch on the I / F module panel surface.

S1	S2	Baudrate
OFF	OFF	125k
OFF	ON	250k
ON	OFF	500k
ON	ON	(reserved)

Reference: Giken industrial default value = 500k

(3) MAC ID

Set the MACID on S3-S8 of the configuration switch on the I / F unit panel side.

S3	S4	S5	S6	S7	S8	MACID
OFF	OFF	OFF	OFF	OFF	OFF	0
OFF	OFF	OFF	OFF	OFF	ON	1
OFF	OFF	OFF	OFF	ON	OFF	2
OFF	OFF	OFF	OFF	ON	ON	3
---	---	---	---	---	---	---
ON	ON	ON	ON	OFF	OFF	60
ON	ON	ON	ON	OFF	ON	61
ON	ON	ON	ON	ON	OFF	62
ON	ON	ON	ON	ON	ON	63

Reference: Giken industrial default value = 1

4-3 LED display
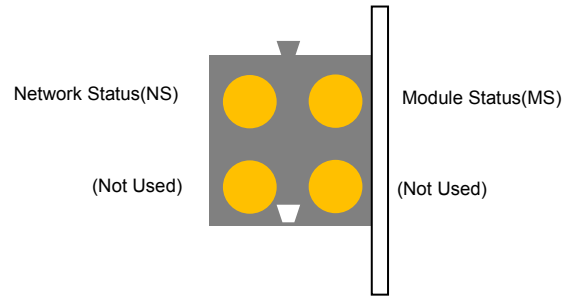
LED	State	Meaning
Network Status	OFF	Power off, not online
	Green	Online, connection established
	Flashing green	Online, connection not established
	Red	Link failure
	Flashing red	Connection timeout
Module Status	OFF	Power off
	Green	Normal operation
	Flashing green	During auto baud rate
	Red	Major error condition
	Flashing red	Rare error condition
	Red/Green	Device self test in progress

5 CC-Link board (GSK-IFCC) connection specification

5-1 IO Specifications

Use a dedicated IO map of CC-LINK.
You can not switch the IO map.

IO map	CC-LINK dedicated map
IO maximum size	PLC output signal 368 bytes (70 h) PLC input signal 368 bytes (170 h) ※ Signal 112 + Result 256 bytes ※ Bit area 112 bytes (70 h) + word area 256 bytes (100 h)
Endianness of tightening result	Big
Limit etc	**can not switch the IO map.** ・Automatic adjustment of the tightening result address of Fn 6-12 is invalid. ・IO size specification of Fn 6-12 is invalid.

PLC output signal dedicated to CC-LINK (PLC ⇒ IF)
Allocate to the bit data area (RXm). (m is the start IO number)
The assignment contents are the same as Anybus common boards.

Address		Size [byte]		Signal name	Description
HEX (RYm)	Decimal	HEX	Decimal (byte)		
+0h (RYm +0h)	+10	12h	18(144)	GSK input signal: unit 1	The arrangement of data is the same as Anybus common map
+12h (RYm +90h)	+18	Ah	10(80)	GSK input signal: unit 2	
+1Ch (RYm +E0h)	+28	Ah	10(80)	GSK input signal: unit 3	
+26h (RYm +130h)	+38	Ah	10(80)	GSK input signal: unit 4	
""				Same up to UNIT7	
+4Eh (RYm +270h)	+78	8h	8(64)	Engine number	
+56h (RYm +2B0h)	+86	10h	16(128)	WORK ID	
+66h (RYm +330h) ～ +6F (RXm +37Fh)	+102	Ah	10	Empty	
Total size 112byte(70h) / 896					

PLC input signal for CC-LINK (IF ⇒ PLC)
The UNIT signal is assigned to the bit data area (RXm). (m is the start IO number)
The assignment contents are the same as Anybus common boards.

Address		Size [byte]		Signal name	Description
HEX (Bit conversion RYm)	Decimal	HEX	Decimal (bit)		
+0h (RXm +0h)	+0	18h	24(192)	GSK output signal: unit 1	The arrangement of data is the same as Anybus common map
+18h (RXm +C0h)	+24	Ah	10(80)	GSK output signal: unit 2	
+22h (RXm +110h)	+34	Ah	10(80)	GSK output signal: unit 3	
+2Ch (RXm +160h)	+44	Ah	10(80)	GSK output signal: unit 4	
+36h (RXm +1B0h) ""	+54	Ah	10(80)	Same up to UNIT7	
+54h (+2A0h) ""				Empty	
+6F (RXm+378～+37Fh)	+111	1h	1(8)	Remote READY signal RXm + 37Bh is always "1"	
Total size 112byte(70h) / 896					

The tightening result is assigned to the word data area (RWrm)
The assignment contents are the same as Anybus common boards.

