FnIO G - Series:

GN-9587

GN-9587 (Profinet Network Adapter)

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Table of Contents

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History

REV.	PAGES	REMARKS	DATE	Editor
Preliminary		Preliminary	August 23, 2019	Joonho, Park
1.01		Revision related to UL certification	Mar 10, 2020	GWLEE
1.02	9	Changed system/field power LED indicate	June 01, 2023	Joonho, Park

1 ENVIRONMENT SPECIFICATION

Environmental specification	
Operating Temperature	-40℃ ~ 60℃ : 1.5A full load is allowed.
UL Temperature	-20℃~60℃
Storage Temperature	-40℃~85℃
Relative Humidity	5% ~ 90% non-condensing
Mounting	DIN rail

General specification	
Shock Operating	IEC 60068-2-27
Vibration Resistance	Based on IEC 60068-2-6 DNVGL-CG-0039 : Vibration Class B, 4g
Industrial Emissions	EN 61000-6-4/A11 : 2011
Industrial Immunity	EN 61000-6-2 : 2005
Installation Position	Vertical and horizontal installation is available.
Product Certifications	CE, UL, FCC

2 GN-9587 (PROFINET NETWORK ADAPTER)

2.1 GN-9587 Specification

Items	Specification
Communication Specification	
Adapter Type	Slave node (Profinet)
Protocol	Profinet, Modbus RTU, DCP-Hello
Max. Expansion Module	32 slots
Max. Data Size	Max 1024 bytes
Max Length Bus Line	Up to 100m from Ethernet Hub/Switch with twisted CAT5 UTP/STP
Max. Nodes	Limited by Profinet Specification.
Baud Rate	100Mbps, Auto-negotiation, Full duplex
Interface Connector	RJ-45 socket * 2pcs
IP-Address Setup	Via Master Device Software
Serial Port	RS232 for MODBUS/RTU, Touch Pannel
Serial Configuration (RS232)	Node : 1 (Fixed) Baud Rate : 115200 (Fixed) Data bit : 8 (Fixed) Parity bit : No parity (Fixed) Stop bit : 1 (Fixed)

Indicator	6 LED
	    1 Green/Red, Module Status (MOD)
	    1 Green, Physical Connection (NET)
	    1 Red, Network Error (ERROR)
	    1 Green/Red, Expansion I/O Module Statsus (IOS)
	    1 Green, System Power Status
	    1 Green, Field Power Status
	2 LED (each RJ45 Connector)
	    1 Yellow, Link/Active
	    1 Green, Not used

Module Location	Starter module left side of G-Series system
Field Power Detection	About 14Vdc
General specification	
UL System Power	Supply voltage : 24Vdc nominal, Class 2
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 15~30Vdc Protection : Output current limit (Min. 1.5A) Reverse polarity protection
Power Dissipation	80mA typical @ 24Vdc
Current for I/O Module	1.5A @ 5Vdc
Isolation	System power to internal logic : Non-isolation System power I/O driver : Isolation
UL Field Power	Supply voltage : 24Vdc nominal, Class 2
Field Power	Supply voltage : 24Vdc typical (Max. 30Vdc) * Field Power Range is different depending on IO Module series. Refer to IO Module`s Specification.
Max. Current Field Power Contact	DC 10A Max
Wiring	I/O Cable Max. 2.0mm²(AWG 14)
Torque	0.8Nm(7 lb-in)
Weight	177g
Module Size	54mm x 99mm x 70mm
Environment Condition	**Refer to '1. Environment Specification'**

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2.2 GN-9587 Wiring Diagram
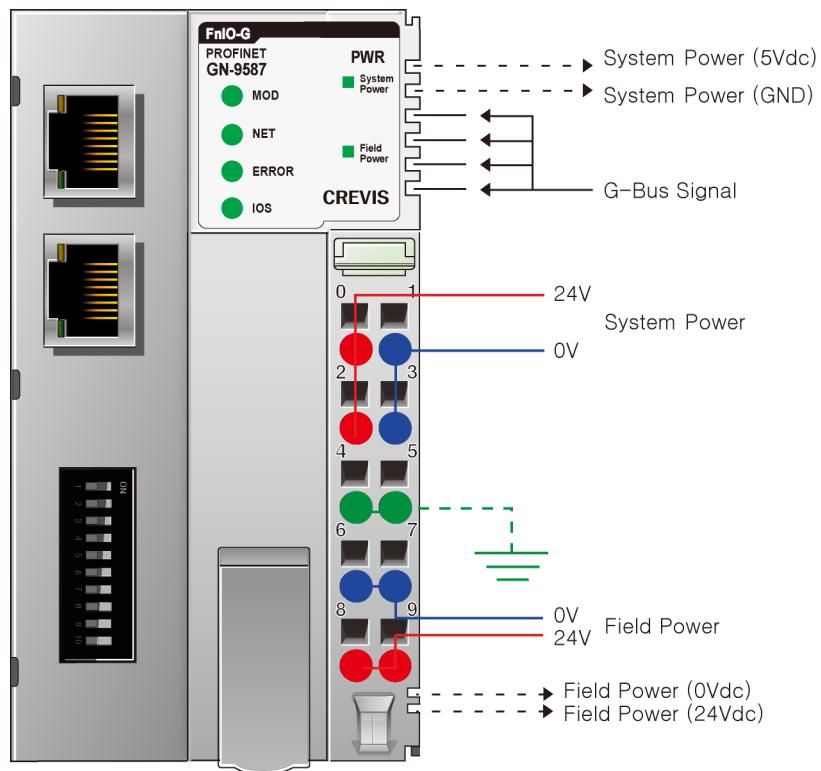
Pin No.	Signal Description	Signal Description	Pin No.
0	System Power, 24V	System Power, Ground	1
2	System Power, 24V	System Power, Ground	3
4	F.G	F.G	5
6	Field Power, Ground	Field Power, Ground	7
8	Field Power, 24V	Field Power, 24V	9

