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1. Communication Specifications

Items	Specifications
Communication Interface	RS-232C
Communication Port	RS-232C Port
Communication method	Half-Duplex system
Synchronous method	Asynchronous Method(Start, Stop system)
Characters	Data bit → 8 bits Parity bit → No Stop bit → 1 bit
Error check	BCC Check (Block Check Character) * Large character: For reading/writing /monitoring data without BCC * Small character:: For reading/writing/monitoring data with BCC
Control signal	ASCII Code
Communication Speed	9600 Baud rate
Communication Distance	Max. 15 meter
Connection	K30H/50H/60H/100S/200H : Connecting 9pin port of CPU module with PC K10S : Connecting 6pin port of Main board with PC K500H/K1000H : Connecting 25pin port of CPU module with PC

◆ Master-K Series

There are 4 kinds of different communication protocols and addresses
for Master-K series.

① For Master-K30H/50H
② For Master-K60H/200H
③ For Master-K10S/100S
④ For Master-K500H/1000H

◆ Absolute address(For **K10S/K30H/50H/60H/100S/200H**)

The data for RS-232C communication should be converted to Hex code of absolute address.
In case of K500H/K1000H, they don't need to convert the address of memory map to absolute address.
You can just use the address of memory map of **K500H/K1000H**(Refer to page 9).

◆ RS-232C/RS-422 Communication

① RS-485 : **K10S/K100S**

② RS422 : **K500H, K1000H**

③ RS-232C : K10S, K100S, K500H, K1000H, **K30H, K50H, K60H, K200H**

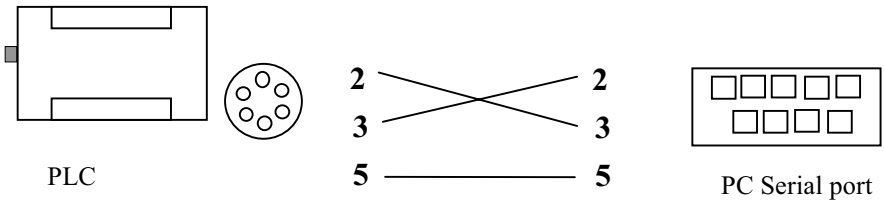
◆ There are two kinds of data sizes for communication of Master- K Series.

① K10S(for RS232C), K30H, K50H : 8bits (byte unit)

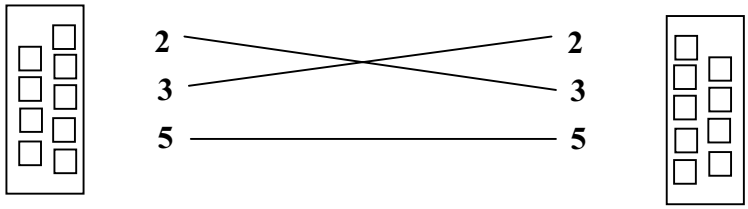
② K10S(for RS485), K60H, K100S, K200H, K500H, K1000H : 16bits(word unit)

◆ Specification of cable for communication (Connecting PLC with Computer)

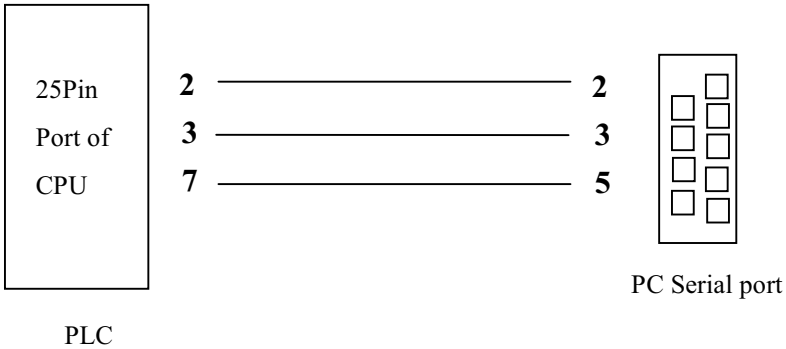
①K10S - PC



② K30H, K50H, K60H, K100S, K200H



③ K500H, K1000H



2. Memory Map

2.1. Memory Map of K30H/K50H

Absolute Address	Area	Command for use
(8C00H ~ 8CFFH)	(Area of High speed Counter)	Read/ Write
9000H ~ 900FH	M area(M00 ~ M15)	Read/ Write
9100H ~ 910FH	M area(M16 ~ M31)	Read/ Write
9200H ~ 920FH	M area(M32 ~ M47)	Read/ Write
9300H ~ 930FH	M area(M48 ~ M63)	Read/ Write
9400H ~ 940FH	K area(K00 ~ K15)	Read/ Write
9500H ~ 950FH	K area(K16 ~ K31)	Read/ Write
9600H ~ 960FH	Timer area (Contact)	Read/ Write
9700H ~ 970FH	Counter area (Contact)	Read/ Write
9800H ~ 980FH	F area	Read
9900H ~ 990FH	P area	Read/ Write
9A00H ~ 9AFFH	D area	Read/ Write
9B00H ~ 9BFFH	Current area of Timer	Read/ Write
9C00H ~ 9CFFH	Current area of Counter	Read/ Write
9D00H ~ 9D1FH	Step controller area(S00 ~ D31)	Read/ Write
9E00H ~ 9EFFH	Setting area of Timer	Read
9F00H ~ 9FFFH	Setting area of Counter	Read

Example)

2.1.1. P, M, K area

Absolute address	Area								Card
H9900	P007	P006	P005	P004	P003	P002	P001	P000	P00
H9901	P017	P016	P015	P014	P013	P012	P011	P010	P01
H9902	P027	P026	P025	P024	P023	P022	P021	P020	P02
H9903	P037	P036	P035	P034	P033	P032	P031	P030	P03
•	•								
•	•								
•	•								
H9905	P057	P056	P055	P054	P053	P052	P051	P050	P05

2.1.2 Timer, Counter area

Absolute address	Area	Card
H9B00	Low byte data of Timer T000	T000
H9B01	Upper byte data of Timer T000	
H9B02	Low byte data of Timer T001	T001
H9B03	Upper byte data of Timer T001	
H9B04	Low byte data of Timer T002	T002
H9B05	Upper byte data of Timer T002	
•	MSB • LSB	•
•	•	•
•	•	•

- MSB:16th bit(Most Significant Bit)
- LSB: 1st bit(Least Significant Bit)

2.2 Memory Map of K60H/K200H

Absolute Address	Area	Command for use
B000H ~ B7FFH	D0000 ~ D1023(1,024 Words)	Read/ Write
C000H ~ C07FH	M area(M00 ~ M63)	Read/ Write
C080H ~ C09FH	P area(P00 ~ P15) 256 Points	Read/ Write
C0C0H ~ C0FFH	K area(K00 ~ K31) 512 Points	Read/ Write
C100H ~ C13FH	L area(L00 ~ L15) 256 Points	Read
C140H ~ C15FH	F area(F00 ~ F15) 256 Points	Read/ Write
C180H ~ C19FH	Timer area(T000 ~ T255) 256 Points	Read/ Write
C1A0H ~ C1BFH	Counter area (C000 ~ C255) 256 Points	Read/ Write
C200H ~ C23FH	S area(S00 ~ S63) 64 Words	Read/Write
C800H ~ C9FFH	Current area of Timer	Read/ Write
CA00H ~ C9FFH	Current area of Counter	Read/ Write
CC00H ~ CDFFH	Setting area of Timer	Read
CE00H ~ CFFFH	Setting area of Counter	Read

Example)

2.2.1 P, M, K area

Absolute address	Area								Card
HC080	P007	P006	P005	P004	P003	P002	P001	P000	P00
HC081	P00F	P00E	P00D	P00C	P00B	P00A	P009	P008	
HC082	P017	P016	P015	P014	P013	P012	P011	P010	P01
HC083	P01F	P01E	P01D	P01C	P01B	P01A	P019	P018	
HC084	P027	P026	P025	P024	P023	P022	P021	P020	P02
HC085	P02F	P02E	P02D	P02C	P02B	P02A	P029	P028	
•	•								•
•	•								•
•	•								•

2.2.2. Timer, Counter area

Absolute address	Area	Card
HC800	Low byte data of Timer T000	T000
HC801	Upper byte data of Timer T000	
HC802	Low byte data of Timer T001	T001
HC803	Upper byte data of Timer T001	
HC804	Low byte data of Timer T002	T002
HC805	Upper byte data of Timer T002	
•	MSB • LSB	•
•	•	•
•	•	•

- MSB:16th bit(Most Significant Bit)
  LSB: 1st bit(Least Significant Bit)

2.3 Memory Map of K10S/K100S(for RS-232C)

Absolute Address	Area	Command for use
8000H ~ 803FH	Data program area(32 Words X 16 Points)	Read/ Write
8040H ~ 807FH	M area(32 Words X 16 Points)	Read/ Write
8080H ~ 808FH	P area(8 Words X 16 Points)	Read/ Write
8090H ~ 809FH	P Auxiliary area(8 Words X 16 Points)	Read/ Write
80A0H ~ 80BFH	No use	
80C0H ~ 80DFH	K area(16 Words X 16 Points)	Read/ Write
80E0H ~ 80FFH	K Auxiliary area(16 Words X 16 Points)	Read/ Write
8100H ~ 811FH	L area (16 Words X 16 Points)	Read/ Write
8120H ~ 813FH	L area (16 Words X 16 Points)	Read/Write
8140H ~ 815FH	F area(16 Words X 16 Points)	Read
8160H ~ 817FH	No use	
8180H ~ 818FH	Timer area(16 Words X 16 Points)	Read/ Write
8190H ~ 919FH	No use	
81A0H ~ 81AFH	Counter area (16 Words X 16 Points)	Read/ Write
81B0H ~ 81EFH	Step controller area(S00 ~ S31) 32 Words	Read/ Write
81F0H ~ 81FFH	No use	
8200H ~ 82FFH	Setting area of Timer(128 Words X 2Bytes)	Read
8300H ~ 83FFH	Setting area of Counter(128 Words X 2Bytes)	Read
8400H ~ 84FFH	Current area of Timer(128 Words X 2Bytes)	Read/ Write
8500H ~ 85FFH	Current area of Counter(128 Words X 2Bytes)	Read/ Write
8600H ~ 867FH	Information area for Timer(128 Words X 1Byte)	Read
8680H ~ 86FFH	Information area for Counter(128 Words X 1Byte)	Read
8700H ~ 88FFH	Data Register area(256 Words X 2Bytes)	Read/ Write

