

Communication Related Settings

- Port 1...Port 4 can support Modbus RTU (Slave) communication protocol :

R4047 : Upper Byte = 55H , configure the communication port for Modbus RTU protocol;

= Other values , Port 1~4 don't support Modbus RTU protocol (The defaults are FATEK protocol) °

Lower Byte : Port assignment for Modbus RTU protocol

Format as below :

Upper Byte	Lower Byte							
55	b7	b6	b5	b4	b3	b2	b1	b0

b0, Reserved ;

b1=0, Port 1 acts as FATEK protocol

=1, Port 1 acts as Modbus RTU protocol

b2=0, Port 2 acts as FATEK protocol

=1, Port 2 acts as Modbus RTU protocol

b3=0, Port 3 acts as FATEK protocol

=1, Port 3 acts as Modbus RTU protocol

b4=0, Port 4 acts as FATEK protocol

=1, Port 4 acts as Modbus RTU protocol

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b5~b7, Reserved

※ It allows to assign multiple ports for Modbus RTU protocol , where the corresponding bit must be 1 °

For example:

R4047=5502H, Assign Port 1 as Modbus RTU protocol ;

R4047=5504H, Assign Port 2 as Modbus RTU protocol ;

R4047=5506H, Assign both Port 1 & Port 2 as Modbus RTU protocol °

Refer to : Appendix-Modbus-Fatek , the rule for address mapping between Modbus & Fatek

● Communication Parameters Setting

- Port 0 : Allowed to change Baud Rate, the others are fixed as below :
7-bit of Data , Even Parity , 1-bit of Stop

R4050 : Port 0 Communication Parameters Register

- = 0 , Baud Rate is 9600 bps (Default of FB-V2.xx / FB_E-V3.xx)
- = 5500H , Baud Rate is 19200 bps (FB_E-V3.xx / FB_S-V4.xx)
- = 5501H , Baud Rate is 9600 bps (FB_E-V3.xx / FB_S-V4.xx)
- = 5507H , Baud Rate is 38400 bps (FB_E-V3.xx / FB_S-V4.xx)
- = 5621H , Baud Rate is 9600 bps (Default of FB_S-V4.xx)
- = 5622H , Baud Rate is 19200 bps (FB_S-V4.xx)
- = 5623H , Baud Rate is 38400 bps (FB_S-V4.xx)
- = 562BH , Baud Rate is 57600 bps (FB_S-V4.xx)
- = 562CH , Baud Rate is 115200 bps (FB_S-V4.xx)

- Port 1…Port 4 : Each port has the corresponding register for communication parameters setting;
b0~b3 of the register is used to set Baud Rate,
b4~b7 of the register is used to set Data Bit, Parity, Stop Bit
- ※ The data bit is fixed at 8-bit while in Modbus RTU communication protocol

R4146 : Port 1 Communication Parameters Register

- = 0, it means 9600 bps, 7-bit of Data, Even Parity, 1-bit of Stop
(Default of FB-V2.xx / FB_E-V3.xx)
- = 55X0H, Baud Rate is 19200 bps (FB-V2.xx/ FB_E-V3.xx/ FB_S-V4.xx)
- = 55X1H , Baud Rate is 9600 bps (FB-V2.xx/ FB_E-V3.xx/ FB_S-V4.xx)
- = 55X2H , Baud Rate is 4800 bps (FB-V2.xx/ FB_E-V3.xx/ FB_S-V4.xx)
- = 55X3H , Baud Rate is 2400 bps (FB-V2.xx / FB_E-V3.xx)
- = 55X4H , Baud Rate is 1200 bps (FB-V2.xx / FB_E-V3.xx)
- = 55X5H , Baud Rate is 600 bps (FB-V2.xx / FB_E-V3.xx)
- = 55X7H , Baud Rate is 38400 bps (FB_E-V3.xx / FB_S-V4.xx)
- = 56XXH, refer to following descriptions
(Default 5621H for FB_S-V4.xx)

R4158 : Port 2 Communication Parameters Register (Not for High Speed Link)

- = 55XXH, refer to following descriptions
(Default 5521H for FB_E-V3.xx)
- = 56XXH, refer to following descriptions
(Default 5621H for FB_S-V4.xx)