2.3 GN-9587 LED Indicator

2.3.1 LED Indicator
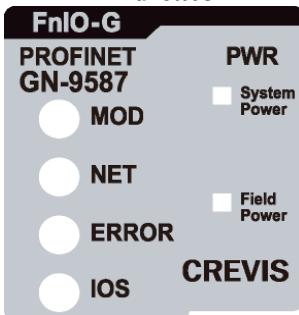
LED No.	LED Function / Description	LED Color
MOD	Module status	Green/Red
NET	Current communication status	Green
ERROR	Error Status (Profinet)	Green
IOS	Extension Module Status	Green/Red
System Power	System Power Enable	Green
Field Power	Field Power Enable	Green

2.3.2 MOD (Module Status LED)

Status	LED	To indicate
No Powered	OFF	No power is supplied to the unit.
Device Operational	Green	The unit is operating in normal condition.
Unrecoverable Fault	Red	The device has an unrecoverable fault. - Memory error or CPU watchdog error.

2.3.3 NET (Network Status LED)

Status	LED	To indicate
No Powered	OFF	No power is supplied to the unit.
Communication	Green	Normal communication.
Communication Ready	Flashing Green	Link Connection.
Communication error	Red	Asic chip error

2.3.4 ERROR (Error Status LED)

Status	LED	To indicate
No Error	OFF	No Error.
Connection error	Red	Communication connection error. Asic chip error.
Configuration error	Flashing Red	Can not data read of Profinet Chip or Invalid node switch number.

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2.3.5 IOS LED (Extension Module Status LED)

Status	LED	To indicate
Not Powered	OFF	Device may not be powered.
No Expansion Module	Flashing Red	Adapter has no expansion module
Internal Bus Connection, Run Exchanging I/O	Green	Exchanging I/O data.
Expansion Configuration Failed	Red	One or more expansion module occurred in fault state. - Detected invalid expansion module ID. - Overflowed Input/Output Size - Too many expansion module - Initialization failure - Communication failure. - Changed expansion module configuration. - Mismatch vendor code between adapter and expansion module.

2.3.6 Field Power, System Power LED (Field Power, System Power Status LED)

Status	LED	To indicate
No field, System power	OFF	Not supplied 24Vdc system power, 5Vdc system power.
Supplied field, System power	Green	Supplied 24Vdc field power, 5Vdc system power.

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2.4 GN-9587 Electrical Interface

2.4.1 RJ-45 Socket
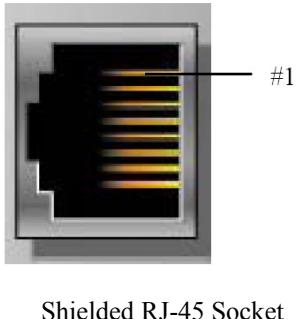
RJ-45	Signal Name	Description
1	TD+	Transmit +
2	TD-	Transmit -
3	RD+	Receive +
4	-	
5	-	
6	RD-	Receive -
7	-	
8	-	
Case	Shield	

Shielded RJ-45 Socket

2.4.2 Dip Switch

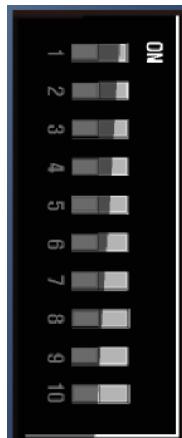| DIP Pole#	Description	
1	Node ID Bit0	Device Name (GN9587-XX)
2	Node ID Bit1	- XX must a value between 1~99.
3	Node ID Bit2	
4	Node ID Bit3	* If the switch value is 0, it switches to
5	Node ID Bit4	the "User Setting Station Name"
6	Node ID Bit5	function.
7	Node ID Bit6	
8	Speed-Up for DCP-Hello Protocol (On: used, Off : not used)	
9	Setting for DATA FORMAT (On: MOTORORA, Off : INTEL)	
10	PLC STOP Action (On: Last Hold Value, Off : I/O All Clear)	

• **When the dip switch is not set to non-zero (1~99):**
If the decimal value of the dip switch is not zero (0), the name of device will be fixed as
"GN9587-xx" (xx: 1~99). You must put the fixed device name.

