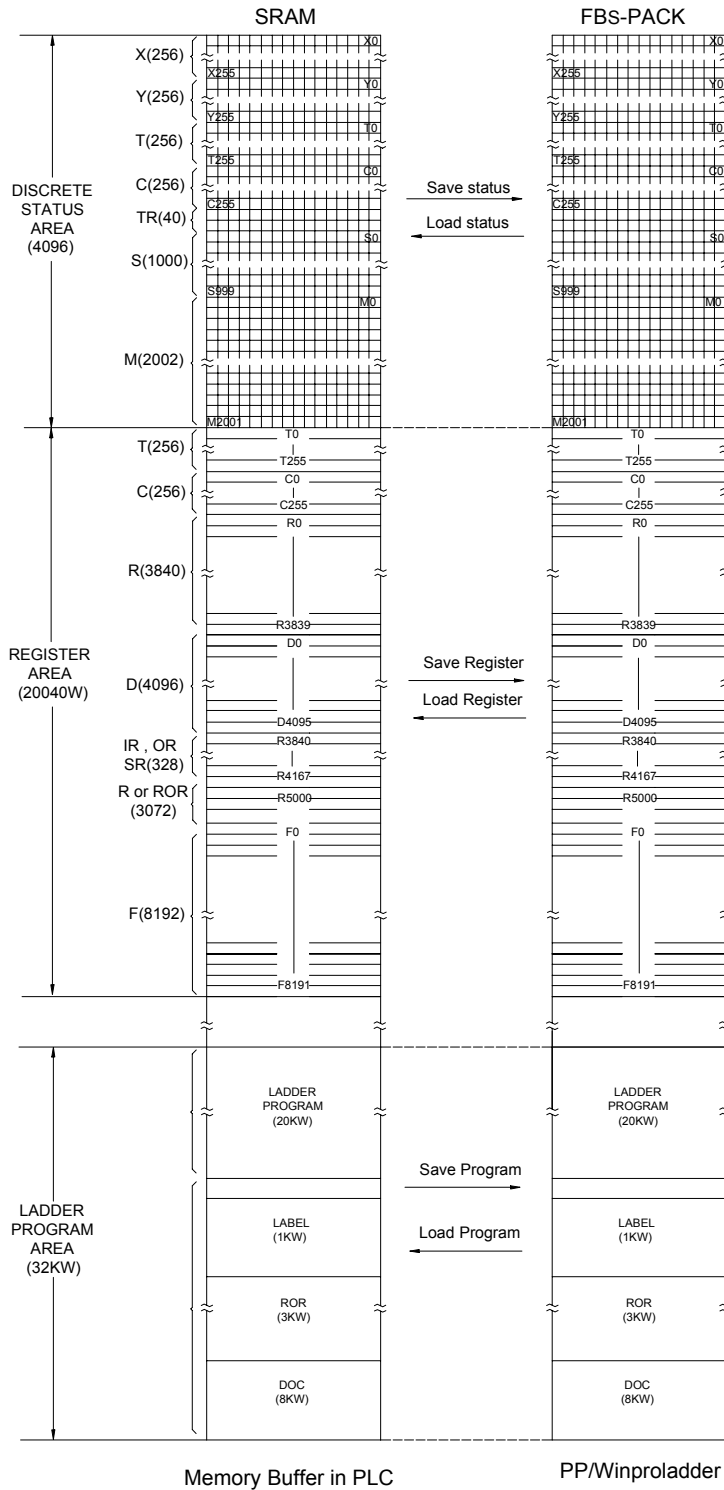# Chapter 2   FBs-PLC Memory Allocation

2.1 FBs-PLC Memory Allocation

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 changing 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 a dedicated area of program memory to store the contents of Read Only Register. ROR can be configured up to 3072 words in maximum.