Example)

2.3.1. P, M, K area

Absolute address	Area	Card
H8080	P007 P006 P005 P004 P003 P002 P001 P000	P00
H8081	P00F P00E P00D P00C P00B P00A P009 P008	
H8082	P017 P016 P015 P014 P013 P012 P011 P010	P01
H8083	P01F P01E P01D P01C P01B P01A P019 P018	
H8084	P027 P026 P025 P024 P023 P022 P021 P020	P02
H8085	P02F P02E P02D P02C P02B P02A P029 P028	
•	•	•
•	•	•
•	•	•

2.3.2. Timer, Counter area

Absolute address	Area	Card
H8200	Low byte data of Timer T000	T000
H8201	Upper byte data of Timer T000	
H8202	Low byte data of Timer T001	T001
H8203	Upper byte data of Timer T001	
H8204	Low byte data of Timer T002	T002
H8205	Upper byte data of Timer T002	
•	MSB • LSB	•
•	•	•
•	•	•

- MSB:16th bit(Most Significant Bit)
  LSB: 1st bit(Least Significant Bit)

2.4 Memory Map of K10S/K100S(for RS-485)

Device	Area	Remarks
P	P area, P0000 ~ P005F Words	Word and bit data
M	M area, M0000 ~ M031F Words	Word and bit data
L	L area, L0000 ~ L015F Words	Word and bit data
K	K area, K0000 ~ K015F Words	Word and bit data
F	F area, F0000 ~ F015F Words	Word and bit data
T	Timer area(Current value), T0000 ~ T0127 Words	Word data
C	Count area(Current value), C0000 ~ C0127 Words	Word data
D	Data register area, D0000 ~ D0255 Words	Word data
S	Step controller area, S0000 ~ S0031 Words	Word data

2.5. Memory Map of K500H/K1000H

Device	Area	Remarks
P	P area, P0000 ~ P0063 Words	Word and bit data
M	M area, M0000 ~ M0191 Words	Word and bit data
L	L area, L0000 ~ L0063 Words	Word and bit data
K	K area, K0000 ~ K0031 Words	Word and bit data
F	F area, F0000 ~ F0031 Words	Word and bit data
T	Timer area(Current value), T0000 ~ T0255 Words	Word data
C	Count area(Current value), C0000 ~ C0255 Words	Word data
D	Data register area, D0000 ~ D9999 Words	Word data
S	Step controller area, S0000 ~ S0099 Words	Word data

3. Commands

3.1. K10S,K100S(forRS485)/K500H/K1000H

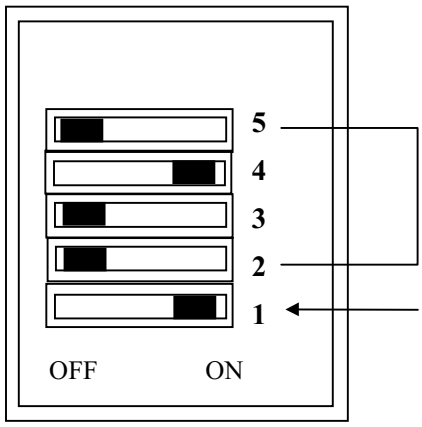
Command	Functions	Available area
R(r)	Word Read	P, M, L, K, F, T, C, D, S
W(w)	Word Write	P, M, L, K, T, C, D, S
G(g)	Bit Read	P, M, L, K, F
H(h)	Bit Write	P, M, L, K
M(m)	Mode Change	R(r): Run mode change S(s): Stop mode change P(p): Pause mode change D(d): Debug mode change
U(u)	Registering Bit Monitor	P, M, L, K, F, T, C Registered Frame:00~0FH Registered Block: 1~40 blocks Monitor data/1Block: 128bits
V(v)	Executing Bit Monitor	P, M, L, K, F, T, C
X(x)	Registering Word Monitor	P, M, L, K, F, T, C, D, S Registered Frame: 0~0FH Registered Block: 1~40 blocks Monitor data/1Block: 64 words
Y(y)	Executing Word Monitor	P, M, L, K, F, T, C, D, S

* Small character: With BCC check * Error : When some data is out of device area.

3.2. K10S,K100S(forRS232C)/K30H/K50H/K60H/K200H

Command	Functions	Available area
G(g)	Byte Read	P, M, L, K, F
H(h)	Byte Write	P, M, L, K
M(m)	Mode Change	01: Run mode change 02: Stop mode change 04): Pause mode change

4. Setting dip switch for K500H/K1000H



* For setting baud rate (9600) of RS-232C

* For selecting RS-232C or RS-422

RS-232C — Baud Rate

	SW1	SW2	SW3	SW4	SW5	Station	Baud Rate	Remarks
RS-232C	**ON**	X	ON	ON	ON	No Station	300	You should **turn** the PLC **off** for restart.
		X	ON	ON	OFF		600	
		X	ON	OFF	ON		1200	
		X	ON	OFF	OFF		2400	
		X	OFF	ON	ON		4800	
		X	OFF	ON	OFF		9600	
		X	OFF	OFF	ON		19000	
		OFF	OFF	OFF	OFF		Reversed	

RS-422 — Station

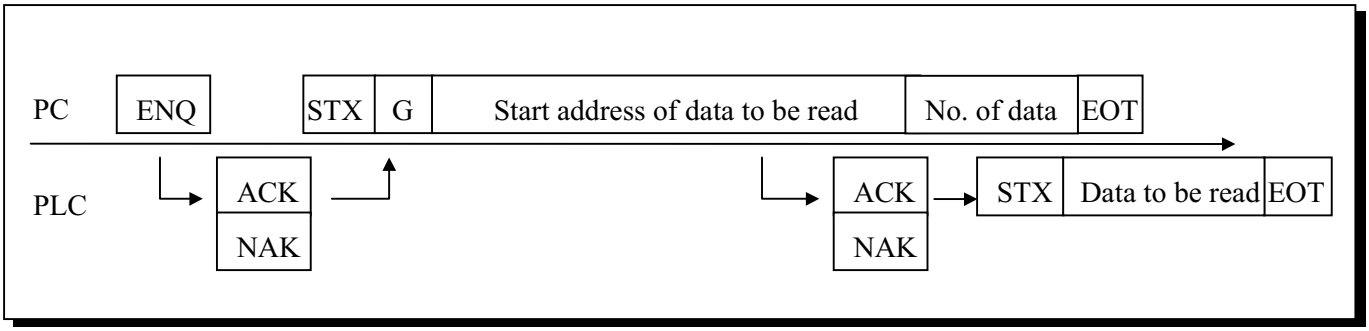
	SW1	SW2	SW3	SW4	SW5	Station	Baud Rate	Remarks
RS-422	**OFF**	ON	ON	ON	ON	0	You can set the baud rate by **parameter** in S/W (KLD203).	You should **turn** the PLC **off** for restart.
		ON	ON	ON	OFF	1		
		ON	ON	OFF	ON	2		
		.	.	.	.	.		
		.	.	.	.	.		
		.	.	.	.	.		
		OFF	OFF	ON	OFF	13		
		OFF	OFF	OFF	ON	14		
		OFF	OFF	OFF	OFF	15		

5. Protocol for Master -K series

5.1. K30H, K50H

5.1.1. Data Read protocol

1. Let's suppose we want to read data 'P01~ P02' (**3 D 0 7**)from K30H.
2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Command

G: For reading data without BCC(Block Check Character)

g: For reading data with BCC(Block Check Character)

5. **Start** address of data to be read : It should be absolute address.

Refer to the memory map of K30H and K50H (page 3)

9	9	0	1

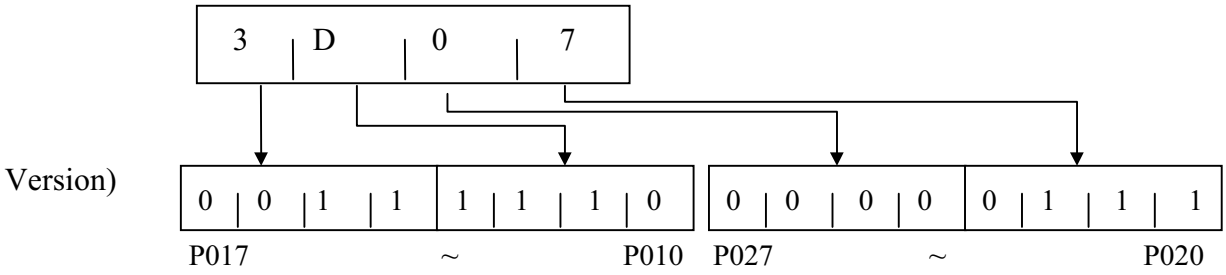
Ex) 9901 → Absolute address of P01 word(P010 ~P017)

6. The number of data to be read

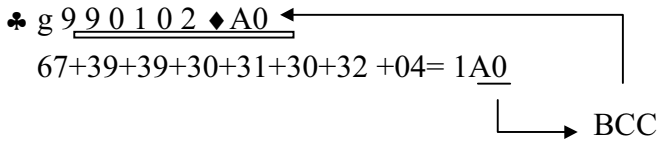
The number means that of bytes (8 bits) to be read.

So, you should write '02' to read data P01 ~P02 (8bits X 2 bytes).

