SanRex

Thyristor Type Power Adjusting Unit

CALPOTE

UF series

Device Net communication unit

UF－DN

USER MANUAL

TABLE OF CONTENTS

1. COMMUNICATION

1.1 Summary

To the communication between the UF-unit and the external unit, there are RS485, Device Net, CC-Link, Prof-Bus communications.

In this USER MANUAL, explains the correspondence procedure in the UF-unit and the Device Net communication.

In this USER MANUAL, Device Net spec is explained roughly and so that if you want to know in detail about it, please make reference to "Device Net Specification" issued by ODVA(Open DeviceNet Vendor Association , Inc).

2 SPECIFICATION

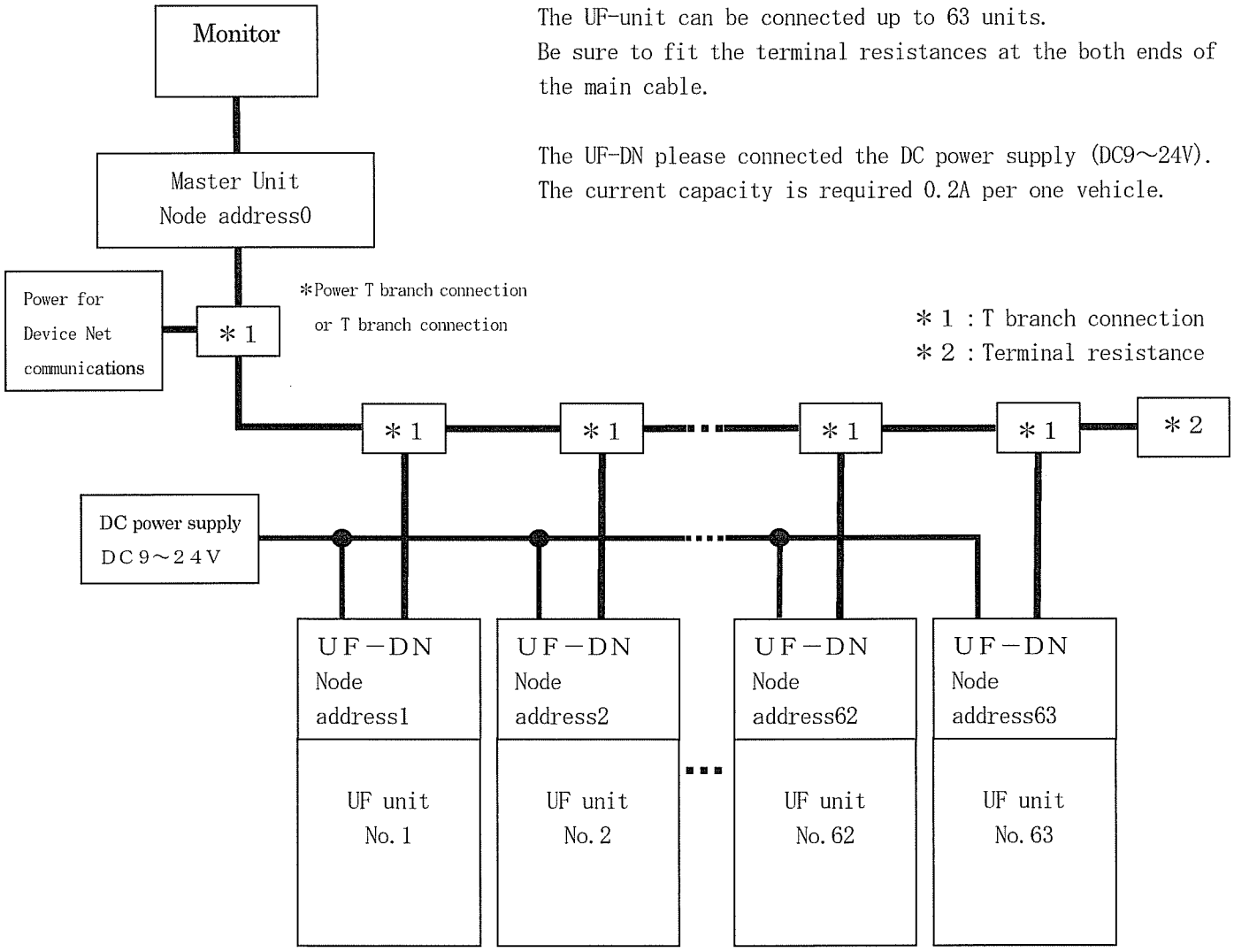
2.1 System configuration

The UF-unit perform as a node of Device Net.