• **When the dip switch is set to zero(0):**
GN-9587 Devices on a PROFINET subnet must have unique names. The device names must satisfy DNS naming
conventions. This means that the following rules must be observed:
– Names are limited to a total of 127 characters (letters, numbers, dashes or dots)
– Any component part (that is, a character string between two dots) of the device name may only be up to 63
characters long.
– Names cannot contain any special characters such as umlauts, parentheses, underscores, forward or backward
slashes, empty spaces, etc. The dash is the only special character allowed.
– Names must not begin or end with the "-" or "." characters.
– Names must not have the format n.n.n.n (where n = 0...999).
– The device name must not start with numbers.
Device names are assigned to PROFINET IO device when the device is being set up and placed in operation for the
first time ("commissioned").
The default name is "GN9587-address".

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2.4.3 RS232 Port for MODBUS/RTU, Touch Pannel

Pin #1
Pin #2
Pin #3
Pin #4
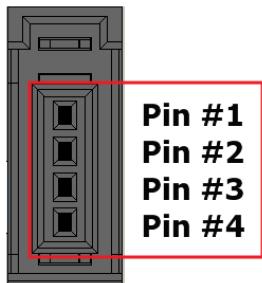
RS232 (37204-62A3-004PL/3M)		
Pin#	Signal Name	Description
1	Reserved	----
2	TXD	RS232 TXD
3	RXD	RS232 RXD
4	GND	RS232 GND

3 I/O Process Image Map

An expansion module may have 3 types of data as I/O data, configuration parameter and memory register.
The data exchange between network adapter and expansion modules is done via an I/O process image data by G-Series protocol. The following figure shows the data flow of process image between network adapter and expansion modules.
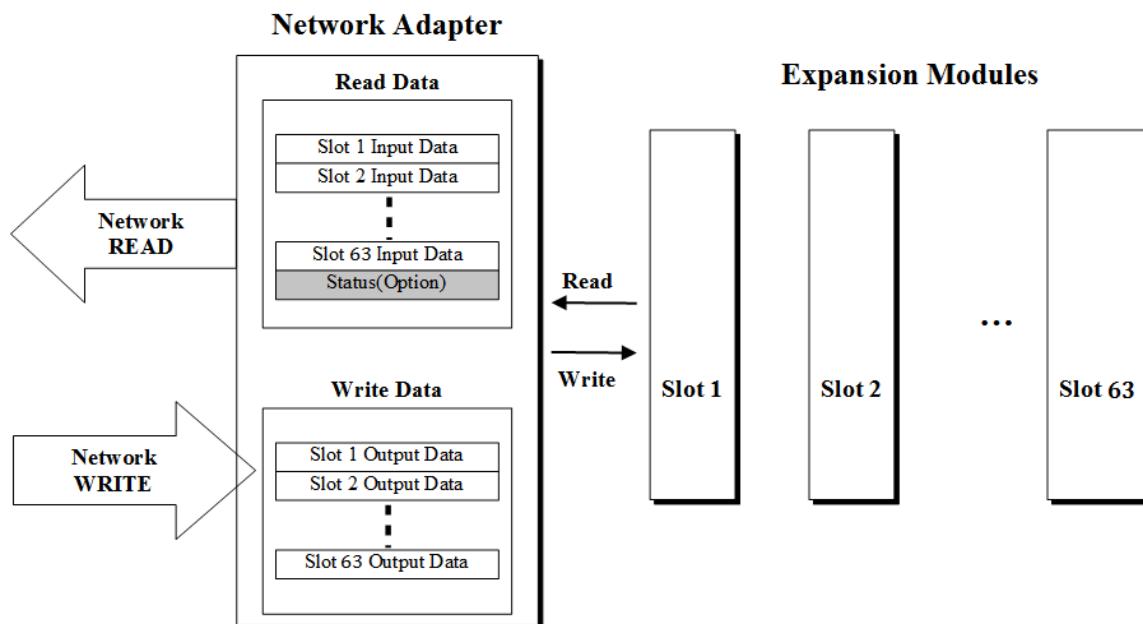
3.1 Mapping Data into Image Table

3.1.1 Discrete Input Module

- 4 Point Input Module

Input Module Data

				D3	D2	D1	D0

Input Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	Reserved				D3	D2	D1	D0

- 8 Point Input Module

Input Module Data	D7	D6	D5	D4	D3	D2	D1	D0

Input Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0

- 16 Point Input Module

Input Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0

Input Module Data	D7	D6	D5	D4	D3	D2	D1	D0
	D15	D14	D13	D12	D11	D10	D9	D8

- 32 Point Input Module

Input Module Data	D7	D6	D5	D4	D3	D2	D1	D0
	D15	D14	D13	D12	D11	D10	D9	D8
	D23	D22	D21	D20	D19	D18	D17	D16
	D31	D30	D29	D28	D27	D26	D25	D24