Address※		Size		Description
HEX	Decimal			
RWrm +0h ～ RWrm +7Fh	+0 ～ +127	80h word (100hByte) (256Byte)	Tightening result ※ Refer to the tightening result notification	The arrangement of data is the same as Anybus common map

Total size 256 bytes (100h)
※ The address of RWrm is incremented by 1 word (2 bytes).

5-2 Board settings

CC-Link system overview
・Supported version: CC-Link Ver. 2.00
　　　　　　　　　　(Cannot be connected to the master station of Ver. 1.00)
・Station type:　　　　　　　Remote device station (slave station)
・Number of occupied stations: 4 station
・Extended cyclic :　　　　　8 times

Connector pin number	Signal name
1 （Upper / right side LED side）	DA
2	DB
3	DG
4	SLD
5 (Lower / left side)	FG

Transmission rate

Switch setting	Transmission rate
0	156kbps
1	625kbps
2	2.5Mbps
3	5.0Mbps
4	10.0Mbps
5～8	Not applicable
9	Reservation

Slave station number
Set the station number with the rotary switch in the middle of the board and on the top
(status LED side).
The middle is the digit of 10 and the top is the digit of 1. The setting range is 01 to 64 (decimal number). (99 is reserved)

5-3 LED display
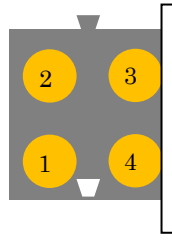
（Rotary switch side)

Number	Name	State	Meaning
1	RUN （Green）	Lights up	Anybus normal
		Off	Anybus standby state
2	ERROR(Red)	Lights up	Anybus CRC error (Station number selection error or Communication speed selection error)
		Off	No abnormality
3	RD(Green)	Lights up	CC-Link During data reception
		Off	CC-Link No data received
4	SD （Green）	Lights up	CC-Link During data transmission
		Off	CC-Link No data transmission

6 Profinet-IO board (GSK-IFPNIO) connection specification

6-1 IO Specifications

IO map	Anybus standard IO map
IO maximum size	PLC output signal 128 bytes (80 h) PLC input signal 512 bytes (200 h)
Endianness of tightening result	Big

6-2 Board settings
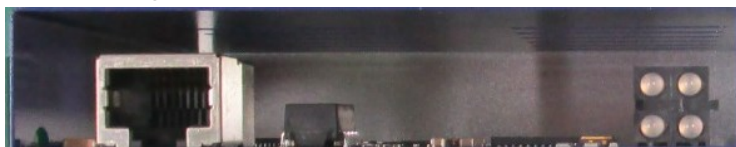
There is no switch on the board.
Connect to the EtherNet HUB with a LAN cable.

・Number of PROFINET slots: 1 slot
・Device Vendor ID: 0x010C (board standard)
・Device ID of device: 0x0001 (0x0006) (board standard)

6-2-1 About GSD file

When connecting with PROFINET, it is called a GSD controller dedicated GSD file
You need to submit an XML file to the equipment manager.
The GSD file for GSK controller uses the standard file downloaded from HMS.

【PROFINBET IO】
GSDML-V2.3-HMS-ABSPRT-20131114.xml

※ GSD file differs depending on FW version of Anybus board.
The above file is the latest GSD file at the moment.

6-3 Network Connection Settings

Profinet is a PLC using Ethernet technology.
It is necessary to set the IP address etc. in order to identify the device.

There are two ways to set the IP address.

Priority	Method	Description
Hight	IP address setting using GSK setting software	You can check the setting contents on the PC screen
Low	Operate with the IP address stored on the Anybus board	Requires dedicated software to store on the board

※ In general, we recommend using the GSK setting software, which can easily check the address.