The node connected system of the DeviceNet has two the T branch connection and the multi-drop, our system of the UF-DN unit is using the T branch connection as shown below.

In the event of any communication error cause by reflection on transmission lines etc, use a special cable which is exclusive to Device Net and connect terminal resistances to the both ends of main line.

Also, if the DeviceNet communication power are not already connected, the DeviceNet communication power must use connected to Power T branch connection or T branch connection.



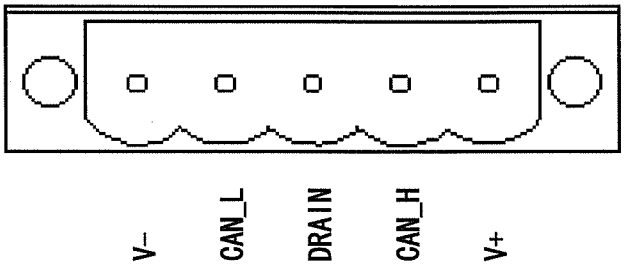
The UF-unit can be connected up to 63 units.
Be sure to fit the terminal resistances at the both ends of the main cable.

The UF-DN please connected the DC power supply (DC9～24V).
The current capacity is required 0.2A per one vehicle.

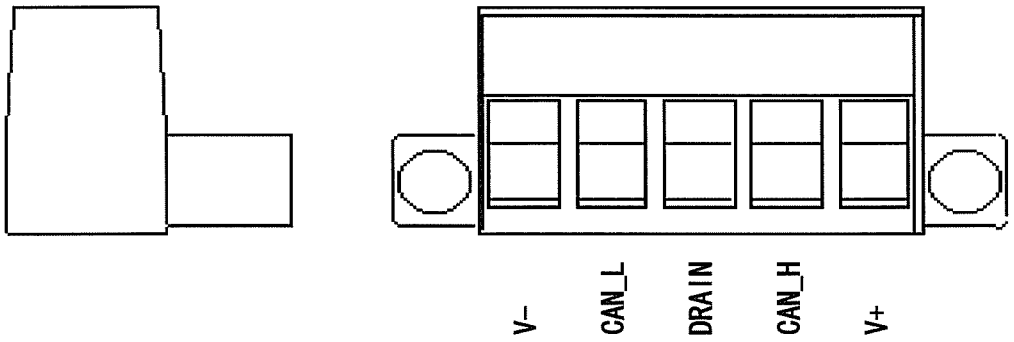
＊1 : T branch connection
＊2 : Terminal resistance

2．2 Connector

(1) Socket — MSTB2．5／5－GF－5．08AU
Made by PHOENIX CONTACT



(2) Plug — MSTB2．5／5－STF—5．08—AU
Made by PHOENIX CONTACT



2．3 Communication cable

Device Net uses either the THIN Cable or the THICK Cable settled by the specifications and constructs the main line.

It can also be used the cable of both on the same network combination.

You can use of either type cable is determined by the main line network length or the data transmission speed.

The description of each cable is shown as below.

(1) THICK Cable

The THICK Cable , is composed of two shielded pairs twisted on a common axis, and is composed of the covered drain by a braided shield in the center. Usually, the THICK Cable is used as a main line if you need length.

(2) THIN Cable

The THIN Cable is narrower than the THICK Cable, are flexible. Usually, it is used as the branch line. But it can be used as a short-distance main line.

2. 4 Connection resistance

Device Net needs to attach the terminal resistances to both ends of main line.

2. 4. 1 Specification

The specifications of the terminal resistances are shown as below.

- resistance　　１２１Ω
- ±１% metal film resistance
- acceptable loss　　１／４W

2. 4. 2 Notice on the installation

(1) Please do not absolutely attach the terminal resistances to the node.
If they attach the terminal resistances to the node, problems may happen at network dead end and it leads to break down. (Impedance might be too high or too low.)

(2) Please do not attach the terminal resistances to the branch line' s ends.

3. COMMUNICATION METHOD

3.1 Communication text

3.1.1 Case of UF1

(1) Read data (Viewed from the PLC input)

Instance2 OUT data area(Deforutopasueria : 100)