Input Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0
	Byte 1	D15	D14	D13	D12	D11	D10	D9	D8
	Byte 2	D23	D22	D21	D20	D19	D18	D17	D16
	Byte 3	D31	D30	D29	D28	D27	D26	D25	D24

3.1.2 Discrete Output Module

- 4 Point Output Module

Output Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	Reserved				D3	D2	D1	D0

Output Module Data		D3	D2	D1	D0	

- 8 Point Output Module

Output Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0

Output Module Data	D7	D6	D5	D4	D3	D2	D1	D0

- 16 Point Output Module

Output Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0
	Byte 1	D15	D14	D13	D12	D11	D10	D9	D8

Output Module Data	D7	D6	D5	D4	D3	D2	D1	D0
	D15	D14	D13	D12	D11	D10	D9	D8

- 32 Point Output Module

Output Image Value	Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Byte 0	D7	D6	D5	D4	D3	D2	D1	D0
	Byte 1	D15	D14	D13	D12	D11	D10	D9	D8
	Byte 2	D23	D22	D21	D20	D19	D18	D17	D16
	Byte 3	D31	D30	D29	D28	D27	D26	D25	D24

Output Module Data	D7	D6	D5	D4	D3	D2	D1	D0
	D15	D14	D13	D12	D11	D10	D9	D8
	D23	D22	D21	D20	D19	D18	D17	D16
	D31	D30	D29	D28	D27	D26	D25	D24

3.1.3 Analog Input Module

- 4 Channel Analog Input Module

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Input Module Data

Analog Input Ch0
Analog Input Ch1
Analog Input Ch2
Analog Input Ch3

Input Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Analog Input Ch0 low byte							
Byte 1	Analog Input Ch0 high byte							
Byte 2	Analog Input Ch1 low byte							
Byte 3	Analog Input Ch1 high byte							
Byte 4	Analog Input Ch2 low byte							
Byte 5	Analog Input Ch2 high byte							
Byte 6	Analog Input Ch3 low byte							
Byte 7	Analog Input Ch3 high byte							

- 8 Channel Analog Input Module

Input Module Data

Analog Input Ch0
Analog Input Ch1
Analog Input Ch2
Analog Input Ch3
Analog Input Ch4
Analog Input Ch5
Analog Input Ch6
Analog Input Ch7

Input Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Analog Input Ch0 low byte							
Byte 1	Analog Input Ch0 high byte							
Byte 2	Analog Input Ch1 low byte							
Byte 3	Analog Input Ch1 high byte							
Byte 4	Analog Input Ch2 low byte							
Byte 5	Analog Input Ch2 high byte							
Byte 6	Analog Input Ch3 low byte							
Byte 7	Analog Input Ch3 high byte							
Byte 8	Analog Input Ch0 low byte							
Byte 9	Analog Input Ch0 high byte							
Byte 10	Analog Input Ch1 low byte							
Byte 11	Analog Input Ch1 high byte							
Byte 12	Analog Input Ch2 low byte							
Byte 13	Analog Input Ch2 high byte							
Byte 14	Analog Input Ch3 low byte							
Byte 15	Analog Input Ch3 high byte							

3.1.4 Analog Output Module

- 4 Channel Analog Input Module

Output Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Analog Output Ch0 low byte							
Byte 1	Analog Output Ch0 high byte							
Byte 2	Analog Output Ch1 low byte							
Byte 3	Analog Output Ch1 high byte							
Byte 4	Analog Output Ch2 low byte							
Byte 5	Analog Output Ch2 high byte							
Byte 6	Analog Output Ch3 low byte							
Byte 7	Analog Output Ch3 high byte							

Output Module Data

Analog Output Ch0
Analog Output Ch1
Analog Output Ch2
Analog Output Ch3

- 8 Channel Analog Input Module

Output Image Value

Bit No	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Byte 0	Analog Output Ch0 low byte							
Byte 1	Analog Output Ch0 high byte							
Byte 2	Analog Output Ch1 low byte							
Byte 3	Analog Output Ch1 high byte							
Byte 4	Analog Output Ch2 low byte							
Byte 5	Analog Output Ch2 high byte							
Byte 6	Analog Output Ch3 low byte							
Byte 7	Analog Output Ch3 high byte							
Byte 8	Analog Output Ch4 low byte							
Byte 9	Analog Output Ch4 high byte							
Byte 10	Analog Output Ch5 low byte							
Byte 11	Analog Output Ch5 high byte							
Byte 12	Analog Output Ch6 low byte							
Byte 13	Analog Output Ch6 high byte							
Byte 14	Analog Output Ch7 low byte							
Byte 15	Analog Output Ch7 high byte							

Output Module Data

Analog Output Ch0
Analog Output Ch1
Analog Output Ch2
Analog Output Ch3
Analog Output Ch4
Analog Output Ch5
Analog Output Ch6
Analog Output Ch7

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3.2 Example of Input Process Image (Input Register) Map

Input image data depends on slot position and expansion slot data type. Input process image data is only ordered by expansion slot position .