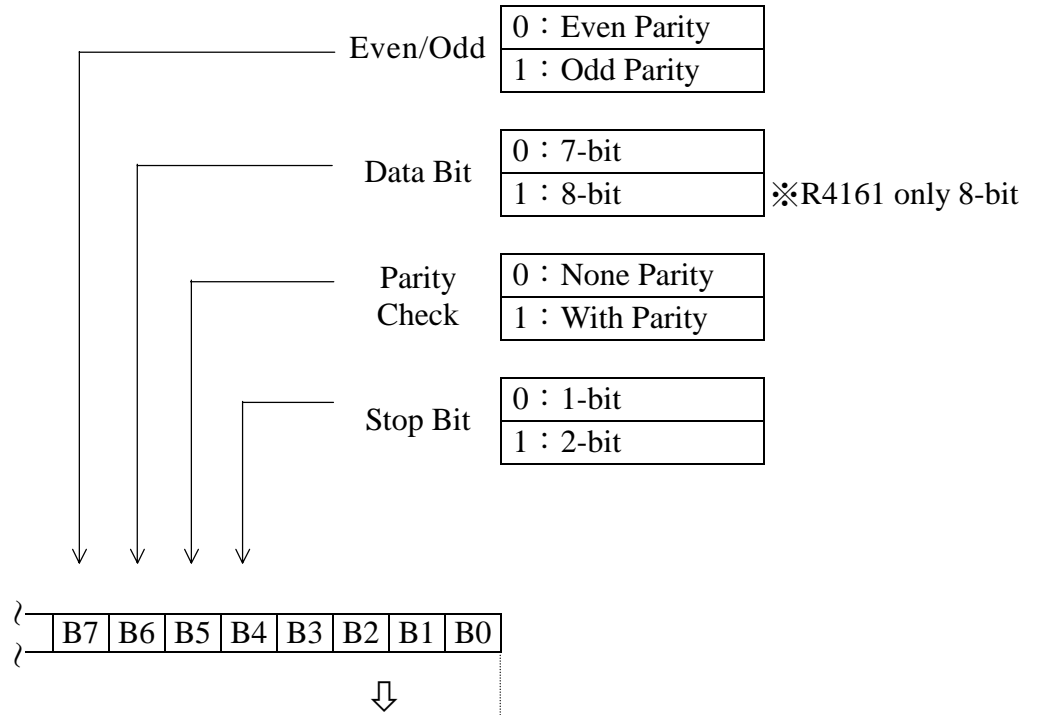
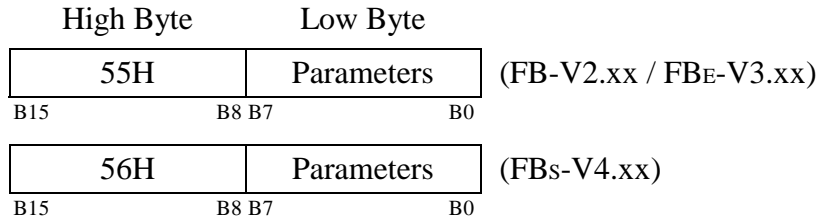
R4161 : Port 2 High Speed Link Communication Parameters Register

- = 55XXH, refer to following descriptions
(Default 5565H for FB_E-V3.xx)
- = 56XXH, refer to following descriptions
(Default 5665H for FB_S-V4.xx)

R4043 : Port 3 Communication Parameters Register
= 56XXH, refer to following descriptions
(Default 5621H for FBs-V4.xx)

R4044 : Port 4 Communication Parameters Register
= 56XXH, refer to following descriptions
(Default 5621H for FBs-V4.xx)

※ Port 1···Port 4 supports user-defined Baud Rate setting (1125 bps~1152000 bps)



				Value	Baud Rate
0	0	0	0	0	4800 bps
0	0	0	1	1	9600 bps
0	0	1	0	2	19200 bps
0	0	1	1	3	38400 bps
0	1	0	0	4	76800 bps
0	1	0	1	5	153600 bps
0	1	1	0	6	307200 bps
0	1	1	1	7	614400 bps
1	0	0	0	8	7200 bps
1	0	0	1	9	14400 bps
1	0	1	0	A	28800 bps
1	0	1	1	B	57600 bps
1	1	0	0	C	115200 bps
1	1	0	1	D	230400 bps
1	1	1	0	E	921600 bps
1	1	1	1	F	User-defined

※ Baud Rate of R4161 must be ≥ 38400bps

- ※ Port 1…Port 4 supports user-defined Baud Rate setting (1125 bps~1152000 bps)
- D4000 = Port 1 Baud Rate Divisor, $D4000 = (18432000 / \text{Baud Rate}) - 1$
- D4001 = Port 2 Baud Rate Divisor, $D4001 = (18432000 / \text{Baud Rate}) - 1$
- D4002 = Port 3 Baud Rate Divisor, $D4002 = (18432000 / \text{Baud Rate}) - 1$
- D4003 = Port 4 Baud Rate Divisor, $D4003 = (18432000 / \text{Baud Rate}) - 1$

Expression :

$$\begin{aligned} \text{Baud_Rate_Div} &= (18432000 / \text{Baud_Rate}) - 1 && (15 \sim 16383) \\ \text{Baud_Rate} &= 18432000 / (\text{Baud_Rate_Div} + 1) && (1125 \text{ bps} \sim 1152000 \text{ bps}) \end{aligned}$$