Data Size: 24byte

① Status flag(00－01H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

15 : Abnormal collective
(1: Abnormal collective(Including communication error) ／ 0: Normal)
14 : Over current abnormality (1: Over current ／ 0: Normal)
13 : Fuse disconnection (1: Fuse disconnection ／ 0: Normal)
12 : Temperature rise abnormality (1: Temperature rise abnormality ／ 0: Normal)
11 : Thyristor abnormality (1: Thyristor abnormality ／ 0: Normal)
10 : Load abnormality (1: Load abnormality ／ 0: Normal)
09 : Power supply undervoltage (1: Power supply undervoltage ／ 0: Normal)
08 : Abnormal frequency (1: Abnormal frequency ／ 0: Normal)
07 : Heater disconnection (1: Heater disconnection ／ 0: Normal)
06 : Gate block (1: Gate block ／ 0: Normal)
05 : EEPROM abnormal (1: EEPROM abnormal ／ 0: Normal)
04 : Reservation
03 : Monitor value switch state flag (1: Set value ／ 0: Usually)
02 : Reservation
01 : Reservation
00 : State display・Start/Stop (1: Operation ／ 0: Stop)

② Monitor value 1(02－03H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"
00～15 : Out current 0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"
00～15 : Control signal 0～1000(0.1% unit)

③ Monitor value 2(04－05H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"
00～15 : Out voltage 0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"
00～15 : Manual(upper limit) signal 0～1000(0.1% unit)

④ Monitor value 3(０６－０７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : Out power　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Lower point(lower limit) signal　　0～1000(0.1% unit)

⑤ Monitor value 4(０８－０９H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : Soft start time　　0～3000(0.1s unit)

When the Monitor value switch state flag is "Set value"

00～15 : Grade signal　　0～1000(0.1% unit)

⑥ Monitor value 5(０Ａ－０ＢH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

08～15 : Delay time　　0～30(0.1s unit)

00～07 : Period time　　10～30(0.1s unit)

When the Monitor value switch state flag is "Set value"

00～15 : Soft start time　　0～3000(0.1s unit)

⑦ Monitor value 6(０Ｃ－０ＤH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

09～15 : Reservation

08 : Self-diagnostic function setting (1: Yes ／ 0: Release)

00～07 : I/O characteristic change(Function No.)　　0～7 (Function No.)

When the Monitor value switch state flag is "Set value"

08～15 : Delay time　　0～30(0.1s unit)

00～07 : Period time　　10～30(0.1s unit)

⑧ Monitor value 7(０Ｅ－０ＦH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

08～15 : Current limit 50～110(1% unit)

00～07 : Heater disconnecting amount 5～50(1% unit)

When the Monitor value switch state flag is "Set value"

09～15 : Reservation

08 : Self-diagnostic function setting (1: Yes ／ 0: Release)

00～07 : I/O characteristic change(Function No.) 0～7(Function No.)

⑨ Monitor value 8(１０－１１H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : Reservation

When the Monitor value switch state flag is "Set value"

08～15 : Current limit 50～110(1% unit)

00～07 : Heater disconnecting amount 5～50(1% unit)

⑩ Monitor value 9～11(１２－１７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Reservation

※ The Set value is reading data from the UF1.
The Set value may be different from the PLC.

(2) Write data(Viewed from the PLC output)

Instance2 IN data area(Deforutopasueria : １０１)

Data Size: ２４byte

① Control flag(００－０１H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

15 : Monitor value switch state flag (1: Set value ／ 0: Usually)

14 : 1～11 Set value enable or disable (1: Enable ／ 0: Disable)

01～13 : Reservation

00 : Start/Stop setting (1: Start ／ 0: Stop)

② Set value 1(０２－０３H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Control signal　　0～1000(0.1% unit)

③ Set value 2(０４－０５H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Manual(upper limit) signal　　0～1000(0.1% unit)

④ Set value 3(０６－０７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Lower point(lower limit) signal　　0～1000(0.1% unit)

⑤ Set value 4(０８－０９H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Grade signal　　0～1000(0.1% unit)

⑥ Set value 5(０Ａ－０ＢH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Soft start time　　0～3000(0.1s unit)

⑦ Set value 6(０Ｃ－０ＤH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Delay time　　0～30(0.1s unit)
00～07 : Period time　　10～30(0.1s unit)

⑧ Set value 7(０Ｅ－０ＦH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Reservation
00～07 : I/O characteristic change(Function No.)　　0～7 (Function No.)