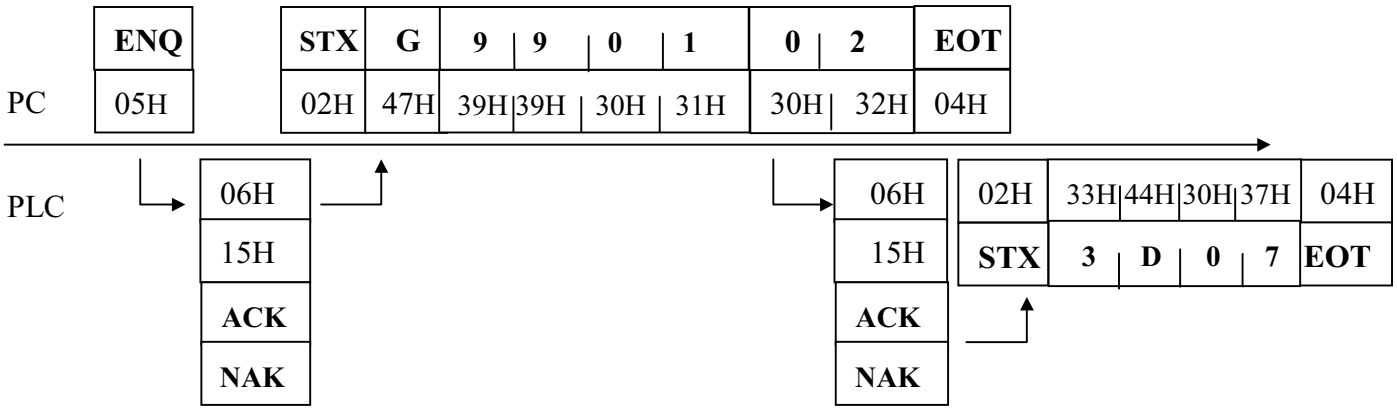
7. Data to be read



8. Example of BCC Check



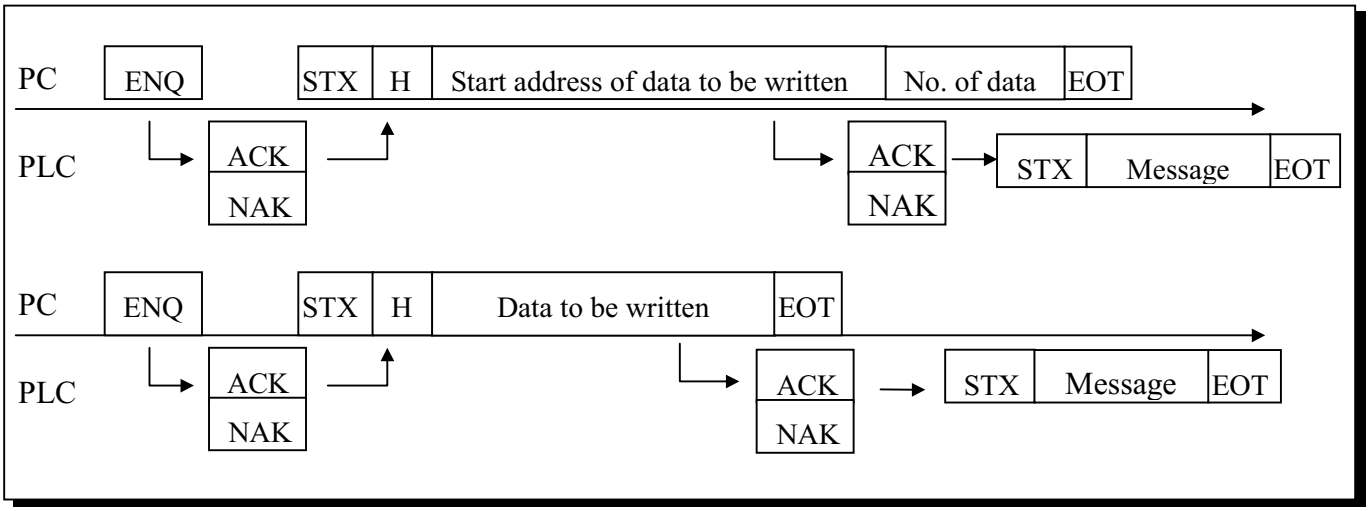
9. Example) To read data 'P01~ P02' from K30H.



5.1.2. Data Write protocol

1. Let's suppose we want to write FFFF to P02 ~ P03(output cards) of K50H.

2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Command

H: For writing data without BCC(Block Check Character)

h: For writing data with BCC(Block Check Character)

5. Start address of data to be written : It should be absolute address.
Refer to the memory map of K30H and K50H (page 3)

9	9	0	2

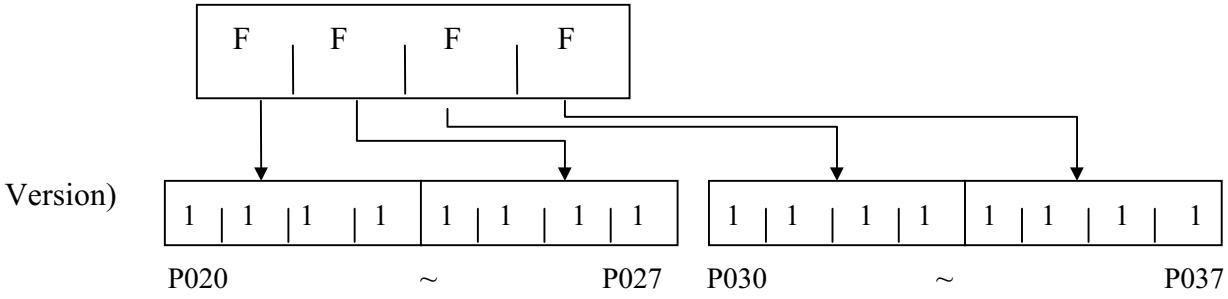
Ex) 9902 -> P02 word(P020 ~P027)

6. The number of data to be written

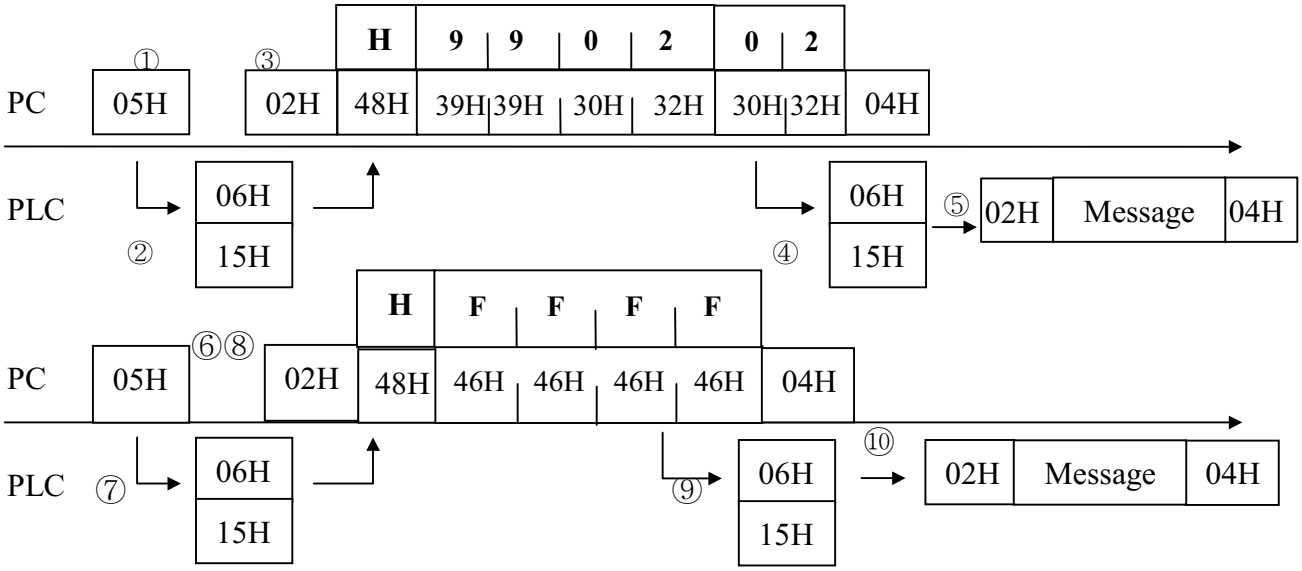
The number means that of byte (8 bits) to be written.

So, you should write ‘02’ to write ‘FFFF’ to the area of ‘P02 ~P03’(8bits X 2 bytes).

7. Data to write



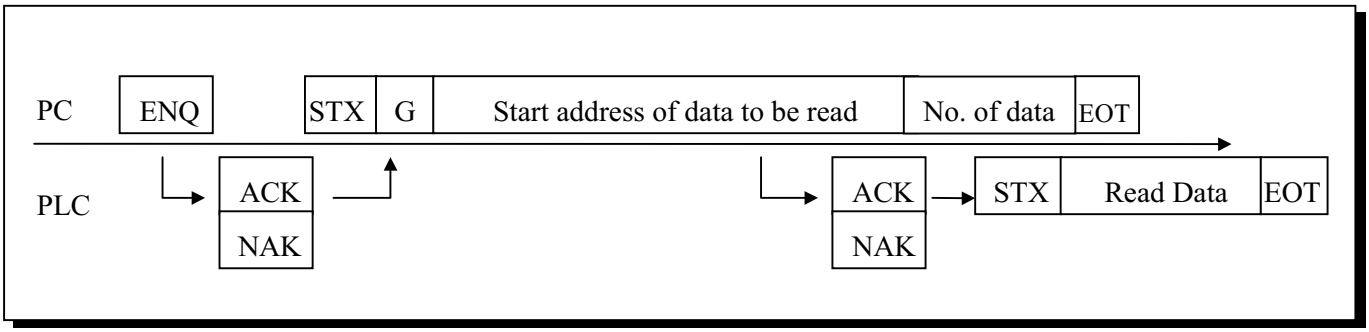
8. Example)



5.2. K60H, K200H

5.2.1. Data Read protocol

1. Let's suppose we want to read data of 'P01~ P02' from K60H.
2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Command

G: For reading data without BCC(Block Check Character)

g: For reading data with BCC(Block Check Character)

5. **Start** address of data to be read : It should be absolute address.
Refer to the memory map of K60H and K200H (page 5)

