

1

1.1 1 - 1
1.2 1 - 2
1.3 1 - 4

2

2.1 2 - 1
2.1.1 2 - 1
2.1.2 Cnet I/F 2 - 2
2.2 2 - 4
2.2.1 2 - 4
2.2.2 K80S 2 - 5

3

3.1 3 - 1

4

4.1 4 - 1
4.1.1 20 (DC /) 4 - 2
4.2.2 30 (DC /) 4 - 3
4.2.3 40 (DC /) 4 - 3
4.2.4 60 (DC /) 4 - 3
4.2 4 - 4
4.2.1 10- (DC /) 4 - 4
4.2.2 A/D · D/A 4 - 4
4.2.3 4 - 4

5 CPU

- 5.1 5 - 1
- 5.2 5 - 3
 - 5.2.1 5 - 3
 - 5.2.2 5 - 4
 - 5.2.3 5 - 5
 - 5.2.4 5 - 5
 - 5.2.5 5 - 6
 - 5.2.6 5 - 9
- 5.3 5 - 12
 - 5.3.1 5 - 12
 - 5.3.2 5 - 12
 - 5.3.3 5 - 14
 - 5.3.4 5 - 17
- 5.4 5 - 18
 - 5.4.1 RUN 5 - 18
 - 5.4.2 STOP 5 - 19
 - 5.4.3 PAUSE 5 - 19
 - 5.4.4 DEBUG 5 - 19
 - 5.4.5 5 - 20
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 - 5.5.2 On/Off 5 - 23
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 - 5.5.4 5 - 26
- 5.6 5 - 27
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- 5.8 5 - 29
 - 5.8.1 5 - 29
 - 5.8.2 5 - 29
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 - 5.9.1 5 - 32
 - 5.9.2 5 - 32

5.10	5 - 35
5.8.1	5 - 35
5.8.2	5 - 35
5.8.1	5 - 35

6

6.1	6 - 1
6.2	6 - 2
6.2.1	6 - 2
6.2.2	6 - 6
6.3	6 - 7
6.3.1	6 - 7
6.3.2	.....	6 - 10
6.4		
6.4.1 A/D · D/A	.....	6 - 10
6.4.2	.....	6 - 15

7

7.1	.....	7 - 1
7.1.1	.....	7 - 1
7.1.2	.....	7 - 12
7.1.3	.....	7 - 23
7.1.4	.....	7 - 25
7.1.5 PID	.....	7 - 27
7.1.6	.....	7 - 53
7.2	.....	7 - 55
7.2.1 A/D · D/A	.....	7 - 55
7.2.2	.....	7 - 64

8

8.1	.....	8 - 1
8.1.1	.....	8 - 1
8.1.2	.....	8 - 2
8.1.3	.....	8 - 5

8.1.4	.....	8 - 8
8.1.5	.....	8 - 9
8.1.6	.....	8 - 10
8.1.7	1:1	8 - 30
8.1.8	.....	8 - 42
8.2	.....	8 - 45
8.2.1	.....	8 - 45
8.2.2	.....	8 - 46
8.2.3	.....	8 - 55
8.2.4	.....	8 - 56
8.3	.....	8 - 68
8.3.1	.....	8 - 68
8.3.2	.....	8 - 68
8.3.3	.....	8 - 72
8.2.4	.....	8 - 74

9

9.1	.....	9 - 1
9.1.1	.....	9 - 1
9.1.2	.....	9 - 4
9.1.3	.....	9 - 7
9.2	.....	9 - 8
9.2.1	.....	9 - 8
9.2.2	.....	9 - 10
9.2.3	.....	9 - 10
9.2.4	.....	9 - 11

10

10.1	.....	10- 1
10.2	.....	10- 1
10.3	.....	10- 2

11

11.1	11- 1
------	-------	-------

11.2	.....	11- 1
11.2.1	POWER LED 가	11- 2
11.2.2	ERR. LED 가	11- 3
11.2.3	RUN LED 가	11- 4
11.2.4	가	11 - 6
11.3	.....	11 - 8
11.4	.....	11 - 9
11.4.1	.....	11 - 9
11.4.2	.....	11 - 10
11.5	.....	11 - 12



1.	.....	1 - 1
2.	.....	2 - 1
3.	.....	3 - 1

1.1

MASTER-K80S

PLC

No.		
1		
2		MASTER-K80S
3		K80S
4		
5	CPU	
6		
7		
8		MK80S
9		PLC
10		PLC 가
11		
1		
2		
3		/

1)

1.2

1) MASTER-K

(1)

(2)

(3) PLC

(4) RUN 가

2) K80S CPU, PLC

(1)

0.5µs/Step

(2)

- - : 0.2ms
- : 1 16KHz, 2 8KHz
- : 8 가

• 0 ~ 15ms

•

• RS-232C PC
New-MASTER-K 1:1

• PID

(3) RUN/STOP 가 /

(4) RS-232C Cnet I/F

(5)

KGLWIN

(6)

(7)

(8)
PLC

-
-
-
-

(9)

가

1.3

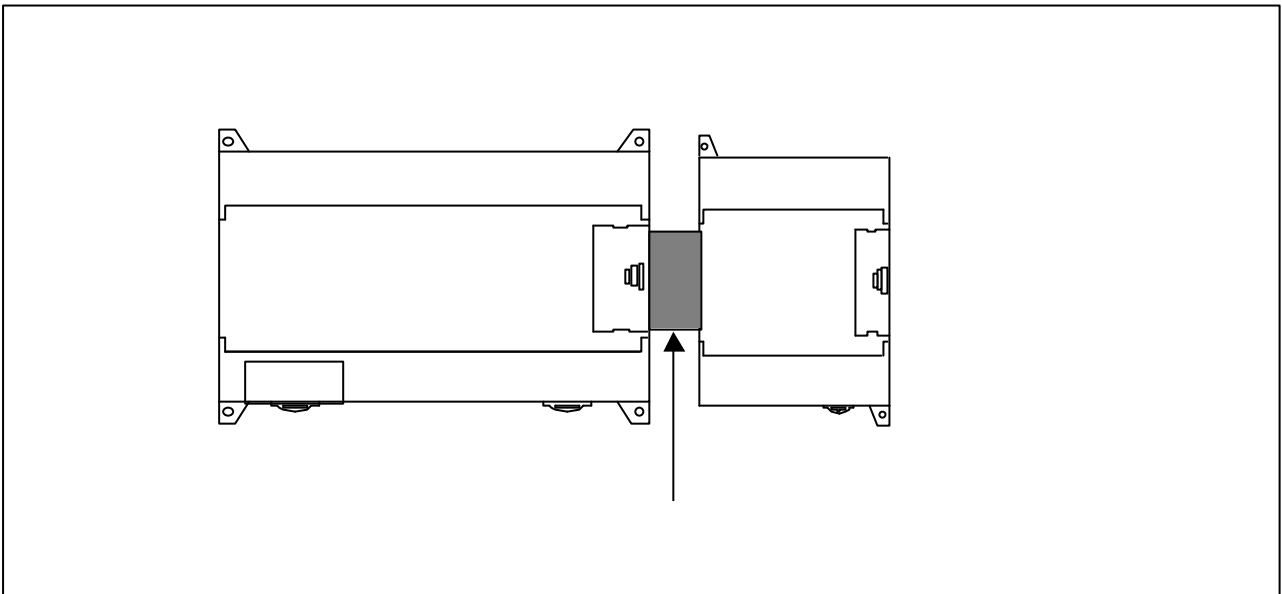
(Module)	가	) CPU ,
(Unit)	PLC , 가 PLC)
PLC (PLC System)	PLC 가 가	
KGLWIN	,	
KLD-150S	,	
		CPU
FAM	Factory Automation Monitoring S/W S/W	
Fnet	Fieldbus Network ()	
Cnet	Computer Network ()	
RTC	Real Time Clock IC	
(Watchdog Timer)	가	

<p>(Sink)</p>	<p>가 On PLC 가</p>	
<p>(Source)</p>	<p>가 On PLC 가</p>	
<p>PLC On 가</p>		
<p>PLC On 가</p>		

MASTER-K80S

2.1

2.1.1



가		• 20 ~ 80	
가		• 2	} Total 3 가
	A/D · D/A	• 2	
		• 3	
	Cnet I/F	• 1	
			• K7M-DR20S, K7M-DR30S, K7M-DR40S, K7M-DR60S
			• G7E-DR10A
	A/D · D/A	• G7F-ADHA	
			• G7F-AT2A
	Cnet I/F	• G7L-CUEB, G7L-CUEC	

2.1.2 Cnet I/F

Cnet I/F

RS-232C/RS-422

MK80S

RS-232C

가

RS-232C

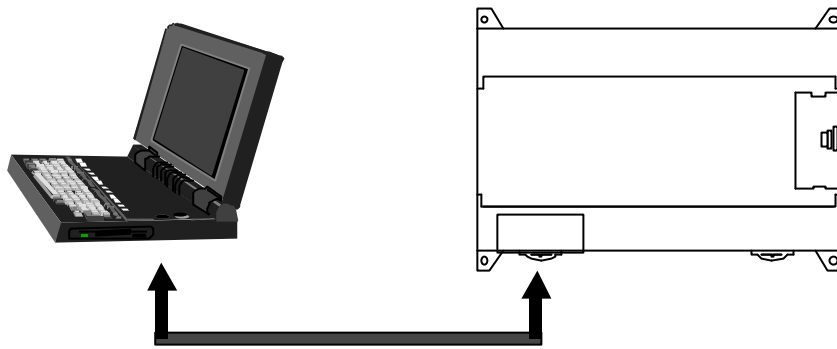
G7L-CUEB, RS-422

G7L-CUEC 가

1) 1:1

(1)

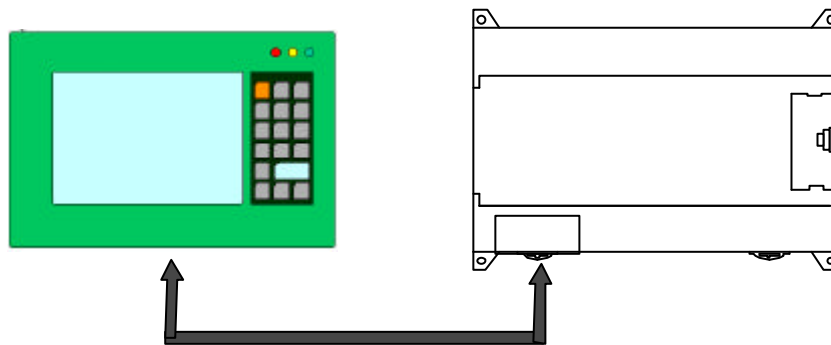
PC 1:1

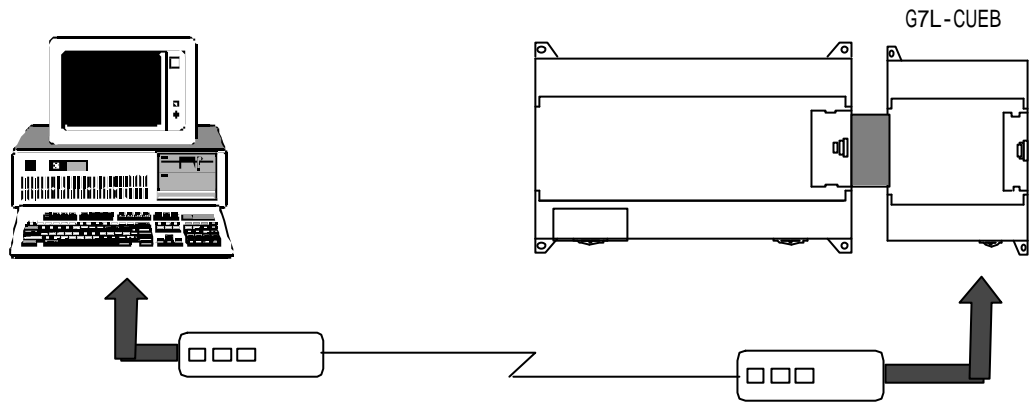
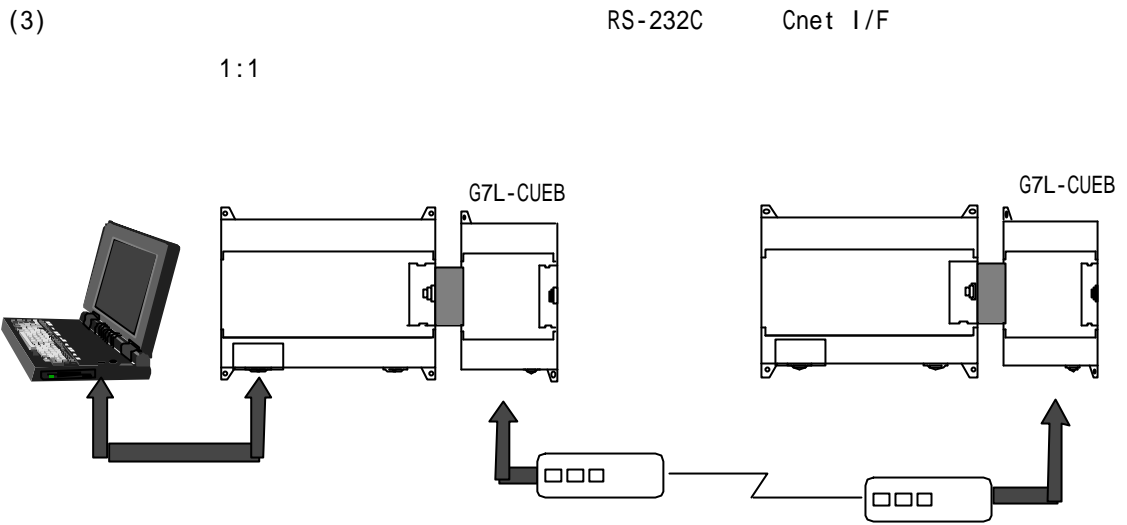


(2)

PMU

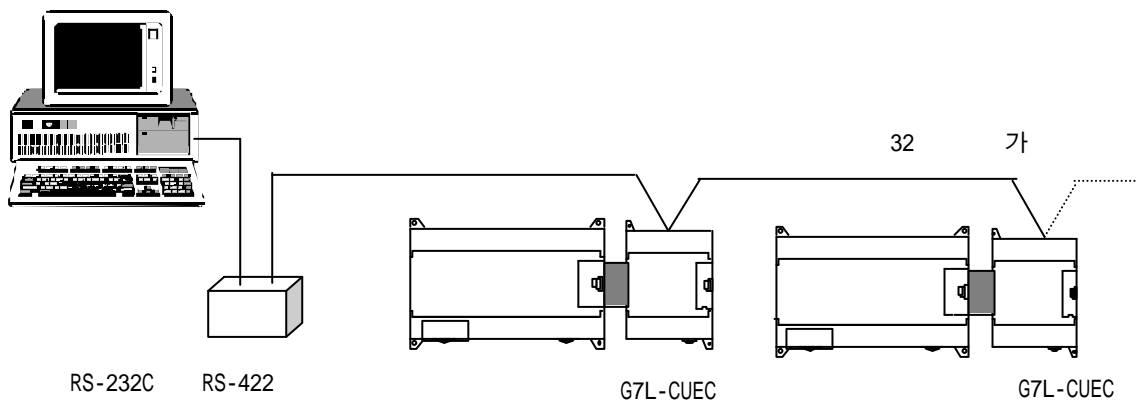
1:1





2) 1:n

RS-422 Cnet I/F 32 K80S MASTER-K PLC

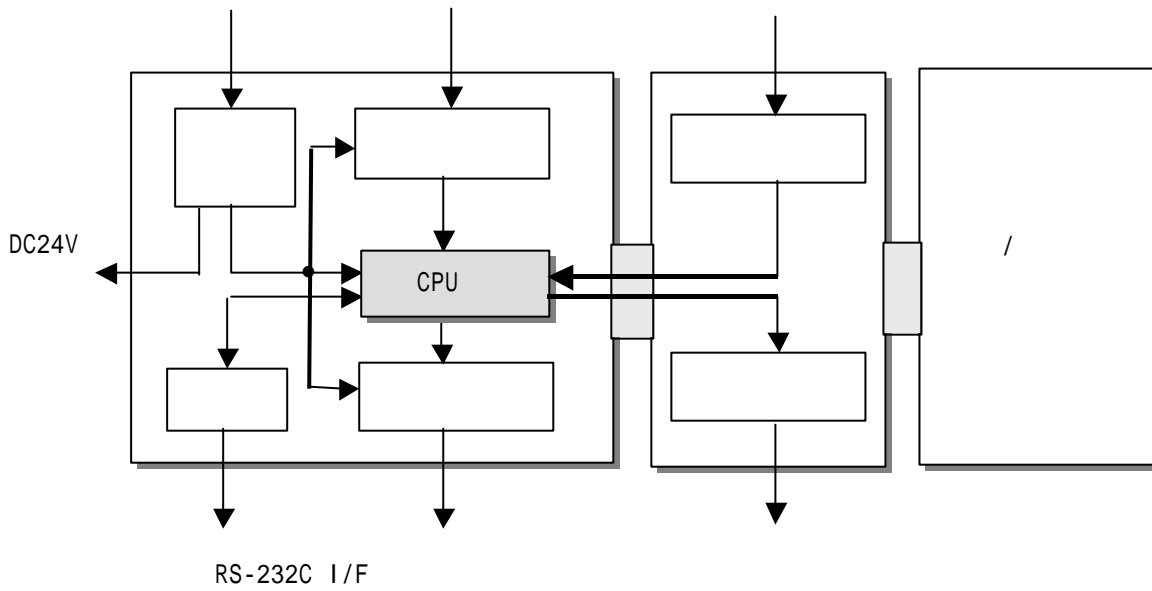


2.2

MASTER-K80S

2.2.1

K80S



CPU	<ul style="list-style-type: none"> • • • • •
	<ul style="list-style-type: none"> •
	<ul style="list-style-type: none"> • CPU
	<ul style="list-style-type: none"> • PLC
	<ul style="list-style-type: none"> • (KGLWIN) RS-232C
	1:1

2.2.2 K80S

		K7M-DR20S	<ul style="list-style-type: none"> • - DC24V 12 / 8 • : 7kstep • - :1 16 kHz, 2 8 kHz 1 - : 1 × 2 kHz - : 0.2ms, 8 (P000 ~ P007) - : 0.4ms, 8 (P000 ~ P007) - : 0 ~ 15ms() -PID -RS-232C 	
		K7M-DR30S	<ul style="list-style-type: none"> • - DC24V 18 / 12 • : 7kstep • - :1 16 kHz, 2 8 kHz 1 - : 1 × 2 kHz - : 0.2ms, 8 - : 0.4ms, 8 - : 0 ~ 15ms() -PID -RS-232C 	
		K7M-DR40S	<ul style="list-style-type: none"> • - DC24V 24 / 16 • : 7kstep • - :1 16 kHz, 2 8 kHz 1 - : 1 × 2 kHz - : 0.2ms, 8 (P000 ~ P007) - : 0.4ms, 8 (P000 ~ P007) - : 0 ~ 15ms() -PID -RS-232C 	
		K7M-DR60S	<ul style="list-style-type: none"> • - DC24V 36 / 24 • : 7kstep • - :1 16 kHz, 2 8 kHz 1 - : 1 × 2 kHz - : 0.2ms, 8 (P000 ~ P007) - : 0.4ms, 8 (P000 ~ P007) - : 0 ~ 15ms() -PID -RS-232C 	

		G7E-DR10A	<ul style="list-style-type: none">• - DC24V 6 / 4	
	A/D - D/A	G7F-ADHA	<ul style="list-style-type: none">• A/D : 2 , D/A : 1	
		G7F-AT2A	<ul style="list-style-type: none">• : 4• : 0 ~ 200	
	Cnet I/F	G7L-CUEB	<ul style="list-style-type: none">• RS-232C : 1	
		G7L-CUEC	<ul style="list-style-type: none">• RS-422 : 1	

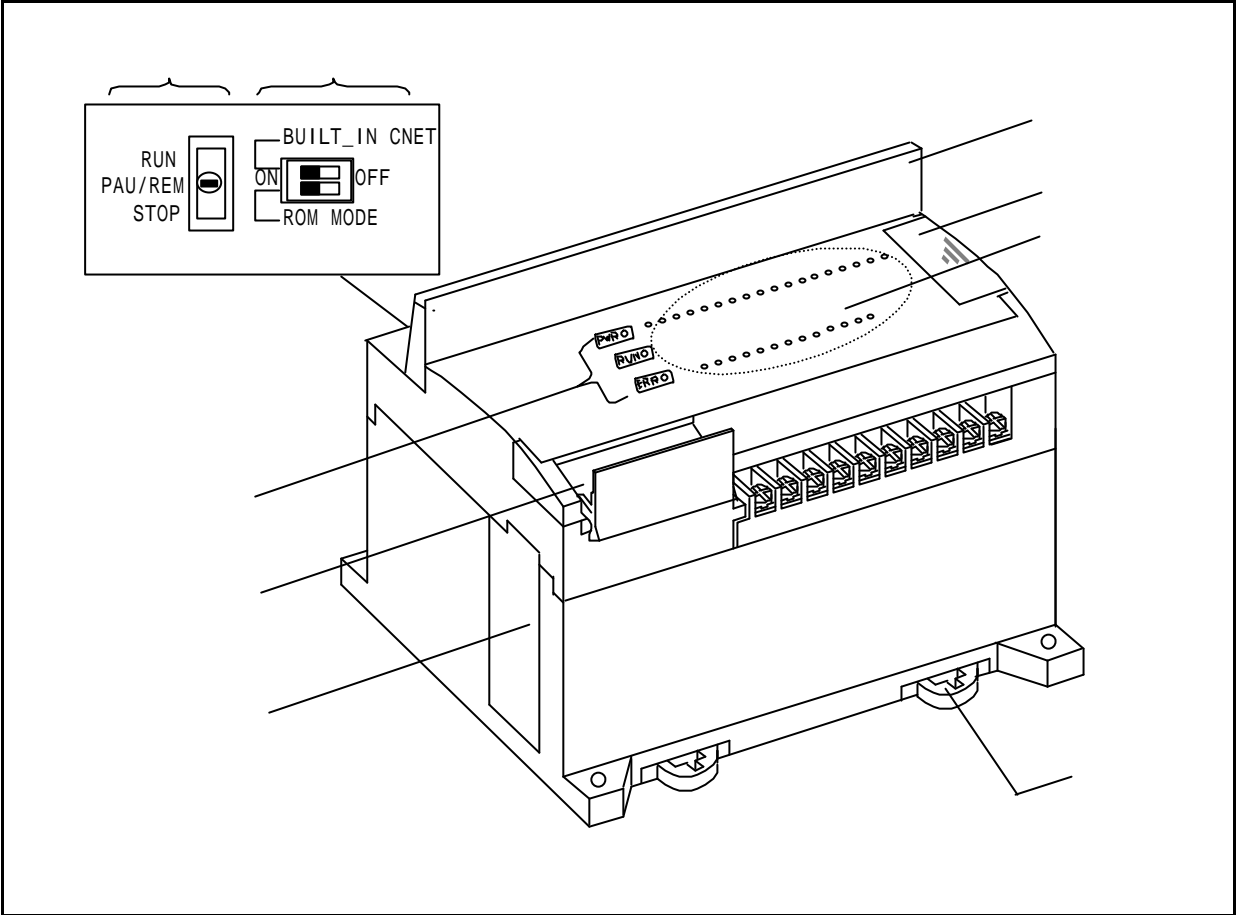
3.1

MASTER-K80S

No.					
1	0 ~ 55°C				
2	-25 ~ +70 °C				
3	5 ~ 95%RH,				
4	5 ~ 95%RH,				
5				-	X, Y, Z 10 IEC61131-2
	가				
	10 ≤ f < 57Hz	-	0.075mm		
	57 ≤ f ≤ 150Hz	9.8m/s ² {1G}	-		
	가				
	10 ≤ f < 57Hz	-	0.035mm		
6	<ul style="list-style-type: none"> 가 : 147 m/s²{15G} 가 : 11ms : (X, Y, Z 3 3) 				IEC61131-2
7	± 1,500 V				LG
	: 4kV ()				IEC61131-2 IEC1000-4-2
	27 ~ 500 MHz, 10 V/m				IEC1131-2, IEC1000-4-3
	/		(24V)	(24V)	IEC1131-2 IEC1000-4-4
		2kV	1kV	0.25kV	
8	가 , 가				
9	2,000m				
10	2				
11					

1) IEC(International Electrotechnical Commission :)
 : 가
 2)
 : 2 ,

4.1



No.			
	CPU LED	PWR LED	<ul style="list-style-type: none"> • On : • Off :
		RUN LED	CPU <ul style="list-style-type: none"> • On : 가 RUN • Off : LED가 Off CPU 가 STOP PAU / REM
		ERR LED	CPU <ul style="list-style-type: none"> • : • Off : CPU가
	LED		

5 CPU

5.1

K80S

		K7M-DR20S	K7M-DR30S	K7M-DR40S	K7M-DR60S	
		() ,				
		(Ladder Diagram) (Instruction List)				
		30				
		218				
		: 0.5 μ s/Step				
		7kstep				
		20	30	40	60	
	P	P000 ~ P13F				
	M	M000 ~ M191F				
	K	K000 ~ K31F				
	L	L000 ~ L63F				
	F	F000 ~ F63F				
	T	100ms : T000 ~ T191(192) 10ms : T192 ~ T255(64) 가 가				
	C	C000 ~ C255				
	S	S00.00 ~ S99.99				
	D	D0000 ~ 9999				
		RUN, STOP, PAUSE, DEBUG				
		3				

		K7M-DR20S	K7M-DR30S	K7M-DR40S	K7M-DR60S			
	PID	, /						
	Cnet I/F	MASTER-K MODBUS RS-232C 1				KGLWIN		
			1 16 kHz					
			2 8 kHz 1					
			가 . 3 가					
			. 1 가 .					
			. 1 B 가 .					
			. 2 가 .					
			1/2/4					
			: 0.2 ms ,8					
			2 kHz ,1					
		8 : 0.4ms						
		0 ~ 15 ms (가)						
		(g)	K7M-DR20S	480				
			K7M-DR30S	550				
			K7M-DR40S	670				
K7M-DR60S	845							
G7E-DR10A	230							

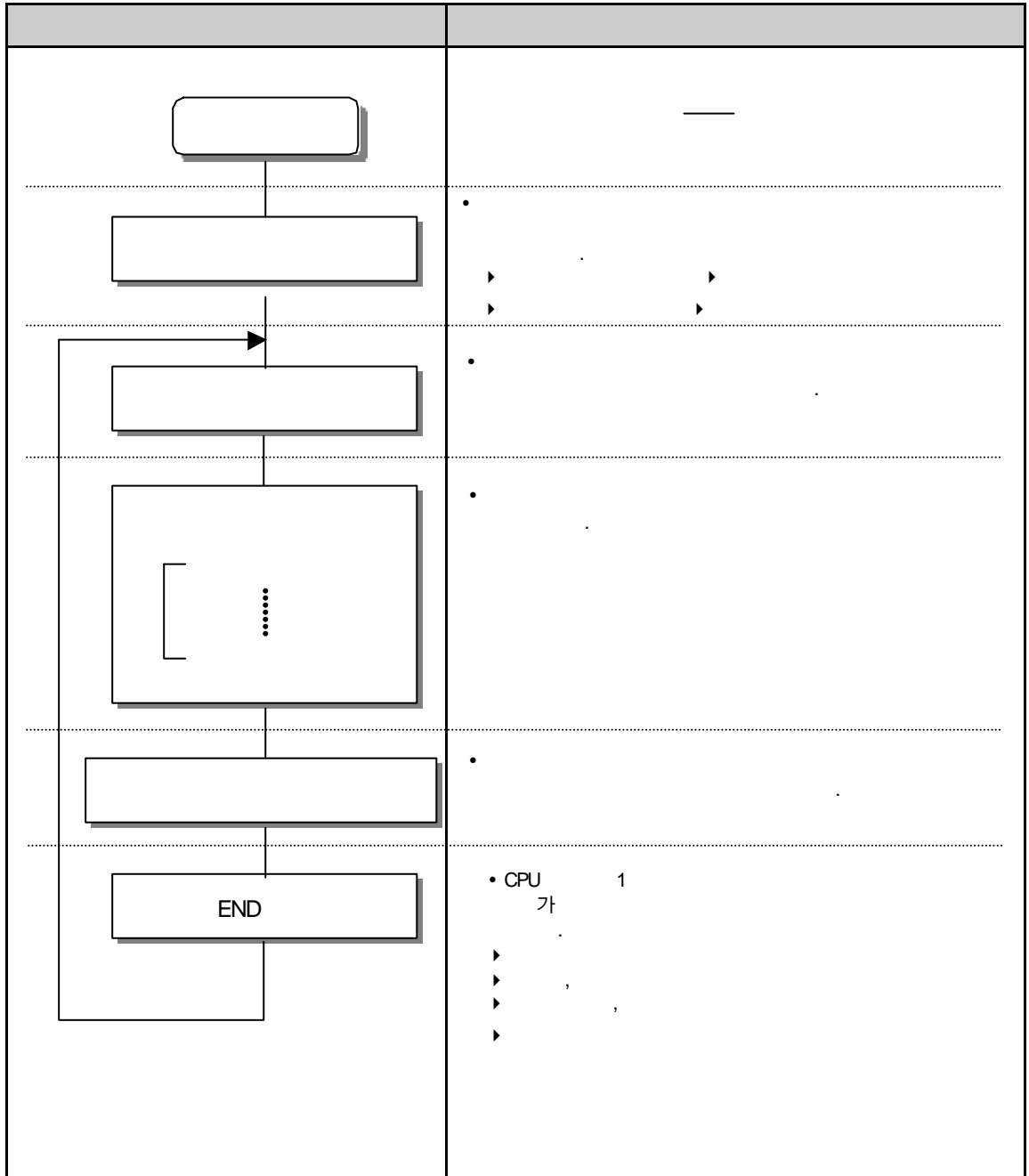
5.2

5.2.1

1) PLC

PLC

가



2) PLC

CPU

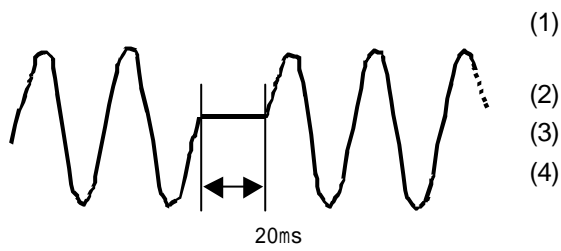
2

5.2.2

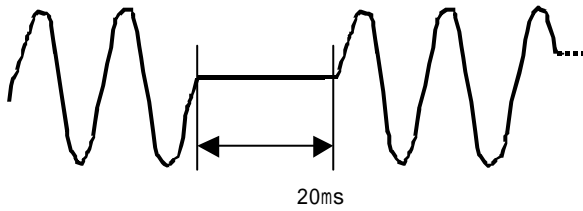
CPU

CPU

1) 20ms



2) 20ms



가

1)	:	?	PLC 가	(	ms ~ ms)

5.2.3 (Scan Time)

0 0

1)

가

PLC

(1) = + + PLC

- =
- = 1
- PLC = + +

(2)

가

2)

- (1) (F)
- F50 : (1ms)
 - F51 : (1ms)
 - F52 : (1ms)

5.2.4 (Scan Watchdog Timer)

1)

. (KGLWIN .)

2)

PLC

가,
Off

3)

(Scan Watchdog Time)
'WDT'

가

'WDT'

0

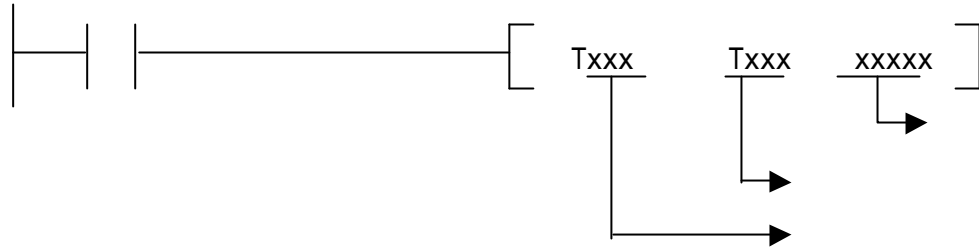
4)

STOP

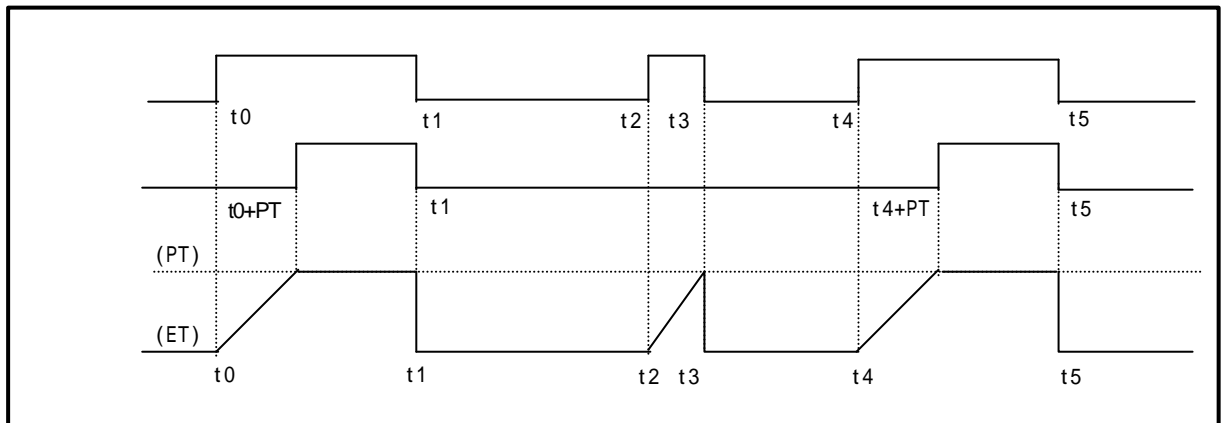
1) 10 ~ 6000ms (10ms)

5.2.5

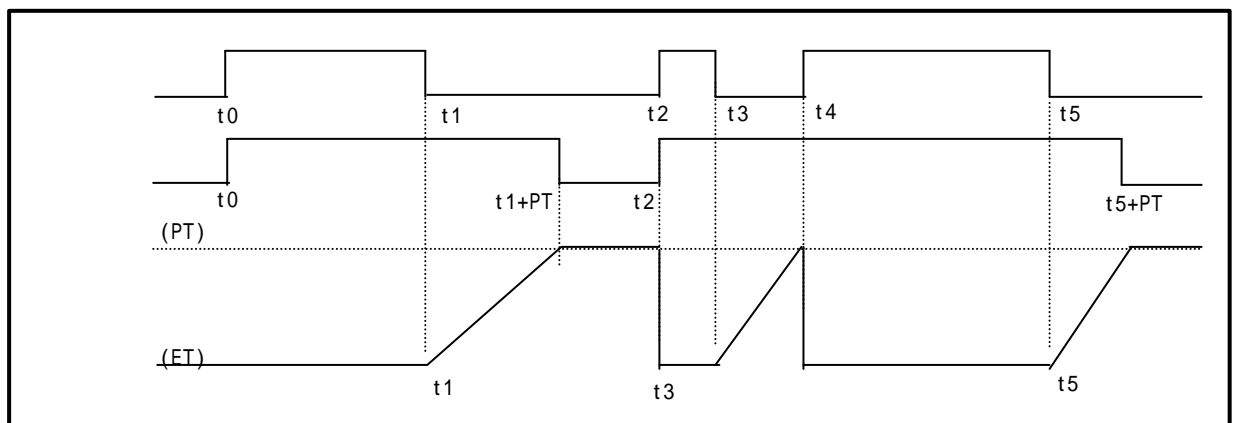
CPU (TON), Off 가 (TOFF), 가 가 (TMR), Monostable(TMON), Retriggerable(TRTG) . On
 5 가 100ms 0.1 ~ 6553.5 , 10ms 0.01 ~ 655.35
 'MASTER-K'



1) On On/Off (=)
 TON (Txxx) On

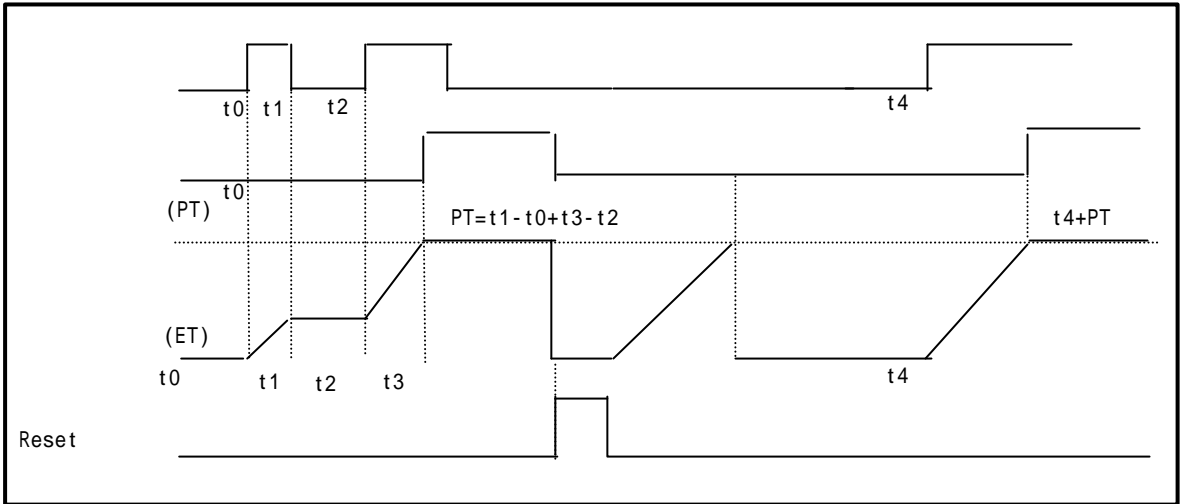


2) Off On/Off (=)
 TOF (Txxx) Off Off



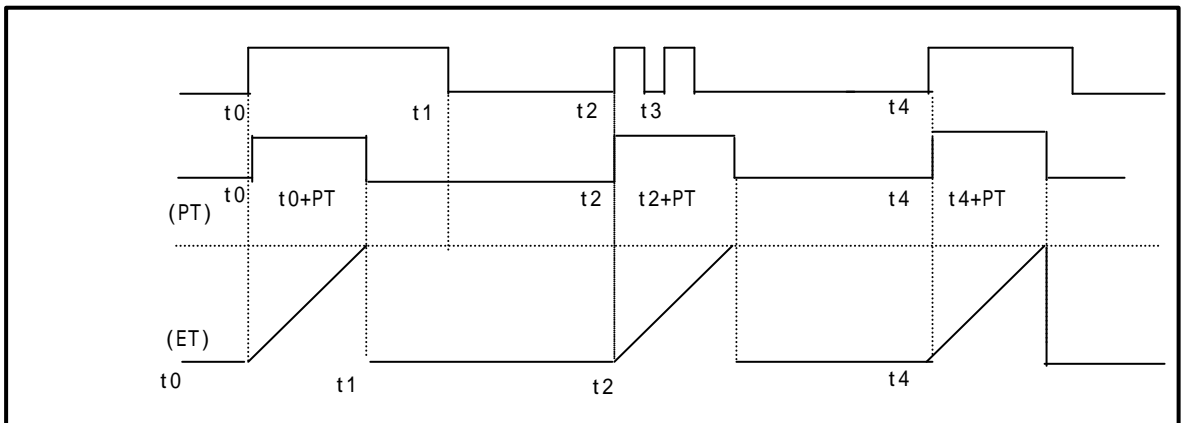
3) (TMR) On/Off 가 Reset On On

On On . On Reset On On



4) On/Off (Txxx) On Off "0" On

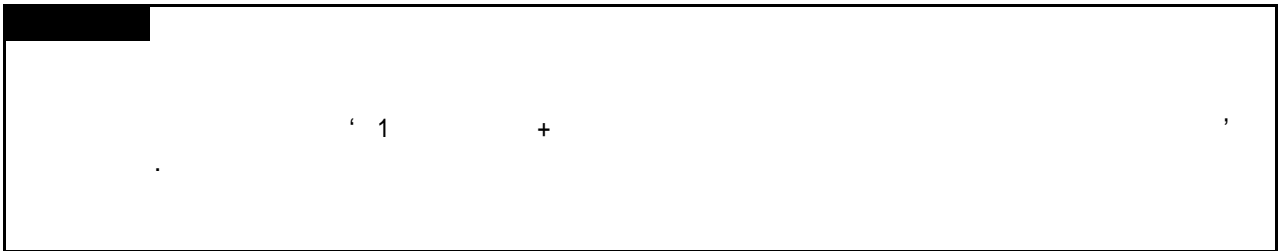
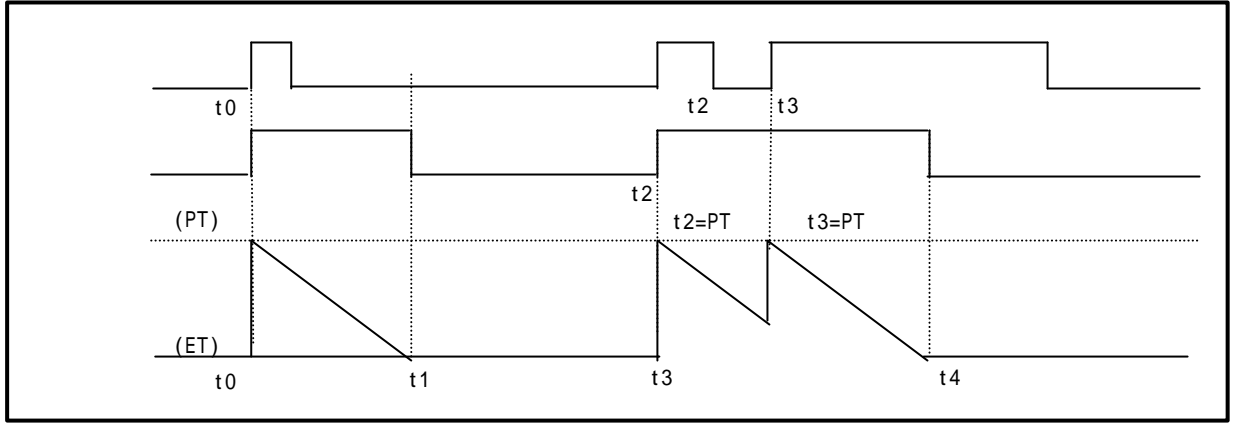
On, Off Off (Txxx) On TMON "0" On



5)

On/Off

On
 "0" (Txxx) On
 Off → On Off "0"



5.2.6

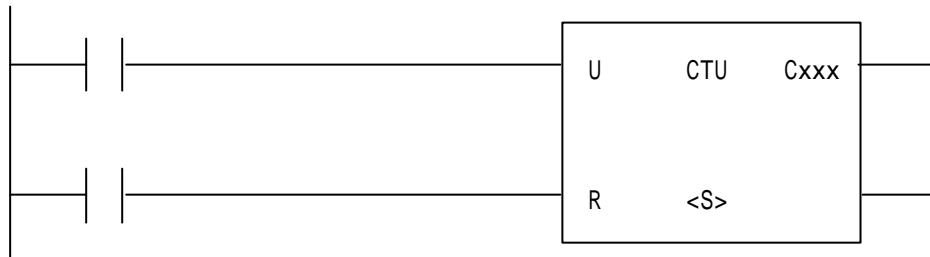
CPU 가 (CTU), (Off→0n) (CTD), 가 (CTUD), (CTR)
 4 가 'MASTER-K'

- 가 가 가
- 가 2 가 "0"
- 가

1) On/Off

(1) 가

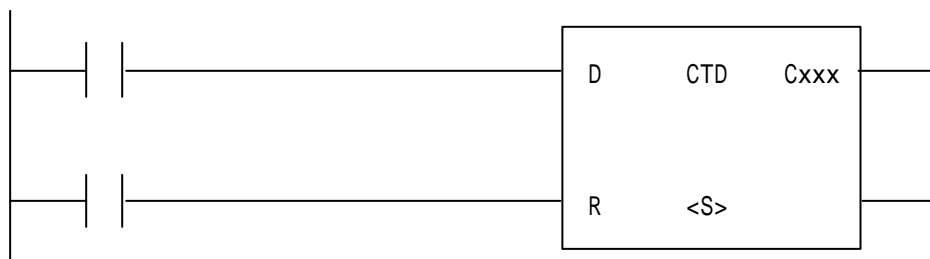
- (U), (R)



- 가 0 (Cxxx) On (Cxxx) Off

(2)

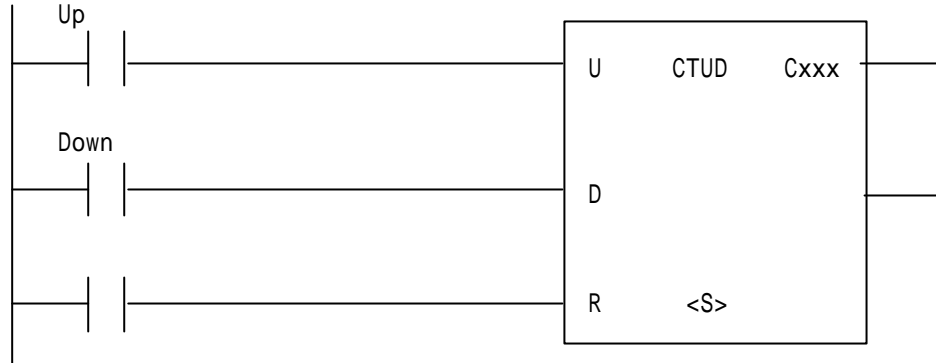
- (D),



- 0 (Cxxx) On (Cxxx) Off

(3) 가

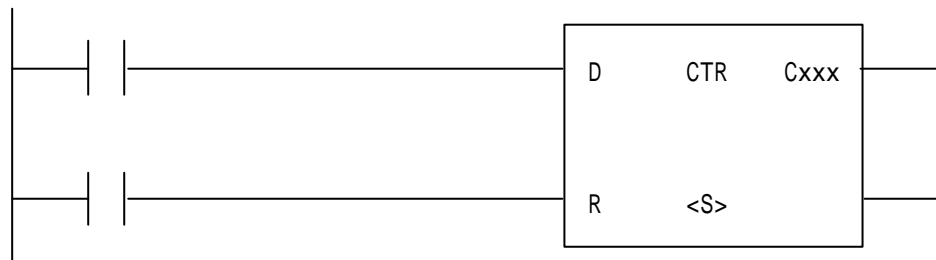
- 2 , .



- 0 .
- Up 1 가, Down 1 가, Down (PV) Cxxx 가 On , Cxxx 가 Off .

(4)

- (D), .



- 1 가, 0 .
- 0 Cxxx 가 On .