+

6-3-1 IP address setting using GSK setting software (high priority)

Connect GSK and PC and register IP address, subnet mask etc using GSK setting software.
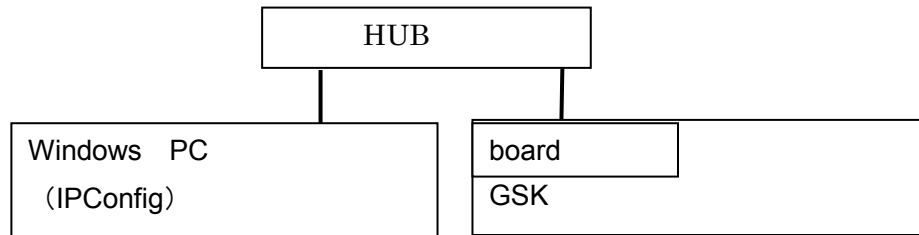Start GSK Setting Software and select
Main Menu ⇒Options ⇒ Network Settings ⇒ PLC Network Settings

After changing, please turn off / on GSK power. Operates with the set IP address.
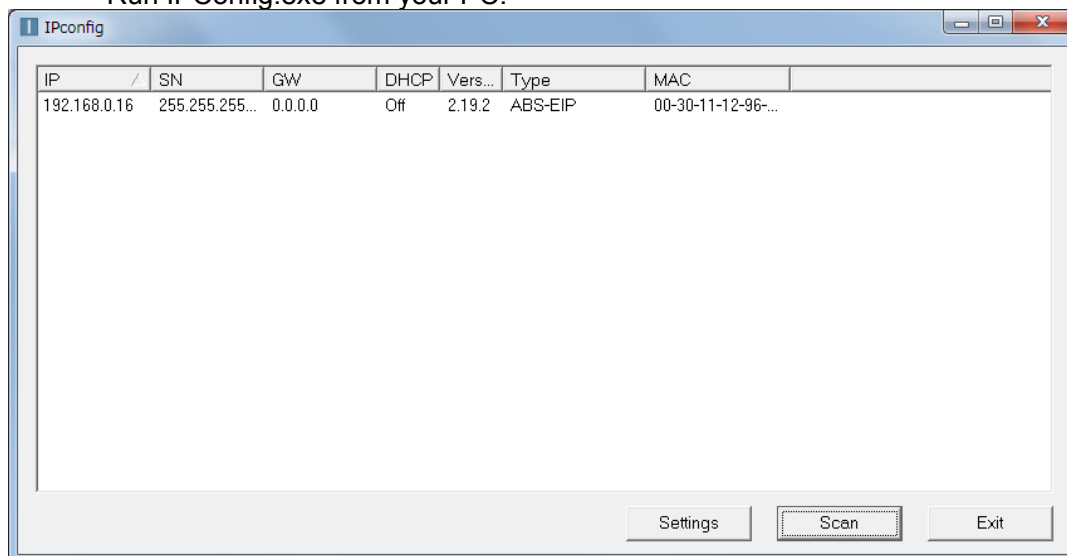
When the IP address of PLC network setting is "0.0.0.0" It operates with the IP address stored in the Anybus board itself.

6-3-2 Operates with the IP address stored on the Anybus board. (Low priority)

When the IP address of PLC network setting is 0.0.0.0, it operates with the IP address memorized by Anybus board.
To change the IP address, use the software IPConfig provided by HMS.
IP address setting procedure

1) Connect PC and GSK with LAN cable.

```
          ┌─────────────────────────┐
          │           HUB           │
          └─────────────────────────┘
             │                  │
  ┌──────────────────┐   ┌──────────────────────┐
  │ Windows   PC     │   │ board                │
  │                  │   ├──────────────────────┤
  │  （IPConfig）     │   │ GSK                  │
  └──────────────────┘   └──────────────────────┘
```

2) GSK power On.
Run IPConfig.exe from your PC.

IP	/	SN	GW	DHCP	Vers...	Type	MAC
192.168.0.16		255.255.255...	0.0.0.0	Off	2.19.2	ABS-EIP	00-30-11-12-96-...

Settings   Scan   Exit

If the IP address is not displayed, press "Scan".
Select the IP address (192.168 ,,,) and click on it.
I do not use the Settings button.

4) IP address change operation

Change the IP address, subnet mask etc. and press Set to store the value.

5) Confirmation of changed IP
  GSK power Off.
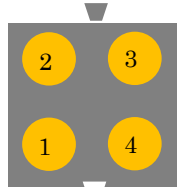 After turning all switches off, turn on GSK power.
  Use IPConfig to confirm that the IP address has changed.

6-3-3 Checking IP Address in Operation
  You can check the working IP address using Fn3 display of GSK driver.
  For details, refer to the GSK controller instruction manual.

