

## Chapter 3 FBs-PLC Memory Allocation and Listing of Special Relays & Registers

### 3.1 FBs-PLC Memory Allocation

Bit Status	X0 ~ X255
	Y0 ~ Y255
	T0 ~ T255
	C0 ~ C255
	TR0 ~ TR39
	S0 ~ S999
	M0 ~ M2001
Data Registers	T0 ~ T255
	C0 ~ C255
	R0 ~ R3839
	R3840 ~ R4167
	R5000~R8071
	D0~D4095
	F0 ~ F8191

Remark:

1. When the Read Only Register (ROR) has been configured by the user, the contents of R5000 ~ R8071 (depends on the quantity of configuration) will be loaded from the ROR's during each time of power up or PLC from STOP to RUN mode. The user can access the ROR through the corresponding R5000~ R8071. Write operation of function instructions are prohibited in this ROR area of corresponding R5000~ R8071. The others of R5000~ R8071 that have not been configured for ROR, they can work as general purpose registers.
2. There is dedicated memory to store the contents of Read Only Register, this memory is out of the program memory. ROR can be configured up to 3072 words in maximum.

Program Area	Ladder Program ( 20K Words)
	Vector + Lable ( 1K Words)
	Read Only Register ( 3K Words)
	Documents ( 8K Words)

### 3.2 Digital and Register Allocations

“\*” is default, user configurable

Type	Symbol	Item		Range	Remarks	
Digital 《 Bit Status 》	X	Digital Input (DI)		X0 ~ X255 (256)	Mapping to external digital I/O	
	Y	Digital Output (DO)		Y0 ~ Y255 (256)		
	TR	Temporary Relay		TR0 ~ TR39 (40)	For branched points	
	M	Internal Relays	Non-Retentive	M0 ~ M799 (800)* M1400 ~ M1911 (512)	M0 ~ M1399 configurable as Non-retentive or Retentive, M1400 ~ M1911 are fixed to Non-retentive	
			Retentive	M800 ~ M1399 (600)*		
		Special Relay		M1912 ~ M2001 (90)		
	S	Step Relays	Non-Retentive	S0 ~ S499 (500)*	S20 ~ S499 configurable as Retentive	
			Retentive	S500 ~ S999 (500)*	Configurable as Non-retentive	
	T	Timer contact status		T0 ~ T255 (256)		
C	Counter contact status		C0 ~ C255 (256)			
Register 《 Word Data 》	TMR	CV of Timer Register	0.01S Time Base	T0 ~ T49 (50)*	The quantity of each time base can be configured	
			0.1S Time Base	T50 ~ T199 (150)*		
			1S Time Base	T200 ~ T255 (56)*		
	CTR	CV of Counter Register	16-bit 32-bit	Retentive	C0 ~ C139 (140)*	Configurable as Non-retentive
				Non-Retentive	C140 ~ C199 (60)*	Configurable as Retentive
				Retentive	C200 ~ C239 (40)*	Configurable as Non-retentive
				Non-Retentive	C240 ~ C255 (16)	Configurable as Retentive
	DR or HR	Data Registers	Retentive	R0 ~ R2999 (3000)* D0 ~ D3999 (4000)	R0 ~ R3839 configurable as Non-retentive or Retentive, D0 ~ D3999 are fixed to Retentive	
			Non-Retentive	R3000 ~ R3839 (840)*		
	IR	Input Registers		R3840 ~ R3903 (64)	Map to external AI/Reg input	
	OR	Output Registers		R3904 ~ R3967 (64)	Map to external AO/Reg output	
	Special Register	System Special Registers		R3968 ~ R4167 (200) D4000 ~ D4095 (96)		
		High-Speed Timer Register		R4152 ~ R4154 (3)		
		HSC Registers	Hardware (4sets)		DR4096 ~ DR4110	
			Software (4sets)		DR4112 ~ DR4126	
		Calendar Registers	Minute	Second	R4129	R4128
				Day	Hour	R4131
Year			Month	R4133	R4132	
	Week				R4134	
DR or ROR	Data Registers		R5000 ~ R8071 (3072)*	As general purpose registers if ROR not been configured.		
	Read Only Registers		R5000 ~ R8071 (0)*	Configurable as ROR for recipe like application		

	FR	File Registers	F0 ~ F8191 (8192)	Need dedicated instruction to access
	XR	Index Registers	V · Z (2) · P0 ~ P9 (10)	

Remark: During power up or changing operation mode from STOP→RUN, all contents in non-retentive relays or registers will be cleared to 0; the retentive relays or registers will remain the same state as before.

