

# Rockwell Automation, Inc.

## Control/Compact Logix Series

### DF1 Driver

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Supported version

TOP Design Studio

V1.0 or higher



## CONTENTS

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We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

### **1. System configuration** [Page 2](#)

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

### **2. External device selection** [Page 3](#)

Select a TOP model and an external device.

### **3. TOP communication setting** [Page 4](#)

Describes how to set the TOP communication.

### **4. External device setting** [Page 9](#)

Describes how to set up communication for external devices.

### **5. Cable table** [Page 11](#)

Describes the cable specifications required for connection.

### **6. Supported addresses** [Page 12](#)

Refer to this section to check the addresses which can communicate with an external device.

# 1. System configuration

The system configuration of the driver "Rockwell Automation – Control/CompactLogix Series DF1" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
ControlLogix	Logix5550	CPU Direct	RS-232C	<a href="#">3.1 Settings example 1 (Page 4)</a>	<a href="#">5.1. Cable table 1 (Page 9)</a>
CompactLogix	1769-L20 1769-L30 1769-L31 1769-L32E 1769-L35E	Channel 0	RS-232C	<a href="#">3.1 Settings example 1 (Page 4)</a>	<a href="#">5.1. Cable table 1 (Page 9)</a>

## ■ Connectable configuration

TOP – External device ( 1 : 1 )



## 2. External device selection

- Select a TOP model and a port, and then select an external device.

Settings		Contents					
TOP	Model	Check the TOP display and process to select the touch model.					
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select <b>"Rockwell Automation, Inc"</b> .					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td><b>Control/Compact Logix Series</b></td> <td>Serial</td> <td><b>DF1 Driver</b></td> </tr> </tbody> </table> <p>Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.</p>	Model	Interface	Protocol	<b>Control/Compact Logix Series</b>	Serial
Model	Interface	Protocol					
<b>Control/Compact Logix Series</b>	Serial	<b>DF1 Driver</b>					

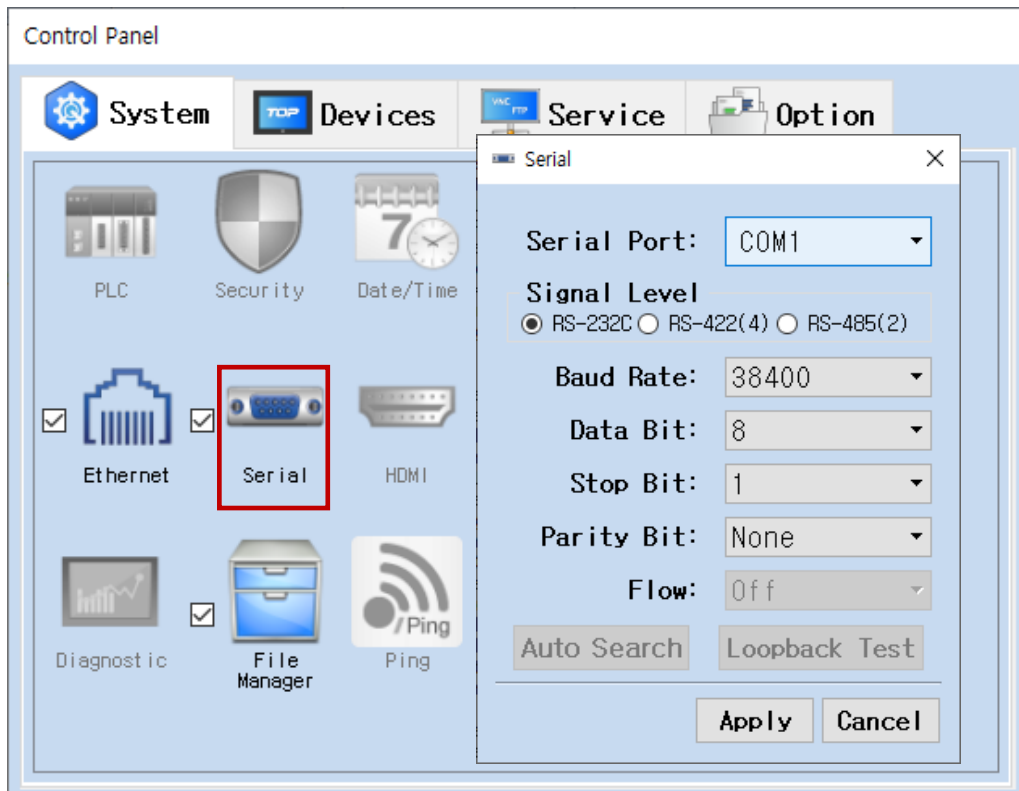
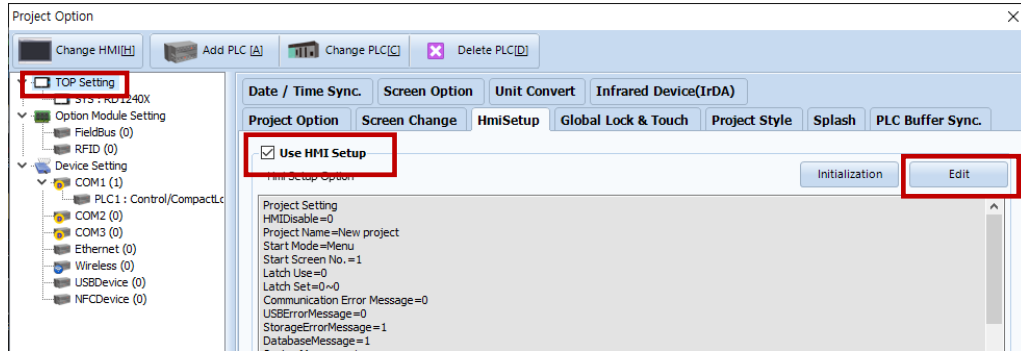
### 3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