For examples:

If we want to set Baud Rate of Port 1 to be 1200 bps, then

$$R4146 = 56XFH$$

$$D4000 = (18432000/1200) - 1 = 15359$$

If we want to set Baud Rate of Port 2 to be 256000 bps, then

$$R4158 = 56XFH$$

$$D4001 = (18432000/256000) - 1 = 71$$

● Modem Interface Setting

High Byte of R4149 = 55H, Remote-Diagnosis/Remote-CPU-Link by way of Port 1 through Modem connection, it supports user program controlled dial up function
= AAH, Remote diagnosis by way of Port 1 through Modem connection, it supports Passive receiving & Active dialing operation mode
= Other values, without above function

● Without Station Number Checking for FATEK's external communication protocol

While PLC communicating with WinProLadder or Handheld PP, it recognizes the FATEK's internal communication protocol.

While PLC communicating with Man Machine Interface (MMI) or Supervising software (SCADA), it recognizes the FATEK's external communication protocol.

Low Byte of R4149 = 1, Port 0 without station number checking while FATEK's external communication protocol

Low Byte of R4155 = 1, Port 1 without station number checking while FATEK's external communication protocol

High Byte of R4155 = 1, Port 2 without station number checking while FATEK's external communication protocol

Low Byte of R4156 = 1, Port 3 without station number checking while FATEK's external communication protocol

High Byte of R4156 = 1, Port 4 without station number checking while FATEK's external communication protocol

● Reply Delay Time Setting

As the PLC received a packet of addressed message and passed the error check, it would reply the message after the reply delay time period.

Low Byte of R4040 : Port 0 reply delay time setting (Unit in mS)

High Byte of R4040 : Port 1 reply delay time setting (Unit in mS)

Low Byte of R4041 : Port 2 reply delay time setting (Unit in mS)

High Byte of R4041 : Port 3 reply delay time setting (Unit in mS)

Low Byte of R4042 : Port 4 reply delay time setting (Unit in mS)

● Transmission Delay Time Setting

While the communication port being used as the master of FATEK CPU LINK (FUN151) or Modbus RTU (FUN150) multidrop's network, it allows the user to set the transmission delay time to slow down the expiration of message frame.

High Byte of R4147 : Port 1 transmission delay time setting (Unit in 10mS)

High Byte of R4159 : Port 2 transmission delay time setting (Unit in 10mS)

High Byte of R4045 : Port 3 transmission delay time setting (Unit in 10mS)

High Byte of R4048 : Port 4 transmission delay time setting (Unit in 10mS)

● Receive Time-out Span Setting

While the communication port being used as the master of FATEK CPU LINK (FUN151) or Modbus RTU (FUN150) multidrop's network, it allows the user to set the receive time-out span to detect whether the slave station on line or not.

Low Byte of R4147 : Port 1 receive time-out span setting (Unit in 10mS)

Low Byte of R4159 : Port 2 receive time-out span setting (Unit in 10mS)

Low Byte of R4045 : Port 3 receive time-out span setting (Unit in 10mS)

Low Byte of R4048 : Port 4 receive time-out span setting (Unit in 10mS)

● New Message Detection Time Interval Setting

- While the communication port being used as the master or slave of Modbus RTU protocol, the system will give the default time interval to identify each packet of receiving message, if the default works not well, the user can set this time interval through the high byte setting of R4148 and let M1956 be 1, to avoid the overlap of different packet of message frame.

M1956=1, High Byte of R4148 is used to set the new message detection time interval for Port 1~Port 4 (Unit in mS)

- While the communication port being used to communicate with the intelligent peripherals through the FUN151 convenient instruction, if the communication protocol without the end of text to separate each packet of message frame, it needs message detection time interval to identify the different packet. High byte of R4148 is used for this setting.

High Byte of R4148 : New message detection time interval setting for Port 1~Port 4 (Unit in mS)

- Without Station Number Checking for FATEK's internal communication protocol
While PLC communicating with WinProladder or Handheld PP, it recognizes the FATEK's internal communication protocol, the quick way to communicate with the PLC is to key in 255 as the station number for WinProladder to connect with the unsured station number of target.

When the number 255 for WinProladder to connect with the PLC, the PLC will communicate with Winproladder even the station number of PLC is 1~254.

● Related Internal Relay

M1960 : Port 1 Ready

M1961 : Port 1 Finished

M1962 : Port 2 Ready

M1963 : Port 2 Finished

M1936 : Port 3 Ready

M1937 : Port 3 Finished

M1938 : Port 4 Ready

M1939 : Port 4 Finished