2.2 Digital and Register Allocations

"*" is default, user configurable

Item				Range	Remarks
Digital 《 Bit Status 》	X	Input contact (DI)		X0~X255 (256)	Corresponding to external digital input
	Y	Output relay (DO)		Y0~Y255 (256)	Corresponding to external digital output
	TR	Temporary relay		TR0~TR39 (40)	
	M	Internal relay	Non-retentive	M0~M799 (800)*	Can be configured as retentive type
				M1400~M1911 (512)	
			Retentive	M800~M1399 (600)*	Can be configured as non-retentive type
		Special Relay		M1912~M2001 (90)	
	S	Step Relay	Non-Retentive	S0~S499 (500)*	S20~S499 can be configured as retentive type
			Retentive	S500~S999 (500)*	Can be configured as non-retentive type
	T	Timer "Time-Up" status contact		T0~T255 (256)	
	C	Counter "Counter-Up" status contact		C0~C255 (256)	
Register 《 Word Data 》	TMR	Time current value register	0.01S Time Base	T0~T49 (50)*	T0~T255 numbers for each time base can be adjusted.
			0.1S Time Base	T50~T199 (150)*	
			1S Time Base	T200~T255 (56)*	
	CTR	Counter current value register	16-bit Retentive	C0~C139 (140)*	Can be configured as non-retentive type
			16-bit Non-Retentive	C140~C199 (60)*	Can be configured as retentive type
			32-bit Retentive	C200~C239 (40)*	Can be configured as non-retentive type
			32-bit Non-Retentive	C240~C255 (16)*	Can be configured as retentive type
	HR DR	Data Register	Retentive	R0~R2999 (3000)*	Can be configured as non-retentive type
				D0~D3999 (4000)	
			Non-Retentive	R3000~R3839 (840)*	Can be configured as retentive type
	HR ROR		Retentive	R5000~R8071 (3072) *	When not configured as ROR, it can serve normal register (for read/write)
			Read Only Register (ROR)	R5000~R8071 can be set as ROR ~ default setting is (0)*	ROR is stored in special ROR area and not occupy program space
			File Register	F0~F8191 (8192)	Save/retrieved via dedicated instruction
	IR	Input Register		R3840~R3903 (64)	Corresponding to external numeric input
	OR	Output Register		R3904~R3967 (64)	Corresponding to external numeric output
	SR	Special system register		R3968~R4167 (197) D4000~D4095 (96)	
		0.1 mS High-Speed Timer Register		R4152~R4154 (3)	
		HSC Registers	Hardware (4sets)	DR4096~DR4110 (4x4)	
			Software(4sets)	DR4112~DR4126 (4x4)	
		Calendar Registers	Minute / Second	R4129 / R4128	
			Day / Hour	R4131 / R4130	
			Year / Month	R4133 / R4132	
			Week	R4134	

	FR	File Registers	F0～F8191(8192)	
	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.

2.3 Special Relay Details

Relay No.	Function	Description
1. Stop, Prohibited Control		
M1912	Emergency Stop control	• If 1, 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.
M1913	Disable external outputs control	• All external outputs are turn off but the status of Y0～Y255 inside the PLC will not be affected.
M2001	Disable/Enable status retentive control	•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.
		•If M2001 is disabled and force ON, the Disable/Enable status & 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.
2. CLEAR Control		
M1914	Clear Non-Retentive Relays	• Cleared When at 1
M1915	Clear Retentive Relays	• Cleared When at 1
M1916	Clear Non-Retentive Registers	• Cleared When at 1
M1917	Clear Retentive Registers	• Cleared When at 1
M1918	Master Control (MC) Selection	• If 0, the pulse activated functions within the master control loop will only be executed once at first 0→1 of master control loop.
		If 1, the pulse activated functions within the master control loop will be executed every time while changing 0→1 of master control loop.
M1919	Function output control	•If 0, the functional outputs of some function instructions will memory the output state, even these instructions not been executed.
		If 1, the functional output of some function instructions without the memory ability.
※ M1918/M1919 can be set to 0 or 1 at will around the whole program to meet the control requirements.		

Relay No.	Function	Description
3. Pulse Signals		
◤M1920	0.01S Clock pulse	
◤M1921	0.1S Clock pulse ①	
◤M1922	1S Clock pulse	
◤M1923	60S Clock pulse	
◤M1924	Initial pulse (first scan) ②	
◤M1925	Scan clock pulses ③	
◤M1926	=0, PLC is working at STOP mode =1, PLC is working at RUN mode	

Diagram:

"RUN"

"STOP"

① "1" / "0" with T intervals — T(M1920)=0.01S, T(M1921)=0.1S, T(M1922)=1S, T(M1923)=60S