### 3.3 Special Relay Details

Relay No.	Function	Description
1. Stop, Prohibited Control		
M1912	Emergency Stop control	<ul style="list-style-type: none"> <li>If ON, PLC will be stopped (but not enter STOP mode) and all outputs OFF. This bit will be cleared when power up or changing operation mode from STOP→RUN.</li> </ul>
M1913	Disable external outputs control	<ul style="list-style-type: none"> <li>All external outputs are turn off but the status of Y0~Y255 inside the PLC will not be affected.</li> </ul>
M2001	Disable/Enable status retentive control	<ul style="list-style-type: none"> <li>If M2001 is 0 or enabled, the Disable/Enable status of all contacts will be reset to enable during power up or changing operation mode from STOP→RUN.</li> <li>If M2001 is disabled and force ON, the Disable/Enable status &amp; ON/OFF state of all contacts will remain as before during power up or changing operation mode from STOP→RUN. While testing, it may disable and force ON M2001 to keep the ON/OFF state of disabled contacts, but don't forget to enable the M2001 after testing.</li> </ul>
2. CLEAR Control		
M1914	Clear Non-Retentive Relays	<ul style="list-style-type: none"> <li>Cleared When at 1</li> </ul>
M1915	Clear Retentive Relays	<ul style="list-style-type: none"> <li>Cleared When at 1</li> </ul>
M1916	Clear Non-Retentive Registers	<ul style="list-style-type: none"> <li>Cleared When at 1</li> </ul>
M1917	Clear Retentive Registers	<ul style="list-style-type: none"> <li>Cleared When at 1</li> </ul>
M1918	Master Control (MC) Selection	<ul style="list-style-type: none"> <li>If 0, the pulse activated functions within the master control loop will only be executed once at first 0→1 of master control loop.</li> <li>If 1, the pulse activated functions within the master control loop will be executed every time while changing 0→1 of master control loop.</li> </ul>
M1919	Function output control	<ul style="list-style-type: none"> <li>If 0, the functional outputs of some function instructions will memory the output state, even these instructions not been executed.</li> <li>If 1, the functional output of some function instructions without the memory ability.</li> </ul>
<p>※ M1918/M1919 can be set to 0 or 1 at will around the whole program to meet the control requirements.</p>		

Relay No.	Function	Description
<b>3. Pulse Signals</b>		
M1920 M1921 M1922 M1923 M1924  M1925 M1926	0.01S Clock pulse } ① 0.1S Clock pulse } 1S Clock pulse } 60S Clock pulse } Initial pulse (first scan) ②  Scan clock pulses ③ Reserved	<p>T is the pulse period</p> <p>t is the scan time</p> <p>T(M1920)=0.01S  T(M1921)=0.1S  T(M1922)=1S  T(M1923)=60S</p>
M1927	CTS input status of communication port 1	<ul style="list-style-type: none"> <li>0 : CTS True (ON)</li> <li>1 : CTS False (OFF)</li> <li>When communication port 1 is used to connect with the printer or modem, it can use this signal and a timer to detect whether the printer or the modem is ready.</li> </ul>
<b>4. Error Messages</b>		
M1928 M1929 M1930 M1931 M1932 M1933 M1934   M1935	Reserved Reserved No expansion unit or exceed the limit on number of I/O points Immediate I/O not in the main unit range Unused System stack error Reserved Reserved	<ul style="list-style-type: none"> <li>1: Indicating no expansion unit or exceed the limit on number of I/O points</li> <li>1: Indicating that Immediate I/O not in the main unit range and the main unit cannot RUN</li> <li>1: Indicating that system stack error</li> </ul>
<b>5. Port3~ Port4 Controls ( MC/MN )</b>		
M1936	Port 3 busy indicator	<ul style="list-style-type: none"> <li>0 : Port 3 Busy</li> <li>1 : Port 3 Ready</li> </ul>
M1937	Port 3 finished indicator	<ul style="list-style-type: none"> <li>1 : Port 3 finished all communication transactions</li> </ul>
M1938	Port 4 busy indicator	<ul style="list-style-type: none"> <li>0 : Port 4 Busy</li> <li>1 : Port 4 Ready</li> </ul>
M1939	Port 4 finished indicator	<ul style="list-style-type: none"> <li>1 : Port 4 finished all communication transactions</li> </ul>