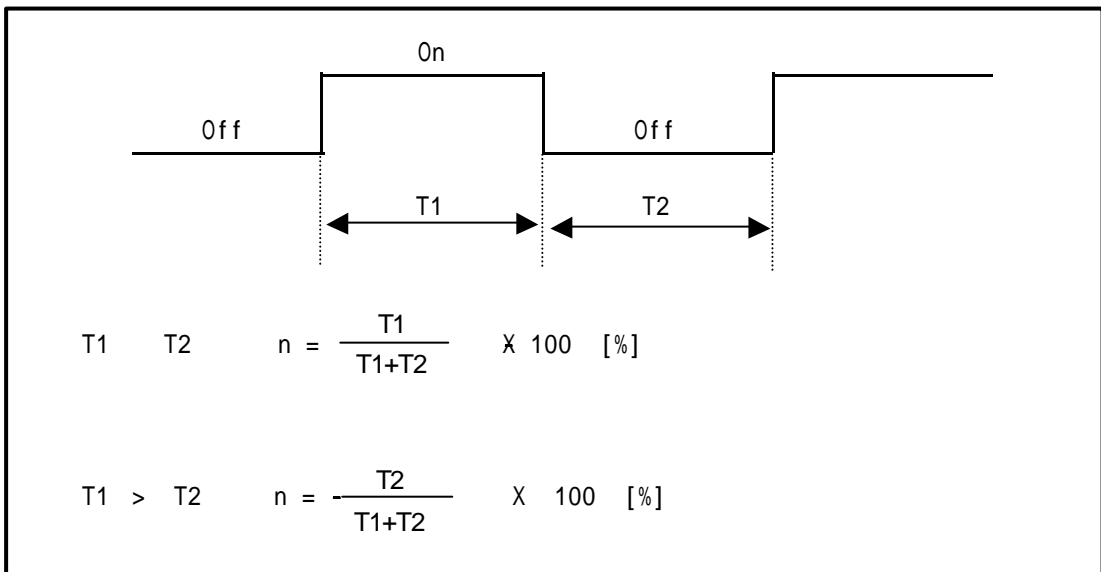
2)

- 가 가 , On Off

$$C_{max} = \frac{n}{100} \times \frac{1}{ts} \quad [\text{/s}]$$

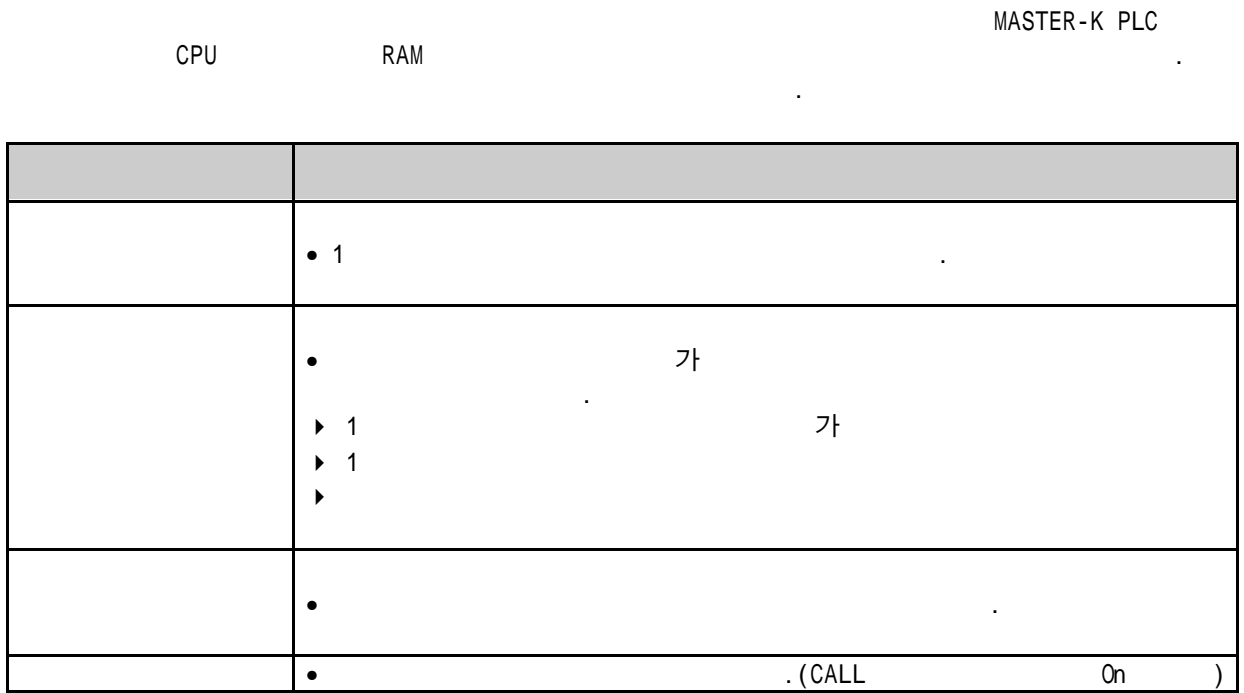
n : (%)
ts : [s]

- (n) On, Off (%)

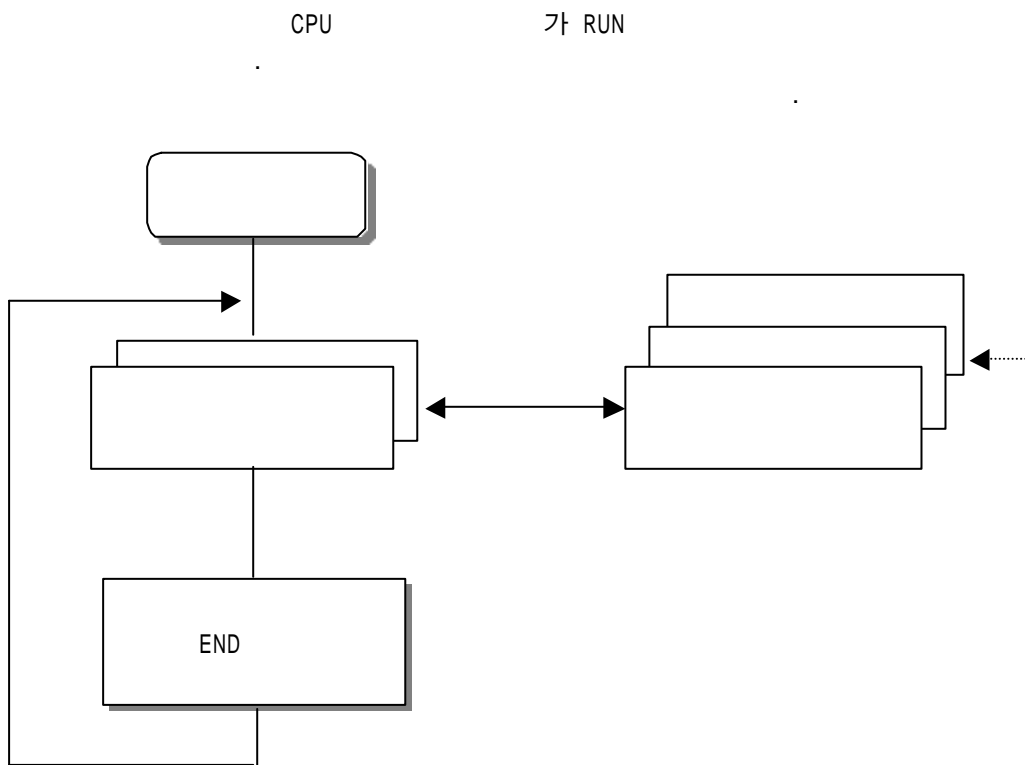


5.3

5.3.1



5.3.2



1)

(1)

•

0

•

2)

(1)

•

(2)

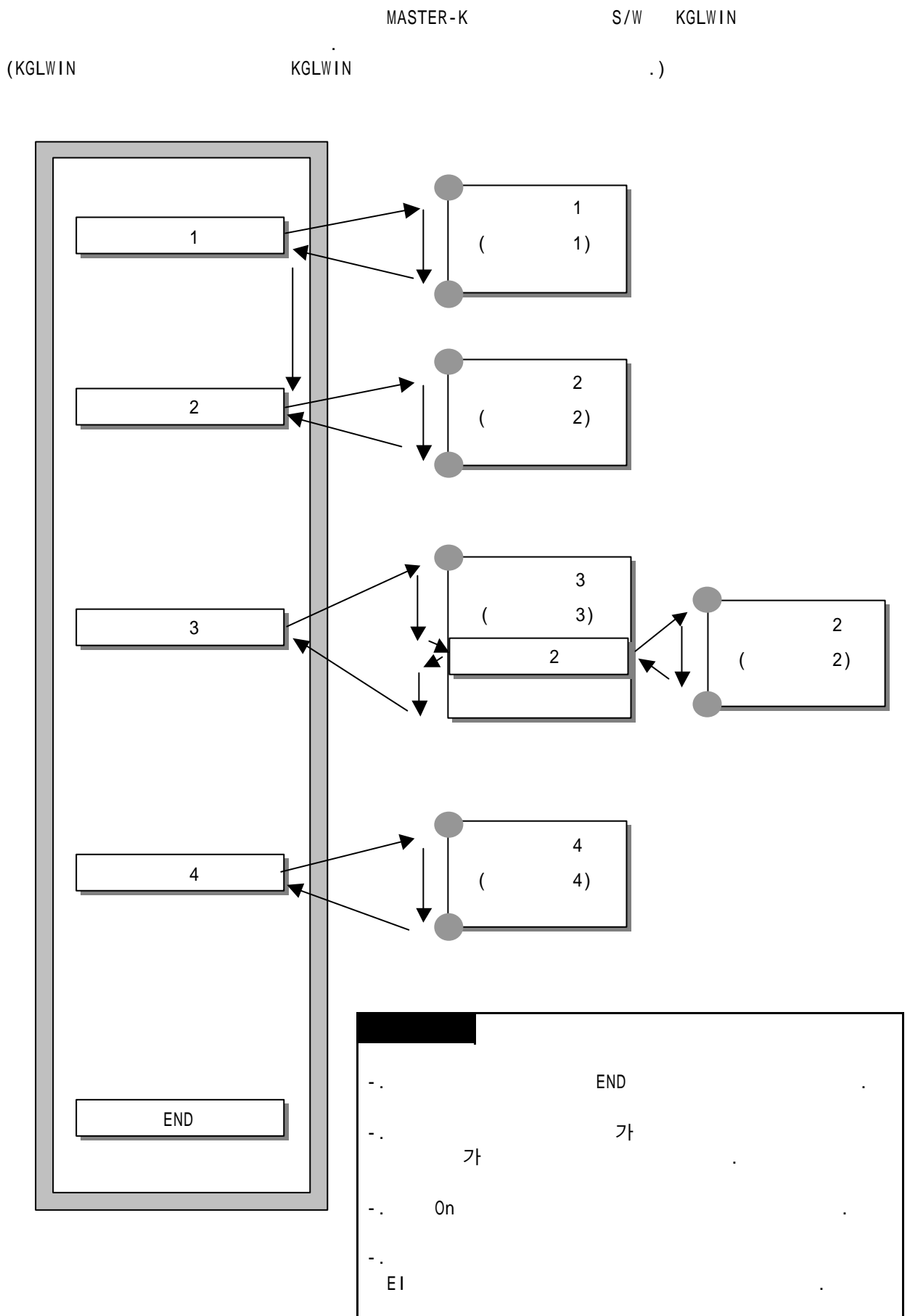
•

2

:

:

5.3.3



1)

순서	인터럽트 종류	정주기 시간(10ms)	에지 타입
0	INT 0		1
1	TDINT 0	2	
2	INT 1		3
3			
4			
5			
6			
7			

인터럽트 항목 수정

인터럽트 종류
 정주기 외부

확인

인터럽트 번호: 0

취소

정주기 시간: * 10 msec

Edge 선택: Rising

2) (Time Drive Interrupt)

(TDINT)

가

가

	가
	TDINT(INT) 0 ~ 7 8)

3) (Process Drive Interrupt)

P000 ~ P007

8

가

‘TDINT’

, ‘INT’

. (

EDGE

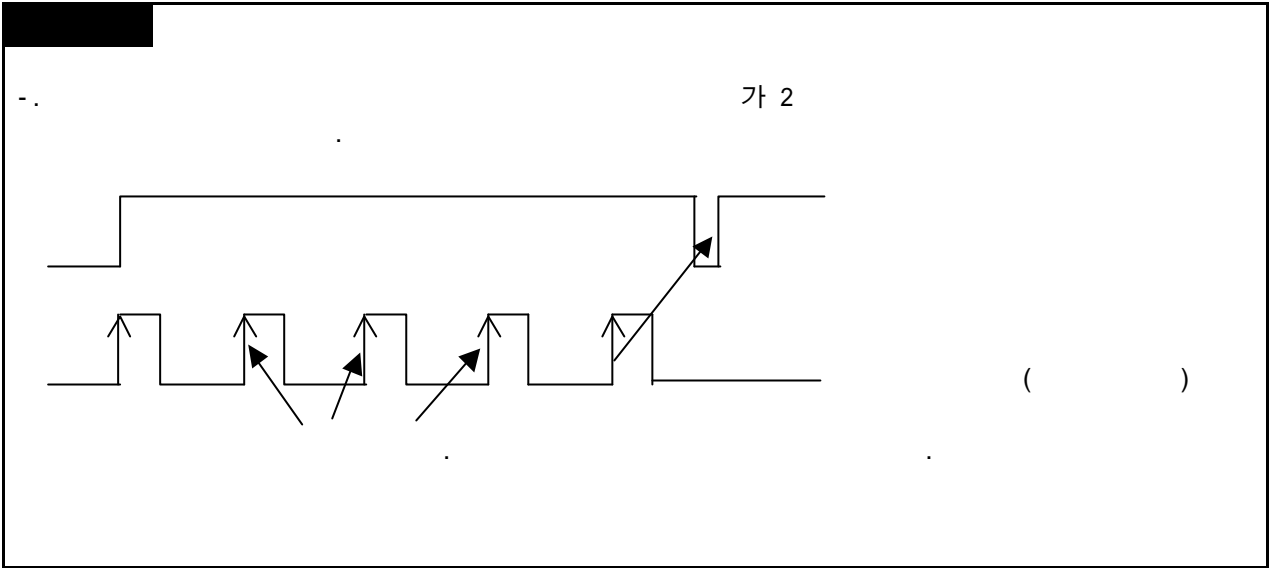
, , /

.)

8

가

20ms



5.3.4

1)

PLC

PLC

- PLC
-
-
-

2)

PLC

(1) PLC
CPU

가

PLC가

(2)

PLC

가

(3)

가

가

가

(4)

가

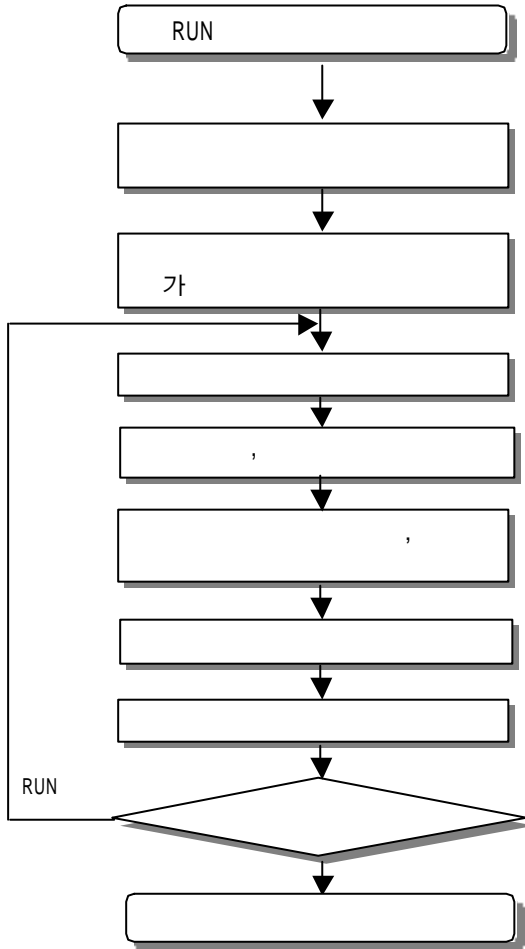
PLC

1)	가	F006	
2)	11		

5.4

CPU RUN , STOP , PAUSE , DEBUG 4 가 .

5.4.1 RUN



1)

가 , 가

2)

- (1)
- (2)
- (3)

5.4.2 STOP

가 STOP KGLWIN

1)

2)

(1)

(2)

(3)

5.4.3 PAUSE

RUN

1)

2)

(1)

(2)

(3)

5.4.4 DEBUG

가 STOP

1)

(1)

(2)

2)

(1)

(2)

(3)

(4)

(5)

3)

가 4가 가
가 .

()	
(Break Point)	•
	(Read, Write, Value)

4)

(1) KGLWIN

(2) (Enable / Disable)

(KGLWIN 9 .)

5.4.5

1)

(1) CPU

(2) CPU KGLWIN

(3) KGLWIN Fnet CPU

(4) FAM,

(5) ' STOP' ,

2)

RUN	RUN
STOP	STOP
STOP → PAU / REM	STOP
PAU / REM → RUN * 1	RUN
RUN → PAU / REM	PAUSE
PAU / REM → STOP	STOP

1) RUN	RUN PLC

3)

가 . 가 STOP (가 STOP → PAU / REM)

		KGLWIN	FAM,
PAU / REM	STOP → RUN		
	STOP → PAUSE	X	X
	STOP → DEBUG		
	RUN → PAUSE		
	RUN → STOP		
	RUN → DEBUG	X	X
	PAUSE → RUN		
	PAUSE → STOP		
	PAUSE → DEBUG	X	X
	DEBUG → STOP		
	DEBUG → RUN	X	X
	DEBUG → PAUSE	X	X

5.5

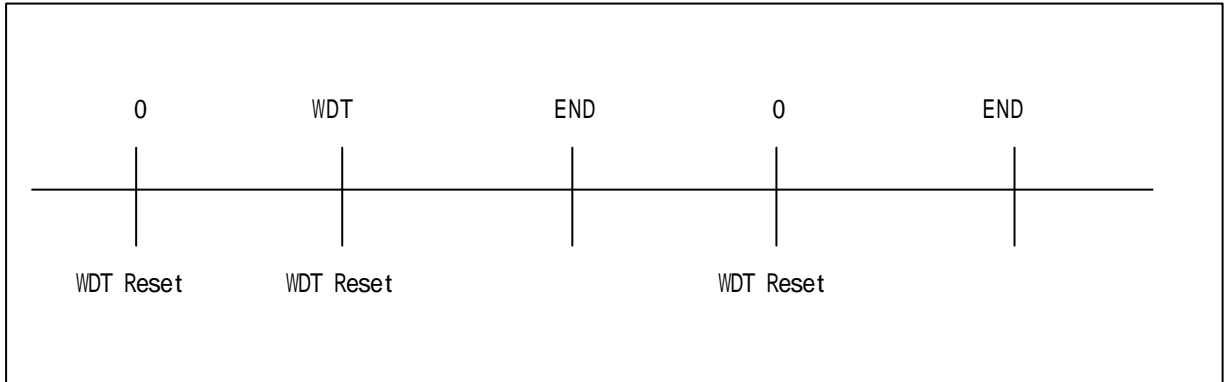
5.5.1

1)

- (1) CPU PLC
- (2) PLC

2)

WDT(Watch Dog Timer) PLC CPU WDT
 PLC 가 .FOR ~ NEXT ,CALL Off CPU RUN LED 가 WDT LED
 WDT .(WDT MASTER-K



3) I/O

I/O

4)

CPU

5)

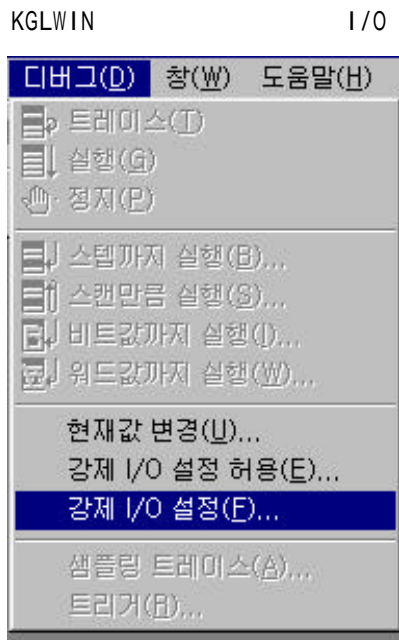
CPU

F006

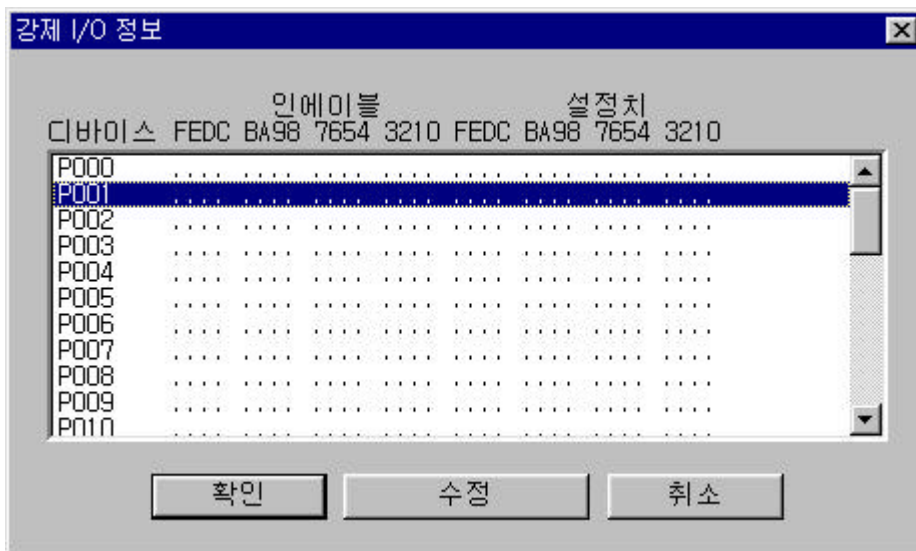
5.5.2 On/Off

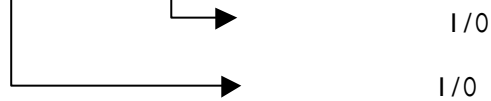
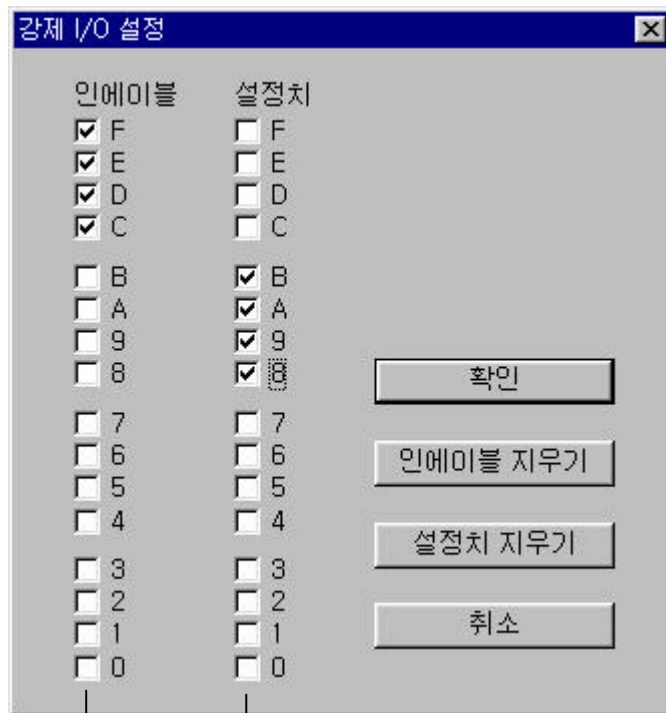
I/O (OUTOFF) OUTOFF On /Off

1) I/O I/O I/O 가

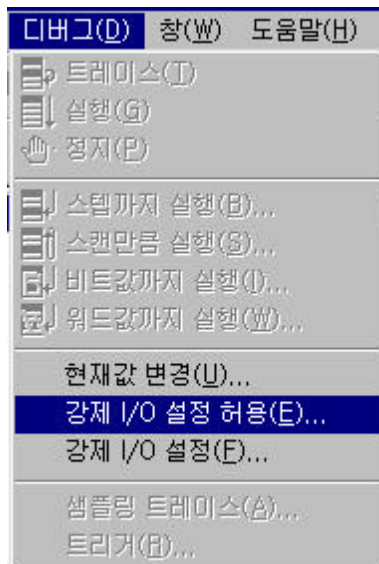


I/O





I/O On I/O



5.5.3 (Direct)

‘ IORF’



5.5.4

1)

가 16 .17 가

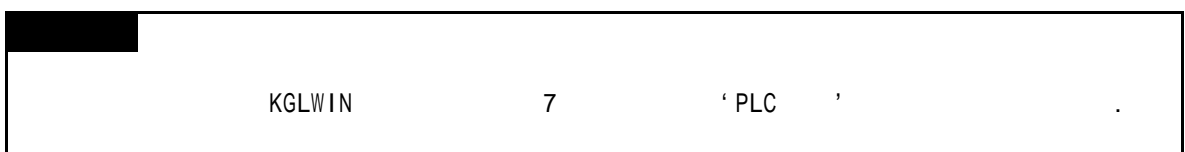
	D4901 ~ D4904	1
	D9905 ~ D9908	2
	•	
	•	
	D4961 ~ D4964	16

2)

D4900	h0001	
D4901	h9905	99 5
D4902	h2812	28 12
D4903	h3030	30 30
D4904	h0001	

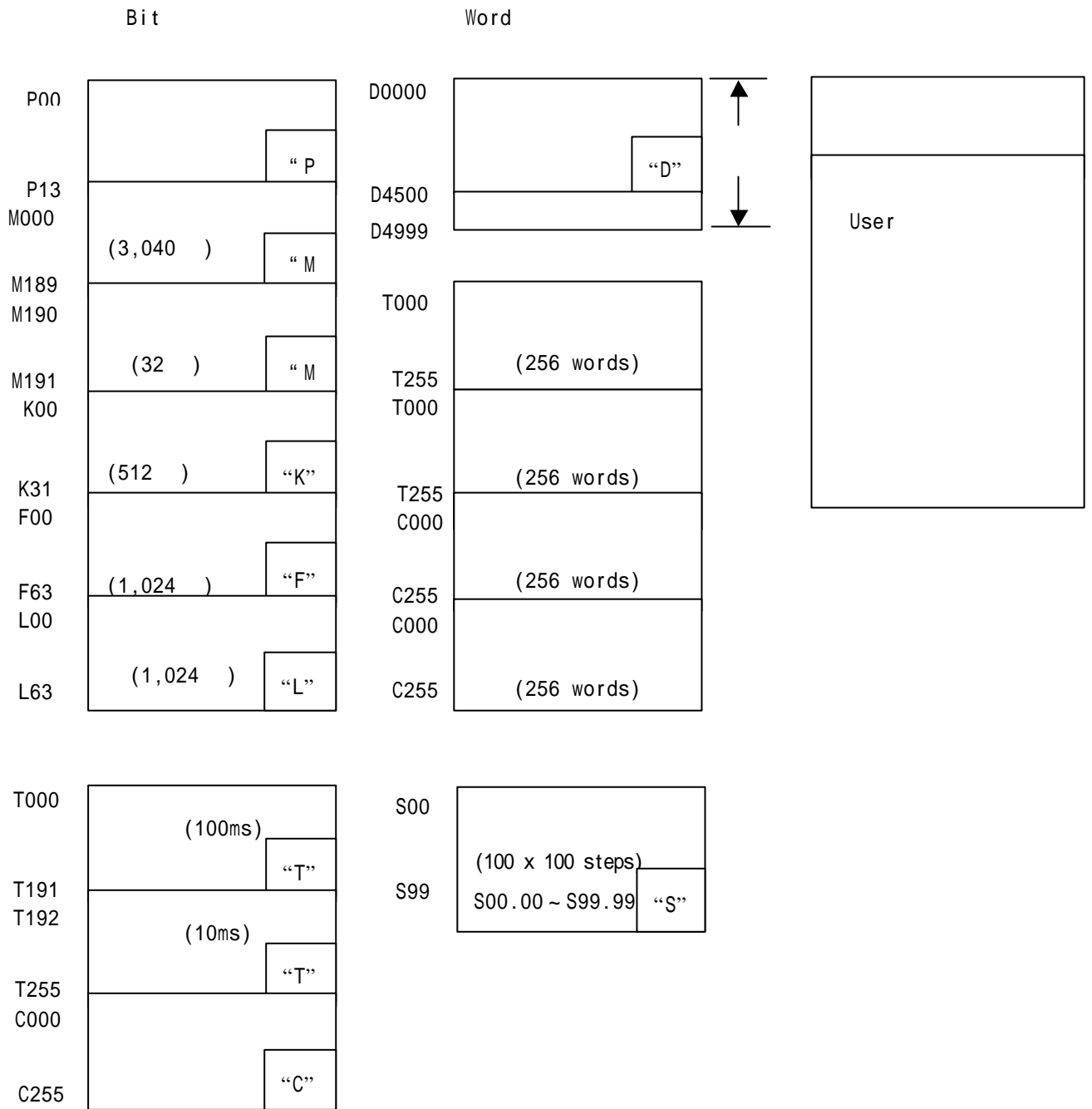
3)

KGLWIN KLD-150S

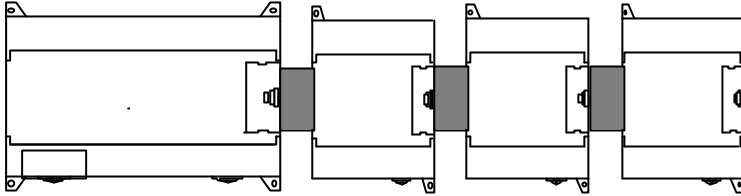


5.6

CPU 가 가 가 가



5.7



(3 가)

	가	
	2	
	2	
	3	
	1	

I/O

		P000 ~ P03F	64
		P040 ~ P07F	64
#1		P080 ~ P08F	16
		P090 ~ P09F	16
#2		P100 ~ P10F	16
		P110 ~ P11F	16
#3		P120 ~ P12F	16
		P130 ~ P13F	16
			A/D, A/T,

I/O I/O
(가)

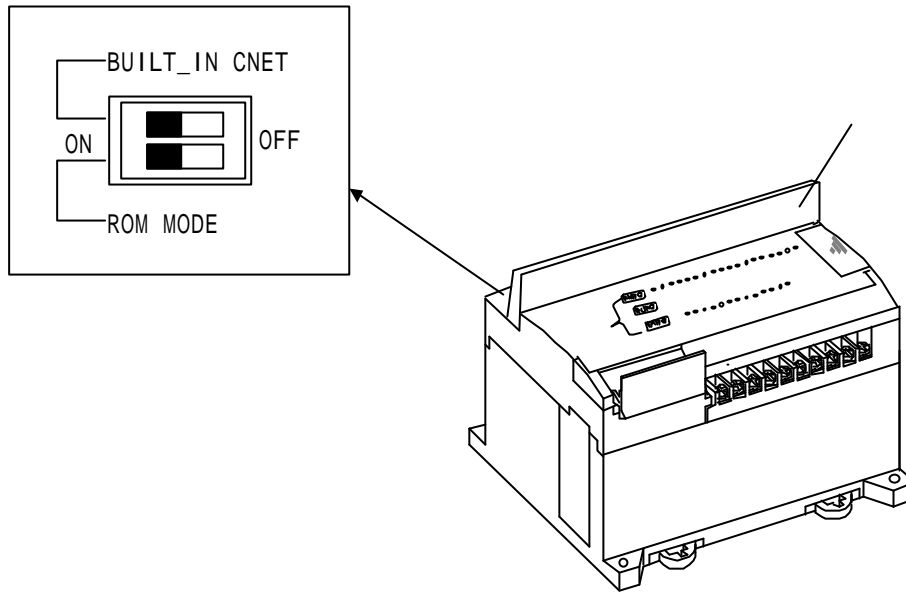
5.8

MK80S

PLC CPU ROM
ROM

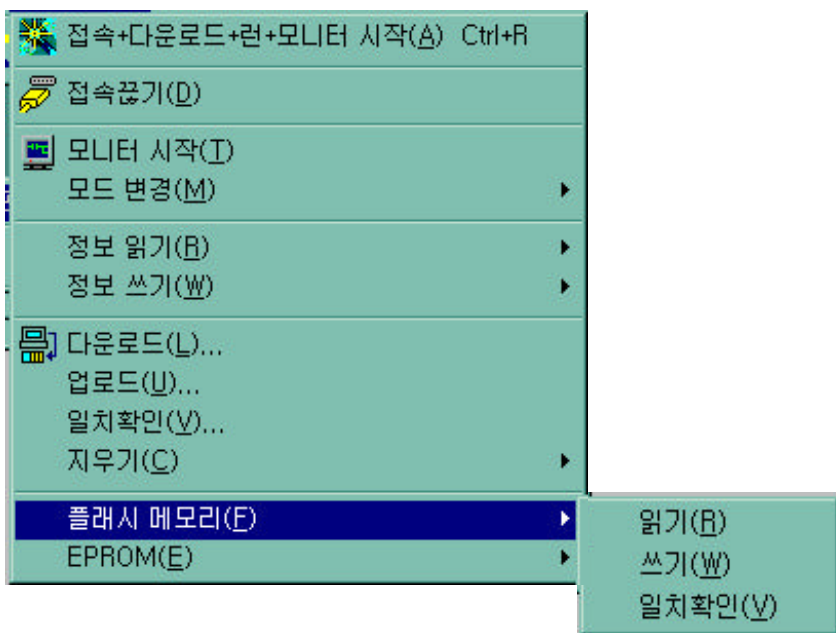
(Flash Memory)

5.8.1



5.8.2

STOP

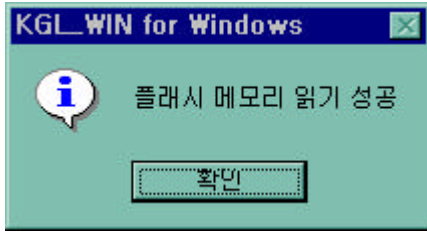


1)

(KGLWIN

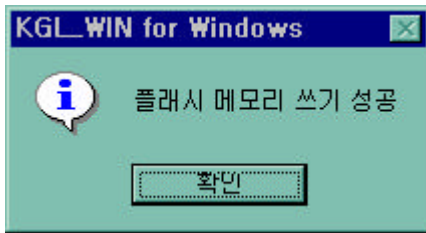
CPU

.)



2)

CPU



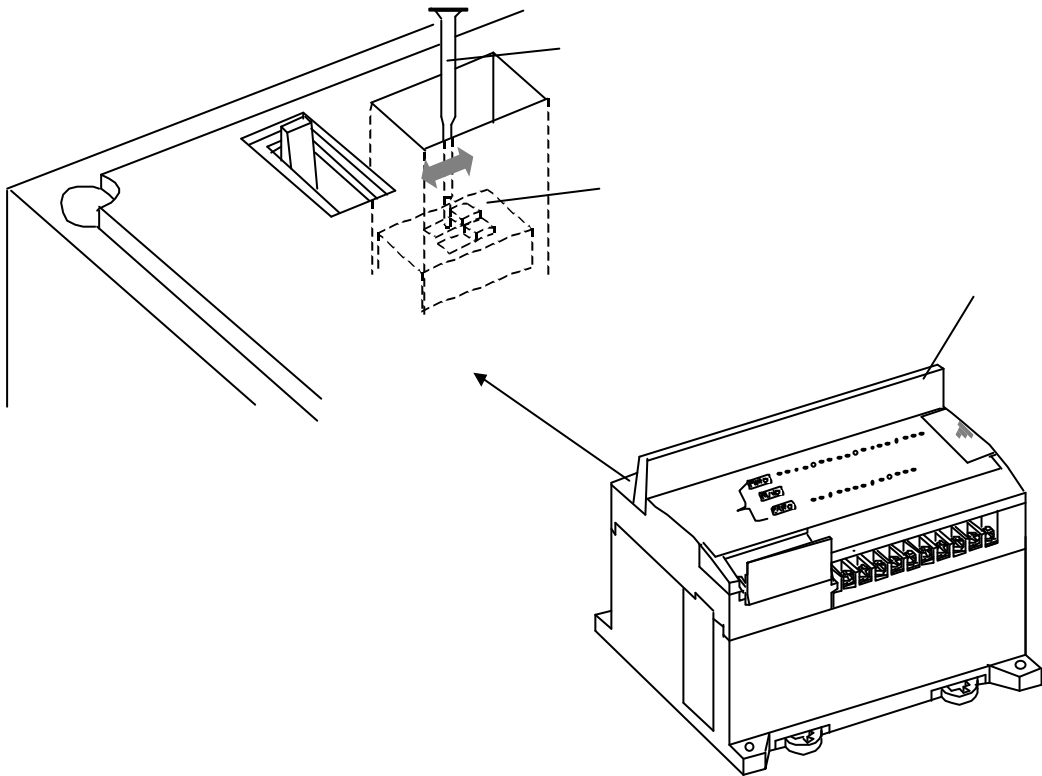
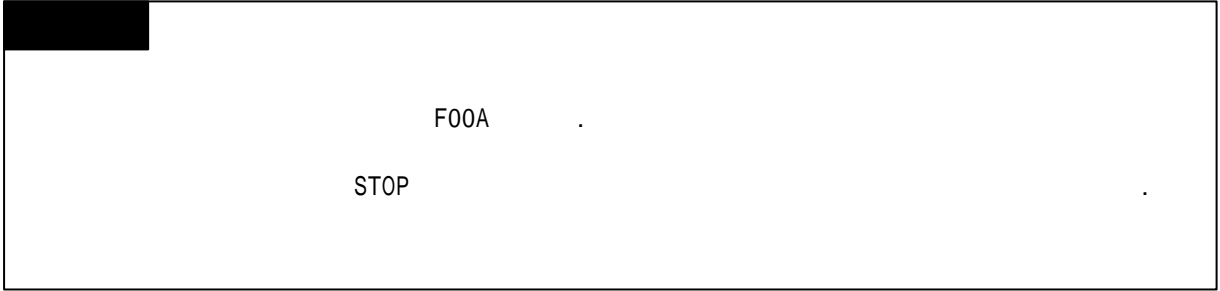
3)

CPU



4)

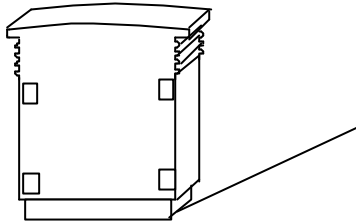
<p>ON</p> <p>ROM MODE</p>	On
<p>ON</p> <p>ROM MODE</p>	CPU RAM



5.9

MK80S

5.9.1



5.9.2

가.

(1) Off

(2)

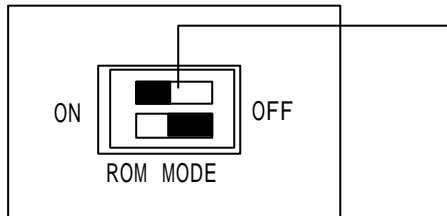
:

:

(3)

(ROM_MODE)

Off



Cnet

(4)

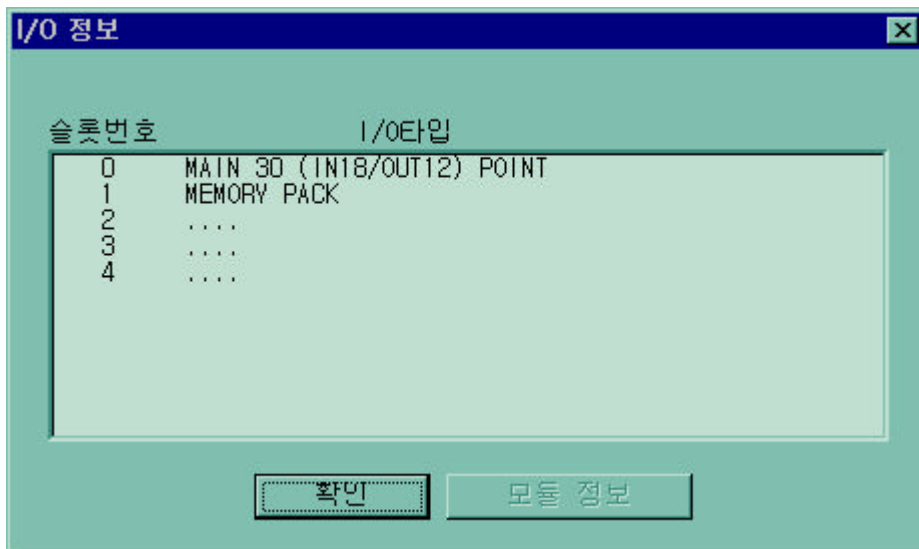
On

(5) KGLWIN

PLC

(6)

- I/O



(7) KGLWIN - - 가 .



(8) Off .

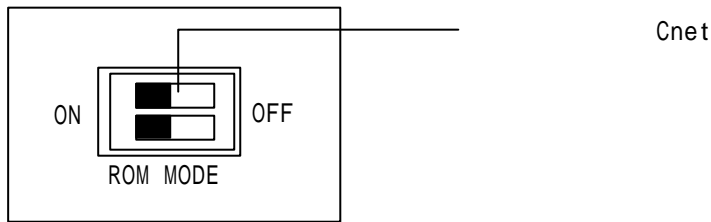
(9) 가 .

(1) Off .

(2) (.

.)

(3) (ROM_MODE) On .



(4) On .

(5) RUN LED ERR. LED 가 PLC

. (15)

(6) .

(7) Off .

(8) .

(9) On .

PLC



5.10

5.10.1

	DC 3.0 V
	5
	, RTC
	, 3V
(mm)	φ 14.5 X 26

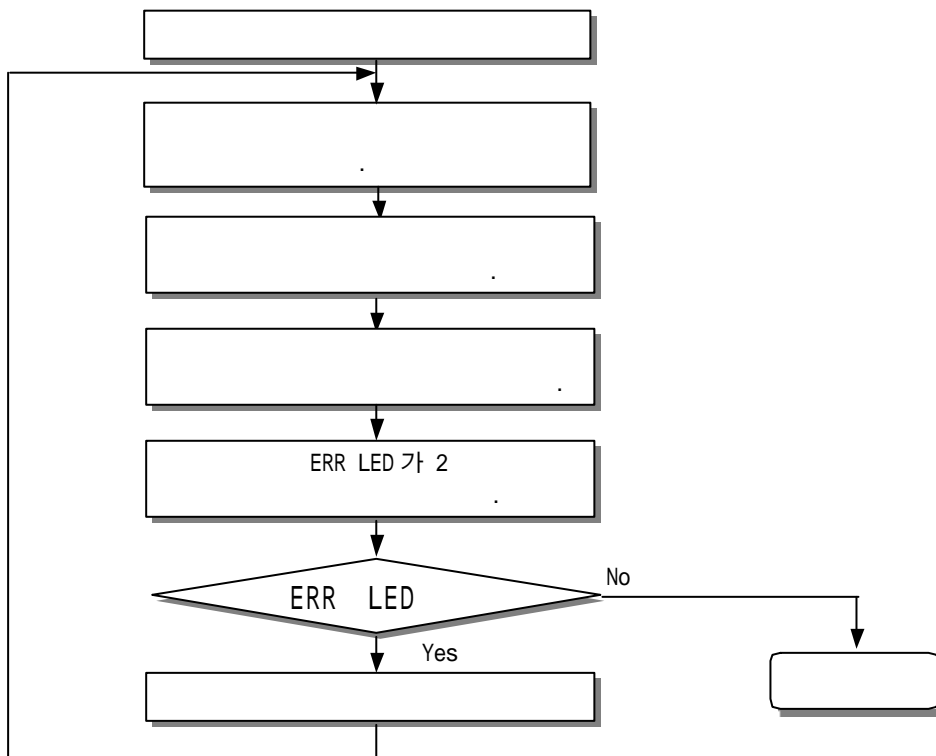
5.10.2

- 1) 가
- 2)
- 3)

5.10.3

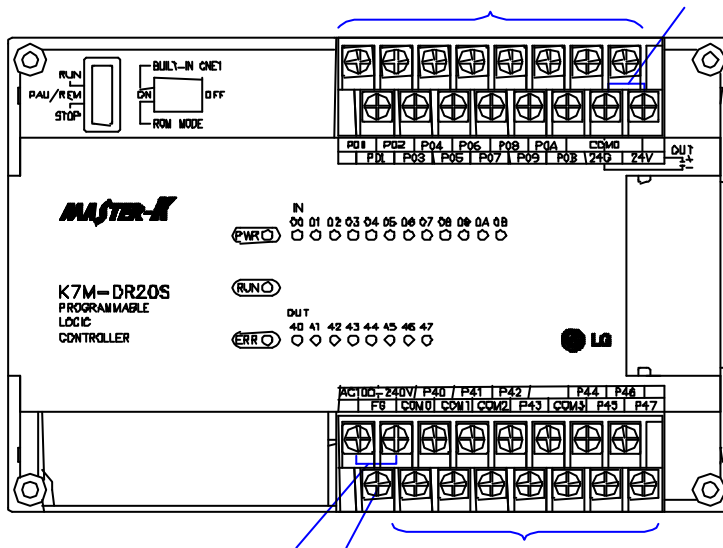
30

가



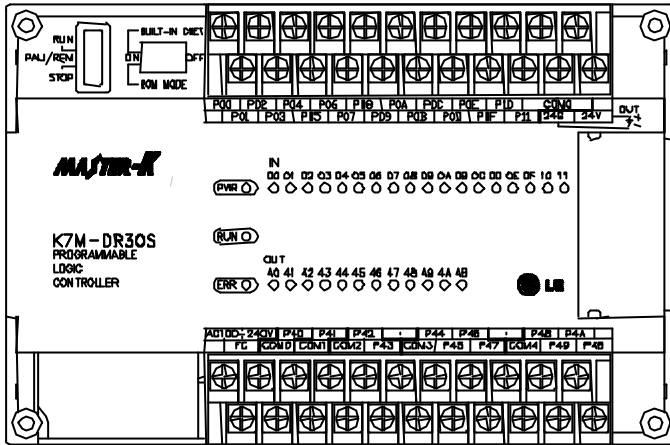
No.		
		<ul style="list-style-type: none"> • RUN : • STOP : • PAU / REM : PAUSE : REMOTE :
		5
RS-232C		(KGLWIN)
		•
		•
DIN		• DIN

4.1.1 20

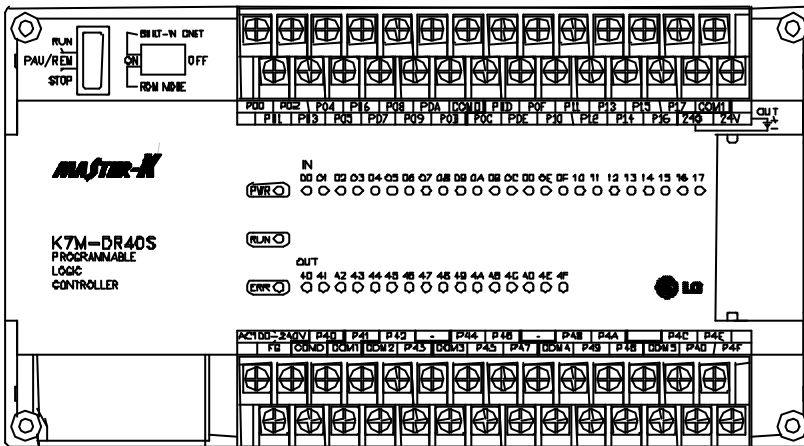


No.		
		• AC100 ~ 240V
FG		• ,
		•
		•
DC24V, 24G		• DC 24V 가

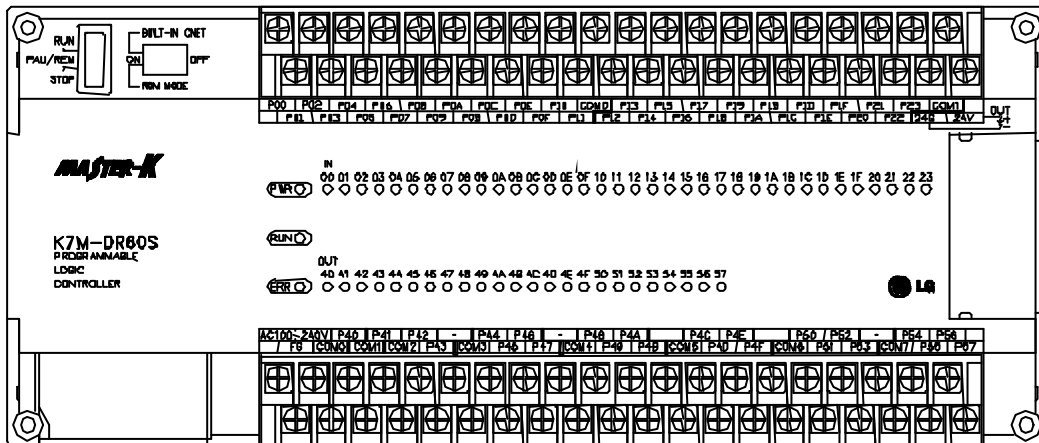
4.1.2 30



4.1.3 40

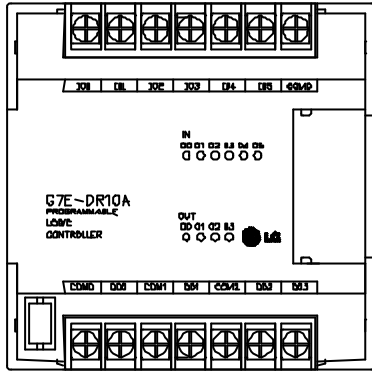


4.1.4 60

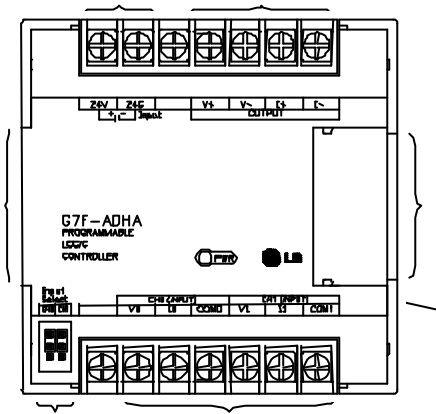


4.2

4.2.1 10

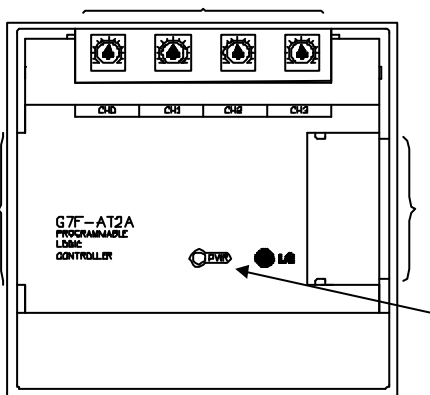


4.2.2 A/D · D/A



No.	
	RUN LED
	(/)
	(DC24V)

4.2.3



No.	
	RUN LED

6.1

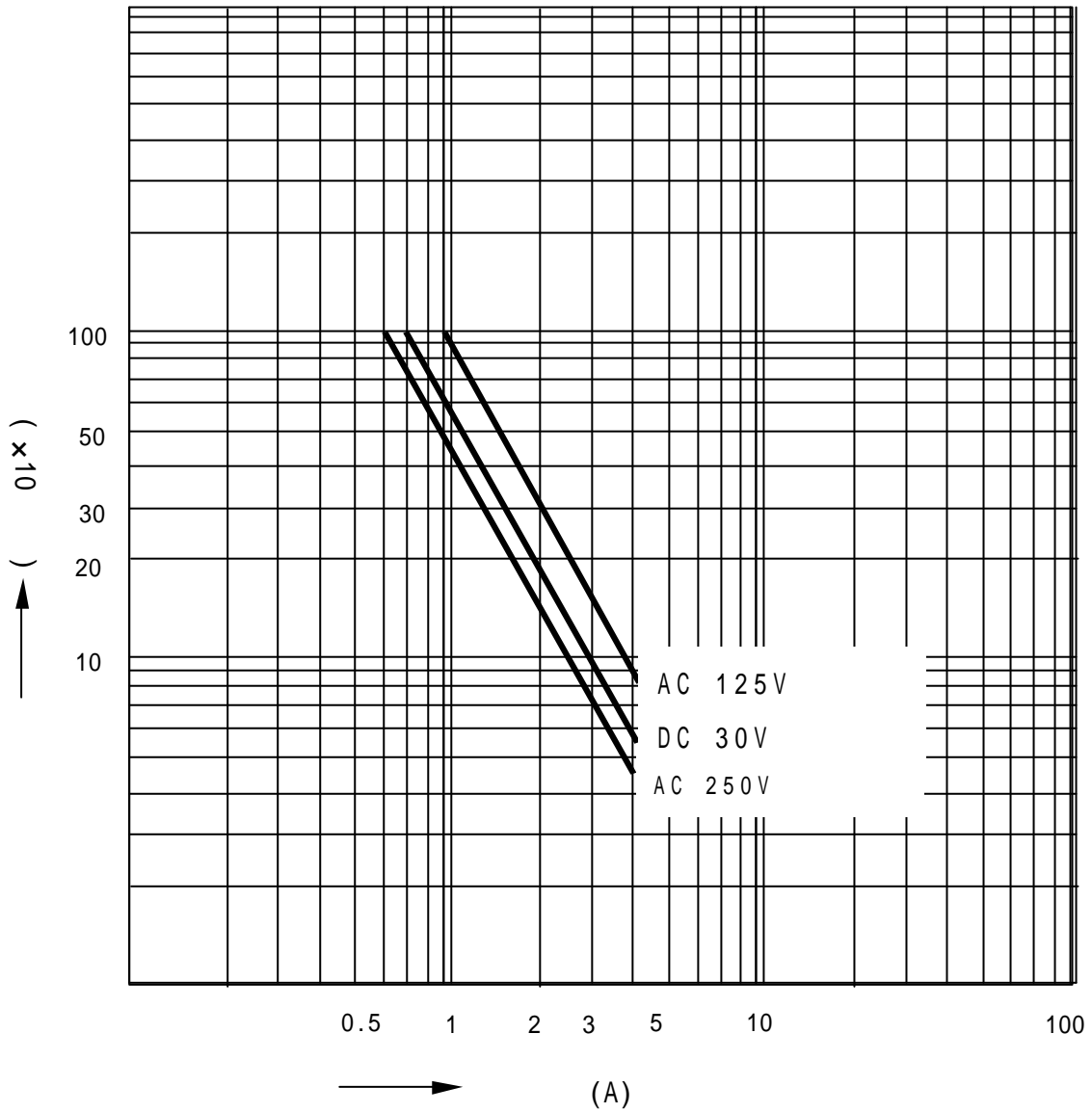
MK80S

/

1

On, 1

Off



6.2

6.2.1

1)

		K7M-DR20S	K7M-DR30S	K7M-DR40S	K7M-DR60S
				12	18	24	36
		DC24V			
		7 mA			
		DC20.4 ~ 28.8V (5%)			
		100% On			
On / On		DC15V / 4.3 mA			
Off / Off		DC5V / 1.5 mA			
		3.3 kΩ (100 ~ 102: 1.5 kΩ)			
	Off → On	15ms ¹			
	On → Off	15ms ¹			
		12 / COM	18 / COM	12 / COM	16 / COM
		On LED			

¹ :KGLWIN

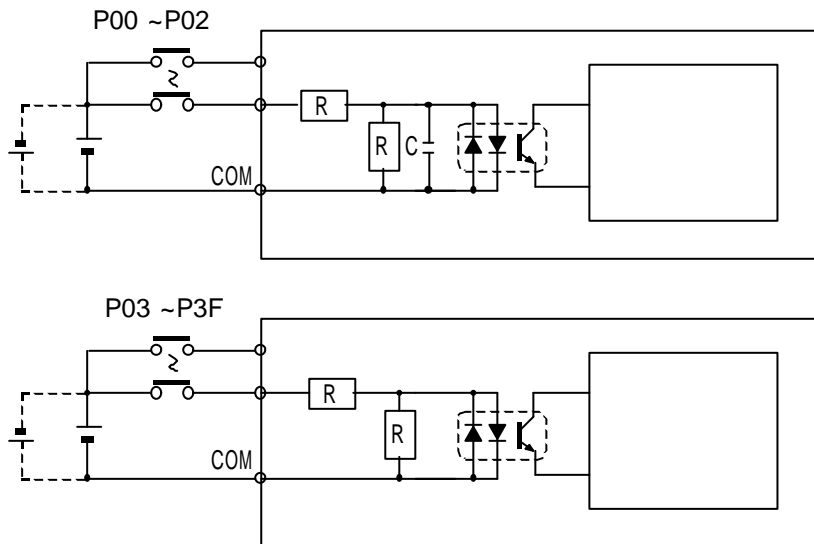
0ms

15ms

1ms

가

2)

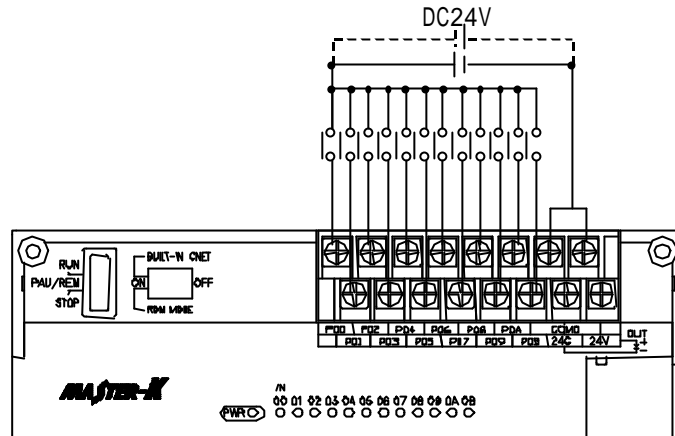


3)