C	0	8	2

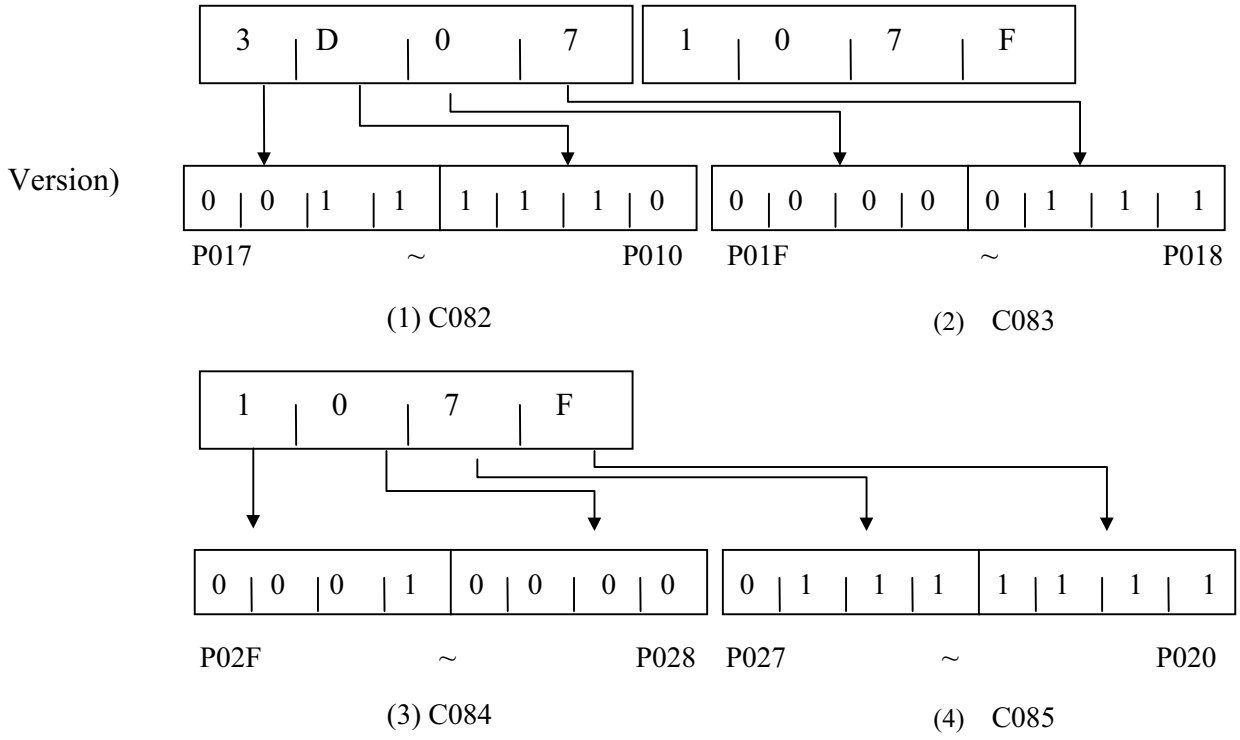
Ex) C0802 → Absolute address of P01 word(P010 ~P017)

6. The number of data to be read

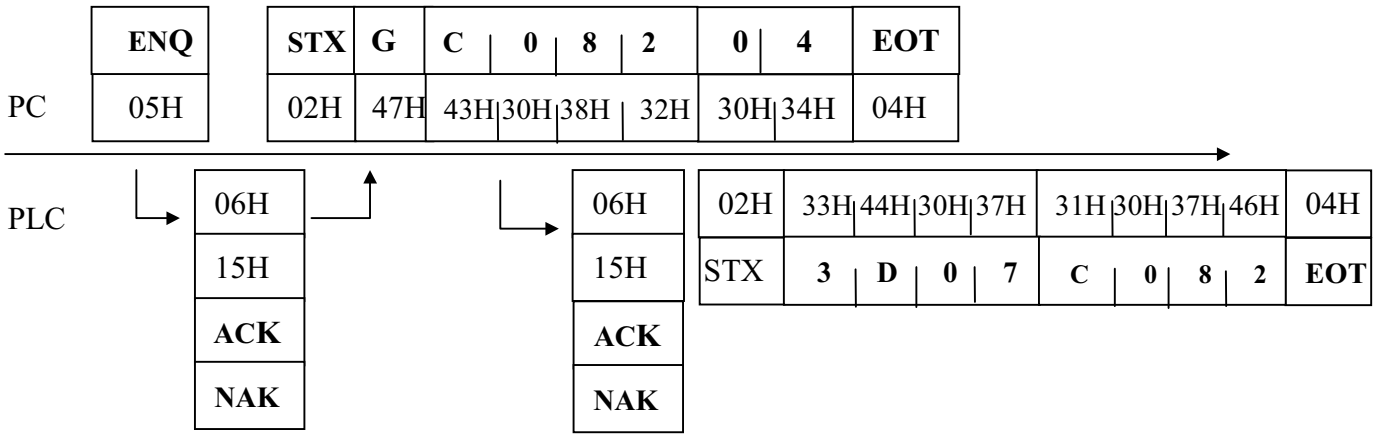
The number means that of bytes (8 bits) to be read.

So, you should write '04' to read data P01 ~P02 (8bits X 4 bytes).

7. Read data



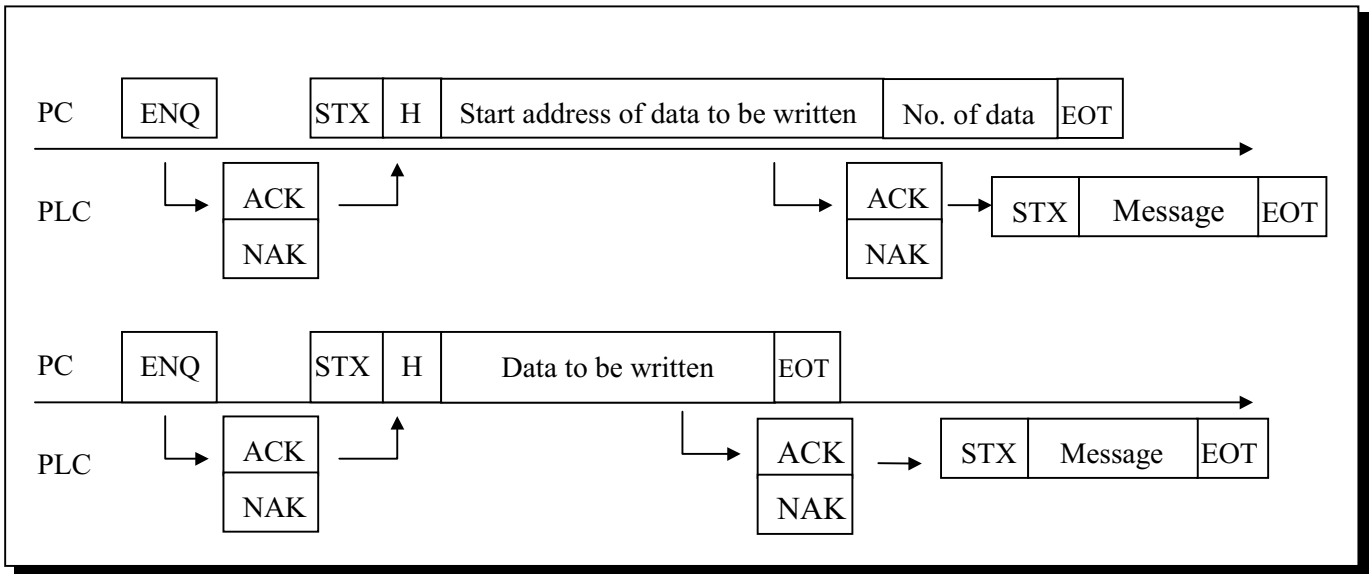
8. Example) To read data of 'P01~ P02' from K60H.



5.2.2. Data Write protocol

1. Let's suppose we want to write FFFF to P02 (output card) of K60H.

2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Command

H: For writing data without BCC(Block Check Character)

h: For writing data with BCC(Block Check Character)

5. **Start** address of data to be written : It should be absolute address.
Refer to the memory map of K60H and K200H (page 5)

C	0	8	4

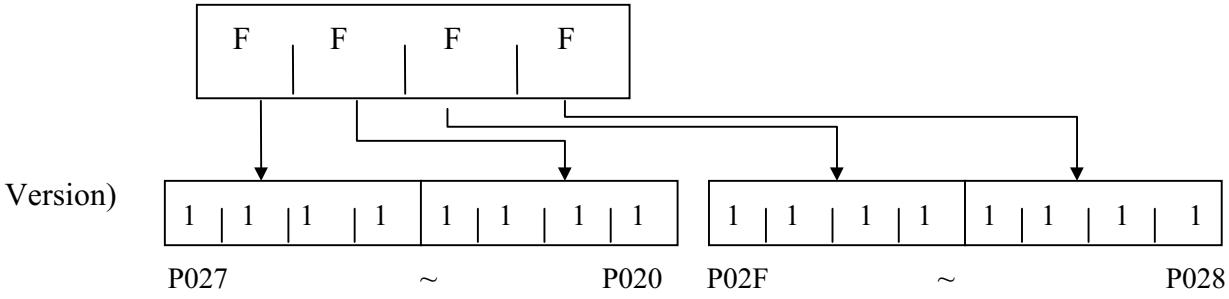
Ex) C084 ->**Upper** address of P02 word(P020 ~P027)

6. The number of data to be written

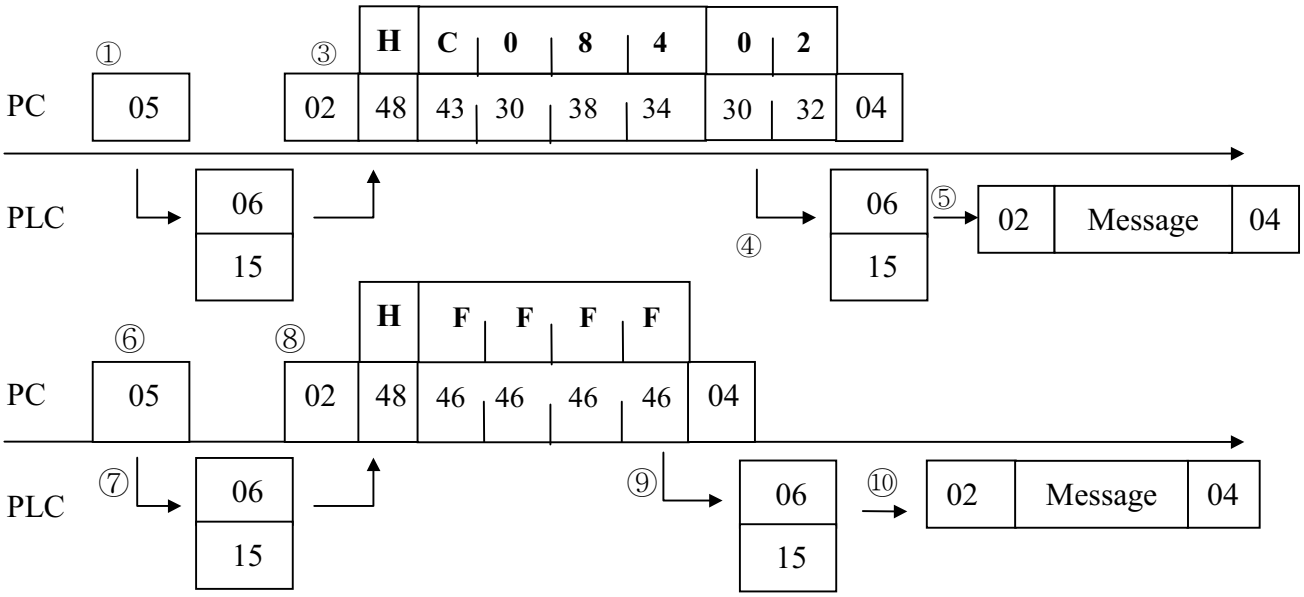
The number means that of byte (8 bits) to be written.