⑨ Set value 8(１０－１１H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Current limit 50～110(1% unit)
00～07 : Heater disconnecting amount 5～50(1% unit)

⑩ Set value 9～11(１２－１７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Reservation

3．1．2 Case of the UF3

(1) Read data(Viewed from the PLC input)
Instance2 OUT data area(Deforutopasueria : １００)
Data Size: ２４byte

① Status flag(００－０１H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

15 : Abnormal collective
(1: Abnormal collective(Including communication error) ／ 0: Normal)
14 : Over current abnormality (1: Over current ／ 0: Normal)
13 : Fuse disconnection (1: Fuse disconnection ／ 0: Normal)
12 : Temperature rise abnormality (1: Temperature rise abnormality ／ 0: Normal)
11 : Thyristor abnormality (1: Thyristor abnormality ／ 0: Normal)
10 : Load abnormality (1: Load abnormality ／ 0: Normal)
09 : Power supply undervoltage (1: Power supply undervoltage ／ 0: Normal)
08 : Abnormal frequency (1: Abnormal frequency ／ 0: Normal)
07 : Heater disconnection (1: Heater disconnection ／ 0: Normal)
06 : Gate block (1: Gate block ／ 0: Normal)
05 : EEPROM abnormal (1: EEPROM abnormal ／ 0: Normal)
04 : Reservation
03 : Monitor value switch state flag (1: Set value ／ 0: Usually)
02 : Reservation
01 : Reservation
00 : State display・Start/Stop (1: Operation ／ 0: Stop)

② Monitor value 1(０２－０３H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"
00～15 : U-phase out current 0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"
00～15 : Control signal 0～1000(0.1% unit)

③ Monitor value 2(０４－０５H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : V-phase out current　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Manual(upper limit) signal　　0～1000(0.1% unit)

④ Monitor value 3(０６－０７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : W-phase out current　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Lower point(lower limit) signal　　0～1000(0.1% unit)

⑤ Monitor value 4(０８－０９H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : U-phase out voltage　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Grade signal　　0～1000(0.1% unit)

⑥ Monitor value 5(０Ａ－０ＢH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : V-phase out voltage　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Soft start time　　0～3000(0.1s unit)

⑦ Monitor value 6(０Ｃ－０ＤH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : W-phase out voltage　　0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

08～15 : Delay time　　0～30(0.1s unit)

00～07 : Period time　　10～30(0.1s unit)

⑧ Monitor value 7(0E－0FH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

00～15 : Out power 0～1250(0.1% unit)

When the Monitor value switch state flag is "Set value"

09～15 : Reservation

08 : Self-diagnostic function setting (1: Yes ／ 0: Release)

00～07 : I/O characteristic change(Function No.) 0～7(Function No.)

⑨ Monitor value 8(10－11H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Soft start time 0～3000(0.1s unit)

When the Monitor value switch state flag is "Set value"

08～15 : Current limit 50～110(1% unit)

00～07 : Heater disconnecting amount 8～50(1% unit)

⑩ Monitor value 9(12－13H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

08～15 : Delay time 0～30(0.1s unit)

00～07 : Period time 10～30(0.1s unit)

When the Monitor value switch state flag is "Set value"

00～15 : Reservation

⑪ Monitor value 10(14－15H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

09～15 : Reservation

08 : Self-diagnostic function setting (1: Yes ／ 0: Release)

00～07 : I/O characteristic change(Function No.) 0～7(Function No.)

When the Monitor value switch state flag is "Set value"

00～15 : Reservation

⑫ Monitor value 11(１６－１７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

When the Monitor value switch state flag is "Usually"

08～15 : Current limit　　50～110(1% unit)

00～07 : Heater disconnecting amount　　8～50(1% unit)

When the Monitor value switch state flag is "Set value"

00～15 : Reservation

※ The Set value is reading data from the UF3.
The Set value may be different from the PLC.

(2) Write data(Viewed from the PLC output)

Instance2 IN data area(Deforutopasueria : １０１)

Data Size: ２４byte

① Control flag(００－０１H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

15 : Monitor value switch state flag (1: Set value ／ 0: Usually)

14 : 1～11 Set value enable or disable (1: Enable ／ 0: Disable)

01～13 : Reservation

00 : Start/Stop setting (1: Start ／ 0: Stop)

② Set value 1(０２－０３H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Control signal　　0～1000(0.1% unit)

③ Set value 2(０４－０５H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Manual(upper limit) signal　　0～1000(0.1% unit)

④ Set value 3(０６－０７H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Lower point(lower limit) signal　　0～1000(0.1% unit)

⑤ Set value 4(０８－０９H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Grade signal　　0～1000(0.1% unit)

⑥ Set value 5(0A－0BH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Soft start time　　0～3000(0.1s unit)

⑦ Set value 6(0C－0DH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Delay time　　0～30(0.1s unit)
00～07 : Period time　　10～30(0.1s unit)

⑧ Set value 7(0E－0FH)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Reservation
00～07 : I/O characteristic change(Function No.)　　0～7 (Function No.)

⑨ Set value 8(10－11H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

08～15 : Current limit　　50～110(1% unit)
00～07 : Heater disconnecting amount　　8～50(1% unit)

⑩ Set value 9～11(12－17H)

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00

00～15 : Reservation

3. 2 Communication procedure

3. 2. 1 Basic Mode

(1) Write the Set value

Writing procedures are not specifically determines.
Write data based on data specifications.