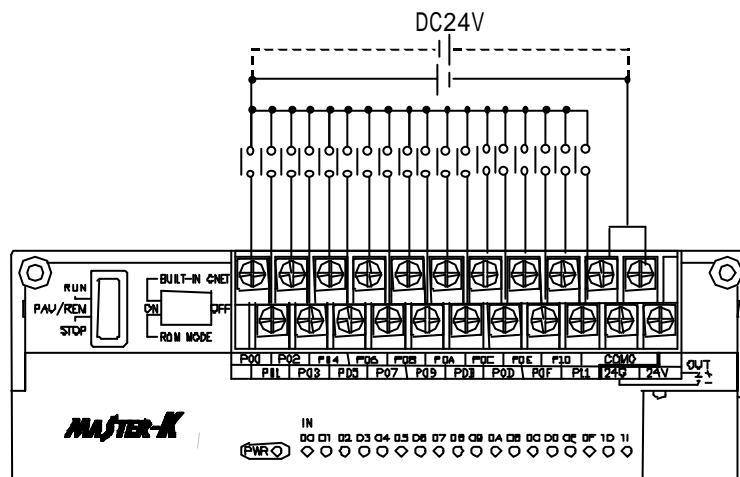
.MK80S

DC

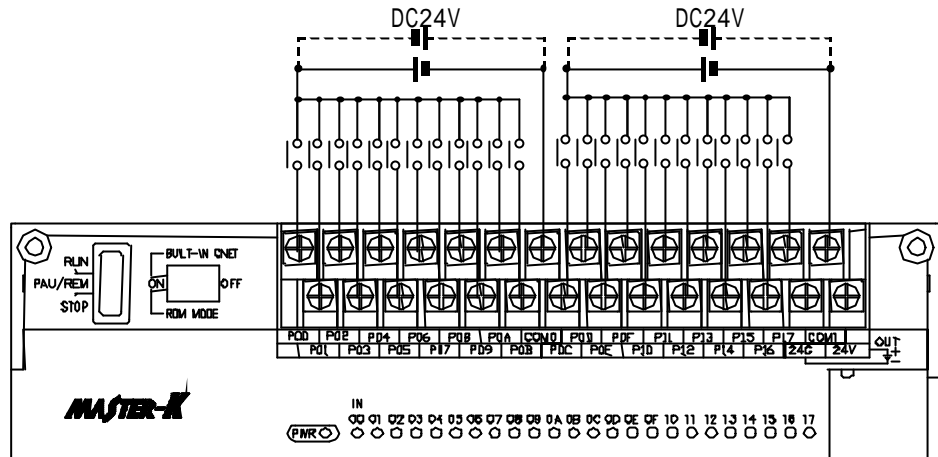
(1)20



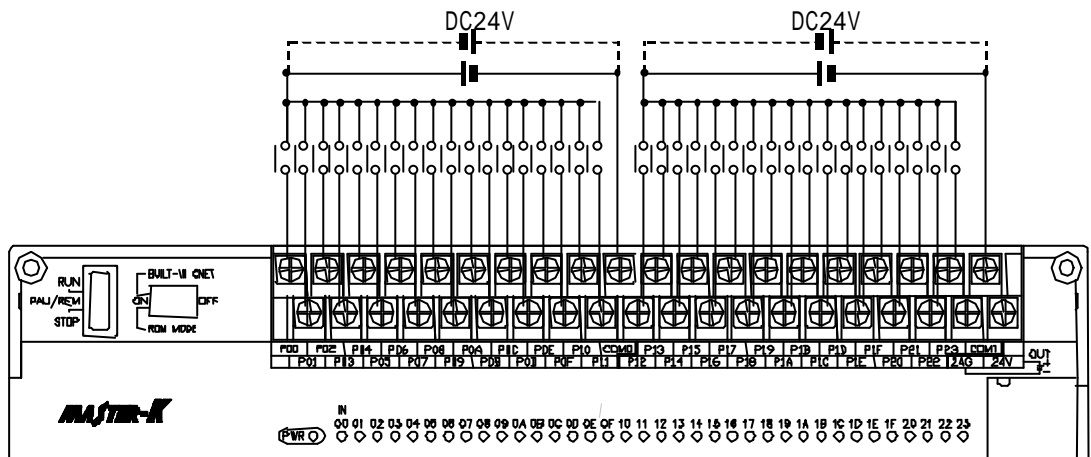
(2)30



(3)40



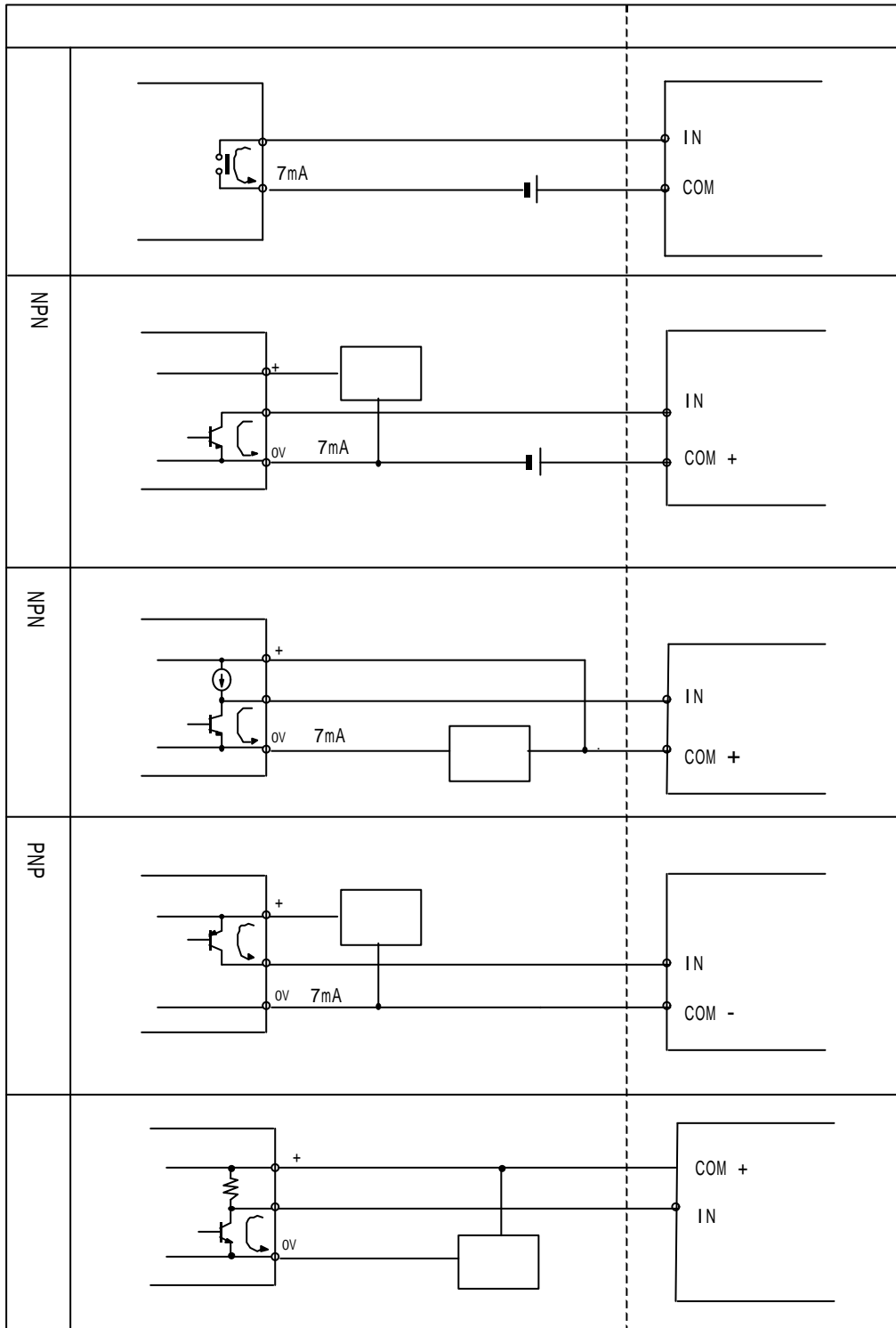
(4)60



4)

DC

DC



6.2.2

1)

		G7E-DR10A	
		6	
		DC24V	
		7 mA	
		DC20.4 ~ 28.8V (5%)	
		100% On	
On / On		DC15V	/ 4.3 mA
Off / Off		DC5V	/ 1.5 mA
		3.3 kΩ	
	Off → On	15ms	¹
	On → Off	15ms	¹
		6 / COM	
		On LED	

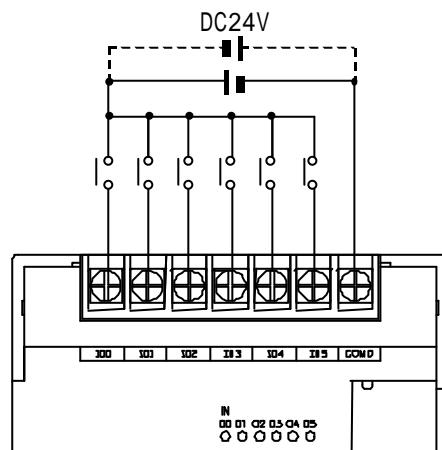
¹ : KGLWIN

0 0ms 15ms 1ms

가

2)

3)



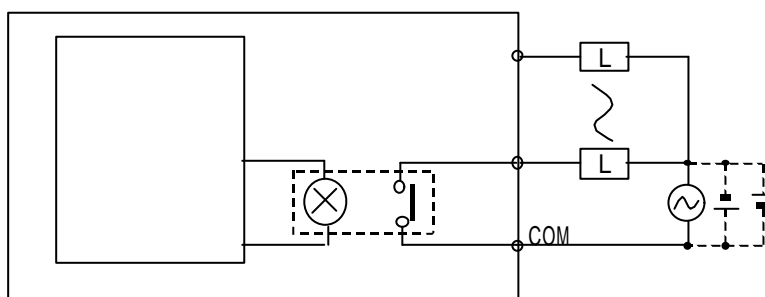
6.3

6.3.1

1)

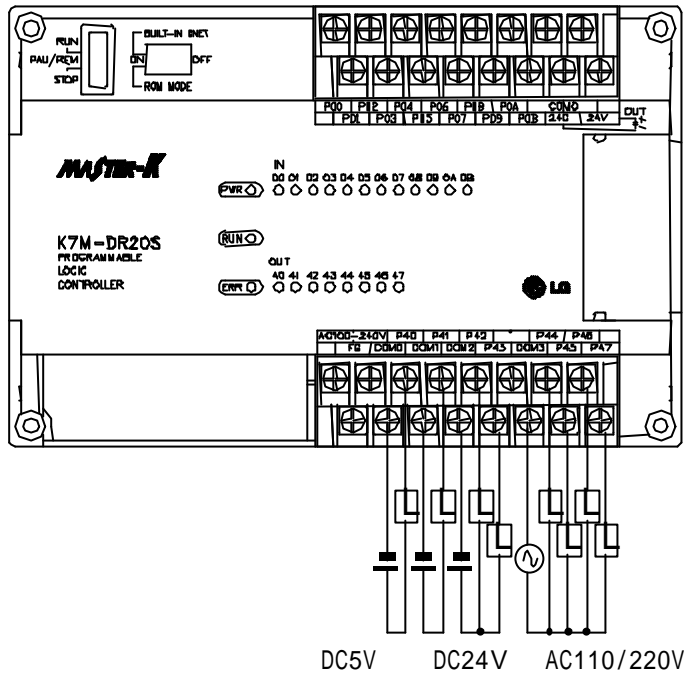
		K7M-DR20S	K7M-DR30S	K7M-DR40S	K7M-DR60S
				8	12	16	24
		DC24V / 2A (), AC220V / 2A (COS Ψ = 1) / 1 5A / 1COM			
		DC5V / 1mA			
		AC250V, DC110V			
Off		0.1mA (AC220V, 60Hz)			
		1,200 /			
		2,000			
		/ 10			
		AC200V / 1.5A, AC240V / 1A (COSΨ = 0.7) 10			
		AC200V / 1A, AC240V / 0.5A (COSΨ = 0.35) 10			
		DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 10			
Off → On		10 ms			
On → Off		12 ms			
		1 / 1COM, 2 / 1COM, 4 / 1COM			
		On LED			

2)

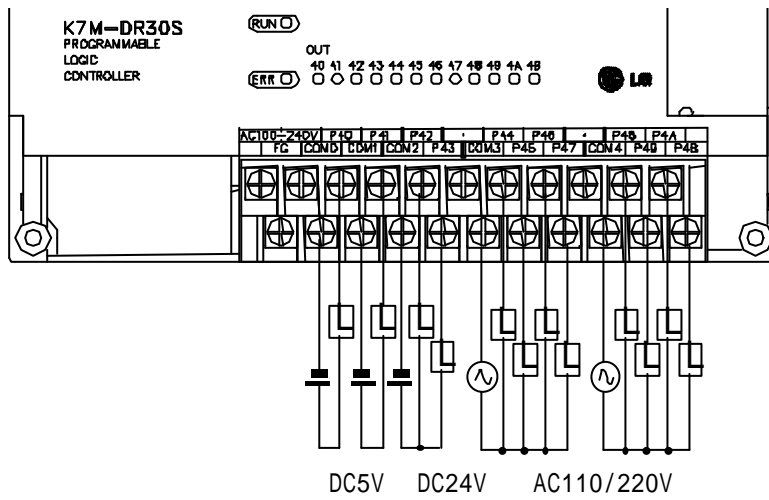


3)

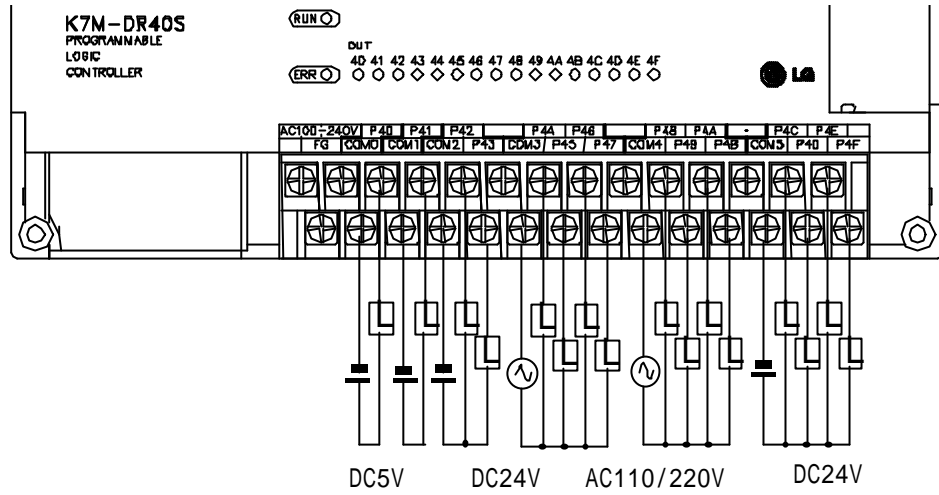
(1) 20



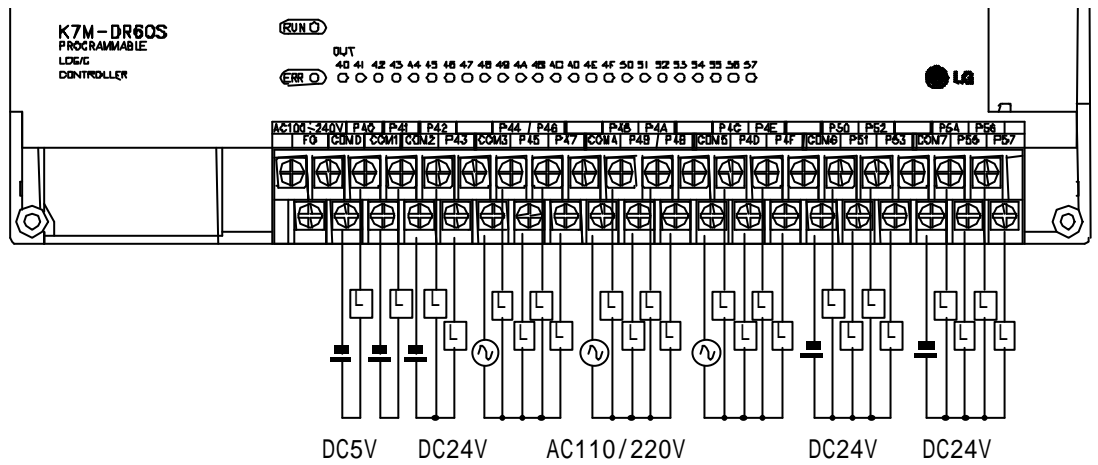
(2) 30



(3) 40



(4) 60



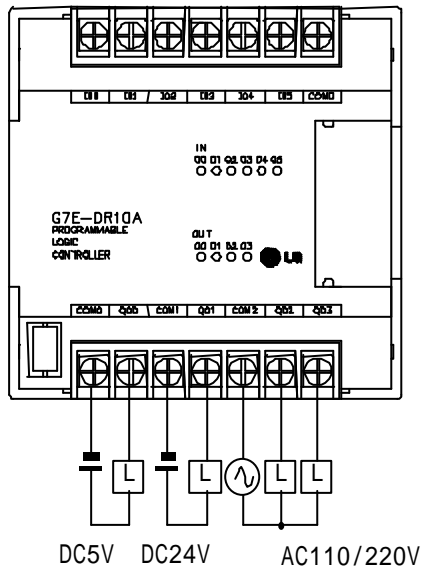
6.3.2

1)

		I/O	
		G7E-DR10A	
		4	
/		DC24V / 2A (), AC220V / 2A (COS Ψ = 1) / 1 5A / 1COM	
/		DC5V / 1mA	
/		AC250V, DC110V	
Off		0.1mA (AC220V, 60Hz)	
		1,200 /	
		2,000	
		/ 10	
		AC200V / 1.5A, AC240V / 1A (COSΨ = 0.7) 10	
		AC200V / 1A, AC240V / 0.5A (COSΨ = 0.35) 10	
		DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 10	
	Off → On	10 ms	
	On → Off	12 ms	
		1 / 1COM, 2 / 1COM	
		On LED	

2)

3)



1)	7.2
----	-----

7.1

7.1.1

가 가

	가 . 3 가
	-1 가 . -1 B 가 . -2 가 .
	1/2/4

1)

	1 (1 2)	
	A , B , Preset	
	F0170 (), F0171 (Carry)	
	F018 (Low Word), F019(High Word)	
	0 ~ 16,777,215 (0 -FFFFFFh) 24 Bit 가/	
	1 16Kpps / 2 8 Kpps	
가/	1 B 가/	
	2	
	(2) 1 /2 /4	
	D4999 10 가	

2)

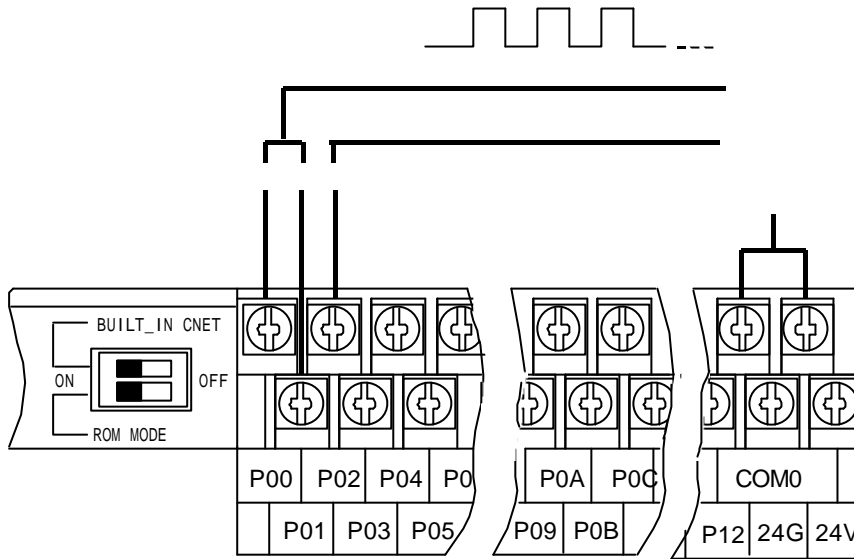
(1) A / B

/	DC 24V (15mA)
On	14V
Off	2.5V

(2)

/	DC 24V (15mA)
On	19V
Off	6V
On	1.5ms
Off	2ms

3)



No.			
	P00	ϕ A 24V	A
	P01	ϕ B 24V	B
	P02	24V	
	COM0		

4) 7.1 (Interface)

[7.1] Interface

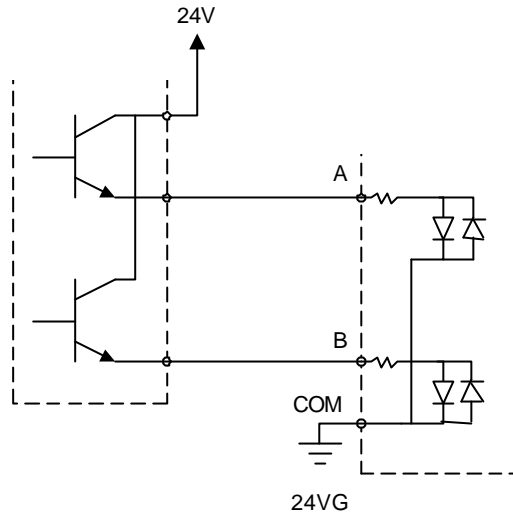
/					
		P00	A (DC24V)	On	14 ~ 26.4 V
				Off	2.5V
		P01	B (DC24V)	On	14 ~ 26.4 V
				Off	2.5V
		COM0	COM()	—	
		P02	(DC24V)	On	19 ~ 26.4 V
				Off	6 V
		COM0	COM()	—	

5) (Noise)

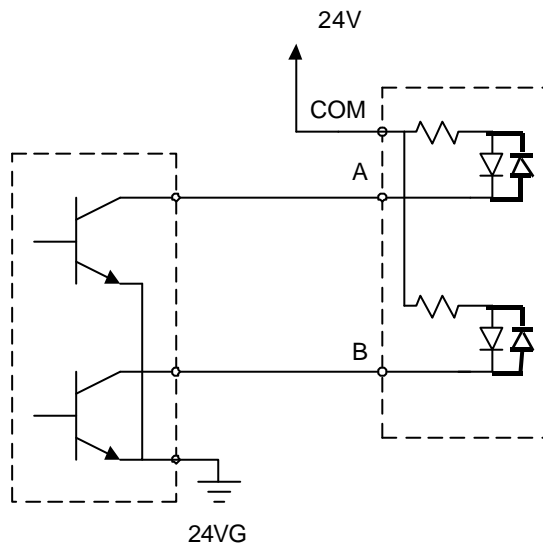
- (1) 3
- (2) 가 ,
- (3) 가 , A , B

6)

(1) ()가

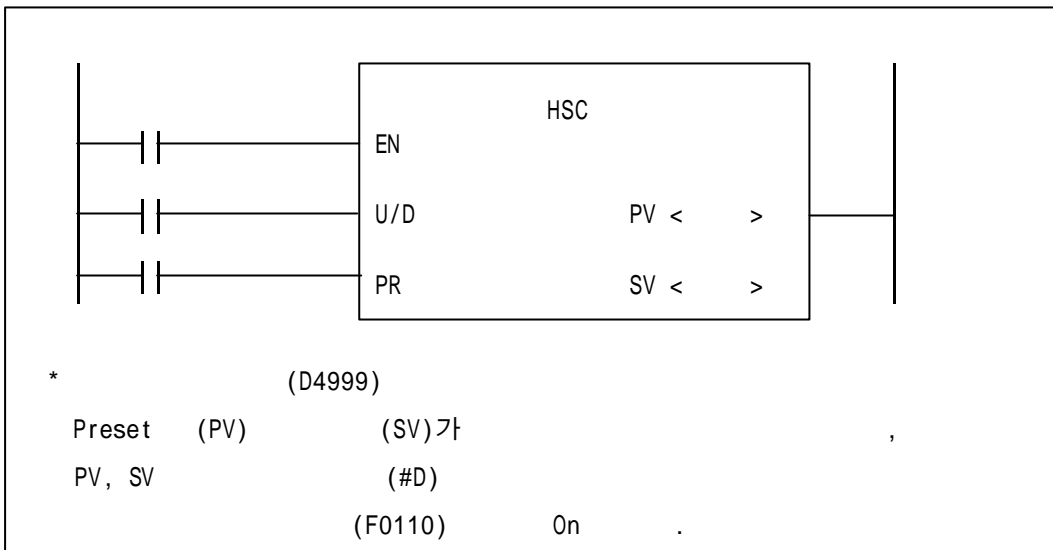


(2) 가



7)

(1) (HSC)



(D4999)						
		A	B	Preset		
1	h1000	Pulse	-	-	-	U/D : PR :
	h1010	Pulse	-	Preset	-	U/D : PR : Preset
	h1100	Pulse	U/D		-	U/D : B PR :
	h1110	Pulse	U/D	Preset	-	U/D : B PR : Preset
2	h2001	A	B	-	1	PR : 1
	h2002	A	B	-	2	PR : 2
	h2004	A	B	-	4	PR : 4
	h2011	A	B	Preset	1	PR : Preset 1
	h2012	A	B	Preset	2	PR : Preset 2
	h2014	A	B	Preset	4	PR : Preset 4

*) U/D PR HSC U/D, PR
 Dummy .

가) EN

Enable

EN

On

) U/D

1

Up/Down

, U/D

Off

Up

, On

Down

B

Up/Down

B

High

Up

, Low

Down

) PR

Preset

, PR

Edge

HSC

PV

Preset

(PR)

Preset

,

Preset

Preset

가

)

(F0170)

(F019, F018)가 HSC

(SV)

On

,

Off

) Carry

(F0171)

16,777,215(FFFFFFh) 0

0

16,777,215(FFFFFFh)

On

,

Enable

(EN)

Off

Preset

(PR)

Edge

Off

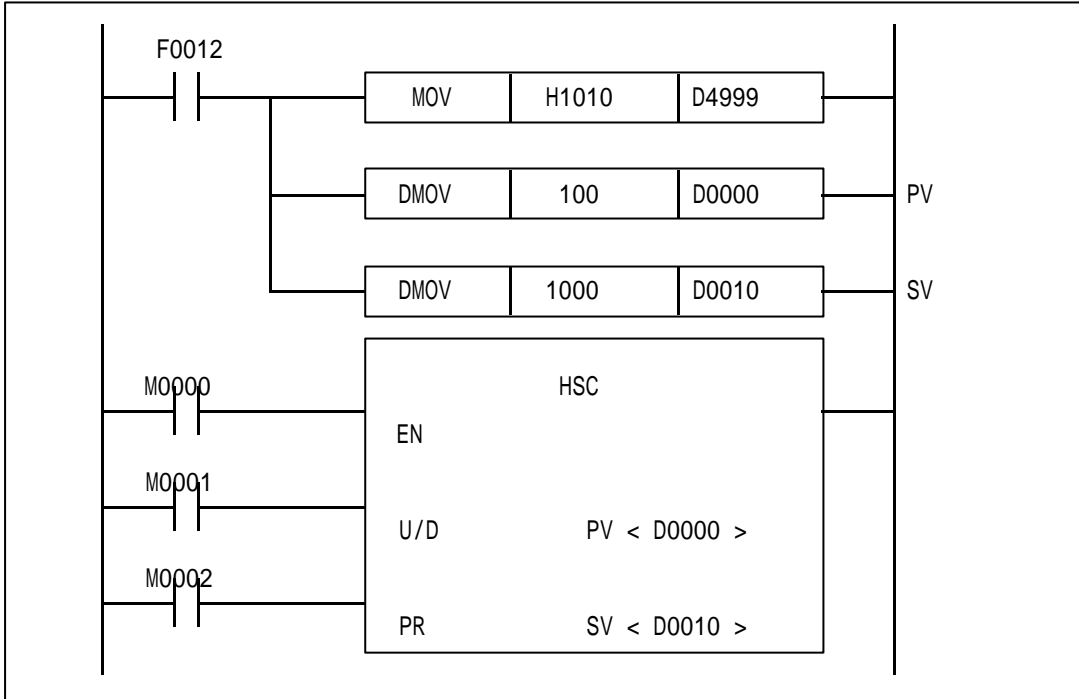
Carry

On

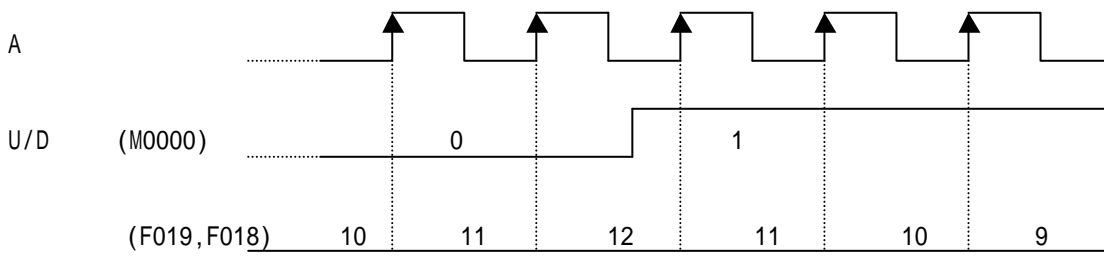
8)

(1) 1 (가/)

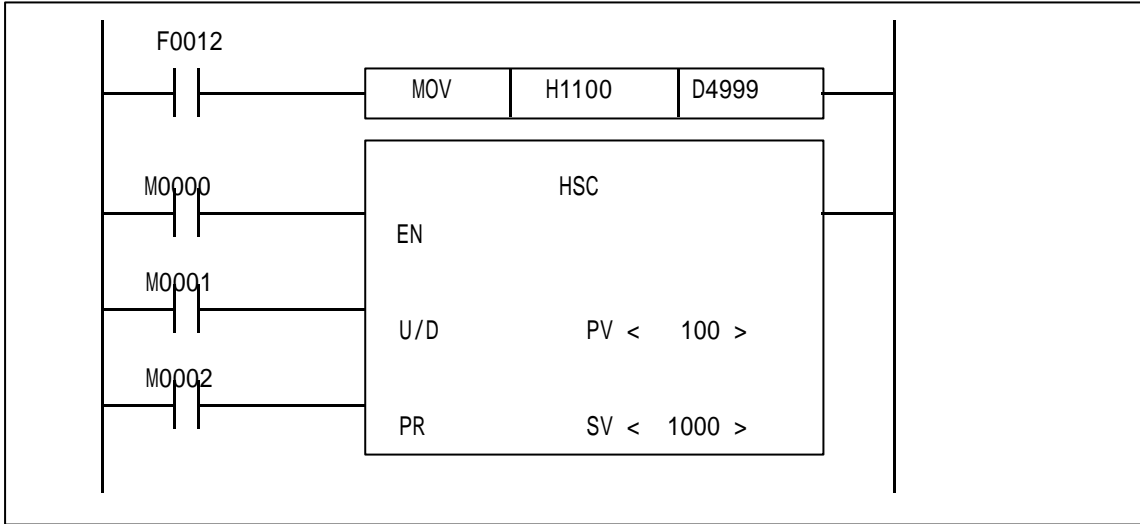
가) U/D Preset Preset
) Preset = D0000 = 100, = D0010 = 1000



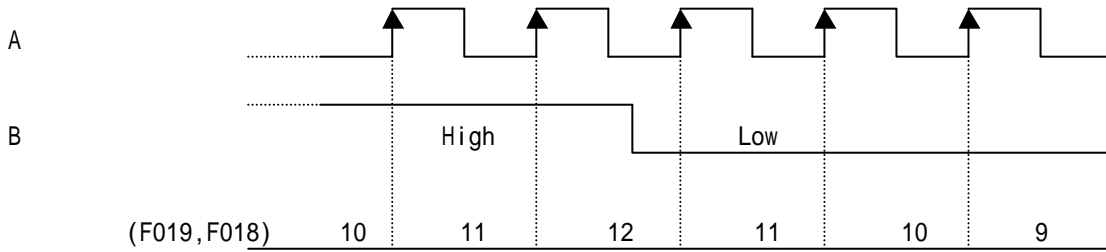
) EN (M0000) 1 .
) A 가 , HSC U/D (M0001) 가,
) U/D 0 가 , 1 .



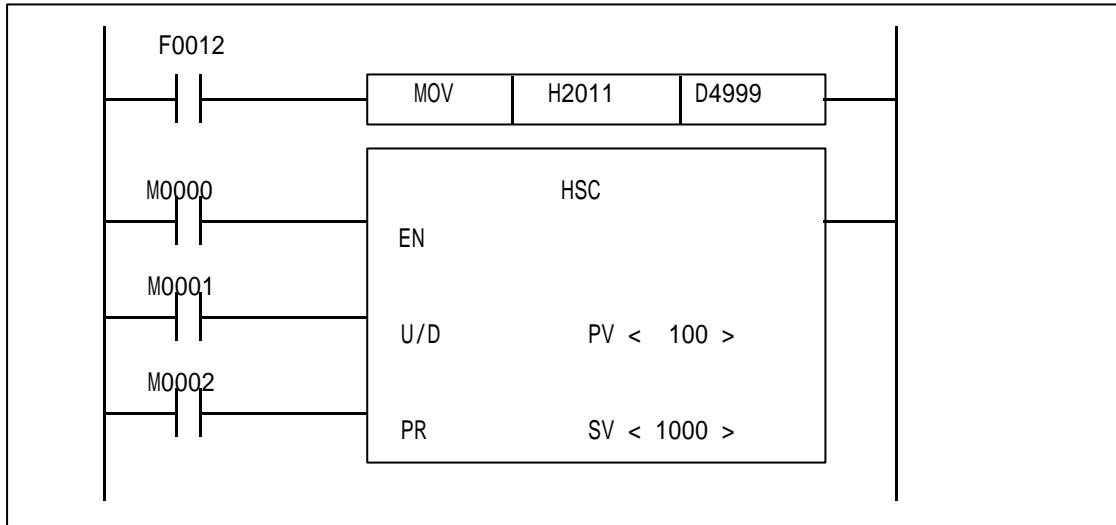
(2) 1 (B 가/)
 가) B U/D Preset
) Preset = 100, = 1000



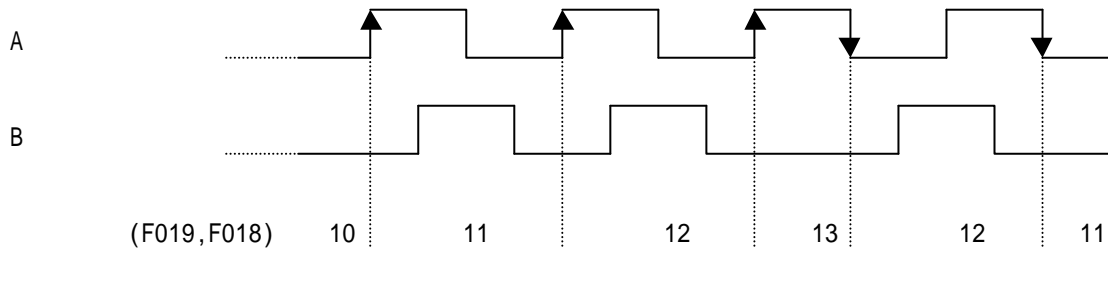
) EN (M0000) 1
) A 가 , B 가,
) B High 가 , Low



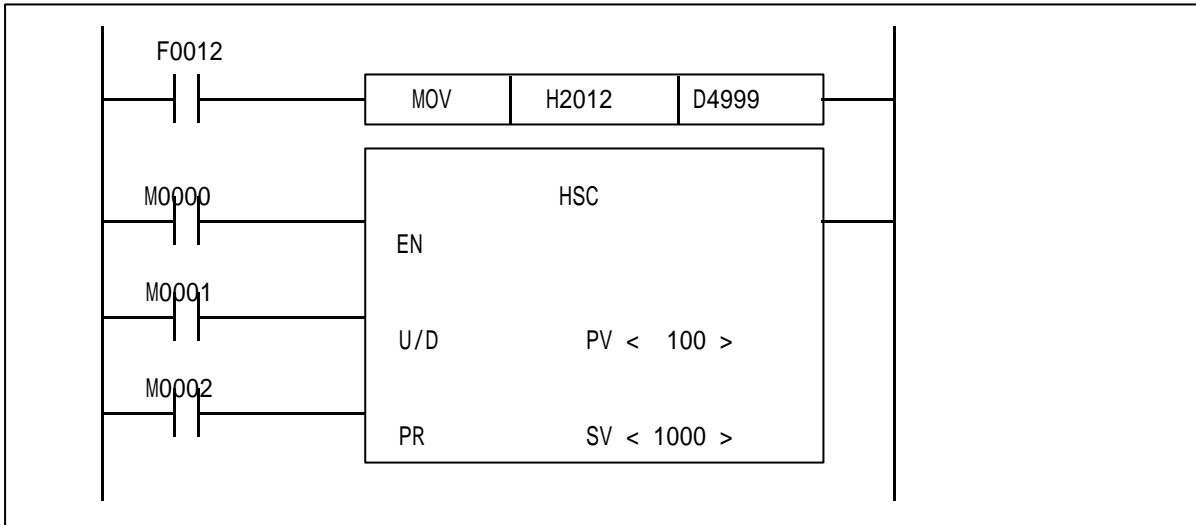
(3) 2 (1)
 가) Preset Preset 1
) Preset = 100, = 1000



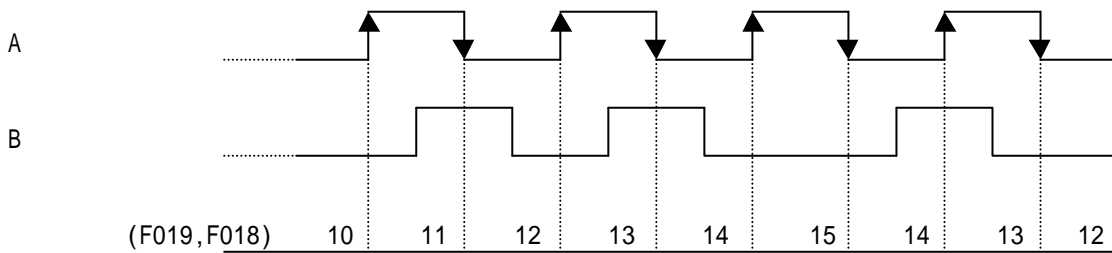
-) EN (M0000) 1 .
-) A 가 B 가 ,
-) B 가 A .
-) A 가 B 가 Low 가 ,
-) A 가 B 가 Low .



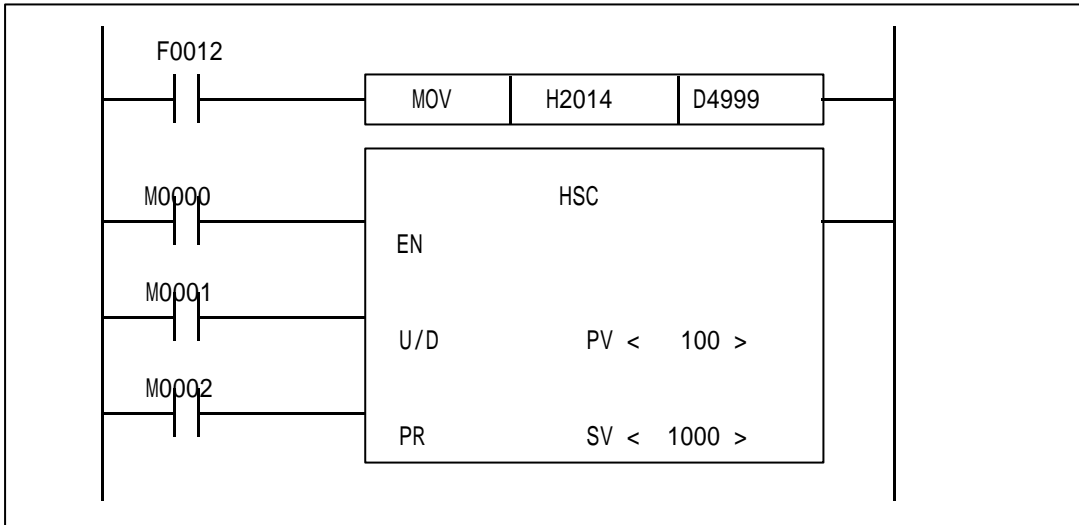
(4) 2 (2)
 가) Preset Preset 2
) Preset = 100, = 1000



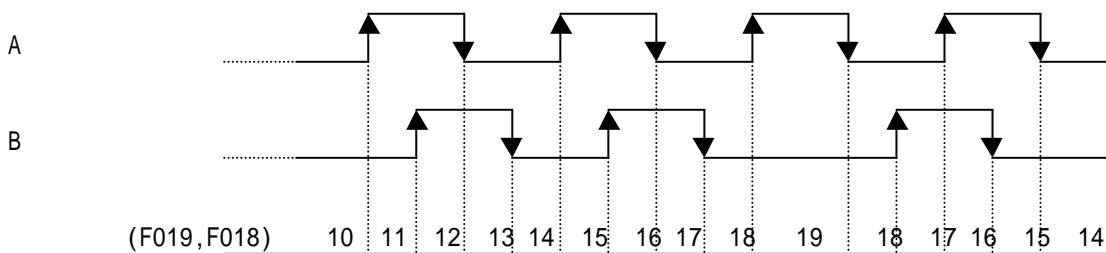
) EN (M0000) 1
) A 가 B 가 ,
) B 가 A .
) A 가 B 가 Low , A 가 B
 가 High 가 , A 가 B 가 High
 , A 가 B 가 Low .



(5) 2 (4)
 가) Preset Preset 4
) Preset = 100, = 1000



) EN (M0000) 1 .
) A 가 B 가 ,
) B 가 A .
) A 가 B 가 Low , A 가
 B 가 High , B 가 A 가
 High , B 가 A 가 Low 가 ,
 A 가 B 가 High , A 가 B
 가 Low , B 가 A 가 Low ,
 B 가 A 가 High .



7.1.2 (Pulse Output)

MK80S

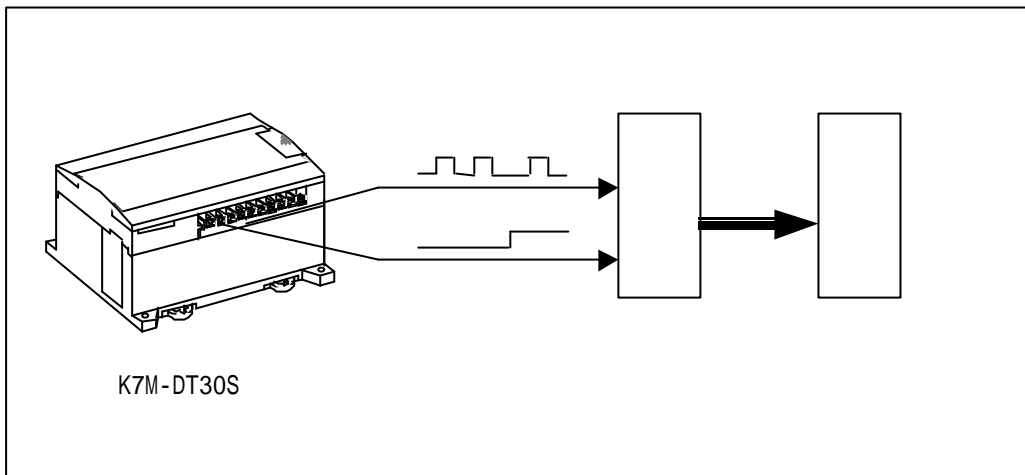
2Kpps

1)

MK80S
(Pulse)

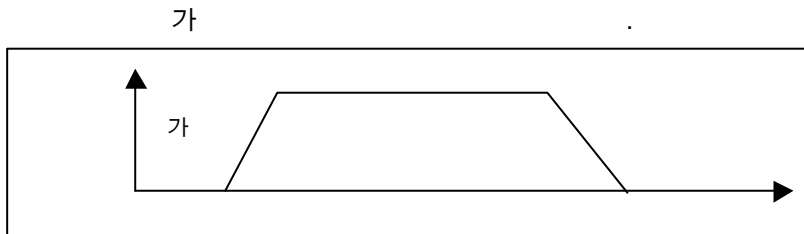
(Direction)

(PLSOUT)



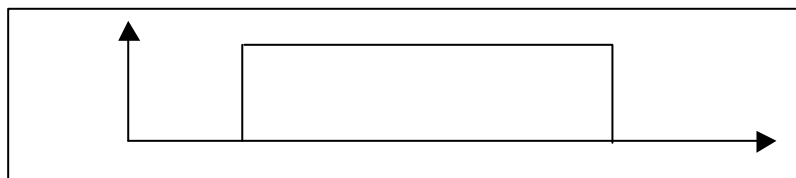
3 가

(1) 가



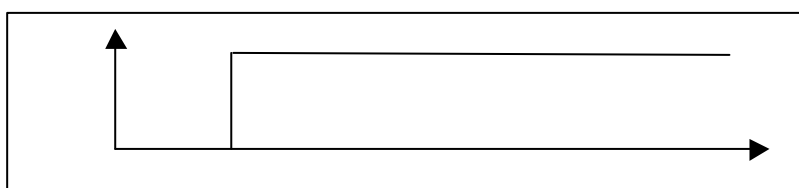
(2)

가



(3)

가

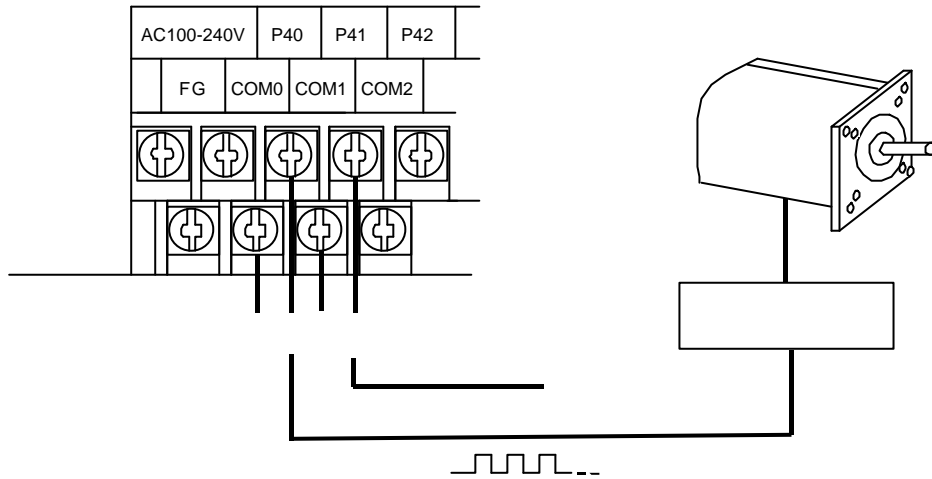


2)

	1
	2Kpps, 50pps (50pps 가)
	0 ~ 4294967295
가/	
	/
	12V/24V
	DC10.2 ~ 26.4V
	150mA
	0.4A, 10ms
On	DC 0.5V
Off	0.1mA
On	1ms
Off	1ms

1)	P040	P041
----	------	------

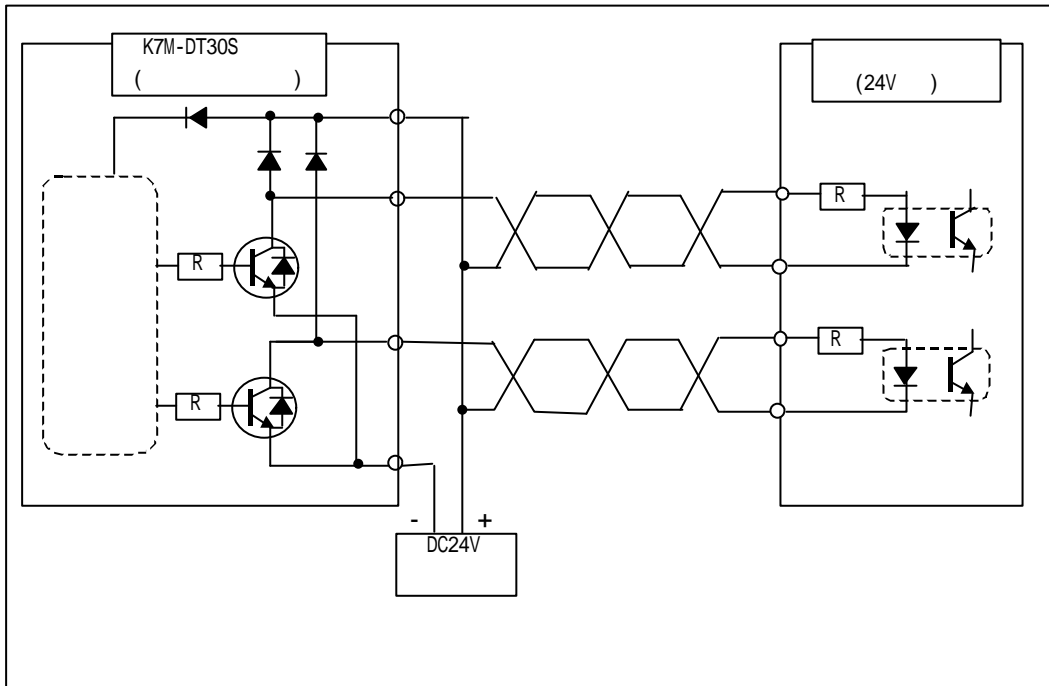
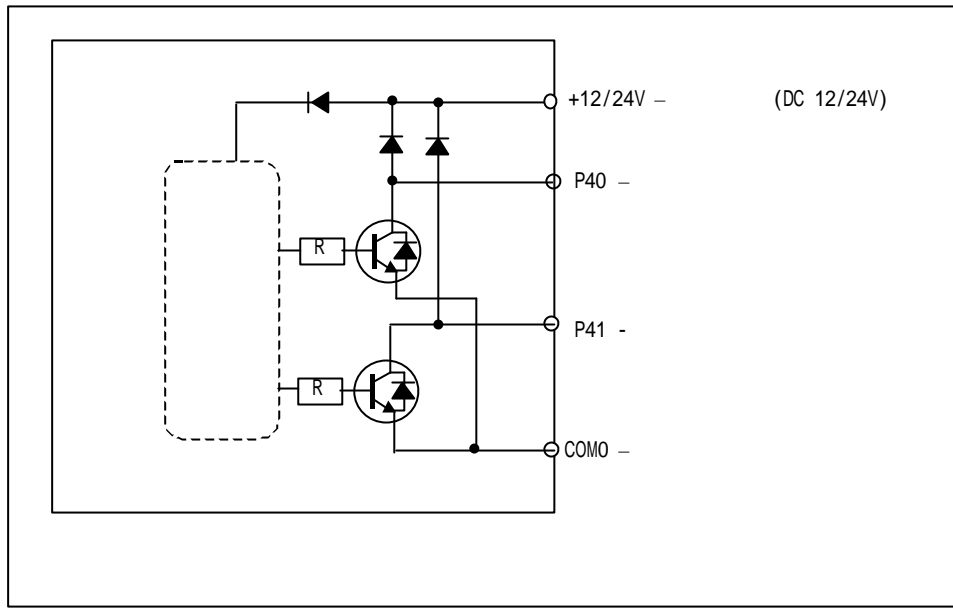
3)



No.			
	P040		
	COM0		
	P041		
	COM0		

1)	가	(PLSOUT) 2	/ ' P41 '
----	---	------------	-----------

4)



(Noise)

1) 가 3 가 .

2) 가 , 가 .

3) 가 .

5)

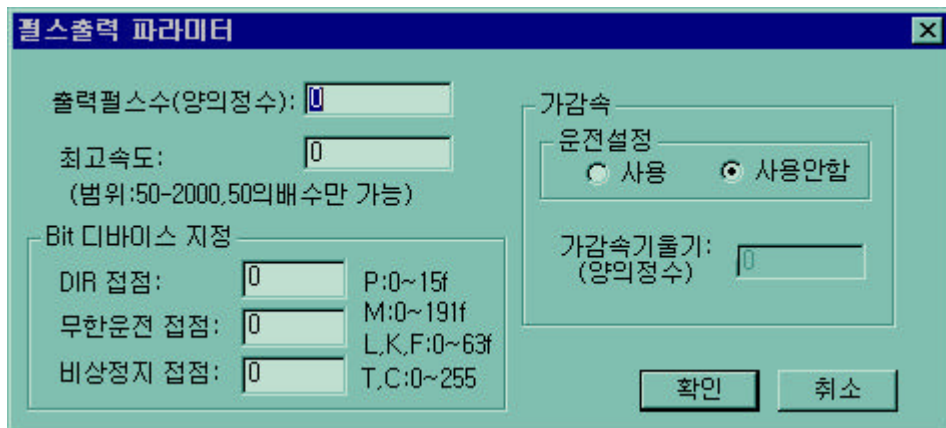
KGLWIN

(.)

기본	인터럽트	통신	PID(TUN)	PID(CAL)	펄스출력	아날로그					
운전패턴No.	출력펄스수	최고속도	가감속운전설정	가감속기울기	DIR접점	무한운전접점	비상정지접점	가감속시간	가감속펄스수		
0	0	0	0	0	0	0	0	0	0		
1	0	0	0	0	0	0	0	0	0		
2	0	0	0	0	0	0	0	0	0		
3	0	0	0	0	0	0	0	0	0		
4	0	0	0	0	0	0	0	0	0		
5	0	0	0	0	0	0	0	0	0		
6	0	0	0	0	0	0	0	0	0		
7	0	0	0	0	0	0	0	0	0		
8	0	0	0	0	0	0	0	0	0		
9	0	0	0	0	0	0	0	0	0		
10	0	0	0	0	0	0	0	0	0		
11	0	0	0	0	0	0	0	0	0		
12	0	0	0	0	0	0	0	0	0		
13	0	0	0	0	0	0	0	0	0		
14	0	0	0	0	0	0	0	0	0		
15	0	0	0	0	0	0	0	0	0		

1) 40

2)



6)

(1) NO.