② M1924 — t

③ M1925 — t t t t t — t is the scan time

Relay No.	Function	Description
◤M1927	CTS input status of communication port 1	• 0：CTS True (ON) • 1：CTS False (OFF) • 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.
4. Error Messages		
◤M1928	Reserved	
◤M1929	Reserved	
◤M1930	No expansion unit or exceed the limit on number of I/O points	• 1: Indicating no expansion unit or exceed the limit on number of I/O points
◤M1931	Immediate I/O not in the main unit range	• 1: Indicating that Immediate I/O not in the main unit range and the main unit cannot RUN
◤M1932	Unused	
◤M1933	System stack error	• 1: Indicating that system stack error
◤M1934		
⏐	Reserved	
◤M1935		
5.Port3～Port4 Controls（MC/MN）		
M1936	Port 3 busy indicator	• 0：Port 3 Busy • 1：Port 3 Ready
M1937	Port 3 finished indicator	• 1：Port 3 finished all communication transactions
M1938	Port 4 busy indicator	• 0：Port 4 Busy • 1：Port 4 Ready
M1939	Port 4 finished indicator	• 1：Port 4 finished all communication transactions

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	HSC1software Clear	• 1: Clear
M1948	HSC1 software Direction	• 0: Count-up, 1: Count-down
M1949	Reserved	
M1950	Port 3 communication indicator	• 1: Port 3 has received and transmitted a message
M1951	Port 4 communication indicator	• 1: Port 4 has received and transmitted a message
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 Message Fame Interval Detection Time	• 0: Use system default value as Message Fame Interval Detection Time for Modbus RTU communication protocol • 1: Use the high byte value of R4148 as Message Fame Interval Detection Time for 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 mode 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 signal selection	• 0: Dialing by TONE when Port 1 connecting with Modem. • 1: Dialing by PULSE when Port 1 connecting wit 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	• 1: Indicating that dialing is successful (when Port 1 is connected with Modem).
M1966	Dialing fail flag	• 1: Indicating that dialing has failed (when Port 1 is connected with Modem).
M1967	Port 2 High Speed Link working mode selection	• 0: Continuous cycle. • 1: One cycle only. It will stop when the last communication transaction is completed (only effective at the master station).
M1968	Step program status	• 1: Indicating that there are more than 16 active steps in the step program at the same time.
M1969	Indirect addressing illegal write flag	• 1: Indicating that a function with index addressing attempts to write cross over the boundary of different type of data.
M1970	Port 0 status	• 1: Port 0 has received and transmitted a message
M1971	Port 1 status	• 1: Port1 has received and transmitted a message
M1972	Port 2 status	• 1: Port2 has received and transmitted a message
M1973	The CV value control after counting "Count-Up"	• 0: Indicating that the CV value will continue counting up to the upper limit after "Time-Up". • 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）
M1974	RAMP function slope control	• 0: Time control for ramping • 1: Equivalent slope control for ramping
M1975	CAM function (FUN112) selection	• 1: For the circular applications where the electric CAM switch (FUN112) can support the wrap around situation like the angle from 359° cross to 0°

9. HSC2～HSC7 Controls

Relay No.	Function	Description
M1976	HSC2 software Mask	• 1: Mask
M1977	HSC2 software Clear	• 1: Clear
M1978	HSC2 software Direction	• 0: Count-up, 1: Count-down
M1979	HSC3 software Mask	• 1: Mask
M1980	HSC3 software Clear	• 1: Clear
M1981	HSC3 software Direction	• 0: Count-up, 1: Count-down
M1982	HSC4 software Mask	• 1: Mask
M1983	HSC4 software Direction	• 0: Count-up, 1: Count-down
M1984	HSC5 software MASK	• 1: Mask
M1985	HSC5 software Direction	• 0: Count-up, 1: Count-down
M1986	HSC6 software Mask	• 1: Mask
M1987	HSC6 software Direction	• 0: Count-up, 1: Count-down
M1988	HSC7 software Mask	• 1: Mask
M1989	HSC7 software Direction	• 0: Count-up, 1: Count-down
M1990	Reserved	