(2) Read the Monitor value

Device Net interface board and UF1/UF3-unit may not read correctly by the timing of the data interface unit.
Read data in communication of once, be sure to conduct more than once.

(a) When the Monitor value switch state flag is "Usually"

① The Monitor value switch state flag (15bit) of Control flag (00-01H) set to "0 ".
② The Monitor value switch state flag (03bit) of Status flag (00-01H) is set "0".
③ Reads the data of the Monitor value 1～11(02-17H). The data of the Monitor value switch state flag "Usually" put out to read.

(b) When the Monitor value switch state flag is "Set value"

① The Monitor value switch state flag (15bit) of Control flag (00-01H) set to "1 " .
② The Monitor value switch state flag (03bit) of Status flag (00-01H) is set "1".
③ Reads the data of the Monitor value 1～16 (02-17H). The data of the Monitor value switch state flag "Set value" put out to read.

(i) Case of UF1

Address No.	Monitor value switch state flag	
	Usually	Usually
Monitor value 1(02-03H)	Out current	Out current
Monitor value 2(04-05H)	Out voltage	Out voltage
Monitor value 3(06-07H)	Out power	Out power
Monitor value 4(08-09H)	Soft start time	Soft start time
Monitor value 5(0A-0BH)	08～0F: Delay time 00～07: Period time	08～0F: Delay time 00～07: Period time
Monitor value 6(0C-0DH)	09～0F: Reservation 08: Self-diagnostic function setting 00～07: I/O characteristic change	09～0F: Reservation 08: Self-diagnostic function setting 00～07: I/O characteristic change
Monitor value 7(0E-0FH)	08～0F: Current limit 00～07: Heater disconnecting amount	08～0F: Current limit 00～07: Heater disconnecting amount
Monitor value 8(10-11H)	Reservation	Reservation
Monitor value 9(12-13H)	Reservation	Reservation
Monitor value 10(14-15H)	Reservation	Reservation
Monitor value 11(16-17H)	Reservation	Reservation

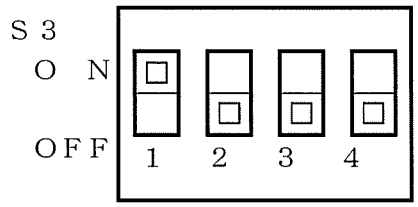
(i) Case of UF3

Address No.	Monitor value switch state flag	
	Usually	Usually
Monitor value 1(02-03H)	U-phase out current	U-phase out current
Monitor value 2(04-05H)	V-phase out current	V-phase out current
Monitor value 3(06-07H)	W-phase out current	W-phase out current
Monitor value 4(08-09H)	U-phase out voltage	U-phase out voltage
Monitor value 5(0A-0BH)	V-phase out voltage	V-phase out voltage
Monitor value 6(0C-0DH)	W-phase out voltage	W-phase out voltage
Monitor value 7(0E-0FH)	Out power	Out power
Monitor value 8(10-11H)	Soft start time	Soft start time
Monitor value 9(12-13H)	08～0F: Delay time 00～07: Period time	08～0F: Delay time 00～07: Period time
Monitor value 10(14-15H)	09～0F: Reservation 08: Self-diagnostic function setting 00～07: I/O characteristic change	09～0F: Reservation 08: Self-diagnostic function setting 00～07: I/O characteristic change
Monitor value 11(16-17H)	08～0F: Current limit 00～07: Heater disconnecting amount	08～0F: Current limit 00～07: Heater disconnecting amount