No. No. 40

(2)

. (: 0 ~ 4294967295)

(3)

50 가) (: 50 ~ 2,000pps 가

(4) 가

가 가 . (: 1 , : 0)

(5) 가

가 : 가
- 가 : " 0 "

- : "0"

(6) DIR

: 1 , : 0
DIR On PLSOUT
On

(7)

(8)

(9) 가

가 가 KGLWIN
-(가)

$$\text{가} = [(\text{가} - 50) / 50 + (\text{가} - 100) / 50 + (\text{가} - 150) / 50 + \dots + (100 / 50) + (50 / 50)] * \text{가} * 2$$

) : 1000pps , 가 : 1 가

$$[((1000 - 50) / 50 + (950 - 50) / 50 + (900 - 50) / 50 + \dots + (100 / 50) + (50 / 50)] * 1 * 2 = 380$$

(10) 가

가 가 KGLWIN
-(가)

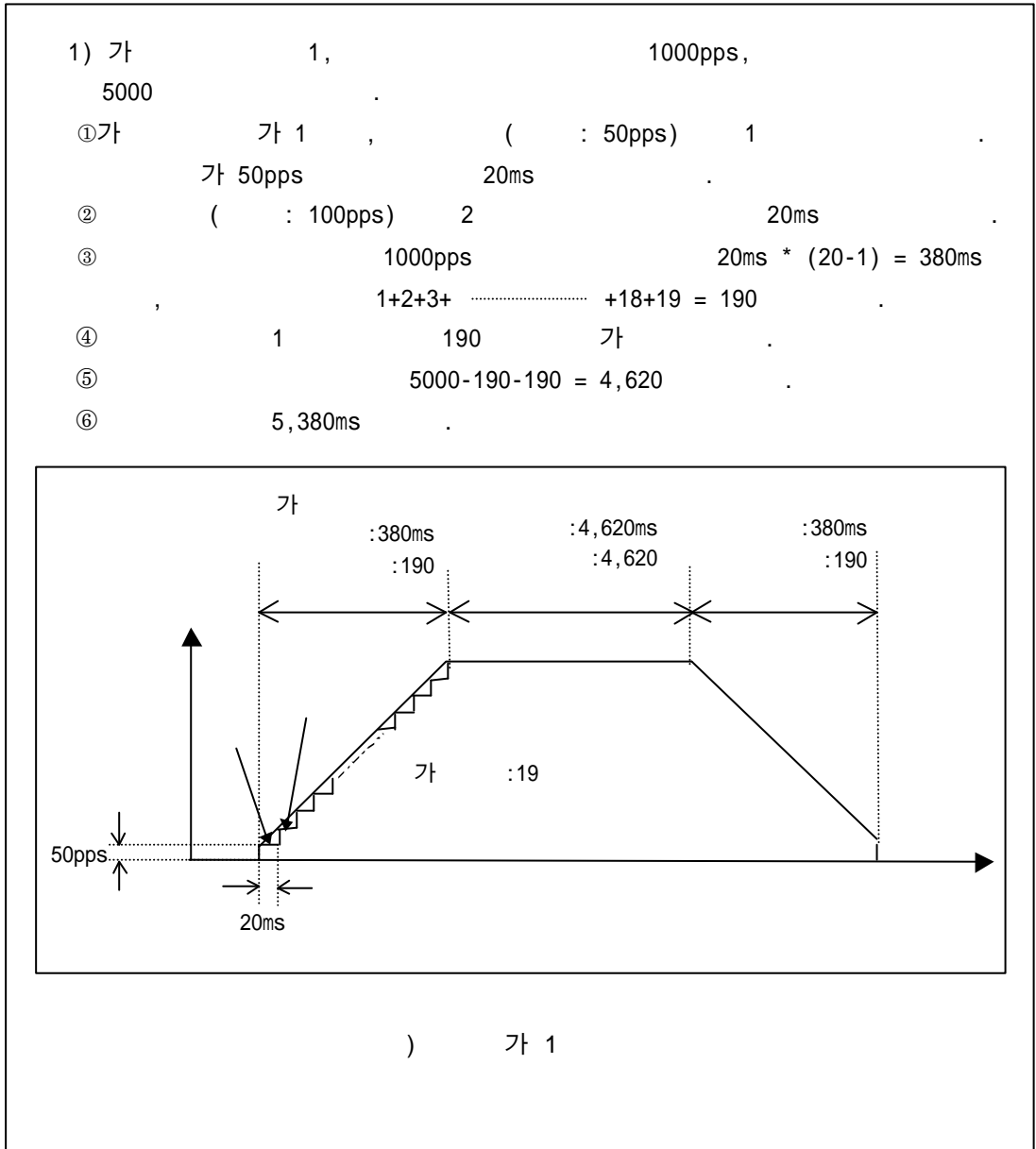
가/ (ms) = [(가 - 50) / 50] * 가 * 2 * 10

) : 1000pps , 가 : 1 가

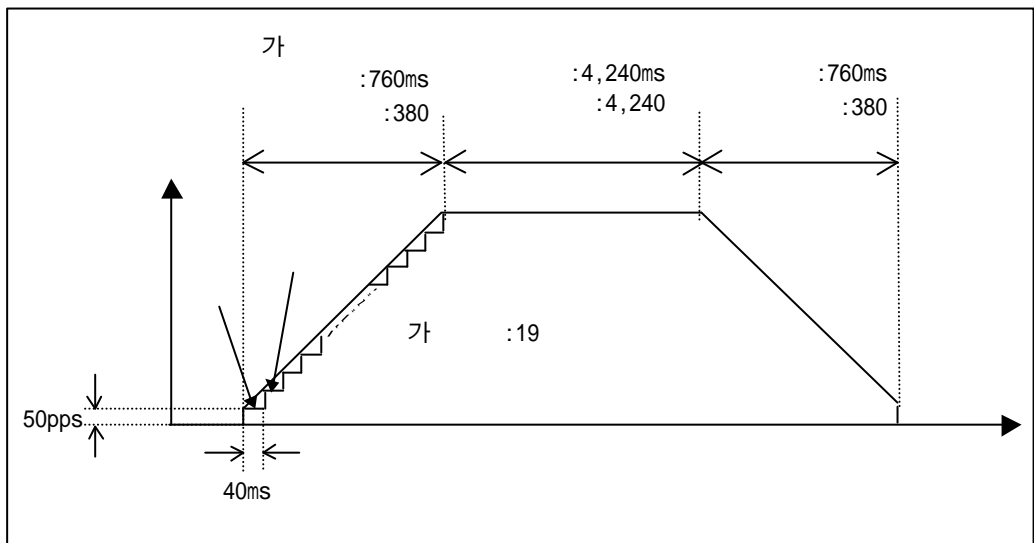
$$[(1000 - 50) / 50] * 1 * 2 * 10 = 380\text{ms} \text{ (가 : 380ms , : 380ms)}$$

1) MK80S 가
가 가

7)



- 2) 가 2, 1000pps, 5000
- ①가 가 2, (: 50pps) 2
가 50pps 40ms
 - ② (: 100pps) 4 40ms
 - ③ 1000pps 40ms * (20-1) = 760ms
 - ④ 2 380 가
2+4+6+ +36+38 = 380
 - ⑤ 5000-380-380 = 4,240
 - ⑥ 57,60ms



) 가 2

1) MK80S 가 가 가
가 , 가 가
(PLSOUT) 가

8)

		가														
		M	P	K	L	F	T	C	S	D	#D		(F110)	(F111)	(F112)	
PLSOUT	S1									0		0	7	0		
	S2	0	0	0	0		0	0		0	0					
	S3		0													

Set

(F110)	Set
--------	-----

n	
S1	
S2	

■ PLSOUT

가)

- On
- n
- S1 . (3Word)
- S2 P

)



- M0020 On 5
- P0040 , D0000, D0001
- D0002 ..

-
- 2

)

00		-
01		
02	(2000 , 50 가 , 0)	
03	가 가	
04		
05		

9)

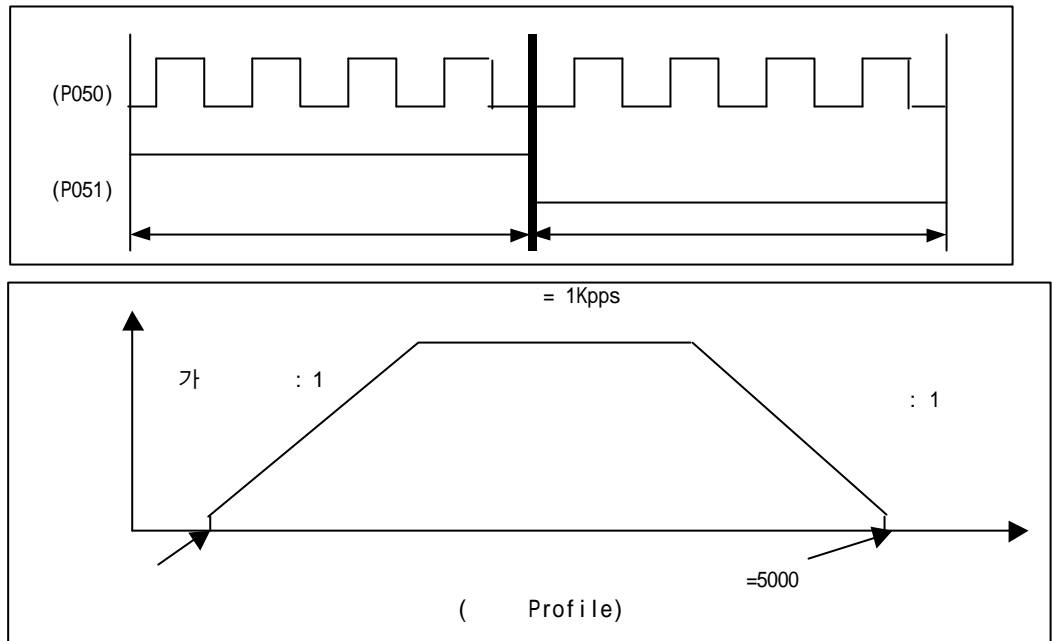
2 가

가)

(가)

가

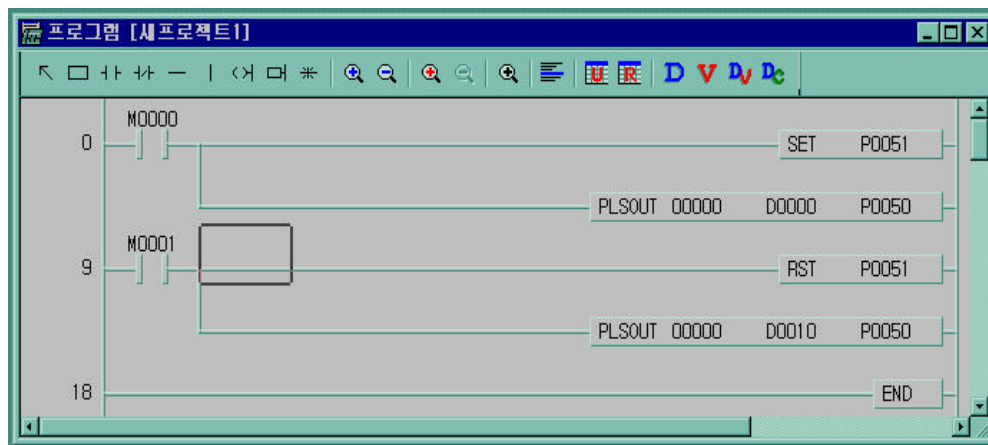
, /



파라미터 [새 프로젝트]

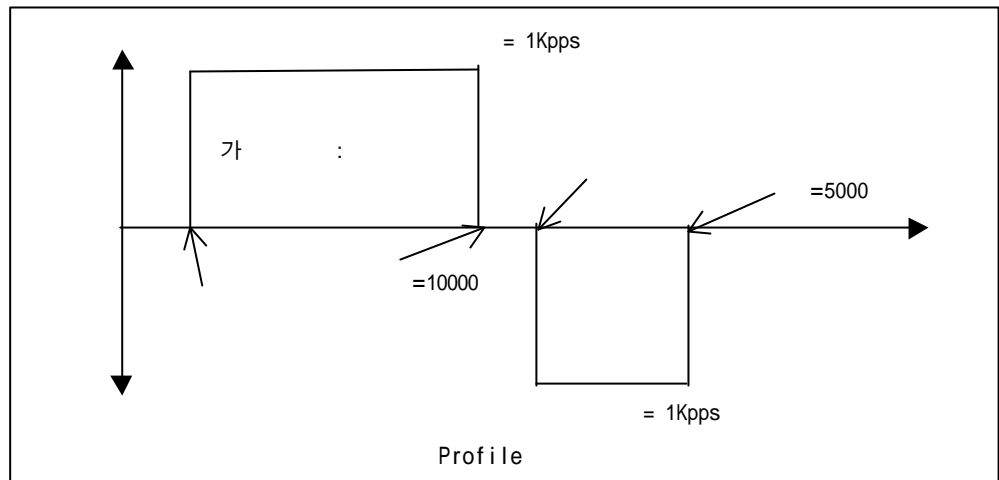
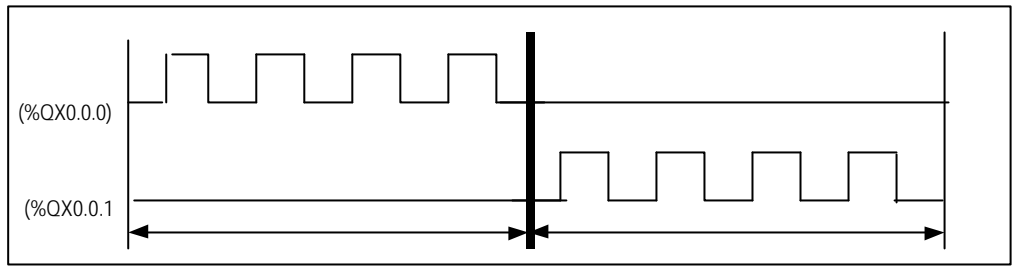
기본	인터럽트	통신	PID(TUN)	PID(CAL)	펄스출력	아날로그			
운전패턴No.	출력펄스수	최고속도	가감속운전설정	가감속기울기	DIR점점	무한운전점점	비상정지점점	가감속시간	가감속펄스수
0	5000	1000	1	1	P51	M20	M10	380	1140

DIR P51



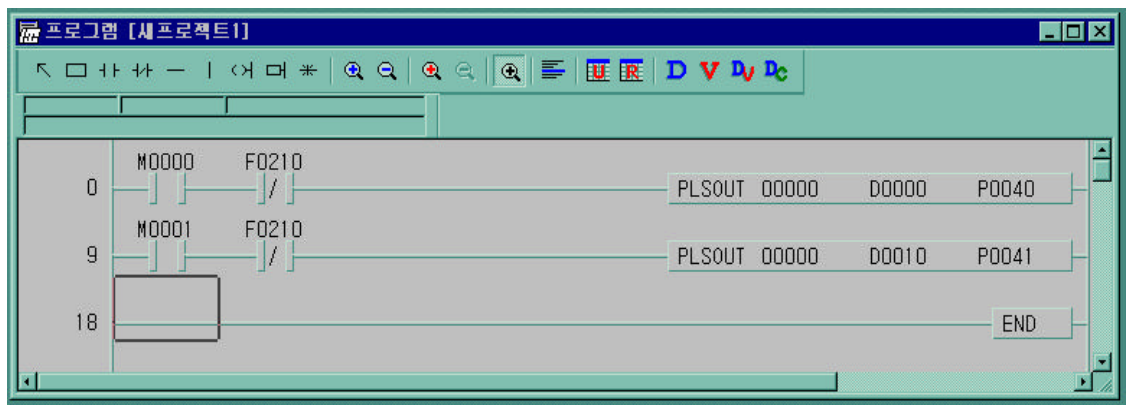
M000 On DIR P51 set 0
 M0001 On DIR P51 0
 DIR

() 가



파라미터 [새 프로젝트]

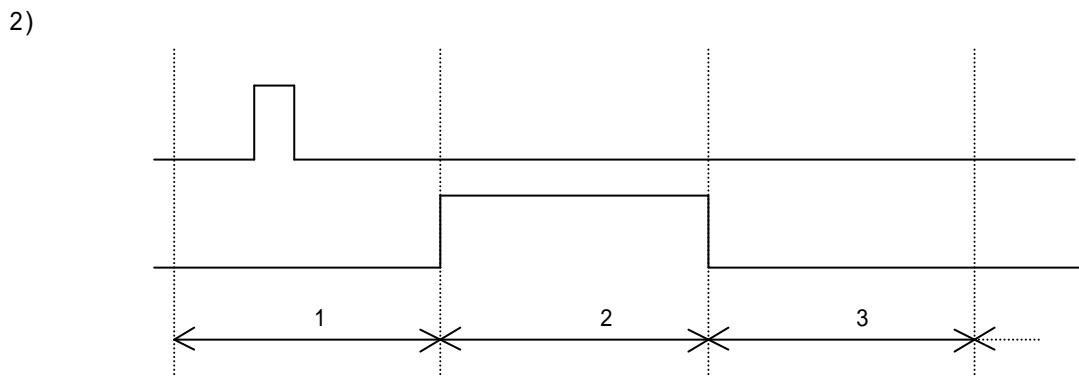
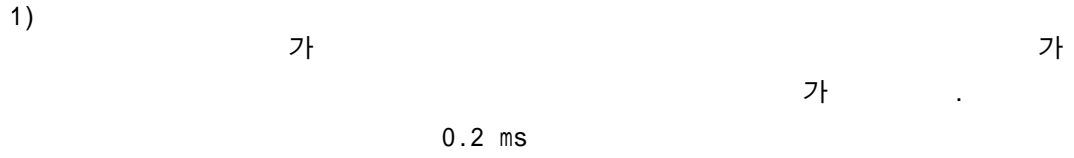
운전패턴No.	출력펄스수	최고속도	가감속운전설정	가감속기울기	DIR접점	무한운전접점	비상정지접점	가감속
0	5000	1000	0	0	0	0	0	
1	0	0	0	0	0	0	0	
2	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	



F210

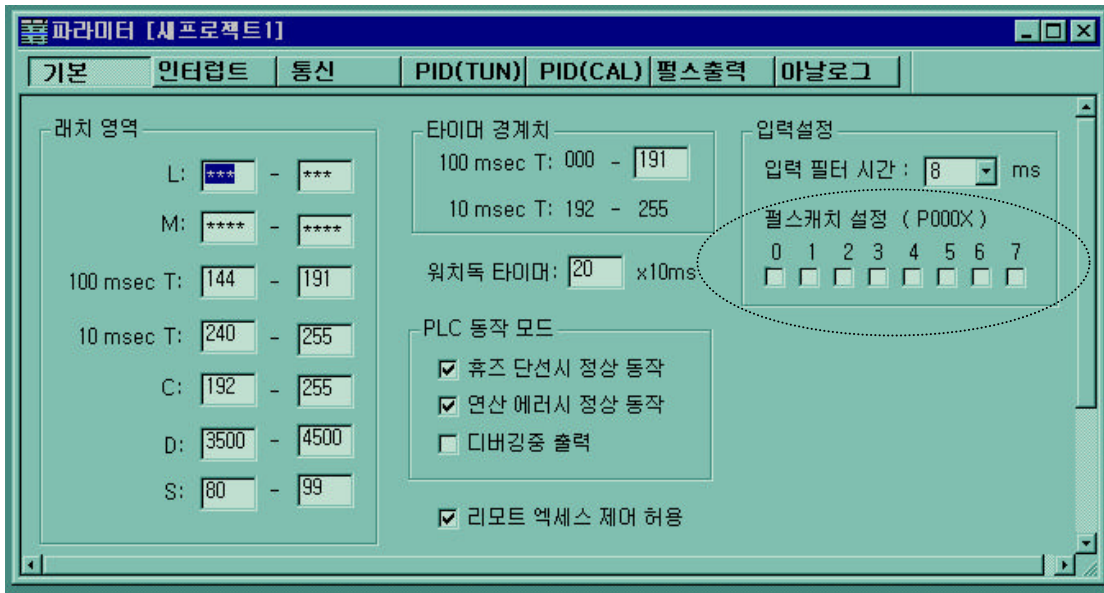
7.1.3 (Pulse Catch)

8 (P000 ~ P007)
0.2ms



1	· 0.2ms 가 CPU 가
2	· On
3	· Off

- 3)
(1) KGLWIN
(2)
(KGLWIN .)



1)	가	P000 ~ P007	8	
2)				

7.1.4 (Filter)

MK80S KGLWIN 0 ~ 15ms

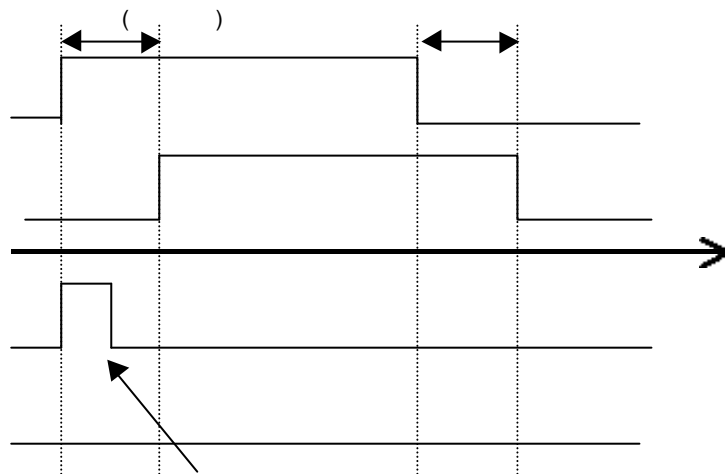
1)

가

가

가

2)



3)

(1) KGLWIN

(2)

1ms

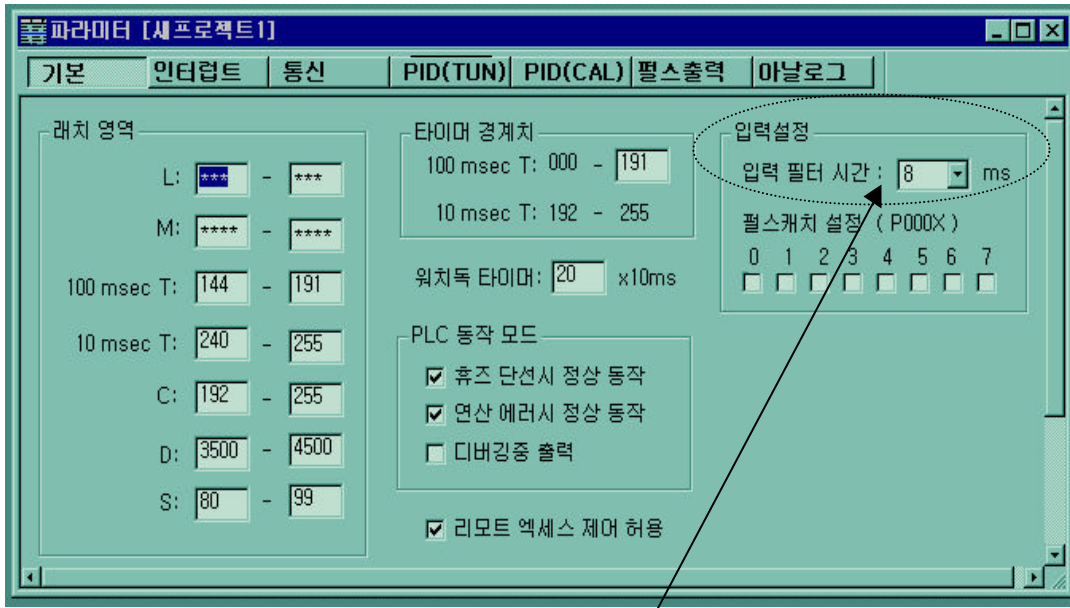
가

(

8 ms

.)

(3)



0 ~ 15 ms

7.1.5 PID

1)

MK80S

PID(Proportional Integral Differential)

. MK80S

MK300S/1000S

PID

PID

, CPU

PID

PID

() ,
가

가

(P), (I), (D)
가

.< 1-1> PID

MK80S PID

CPU

, PID

PID

PLC

/

가

P , PI , PID

On/Off

(가) 가

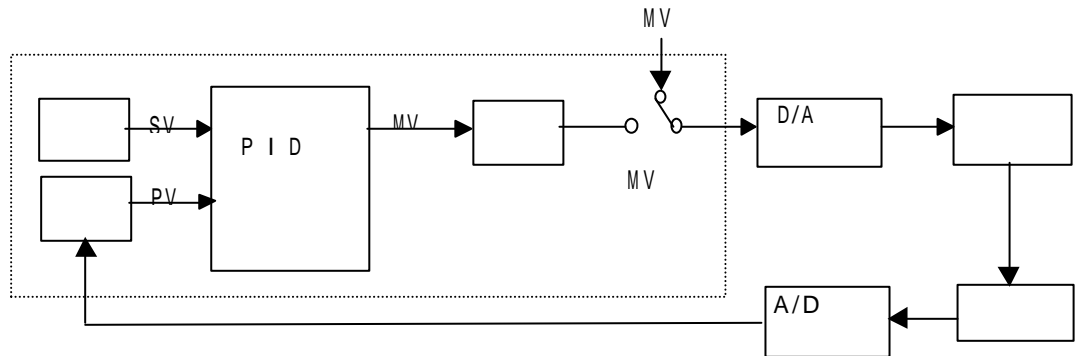
가

(PID

)

가

가 가



< 1-1> PID

2)

(1)

가) (P)

(가) (E:)

() (E) (SV) (PV)

(Reference Value)

가

$$MV = Kp * [b * SV - PV]$$

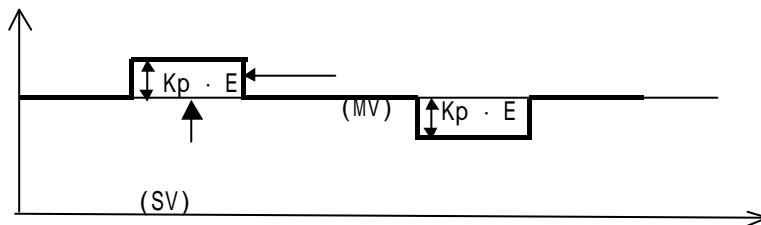
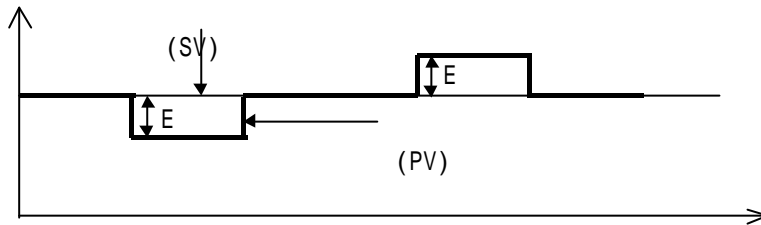
Kp

, b

. b가 '1'

() 가

(MV) < 2-1>



< 2-1>

MV

() < 2-1 >

(Kp)가

(E)

(MV)

가

(Kp)가

() (Kp)가

(PV)

(SV)

< 2-2>

가

(Kp)가

< 2-3>

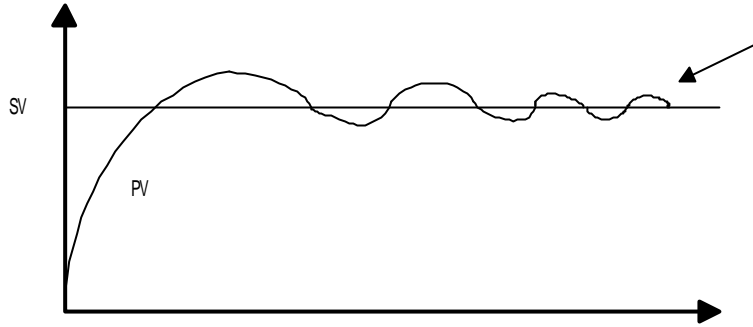
가

()가

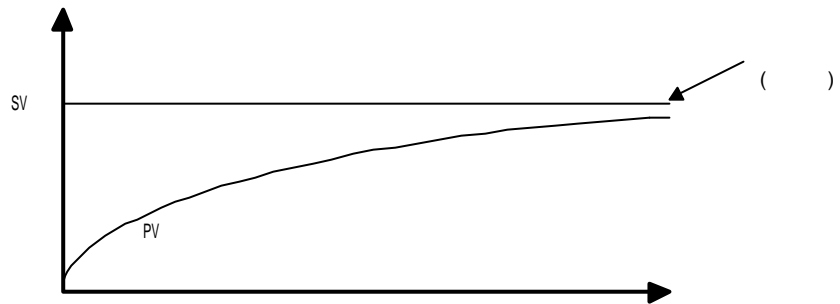
(PV)

(SV)

() (MV) 0 ~ 4000 (MV_MAX)
 (MV_MIN) 가 0 ~ 4000
 () 가 , (BIAS) 가
 (SV) (PV)



< 2-2> (Kp)가



< 2-3> (Kp)가

) (I)
 (가) (SV) (PV) (E)가 ,
 가
 (MV)
 () 가 . 가
 , Ti .

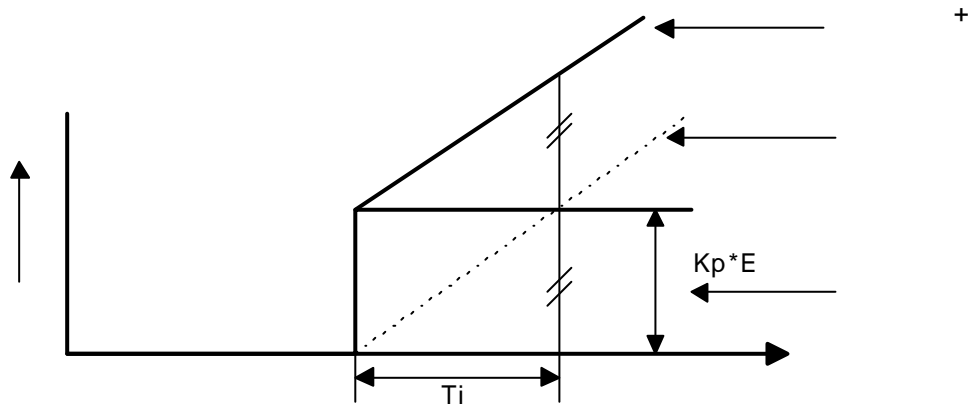
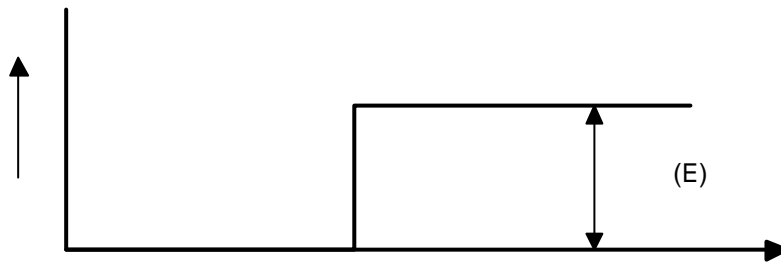
() 가 < 2-4> .
 () .

$$MV = \frac{Kp}{Ti} \int Edt$$

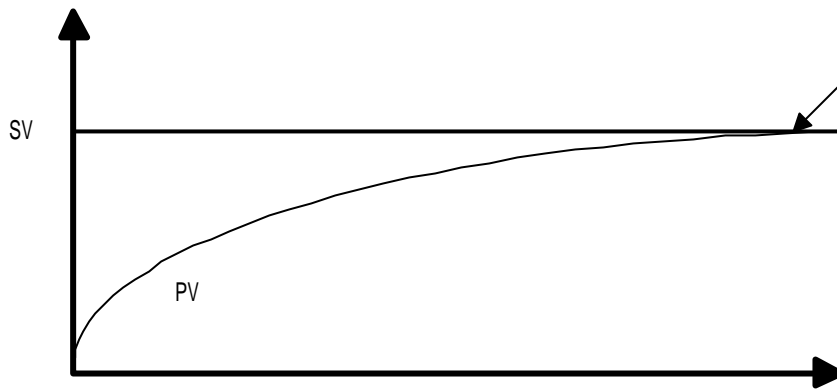
(Ti)

, < 2-5> ,
 가
 < 2-6> 가

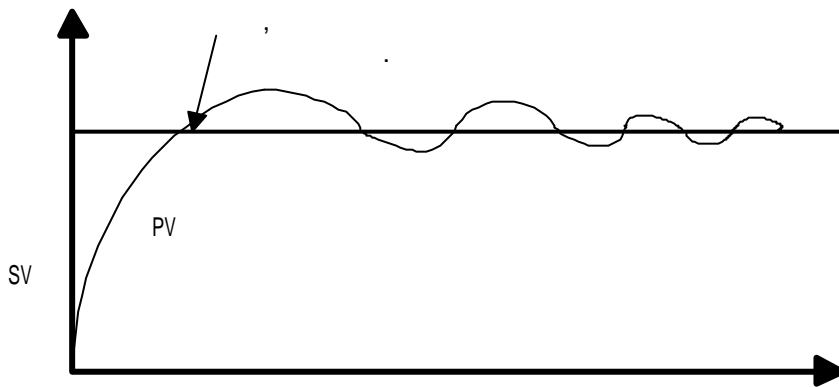
() PI , PID



< 2-4> 가



< 2-5>



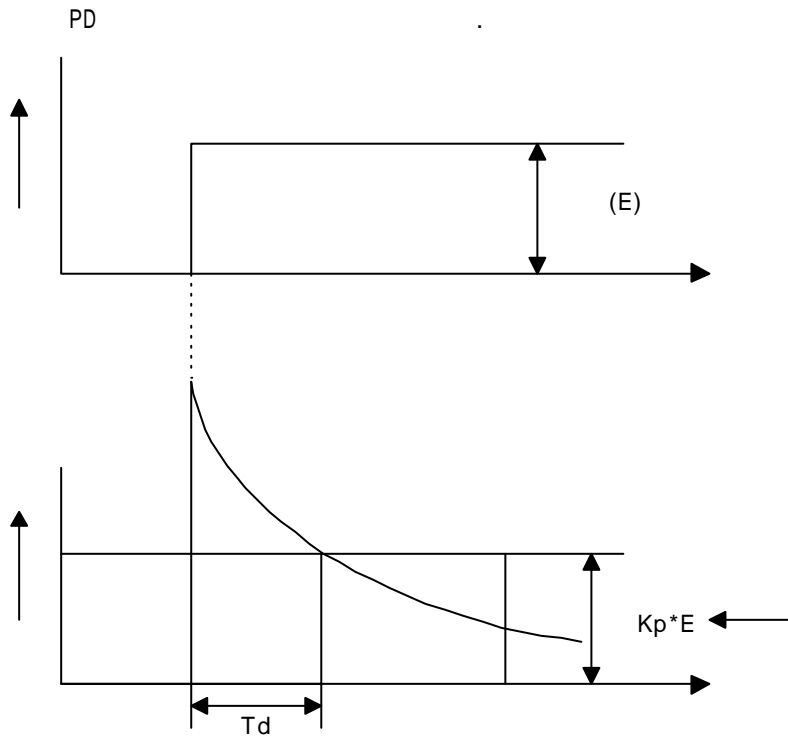
< 2-6>

-) (D)
- (가) (SV) 가 ()
- (MV) 가 ()
- () 가 ()
- () 가
- () 가
- () 가 T_d
- () 가 $< 2-7 >$
- ()

$$MV = K_p * T_d \frac{dE}{dt}$$

$$(E = (SV) - (PV)) \quad (PV)$$

- () PID , D

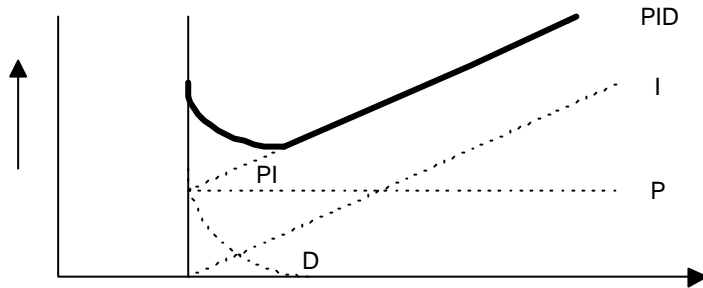
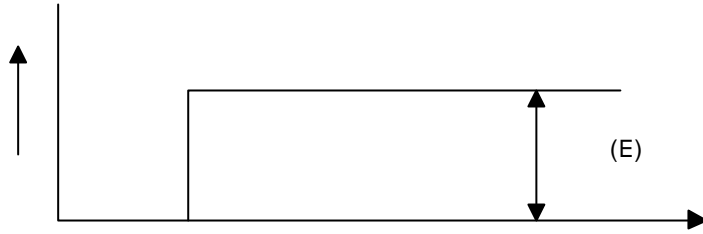


$< 2-7 >$ 가

) PID

(가)PID (P + I + D)

() 가 , PID < 2-8>



< 2-8> 가 PID

)

(가)PID

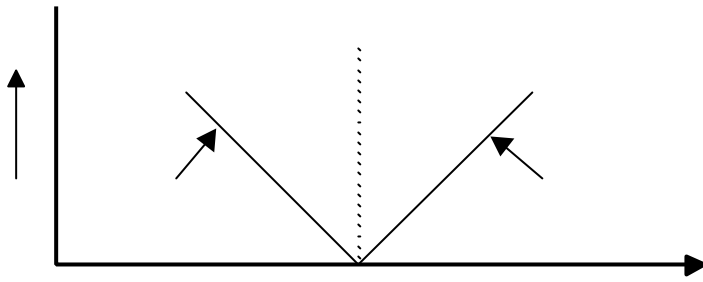
2

(PV) (SV) (MV)

(PV) (SV) (MV)

() (MV), (PV), (SV)

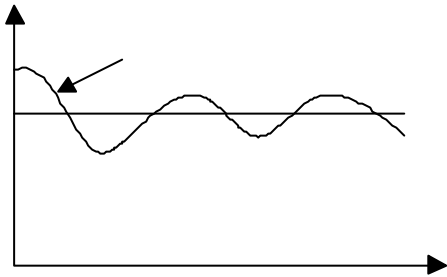
< 2.9>



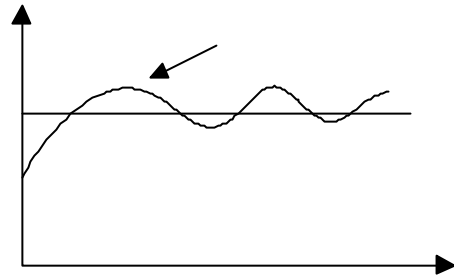
< 2-9> (MV), (PV), (SV) ,

() ,

< 2-10> .



()



()

< 2-10>

) (Reference Value)

PID

< 2-11>

(SV)

(PV)

. PID

. PID

$$MV = K \left[E_p + \frac{1}{T_i} \int_0^t E_i(s) ds + T_d \frac{dE_d}{dt} \right]$$

MV

, K

, T_i

, T_d

E_p

b*SV - PV,

E_d -PV,

E_i

SV-PV

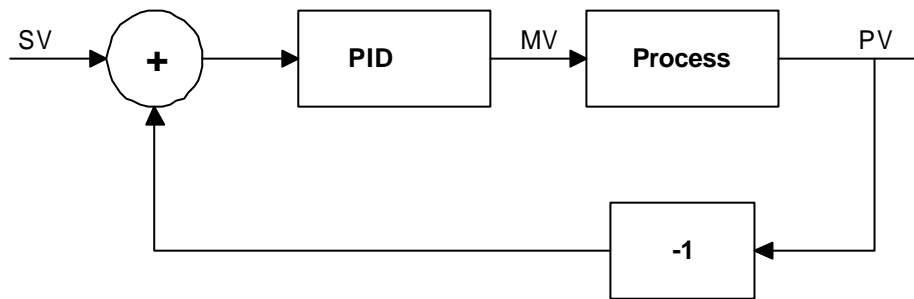
b

(Reference Value)

(Reference Value)

(Load Disturbance)

(Measurement Noise)



< 2-11>

< 2-12> PI

b

(PV)

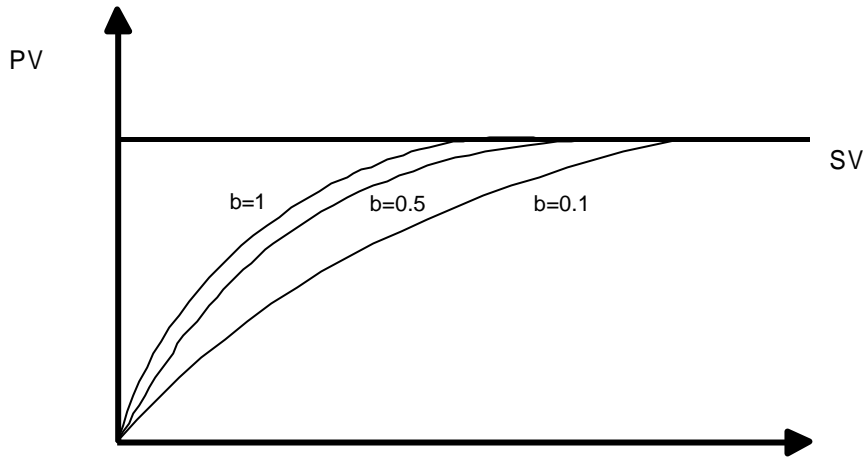
.(

)

가

(SV)

(Transient Response)



< 2-12>

PI

) (Integral Windup)
 , (Actuator) 가 가
 , 가

. PID
 (Integrated) ,
 (Windup) 가

< 2-13>

< 2-13> PI 가 ,

가 , 10 () 가
 , 0 가 가

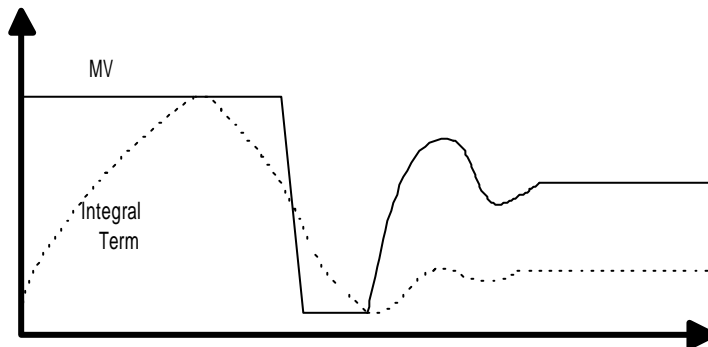
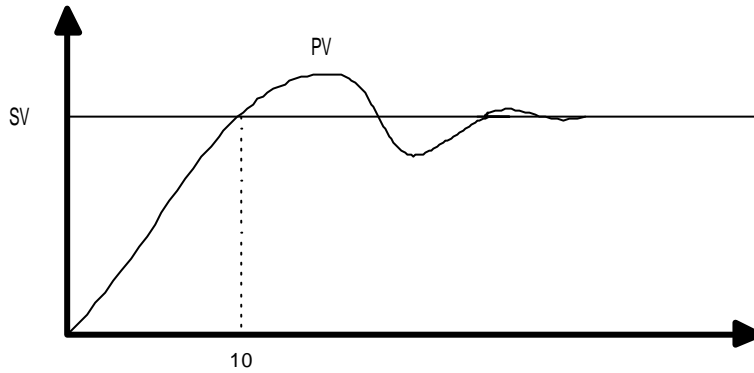
가 가

< 2-14>

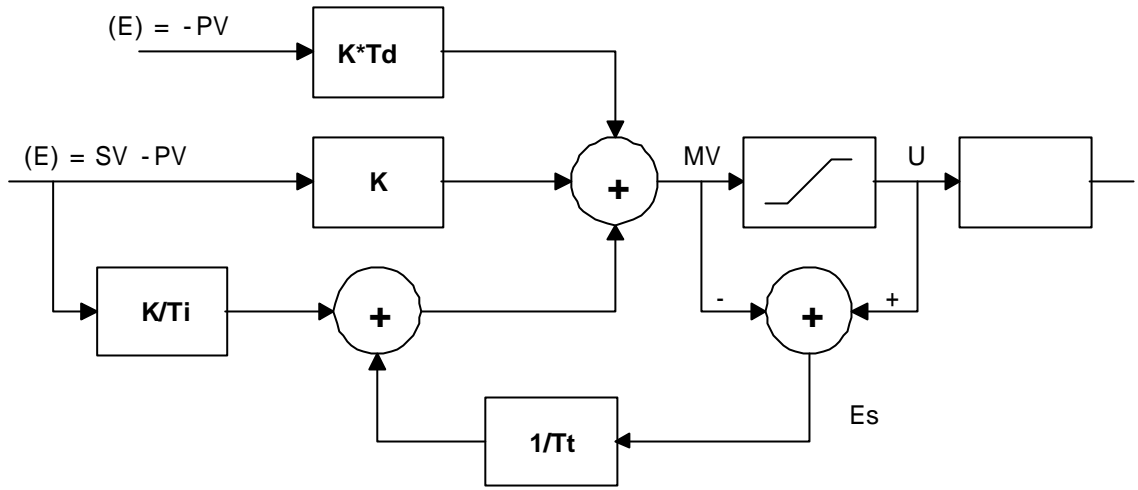
(Anti

Windup)

< 2-12> , (U) PID (MV)
 Es (Gain) $1/T_t$, Es '0' PID
 가 , 가 (, $MV = U$) , 가 가
 Es '0' .
 . T_t
 가 $1/T_t$ T_t
 (Anti Windup)
 . < 2-15> PI T_t (PV)

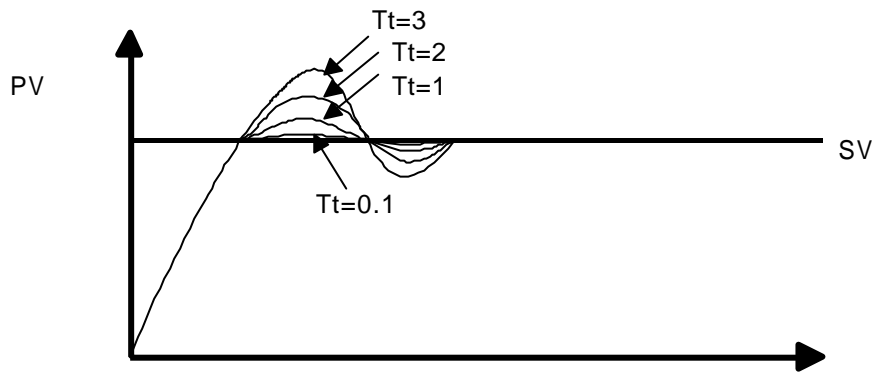


< 2-13>



< 2-14>

PID



< 2-15>

Tt(Tracking Time Constant)

(2) PID

PID P, I, D

가) P

P

$$P(n) = K[b * SV(n) - PV(n)] \quad (2.2.1)$$

n, K, b, SV, PV

) I

$$I(t) = \frac{K}{Ti} \int_0^t e(s) ds$$

t

$$\frac{dI}{dt} = \frac{K}{Ti} e \quad (SV - PV)$$

$$\frac{I(n+1) - I(n)}{h} = \frac{K}{Ti} e(n) \quad h$$

$$I(n+1) = I(n) + \frac{Kh}{Ti} e(n) \quad (2.2.2)$$

) D

$$\frac{Td}{N} \frac{dD}{dt} + D = -KTd \frac{dy}{dt}$$

N

(High Frequency Noise Depression Ratio)

, y

, PV

, PV

가 가

Tustin

Tustin

$$D(n) = \frac{2Td - hN}{2Td + hN} D(n-1) - \frac{2KTdN}{2Td + hN} [y(n) - y(n-1)] \quad (2.2.3)$$

) PID

P, I, D

PID

(Pseudo Code)


```

1: PID
   Bi = K*h/Ti;
   Ad = (2*Td-N*h)/(2*Td+N*h);
   Bd = 2*K*N*Td/(2*Td+N*h);
   AO = h/Tt;

2:      (SV)      (PV)
   PV = adin(ch1);

3:
   P = K*(b*SV - PV);

4:      . ( , D      0)
   D = Ad*D - Bd*(PV - PV_old);

5:      (MV)      . ( , I      0)
   MV = P+I+D;

6:
   U = sat(MV, U_low, U_high);

7: MV      D/A

8:
   I = I +bi*(SV-PV)+AO*(U-MV)

9: PV_old
   PV_old = P
    
```

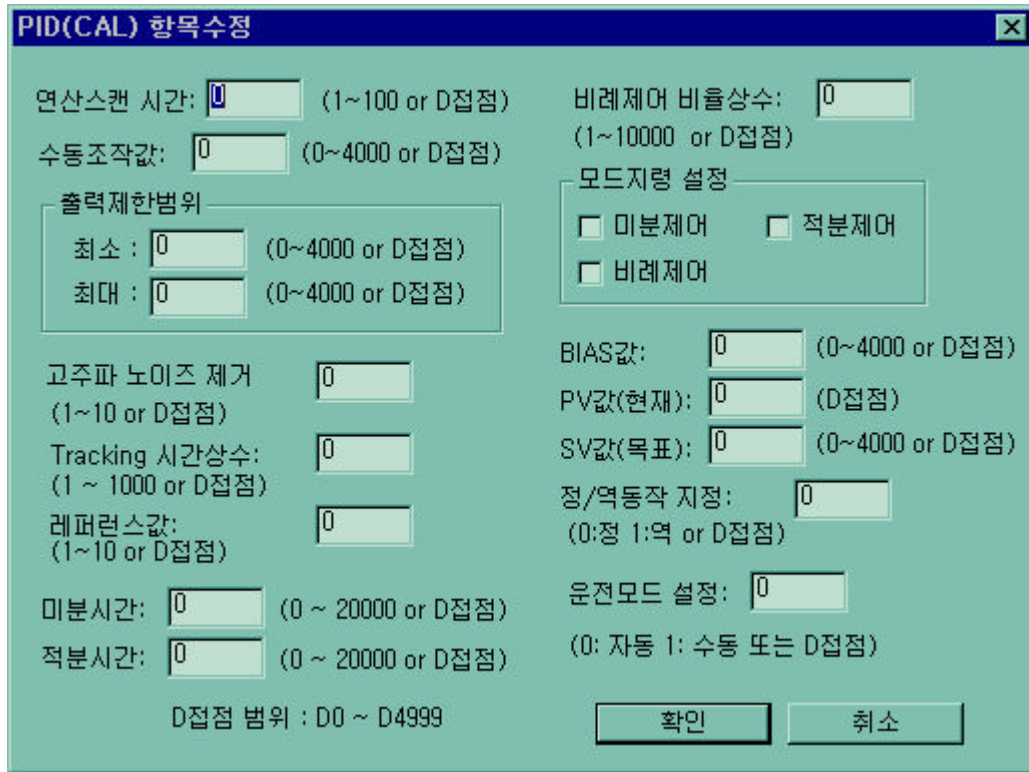
3)

MK80S PID 2 가 .