So, you should write ‘02’ to write ‘FFFF’ to the area of ‘P02(8bits X 2 bytes).

7. Data to write



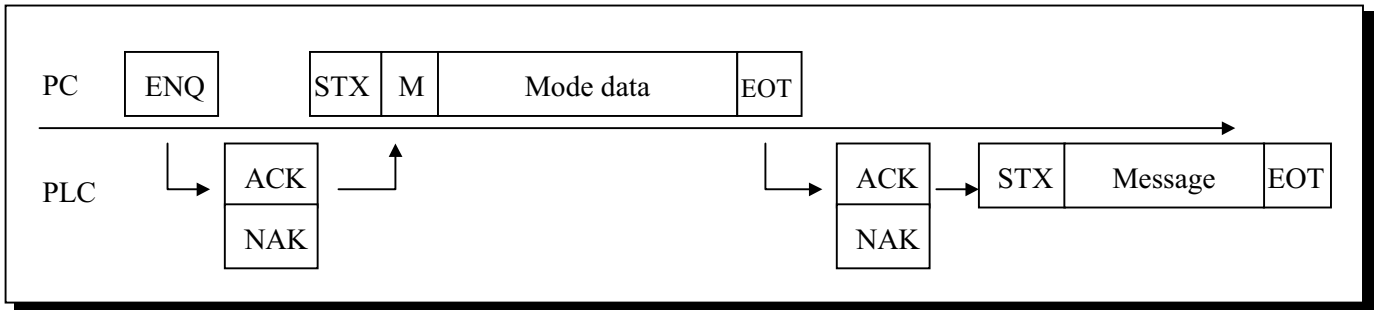
8. Example) The below data are expressed by Hex code.



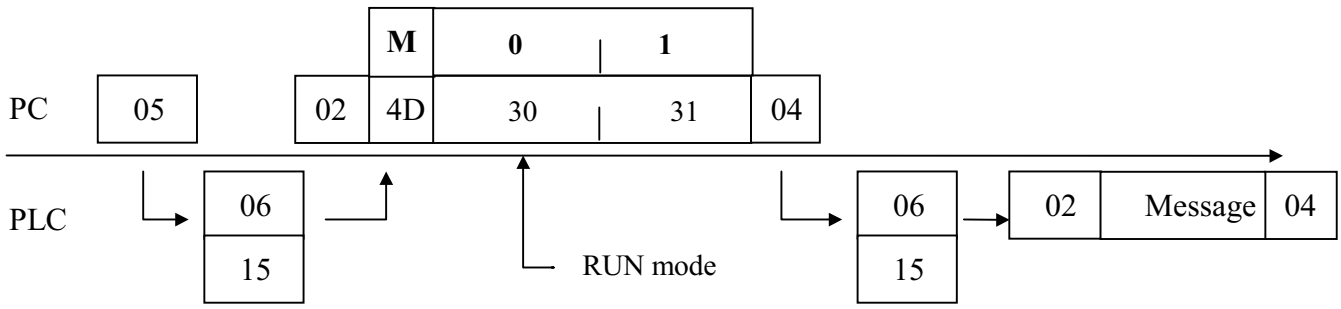
5.3. Mode change for K30H/50H/60H/200H

1. Mode data
   RUN mode : '01'
   STOP mode : '02'
   PAUSE mode : '04'
2. Command
   M: For Mode change without BCC(Block Check Character)
   m: For Mode change with BCC(Block Check Character)

3.. The protocol for mode change



4. Example : The below data are expressed by Hex code.



5.4. K10S, K100S

5.4.1. RS-232C Protocol

The protocol is same as K60H/K200H's. They should be converted to Hex code of absolute address. Please refer to page no. 7 for memory map. The data size for communication is byte (8bits).

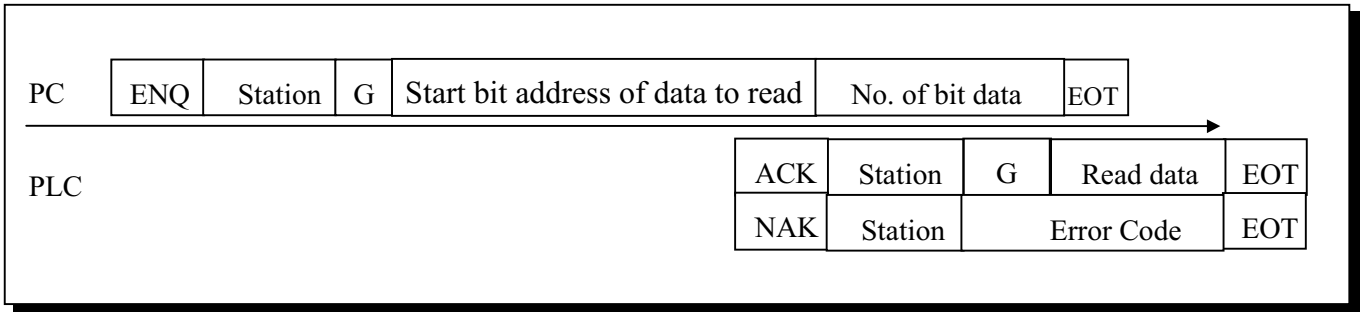
5.4.2. RS-485 Protocol

The protocol is same as K500H/K1000H's. They don't need to convert the address of memory map to absolute address. You can just the address of memory map of K10S/K100S. Please refer to page no. 9 .

5.5. K500H, K1000H

5.5.1. The protocol of reading bit data

1. Let's suppose we want to read bit data 'P010 to P01F from K500H(K1000H).
2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

5. Command

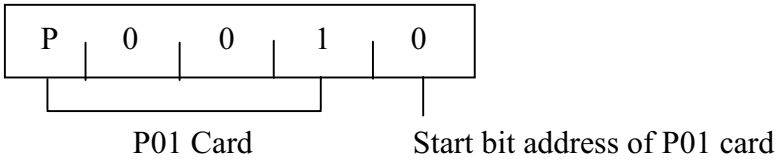
G: For reading Bit data without BCC(Block Check Character)

g: For reading Bit data with BCC(Block Check Character)

6. Start bit address of data to be read

Refer to the memory map of K500H and K1000H (page 9)

It's not necessary to use absolute address. You can just use Memory address of them.



7. The number of bit data to be read

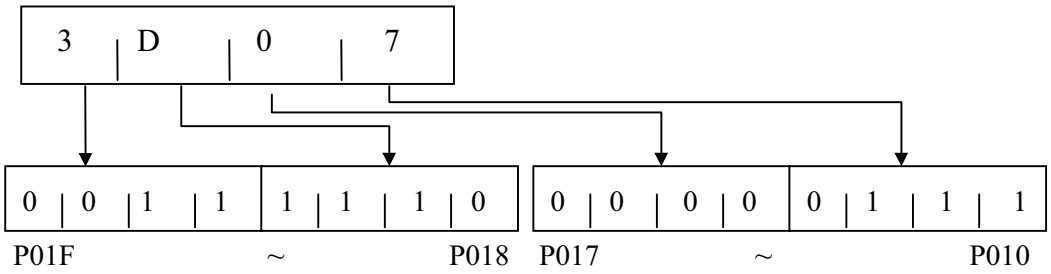
The number means that of bit to be read.

So, you should write '10' to read 16 bits 'P010 ~P01F'

The number of them should be expressed by Hex code(Up to **01** to **80 numbers**).

(i.e. 80 means 128bits. 40 means 64bits. 10 means 16bits.)

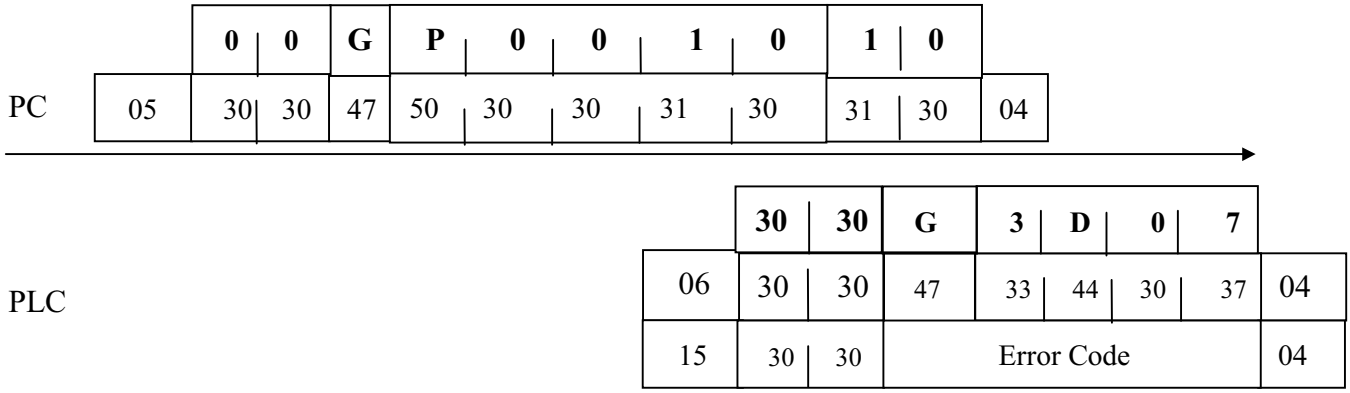
8. Read data from PLC



9. Error code

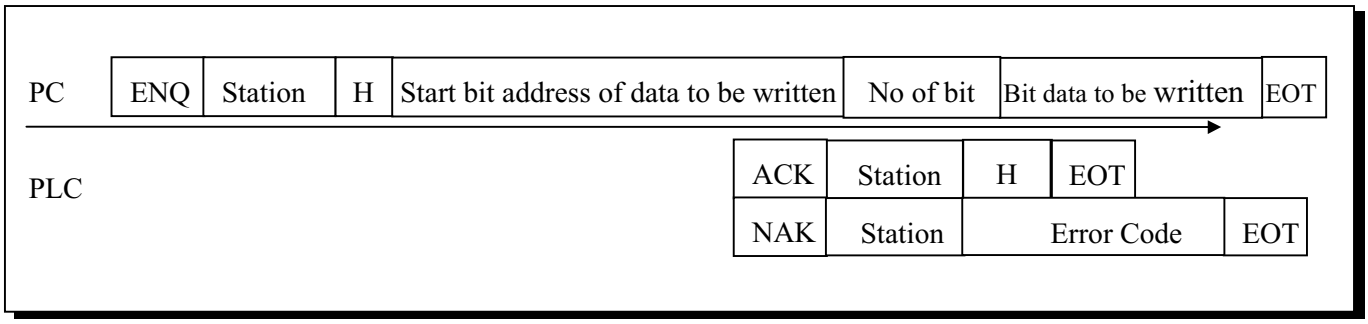
Please refer to page no. 37.