4. HOW TO SET S3 OF THE UF-UNIT

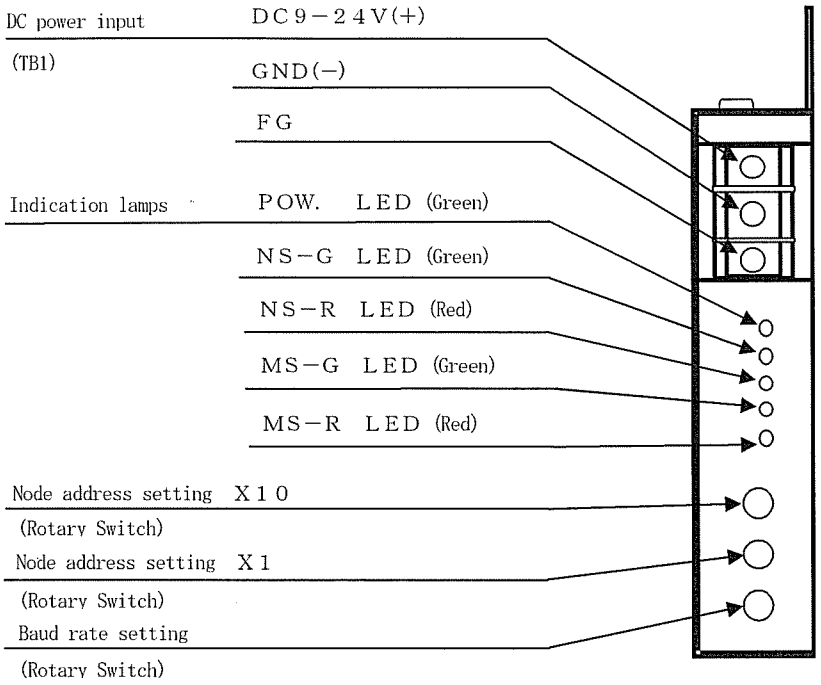
The UF-unit take the front cover, inside it has S3. If use the UF-DN, the unit number setting S3 is must be in "No.1".

S3 default setting is set "No.0".
As follows, the unit number setting S3 of the UF-unit Please set "No.1".



	S 3－1	S 3－2	S 3－3	S 3－4
No. 1	ON	OFF	OFF	OFF

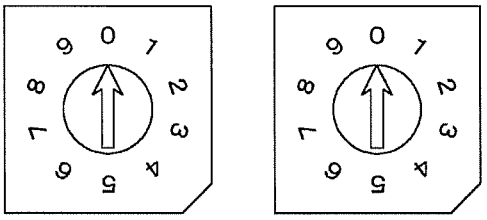
5. HOW TO SET THE UF-DN



5. 1 Node address setting

Node address setting sets Node address No. used on the network and the number can set the range of 0～63.

The UF-DN uses one in the Node address.

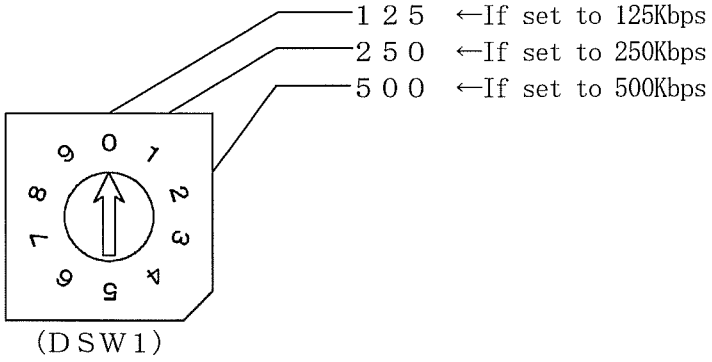


↑ Set the tens digit (DSW3)　↑ Set the ones digit (DSW2)

5. 2 Baud rate setting

Baud rate setting sets transmission speed on network.

Three types of settings for 125Kbps/250Kbps/500Kbps can be changed.



6. HOW TO SETTING THE SET VALUES FROM UF-CL

If set the communication, the signal display panel priority settings "2" should be set to change.
If set the UF-DN, the signal display panel priority settings "2" should be set to change.

6.1 How to set the UF-DN

Example

At the UF-DN, L (Lower point(lower limit)signal) to be able to change settings.

(1) Change display-mode

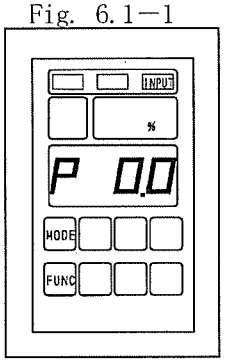
If the [MODE] key is pressed while the [FUNC] key is being pressed down, the display mode is switched.

Press several times, the display-mode of display panels show "INPUT". (Fig. 6.1−1)

"MONI" mode if you are viewing, press twice.

"STATE" mode if you are viewing, press once.

Fig. 6.1−1



(2) Chang the display item

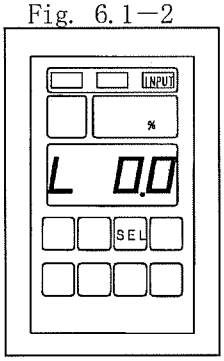
If the [SEL] key is pressed down, the display content is switched.

Press the [SEL] key twice, 4-digit display on the left is the display to "L" . (Fig. 6.1−2)

When the "L" does not show, press "SEL" key a few times.

The set values display the set values in the set-mode is currently set.