Relay No.	Function	Description
6. HSC0/HSC1 Controls (MC/MN)		
M1940	HSC0 software Mask	• 1: Mask
M1941	HSC0 software Clear	• 1: Clear
M1942	HSC0 software Direction	• 0: Count-up, 1: Count-down
M1943	Reserved	
M1944	Reserved	
M1945	Reserved	
M1946	HSC1 software Mask	• 1: Mask
M1947	HSC1 software Clear	• 1: Clear
M1948	HSC1 software Direction	• 0: Count-up, 1: Count-down
M1949	Reserved	
M1950	Reserved	
M1951	Reserved	
7. RTC Controls		
M1952	RTC setting	
M1953	±30 second Adjustment	
■ M1954	RTC installation checking	
■ M1955	Set value error	
8. Communication/Timing/Counting Controls		
M1956	Selection of New Message Detection Time	• 0: System default for New Message Detection Time while Modbus RTU communication protocol • 1: Setting by high byte of R4148 for New Message Detection Time while Modbus RTU protocol
M1957	The CV value control after the timer "Time Up"	• 0: The CV value will continue timing until the upper limit is met after "Time Up" 1: The CV value will stop at the PV value after "Time Up" (User may control M1957 within the program to control the individual timer )
M1958	Communication port 2 High Speed Link selection	• 0: Set Port 2 to Normal Speed Link • 1: Set Port 2 to High Speed CPU Link ※ M1958 is only effective at slave station
M1959	Modem dialing selection	• 0: Dialing by TONE when Port 1 connecting with Modem. • 1: Dialing by PULSE when Port 1 connecting with Modem.
M1960	Port 1 busy indicator	• 0: Port 1 Busy • 1: Port 1 Ready
M1961	Port 1 finished indicator	• 1: Port 1 finished all communication transactions
M1962	Port 2 busy indicator	• 0: Port 2 Busy • 1: Port 2 Ready
M1963	Port 2 finished indicator	• 1: Port 2 finished all communication transactions
M1964	Modem dialing control	• If Port 1 is connected with Modem, when signal 0→1 will dial the phone number; when signal 1→0 will hang-up the phone.