#### 3.1 Communication setting in TOP Design Studio

##### (1) Communication interface setting

- [ Project > Project Property > TOP Setting ] → [ Project Option > "Use HMI Setup" Check > Edit > Serial ]
- Set the TOP communication interface in TOP Design Studio.



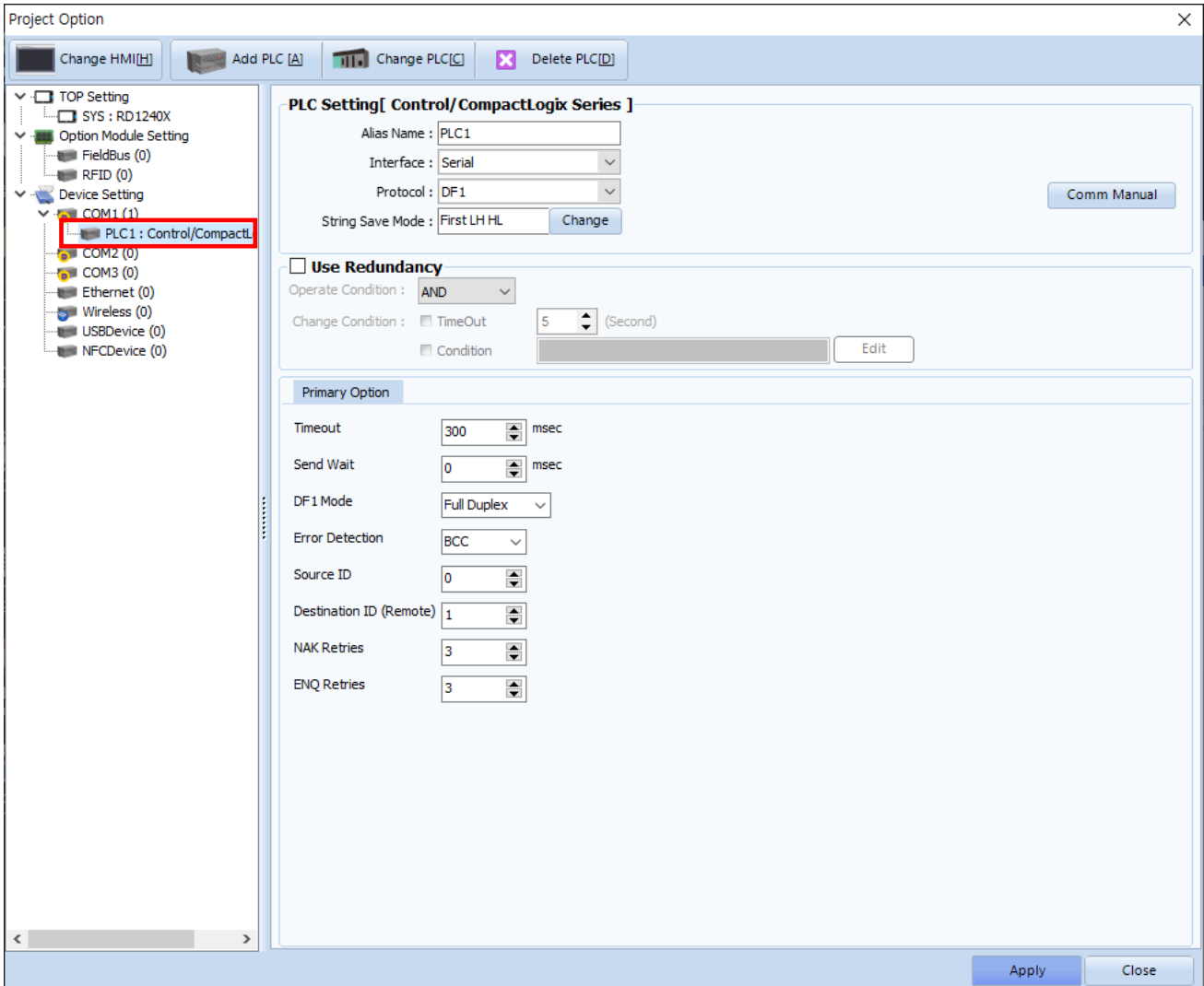
Items	TOP			External device	Remarks
	RS-232C	RS-422	RS-485		
Signal Level (port)	RS-232C	RS-422	RS-485	RS-232C RS-422/485	
Baud Rate	38400				
Data Bit	8				
Stop Bit	1				
Parity Bit	None.				

\* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

**(2) Communication option setting**

- [Project > Project Property > Device Setting > COM> "PLC1 : Control/Compact Logix Series"]  
 – Set the options of the DF1 communication driver in TOP Design Studio.



### 3.2. Communication setting in TOP

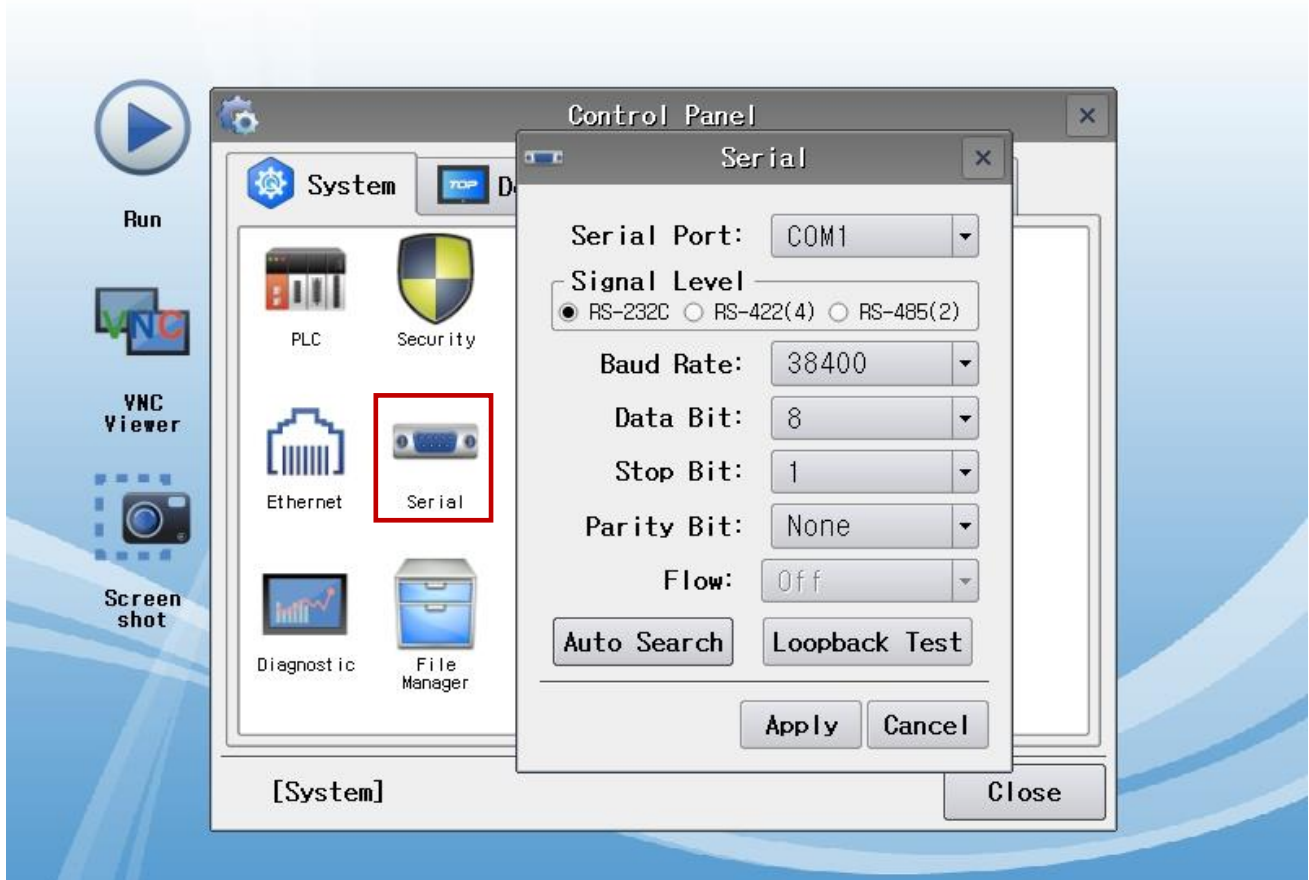
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