No.		
1	PID8	PID
2	PID8AT	(Auto Tuning)

1)	KGLWIN / KLD-150S
2)	MASTER-K

4)
가) PID8



(1)

가 (PID8)
가
10 Scale Up , 가 2
20 . 0.1 (: 1) 10
(: 100) 가
10.0(100)

(2)

(: 0 ~ 4000)

(3)

(High Frequency Noise Depression Ratio)

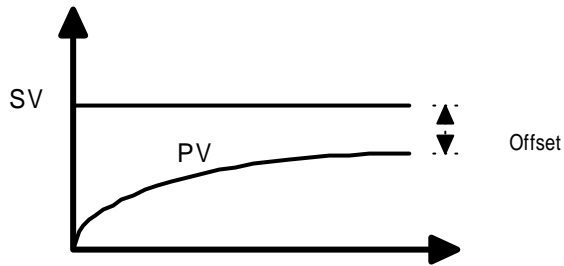
Scale 1 10
1 10
→ 15.2

- (4) Tracking (Tracking Time Constant)
 Tracking Anti_Reset Windup
 100 Scale Up
 가 가 0.5
 Tracking 50
 0.01(1)
 10.00(1000)
 → 2
- (5) ()
 ()
 PID 가
 () (, ,)
 10 Scale Up
 가 가 1
 10 ()
 0.1(1) 1.0(10)
 → 2
- (6) /
 / 가 /
 10 Scale Up (: 0 ~ 20000)
 가
- (7) PID 100 Scale Up
 (: 1 ~ 10000)
- (8) (, ,)

No.				
1	1(Enable)	0(Disable)	0(Disable)	
2	1(Enable)	1(Enable)	0(Disable)	
3	1(Enable)	1(Enable)	1(Enable)	
4	0(Disable)	0(Disable)	0(Disable)	On/Off

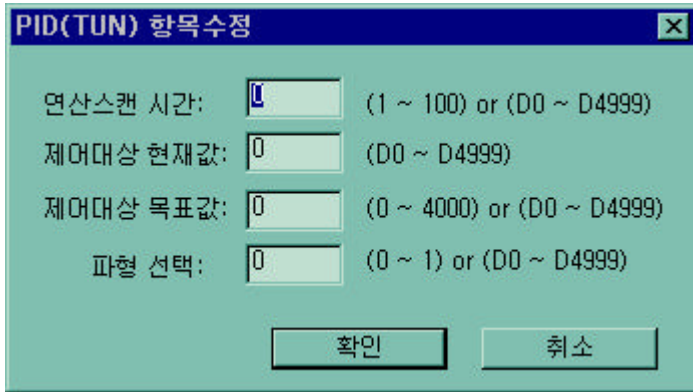
● , PD

(9) (BIAS) Offset
 (BIAS) Offset (Compensation)
 , P SV - PV Offset 100 가 ,
 BIAS 100
 0 ~ 20000
 가



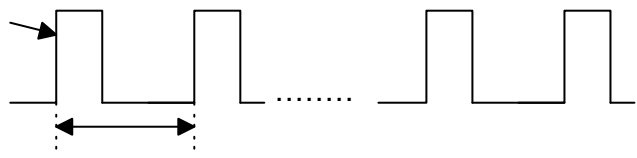
(10) SV (Setting Value,) / PV(Process Value,)
 0 ~ 4000
 (PV 가)
 가

) PID8AT



(1)

가 (PID8AT) 10 Scale Up
 가 2 20
 0.1 (:1) 10 (: 100)
 가 10.0 (100)



(2) SV (Setting Value,) / PV (Process Value,)

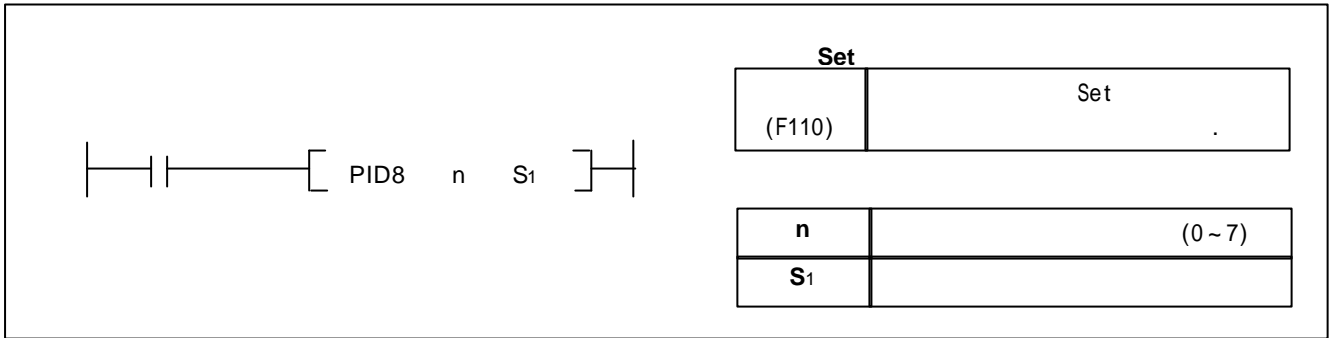
MK80S 0 ~ 4000 MK80S
 A/D D/A 가 12 Offset
 (SV)
 Pt100(: =0 °C ~ 250
 °C) 가 (SV) 100°C
 SV 100

A/D 1. (0V ~ 10V) 2. (4 ~ 20mA)
 (4 ~ 20mA)가 A/D (12) -48 ~ 4097(
 K80S A/D 0 ~ 4000)
 A/D

5)

(1) PID8

		가													
		M	P	K	L	F	T	C	S	D	#D	(F110)	(F111)	(F112)	
PID8	n									0	0	5	0		
	S1									0					

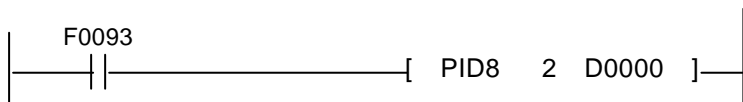


■ PID8(PID)

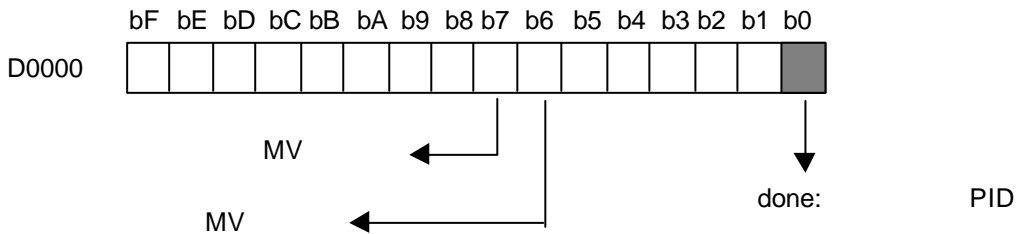
가)

- On PID LOOP PID
- (Off, On PID)
- S1 PID PID LOOP .(0~7)

)

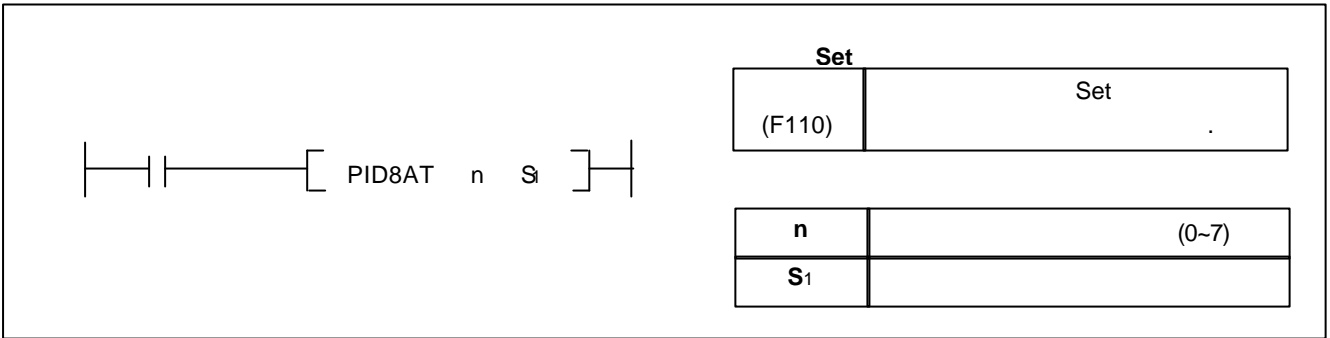


- F0093(1) Off, On PIDCAL
- 2 PID LOOP PID
- PID D0000 , D0001



(2) PID8AT

		가													
		M	P	K	L	F	T	C	S	D	#D		(F110)	(F111)	(F112)
PID8AT	n									0		0	5	0	
	S1									0					



■ PID8AT()

가)

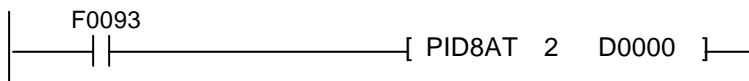
- On P, I, D

- n PID8AT PID8AT LOOP (0~7)

- S1 PID

S1 5

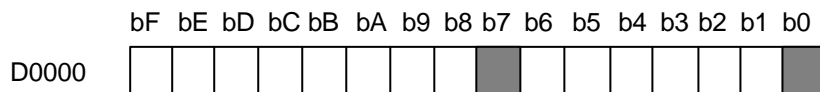
)



- On PID8AT 2 PIDTUN LOOP PID

- PID D0000 , D0001

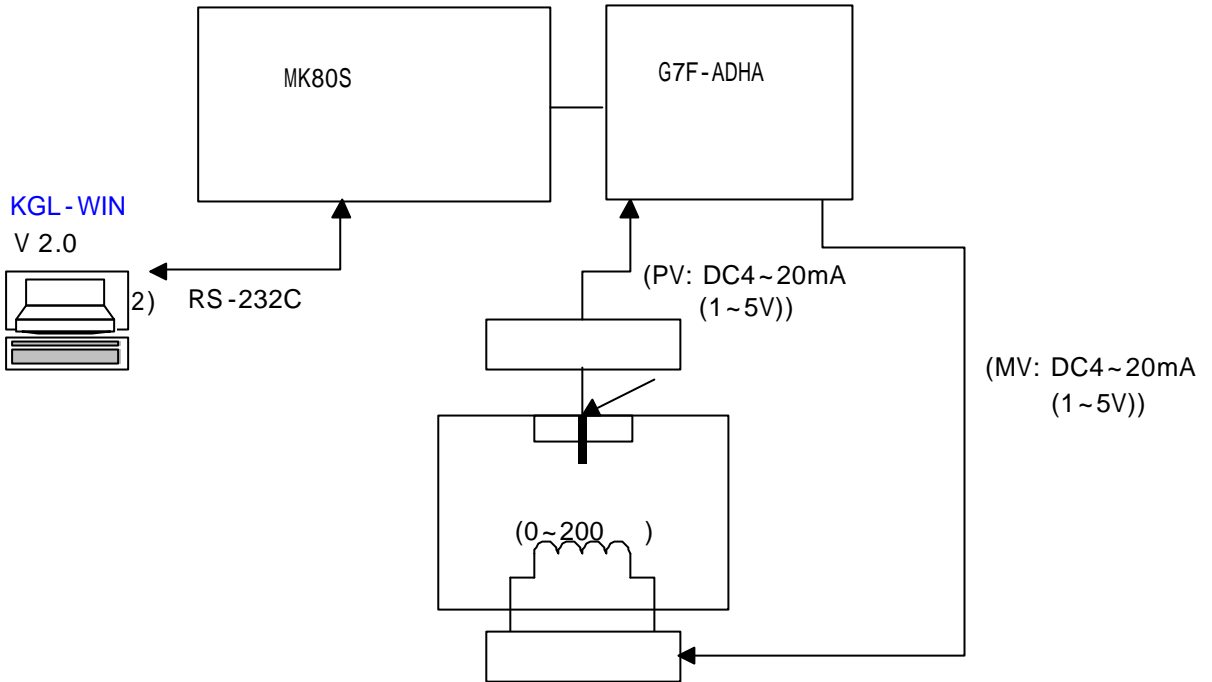
- P, I, D D0002, D0003, D0004



Done :

On

4)
(1)



가) PID (K80S)

/ :

/ :

()

: 960(60 °C), 1120(70 °C), 1280(80 °C), 1600(100 °C)

: D4980(AD 1 AD)

BIAS : 0 (P 0)

P,I,D : PID , ,

(REF), Tracking (TT), (N)

: =10, Tracking =50, =1

, : ()=4000, ()=0,

=2000

: 10 (=100)

) (K80S)

(RTD): 960(60 °C), 1120(70 °C), 1280(80 °C),

1600(100 °C)

: 10 (=100)

: D4980(AD 1 AD)

: =1

) A/D
 : 1
 : DC 4 ~ 20mA
 A/D : D4980

) D/A
 : DC 4 ~ 20mA
 D/A : D4982

(3)

가) PID

(0 ~ 250°C) 4 ~ 20mA
 A/D 1 , 0 ~ 4000
 PID 가 PID8
 PLC (SV) A/D
 (: PV) , (MV) 0 ~ 4000
 D/A .(PID done : bit0)
 D/A PID (4 ~ 20mA)
 ()

)

(0 ~ 250°C) 4 ~ 20mA
 A/D 1 , 0 ~ 4000
 가 PID8AT
 PLC (SV) A/D
 (: PV) , (MV) 0 ~ 4000
 D/A , (bit7)가 1 , P,I,D
 PID , PID
 done (bit 0)가 On
 D/A PID (4 ~ 20mA)
 ()

	(1) G7F-ADHA	A/D	2	,D/A	1	.
	7.2					.

) PID

P, I, D 가 , PID

80%

PID

가

80%

PID(TUN) 항목수정

연산스캔 시간: (1 ~ 100) or (D0 ~ D4999)

제어대상 현재값: (D0 ~ D4999)

제어대상 목표값: (0 ~ 4000) or (D0 ~ D4999)

파형 선택: (0 ~ 1) or (D0 ~ D4999)

확인 취소

PID8AT
F0095

PID(CAL) 항목수정

연산스캔 시간: (1~100 or D영역)

수동조작값: (0~4000 or D영역)

출력제한범위

최소 : (0~4000 or D영역)

최대 : (0~4000 or D영역)

고주파 노이즈 제거 (1~10 or D영역)

Tracking 시간상수: (1 ~ 1000 or D영역)

레퍼런스값: (1~10 or D영역)

미분시간: (0 ~ 20000 or D영역)

적분시간: (0 ~ 20000 or D영역)

D영역 범위 : D0 ~ D4999

비례제어 비율상수: (1~10000 or D영역)

모드시령 설정

미분제어 적분제어

비례제어

BIAS값: (0~4000 or D영역)

PV값(현재): (D영역)

SV값(목표): (0~4000 or D영역)

정/역동작 지정: (0:정 1:역 or D영역)

운전모드 설정: (0: 자동 1: 수동 또는 D영역)

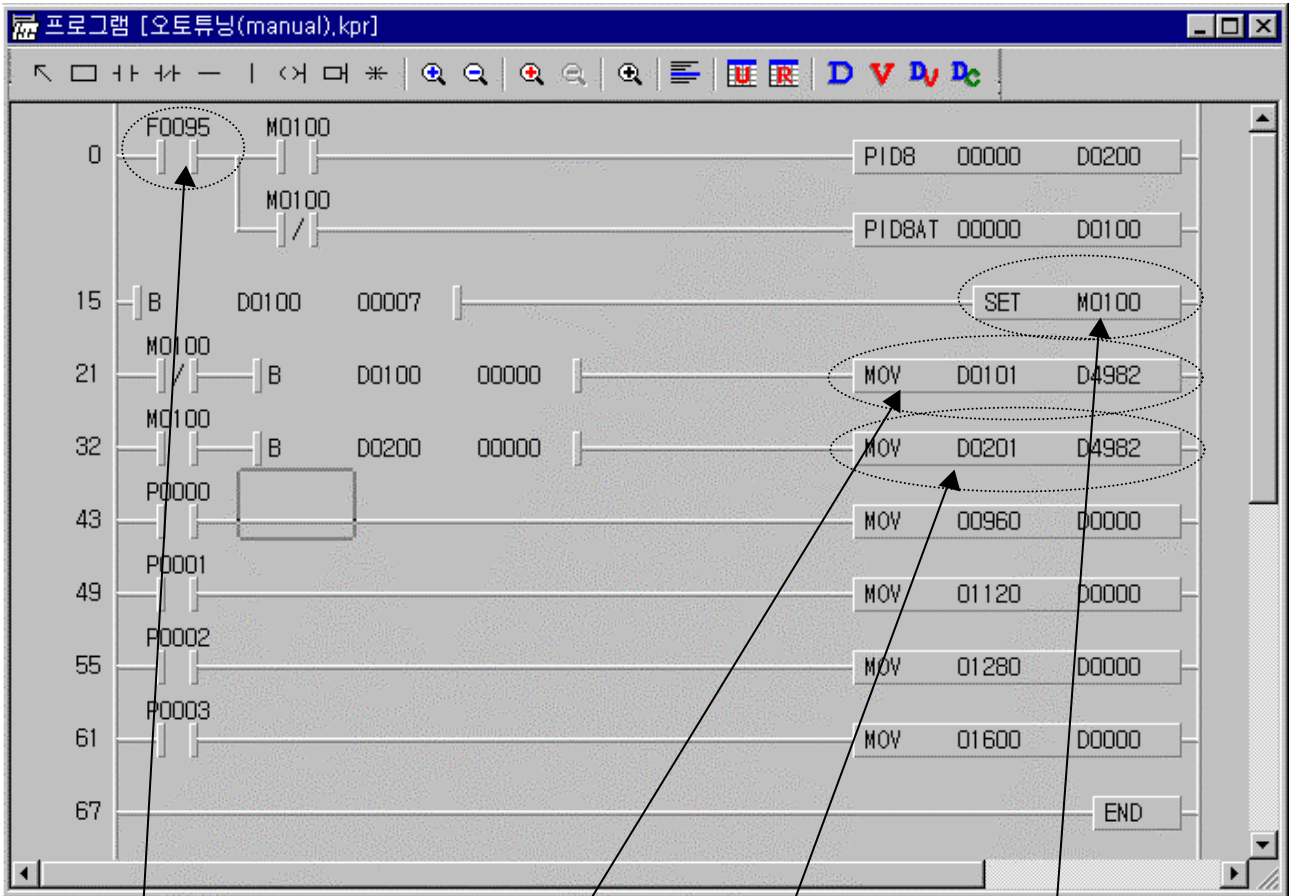
확인 취소

PID8AT

D0102

D0103

, D0104



F0095 10

PID M0100
SET .

F0095
PID
PID MV D0201 DA

MV D0101 DA

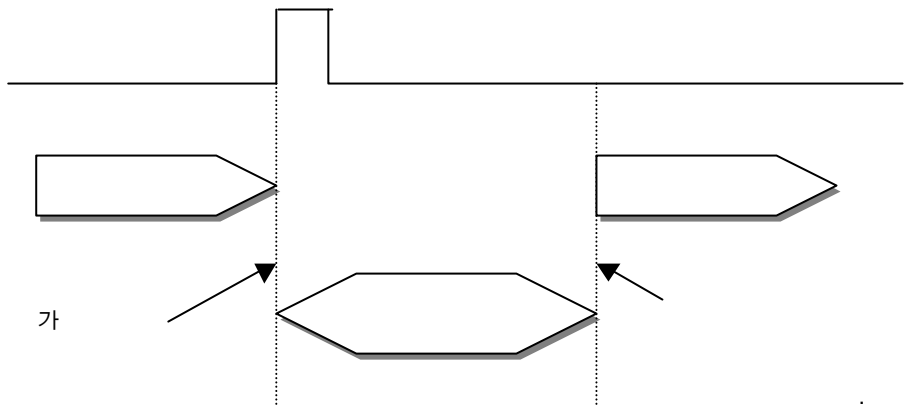
7.1.6

MK80S

1)

가

2)

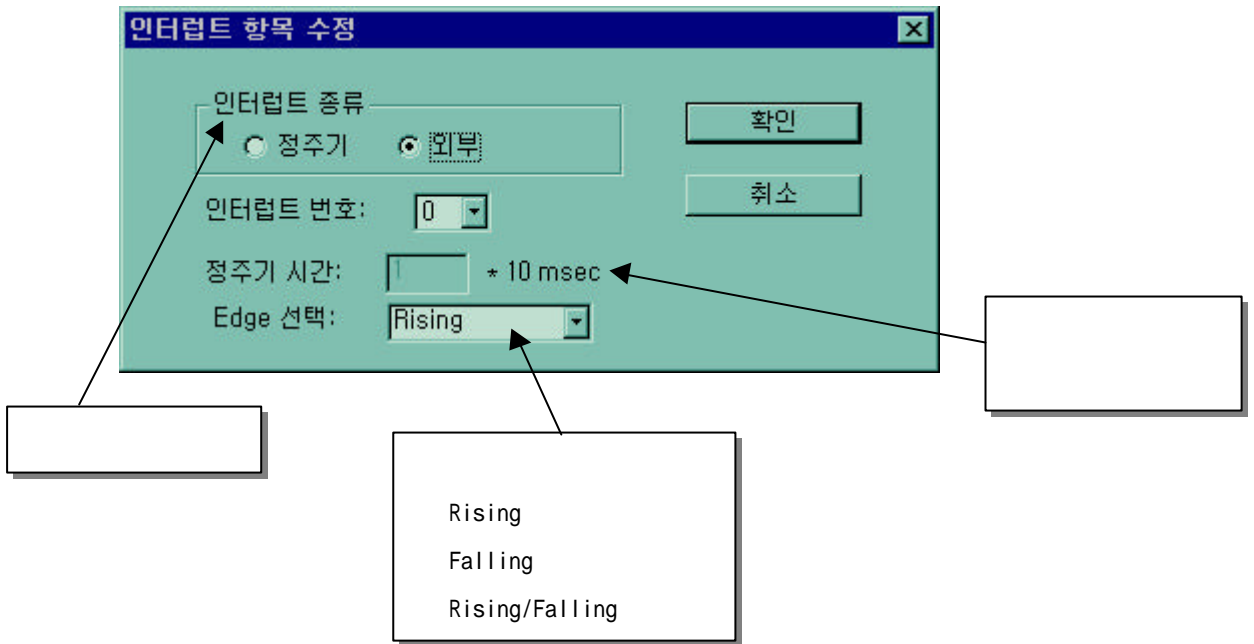


3)

- P000 ~ P007 8
- 8 가

	00	01	02	03	04	05	06	07
	A	B						
	-	-	-	-	-	-	-	-
Total 8 가								

- 8 / / 가



KGLWIN

KGLWIN

7.2

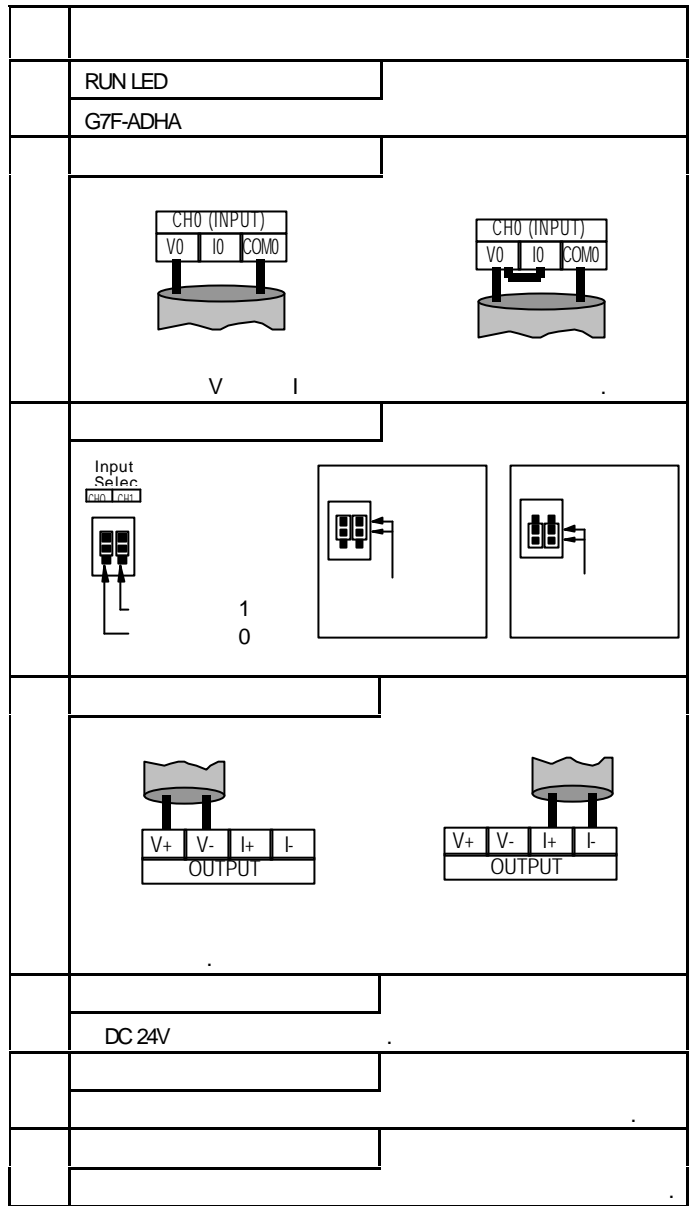
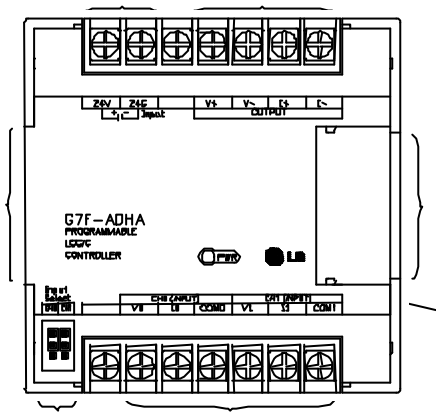
7.2.1 A/D ·D/A

1)

			DC 0 10V (1 MΩ)
			DC 0 20 mA (250)
			DC 4 20 mA (250)
		12Bit(-48-4047)	
/	1.	/ (: , :)	
	2.	/	
	3.	V I	
		2 /1	
		DC +12V	
		DC +24 mA	
			DC 0 10V (2 kΩ 1 MΩ)
			DC 0 20 mA (510)
			DC 4 20 mA (510)
		12Bit(-48-4047)	
/			
		1 /1	
		DC +12V	
		DC +24 mA	
		: DC 0 10V	2.5 mV (1/4000)
		DC 0 20 mA	5 μA (1/4000)
		DC 4 20 mA	6.25 μA (1/3200)
		± 0.5% [(Full Scale)]	
		2 ms/CH +	
		PLC ()	
		9 2	
		20 mA	
		DC21.6 26.4V, 80 mA	
		240g	

1)	/
2)	.
3)	2

2)



3)

KGLWIN	2.13	KGLWIN	2.14
--------	------	--------	------

기본	인터럽트	통신	PID(TUN)	PID(CAL)	펄스출력	아날로그	
아날로그							
-아날로그 유니트 #1 A/D 채널1 : <input type="radio"/> 전류 0 ~ 20mA <input checked="" type="radio"/> 전압 0 ~ 10V A/D 채널2 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 D/A 채널 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 <input checked="" type="checkbox"/> 스톱모드 전환시 데이터 클리어		-아날로그 유니트 #2 A/D 채널1 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 A/D 채널2 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 D/A 채널 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 <input checked="" type="checkbox"/> 스톱모드 전환시 데이터 클리어		-아날로그 유니트 #1 유니트 종류 <input checked="" type="radio"/> A/D D/A 혼합 <input type="radio"/> A/D 4채널 A/D 채널1 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 A/D 채널2 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 D/A 채널 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 <input checked="" type="checkbox"/> 스톱모드 전환시 데이터 클리어		-아날로그 유니트 #2 유니트 종류 <input checked="" type="radio"/> A/D D/A 혼합 <input type="radio"/> A/D 4채널 A/D 채널1 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 A/D 채널2 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 D/A 채널 : <input checked="" type="radio"/> 전류 0 ~ 20mA <input type="radio"/> 전압 <input checked="" type="checkbox"/> 스톱모드 전환시 데이터 클리어	

(1) A/D
A/D

* K80S CPU ROM 1.3

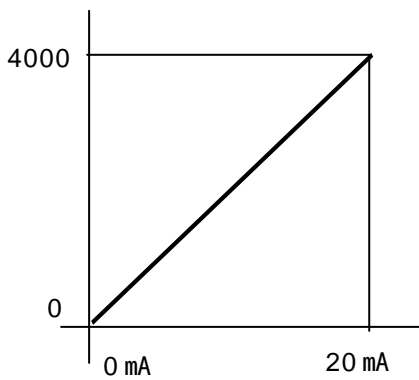
D4980	0	A/D	#1
D4981	1	A/D	
D4982	D/A		
D4983	0	A/D	#2
D4984	1	A/D	
D4985	D/A		

* K80S CPU ROM 1.4

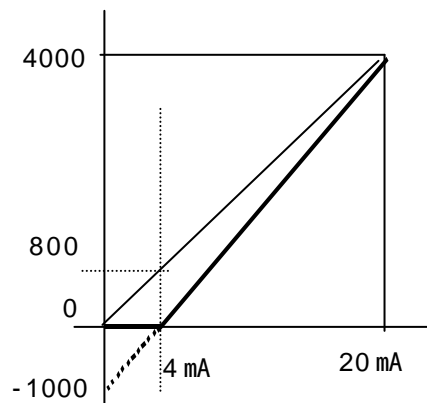
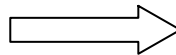
D4980	1	A/D	#1
D4981	2	A/D	
D4982	D/A		
D4983			#2
D4984	1	A/D	
D4985	2	A/D	
D4986	D/A		
D4987			

(2)

.(K80S 0 ~ 20mA 4 ~ 20mA .)



: $20 \text{ mA} / 4000 = 5 \mu\text{A}$



: $20 \text{ mA} / 3200 = 6.25 \mu\text{A}$

$$(A/D) = [(0 \sim 20mA) - 800] * 4000/3200$$

) 0 ~ 20mA 8 mA가

$$: 8 mA / 5 \mu A = 1600$$

$$: (1600 - 800) * 1.25 = 1000$$

$$(D/A) = [(4 \sim 20mA) * 3200/4000] + 800$$

) 0 ~ 20mA

“1000”)

$$: 1000 * 5 \mu A = 5 mA$$

$$: (1000 * 0.8) + 800 = 1600$$

$$1600 * 5 \mu A = 8 mA$$

4)

(1)

AWG22(0.3

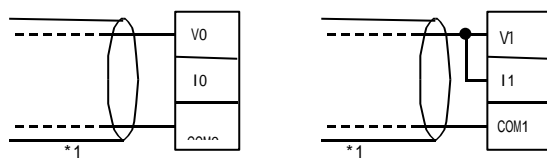
mm²)

가

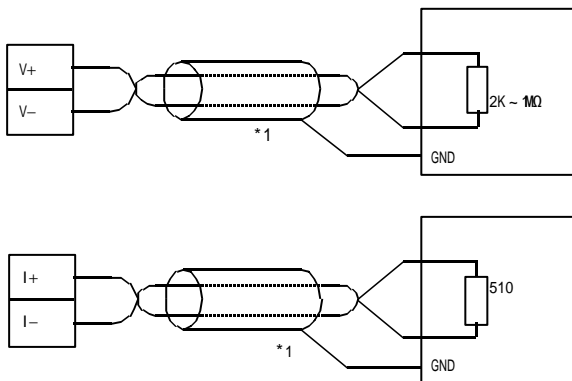
DC24V

(2)

가)



)



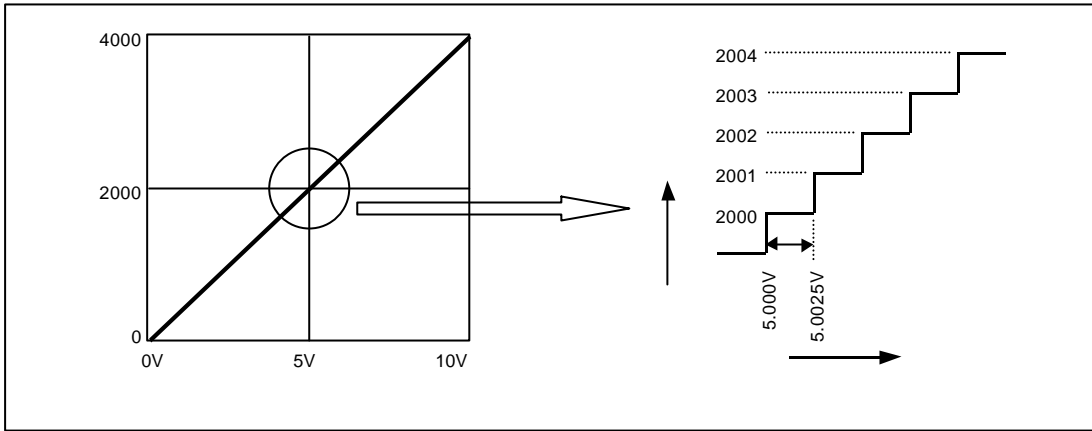
*1 :

2

*

1

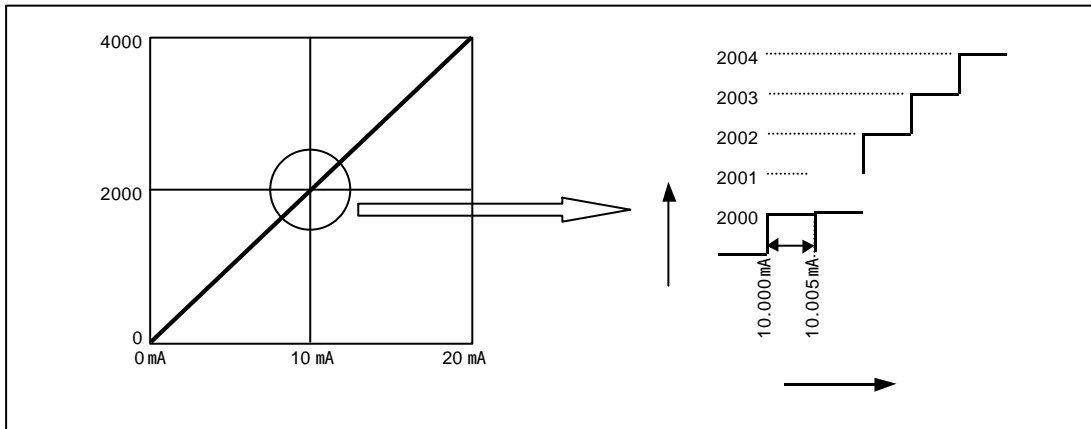
5)
(1)
가)



A/D ()

0V 0 10V 4000
2.5 mV가 1 2.5 mV

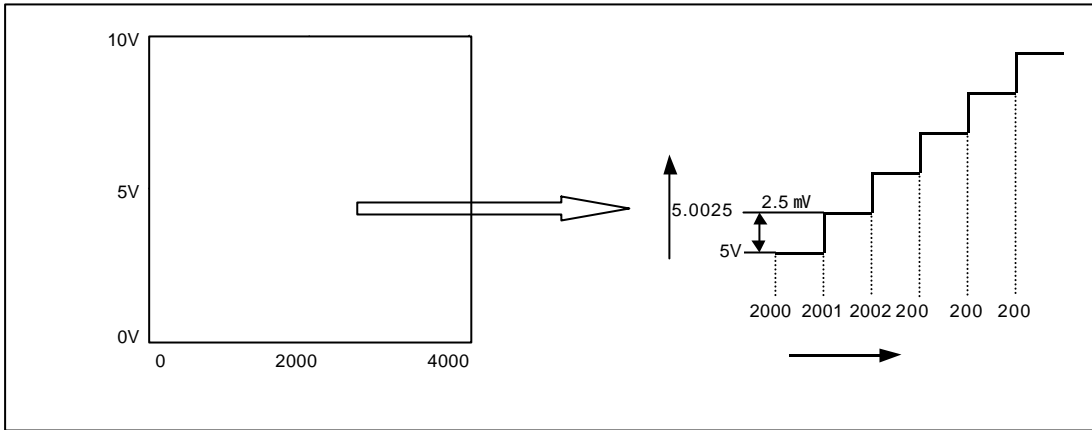
)



A/D ()

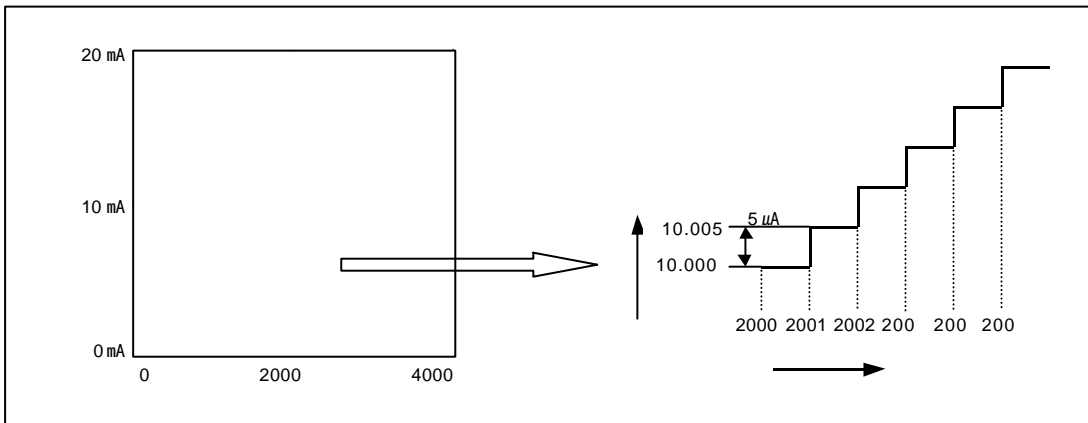
0 mA 0, 10 mA 2000, 20 mA 4000
5 μ A가 1 5 μ A

(2)
가)



D/A ()
0 1 0V , 4000 10V
2.5 mV

)



D/A ()
0 1 0 mA, 4000 20 mA
5 μA

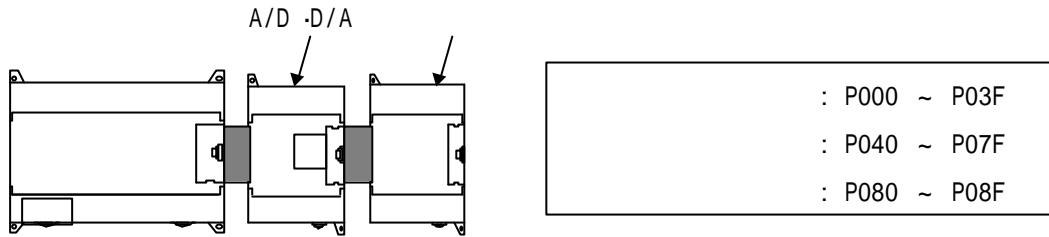
6) (* K80S CPU ROM 2.0)

(1) A/D

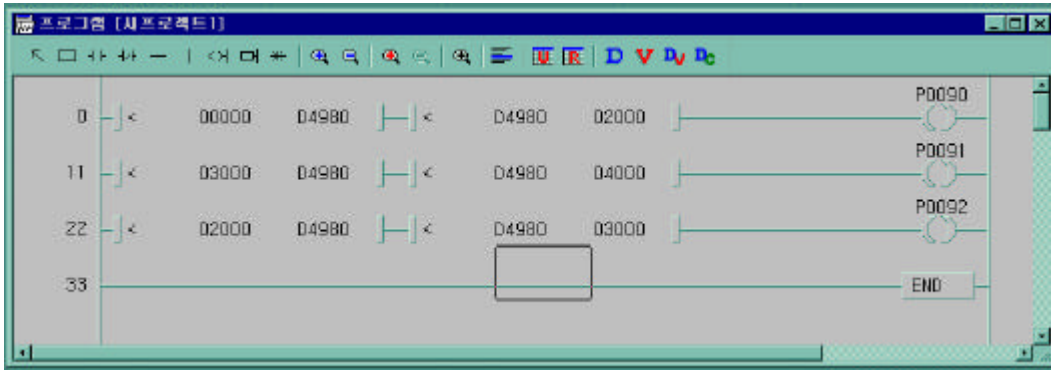
가)

- "1 " 2000 P90 0n
- "1 " 3000 P91 0n
- "1 " 2000 3000 P92 0n

)



)

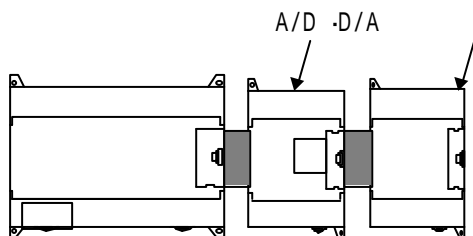


(2) 5

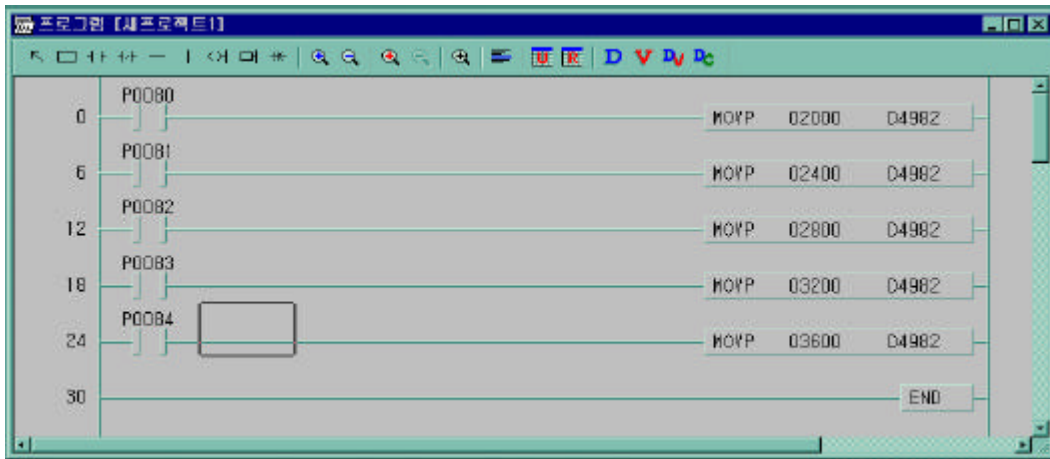
가)

- P080 0n 2000(5V) .
- P081 0n 2400(6V) .
- P082 0n 2800(7V) .
- P083 0n 3200(8V) .
- P084 0n 3600(9V) .

)



)



7.2.2 A/D

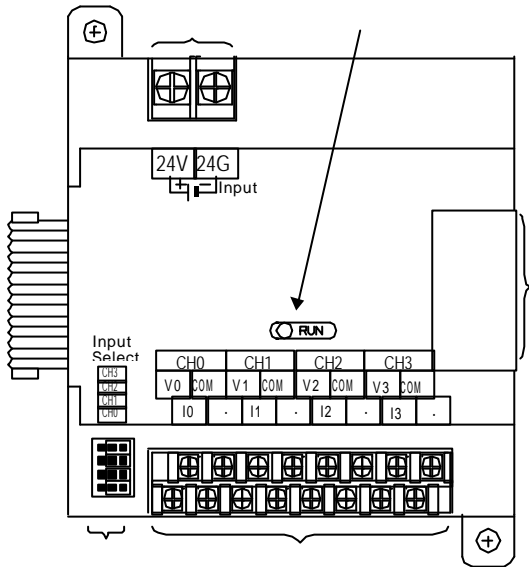
1)

A/D

		DC 0 10V (1 MΩ)
		DC 4 20 mA (250)
		DC 0 20 mA (250)
/		(V I)
		12 (0 4000)
	DC 0 10V	2.5 mV (1/4000)
	DC 0 20 mA	5 μA (1/4000)
	DC 4 20 mA	5 μA (1/3200)
		±0.5% [(Full Scale)]
		+ 2 ms/CH
		: ±15V, : ±25 mA
		4 /
		PLC ()
		2 /16
	+5V	100mA
	+15V	100mA
	-15V	50mA
		DC 21.6 ~ 26.4V
		100 mA
		300g

	/			
	2			
A/D		CPU	ROM	V1.4 , KGLWIN V2.14

2)



	RUN LED
	G7F-AD2A
	Jumper
	DC 24V

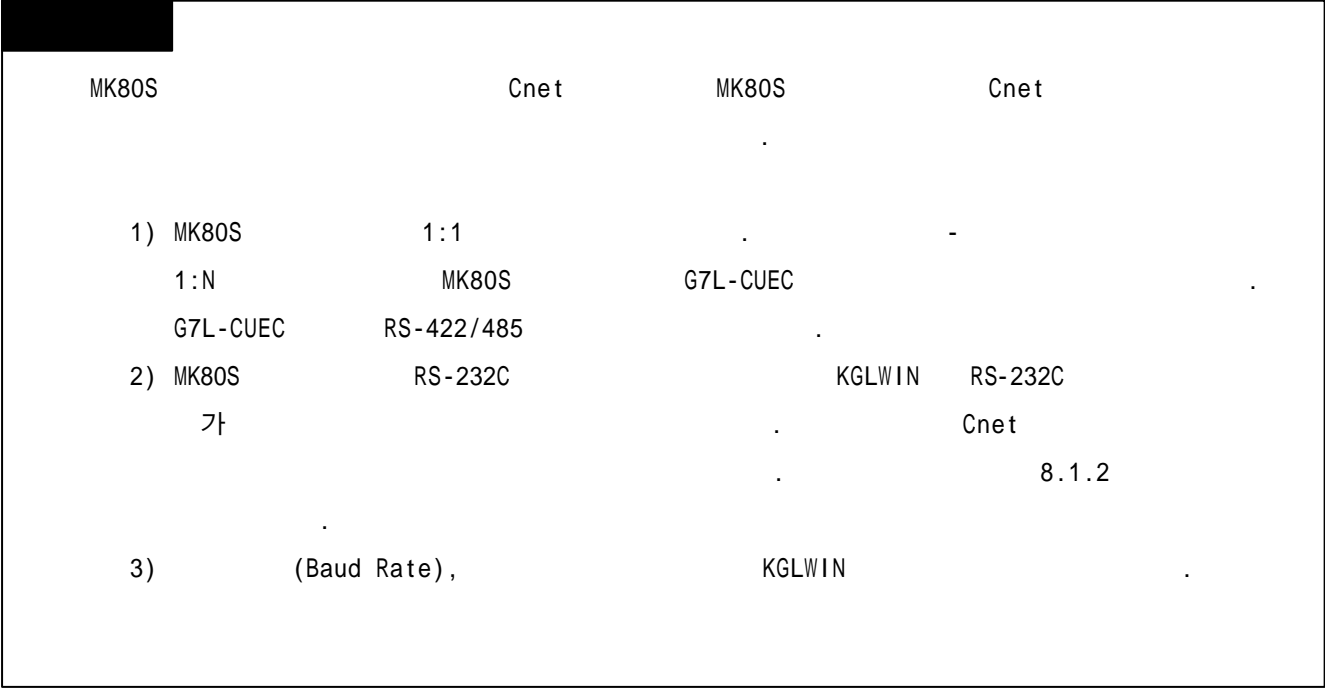
8.1

8.1.1

MK80S I/F (G7L-CUEC) MK80S , MK80S Cnet CPU
 / 가 / , 가 , MK80S Cnet

MK80S

- /
- /
- CPU
-
-
- 1:1 () (MK80S : RS-232C)



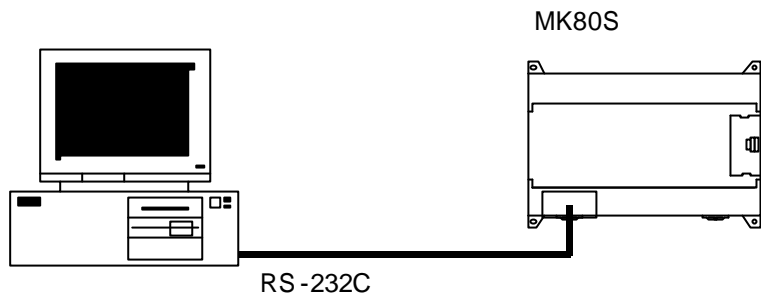
8.1.2

MK80S

1) ()

(1) PC 1:1
가)

, FAM CIMON 가 PC C BASIC



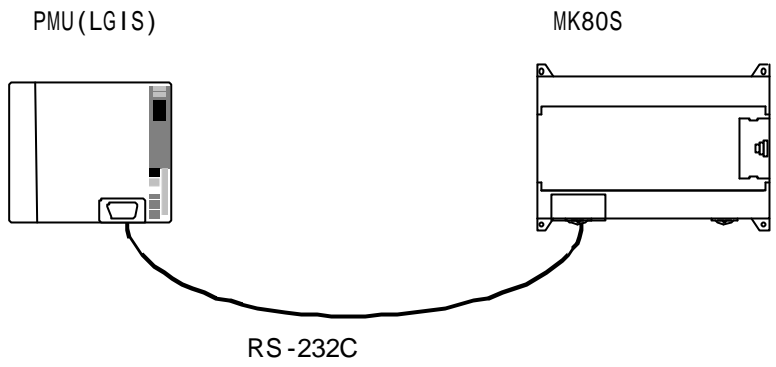
	PC		MK80S	
	Pin	Signal	Pin	Signal
<p>(Female Type)</p>	1		1	5V
	2		2	RXD1
	3	←	3	TXD1
	4		4	RXD2
	5	←	5	SG
	6		6	5V
	7		7	TXD2
	8		8	SG
	9		9	SG

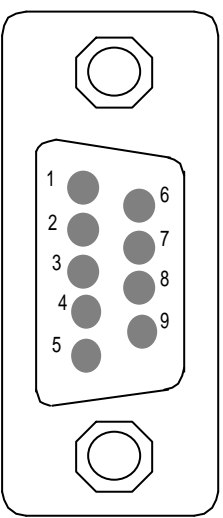
TXD1, RXD1 Loader

TXD2, RXD2 Cnet

(2) PMU

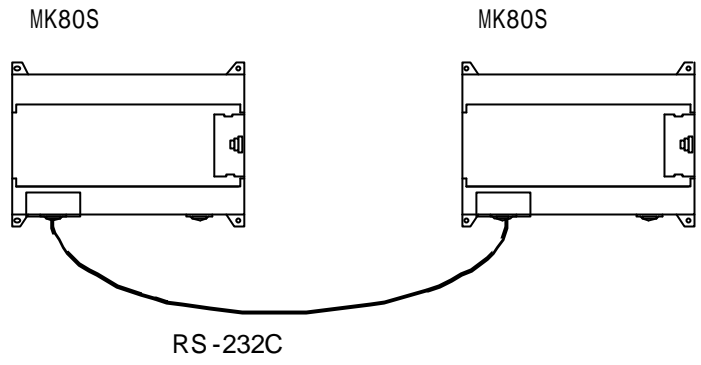
1:1



 (Female Type)	PMU		MK80S	
	1		1	5V
	2		2	RXD1
	3		3	TXD1
	4		4	RXD2
	5		5	SG
	6		6	5V
	7		7	TXD2
	8		8	SG
	9		9	SG

(3)

1:1



 (Male Type)	MK80S		MK80S	
	1		1	5V
	2		2	RXD1
	3		3	TXD1
	4		4	RXD2
	5	←→	5	SG
	6	←→	6	5V
	7	←→	7	TXD2
	8		8	SG
	9		9	SG

8.1.3

1)

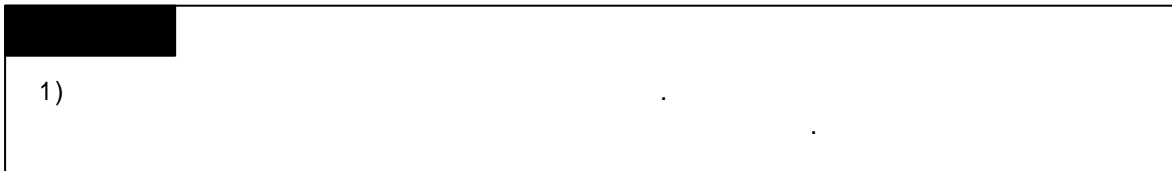
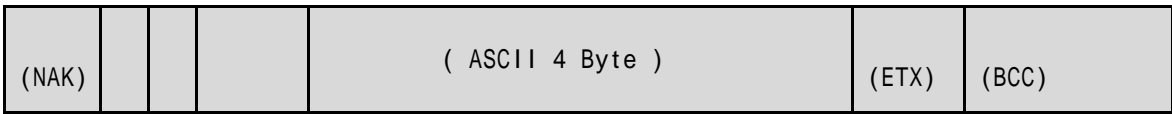
(1) Request (MK80S)
(256 Byte)



(2) ACK Response (MK80S ,)
(256 Byte)



(3) NAK Response (Cnet ,)
(256 Byte)

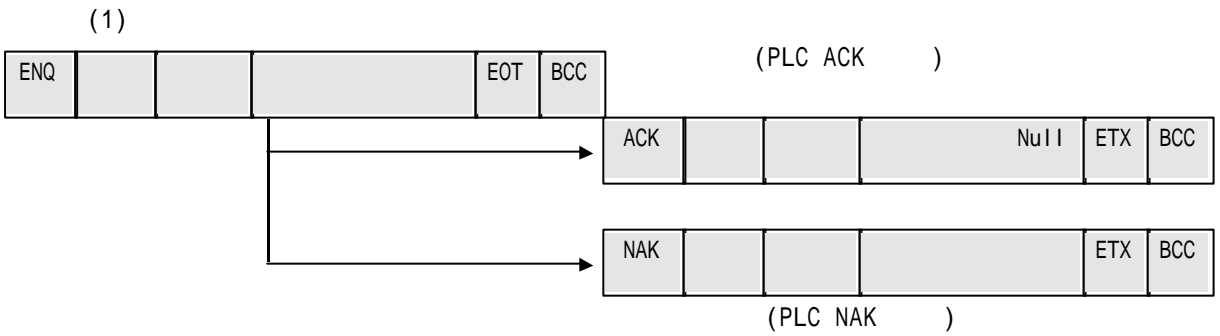


[]

	Hex		
ENQ	H05	Enquire	Request
ACK	H06	Acknowledge	ACK
NAK	H15	Not Acknowledge	NAK
EOT	H04	End of Text	ASCII
ETX	H03	End Text	ASCII

1)	. 16	16	ASCII
	가 R(r) W(w)	()
	•		
	•		
	•		
	•		
	•		
2)	16	H01, H12345, H34, H12, H89AB	
	'H'	가 16	.