Relay No.	Function	Description
M1965	Dialing success flag	<ul style="list-style-type: none"> <li>• 1: Indicating that dialing is successful (when Port 1 is connected with Modem).</li> </ul>
M1966	Dialing fail flag	<ul style="list-style-type: none"> <li>• 1: Indicating that dialing has failed (when Port 1 is connected with Modem).</li> </ul>
M1967	Port 2 High Speed Link working mode selection	<ul style="list-style-type: none"> <li>• 0: Continuous cycle.</li> <li>• 1: One cycle only that stops when the last communication transaction is completed (only effective at the master station).</li> </ul>
M1968	Step program status	<ul style="list-style-type: none"> <li>• 1: Indicating that there are more than 16 active steps in the step program at the same time.</li> </ul>
M1969	Indirect addressing illegal write flag	<ul style="list-style-type: none"> <li>• 1: Indicating that a function with index addressing will write over range</li> </ul>
M1970	Port 0 status	<ul style="list-style-type: none"> <li>• 1: Port 0 has received and transmitted a message</li> </ul>
M1971	Port 1 status	<ul style="list-style-type: none"> <li>• 1: Port1 has received and transmitted a message</li> </ul>
M1972	Port 2 status	<ul style="list-style-type: none"> <li>• 1: Port2 has received and transmitted a message</li> </ul>
M1973	The CV value control after counting "Count-Up"	<ul style="list-style-type: none"> <li>• 0: Indicating that the CV value will continue counting up to the upper limit after "Time-Up".</li> <li>• 1: Indicating that the CV value will stop at the PV value after "Count-Up" ( User may control M1973 within the program to control the individual counter )</li> </ul>
M1974	RAMP function (FUN95) slope control	<ul style="list-style-type: none"> <li>• 0: Time control for ramping</li> <li>• 1: Equivalent slope control for ramping</li> </ul>
M1975	CAM function (FUN112) selection	<ul style="list-style-type: none"> <li>• 1: For the circular applications where the electric CAM switch (FUN112) can support the angle like 350° ~ 10°</li> </ul>
<b>9. HSC2 ~ HSC7 Controls</b>		
M1976	HSC2 software Mask	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1977	HSC2 software Clear	<ul style="list-style-type: none"> <li>• 1: Clear</li> </ul>
M1978	HSC2 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1979	HSC3 software Mask	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1980	HSC3 software Clear	<ul style="list-style-type: none"> <li>• 1: Clear</li> </ul>
M1981	HSC3 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1982	HSC4 software Mask	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1983	HSC4 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1984	HSC5 software MASK	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1985	HSC5 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1986	HSC6 software Mask	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1987	HSC6 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1988	HSC7 software Mask	<ul style="list-style-type: none"> <li>• 1: Mask</li> </ul>
M1989	HSC7 software Direction	<ul style="list-style-type: none"> <li>• 0: Count-up, 1: Count-down</li> </ul>
M1990	Reserved	

Relay No.	Function	Description
10. PSO0~ PSO3 Controls		
M1991 M1992	Selection of stopping the pulse output (FUN140) PSO0 Busy indicator	<ul style="list-style-type: none"> <li>• 0 : Immediately stop while stopping pulse output</li> <li>• 1 : Slow down stop while stopping pulse output</li> <li>• 0 : PSO0 Busy</li> <li>• 1 : PSO0 Ready</li> </ul>
M1993 M1994 M1995 M1996 M1997 M1998 M1999 M2000	PSO1 Busy indicator PSO2 Busy indicator PSO3 Busy indicator PSO0 Finished indicator PSO1 Finished indicator PSO2 Finished indicator PSO3 Finished indicator Selection of Multi-Axis synchronization for High Speed Pulse Ouput (FUN140)	<ul style="list-style-type: none"> <li>• 0 : PSO1 Busy</li> <li>• 1 : PSO1 Ready</li> <li>• 0 : PSO2 Busy</li> <li>• 1 : PSO2 Ready</li> <li>• 0 : PSO3 Busy</li> <li>• 1 : PSO3 Ready</li> <li>• 1 : PSO0 finished the last step of motion</li> <li>• 1 : PSO1 finished the last step of motion</li> <li>• 1 : PSO2 finished the last step of motion</li> <li>• 1 : PSO3 finished the last step of motion</li> <li>• 1: Synchronized Multi-Axis</li> </ul>



### 3.4 Special Registers Details

Register No.	Function	Description
R3840   R3903	Input Registers CH0 : R3840   CH63 : R3903	For Analog or Numeric inputs
R3904   R3967	Output Registers CH0 : R3904   CH63 : R3967	For Analog or Numeric outputs
R3968   R3999	Raw Temperature Registers TP0 : R3968   TP31 : R3999	For temperature measurement
R4000	Reserved	
R4001	Reserved	
R4002	Reserved	
R4003	Reserved	
R4004	Reserved	
R4005	High Byte : Period of PWM =0, 2 seconds =1, 4 seconds =2, 8 seconds =3, 1 second =4, 16 seconds ≥5, 32 seconds Low Byte : Period of PID calculation =0, 2 seconds =1, 4 seconds =2, 8 seconds =3, 1 second =4, 16 seconds ≥5, 32 seconds	For PID temperature control
R4006	Threshold value of output ratio for heating/cooling loop abnormal detecting (Unit in %)	For PID temperature control
R4007	Threshold value of continuous time for heating/cooling loop abnormal detecting (Unit in second)	For PID temperature control
R4008	Maximum temperature for heating loop abnormal detecting	For PID temperature control
R4009	Reserved	