#### (1) Communication interface setting

- [ Main Screen > Control Panel > Serial ]



TOPRX - TOPRX0800S

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Items	TOP			External device	Remarks
Signal Level (port)	RS-232C	RS-422	RS-485	RS-232C RS-422/485	
Baud Rate	38400				
Data Bit	8				
Stop Bit	1				
Parity Bit	None.				

\* The above settings are setting examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device. (COM3 supports only RS-485.)
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

(2) Communication option setting

■ [ Main Screen > Control Panel > PLC ]



### 3.3 Communication diagnostics

- Check the interface setting status between the TOP and an external device.
  - Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
  - Check if the port (COM1/COM2/COM3) settings you want to use in [Control Panel > Serial] are the same as those of the external device.

- Diagnosis of whether the port communication is normal or not
  - Touch "Communication diagnostics" in [Control Panel > PLC ].
  - The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

<b>OK</b>	<b>Communication setting normal</b>
<b>Time Out Error</b>	<b>Communication setting abnormal</b> - Check the cable, TOP, and external device setting status. <b>(Reference: Communication diagnostics sheet)</b>

- Communication diagnostics sheet
  - If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	<a href="#">1. System configuration</a>	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	<a href="#">2. External device selection</a> <a href="#">3. Communication setting</a>	
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	Relative prefix	Project setting	OK		NG
		Communication diagnostics	OK		NG
	Serial Parameter	Transmission Speed	OK		NG
		Data Bit	OK		NG
Stop Bit		OK	NG		
Parity Bit		OK	NG		
External device	CPU name	OK	NG	<a href="#">4. External device setting</a>	
	Communication port name (module name)	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	OK	NG		
	Serial Parameter	Transmission Speed	OK		NG
		Data Bit	OK		NG
		Stop Bit	OK		NG
Parity Bit		OK	NG		
Check address range		OK	NG	<a href="#">6. Supported addresses</a> (For details, please refer to the PLC vendor's manual.)	



## 4. External device setting

Set as below using "Control/CompactLogix Series" Ladder Software "RSLogix5000". For more detailed setting method than that described in this example, refer to the PLC user manual.



- Take caution when selecting RTU/ASCII mode in Protocol Frame format.
- Check the contents of the address map on the external device side and use the communication address according to its contents.

1. In "RSLogix5000" project window, bring up the [Controller Properties] pop-up window.

2. Configure the [Serial Port] tab settings as shown below.

Setup Items	Setup Description	Remarks
Mode	System	
BaudRate	38400	
Data Bits	8	
Parity Bits	None	
Stop Bits	1	
Control Line	No Handshake	
RTS Send Delay	0	
TRS Off Delay	0	

3. Configure the [System Protocol] tab settings as shown below.

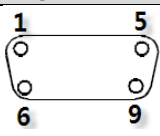
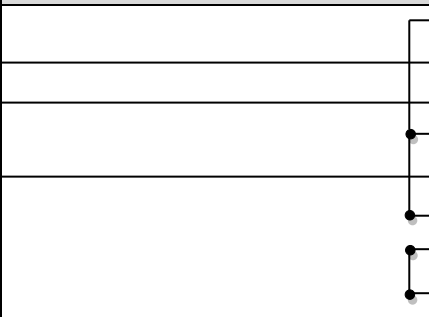
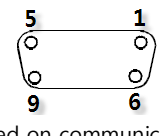
Setup Items	Setup Description	Remarks
Protocol	DF1 Slave	
Station Address	0	
Transmit	3	
Slave Poll	3000	
EOT Suppression	No Check	
Error Detection	BCC	
Enable Duplicate Detection	No Check	

4. Download configurations to PLC.

## 5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.  
 (The cable diagrams described in this section may differ from the external device vendor's recommendations.)