2)



8.1.4

			ASCII		ASCII	
	r(R)	H72 (H52)	SS	5353	Bit, Word	
	r(R)	H72 (H52)	SB	5342	Word (Bit)	
	w(W)	H77 (H57)	SS	5353	Bit, Word	
	w(W)	H77 (H57)	SB	5342	Word (Bit)	
CPU	r(R)	H73 (H53)	ST	5354	PLC	

			ASCII		ASCII	
	x(X)	H78 H58	H00 ~ B9	3030 ~ 039		
	y(Y)	H79 (H59)	H00 ~ B9	3030 ~ 039		

1) MK80S

8.1.5

1)

- 가 :

		/	Bit/Word
P		가	가
M		가	가
L		가	가
K		가	가
C		가	가 (Word)
T		가	가 (Word)
D		가	Word 가
S		가	Word 가
F		가	가

- ('%' (25H))

Bit	X(58H)	%PX000,%MX000,%LX000,%KX000,%CX000,%TX000,%FX000
Word	W(57H)	%PW000,%MW000,%LW000,%KW000,%CW000,%TW000,%FW000,%DW000,%SW000

<p>1. / Bit .</p> <p>()</p> <p>2. (D), (S) 가 .</p> <p>3. (.)</p>

8.1.6

1) (R(r)SS)

(1)

PLC
16

(2) PC

									
()	ENQ	H20	R(r)	SS	H01	H06	%MW100		EOT	BCC
ASCII	H05	H3230	H52(72)	H5353	H3031	H3036	H254D57313030		H04	

1 (16 가)

	가 (r)	ENQ	EOT	ASCII	(Byte)
BCC	) ( ) BCC	Byte	ASCII	BCC	가
	H05+H32+H30+H72+H53+H53+H30+H31+H30+H36+H25+H4D+H57+H31+H30+H30+H04				
	=H03A4				
	BCC A4				
	' [] []'				가
			16		[
	] H01(ASCII :3031) ~ H10(ASCII :3130)				
()	Hex ASCII		16	H01(ASCII :3031)	H10(ASCII
	:3130)				
	) %MWO	가 4		H04	
	%MW000	가 6		H06	
			16	ASCII	

1) ()	16	'H'
2)	(Word)	(Bit) 가

(3) MK80S (MK80S ACK)

									
()	ACK	H20	R(r)	SS	H01	H02	HA9F3		ETX	BCC
ASCII	H06	H3230	H52(72)	H5353	H3031	H3032	H41394633		H04	

1 (16)

BCC	가 (r) ACK ETX ASCII Byte									
	Byte ASCII BCC 가									
	Hex Byte ASCII (X,W)									
	•									
	<table border="1"> <tr> <td></td> <td>가</td> <td></td> </tr> <tr> <td>Bit(X)</td> <td>%(P,M,L,K,F,T,C)X</td> <td>1</td> </tr> <tr> <td>Word(W)</td> <td>%(P,M,L,K,F,T,C,D,S)W</td> <td>2</td> </tr> </table>		가		Bit(X)	%(P,M,L,K,F,T,C)X	1	Word(W)	%(P,M,L,K,F,T,C,D,S)W	2
	가									
Bit(X)	%(P,M,L,K,F,T,C)X	1								
Word(W)	%(P,M,L,K,F,T,C,D,S)W	2								
	• 16 ASCII									

1

가 H04(ASCII :H3034)	4Byte	16	(Hex)	가
4 Byte	16	가 ASCII		

2

가 H04	가 H12345678	ASCII	"31 32 33 34 35 36 37 38"
-------	-------------	-------	---------------------------

1)

H00	, 1	Bit H01	Byte	Bit 0
-----	-----	---------	------	-------

(4) MK80S (MK80S NAK)

					(Hex 2 Byte)		
()	NAK	H20	R(r)	SS	H1132	ETX	BCC
ASCII	H15	H3230	H52(72)	H5353	H31313332	H03	

BCC	가 (r)	NAK	ETX	ASCII	Byte	가	.
	16	2 Byte(ASCII	4Byte)				.
		8.1.8					

(5)



1 M020 1 , P001 1
 (, M020 H1234 가 P001 H5678 가
 가 .)
 PC (PC MK80S)

()	ENQ	H01	R(r)	SS	H02	H06	%MW020	H06	%PW001	EOT	BCC
ASCII	H05	H3031	H52(72)	H5353	H3032	H3036	H254D5730 3230	H3036	H255057303 03031	H04	

ACK (PC MK80S)

()	ACK	H01	R(r)	SS	H02	H02	H1234	H02	H5678	ETX	BCC
ASCII	H06	H3031	H52(72)	H5353	H3032	H3032	H31323334	H3032	H35363738	H03	

NAK (PC MK80S)

()	NAK	H01	R(r)	SS			(2 Byte)		ETX	BCC	
ASCII	H15	H3031	H52(72)	H5353			(4 Byte)		H03		

2) (R(r)SB)

(1)

PLC

(2) PC

							(128 Byte)		
()	ENQ	H10	R(r)	SB	H06	%MW100	H05	EOT	BCC
ASCII	H05	H3130	H52(72)	H5342	H3036	H254D57313030	H3035	H04	

1)	가 5	5	Word	Word
2)			64	
3)				가
4) Bit				

BCC	가	(r)	ENQ	EOT	ASCII	Byte
		Byte	ASCII	BCC	가	
()	Hex	ASCII				16 H01(ASCII :3031)
	H10(ASCII :3130)			16	ASCII	

(3) MK80S (MK80S ACK)

()	ACK	H10	R(r)	SB	H01	H02	H1122	EOT	BCC
ASCII	H06	H3130	H52(72)	H5342	H3031	H3134	H31313232	H03	

BCC	가 (r)	ACK	ETX	ASCII	Byte						
	Byte	ASCII	BCC	가	Byte						
	Hex	Byte	ASCII		Byte						
	1	= 2									
	<table border="1"> <tr> <td>WORD(W)</td> <td>가</td> <td>(Byte)</td> </tr> <tr> <td></td> <td>%(P,M,L,K,F,T,C,D,S)W</td> <td>2</td> </tr> </table>		WORD(W)	가	(Byte)		%(P,M,L,K,F,T,C,D,S)W	2			
WORD(W)	가	(Byte)									
	%(P,M,L,K,F,T,C,D,S)W	2									
	Hex	ASCII									

<u>1</u>					
PC			W(WORD)	PC	가
03		PLC ACK	H06(2*03 = 06 Byte)	Byte	ASCII
3036					

<u>2</u>					
35363738	3 WORD	1234,5678,9ABC	ASCII		31323334
39414243					

(4) MK80S (MK80S NAK)

					(Hex 2 Byte)		
()	NAK	H10	R(r)	SB	H1132	ETX	BCC
ASCII	H15	H3130	H52(72)	H5342	H31313332	H03	

BCC	가	(r)	NAK	ETX	ASCII	Byte	가
	Hex	2 Byte(ASCII	4Byte)				
		8.1.8					

(5)

10 M000 2 WORD . (M000 M001
 가 가 .)
 M000 = H1234
 M001 = H5678
 PC (PC MK80S)

()	ENQ	HOA	R(r)	SB	H06	%MWO00	H02	EOT	BCC
ASCII	H05	H3041	H52(72)	H5342	H3036	H254D3030 30	H3032	H04	

ACK (PC MK80S)

()	ACK	HOA	R(r)	SB	H04	12345678	ETX	BCC	
ASCII	H06	H3041	H52(72)	H5342	H3034	H3132333435363738	03		

NAK (PC MK80S)

									BCC
()	NAK	HOA	R(r)	SB	(2 Byte)	ETX	BCC		
ASCII	H15	H3041	H52(72)	H5342	(4 Byte)	H03			

3) (W(w)SS)

(1)

PLC

(2) PC

								...			
()	ENQ	H20	W(w)	SS	H01	H06	%MW100	H00E2	...	EOT	BCC
ASCII	H05	H3230	H57(77)	H5353	H3031	H3036	H254D573 13030	H30304532		H04	

1 (16 가)

BCC	가 (w) ENQ EOT ASCII Byte
	Byte ASCII BCC 가
	‘ [] [] ’ 가 []
	16 H01(ASCII :3031)-H10(ASCII :3130)
()	Hex ASCII H01(ASCII :3031)
	H10(ASCII :3130) 16 ASCII
	, , ‘%’ , .’
	%MW100 H A H000A

1	WORD	가 H1234	ASCII
31323334			

1)	Bit	0	H00(3030)	,	1	Hex 1 Byte	H01(3031)
2)							

(3) MK80S (MK80S ACK)

()	ACK	H20	W(w)	SS	ETX	BCC	
ASCII	H06	H3230	H57(77)	H5353	H03		

BCC	가	(w)	ACK	ETX	ASCII	Byte	가
			Byte	ASCII	BCC		

(4) MK80S (MK80S NAK)

					(Hex 2 Byte)		
()	NAK	H20	W(w)	SS	H4252	ETX	BCC
ASCII	H15	H3230	H57(77)	H5353	H34323532	H03	

BCC	가	(w)	NAK	ETX	ASCII	Byte	가
			Byte	ASCII	BCC		
	Hex	2 Byte(ASCII	4Byte)				
		8.1.8					

(5)

1 M230 "HFF"

PC (PC MK80S)

()	ENQ	H01	W(w)	SS	H01	H06	%MW230	H00FF	EOT	BCC
ASCII	H05	H3031	H57(77)	H5353	H3031	H3036	H254D57323330	H30304646	H04	

ACK (PC MK80S)

()	ACK	H01	W(w)	SS				ETX	BCC
ASCII	H06	H3031	H57(77)	H5353				H03	

NAK (PC MK80S)

()	NAK	H01	W(w)	SS	(2 Byte)			ETX	BCC
ASCII	H15	H3031	H57(77)	H5353	(4 Byte)			H03	

4) (W(w)SB)

(1)

PLC

(2)

							(128 Byte)			
()	ENQ	H10	W(w)	SB	H06	%MW100	H04	H11112222	EOT	BCC
ASCII	H05	H3130	H57(77)	H5342	H3036	H254D57 313030	H3034	H31313131 32323232	H04	

1)	WORD	가 5 , 5	Word
2)	128 Byte	(64)	

BCC	가 (w)	ENQ	EOT	ASCII	Byte
()	Hex	ASCII	16	H01(ASCII :3031)	
	H10(ASCII :3130)		16	ASCII	
	가 , , % ' ' .	PLC	가		

(3) MK80S (MK80S ACK)

()	ACK	H10	W(w)	SB	ETX	BCC	
ASCII	H06	H3130	H57(77)	H5342	H03		

BCC	가	(w)	ACK	ETX	ASCII	Byte	가
			Byte	ASCII	BCC		

(4) MK80S (MK80S NAK)

					(Hex 2 Byte)		
()	ENQ	H10	W(w)	SB	H1132	EOT	BCC
ASCII	H05	H3130	H57(77)	H5342	H31313332	H03	

BCC	가	(w)	NAK	ETX	ASCII	Byte	가
			Byte	ASCII	BCC		
	2 Byte(ASCII 4 Byte)		8.1.8				

(5)

1 D000 2 Byte HAA15 .

PC (PC MK80S)

()	ENQ	H01	W(w)	SB	H06	%DW000	H01	HAA15	EOT	BCC
ASCII	H05	H3031	H57(77)	H5342	H3036	H254457303030	H3031	H41413135	H04	

ACK (PC MK80S)

()	ACK	H01	W(w)	SB	ETX	BCC				
ASCII	H06	H3031	H57(77)	H5342	H03					

NAK (PC MK80S)

()	NAK	01	W(w)	SB	(2)	ETX	BCC			
ASCII	H15	H3031	H57(77)	H5342	(4)	H03				

5) (X##)

(1)

10 (0 9)

(2) PC

()	ENQ	H10	X(x)	H09		EOT	BCC
ASCII	H05	H3130	H58(78)	H3039	[]	H04	

BCC	가	(x)	ENQ	EOT	ASCII	Byte	가
	10	(0-9, H00~H9)	Byte	ASCII	BCC		
					EOT		

: 2가

RSS	(2 Byte)	(2 Byte)	(16 Byte)	...
-----	----------	----------	-----------	-----



RSB	(2 Byte)	(16 Byte)	
-----	----------	-----------	--

(3) MK80S (MK80S ACK)

()	ACK	H10	X(x)	H09	ETX	BCC
ASCII	H06	H3130	H58(78)	H3039	H03	

BCC	가	(x)	Byte	NAK ASCII	ETX ASCII	BCC
						Byte 가

(4) MK80S (MK80S NAK)

					(Hex 2Byte)	
()	ACK	H10	X(x)	H09	H1132	BCC
ASCII	H06	H3130	H58(78)	H3039	H31313332	H03

BCC	가	(x)	Byte	NAK ASCII	ETX ASCII	BCC
						Byte 가
	Hex	2 Byte(ASCII	4Byte)			
		8.1.8				

(5)

1 M000 01 .

PC (PC MK80S)

					R##					
()	ENQ	H01	X(x)	H01	RSS	H01	H06	%MW000	EOT	BCC
ASCII	H05	H3031	H58(78)	H3031	H525353	H3031	H3036	H2554573030 30	H04	

ACK (PC MK80S)

()	ACK	H01	X(x)	H01	ETX	BCC
ASCII	H06	H3031	H58(78)	H3031	H03	

NAK (PC MK80S)

()	NAK	H01	X(x)	H01	(2)	ETX	BCC
ASCII	H15	H3031	H58(78)	H3031	(4)	H03	

6) (Y##)

(1)

(2) PC

()	ENQ	H10	Y(y)	H09	EOT	BCC
ASCII	H05	H3130	H59(79)	H3039	H03	

	. 00 ~ 09(H00 ~ 09) 가 .					
BCC	가 (y)	ENQ	EOT	ASCII	Byte	가 .
	Byte	ASCII	BCC	가		

(3) MK80S (MK80S ACK)

()	ACK	H10	Y(y)	H09	H01	H02	H9183	ETX	BCC
ASCII	H06	H3130	H59(79)	H3039	H3031	H3032	H39313833	H03	

()	ACK	H10	Y(y)	H09	H04	H9183AABB	ETX	BCC	
ASCII	H06	H3130	H59(79)	H3039	H3034	H3931383341414242	H03		

(4) MK80S (MK80S NAK)

					(Hex 2Byte)		
()	NAK	H10	Y(y)	H09	H1132	ETX	BCC
ASCII	H15	H3130	H59(79)	H3039	H31313332	H03	

BCC	가 (y)	NAK	ETX	ASCII	Byte	가	Byte
	Hex 2 Byte(ASCII 8.1.8)	4Byte)					

(5)

1 1
M000 1 가 .
PC (PC MK80S)

()	ENQ	H01	Y(y)	H01	EOT	BCC
ASCII	H05	H3031	H59(79)	H3031	H04	

ACK (PC MK80S)

()	ACK	H01	Y(y)	H01	H01	H02	H2342	ETX	BCC
ASCII	H06	H3031	H59(79)	H3031	H3031	H3032	H32333432	H03	

NAK (PC MK80S)

()	NAK	H01	Y(y)	H01	(2)	ETX	BCC
ASCII	H15	H3031	H59(79)	H3031	(4)	H03	

7) PLC (RST)

(1)

PLC

(2) PC

()	ENQ	H0A	R(r)	ST	EOT	BCC
ASCII	H05	H3041	H52(72)	H5354	H04	

BCC	가	(r)	ENQ	EOT	ASCII	Byte
			Byte	ASCII	BCC	가

(3) MK80S

(MK80S

ACK

)

					PLC (Hex 20 Byte)		
()	ACK	H0A	R(r)	ST		ETX	BCC
ASCII	H06	H3041	H52(72)	H5354	[]	H03	

BCC	가	(r)	ACK	ETX	ASCII	Byte
			Byte	ASCII	BCC	가

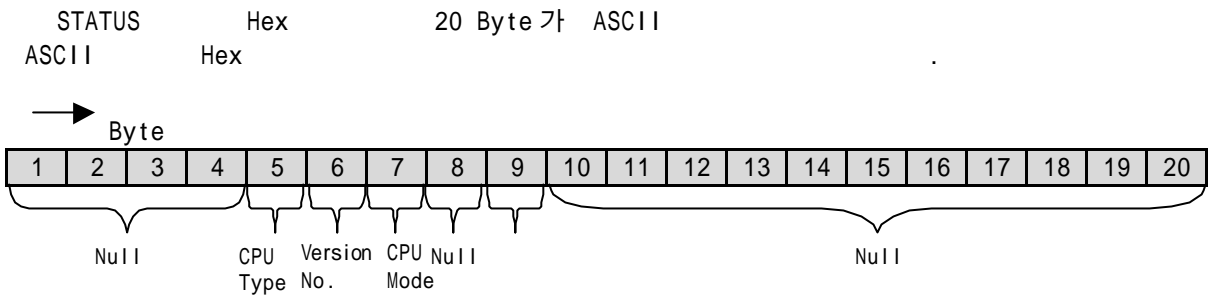
4) (PLC NAK)

					(Hex 2 Byte)		
()	NAK	H0A	R(r)	ST	H1132	ETX	BCC
ASCII	15	3041	5272	5354	31313332	03	

*

* BCC 가 (r) NAK ETX ASCII Byte

* Hex 2 Byte(ASCII 4Byte)



- . CPU Type

CPU Type	Code
K80S	41
K200SA (K3P-07AS)	3A
K200SB (K3P-07BS)	3B
K200SC (K3P-07CS)	3C
K300S (K4P-15AS)	33
K1000S (K7P-30AS)	32

- . Version No.

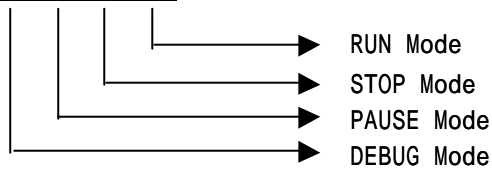
) Bit



= Version 1.2

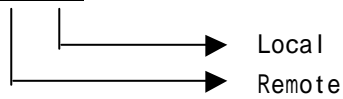
- . CPU Mode

) Bit



- .

) Bit



5)

1 가 PLC STATUS .

()

						BCC
()	ENQ	H01	R(r)	ST	EOT	BCC
ASCII	H05	H3031	H52(72)	H5354	H04	

(PLC ACK)

					STATUS		BCC
()	ACK	H01	R(r)	ST	STATUS FORMAT	ETX	BCC
ASCII	H06	H3031	H52(72)	H5354		H03	

(PLC NAK)

							BCC
()	NAK	H01	R(r)	ST	(2)	ETX	BCC
ASCII	H15	H3031	H52(72)	H5354	(4)	H03	

8.1.7 1:1

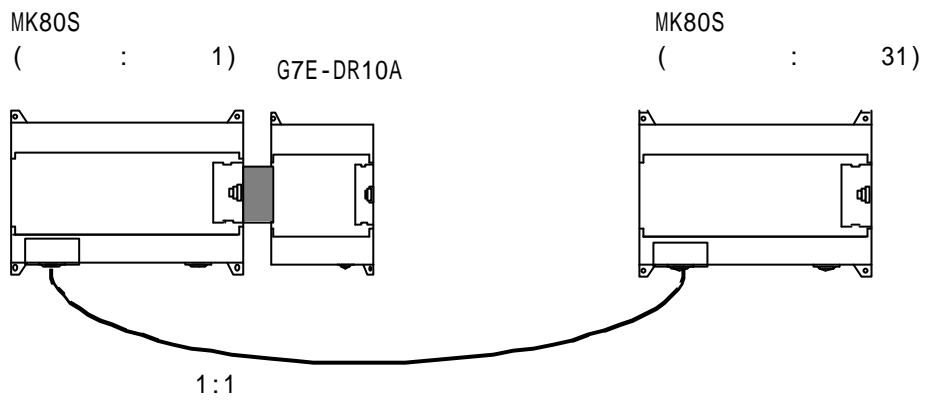
1)

1:1

1() : 1()
KGLWIN

MASTER-K Cnet I/F

- 64
- 32 (G7L-CUEC)
- PLC
- KGLWIN



1:1

8.1.2

(3)

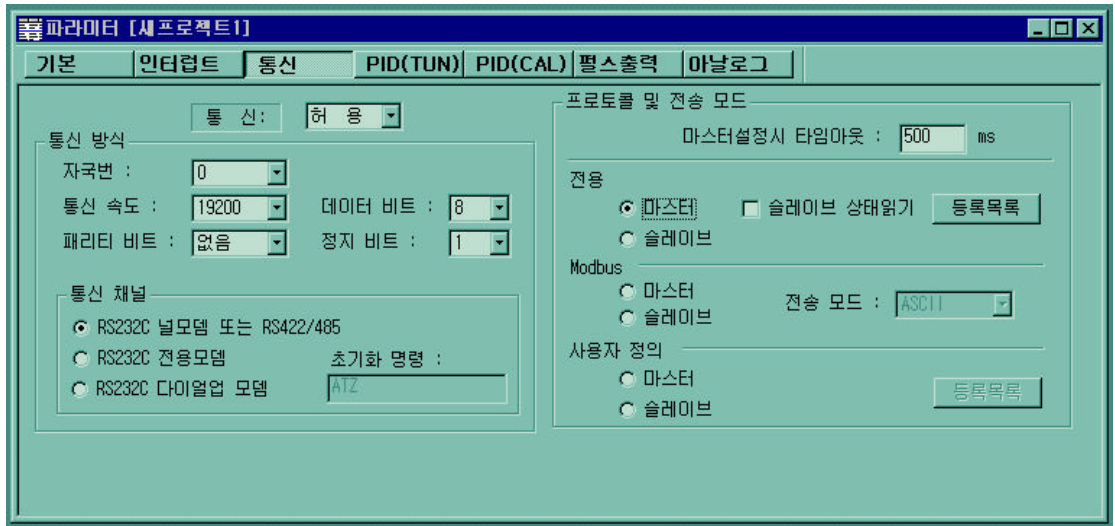
2)

(1)

KGLWIN
- PLC

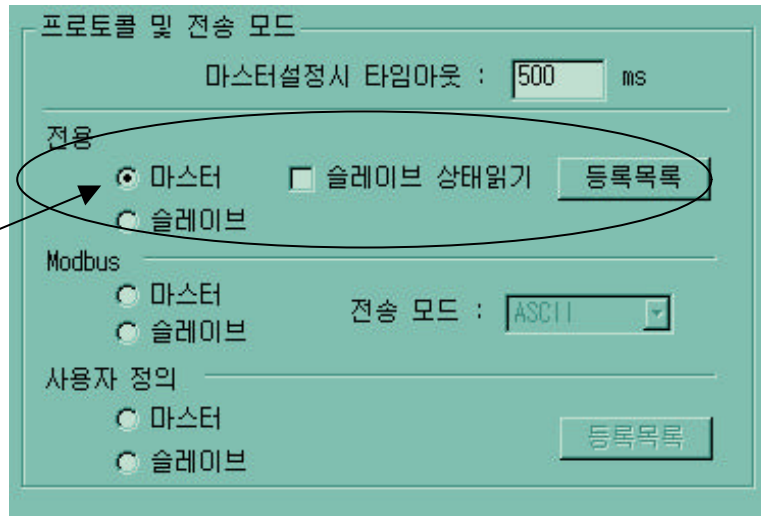
MK80S

KGLWIN



	0 31
	1200, 2400, 4800, 9600, 19200, 38400, 57600 bps
	7 8 Bits
	, Even, Odd
	1 2 Bit(s)
	<ul style="list-style-type: none"> • RS232C RS422/485 : MK80S Cnet I/F (G7L-CUEC) • RS232C : Cnet I/F (G7L-CUEB) • RS232C : Cnet I/F (G7L-CUEB) <p>) RS232C RS232C RS232C Cnet I/F (G7L-CUEB) RS422/485 Cnet I/F (G7L-CUEC)</p>
	<ul style="list-style-type: none"> • MK80S • 500ms • PLC •
/	가
	MK80S
	MK80S 가

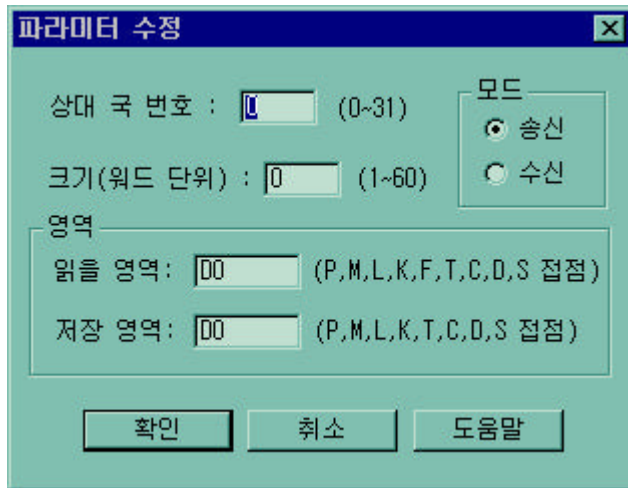
(2)



64

60

- : P, M, L, K, F, T, C, D, S P, M, L, K, T, C, D, S
 - : P, M, L, K, F, T, C, D, S P, M, L, K, T, C, D, S



: () . (.)
 :
 :
 60 .

	가		

3)

(1) (32)
(32)

(32)

0,1	D4400	16,17	D4408	/ (1)
2,3	D4401	18,19	D4409	
4,5	D4401	20,21	D4410	
6,7	D4403	22,23	D4411	
8,9	D4404	24,25	D4412	
10,11	D4405	26,27	D4413	
12,13	D4406	28,29	D4414	
14,15	D4407	30,31	D4415	

1		
2	NAK	

(2)

(32)

0,1	D4416	16,17	D4424	/ (1)
2,3	D4417	18,19	D4425	
4,5	D4418	20,21	D4426	
6,7	D4419	22,23	D4427	
8,9	D4420	24,25	D4428	
10,11	D4421	26,27	D4429	
12,13	D4422	28,29	D4430	
14,15	D4423	30,31	D4431	

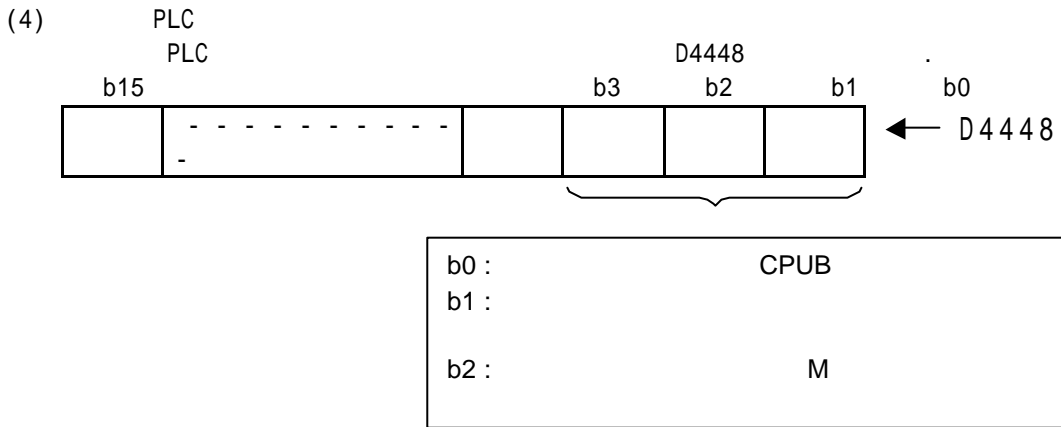
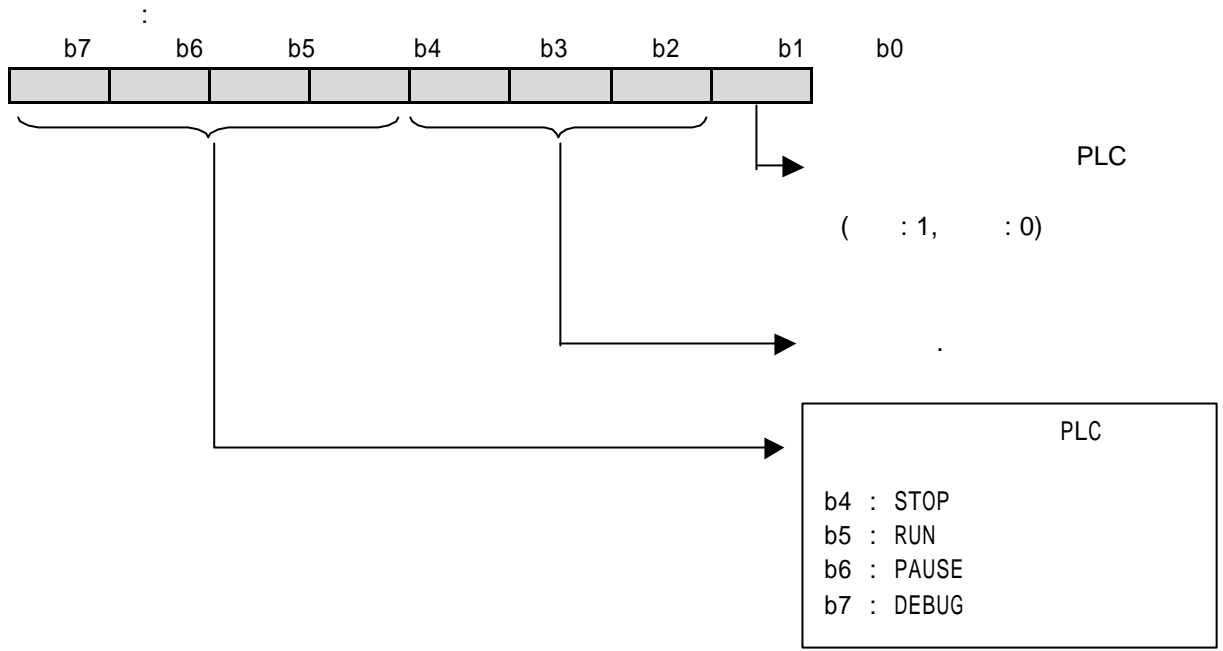
(, 0 D4416 Byte ,
31 D4431 Byte .)

(3)

PLC
PLC

(32) PLC

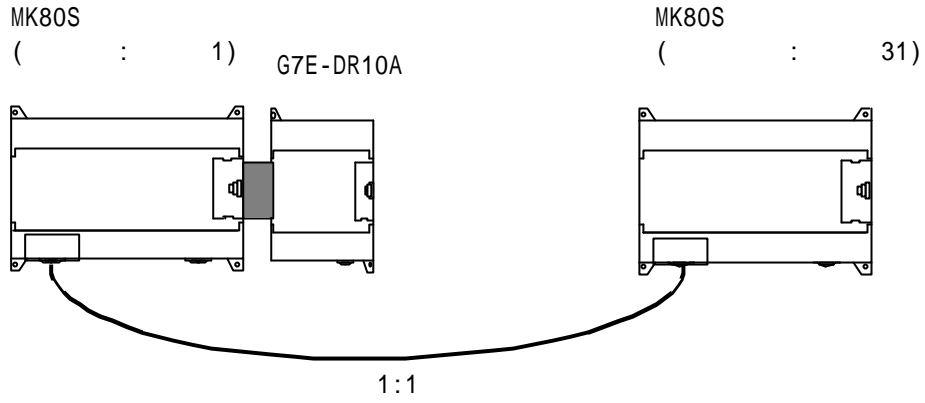
0,1	D4432	16,17	D4440	/ (1)
2,3	D4433	18,19	D4441	
4,5	D4434	20,21	D4442	
6,7	D4435	22,23	D4443	
8,9	D4436	24,25	D4444	
10,11	D4437	26,27	D4445	
12,13	D4438	28,29	D4446	
14,15	D4439	30,31	D4447	



(5)

	D4449 – D4450
	D4451 – D4452
	D4453 – D4454

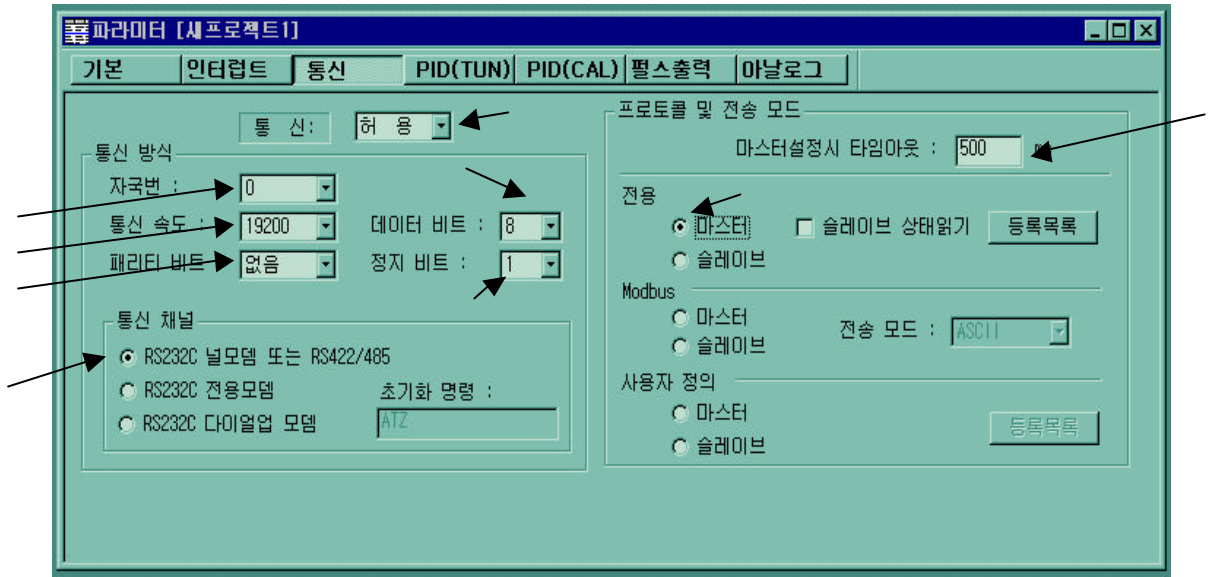
4)



- . M000 1 가
- . 31 (P04)
- . 31 (P04)
- . P09



(1) MASTER



(0 ~ 31)

: 1200,2400,4800,9600,19200,38400,57600

: ,Even,Odd

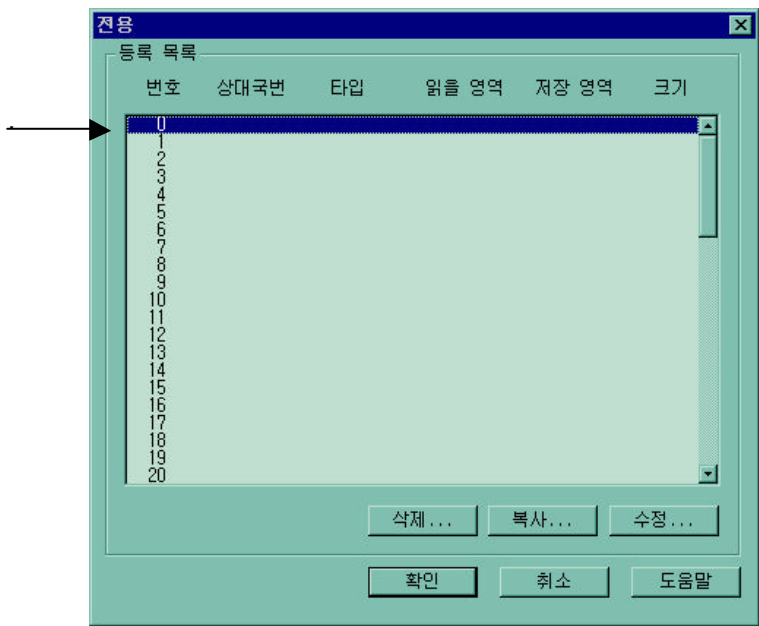
: 7,8

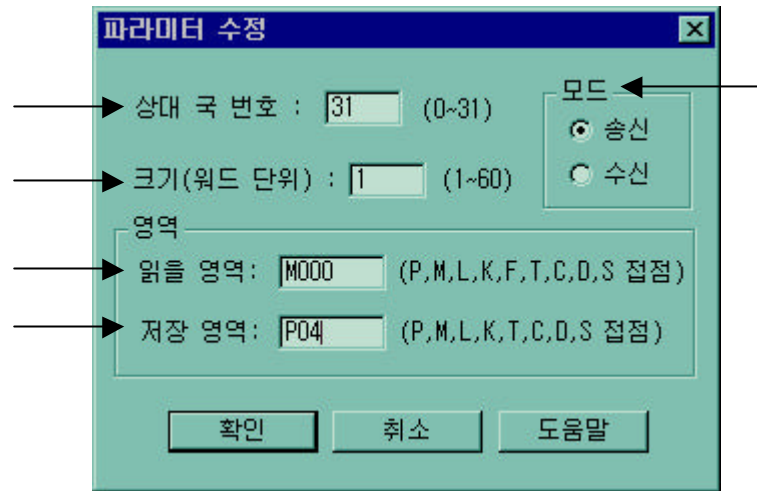
: 1,2

: RS232C RS422/485,RS232C ,RS232C

: 10 ~ 2000ms (500ms)

: ,
/

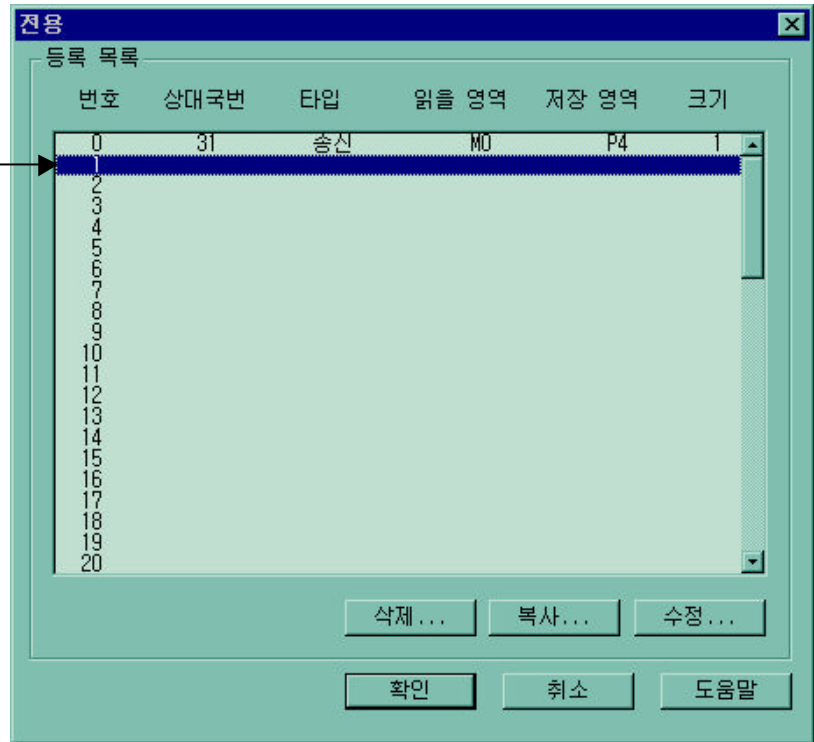




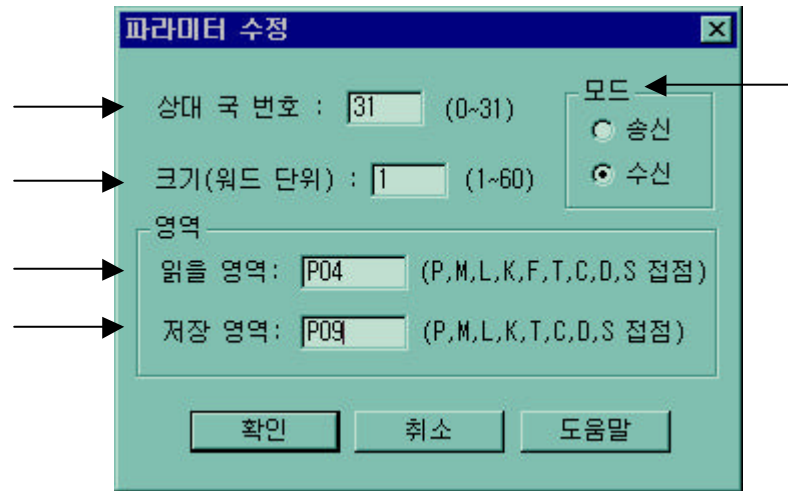
상대국 번호 : 31 (0 ~ 31)
 크기(워드 단위) : 1 (1 ~ 60)
 영역
 읽을 영역 : M000 (P, M, L, K, F, T, C, D, S 접점)
 저장 영역 : P04 (P, M, L, K, T, C, D, S 접점)
 모드 : 송신 / 수신



1



1



상대국 번호 : (0 ~ 31)

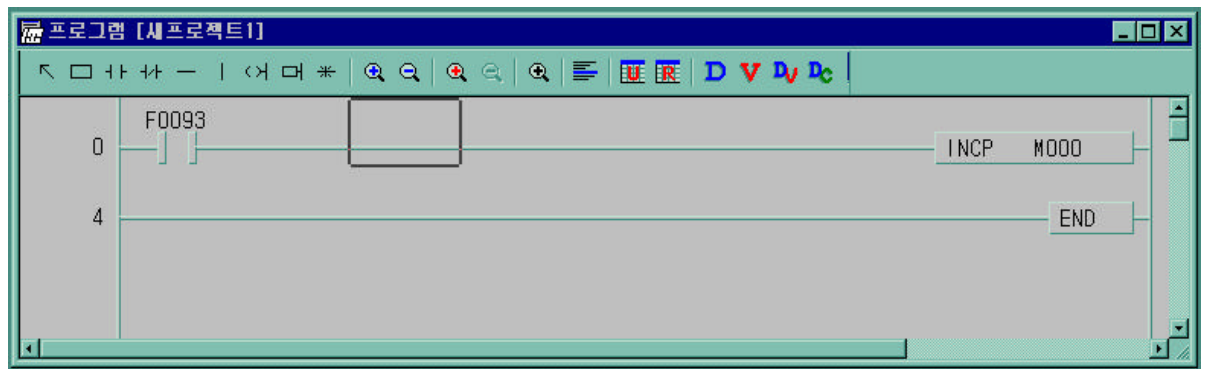
크기 (워드 단위) : (1 ~ 60)

읽을 영역 : (P, M, L, K, F, T, C, D, S 접점)

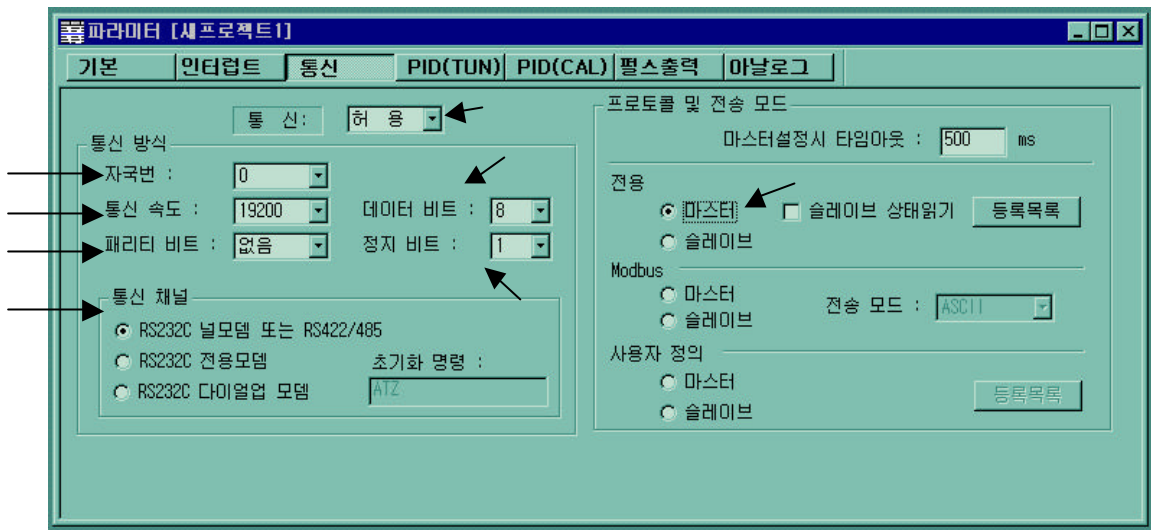
저장 영역 : (P, M, L, K, T, C, D, S 접점)

모드 :
 송신
 수신

확인 취소 도움말



(2) SLAVE



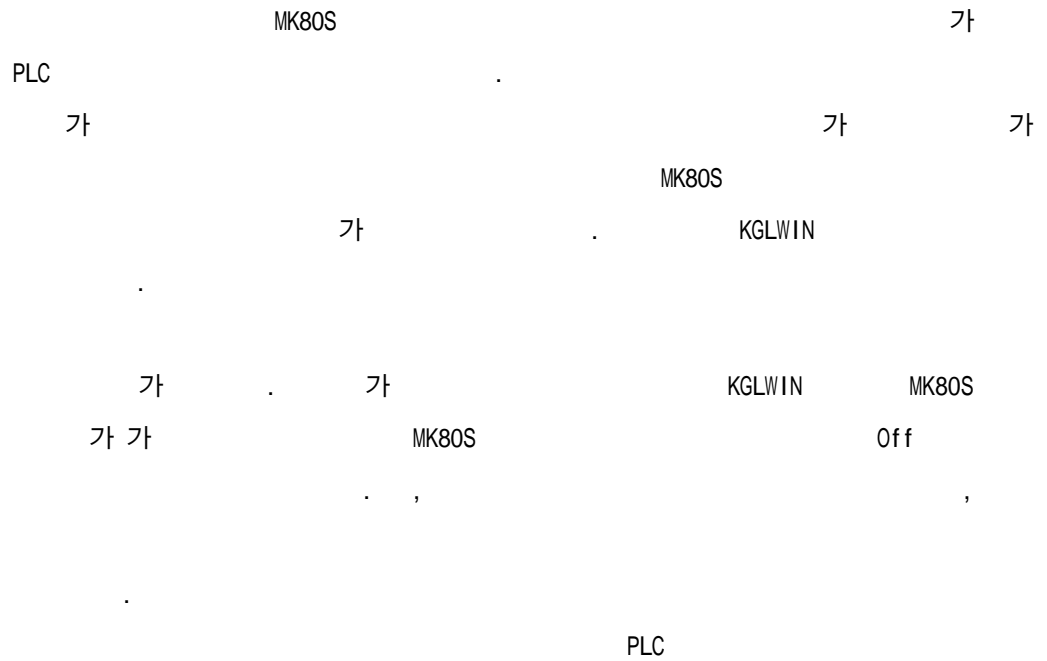
(0 ~ 31)
 : 1200, 2400, 4800, 9600, 19200, 38400, 57600
 : , Even, Odd
 : 7, 8
 : 1, 2
 : RS232C RS422/485, RS232C , RS232C
 :
 /

8.1.8

H0001	PLC	PLC 가 가	* On/Off
H0011		* ASCII	* (%,',_;',:'), 가
H0021		* w(W), r(R), x(X), y(Y), s(S)	*
H0031		* , wSS, wSB "SS", "SB"	*
H1132		* MK80S P,M,L,K,T,C,F,D,S	*
H1232		* Byte 가 0 128	* (, 1 ~ 128 Byte)
H2432		* MK80S x(X), w(W)	*
H7132		* %	*
H2232		* 1) %MX2000 → %DW5000→	*
H0190		*	* 가 9
H0290		*	* 가 9
H6001		* 1) RSB %MX100, %LX200	* * *
H6010		* OVER-RUN, FRAME	*
H6020		* TIME_OUT	* RS-232C * Off/On
H6030		*	* ENQ, EOT 가
H6040		* FRAME 가 256	* 256 가
H6050		* BCC	* BCC 가

8.2

8.2.1

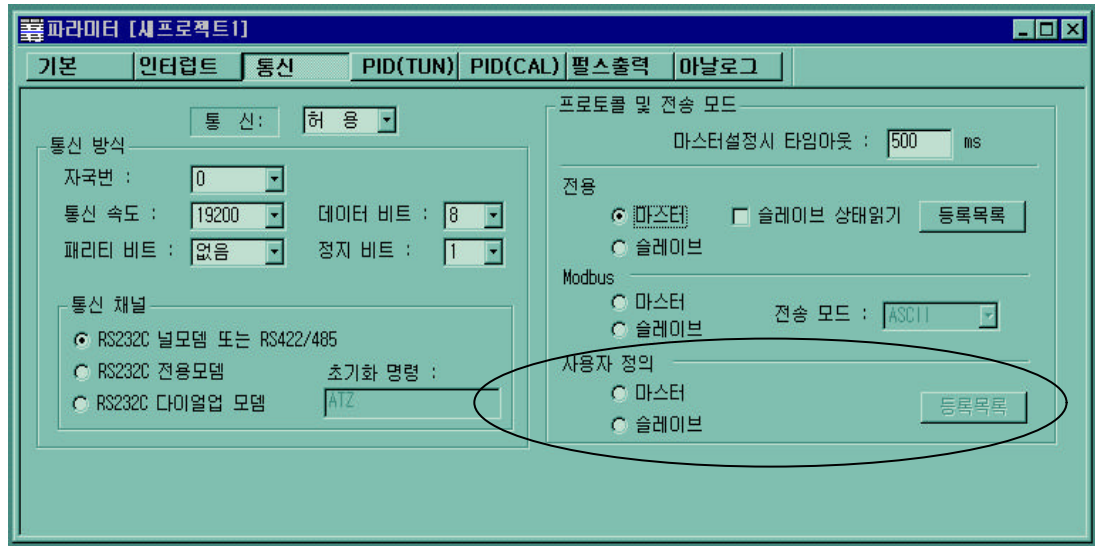


8.2.2

1)

(1) KGLWIN
PLC MK80S

(2) KGLWIN



()

/

2)

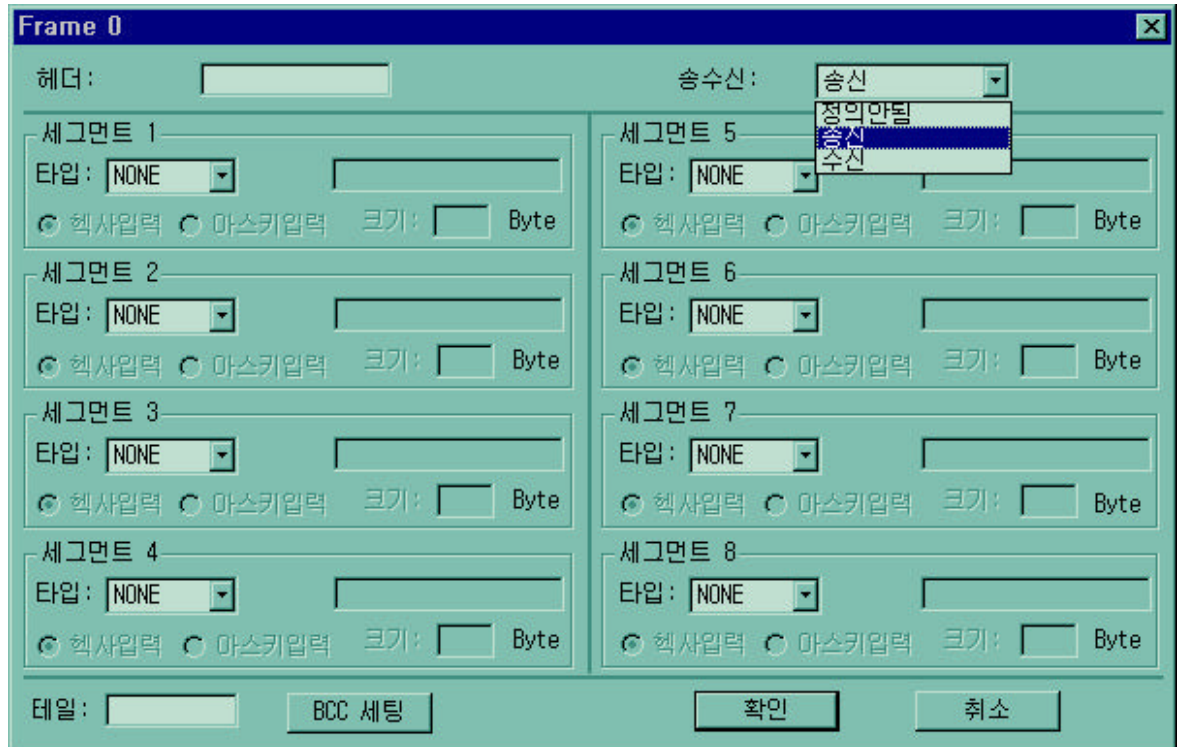
(1)

가



(2)

(0 ~ 15)



- - ‘[‘ ’] 가 1 , 1 ,
 -

가					
NUL(H00)	STX(H02)	ETX(H03)	EOT(H04)	ACK(H06)	NAK(H15)
SOH(H01)	ENQ(H05)	BEL(H07)	BS(H08)	HT(H09)	LF(H0A)
VT(H0B)	FF(H0C)	CR(H0D)	SO(H0E)	S1(H0F)	DLE(H10)
DC1(H11)	DC2(H12)	DC3(H13)	DC4(H14)	SYN(H16)	ETB(H17)
CAN(H18)	EM(H19)	SUB(H1A)	ESC(H1B)	FS(H1C)	GS(H1D)
RS(H1E)	US(H1F)	DEL(H7F)			

- - 1) [1], [2], [A], [a], [NUL], [ENQ] (가)
 - 2) 1, [12], A, [AB], [ABC], NUL, ENQ (가)
 - 3
 - 3) [ENQ][STX][NUL] (가)
 - 4) [A][NUL][ENQ][STX] (가)

- - :
 - :
 - :
 - Frame 0 “ ”

- (1 ~ 8) : (CONSTANT)
(ARRAY)

<p>타입: NONE</p> <p>타입: CONST</p> <p>타입: ARRAY</p>	<p>NONE(),</p> <p>CONSTANT(), ARRAY()가</p> <p>. CONSTANT</p> <p>, ARRAY</p> <p>. ARRAY</p> <p>.(1 2</p> <p>)</p>
<p>[Empty Box]</p>	<p>20 . 10 ,</p> <p>1) 10RSB06%MW006</p> <div data-bbox="788 763 1374 1048" style="border: 1px solid gray; padding: 5px;"> <p>세그먼트 1</p> <p>타입: CONST 10RSB06</p> <p><input type="radio"/> hex 입력 <input checked="" type="radio"/> 아스키 입력 크기: [] Byte</p> <p>세그먼트 2</p> <p>타입: CONST %MW10006</p> <p><input type="radio"/> hex 입력 <input checked="" type="radio"/> 아스키 입력 크기: [] Byte</p> </div> <p>ARRAY 가</p> <p>(P, M, L, F, K, T, C, D, S) (BYTE)</p> <p>2) D000 D003</p> <p>D000, 6</p> <div data-bbox="756 1267 1374 1413" style="border: 1px solid gray; padding: 5px;"> <p>세그먼트 3</p> <p>타입: ARRAY D000</p> <p><input type="checkbox"/> 아스키로 변환하여 송신 크기: [6] Byte</p> </div>
<p><input type="radio"/> hex 입력 <input checked="" type="radio"/> 아스키 입력</p>	<p>가</p> <p>1) : 1 0 R S B 0 6 % M W 1 0 0</p> <p>2) : 31 30 52 53 42 30 36 25 57 44 31 30 30</p>
<p><input type="checkbox"/> 아스키로 변환하여 송신</p> <p><input type="checkbox"/> hex로 변환하여 수신</p>	<p>ARRAY()</p>
<p>크기: [] Byte</p>	<p>ARRAY()</p>

- '[' ']' 가 1 , 1 ,

가					
NUL(H00)	STX(H02)	ETX(H03)	EOT(H04)	ACK(H06)	NAK(H15)
SOH(H01)	ENQ(H05)	BEL(H07)	BS(H08)	HT(H09)	LF(H0A)
VT(H0B)	FF(H0C)	CR(H0D)	SO(H0E)	S1(H0F)	DLE(H10)
DC1(H11)	DC2(H12)	DC3(H13)	DC4(H14)	SYN(H16)	ETB(H17)
CAN(H18)	EM(H19)	SUB(H1A)	ESC(H1B)	FS(H1C)	GS(H1D)
RS(H1E)	US(H1F)	DEL(H7F)			

- 1) [1], [2], [A], [a], [NUL], [EOT] (가)
- 2) 1, [12], A, [AB], [ABC], NUL, EOT (가)

- 3 .