- **For example slot configuration**
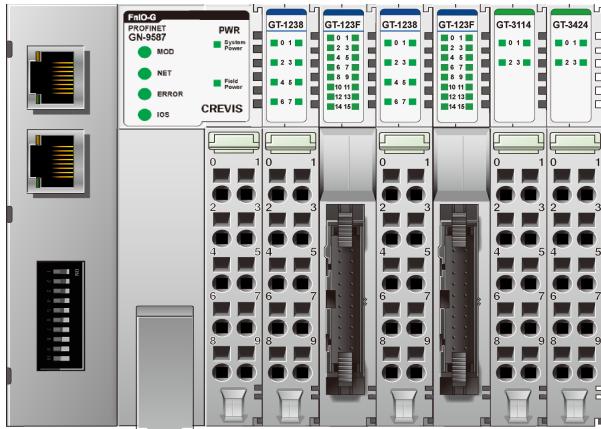
Slot Address	Module Description
#0	ProfiNet Adapter
#1	8-discrete input
#2	16-discrete input
#3	8-discrete input
#4	16-discrete input
#5	4-analog input
#6	4-analog input

- **Input Process Image**

Byte	Slot #	Bit 7	Bit 6	Bit5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Read Byte 0	Slot 1	Discrete Input 8 Point							
Read Byte 1	Slot 2	Discrete Input 16 Point low byte							
Read Byte 2		Discrete Input 16 Point high byte							
Read Byte 3	Slot 3	Discrete Input 8 Point							
Read Byte 4	Slot 4	Discrete Input 16 Point low byte							
Read Byte 5		Discrete Input 16 Point high byte							
Read Byte 6	Slot 5	Analog Input Ch0 low byte							
Read Byte 7		Analog Input Ch0 high byte							
Read Byte 8		Analog Input Ch1 low byte							
Read Byte 9		Analog Input Ch1 high byte							
Read Byte 10		Analog Input Ch2 low byte							
Read Byte 11		Analog Input Ch2 high byte							
Read Byte 12		Analog Input Ch3 low byte							
Read Byte 13		Analog Input Ch3 high byte							
Read Byte 14	Slot 6	Analog Input Ch0 low byte							
Read Byte 15		Analog Input Ch0 high byte							
Read Byte 16		Analog Input Ch1 low byte							
Read Byte 17		Analog Input Ch1 high byte							
Read Byte 18		Analog Input Ch2 low byte							
Read Byte 19		Analog Input Ch2 high byte							
Read Byte 20		Analog Input Ch3 low byte							
Read Byte 21		Analog Input Ch3 high byte							

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3.3 Example of Output Process Image (Output Register) Map

Output image data depends on slot position and expansion slot data type. Output process image data is only ordered by expansion slot position.

- **For example slot configuration**
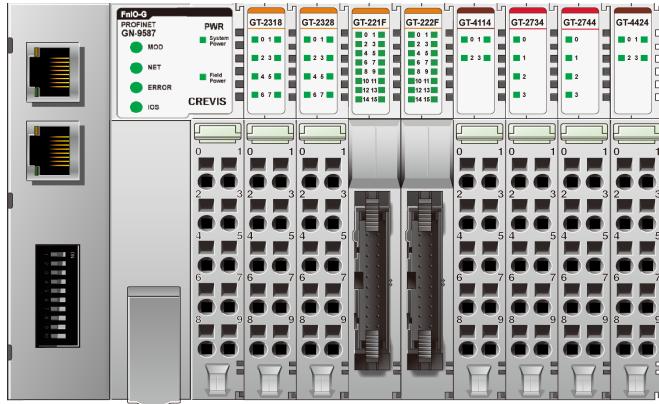
Slot Address	Module Description
#0	ProfiNet Adapter
#1	8-discrete output
#2	8-discrete output
#3	16-discrete output
#4	16-discrete output
#5	4-analog output
#6	4-relay output
#7	4-relay output
#8	4-analog output

- **Output Process Image**

Byte	Slot #	Bit 7	Bit 6	Bti 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Bit 0
Write Byte 0	Slot 1	Discrete Output 8 Point								
Write Byte 1	Slot 2	Discrete Output 8 Point								
Write Byte 2	Slot 3	Discrete Output 16 Point low byte								
Write Byte 3		Discrete Output 16 Point high byte								
Write Byte 4	Slot 4	Discrete Output 16 Point low byte								
Write Byte 5		Discrete Output 16 Point high byte								
Write Byte 6		Analog Output Ch0 low byte								
Write Byte 7		Analog Output Ch0 high byte								
Write Byte 8		Analog Output Ch1 low byte								
Write Byte 9	Slot 5	Analog Output Ch1 high byte								
Write Byte 10		Analog Output Ch2 low byte								
Write Byte 11		Analog Output Ch2 high byte								
Write Byte 12		Analog Output Ch3 low byte								
Write Byte 13		Analog Output Ch3 high byte								
Write Byte 14	Slot 6	Not used				Discrete Output 4 Point			
Write Byte 15	Slot 7	Not used				Discrete Output 4 Point			
Write Byte 16		Analog Output Ch0 low byte								
Write Byte 17		Analog Output Ch0 high byte								
Write Byte 18		Analog Output Ch1 low byte								
Write Byte 19	Slot 8	Analog Output Ch1 high byte								
Write Byte 20		Analog Output Ch2 low byte								
Write Byte 21		Analog Output Ch2 high byte								
Write Byte 22		Analog Output Ch3 low byte								
Write Byte 23		Analog Output Ch3 high byte								