Register No.	Function	Description
R4010   R4011	Installed temperature sensor flag	Each bit represents 1 sensor, if bit value = 1 means installed.
R4012   R4013	PID Temperature control flag	Each bit represents 1 temperature point, if bit value = 1 means enable control.
R4014	Reserved	
R4015	Averaging of temperature value =0, no average on temperature =1, average by two readings =2, average by four readings =3, average by eight readings =4, average by sixteen readings	
R4016	Reserved	
R4017	Reserved	
R4018	Reserved	
R4019	Reserved	
R4020   R4024	Reserved	
R4025 R4026 R4027 R4028	Total Expansion Input Registers Total Expansion Output Registers Total Expansion Digital Inputs Total Expansion Digital Outputs	
R4029	Reserved for system	
R4030   R4039	Tables to save or read back the data registers into or from ROM Pack	When ROM Pack being used to save the ladder program and data registers, these tables describes which registers will be written into ROM Pack, and they will be intialized from ROM Pack while power up for addressed registers
R4040	Reply delay time settings for Port 0 and Port 1	Low Byte : For Port 0 (Unit in mS) High Byte : For Port 1 (Unit in mS)
R4041	Reply delay time settings for Port 2 and Port 3	Low Byte : For Port 2 (Unit in mS) High Byte : For Port 3 (Unit in mS)
R4042	Reply delay time settings for Port 4	Low Byte : For Port 4 (Unit in mS) High Byte : Reserved for system
R4043	Port 3 Communication Parameters Register	Set Baud Rate, Data bit...of Port 3
R4044	Port 4 Communication Parameters Register	Set Baud Rate, Data bit...of Port 4
R4045	Transmission Delay & Receive Time-out Span Setting, while Port 3 being used as the master of FUN151 or FUN150	Low Byte : Port 3 Receive Time-out Span (Unit in 10mS) High Byte : Port 3 Transmission Delay (Unit in 10mS)

Register No.	Function	Description
R4046	Power up initialization selection of data registers been written into ROM Pack	=5530H: Don't initialize the addressed data registers been written into ROM Pack while power up =Others : initialize the addressed data registers been written into ROM Pack while power up
R4047	Communication protocol setting for Port1~ Port4	Set the FATEK or Modbus RTU communication protocol
R4048	Transmission Delay & Receive Time-out Span Setting, while Port 4 being used as the master of FUN151 or FUN150	Low Byte : Port 4 Receive Time-out Span (Unit in 10mS) High Byte : Port 4 Transmission Delay (Unit in 10mS)
R4049	CPU Status Indication	=A55AH, Force CPU RUN =0, Normal Stop =1, Function over CPU can support =2, PLC ID not matched with Program ID =3, Ladder checksum error =4, System STACK error =5, Watch-Dog error =6, Immediate I/O over the CPU limitation =7, Syntax not OK =8, Qty of expansion I/O modules exceeds =9, Qty of expansion I/O points exceeds =10, CRC error of system FLASH ROM
R4050	Port 0 Communication Parameters Register	Set Baud Rate of Port 0
R4051	Reserved	
R4052	Indicator while writing ROM Pack	
R4053	Reserved	
R4054	Define the master station number of the High-Speed CP Link network (FUN151 Mode 3)	If the master station number is 1, it can ignore this register. To set the master station number other than 1 should: Low Bbyte : Station number High Byte: 55H
R4055	PLC station number	• If high byte is not equal 55H, R4055 will show the station number of this PLC • If want to set PLC station number then R4055 should set to: Low Byte : Station number High Byte: 55H
R4056	High Byte : Reserved Low Byte: High speed pulse output frequency dynamic control	Low Byte: =5AH, can dynamically change the output frequency of High Speed Pulse Output
R4057	Power off counter	The value will be increased by 1 while power up