### ■ RS-232C (1:1 connection)

COM			Cable connection	PLC	
Pin arrangement* <b>Note 1)</b>	Signal name	Pin number		Signal name	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	CD	1		CD	 <p>Based on communication cable connector front, D-SUB 9 Pin male (female, convex)</p>
	RD	2		SD	
	SD	3		RD	
	DTR	4		DTR	
	SG	5		SG	
	DSR	6		DSR	
	RTS	7		RTS	
	CTS	8		CTS	
		9			

\***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

## 6. Supported addresses

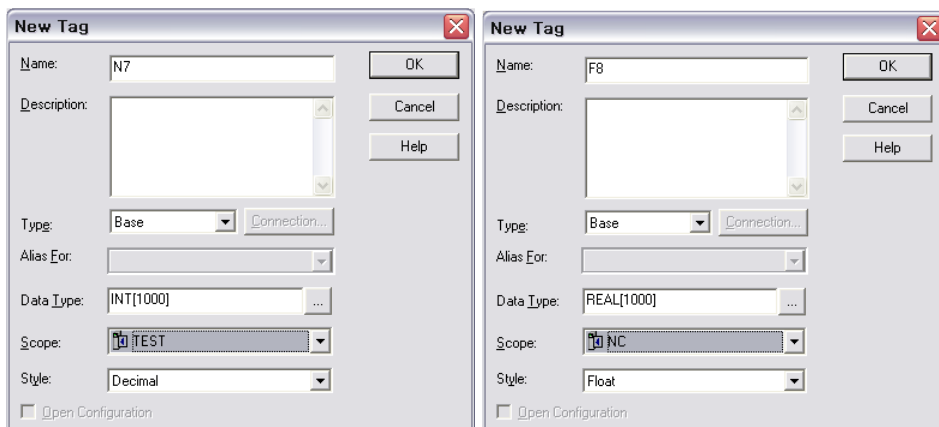
The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

### ■ [New Tag] : Create tag (Tag Name, Data Type Setting)

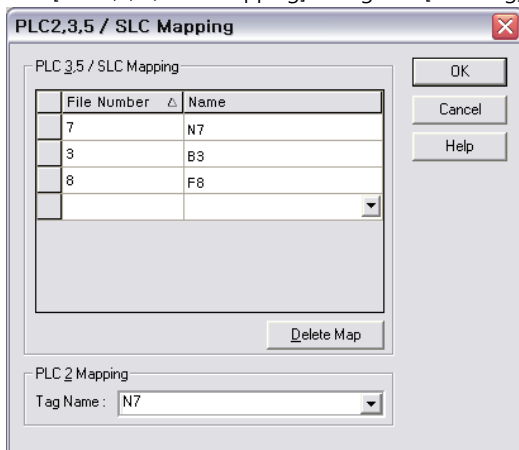
1. Run [Controller Tags] > [New Tag].
2. In [New Tag] dialog box, set Tag Name, Data Type

Items	Contents	Remarks
Tag Name	The name of the tag used in RSLogix5000 (User Define). You must map the File Number to the appropriate tag to communicate with the TOP. ■ [Map PLC/SLC Messages] Reference	
Data type	BOOL : 32bit Data DINT : Double Word Data INT : Word Data REAL : Float Data	



### ■ [Map PLC/SLC Messages] : File Number mapping in tag

3. In "RSLogix5000" menu, run [Logic] > [Map PLC/SLC Messages...].
4. In [PLC 2,3,5 / SLC Mapping] dialog box [New Tag]dialog box created Tag Name, map File Number.



The supported address ranges by the "Tag File Number Setting" described above are as follows:

DEVICE	Bit Address	Word Address	32bit	Remarks
BOOL	B000:000.00~B999:999.00	B000:000~B999:999	L/H	
DINT	B000:000.00~B999:999.00	B000:000~B999:999		
INT	N000:000.00~B999:999.00	N000:000~B999:999		
REAL	-	F000:000~B999:999		