6-4 LED display

(Connector side**)**

Number	Name	State	Meaning
1	Port 1 Link	Green light	Link establishment
		Flashing green	During data exchange
		Off	Link not established
2	communication status	Green light	Online RUN state Connection established with IO controller (RUN state)
		Green light	Online STOP status Connection established with IO controller (STOP state)
		Off	Off-line Not connected with IO controller
3	module status	Green light	Initial No error
		Flashing green	Diagnostic data arrival
			A tool for device identification was used
		Flashing red	Configuration error
			No station name or no IP address assigned
			(Anubus board) internal error
		Off	Power off or not initialized
4	unused		

7 Ethernet / IP board (GSK-IFET) connection specification

7-1 IO Specifications

IO map	Anybus standard IO map
IO maximum size	PLC output signal 128 bytes (80 h)
	PLC input signal 500 bytes (1F4h)
Endianness of tightening result	Big

7-2 Board settings

Connect with 10M / 100M Ethernet. Connection requires a switching HUB.
The order of port connection depends on equipment.
(The configuration of the equipment is work on the sequencer side and

can not be understood on the GSK side)

External view

Switches 1 to 8 are used to specify the IP address. Recommended is 0FF.
For details, refer to Network connection settings.

7-3 About EDS File

PLC needs EDS file when connecting via Ethernet / IP
EDS file uses the file downloaded from HMS.
The latest EDS file as of 12/5/2018/ is 005A000C000E0200.eds.

7-4 Network Connection Settings

It is necessary to set the IP address etc. in order to identify the device.

There are three ways to set the IP address.

Priority	Method	Description
Hight	IP address setting using GSK setting software	You can check the setting contents on the PC screen
Middle	Set IP address on switch on Anybus board	When any one of switches 1 to 8 is ON
Low	Operate with the IP address stored on the Anybus board	Requires dedicated software to store on the board

※ In general, we recommend using the GSK setting software, which can easily check the address.

7-4-1 IP address setting using GSK setting software (high priority)

Connect GSK and PC and register IP address, subnet mask etc using GSK setting software.
Start GSK Setting Software and select
Main Menu ⇒ Options ⇒ Network Settings ⇒ PLC Network Settings

After changing, please turn off / on GSK power. Operates with the set IP address.

When the IP address of PLC network setting is "0.0.0.0" It operates with the IP address stored in the Anybus board itself.

7-4-2 Set the IP address on the switch of Anybus board. (Middle priority)

If the IP address in the PLC network setting is 0.0.0.0, specify the IP address on the Anybus board switch.

The IP address will be fixed at 198.168.0.XXX.
Specify the value of XXX in hexadecimal. Please turn on the switch and decide the IP address referring to the following table.

switch	Bit position	Value (decimal)
SW1	Bit7	128
SW2	Bit6	64
SW3	Bit5	32
SW4	Bit4	16
SW5	Bit3	8
SW6	Bit2	4
SW7	Bit1	2
SW8	Bit0	1

(Example) When setting XXX = 50, SW3, 4 and 7 are turned ON.

7-4-3 Operate with the IP address stored on the Anybus board. (Low priority)
  If all switches are OFF (XXX = 0), the Anybus board operates with the IP address stored by itself. (Low priority)

 It is possible to use IP address other than 168.198.0.XXX.
  The change method uses dedicated software IPConfig.
  ※Refer to the section of Profinet-IO for details

  ・Turn ON the switch before turning on the power and
  set XXX of 198.168.0.XXX to other than 0

  ・Set the IP address using IPConfig.

  ・Turn off the power and return all switches to OFF.

  When the power is turned on again, it operates with the set IP address.
  Use IPConfig to check that the IP address has changed.

7-5 LED display
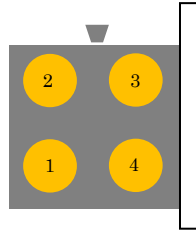
Number	State	Meaning
1	OFF	Link not sensed
	Green light	Link sensed
2	Off	No power
	Green light	Controlled by a Scanner in Run state
	Flashing green	Not configured, or Scanner in Idle state
	Flashing red	A minor recoverable fault has been detected
	Red	A major unrecoverable fault has been detected
	Green/Red	Self-test in progress
3	Off	No power or no IP address
	Green light	On-line, one or more connections established
	Flashing green	On-line, no connections established
	Red	Duplicate IP address, fatal error
	Flashing red	One or more connections timed out
	Green/Red	Self test in progress
4	Flashing green	each time a packet is received or transmitted

Main condition:

LED1	LED2	LED3	Meaning
Off	Green light	OFF	Not connected to HUB
Green light	Flashing green	Flashing green	Connected to HUB Before PLC connection start
Green light	Green light	Green light	Connected to HUB PLC connected

Revision history

Version	DATE	Contents of change	Remarks
003	May.2019	New production	
004	Mar.2020	E-mail address change	
005	Mar.2023	Addition of overseas bases	

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