Relay No.	Function	Description
10. PSO0～POS3 Controls		
M1991	Selection of stopping the pulse output (FUN140)	• 0：Immediately stop while stopping pulse output • 1：Slow down stop while stopping pulse output
M1992	PSO0 Busy indicator	• 0：PSO0 Busy • 1：PSO0 Ready
M1993	PSO1 Busy indicator	• 0：PSO1 Busy • 1：PSO1 Ready
M1994	PSO2 Busy indicator	• 0：PSO2 Busy • 1：PSO2 Ready
M1995	PSO3 Busy indicator	• 0：PSO3 Busy • 1：PSO3 Ready
M1996	PSO0 Finished indicator	• 1：PSO0 finished the last step of motion
M1997	PSO1 Finished indicator	• 1：PSO1 finished the last step of motion
M1998	PSO2 Finished indicator	• 1：PSO2 finished the last step of motion
M1999	PSO3 Finished indicator	• 1：PSO3 finished the last step of motion
M2000	Selection of Multi-Axis synchronization for High Speed Pulse Output (FUN140)	• 1: Synchronized Multi-Axis

2.4 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 | R3980	Define stimulate Modbus equipment	
R3981 | R3999	Reserved	
R4000	Reserved	
R4001	Reserved	
R4002	Reserved	
R4003 | R4004	Define FUN86 temperature reading value at starting/end address	

Register No.	Function	Description
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	Temperature display in Celsius/Fahrenheit	=0, Celsius ;=1,Fahrenhelt
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	
R4016	Reserved	
R4017	Reserved	
R4018	Reserved	
R4019	Number of PASSWORD Retry	
R4020	Control FUN148 instruction forbid to clockwise/anti-clockwise.	
R4021 ｜ R4024	Reserved	
R4025	Total Expansion Input Registers	

Register No.	Function	Description
R4026	Total Expansion Output Registers	
R4027	Total Expansion Digital Inputs	
R4028	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 the ROM Pack being used to save the ladder program and data registers, these tables describes which registers will be written into the ROM Pack. The addressed registers will be initialized from ROM Pack while power up.
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 interval time Setting, while Port 3 being used as the master of FUN151 or FUN150	Low Byte：Port 3 Receive Time-out interval time (Unit in 10mS) High Byte：Port 3 Transmission Delay (Unit in 10mS)
R4046	Power up initialization mode selection of data registers that has 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/ASCII communication protocol
R4048	Transmission Delay & Receive Time-out interval time Setting, while Port 4 being used as the master of FUN151 or FUN150	Low Byte：Port 4 Receive Time-out interval time (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(s) existed that CPU does not 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	

Register No.	Function	Description
R4053	Reserved	
R4054	Define the master station number of the High-Speed CPU 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 Byte : 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
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 mode	Used by FUN151 Mode 3 of Port 2 High byte Low Byte R4059 [Err code | Err count] H Error code： 0AH, No response 01H, Framing Error 02H, Over-Run Error 04H, Parity Error 08H, CRC Error

Register No.	Function	Description
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 13：Parameter 12 error 15：Parameter 14 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 42：DRVZ can't follow DRVC 50：Illegal operation mode of DRVZ 51：Illegal DOG input number 52：Illegal PG0 input number 53：Illegal CLR output number 60: Illegal linear interpolation command
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	FUN147 GP0 vector speed	
R4069		
R4070	FUN147GP1 vector speed	
R4071		

Register No.	Function	Description
R4072		Low Word of PSO 0
R4073		High Word of PSO 0
R4074		Low Word of PSO 1
R4075		High Word of PSO 1
R4076	Pulse count remaining for output	Low Word of PSO 2
R4077		High Word of PSO 2
R4078		Low Word of PSO 3
R4079		High Word of PSO 3
R4080		Low Word of PSO 0
R4081		High Word of PSO 0
R4082		Low Word of PSO 1
R4083	Current output frequency	High Word of PSO 1
R4084		Low Word of PSO 2
R4085		High Word of PSO 2
R4086		Low Word of PSO 3
R4087		High Word of PSO 3
R4088		Low Word of PSO 0
R4089		High Word of PSO 0
R4090		Low Word of PSO 1
R4091	Current pulse position	High Word of PSO 1
R4092		Low Word of PSO 2
R4093		High Word of PSO 2
R4094		Low Word of PSO 3
R4095		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 calendar	
R4129	Minute of calendar	
R4130	Hour of calendar	
R4131	Day of calendar	
R4132	Month of calendar	
R4133	Year of calendar	
R4134	Day of week of calendar	
R4135	month ＋ minute	
� R4136	Current scan time	• Error < ±1ms
▶ R4137	Maximum scan time	
▶ R4138	Minimum scan time	• Re-calculate when PLC changes from STOP to RUN