Fig. 6.1−2



(3) Check set-mode of Lower point(lower limit)signal priority setting

If the [SEL] key is pressed while the [FUNC] key is being pressed down, the display switches the lower point (lower limit)signal priority setting of set-mode.

4 digit display on the left is the display to "LS".

Please check with that. (Fig. 6.1−3)

At this time, the right 1 digit display represents the set-mode. (Table 6.1−1)

Fig. 6.1−3

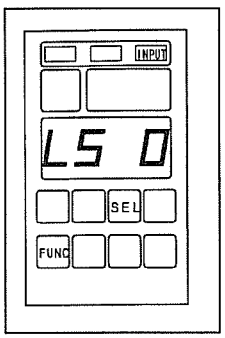
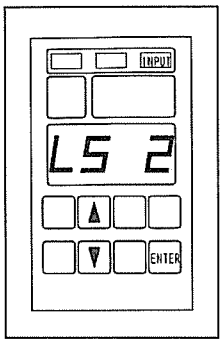


Table 6.1−1

Display	set-mode
L S 0	Setting the set-values from Lower point (lower limit)signal of input (terminal VL2)
L S 1	Setting the set-values from the display panel
L S 2	Setting the set-values from UF-DN

(4) Change in set-mode of Lower point(lower limit)signal priority setting

Fig. 6.1—4



When set in the UF-DN, the left one digit display 4 digit [2], please check to see.

When the set values do not display to "2", "2" settings are set using the [▲] or [▼] key.

Then, [ENTER] please press. (Fig. 6.1—4)

Change lights from blink, the setting is completed.

Once configure the set-mode. Also remembers the set-mode turned off power.

Priority settings changed by manipulating the signal display panel as an example, UF-DN signals can change the settings.

Table 6.1—2, by changing the settings on the display panel signal priority, UF-DN can change the signal settings.

Table 6.1—2

Display item	Function
P	Control signal
H	Manual(upper limit) signal
L	Lower point(lower limit)signal
F	Grade signal
E	Soft start time
C	Current limit
U	Heater disconnecting amount
d	Delay time
—	Period time

7. Indicator

Indicator has 2 types; Module Status LED (MS-G/R) and Network Status LED (NS-G/R), and they express operating state with Lighting, Not Lighting or Blinking.

MS LED		State
MS－G	MS－R	
Not Lighting	Not Lighting	No Power Supply, DeviceNet initializing the MPU
Green Blinking	———	MPU user-generated interrupt timeout
Green Lighting	———	DeviceNet successful initialization the MPU, Normal conditions the user
———	Red Blinking	MPU user-setting error, EEPROM SUM value abnormalities
———	Red Lighting	Hardware error(DPRAM error、Internal ROM error、Internal RAM error、EEPROM error、CAN error etc.)、WDT abnormality

NS LED		State
NS－G	NS－R	
Not Lighting	Not Lighting	No Power Supply, Baud Rate Checking, Checking duplicate node address, WDT abnormality
Green Blinking	———	Node address duplication check is complete
Green Lighting	———	Normal state network
———	Red Blinking	I/ O connection timeout is occurring
———	Red Lighting	Node address duplication error, Anomaly Detection Busoff

MS LED : Module Status LED
NS LED : Network Status LED

8. Device Profile and content of the object implementation

8.1 Device Profile

General Data	DeviceNet Specification Compliance	Volume 1 Release2.0 Volume 2 Release2.0
	Vendor Code	583
	Device Type	Generic Device Type No.:0
	Product Code	
Physical Conformance Data	Network Current Consumption	0.2A
	Connector Type	Open Plug
	The physical presence of the insulating layer	In Isolation
	Support LED	Module Network
	Node Address (MAC ID) Setting	Rotary Switch
	Default Node Address(MAC ID)	0
	Transmission Baud Rate Setting	Rotary Switch
	Support Transmission Baud Rate	125kbit/s, 250 kbit/s, 500kbit/s
Communication Data	Pre-defined Master/Slave Connection Set	Group 2 only server
	Dynamic Connection (UCMM)	None
	Explicit Message Fragmentation	Yes

8.2 Content of the object implementation

8.2.1 Identity Object(01H)

Object Class	Attribute	Not Support
	Service	Not Support

		ID	Content	GET	SET	Value
Object Instance	Attribute	1	Vendor	○	×	583
		2	Device type	○	×	0
		3	Product code	○	×	2082
		4	Revision	○	×	1.01
		5	Status(bits supported)	○		bit0 bit10
		6	Serial number	○	×	Serial No.
		7	Product name	○	×	P00E0208200 EK-5910
		8	State	×	×	
		9	Configuration Consistency Value	×	×	
		10	Heartbeat Interval	×	×	
	Service	Device Net Service		Parameter Option		
		05H	Reset	None		
		0EH	Get_attribute_Single	None		