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3.4 MODBUS Special Register Map

The special register map can be accessed by function code 3, 4, 6 and 16. Also the special register map must be accessed by read/write of every each address (one address).

3.4.1 Adapter Identification Special Register (0x1000, 4096)

Address	Access	Type, Size	Description
0x1000(4096)	Read	1word	Vendor ID = 0x0140(320), Crevis. Co., Ltd.
0x1001(4097)	Read	1word	Device type = 0x000C, Network Adapter
0x1002(4098)	Read	1word	Product Code = 0x9080
0x1003(4099)	Read	1word	Firmware revision, if 0x0101, revision 1.01
0x1004(4100)	Read	2words	Product unique serial number
0x1005(4101)	Read	String upto 34bytes	Product name string (ASCII) "GN-9587,PROFINET(MRP,FSU), GBUS"
0x1006(4102)	Read	1word	Sum check of EEPROM
0x1010(4112)	Read	2words	Firmware release date
0x1011(4113)	Read	2words	Product manufacturing inspection date
0x101E(4126)	Read	7words - 1word - 1word - 1word - 1word - 1word - 2words	Composite Id of following address * RTU mode 0x1100(4352), Modbus RS232 Node. (Fixed 0x0001) 0x1000(4096), Vendor ID 0x1001(4097), Device type 0x1002(4098), Product code 0x1003(4099), Firmware revision 0x1004(4100), Product serial number

- String Type consists of valid string length (first 1word) and array of characters

3.4.2 Other Time Special Register (0x1028, 4136)

Address	Access	Type, Size	Description
0x1028(4136)	Read	1word	IO update time, main loop time. (1usec unit)

3.4.3 Adapter IP/MAC Address Special Register (0x1050, 4176)

Address	Access	Type, Size	Description
0x1050(4176)	Read/Write	2words	IP address. If 192.168.123.1, then 0x017B, 0xA8C0. After update this value, IP address, Subnet mask and Gateway are applied as new one.
0x1051(4177)	Read/Write	2words	Subnet mask. If 255.255.255.0, then 0x00FF, 0xFFFF.
0x1052(4178)	Read/Write	2words	Gateway. If 192.168.123.254, then 0xFE7B, 0xA8C0.
0x1053(4179)	Read	3words	Ethernet physical address (MAC-ID). If 11-22-33-44-55-66, then 0x2211, 0x4433, 0x6655.

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3.4.4 Adapter Information Special Register (0x1100, 4352)

Address	Access	Type, Size	Description
0x1100(4352)*	Read	1word	Current STATION-NUMBER.(DIP SW Number)
0x1102(4354)	Read	1word	Start address of input image word register. =0x0000
0x1103(4355)	Read	1word	Start address of output image word register. =0x0800
0x1104(4356)	Read	1word	Size of input image word register.
0x1105(4357)	Read	1word	Size of output image word register.
0x1106(4358)	Read	1word	Start address of input image bit. = 0x0000
0x1107(4359)	Read	1word	Start address of output image bit. =0x1000
0x1108(4360)	Read	1word	Size of input image bit.
0x1109(4361)	Read	1word	Size of output image bit.
0x110A(4362)	Read	1word	Update time for cyclic data change (same as 0x1028)
0x110D(4365)	Read	1word	Current Dip Switch State and Field Power Status (MSB) ex) Flash memory Value using, Dip SW(0x01), Field Power On = 0x8201
0x110E(4366)	Read	upto 33words	Expansion slot's GT-number including GN First 1word is adapter's number, if GN-9587, then 0x9587
0x1110(4368)	Read	1word	Number of expansion slot
0x1113(4371)	Read	upto 33words	Expansion slot Module Id. First 1word is adapter's module id.
0x1119(4377)	Read	1word	Low byte is internal bus status. Zero value means 'no error'. <table><tr><td>Reserve</td><td>Internal bus status(G-Bus)</td></tr><tr><td></td><td>0x00 : OPERATING 0x02 : CONNECT_FAULT 0x03 : CONFIG_FAULT 0x04 : NO_EXPANSION 0x05 : NVALID_ATTR_VALUE 0x06 : TOO_MUCH_DATA 0x07 : VENDOR_ERROR 0x08 : NOT_EXPECTED_SLOT 0x09 : CRC_ERROR 0x80 : NO FIELD POWER</td></tr></table>
0x111D(4381)	Read	1word	Adapter G-Series Revision.