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, MA model main unit Bit6 =1, With ID protection 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 calendar Bit15 =1, MC main unit
R4140 R4141 R4142 R4143 R4144 R4145	Telephone Number registers	

Register No.	Function	Description
R4146	Port 1 Communication Parameters Register	Set Baud Rate, Data bit… of Port 1
R4147	Transmission Delay & Receive Time-out interval time Setting, while Port 1 being used as the master of FUN151 or FUN150	Low Byte：Port 1 Receive Time-out interval time (Unit in 10mS) High Byte：Port 1 Transmission Delay (Unit in 10mS)

Register No.	Function	Description
R4148	Message Frame 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 & Port0 without checking of station number for FATEK's external communication protocol	• 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 =Others, without above function • Low Byte of R4149: =1, Port 0 without checking of station number for FATEK's external communication protocol (communicating with MMI/SCADA) =Others, Port 0 checks station number, it allows multi-drop network for data acquisition.
R4150	Power on I/O service delay time setting	• 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.
R4151	Circular 1mS time base timer	• The content of R4151 will be increased by 1 every 1mS. It can be used for a more precise timing application.
R4152	Low word of HSTA CV register	HSTA is high speed timer in 0.1 mS resolution
R4153	High word of HSTA CV register	The HSTA can act as 32-bit cyclic timer or fixed time interrupt timer
R4154	PV register of HSTA	

Register No.	Function	Description
R4155	Port 1 & Port 2 without station number checking for FATEK's external communication protocol	• Low Byte of R4155: =1, Port 1 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA) ≠1,Port 1 checks station number, it allows multi-drop network for data acquisition • High Byte of R4155: =1, Port 2 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA) ≠1,Port 2 checks station number, it allows multi-drop network for data acquisition
R4156	Port 3 & Port 4 without station number checking for FATEK's external communication protocol	• Low Byte of R4156: =1, Port 3 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA) ≠1,Port 3 checks station number, it allows multi-drop network for data acquisition • High Byte of R4156: =1, Port 4 without station number checking for FATEK's external communication protocol (communicating with MMI/SCADA) ≠1,Port 4 checks station number, it allows multi-drop network for data acquisition
R4157	PLC OS Version	
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 interval time Setting, while Port 2 being used as the master of FUN151 or FUN150	Low Byte：Port 2 Receive Time-out interval time (Unit in 10mS) High Byte：Port 2 Transmission Delay (Unit in 10mS)
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 R4161
R4161	Port 2 Communication Parameters Register (For High Speed CPU Link)	•Set Baud Rate, Parity…of Port 2 • Data bit is fixed to 8-bit • Baud Rate≧38400 bps
R4162	Fixed time interrupt enable/disable control	B7　　B6　　B5　　B4　B3　B2　B1　B0 | 100mS	50mS	10mS	5mS	4mS	3mS	2mS	1mS | Bit=0, interrupt enabled Bit=1, interrupt disabled

Register No.	Function	Description

R4163	Modem dialing control setting	• 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.
		• High Byte of R4163 :
		  The Ring count setting for Modem auto answer

R4164 R4165	V index register Z index register	
R4166	System used	

R4167	Model of main unit	• 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)
		• High Byte of R4167:
		   =0, MA
		   =1, MC
		   =2, MN

Register No.	Function	Description
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	FUN30 PID resolution of analog input	=0, 14-bit format but valid 12-bit resolution =1,14-bit format and valid 14-bit resolution
D4005	FUN30 PID gain constant	KC=D4005/Pb

Register No.	Function	Description
D4006 │ D4042	Analog input valid bit and set times of average	
D4043 │ D4045	Communication function setting	
D4046 │ D4052	Reserved	
D4053 D4054	RTC chip RTC time setup	RTC chip is S35390A, is able through D4054 to do time setup
D4055 │ D4059	Reserved	
D4060 D4061 D4062 D4063	FUN147 GP0 error code FUN147 GP1 error code FUN147 the step number (positioning point) which has been completed of GP0 FUN147 the step number (positioning point) which has been completed of GP1	
D4064 │ D4070	Reserved	
D4071 │ D4079	Used in FBs-B2A1D/FBs-B2DA/ FBs-B4AD	
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't be referenced by TU/TD transitional contact (contact will always open)