8.2.2 Message Router Object(02H)

Object Class	Attribute	Not Support
	Service	Not Support
Object Instance	Attribute	Not Support
	Service	Not Support
Additional Vendor Specific Specification		None

8.2.3 Device Net Object(03H)

Object Class	Attribute	ID	Content	GET SET	Value
		1	Revision	○ ×	02H
	Service	Device Net Service		Parameter Option	
		0EH	Get_Attribute_Single	None	

Object Instance	Attribute	ID	Content	GET SET	Value
		1	MAC ID	○ ○	
		2	Baud rate	○ ○	
		3	BOI	○ ×	00H
		4	Bus-off counter	○ ×	
		5	Allocation information	○ ×	
		6	MAC ID switch changed	× ×	
		7	Baud rate switch changed	× ×	
		8	MAC ID switch value	× ×	
		9	Baud rate value	× ×	
	Service	Device Net Service		Parameter Option	
		0EH	Get Attribute Single	None	
		10H	Set Attribute Single	None	
		4BH	Allocation Master/Slave _Connection Set	None	
		4CH	Release Master/Slave _Connection Set	None	

8.2.4 Assembly Object(04H)

Object Class	Attribute	Not Support
	Service	Not Support

Object Instance	Section	Information	Maximum Instance
100 (For reading) 101 (For writing)	Instance Type	Static I/O	1
	Attribute	ID Content	GET SET Value
		1 Number of Members in List	× ×
		2 Member List	× ×
		3 Data	○ ○
	Service	Device Net Service	Parameter Option
		0EH Get_Attribute_Single	None
		10H Set_Attribute_Single	None

8.2.5 Connection Object(05H)

Object Class	Attribute	Not Support
	Service	Not Support
	Maximum Possible Number of Active connection	1

Object Instance 1	Section	Information	Maximum Instance
	Instance Type	Explicit Message	1
	Production Trigger	Cyclic	
	Transport Type	Server	
	Transport Class	3	
	Attribute	ID Content	GET SET Value
		1 State	○ ×
		2 Instance type	○ × 00H
		3 Transport class trigger	○ × 83H
		4 Produced connection ID	○ ×
		5 Consumed connection ID	○ ×
		6 Initial comm. characteristics	○ × 21H
		7 Produced connection size	○ × 64H
		8 Consumed connection size	○ × 64H
		9 Expected packed rate	○ ○
		12 Watchdog time-out action	○ ○ One of 01, 03
		13 Produced connection path length	○ × 00H
		14 Produced connection path	○ ×
		15 Consumed connection path length	○ × 00H
		16 Consumed connection path	○ ×
		17 Production inhibit time	○ ×
	Service	Device Net Service	Parameter Option
		05H Reset	None
		0EH Get_Attribute_Single	None
		10H Set_Attribute_Single	None

Object Instance 2	Section	Information			Maximum Instance
	Instance Type	Polled I/O			1
	Production Trigger	Cyclic			
	Transport Type	Server			
	Transport Class	2			
	Attribute	ID	Content	GET SET	Value
		1	State	○ ×	
		2	Instance type	○ ×	01H
		3	Transport class trigger	○ ×	82H
		4	Produced connection ID	○ ×	
		5	Consumed connection ID	○ ×	
		6	Initial comm. Characteristics	○ ×	01H
		7	Produced connection size	○ ×	04H
		8	Consumed connection size	○ ×	04H
		9	Expected packed rate	○ ○	
		12	Watchdog time-out action	○ ×	00H
		13	Produced connection path length	○ ×	06H
		14	Produced connection path	○	×20_04_24_64_30_03
		15	Consumed connection path length	○ ×	06H
		16	Consumed connection path	○	×20_04_24_65_30_03
		17	Production inhibit time	○ ×	
	Service	Device Net Service			Parameter Option
		05H	Reset		None
		0EH	Get_Attribute_Single		None
		10H	Set_Attribute_Single		None

9. Others

9.1 Grounding on network

With regard to Device Net, grounding should carry out one point grounding to prevent ground loop.
Make sure to ground the network using 3 type grounding.
Grounding should perform the special grounding which is divided from activate inverter etc.

9.2 Important notice on the noise countermeasure

To prevent inductive noise, a communication line should be wired separating from other power supply lines and power lines.
Avoid installation in the board in which high-pressure equipment is installed.
Do a noise countermeasure for a surge killer in the equipment which tends to generate noise (motors, solenoids and magnets, etc.).

MEMO

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