* After the system is reset, the new "Set Value" action is applied.

** If the slot location is changed, set default value automatically (all expansion slot are live).

3.4.5 Expansion Slot Information Special Resister (0x2000, 8192)

Each expansion slot has 0x20(32) address offset and same information structure.

Slot#1 0x2000(8192)~0x201F(8223)   Slot#2 0x2020(8224)~0x203F(8255)
Slot#3 0x2040(8256)~0x205F(8287)   Slot#4 0x2060(8288)~0x207F(8319)
Slot#5 0x2080(8320)~0x209F(8351)   Slot#6 0x20A0(8352)~0x20BF(8383)
Slot#7 0x20C0(8384)~0x20DF(8415)   Slot#8 0x20E0(8416)~0x20FF(8447)
Slot#9 0x2100(8448)~0x211F(8479)   Slot#10 0x2120(8480)~0x213F(8511)
Slot#11 0x2140(8512)~0x215F(8543)   Slot#12 0x2160(8544)~0x217F(8575)
Slot#13 0x2180(8576)~0x219F(8607)   Slot#14 0x21A0(8608)~0x21BF(8639)

…..

Slot#32 0x23E0(9184)~0x23FF(9215)

Address Offset	Expansion Slot#1	Expansion Slot#2	Expansion Slot#3	……..	Expansion Slot#32
+ 0x00(+0)	0x2000(8192)	0x2020(8224)	0x2040(8256)	…….	0x27C0(10176)
+ 0x01(+1)	0x2001(8193)	0x2021(8225)	0x2041(8257)	…….	0x27C1(10177)
+ 0x02(+2)	0x2002(8194)	0x2022(8226)	0x2042(8258)	…….	0x27C2(10178)
+ 0x03(+3)	0x2003(8195)	0x2023(8227)	0x2043(8259)	…….	0x27C3(10179)
+ 0x04(+4)	0x2004(8196)	0x2024(8228)	0x2044(8260)	…….	0x27C4(10180)
+ 0x05(+5)	0x2005(8197)	0x2025(8229)	0x2045(8261)	…….	0x27C5(10181)
+ 0x06(+6)	0x2006(8198)	0x2026(8230)	0x2046(8262)	…….	0x27C6(10182)
+ 0x07(+7)	0x2007(8199)	0x2027(8231)	0x2047(8263)	…….	0x27C7(10183)
+ 0x08(+8)	0x2008(8200)	0x2028(8232)	0x2048(8264)	…….	0x27C8(10184)
+ 0x09(+9)	0x2009(8201)	0x2029(8233)	0x2049(8265)	…….	0x27C9(10185)
+ 0x0A(+10)	0x200A(8202)	0x202A(8234)	0x204A(8266)	…….	0x27CA(10186)
+ 0x0B(+11)	0x200B(8203)	0x202B(8235)	0x204B(8267)	…….	0x27CB(10187)
+ 0x0C(+12)	0x200C(8204)	0x202C(8236)	0x204C(8268)	…….	0x27CC(10188)
+ 0x0D(+13)	0x200D(8205)	0x202D(8237)	0x204D(8269)	…….	0x27CD(10189)
+ 0x0E(+14)	0x200E(8206)	0x202E(8238)	0x204E(8270)	…….	0x27CE(10190)
+ 0x0F(+15)	0x200F(8207)	0x202F(8239)	0x204F(8271)	…….	0x27CF(10191)
+ 0x10(+16)	0x2010(8208)	0x2030(8240)	0x2050(8272)	…….	0x27D0(10192)
+ 0x11(+17)	0x2011(8209)	0x2031(8241)	0x2051(8273)	…….	0x27D1(10193)
+ 0x12(+18)	0x2012(8210)	0x2032(8242)	0x2052(8274)	…….	0x27D2(10194)
+ 0x13(+19)	0x2013(8211)	0x2033(8243)	0x2053(8275)	…….	0x27D3(10195)
+ 0x14(+20)	0x2014(8212)	0x2034(8244)	0x2054(8276)	…….	0x27D4(10196)
+ 0x15(+21)	0x2015(8213)	0x2035(8245)	0x2055(8277)	…….	0x27D5(10197)
+ 0x16(+22)	0x2016(8214)	0x2036(8246)	0x2056(8278)	…….	0x27D6(10198)
+ 0x17(+23)	0x2017(8215)	0x2037(8247)	0x2057(8279)	…….	0x27D7(10199)
+ 0x18(+24)	0x2018(8216)	0x2038(8248)	0x2058(8280)	…….	0x27D8(10200)
+ 0x19(+25)	0x2018(8217)	0x2038(8249)	0x2058(8281)	…….	0x27D9(10201)
+ 0x1A(+26)	0x201A(8218)	0x203A(8250)	0x205A(8282)	…….	0x27DA(10202)
+ 0x1B(+27)	0x201B(8219)	0x203B(8251)	0x205B(8283)	…….	0x27DB(10203)
+ 0x1C(+28)	0x201C(8220)	0x203C(8252)	0x205C(8284)	…….	0x27DC(10204)
+ 0x1D(+29)	0x201D(8221)	0x203D(8253)	0x205D(8285)	…….	0x27DD(10205)
+ 0x1E(+30)	0x201E(8222)	0x203E(8254)	0x205E(8286)	…….	0x27DE(10206)
+ 0x1F(+31)	0x201F(8223)	0x203F(8255)	0x205F(8287)	…….	0x27DF(10207)