Register No.	Function	Description								
R4058	Error station number while Port 2 in High Speed CPU Link	Used by FUN151 Mode 3 of Port 2								
R4059	Error code while Port 2 in High Speed CPU LINK	Used by FUN151 Mode 3 of Port 2 <div style="text-align: center;"> <table border="1" style="margin: auto;"> <tr> <td style="width: 50px;"></td> <td style="width: 50px; text-align: center;">High byte</td> <td style="width: 50px; text-align: center;">Low Byte</td> <td style="width: 50px;"></td> </tr> <tr> <td>R4059</td> <td style="border: 1px solid black; text-align: center;">Err code</td> <td style="border: 1px solid black; text-align: center;">Err count</td> <td style="text-align: right;">H</td> </tr> </table> </div> Error code : 0AH, No response 01H, Framing Error 02H, Over-Run Error 04H, Parity Error 08H, CRC Error		High byte	Low Byte		R4059	Err code	Err count	H
	High byte	Low Byte								
R4059	Err code	Err count	H							
R4060	Error code of PSO 0	The error codes are: 1: Parameter 0 error 2: Parameter 1 error 3: Parameter 2 error 4: Parameter 3 error 5: Parameter 4 error 7: Parameter 6 error 8: Parameter 7 error 9: Parameter 8 error 10: Parameter 9 error 30: Speed setting reference number error 31: Speed value error 32: Stroke setting reference number error 33: Stroke value error 34: Illegal positioning program 35: Step over 36: Step number exceeds 255 37: Highest frequency error 38: Idle frequency error 39: Movement compensation value too large 40: Movement value exceeds range 41: DRVC instruction not allow ABS addressing								
R4061	Error code of PSO 1	Same as above								
R4062	Error code of PSO 2	Same as above								
R4063	Error code of PSO 3	Same as above								
R4064	Being completed step number of positioning program	PSO 0								
R4065		PSO 1								
R4066		PSO 2								
R4067		PSO 3								
R4068   R4071	Reserved									

Register No.	Function	Description
R4072 R4073 R4074 R4075 R4076 R4077 R4078 R4079	Pulse count remaining for output	Low Word of PSO 0 High Word of PSO 0 Low Word of PSO 1 High Word of PSO 1 Low Word of PSO 2 High Word of PSO 2 Low Word of PSO 3 High Word of PSO 3
R4080 R4081 R4082 R4083 R4084 R4085 R4086 R4087	Current output frequency	Low Word of PSO 0 High Word of PSO 0 Low Word of PSO 1 High Word of PSO 1 Low Word of PSO 2 High Word of PSO 2 Low Word of PSO 3 High Word of PSO 3
R4088 R4089 R4090 R4091 R4092 R4093 R4094 R4095	Current pulse position	Low Word of PSO 0 High Word of PSO 0 Low Word of PSO 1 High Word of PSO 1 Low Word of PSO 2 High Word of PSO 2 Low Word of PSO 3 High Word of PSO 3

Register No.	Function	Description
R4096	HSC0 current value Low Word	
R4097	HSC0 current value High Word	
R4098	HSC0 preset value Low Word	
R4099	HSC0 preset value High Word	
R4100	HSC1 current value Low Word	
R4101	HSC1 current value High Word	
R4102	HSC1 preset value Low Word	
R4103	HSC1 preset value High Word	
R4104	HSC2 current value Low Word	
R4105	HSC2 current value High Word	
R4106	HSC2 preset value Low Word	
R4107	HSC2 preset value High Word	
R4108	HSC3 current value Low Word	
R4109	HSC3 current value High Word	
R4110	HSC3 preset value Low Word	
R4111	HSC3 preset value High Word	
R4112	HSC4 current value Low Word	
R4113	HSC4 current value High Word	
R4114	HSC4 preset value Low Word	
R4115	HSC4 preset value High Word	
R4116	HSC5 current value Low Word	
R4117	HSC5 current value High Word	
R4118	HSC5 preset value Low Word	
R4119	HSC5 preset value High Word	
R4120	HSC6 current value Low Word	
R4121	HSC6 current value High Word	
R4122	HSC6 preset value Low Word	
R4123	HSC6 preset value High Word	
R4124	HSC7 current value Low Word	
R4125	HSC7 current value High Word	
R4126	HSC7 preset value Low Word	
R4127	HSC7 preset value High Word	
R4128	Second of calender	
R4129	Minute of calender	
R4130	Hour of calender	
R4131	Day of calender	
R4132	Month of calender	
R4133	Year of calender	
R4134	Day of week of calender	
R4135	Reserved	
■ R4136	Previous scan time	• Error < $\pm 1\text{ms}$
■ R4137	Maximum scan time	• Re-calculate when PLC changes from STOP to RUN
■ R4138	Minimum scan time	