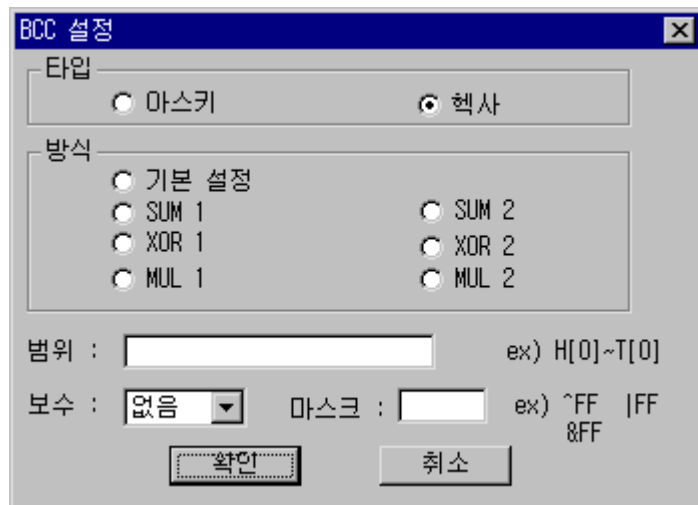
- 3) [EOT][ETX][NUL] (가)
- 4) [A][NUL][EOT][ETX] (가)

- BCC . BCC "BCC"
[BCC] . BCC

5)

테일: [EOT][BCC] BCC 세팅

● BCC : BCC .



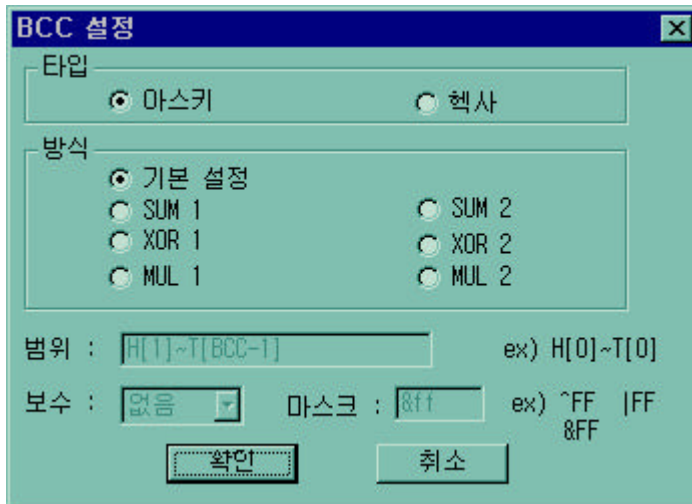
	BCC BCC BCC 1 2 . BCC 8.1.6 .
	[BCC] [BCC]
SUM 1	BCC BCC 가
SUM 2	BCC SUM 1 BCC 가
XOR 1	BCC OR(EXCLUSIVE OR)
XOR 2	BCC XOR 1 BCC 가
MUL 1	BCC MULTIPLY ,
MUL 2	BCC MUL 1 BCC 가
	H , S , T 가 . 1) 가 [ENQ][STX], [EOT][ETX] BCC [STX] [ETX] H[1] ~ T[1]
	BCC , 1 2 가
	1) HFF XOR : ^FF 2) HFF OR : |FF 3) HFF AND : &FF

- - : 126
- : 256
- (L)
-
- 3 L003
(Blinking) .(0 1 0)
- MK80S 가
가

BCC)

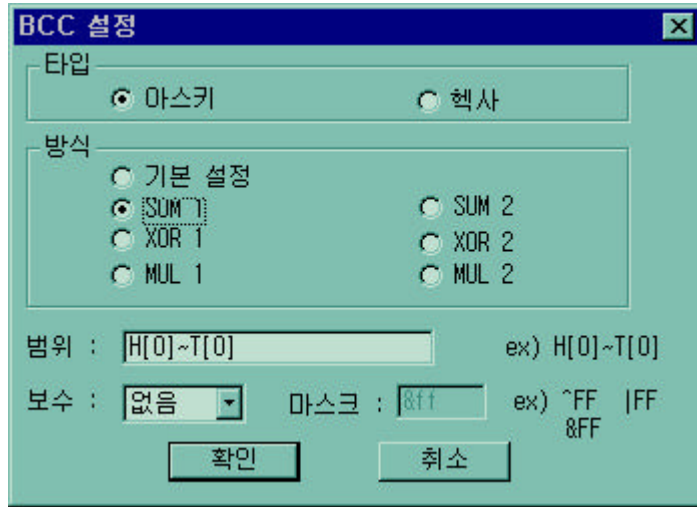


(1)



	SUM Check	BCC	
	31 + 32 + 33 + 34 + 04 = CE	05 31 32 33 34 04 43 41	05 31 32 33 34 04 CE
	12 + 34 + 04 = 4A	05 12 34 34 41	05 12 34 4A

(2) SUM1 , XOR1 MUL1



가) SUM1

	SUM Check	BCC	
	$05 + 31 + 32 + 33 + 34 + 04 = D3$	05 31 32 33 34 04 44 43	05 31 32 33 34 04 D3
	$05 + 12 + 34 + 04 = 4F$	05 12 34 34 46	05 12 34 4F

나) XOR1

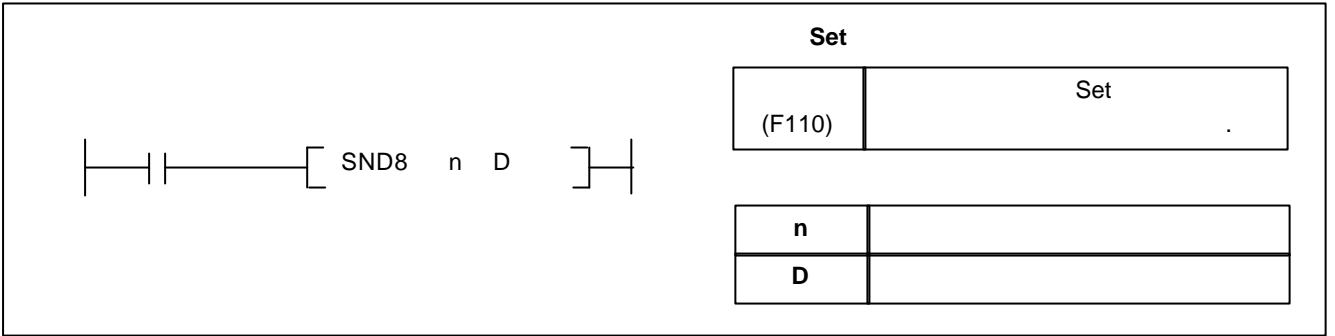
	SUM Check	BCC	
	$05 \wedge 31 \wedge 32 \wedge 33 \wedge 34 \wedge 04 = 05$	05 31 32 33 34 04 30 35	05 31 32 33 34 04 05
	$05 \wedge 12 \wedge 34 \wedge 04 = 27$	05 12 34 32 37	05 12 34 27

다) MUL1

	SUM Check	BCC	
	$05 * 31 * 32 * 33 * 34 * 04 = 60$	05 31 32 33 34 04 36 30	05 31 32 33 34 04 60
	$05 * 12 * 34 * 04 = 20$	05 12 34 32 30	05 12 34 20

8.2.3

		가													
		M	P	K	L	F	T	C	S	D	#D		(F110)	(F111)	(F112)
SND8	n											O	5	O	
	D	O	O	O	O					O	O				

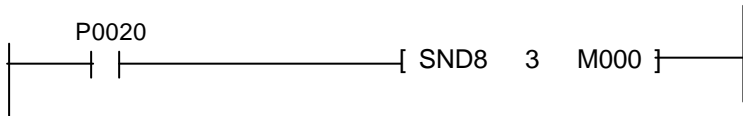


■ SND8

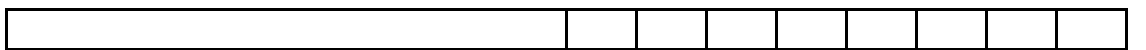
1)

- On
- n
- D

2)



- On 3
- M000, M000



(1Byte)



Done

- Done : On
- : 가 On
- : On

3)

(Status)

Code		
06	Slave Device Busy	
09	Parameter Error	
10	Frame Type Error	

8.2.4

MK80S

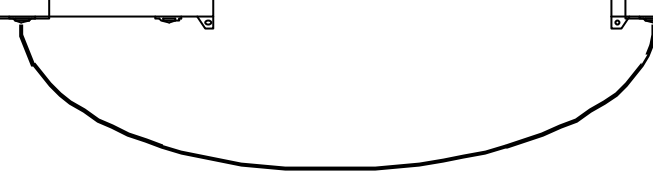
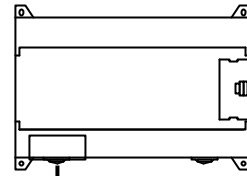
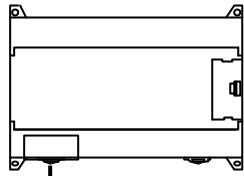
1:1

MK80S

(: 0)

MK80S

(: 1)



1:1

M

,

가

M

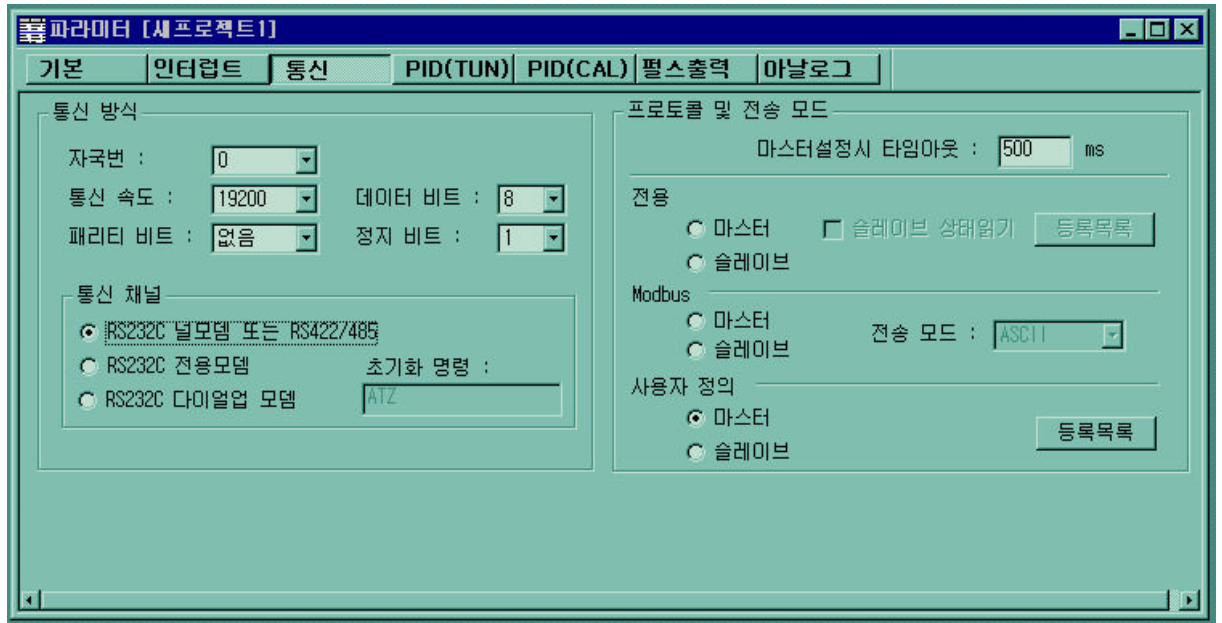
,

가

M

1)

(1)



0

0
BCC

Frame 0

헤더: [ENQ] 송수신: 송신

세그먼트 1
타입: ARRAY M000
 아스키로 변환하여 송신 크기: 2 Byte

세그먼트 2
타입: NONE RT
 hex 입력 아스키 입력 크기: Byte

세그먼트 3
타입: NONE
 hex 입력 아스키 입력 크기: Byte

세그먼트 4
타입: NONE
 hex 입력 아스키 입력 크기: Byte

세그먼트 5
타입: NONE
 hex 입력 아스키 입력 크기: Byte

세그먼트 6
타입: NONE
 hex 입력 아스키 입력 크기: Byte

세그먼트 7
타입: NONE
 hex 입력 아스키 입력 크기: Byte

세그먼트 8
타입: NONE
 hex 입력 아스키 입력 크기: Byte

테일: [EOT[BCC]] BCC 세팅 확인 취소

BCC

BCC 설정

타입
 아스키 hex

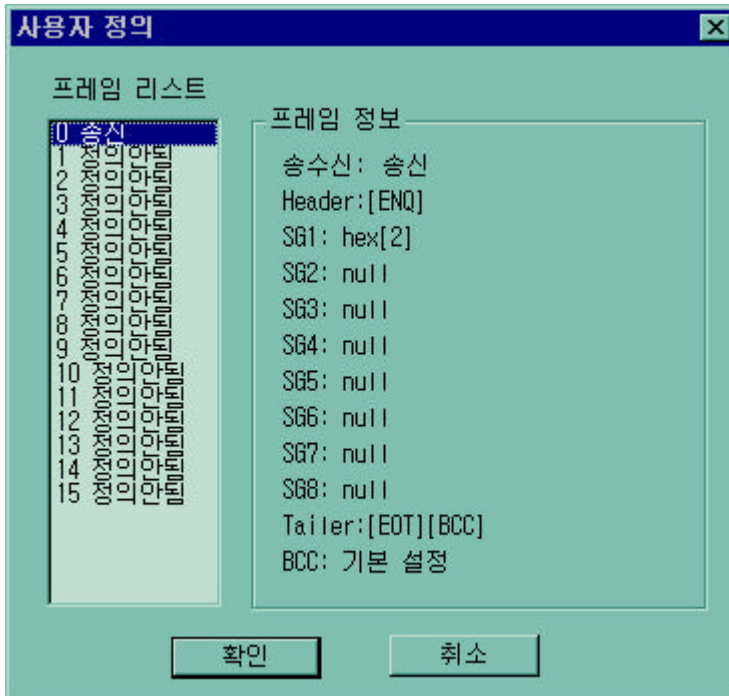
방식
 기본 설정
 SUM 1 SUM 2
 XOR 1 XOR 2
 MUL 1 MUL 2

범위: H[1]~T[BCC-1] ex) H[0]~T[0]

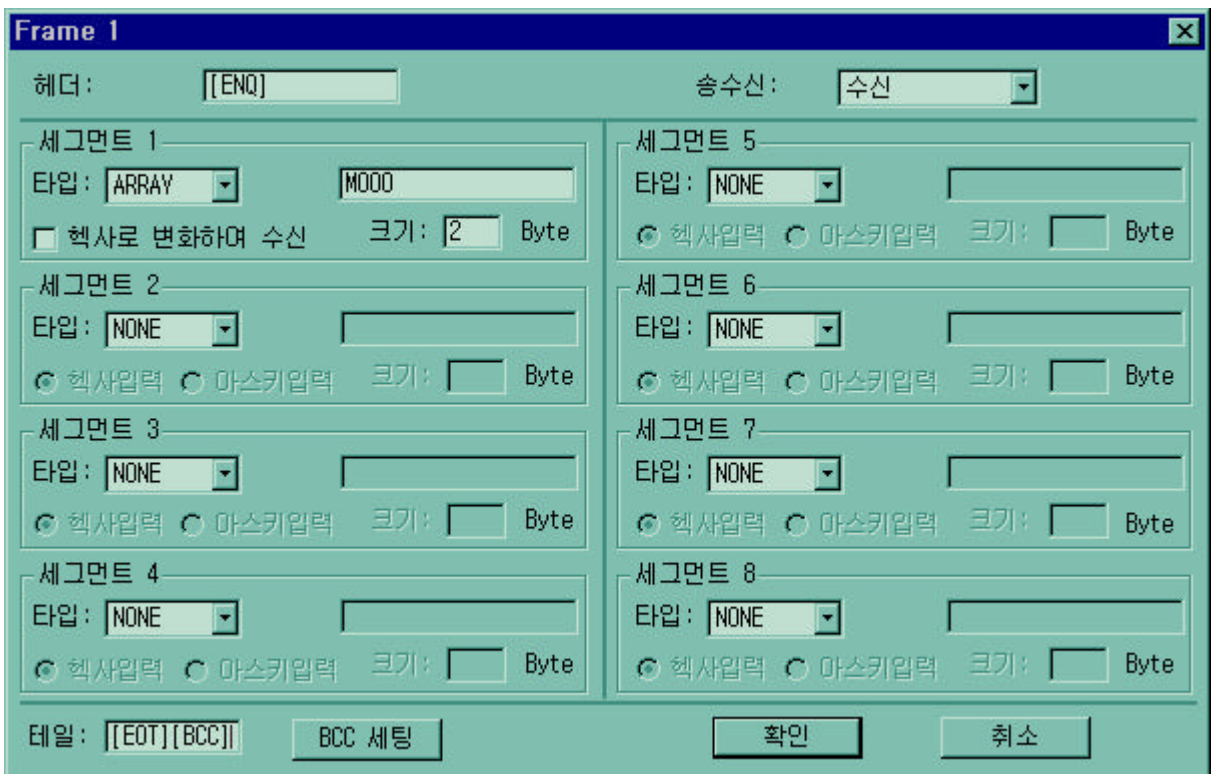
보수: 없음 마스크: &FF ex) ^FF |FF &FF

확인 취소

BCC



(2) 1 Frame 1

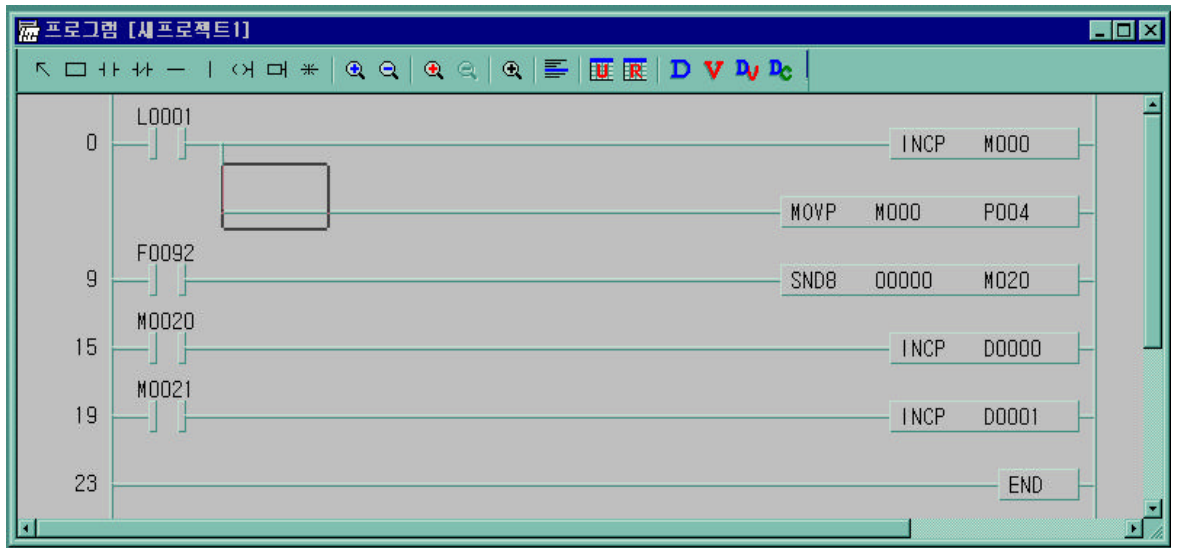


BCC 0 .

- (3) Frame 1
- (4)



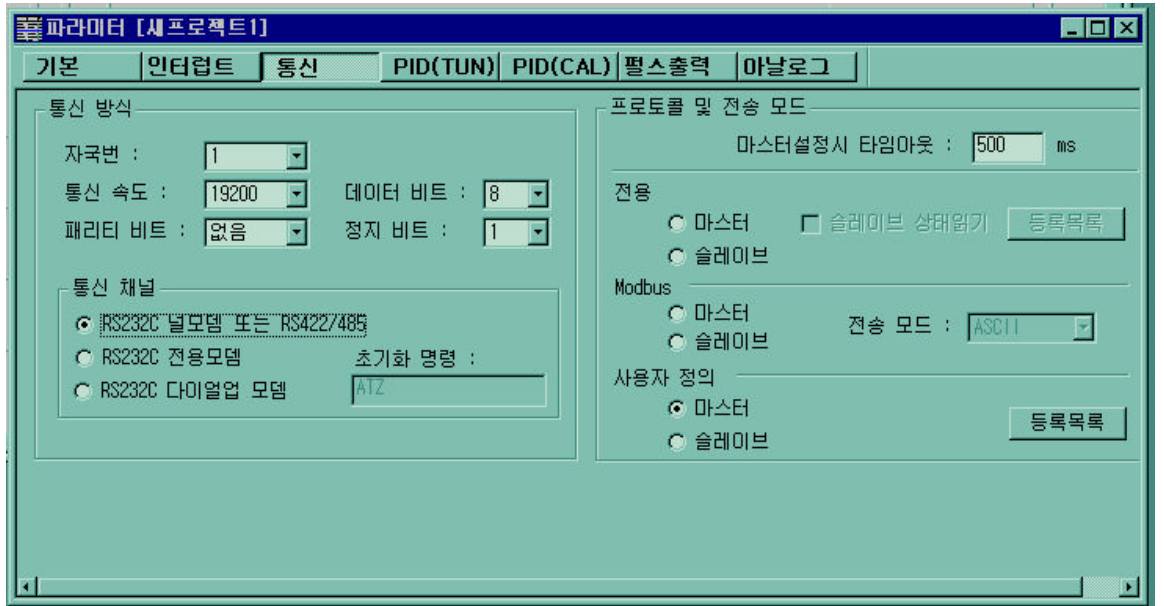
- (5)



- Frame 1 L001 1 On M000
- 가 가 P004
- M000 가 1 (F092 : 1)
- D0000 가 가
- D0001 가 가

2)

(1)



0

Frame 0 [X]

헤더: [[ENQ]] 송수신: 수신

<p>세그먼트 1</p> <p>타입: ARRAY [P04]</p> <p><input type="checkbox"/> hex로 변화하여 수신 크기: [2] Byte</p>	<p>세그먼트 5</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>
<p>세그먼트 2</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>	<p>세그먼트 6</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>
<p>세그먼트 3</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>	<p>세그먼트 7</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>
<p>세그먼트 4</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>	<p>세그먼트 8</p> <p>타입: NONE []</p> <p><input checked="" type="radio"/> hex삽입력 <input type="radio"/> 아스키삽입력 크기: [] Byte</p>

테일: [[EOT][BCC]] BCC 세팅 확인 취소

BCC

BCC 설정 [X]

타입

아스키 hex

방식

기본 설정

SUM 1 SUM 2

XOR 1 XOR 2

MUL 1 MUL 2

범위: [H[1]~T[BCC-1]] ex) H[0]~T[0]

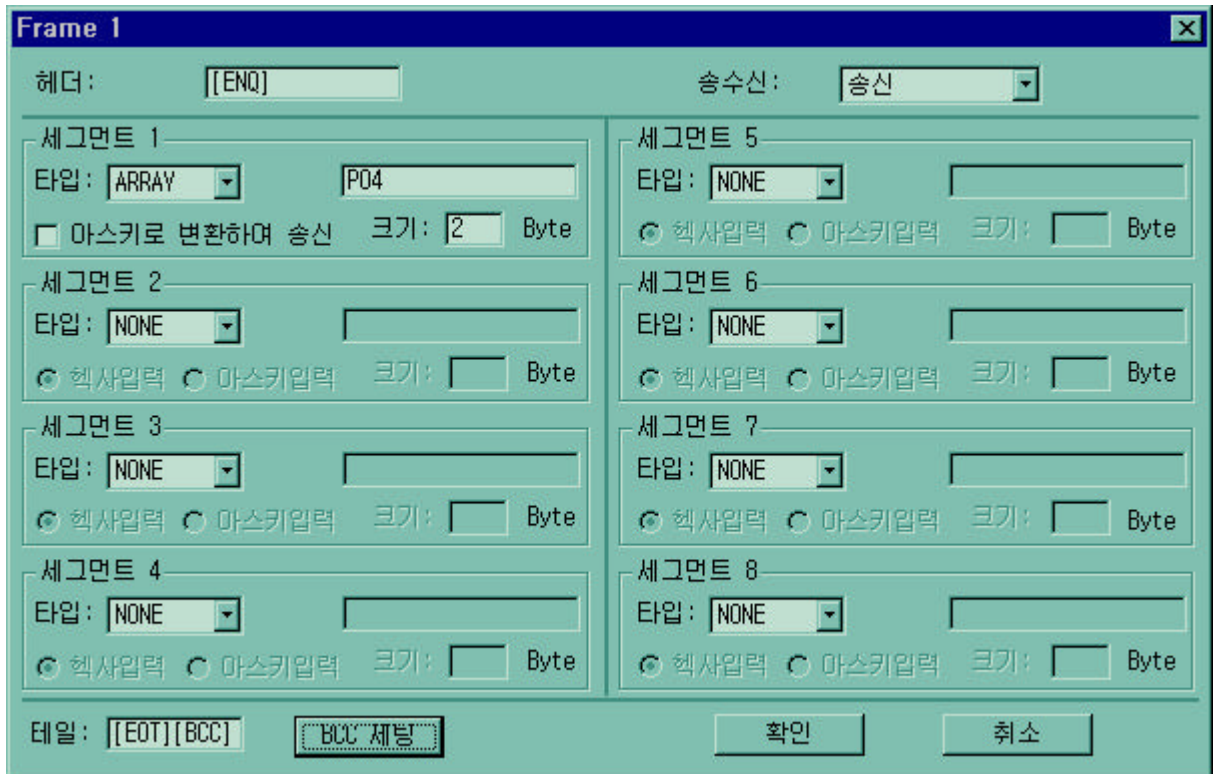
보수: [없음] 마스크: [&ff] ex) ~FF |FF &FF

확인 취소

BCC

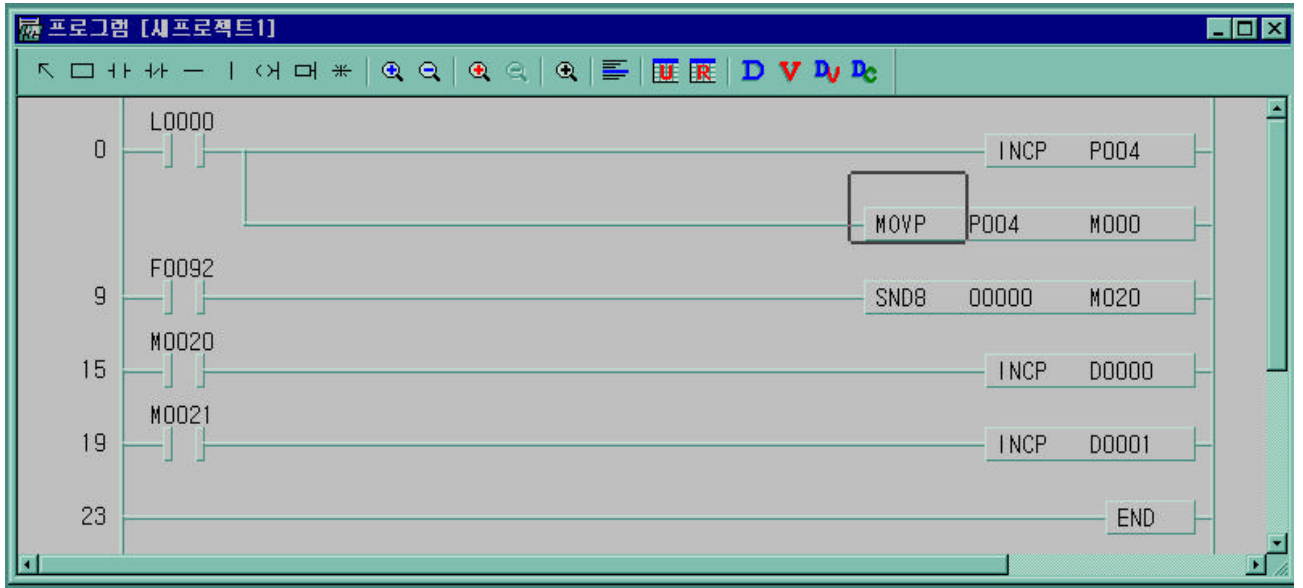


(5) 1 Frame 1



BCC

(8)



- Frame 0 가 L0000 1 On P004 가 P004 M000
- SND8 P004 1 (F092 : 1)
- D0000 가
- D0001 가

8.3

8.3.1

MK80S Modicon PLC (Modbus)
 (ASCII : American Standard Code for InformatiOn Interchange)
 (HEXA) (RTU : Remote Terminal Unit)
 03, 04, 05, 06, 15, 16 01, 02,
 Reference Guide' Modicon Modbus Protocol

8.3.2

1)

- (1)
- (2) ':' (Colon) : H3A', CR LF(-
 (Carriage Return-Line Feed) : HOD HOA)
- (3) (Character) 1 (Interval)
- (4) LRC
- (5) ()

					LRC	(CR LF)
	1	2	2	n	2	2

2) RTU

- (1)
- (2) (Address) CRC
- (3) 3.5 (Character Time) (Interval) 가
- (4) (Character) 1.5 (Character Time)
- (5) 16 CRC
- (6) ()

				CRC
	1	1	n	2

1) 1 1 , 1 8 , 1

2) 584, 984A/B/X LRC 1 (Interval)

3) 1 1

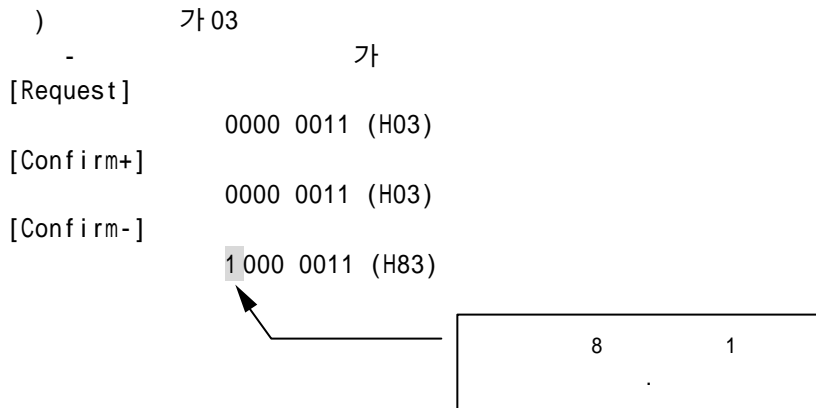
1) 1200 bps 1
 1200 bps 1200 1 가 1
 $1() \div 1200() = 0.83(\text{ms})$
 $1 0.83(\text{ms}) \times 8() = 6.64(\text{ms})$

3) (Address)

- (1) 1 ~ 247 가 MK80S 0 ~ 31
- (2) 0 (Broadcast) 가 MK80S

4) (Function Code)

- (1) 0 ~ 255 MK80S 01, 02, 03, 04, 05, 06, 15, 16
- (2) Confirm+(ACK)
- (3) Confirm-(NCK) 8 1



5) (Data)

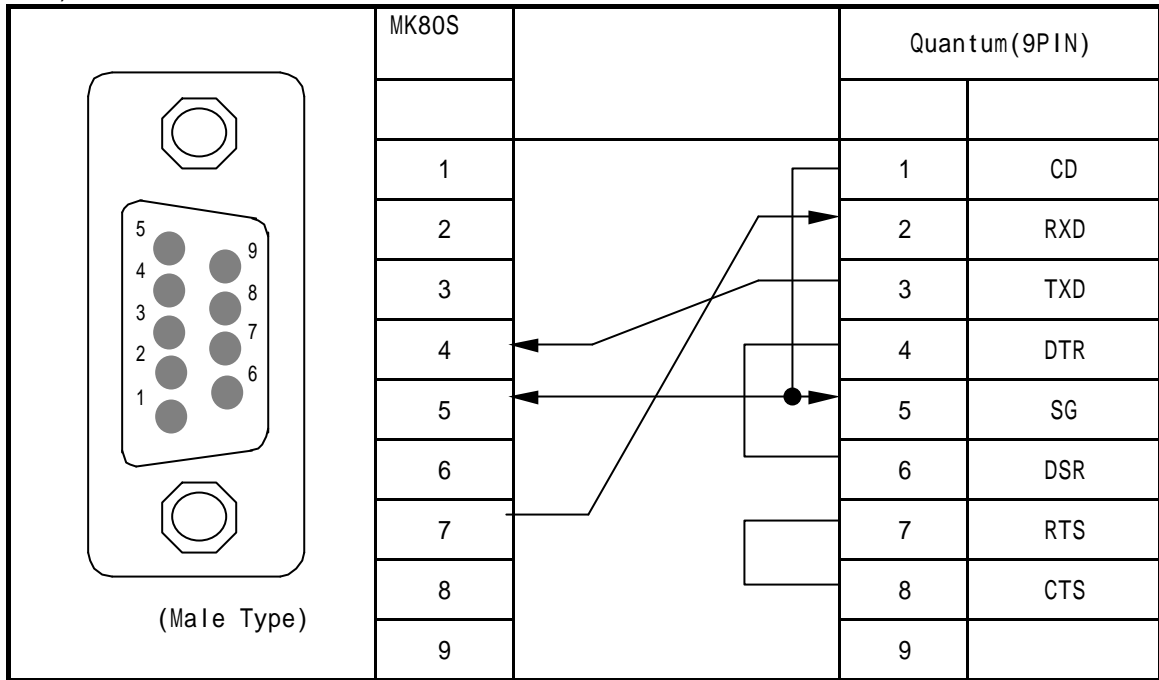
- (1) () (RTU)
- (2) 가
- (3)

6) (LRC Check/CRC Check)

- (1) LRC(Longitudinal Redundancy Check) : /
- (2) CRC(Cyclical Redundancy Check) : RTU 2 CRC

	16	,	10	,	2
	10		7,	10	
16	:	H07, H0A		16#07, 16#0A	
10	:	7, 10			

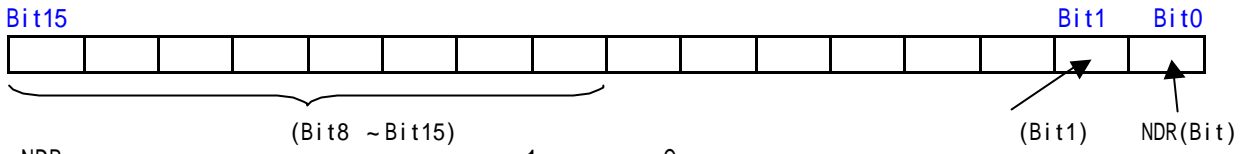
10)



	1 31 (0 .)
	1200, 2400, 4800, 9600, 19200, 38400, 57600 bps
	7 8 : 7 RTU : 8
	, Even, Odd
	1 2 가 : 1 가 : 2
	<ul style="list-style-type: none"> • RS232C RS422/485 : MK80S Cnet I/F (G7L-CUEC) • RS232C : Cnet I/F (G7L-CUEB) • RS232C : Cnet I/F (G7L-CUEB) <p>) RS232C RS232C RS232C Cnet I/F (G7L-CUEB) RS422/485 Cnet I/F (G7L-CUEC)</p>
	<ul style="list-style-type: none"> • MK80S • 500ms • PLC •
Modbus /	가
	RTU

MODBUS , MODBUS On S1 가
 MODBUS .

• S3



- NDR : 1 On
- : 가 1 On , Bit8 ~ Bit15
- : .()

Code		
01	Illegal Function	
02	Illegal Address	Address
03	Illegal Data Value	
04	Slave Device Failure	가 .
05	Acknowledge	가 .
06	Slave Device Busy	가 .
07	Time Out	Time Out
08	Number Error	가 0 256Byte .
09	Parameter Error	
10	Station Error	MODBUS 가

1

17 (Coil) 00020 ~ 00056
가

D1000

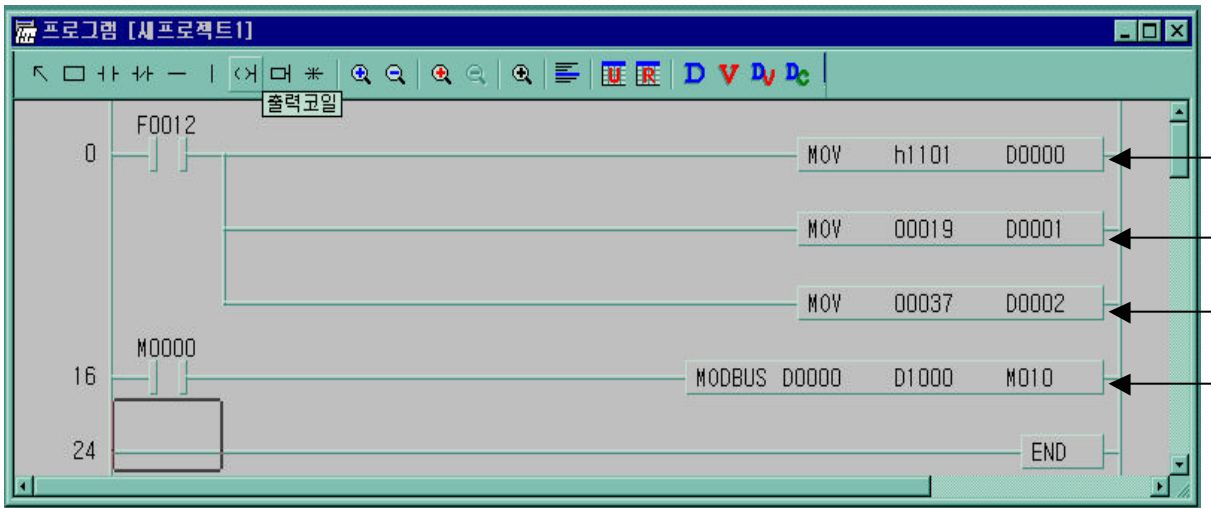
	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
	X	X	X	1	1	0	1	1	0	0	0	0	1	1	1	0	1	0	1	1
	1			B				0				E				B				
	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20
	0	0	1	0	0	1	1	0	1	0	1	1	1	1	0	0	1	1	0	1
	2			6				B				C				D				

57, 58, 59 (Redundancy)

0

1)

1) CD 6B B2 0E 1B



17 = h11 = h01

MODBUS 0 1
20 19

20 56 37
MODBUS
D000 ~ D002 D1000

0

1)

1) CD 6B B2 0E 1B

D1000	h CD 6B
D1001	h B2 CE
D1002	h 00 1B

2

17 (Input) 10197 ~ 10218
가

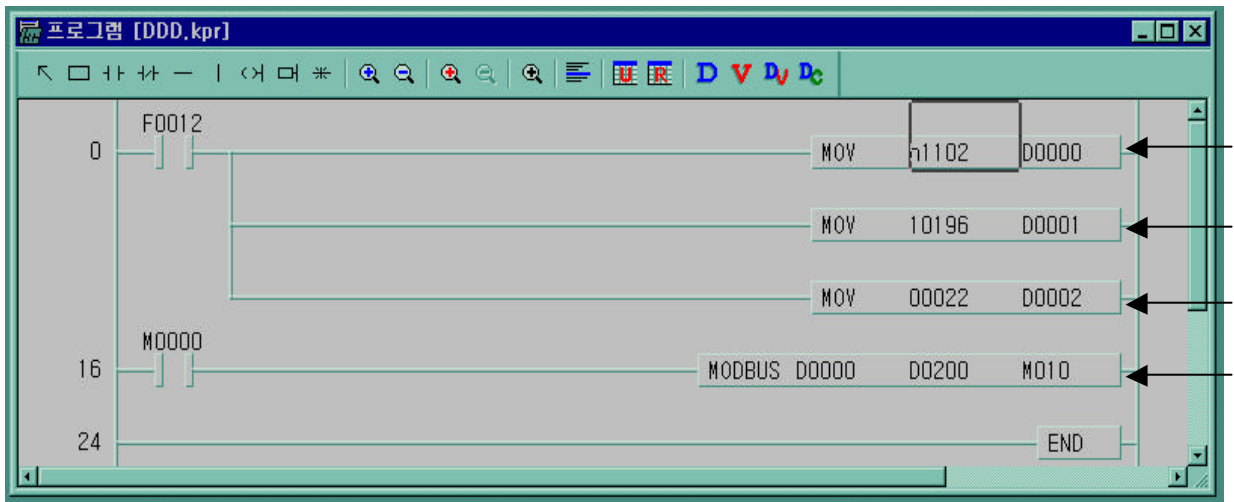
M15

	10220	10219	10218	10217	10216	10215	10214	10213	10212	10211	10210	10209
	X	X	1	1	0	1	0	1	1	1	0	1
	3				5				D			
	10208	10207	10206	10205	10204	10203	10202	10201	10200	10199	10198	10197
	1	0	1	1	1	0	1	0	1	1	0	0
	B				A				C			

● 10219, 10220 (Redundancy)

● 0 1)

AC DB 35



17 = h11 = h02

MODBUS 0 1
10197 10196

10197 10220 22
MODBUS
D000 ~ D002 D200

0 2)

2) AC DB 35

D0200/D0201	h AC DB / h 00 35

9.1

9.1.1

가 .

1)

- (1) 가 .
- (2) 가 .
- (3) .
- (4) .
- (5) 가 0 ~ 55C .
- (6) 가 5 ~ 95% .
- (7) 가 가 가 가 .

2)

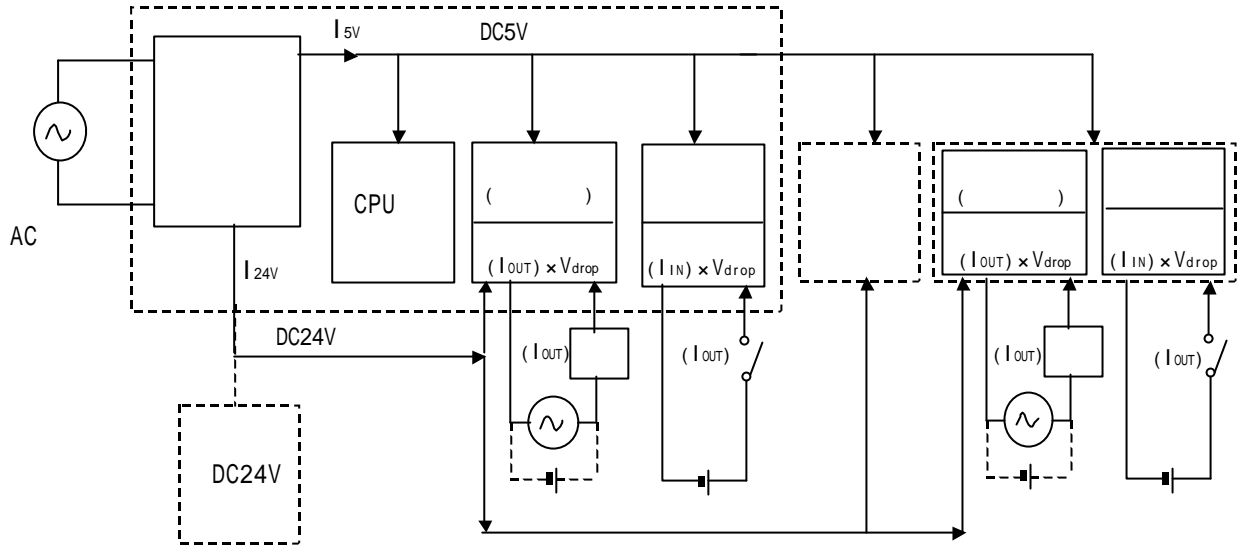
- (1) 가 PLC 가 가
- (2) .
- (3) (Panel) .
- (4) 50mm .
- (5) .

3)

- (1) PLC PLC
- (2) , 가 PLC .

PLC

1) PLC



2)

(1)

MK80S 65% , 35%
 3.5/6.5
 • $W_{pw} = 3.5/6.5 \{ (I_{5V} \times 5) + (I_{24V} \times 24) \}$ (W)
 I_{5V} : DC5V ()
 I_{24V} : DC24V (On)

(2) DC5V

DC5V
 • $W_{5V} = I_{5V} \times 5$ (W)

(3) DC24V

DC24V
 • $W_{24V} = I_{24V} \times 24$ (W)

(4)

(On)
 • $W_{out} = I_{out} \times V_{drop} \times (On)$ (W)
 I_{out} : () (A)
 V_{drop} : (V)

(5)

- $W_{in} = I_{in} \times E \times \text{On} \quad (W)$

$$\left[\begin{array}{l} I_{in} : \quad (\quad) (A) \\ E : \quad (\quad) (V) \end{array} \right.$$

(6)

- $W_s = I_{5V} \times 5 + I_{24V} \times 24 \quad (W)$

PLC

- $W = W_{PW} + W_{5V} + W_{24V} + W_{out} + W_{in} + W_s \quad (W)$

(W)

$$T = W / UA \quad [^{\circ}C]$$

$$\left\{ \begin{array}{l} W : \text{PLC} \\ A : \quad [m^2] \\ U : \end{array} \right. \quad (\quad)$$

..... 6
 4

9.1.2

-
-
-

PCB

가

1)

(1)

가

(2)

(0.18mm²)

AWG24

(3)

가

(4)

DC24V

가

AC

(5)

-

(LED)

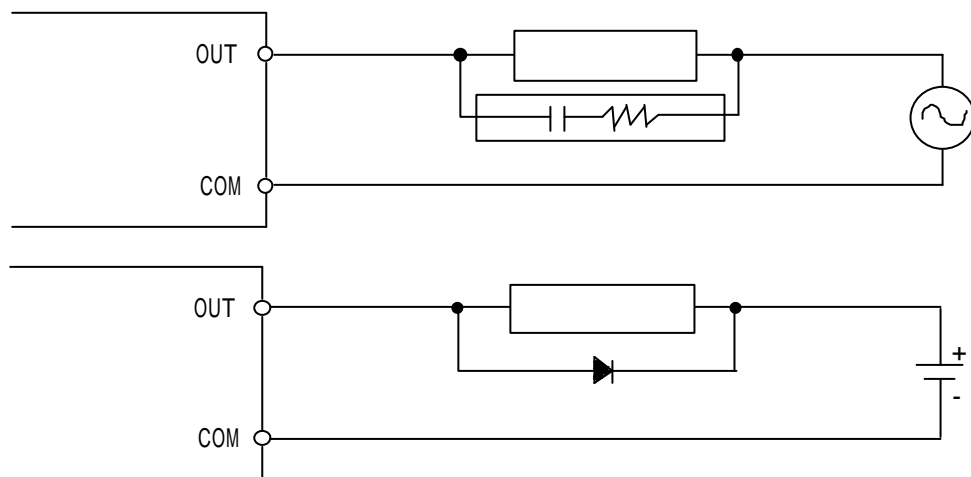
가

(

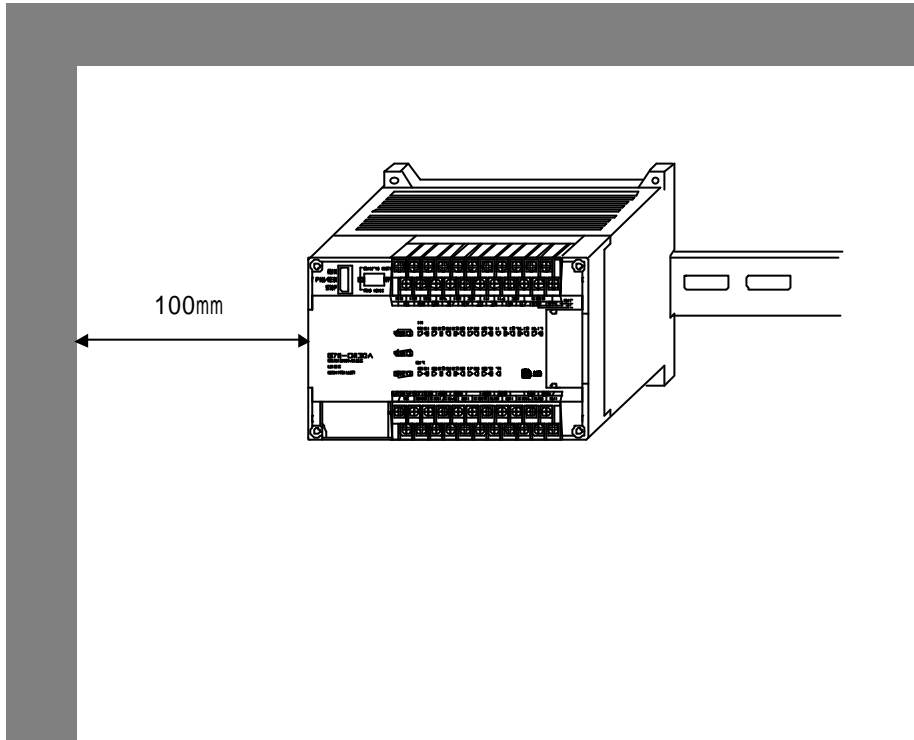
가

(Surge Killer)

+



- (6) 가 가 PLC
- (7) 가 ,PCB
- 2) PLC
- (1) (3) 100mm
- (2) MK80S

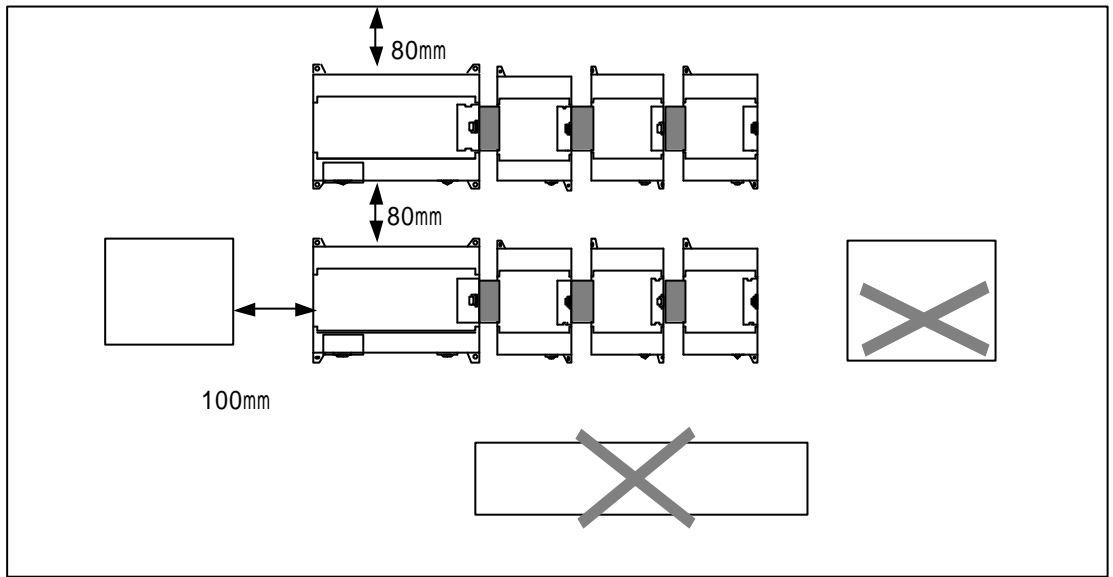


(3) (Panel)

(4) , PLC 가

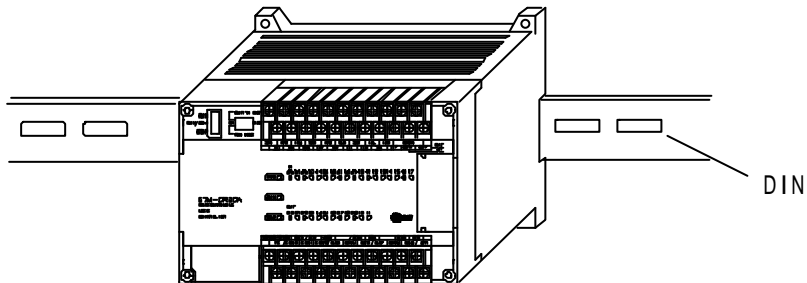
- PLC 50mm
- PLC

(5)) 100mm PLC 가 (100mm



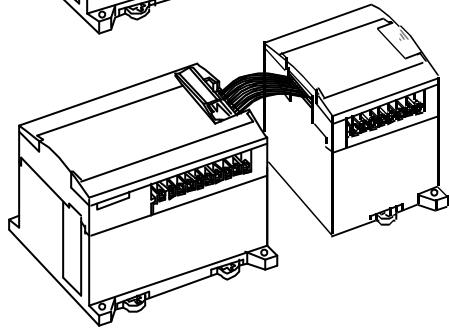
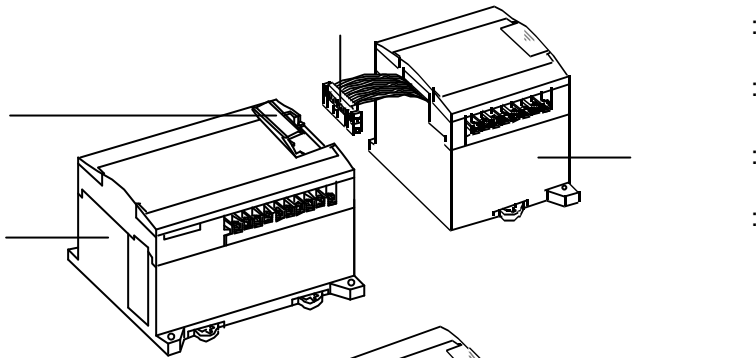
PLC

(6) MK80S DIN 가 가 DIN(35mm) (Hook)

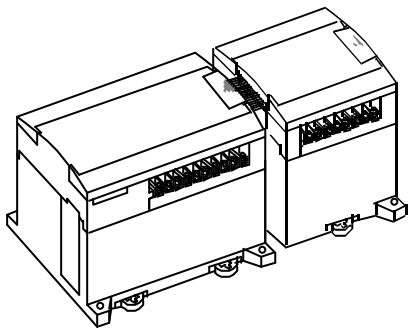


9.1.3

- 1)
- (1)
- (2)



- (3)

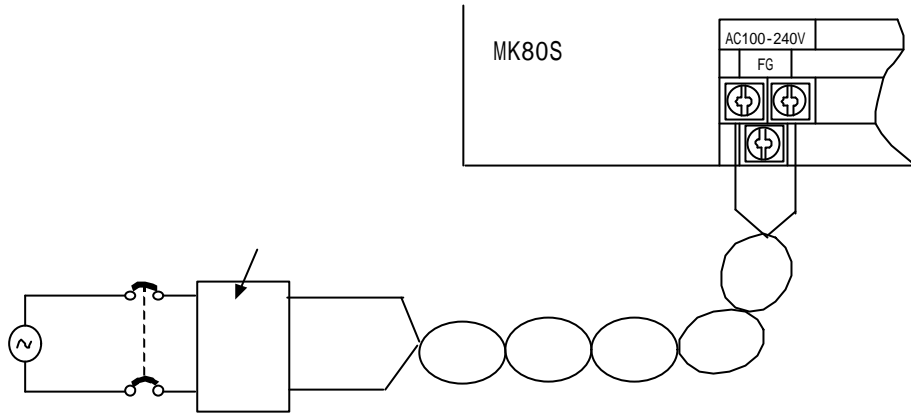


9.2

9.2.1

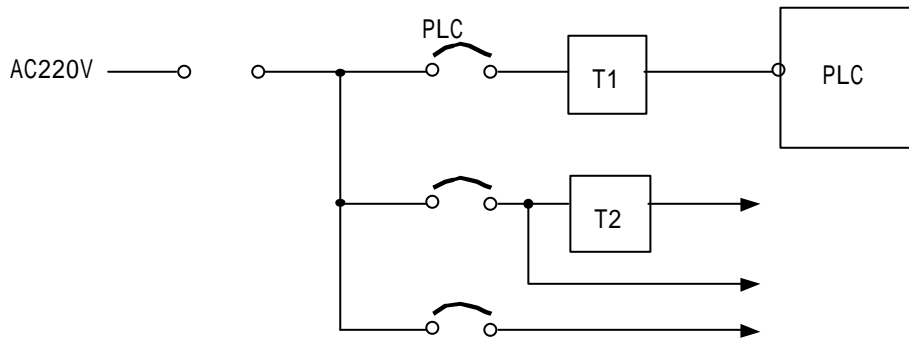
- 1)
- 2)

가



- 3) (가 가 .)