10. Example : The below data are expressed by Hex code.



5.5.2. The protocol of writing bit data

1. Let's suppose we want to write bit data '00101' to 'P060 to P064' area of K500H(K1000H).
2. The format of protocol is as follows.



3. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

4. Command

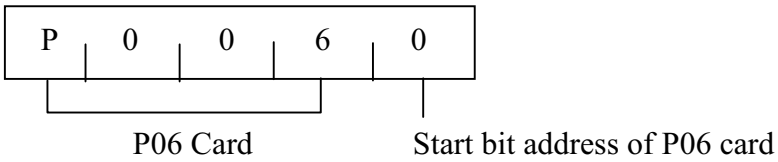
H: For writing Bit data without BCC(Block Check Character)

h: For writing Bit data with BCC(Block Check Character)

5. Start bit address of data to be written

Refer to the memory map of K500H and K1000H (page 9)

It's not necessary to use absolute address also. You can just use Memory address of them.



6. The number of bit data to write

The number means that of bit to be written.

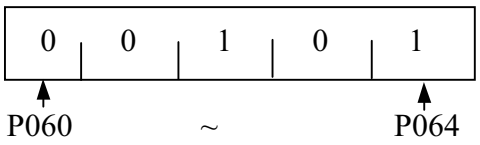
So, you should write '05' to write 5 bits to the area of 'P060 ~P064'

The number of them should be expressed by Hex code(Up to **01** to **80 numbers**).

(i.e. 80 means 128bits. 40 means 64bits. 10 means 16bits.)

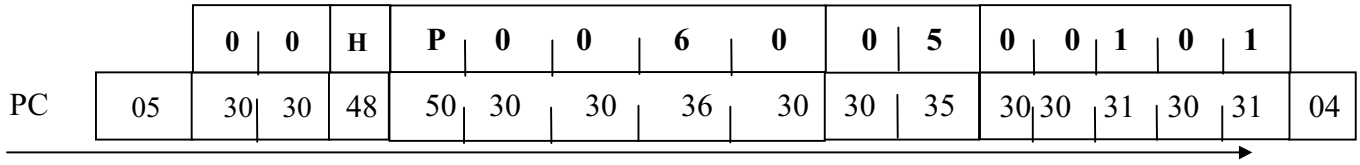
7. Data to be written

You should write the condition of the area to be written like ‘00101’.

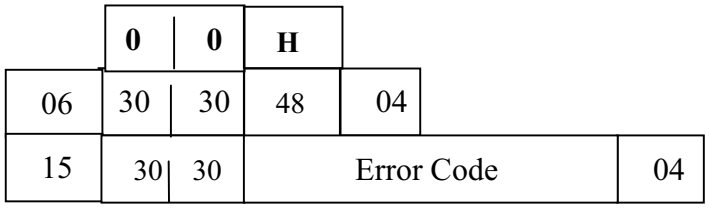


They should be expressed by Binary code (the condition of bit(ON or OFF)).

8. Example : The below data are expressed by Hex code.

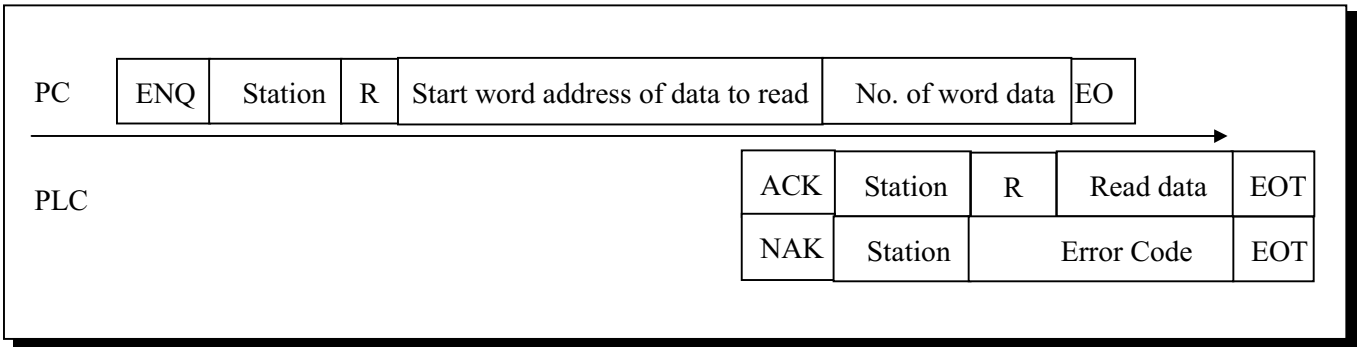


PLC



5.5.3. The protocol of reading word data

1. Let's suppose we want to read word data of 'P01card' from K500H(K1000H).
2. The format of protocol is as follows.



3. ASCII Control code

Signal Code	Hex code	Contents
ENQ	05H	Enquiry
ACK	06H	Acknowledge
NAK	21H	Negative Acknowledge
STX	02H	Start of Text
EOT	04H	End of Text

4. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

5. Command

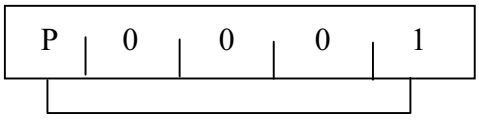
R: For reading word data without BCC(Block Check Character)

r: For reading word data with BCC(Block Check Character)

6. Start word address of data to be read

Refer to the memory map of K500H and K1000H (page 9)

It's not necessary to use absolute address. You can just use Memory address of them.



Start word address to be read

7. The number of word data to be read

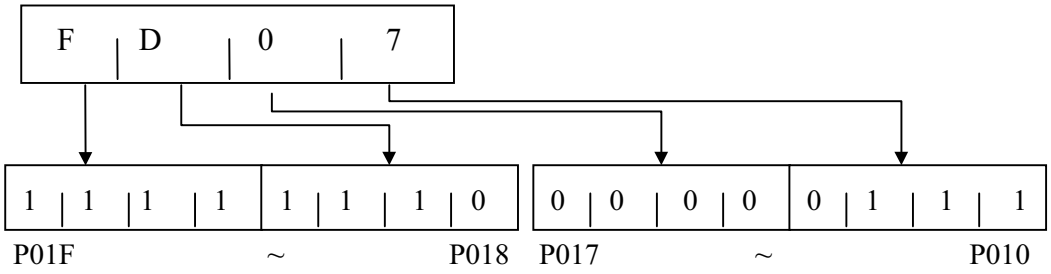
The number means that of word to be read.

So, you should write '01' to read 'P01 card(16bits)'

The number of them should be expressed by Hex code(Up to **01** to **40 (Max. 64words)**.

(i.e. 40 means 64words.)

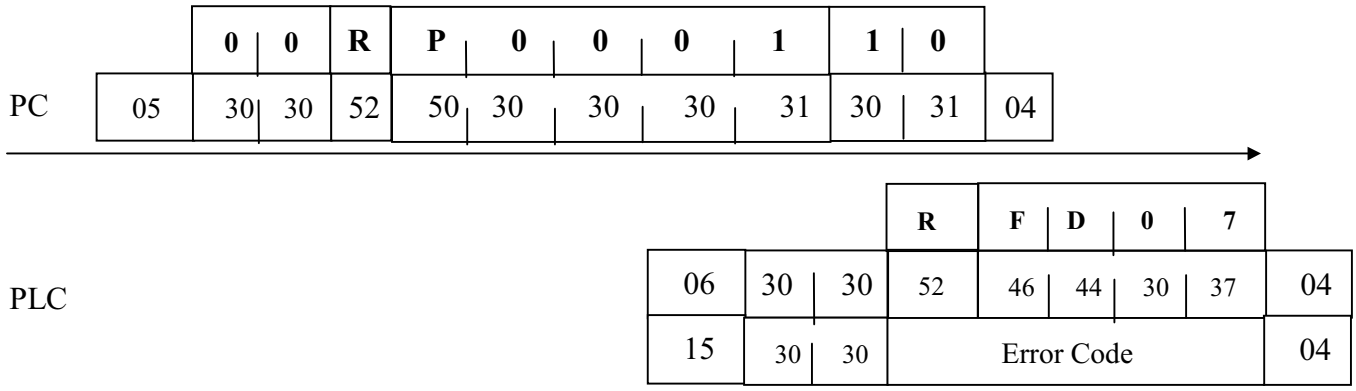
8. Read data from PLC



9. Error code

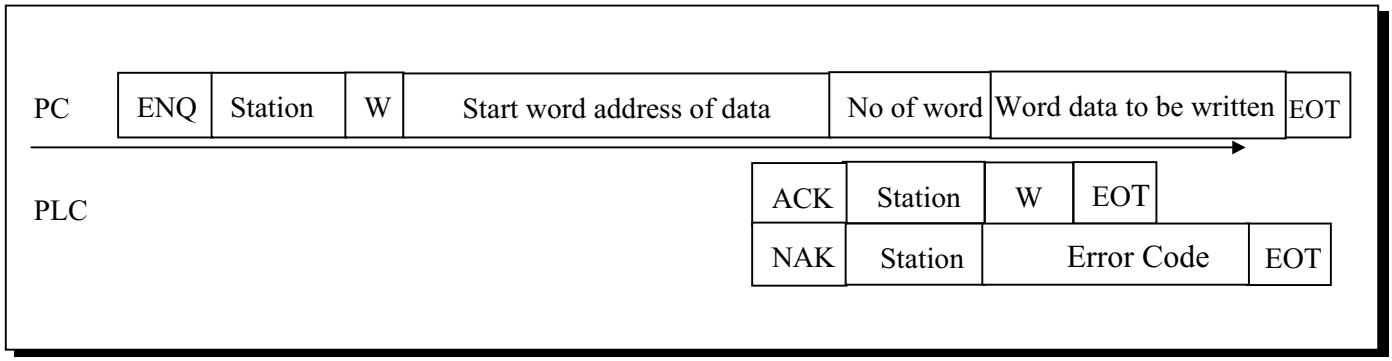
Please refer to page no. 37.