Register No.	Function	Description
R4139	CPU Status	Bit0=0, PLC STOP =1, PLC RUN Bit1  , Reserved Bit2=1, Ladder program checksum error Bit3=0, Without ROM Pack =1, With ROM Pack Bit4=1, Watch-Dog error Bit5=1, Mmain unit Bit6=1, With IDprotection Bit7=1, Emergency stop Bit8=1, Immediate I/O over range Bit9=1, System STACK error Bit10=1, ASIC failed Bit11=1, Function not allowed Bit12  , Reserved Bit13=1, With communication board Bit14=1, With calender Bit15=1, MC main unit
R4140 R4141 R4142 R4143 R4144 R4145	} Telephone Number	


Register No.	Function	Description
R4146	Port 1 Communication Parameters Register	Set Baud Rate, Data bit... of Port 1
R4147	Transmission Delay & Receive Time-out Span Setting, while Port 1 being used as the master of FUN151 or FUN150	Low Byte : Port 1 Receive Time-out Span (Unit in 10mS) High Byte : Port 1 Transmission Delay (Unit in 10mS)
R4148	New Message Detection Time Interval	.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; except this, 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 FUN151 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 for Port 1~ Port 4.  (Unit in mS)
R4149	Modem Interface Setting & Port 0 without station number checking for FATEK's external communication protocol	<ul style="list-style-type: none"> <li>• High Byte of R4149: =55H, Remote-Diagnosis/Remote-CPU-Link by way of Port 1 through Modem connection, it supports user program controled dial up function</li> <li>=AAH, Remote diagnosis by way of Port 1 through Modem connection, it supports Passive receiving &amp; Active dialing operation mode</li> <li>=Others, without above function</li> <li>• Low Byte of R4149: =1, Port 0 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA)</li> <li>=Others, Port 0 checks station number, it allows multi-drop network for data acquisition</li> </ul>
R4150	Power on I/O service delay time setting	<ul style="list-style-type: none"> <li>• PLC is ready for I/O service after this delay time while power up. The unit is in 0.01S. The default value is 100.</li> </ul>




Register No.	Function	Description
R4151	Circular 1mS time base timer	<ul style="list-style-type: none"> <li>The content of R4151 will be increased by 1 every 1mS. It can be used for a more precise timing application.</li> </ul>
R4152 R4153 R4154	Low word of HSTA CV register High word of HSTA CV register PV register of HSTA	HSTA is high speed timer in 0.1 mS resolution The HSTA can act as 32-bit cyclic timer or fixed time interrupt timer
R4155	Port 1 & Port 2 without station number checking for FATEK's external communication protocol	<ul style="list-style-type: none"> <li>Low Byte of R4155: <ul style="list-style-type: none"> <li>=1, Port 1 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA)</li> <li>=Others, Port 1 checks station number, it allows multi-drop network for data acquisition</li> </ul> </li> <li>High Byte of R4155: <ul style="list-style-type: none"> <li>=1, Port 2 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA)</li> <li>=Others, Port 2 checks station number, it allows multi-drop network for data acquisition</li> </ul> </li> </ul>
R4156	Port 3 & Port 4 without station number checking for FATEK's external communication protocol	<ul style="list-style-type: none"> <li>Low Byte of R4156: <ul style="list-style-type: none"> <li>=1, Port 3 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA)</li> <li>=Others, Port 3 checks station number, it allows multi-drop network for data acquisition</li> </ul> </li> <li>High Byte of R4156: <ul style="list-style-type: none"> <li>=1, Port 4 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA)</li> <li>=Others, Port 4 checks station number, it allows multi-drop network for data acquisition</li> </ul> </li> </ul>
R4157	System used	
R4158	Port 2 Communication Parameters Register (Not for High Speed CPU Link)	Set Baud Rate, Data bit...of Port 2
R4159	Transmission Delay & Receive Time-out Span Setting, while Port 2 being used as the master of FUN151 or FUN150	Low Byte : Port 2 Receive Time-out Span (Unit in 10mS) High Byte : Port 2 Transmission Delay (Unit in 10mS)