4) PLC



T1, T2:

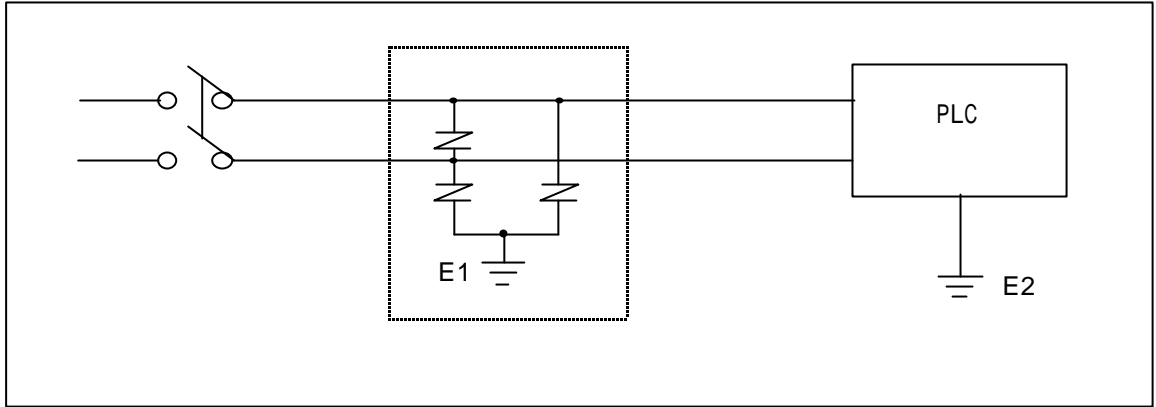
5) AC110/220V

가 (2mm²)

6) AC110/220V , DC24V
 . 가 80mm

(,) ,

7)



1) (E1) PLC (E2)

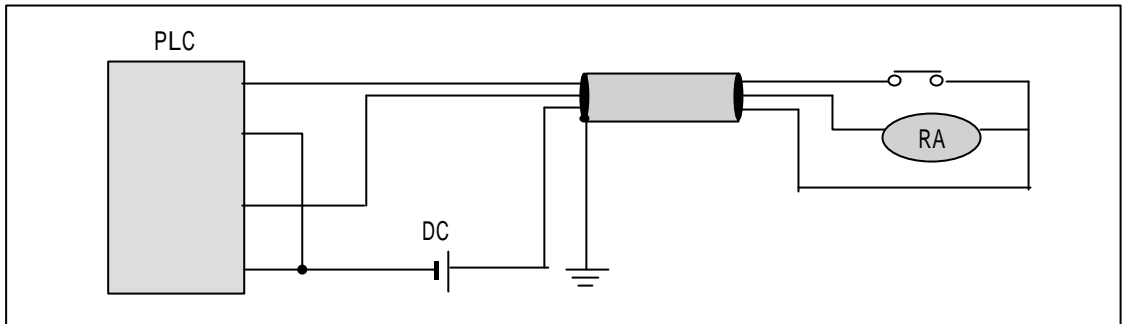
2)

8) 가

9)

9.2.2

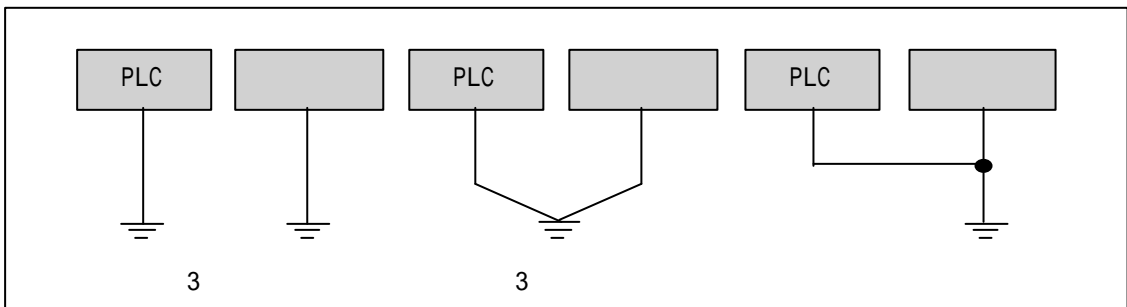
- 1) $0.18 \sim 2 \text{ mm}^2$, (0.5 mm^2)
- 2) .
- 3) 80mm .
- 4) , PLC



- 5) .
- 6) DC24V AC110V AC220V .
- 7) 200m
10 10.4 .

9.2.3

- 1) PLC , 가
- 2) 가 3 (80 Ω) .
- 3))



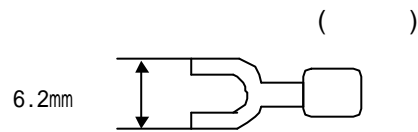
- 가) : 가) :) :
- 4) 2 mm^2 . 가 PLC

9.2.4

	(mm ²)	
	0.18 (AWG24)	1.5 (AWG16)
	0.18 (AWG24)	2.0 (AWG14)
	0.18 (AWG24)	1.5 (AWG16)
	0.18 (AWG24)	1.5 (AWG16)
	1.5 (AWG16)	2.5 (AWG12)
	1.5 (AWG16)	2.5 (AWG12)

MK80S

- M3
- 6 ~ 9 kg·cm
-



10

PLC

10.1

. 6 1~2

		0 ~ + 55C	가
		5 ~ 95%RH	
		- 15% / +10%	

10.2

LED	PWR LED		()	11
	Run LED	Run	()	11
	ERR LED	Run		11
	LED	,	On Off	11
	LED	,	On Off	11

10.3

6 1~2

		/ 가	0 ~ 55°C	()
			5 ~ 95%RH	
			가 가	
PLC	,	.		
	,			
			*AC : AC85 ~ 264V *DC : DC20 ~ 28V	
		,	• 가 • 가	가
			•	가

11.1

가 가

1)

- 가 (,)
- 가 (,)
- (POWER LED, Run LED, ERR. LED, LED)
- PLC

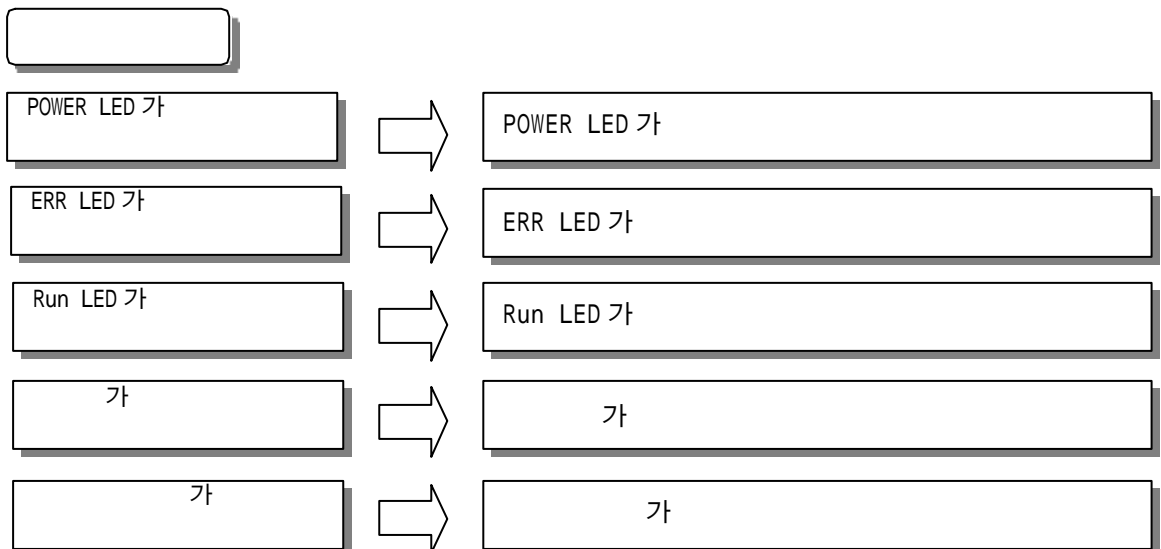
2)

- Stop 가 On / Off

3)

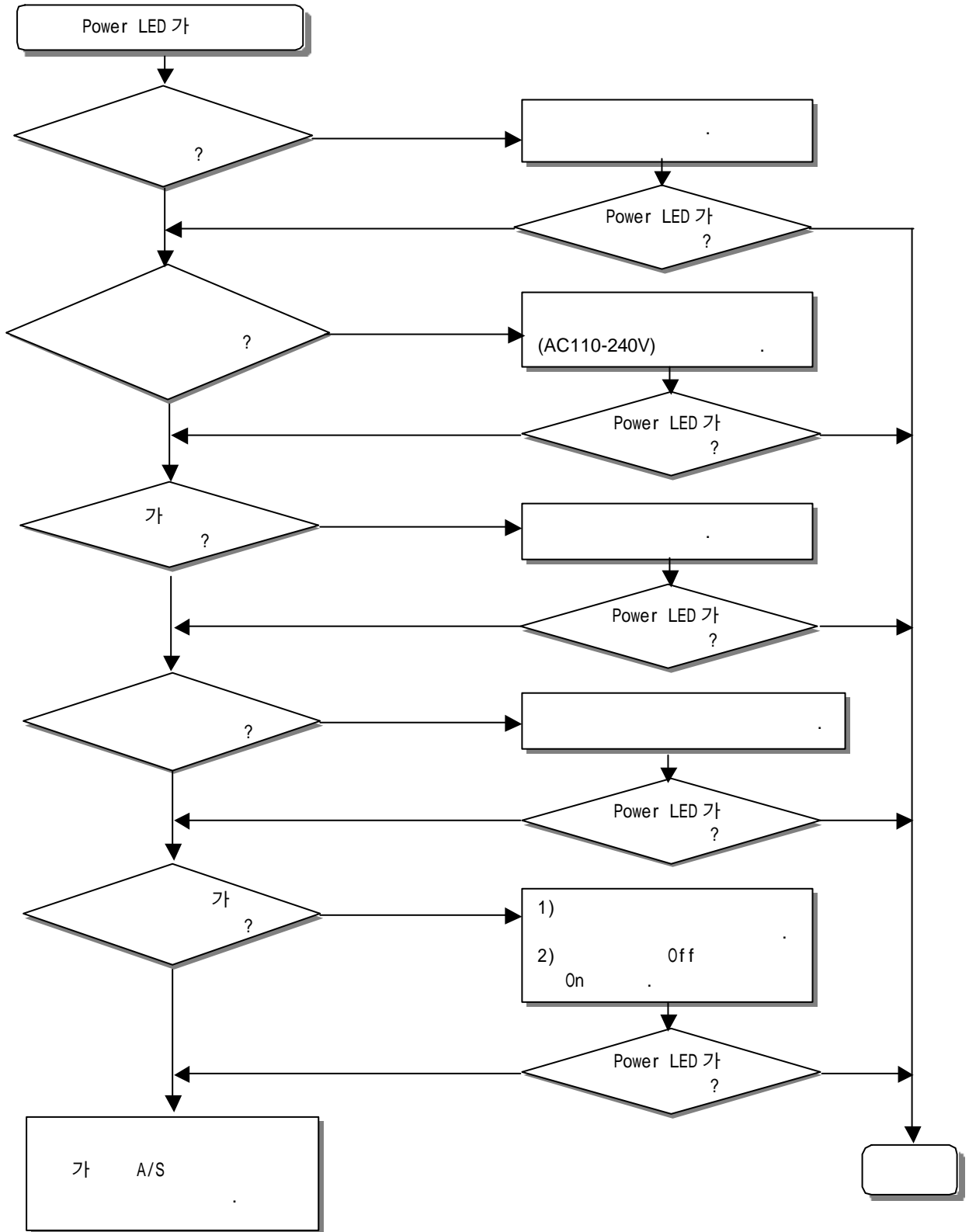
- PLC 가? 가?
- 가? 가?
- PLC 가?

11.2



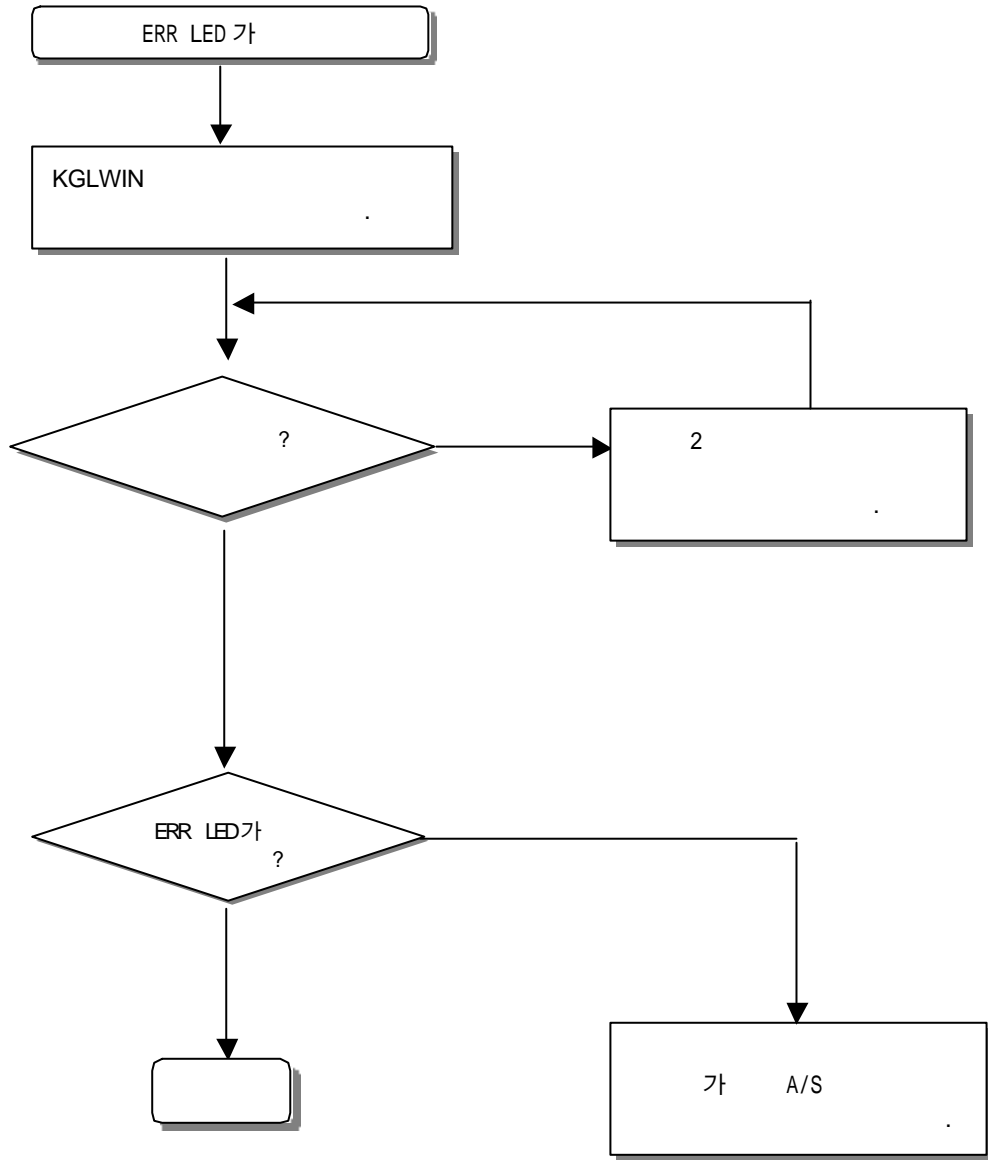
11.2.1 POWER LED 가

Power LED 가



11.2.2 ERR LED 가

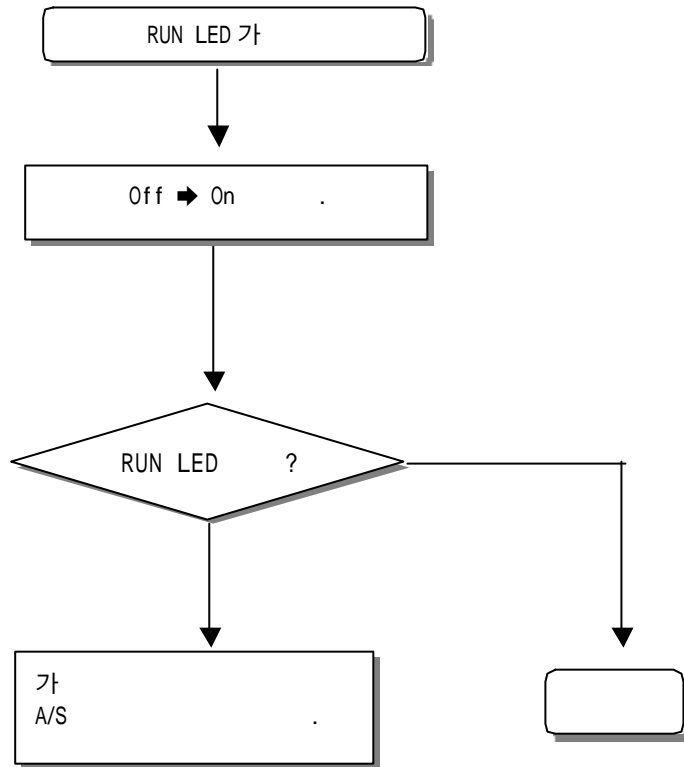
ERR LED 가



1) 가 PLC

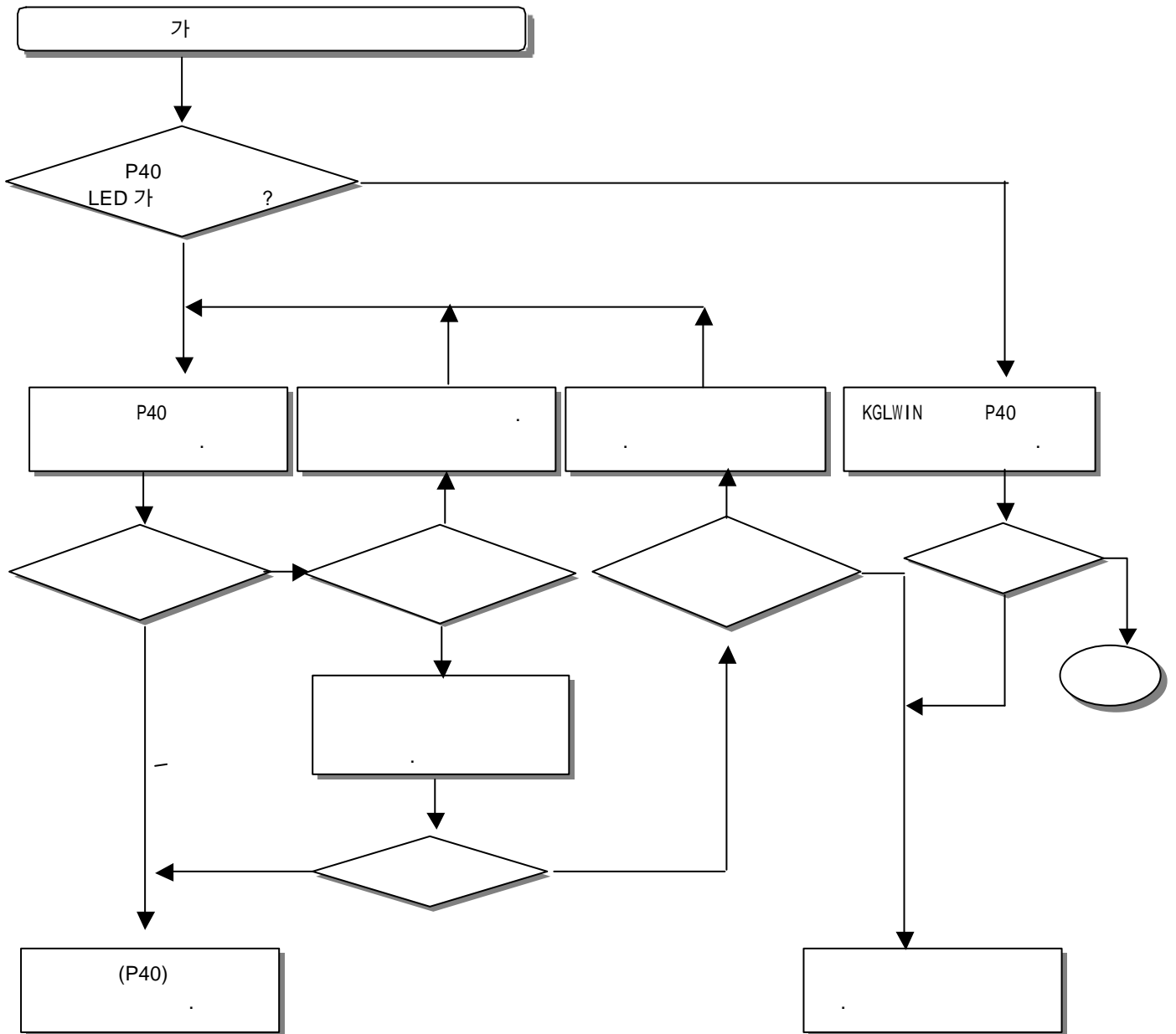
11.2.3 RUN LED 가

RUN LED 가



11.2.4 가

가

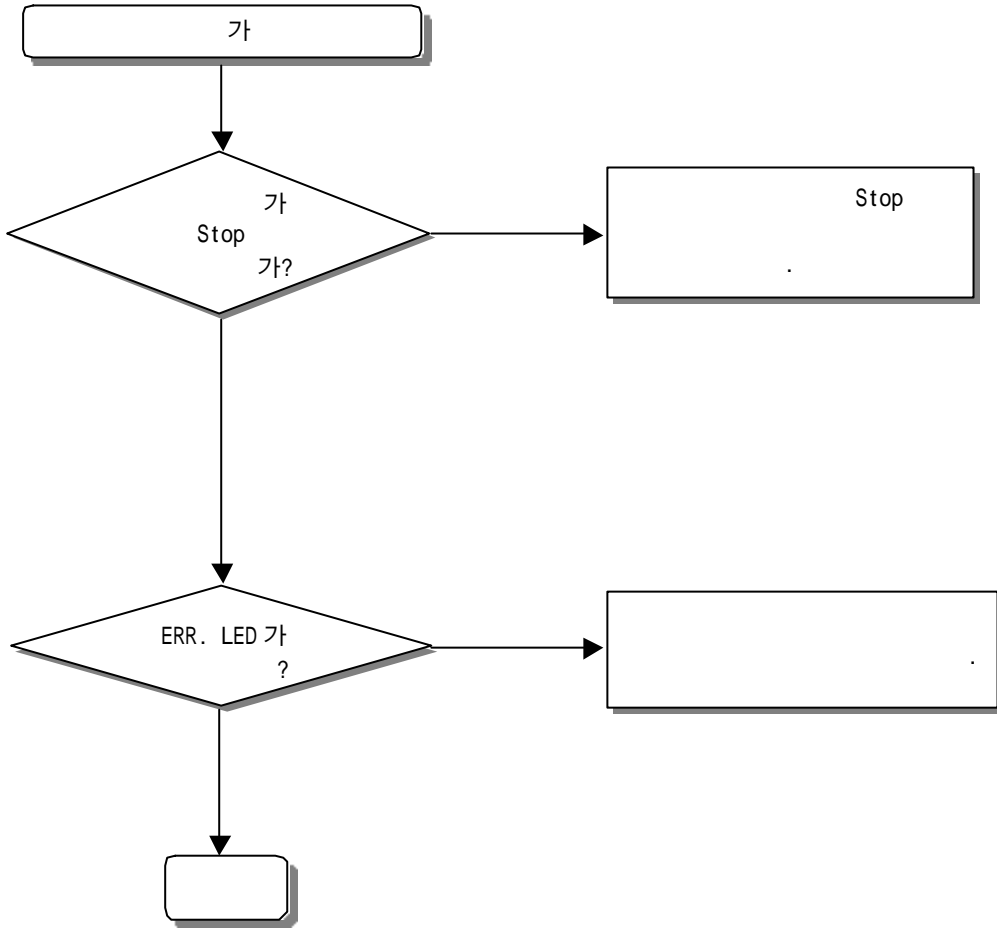


11.2.5

가

CPU

가



11.3

MK80S

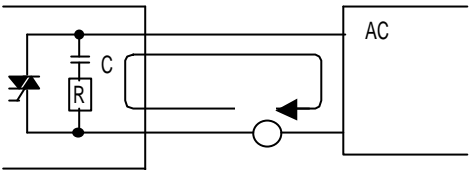
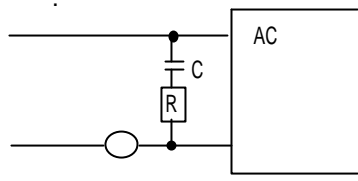
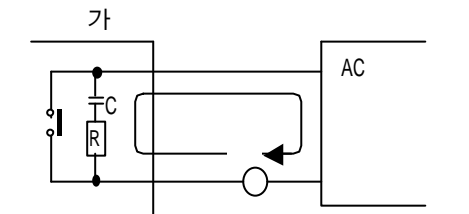
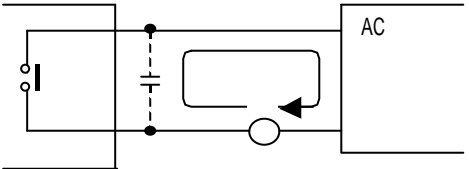
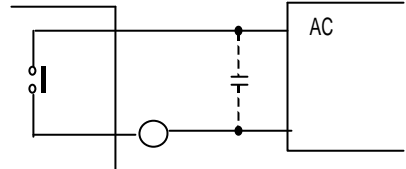
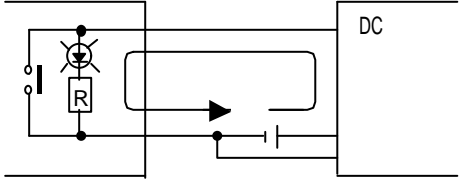
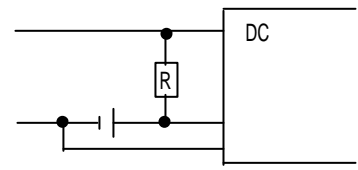
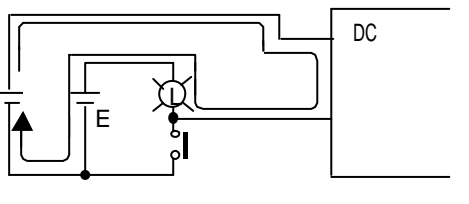
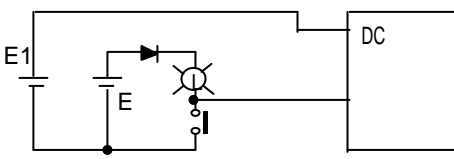
, A/S

FAX

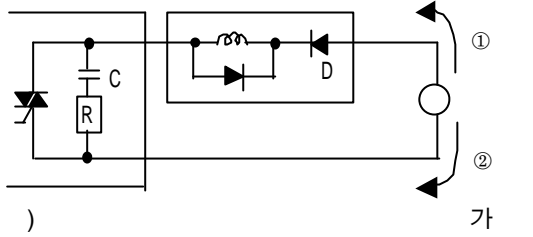
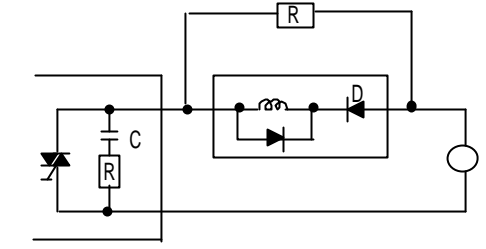
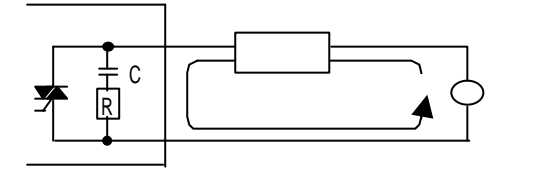
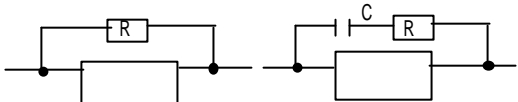
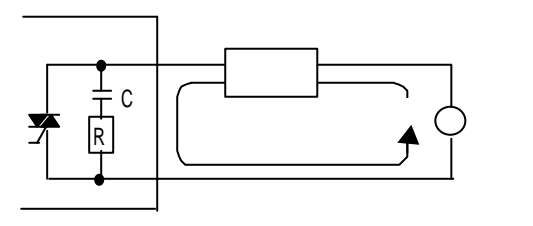
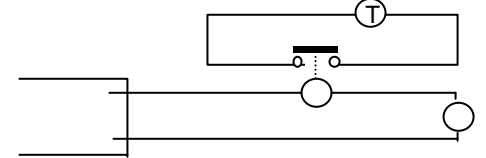
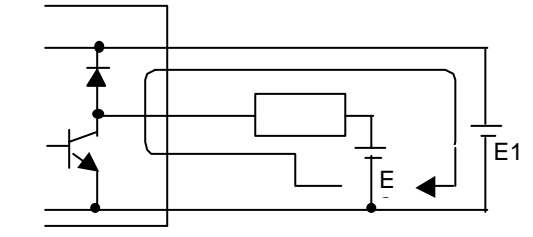
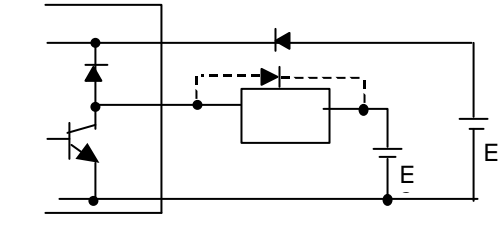
- , .
- 1. :) _____
FAX) _____
- 2. : ()
- 3. - OS (), - ()
- KGLWIN : ()
- 4. :
- 5. :
- (), - KGLWIN ()
- ()
- 6. ERR LED ? Yes(), No()
- 7. KGLWIN :
- 8. : ()
- 9. 7 :
- 10. :
- 11.
 - () : (), ()
 - () : :
- 12. :
- 13. :

11.4

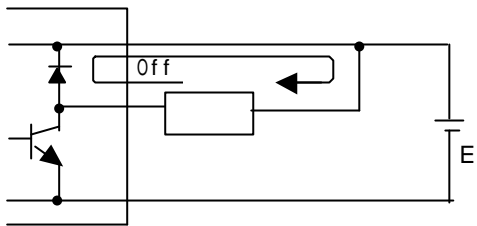
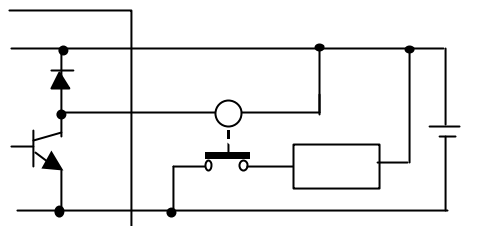
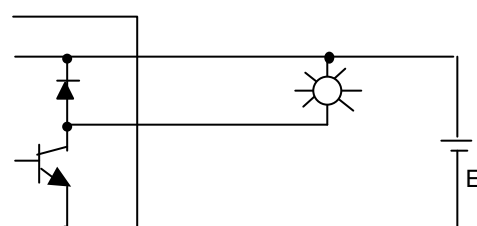
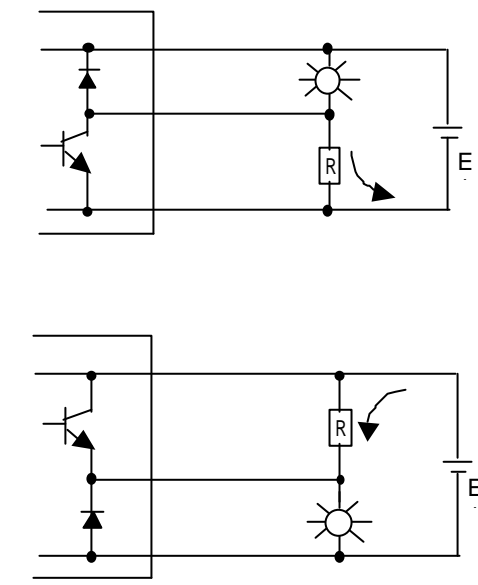
11.4.1

<p>Off 가</p>	<p>()</p> 	
<p>Off 가 (가)</p>	<p>(가)</p> 	<ul style="list-style-type: none"> • CR - C : 0.1 ~ 0.47μF R : 47 ~ 120Ω (1/2W)
<p>Off 가</p>		
<p>Off 가</p>	<p>(LED)</p> 	<p>Off</p> 
<p>Off 가</p>	 <ul style="list-style-type: none"> • E1 > E2 	 <p>()</p>

11.4.2

<p>Off 가</p>	<ul style="list-style-type: none"> 가 () ① C 가 ② C 가 (D) 가 $2\sqrt{2}$ 가 	<ul style="list-style-type: none"> $k\Omega \sim k\Omega$ 
<p>가 Off</p>	<ul style="list-style-type: none"> 가 	<ul style="list-style-type: none"> $k\Omega$ CR 가 가 
<p>가 C-R</p>	<ul style="list-style-type: none"> 가 	<ul style="list-style-type: none"> C-R C-R 가 가 
<p>가 Off ()</p>	<ul style="list-style-type: none"> 2 $E_1 < E_2$ E_1 Off (E_2 On) 	<ul style="list-style-type: none"> () 가 가 

()

<p>Off</p>	<p>• Off [(L/R)]</p>  <p>• Off 가 1</p>	<p>가</p> 
<p>가</p>	 <p>가 10 가</p>	<p>• 1/3 ~ 1/5</p> 

11.5

	Message	(F006)	CPU		
		h0001		ROM H/W	A/S
OS RAM	OS RAM	h0002		ROM	A/S
OS RAM	OS RAM	h0003		ROM	A/S
RAM	RAM	h0004		RAM	A/S
RAM		h0005		RAM	A/S
Gate Array	G/A	h0006		G/A 가	A/S
Sub Rack Power Down	Sub Power	h0007		Rack Power 가 Down	Rack Power
OS WDT	OS WDT	h0008		CPU OS Watch Dog Timer	Power Off A/S
RAM	Common RAM	h0009		RAM I/F	A/S
Fuse Break	I/O Fuse	h000A	()	가	LED
Instruction	OP	h000B		CPU 가 가 ()	A/S
Flash	User Memory	h000C		Flash 가 Read, Write	Flash
I/O	I/O	h0010		① I/O ② I/O 가	① ② I/O
Maximum I/O	Max I/O	h0011		I/O 가 I/O Number (Fmm ,Mini Map , ...	I/O Unit
Special Card Interface	Special I/F	h0012		Card Interface	A/S
Fmm 0 I/F	Fmm 0 I/F	h0013		Fmm 0 I/F	A/S
Fmm 1 I/F	Fmm 1 I/F	h0014		Fmm 1 I/F	A/S
Fmm 2 I/F	Fmm 2 I/F	h0015		Fmm 2 I/F	A/S
Fmm 3 I/F	Fmm 3 I/F	h0016		Fmm 3 I/F	A/S

	Message	(F006)	CPU		
		h0020		-Sum	
I/O	I/O	h0021		RUN I/O 가 I/O	I/O
Maximum I/O	I/O	h0022		I/O I/O 가 I/O	
Fmm 0	Fmm 0 Para	h0023		Fmm 0	
Fmm 1	Fmm 1 Para	h0024		Fmm 1	
Fmm 2	Fmm 2 Para	h0025		Fmm 2	
Fmm 3	Fmm 3 Para	h0026		Fmm 3	
Operation	Operation	h0030	()	· BCD 0~ Digit 가 · Operand	Step
WDT	WDT	h0031		watch dog	
RUN Change	PGM Change	h0032		RUN Change	RUN 가
Change	PGM Change	h0033			
		h0040		CPU 가 가	Step
Missing END	Miss END	h0041		END	END

	Message	(F006)	CPU		
Missing RET	Miss RET	h0042		RET	RET
Missing SBRT	Miss SBRT	h0043		CALL RET	Subroutine
JMP ~ JME	JMP(E)	h0044		JMP ~ JME	JMP ~ JME
FOR ~ NEXT	FOR ~ NEXT	h0045		FOR ~ NEXT	FOR ~ NEXT
MCS ~ MCCLR	MCS ~ MCCLR	h0046		MCS ~ MCCLR	MCS ~ MCCLR
MPUSH ~ MPOP	MPUSH ~ MPOP	h0047		MPUSH ~ MPOP	MPUSH ~ MPOP
Dual Coil	Dual Coil	h0048		Device	Device
Syntax	Syntax	h0049		Load, And(Or) Load	
		h0050		(Back-up)	

1

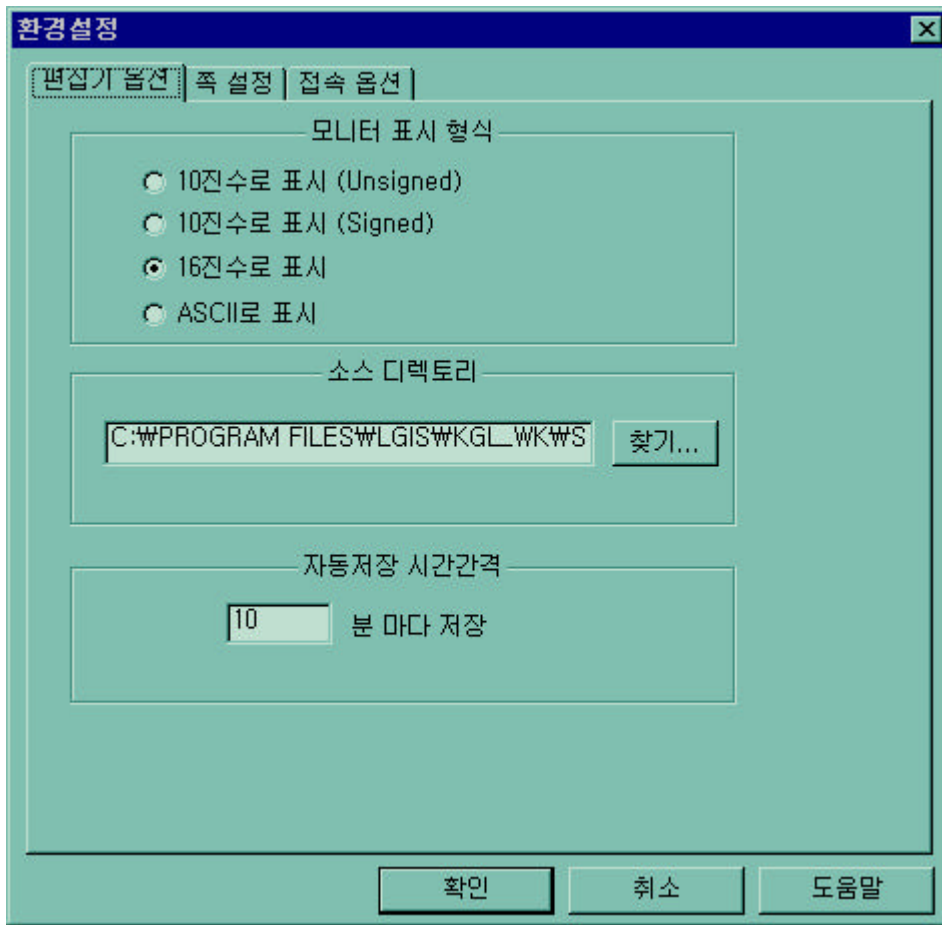
1)

(1)

- PLC KGLWIN (COM1 ~ 4)
- RS-232C 가
- KGLWIN



(2)



‘ASV.’

0 ~ 60

0

:

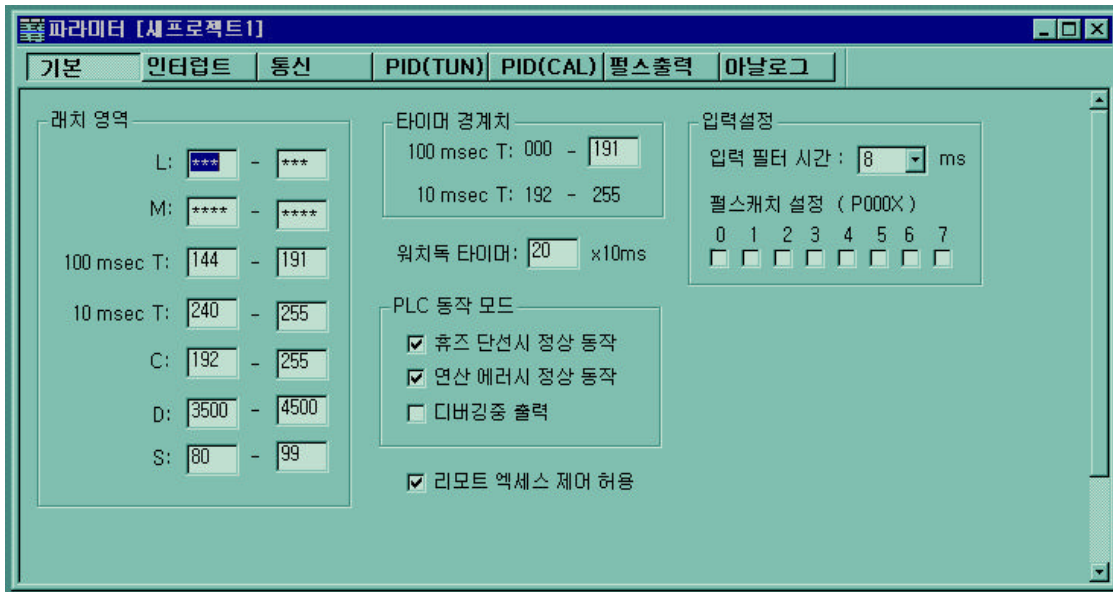
(3)



/ / .

2)

PLC
(Scan Watchdog Time), PLC



(1)

- ()

(2)

- 100ms / 10ms
(100ms 10 ms .)

(3)

- , 1ms , 6,000 ms 가 .

(4)

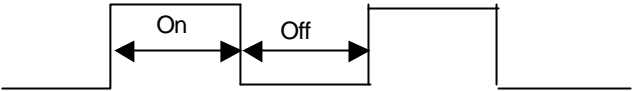
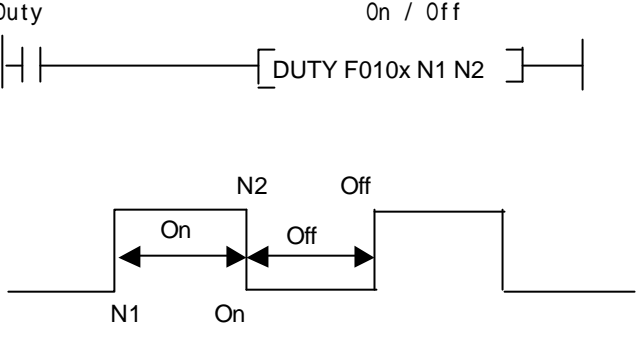
- ,

(5)

- PLC KGLWIN FAM, /
가 .

1) F

F0000	RUN	CPU 가 RUN	On
F0001		CPU 가	On
F0002	Pause	CPU 가 Pause	On
F0003		CPU 가	On
F0006	Remote	CPU 가 Remote	On
F0007	User	User	On
F0008 ~ F0009			
F000A	User	User	On
F000B ~ F000E			
F000F	STOP	STOP	On
F0010	On	On	
F0011	Off	Off	
F0012	1 On	1 On	
F0013	1 Off	1 Off	
F0014			
F0015 ~ F001F			
F0020	1 RUN	1 RUN	On
F0021	Break Point RUN	Break Point RUN	On
F0022	RUN	RUN	On
F0023	RUN	RUN	On
F0024	RUN	RUN	On
F0025 ~ F002F			
F0030			On
F0031			On
F0032	WDT	Watch Dog	On
F0033	I / O	I / O 가 On	On (F0040 ~ F005F)
F0034			On
F0035 ~ F0038			
F0039			On
F003A		Setting	On(RTC)
F003B		RUN Edit	On
F003C		RUN Edit	On

F003D ~ F003F		
F0040 ~ F005F	I / O	On
F0060 ~ F006F		(2.9)
F0090	20ms Clock	<p>On / Off</p> 
F0091	100ms Clock	
F0092	200ms Clock	
F0093	1s Clock	
F0094	2s Clock	
F0095	10s Clock	
F0096	20s Clock	
F0097	60s Clock	
F0098 ~ F009F		
F0100	User Clock 0	<p>Duty On / Off</p> 
F0101	User Clock 1	
F0102	User Clock 2	
F0103	User Clock 3	
F0104	User Clock 4	
F0105	User Clock 5	
F0106	User Clock 6	
F0107	User Clock 7	
F0108 ~ F010F		
F0110		On
F0111		가" 0" On
F0112		가 On
F0113	Off	OUTPUT On
F0115	()	On()
F0116 ~ F011F		
F0120	LT	CAP $S_1 < S_2$ On
F0121	LTE	CAP $S_1 \leq S_2$ On
F0122	EQU	CAP $S_1 = S_2$ On
F0123	GT	CAP $S_1 > S_2$ On
F0124	GTE	CAP $S_1 \geq S_2$ On
F0125	NEQ	CMP $S_1 \neq S_2$ On

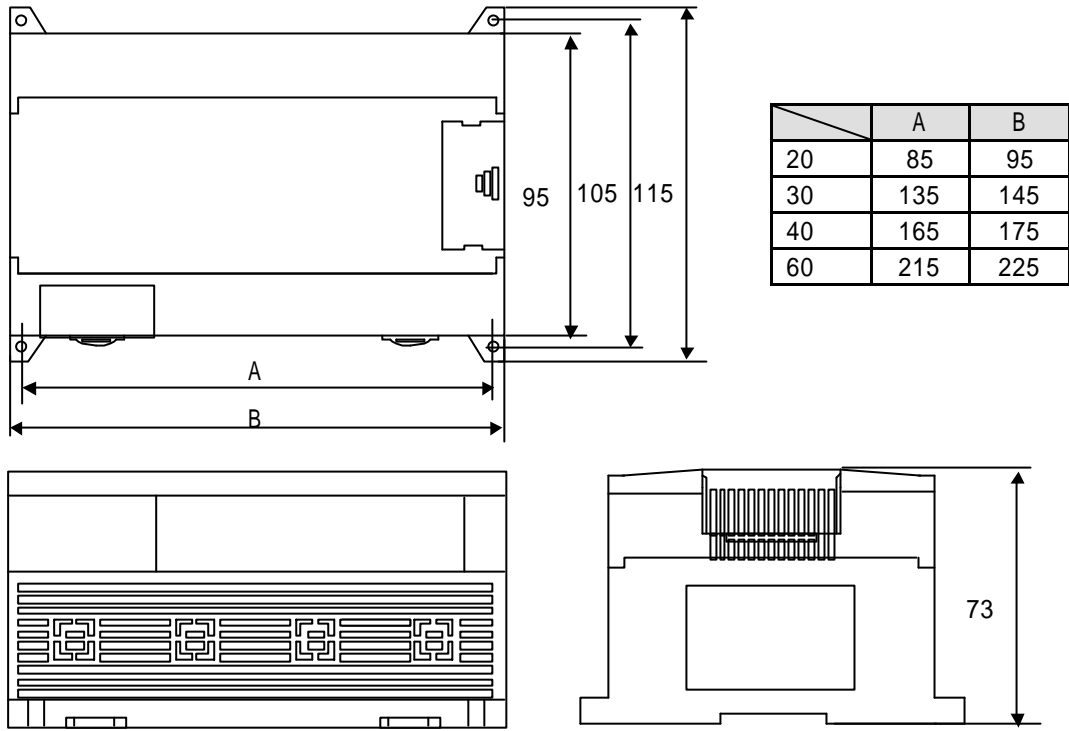
F0125	NEQ	CMP $S_1 \neq S_2$ On
F0126 ~ F012F		
F0130 ~ F013F	AC Down Count	AC Down Count
F0140 ~ F014F	FALS	FALS
F150 ~ F16F		
F170		HSC 가 On
F171	Carry	가 On
F0172 ~ F017F		
F0180 ~ F019F		(HSC)
F0200 ~ F049F		
F210		PLSOUT On
F211		PLSOUT On
F0500 ~ F050F		
F0510 ~ F051F		
F0520 ~ F052F		
F0530 ~ F053F	(/)	(/) (RTC)
F0540 ~ F054F	(/)	(/) (RTC)
F0550 ~ F055F	(/)	(/) (RTC)
F0560 ~ F056F	(/)	(/) (RTC)
F0570 ~ F058F		
F0590 ~ F059F		
F0600 ~ F063F		

2) M

M1904		On RTC Write
M1910	I / O	I / O I/O

3. (: mm)

1)



2)