Address Offset	Access	Type, Size	Description
+ 0x02(+2) **	Read	1word	Input start register address of input image word this slot.
+ 0x03(+3) **	Read	1word	Input word's bit offset of input image word this slot.
+ 0x04(+4) **	Read	1word	Output start register address of output image word this slot.
+ 0x05(+5) **	Read	1word	Output word's bit offset of output image word this slot.
+ 0x06(+6) **	Read	1word	Input bit start address of input image bit this slot.
+ 0x07(+7) **	Read	1word	Output bit start address of output image bit this slot.
+ 0x08(+8) **	Read	1word	Size of input bit this slot
+ 0x09(+9) **	Read	1word	Size of output bit this slot
+ 0x0A(+10)**	Read	n words	Read input data this slot
+ 0x0B(+11)**	Read/Write	n words	Read/write output data this slot
+ 0x0E(+14)	Read	1word	GT-number, if GT-1238, returns 0x1238
+ 0x0F(+15)	Read	String upto 72bytes	First 1word is length of valid character string. If GT-1238, returns "00 1E 52 54 2D 31 32 33 38 2C 20 38 44 49 2C 20 32 34 56 64 63 2C 20 55 6E 69 76 65 72 73 61 6C 00 00" Valid character size = 0x001E =30 characters, "GT-1238, 8DI, 24Vdc, Universal"
+ 0x10(+16)	Read	1word	Size of configuration parameter byte
+ 0x11(+17)**	Read/Write	n words	Read/write Configuration parameter data, Refer to each IO parameter Specification.
+ 0x17(+23)	Read	2words	Firmware Revision ex) 0x00010010 (Major revision 1 /Minor revision 16, Rev 1.016)
+ 0x19(+25)	Read	2words	Firmware release date.

* After the system is reset, the new "Set Value" action is applied.
** Nothing of output, input, memory or configuration parameter corresponding slot returns Exception 02.

3.5 MODBUS Reference

MODBUS Reference Documents
      http://www.modbus.org
MODBUS Tools
      http://www.modbustools.com, modbus poll
      http://www.win-tech.com, modscan32

4 PARAMETER

4.1 GN-9587 Parameter

- Can not be used.

4.2 GN-9587 PROFINET IO Characteristics

4.2.1 Device Identity

Item	Value
Vendor	CREVIS
Vendor ID	0x0140
Product family	CREVIS FnIO System
Device ID	0x9587
Details	GN9587 PROFINET IO Device

4.2.2 Device Access Point

Item	Value
Module Ident Number	0x80010000
Details	GN9587 PROFINET IO Device
Vendor Name	CREVIS
Order Number	GN-9587
Category	CREVIS PROFINET I/O
Software Version	V1.0
Hardware Version	V1.0
Maximal Input Length	1440 Bytes
Maximal Output Length	1440 Bytes
Physical Slots	0..32
Minimal Device Interval	0.25msec
Based on	NP40
DNS Compliant Name	GN9587-address
Supports Extended Assignment of IP Address	No
Fixed in Slots	0
Instance Field of the Object UUID	1
Supports Multiple Write	Yes
Requires IOPS/IOCS	Yes
Requires Engineering tool which supports at least GSDML Version	V2.25

4.2.3 Sub-slot of GN-9587

Item	Value
Sub-slot Number	**Sub-slot Label**
32768 (0x8000)	X1
32769 (0x8001)	P1
32770 (0x8002)	P2

Sub-module	
Sub-module Ident Number	0x00000001
Interface : GN-9587	
Sub-module Ident Number	0x00000002
Sub-slot Number	32768 (0x8000)
Supports Real time Class	RT_CLASS_1, RT_CLASS_3
Supports Isochronous Mode	No
Supported Protocols	SNMP; LLDP
DCP_Hello Supported	Yes
PTP Boundary Supported	Yes
DCP Boundary Supported	Yes
Supported Send-clock Factors (Base 31.25us)	8 16 32 64 128

CREVIS

Supported Reduction Ratios	1 2 4 8 16 32 64 128 256 512
Port 1 : Port 1	
Sub-module Ident Number	0x00000003
Sub-slot Number	32769 (0x8001)
MAU Type	100BASETXFD
Port 2 : Port 2	
Sub-module Ident Number	0x00000003
Sub-slot Number	32770 (0x8002)
MAU Type	100BASETXFD