Register No.	Function	Description																
R4160	Port2 RX/TX time out setting for High Speed CPU Link	High Byte of R4160 : =56H, User setting mode if the system default works not well, Low Byte of R4160 is used for this setting (Not suggest) =Others, system will give the default value according to the setting of R416																
R4161	Port 2 Communication Parameters Register (For High Speed CPU Link)	<ul style="list-style-type: none"> <li>• Set Baud Rate, Parity... of Port 2</li> <li>• Data bit is fixed 8-bit</li> <li>• Baud Rate <math>\geq</math> 38400 bps</li> </ul>																
R4162	Fixed time interrupt enable/disable control	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>B7</th> <th>B6</th> <th>B5</th> <th>B4</th> <th>B3</th> <th>B2</th> <th>B1</th> <th>B0</th> </tr> </thead> <tbody> <tr> <td>100</td> <td>50</td> <td>10</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> </tr> </tbody> </table> <p>(Unit in mS) Bit=0, interrupt enabled Bit=1, interrupt disabled</p>	B7	B6	B5	B4	B3	B2	B1	B0	100	50	10	5	4	3	2	1
B7	B6	B5	B4	B3	B2	B1	B0											
100	50	10	5	4	3	2	1											
R4163	Modem dialing control setting	<ul style="list-style-type: none"> <li>• Low Byte of R4163 : =1, Ignore the dialing tone and the busy tone when dialing. =2, Wait the dialing tone but ignore the busy tone when dialing. =3, Ignore the dialing tone but detect the busy tone when dialing. =4, Wait the dialing tone and detect the busy tone when dialing. =Any other value treated as value equal 4.</li> <li>• High Byte of R4163 : The Ring count setting for Modem auto answer</li> </ul>																
R4164	V index register																	
R4165	Z index register																	
R4166	System used																	
R4167	Model of main unit	<ul style="list-style-type: none"> <li>• Low Byte of R4167: =0, 6I + 4O (FBs-10xx) =1, 8I + 6O (FBs-14xx) =2, 12I + 8O (FBs-20xx) =3, 14I + 10O (FBs-24xx) =4, 20I + 12O (FBs-32xx) =5, 24I + 16O (FBs-40xx) =6, 36I + 24O (FBs-60xx) =7, 28I + 16O (FBs-44MN)</li> <li>• High Byte of R4167: =0, MA =1, MC =2, MN =3, MU</li> </ul>																

暫存器號碼	功 用	說 明
D4000	Port 1 User-defined Baud Rate Divisor (R4146 must be 56XFH)	Port 1 user-defined Baud Rate (1125~1152000 bps) D4000 = (18432000/Baud Rate) - 1
D4001	Port 2 User-defined Baud Rate Divisor (R4158 must be 56XFH)	Port 2 user-defined Baud Rate (1125~1152000 bps) D4001 = (18432000/Baud Rate) - 1
D4002	Port 3 User-defined Baud Rate Divisor (R4043 must be 56XFH)	Port 3 user-defined Baud Rate (1125~1152000 bps) D4002 = (18432000/Baud Rate) - 1
D4003	Port 4 User-defined Baud Rate Divisor (R4044 must be 56XFH)	Port 4 user-defined Baud Rate (1125~1152000 bps) D4003 = (18432000/Baud Rate) - 1
D4004   D4079	Reserved	
D4080 D4081 D4082 D4083 D4084 D4085 D4086 D4087 D4088 D4089	P0 index register P1 index register P2 index register P3 index register P4 index register P5 index register P6 index register P7 index register P8 index register P9 index register	
D4090   D4095	Reserved	

Remark: All the special relays or registers attached with “” symbol shown in the above table are write prohibited.

For the special relays attached with “” symbol also has following characteristics

- . Forced and Enable/Disable operation is not allowed.
- . Can not be referenced by TU/TD transitional contact (contact will always open)