10. Example : The below data are expressed by Hex code.



5.5.4. The protocol of writing word

1. Let's suppose we want to write word data 'FFFF,FFFF' to 'P04 and P05 cards' of K500H(K1000H).
2. The format of protocol is as follows.



3. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

4. Command

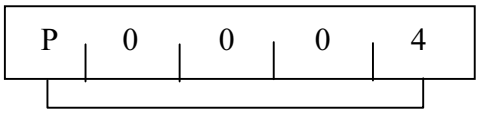
W: For writing word data without BCC(Block Check Character)

w: For writing word data with BCC(Block Check Character)

5. Start word address of data to be written

Refer to the memory map of K500H and K1000H (page 9)

It's not necessary to use absolute address also. You can just use Memory address of them.



Start word address of being written

6. The number of word data to be written

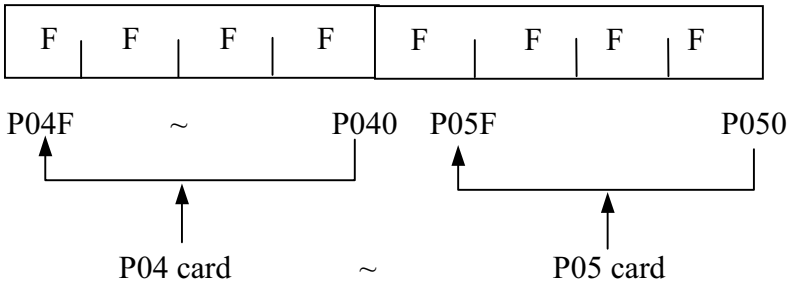
The number means that of word to be written.

So, you should write '02' to write 'FFFF,FFFF' to the area of 'P04 and P05 '

The number of them should be expressed by Hex code(Up to **01** to **40**).

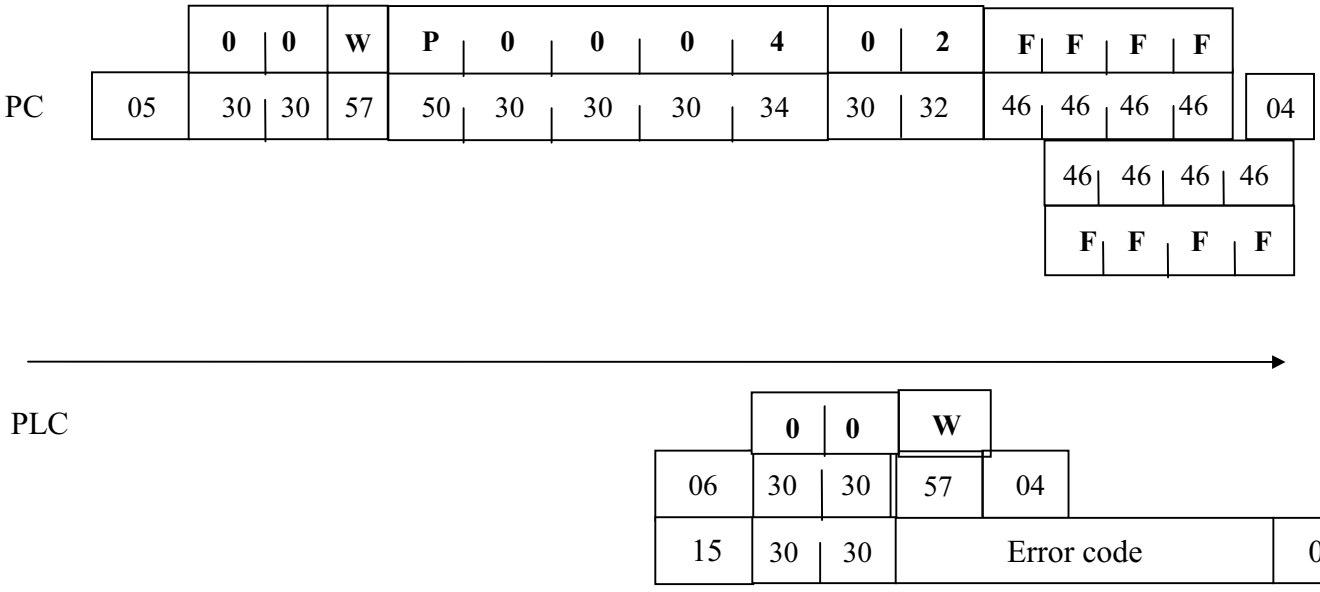
7. Word data to be written

You should write the data of the area to be written like ‘FFFFFFFF’.



They should be expressed by Hex code(**0 to F**)

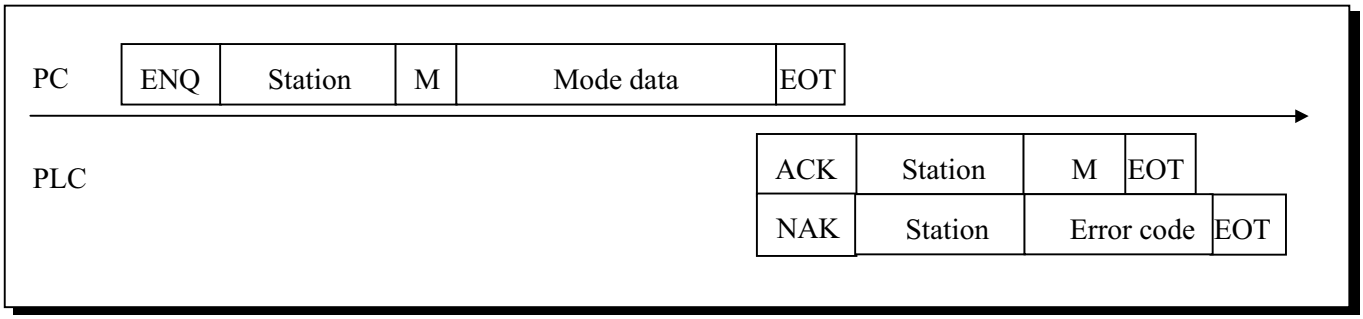
8. Example : The below data are expressed by Hex code.



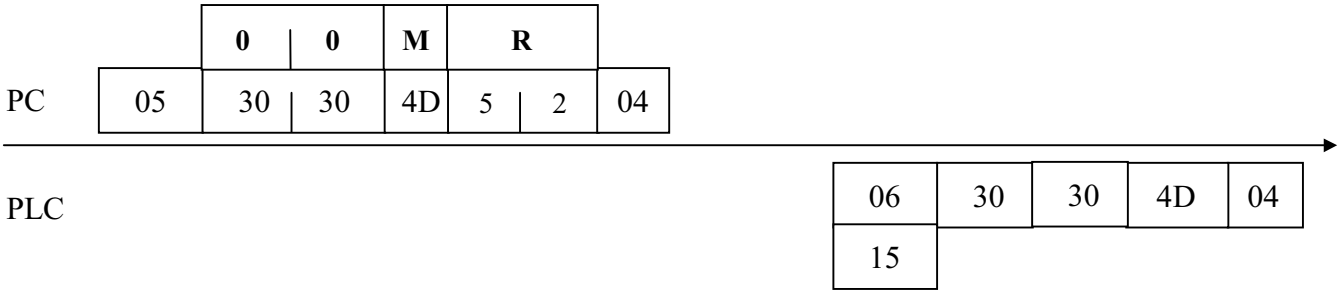
5.5.5. Mode change for K500H/1000H

1. Mode data
   RUN mode : ‘R’
   STOP mode : ‘S’
   PAUSE mode : ‘P’
2. Command
   M: For Mode change without BCC(Block Check Character)
   m: For Mode change with BCC(Block Check Character)

3.. The protocol for mode change

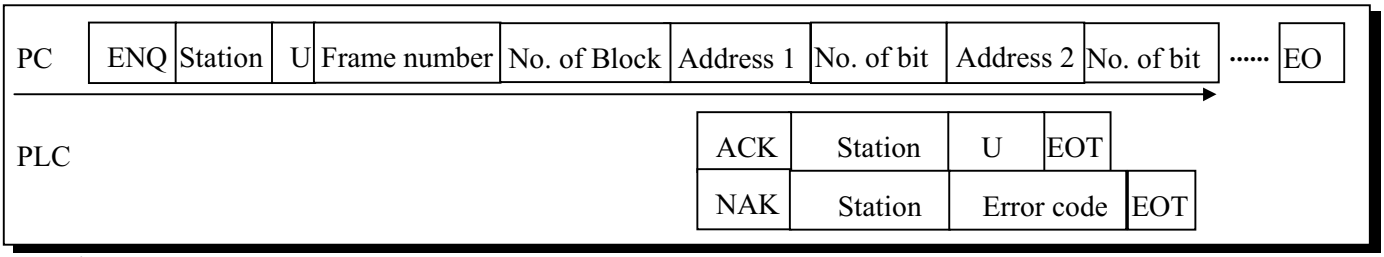


4. Example : The below data are expressed by Hex code.



5.5.6. Register command for bit monitor in K500H/1000H

1. This is so available for monitoring bit data from several different area.
   First of all, you should register the area which you are about to monitor
   You should remember to register your first step for monitoring.
2. Let's suppose we want to monitor 'K000 to K005 and M0000 to M000F(These are bit addresses)
   (2 Blocks in one Frame : refer to the **reference** as below)
3. The protocol to register the bit addresses is as follows.



4. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

5. Command

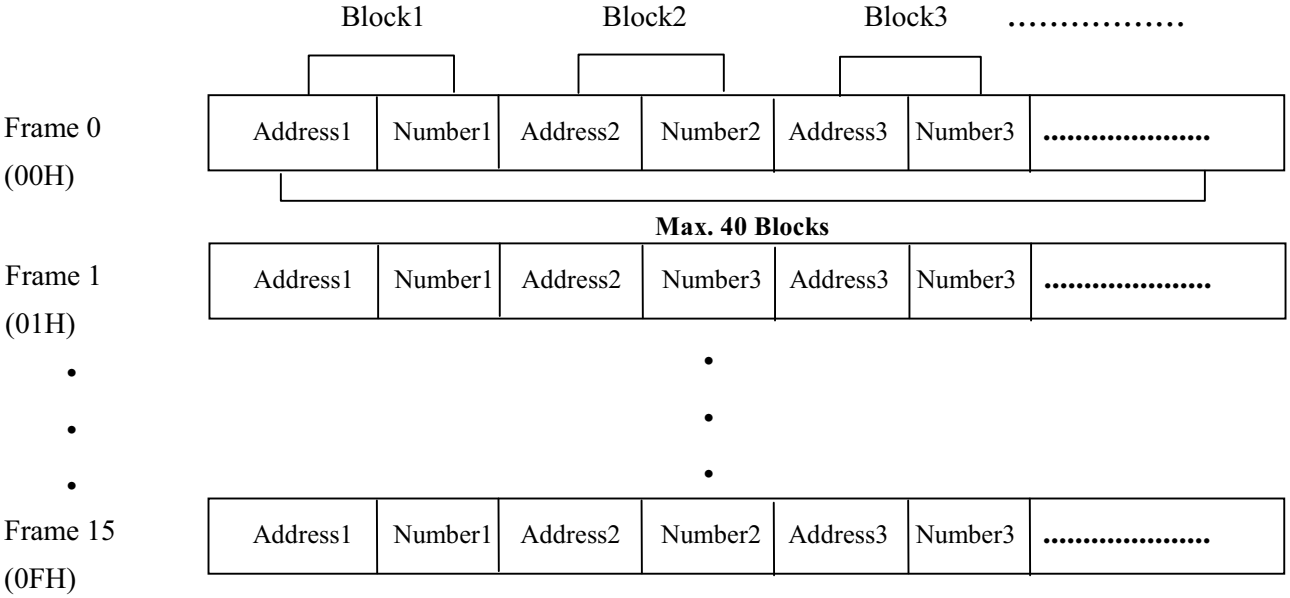
U: For registering to monitor bit address without BCC(Block Check Character)

u: For registering to monitor bit address with BCC(Block Check Character)

6. The number of registered Frame

You should register the Frame number to register in advance.

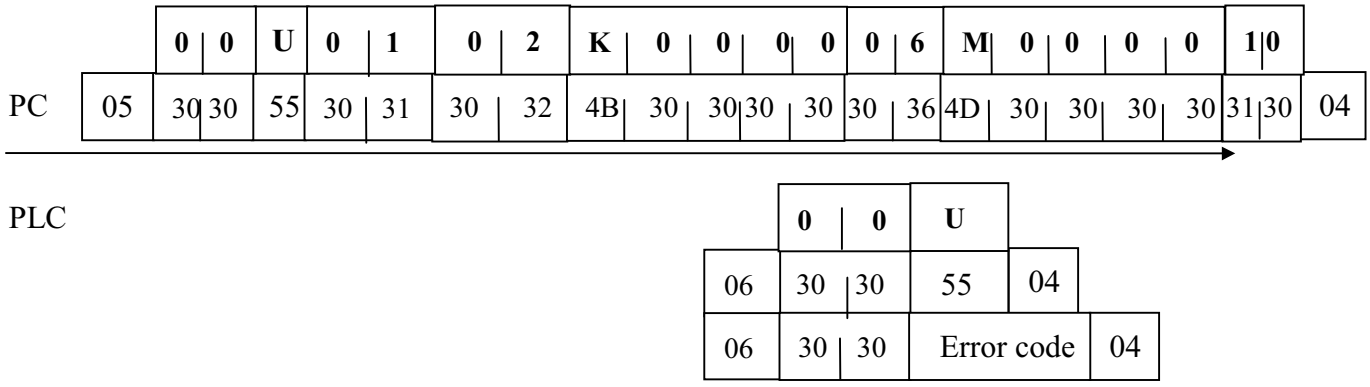
Reference) Frame and Block



The maximum number of Frame is **0F in Hex**(16 in decimal).
The number of bit per one Frame is maximum **40 in Hex**(64bits in decimal).
(i.e : number1 + number2 + number3 +..... = Max. 64bits)
The number of Block per one Frame is maximum **40 in decimal.**

7. The number of Block
   The number of 'Address + number'

8. Example : The below data are expressed by Hex code.



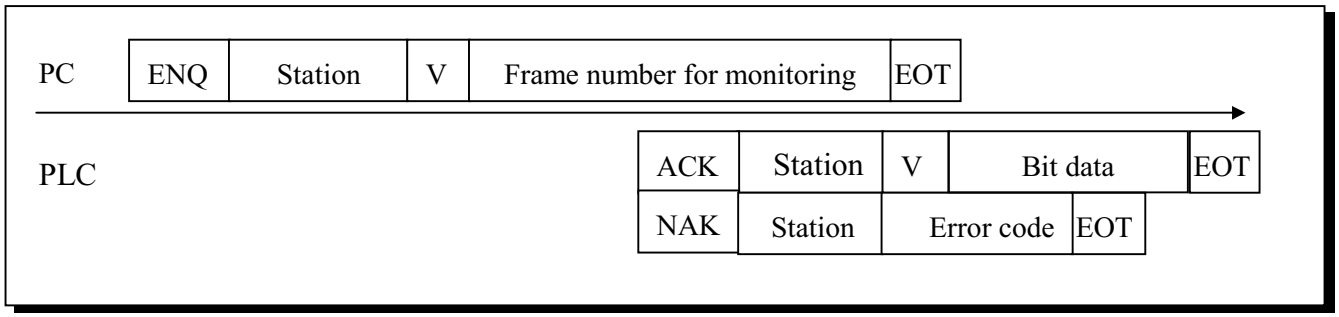
PLC

	0 0	U		
06	30 30	55	04	
06	30 30	Error code	04	

5.5.7. Execution command for bit monitor in K500H/1000H

1. This is so available for monitoring bit data from several different area.
   After you register the area which you are about to do a bit monitor , you should execute the follow step.
   This is your second step for bit monitoring.
2. Let's suppose we want to monitor 'K000 to K005 and M0000 to M000F(These are bit addresses)
   (2 Blocks in '01' Frame) Also let's suppose the bit data of them are '001001 and 1101011100110000'

3. The protocol to execute a bit monitor is as follows.



4. Station

00: For RS-232C communication

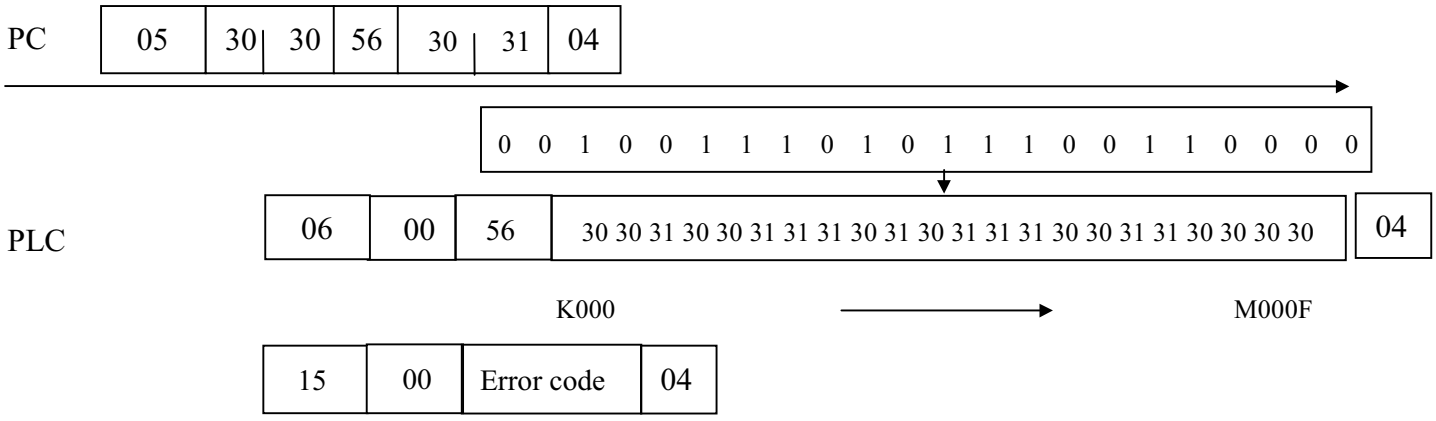
01 ~ 1F: For RS422 communication

5. Command

V: For executing bit monitor without BCC(Block Check Character)

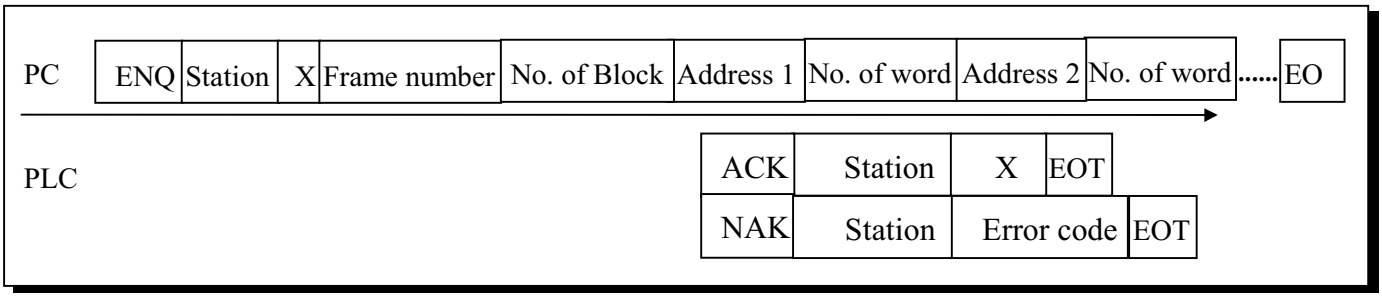
v: For executing bit monitor with BCC(Block Check Character)

6. Example



5.5.8. Register command for word monitor in K500H/1000H

1. Let's suppose we want to monitor 'P00, M000 and M001 cards(These are word addresses).
   (3 Blocks in '**00**' Frame)
2. The protocol to register the word addresses is as follows.



3. Station

00: For RS-232C communication

01 ~ 1F: For RS422 communication

4. Command

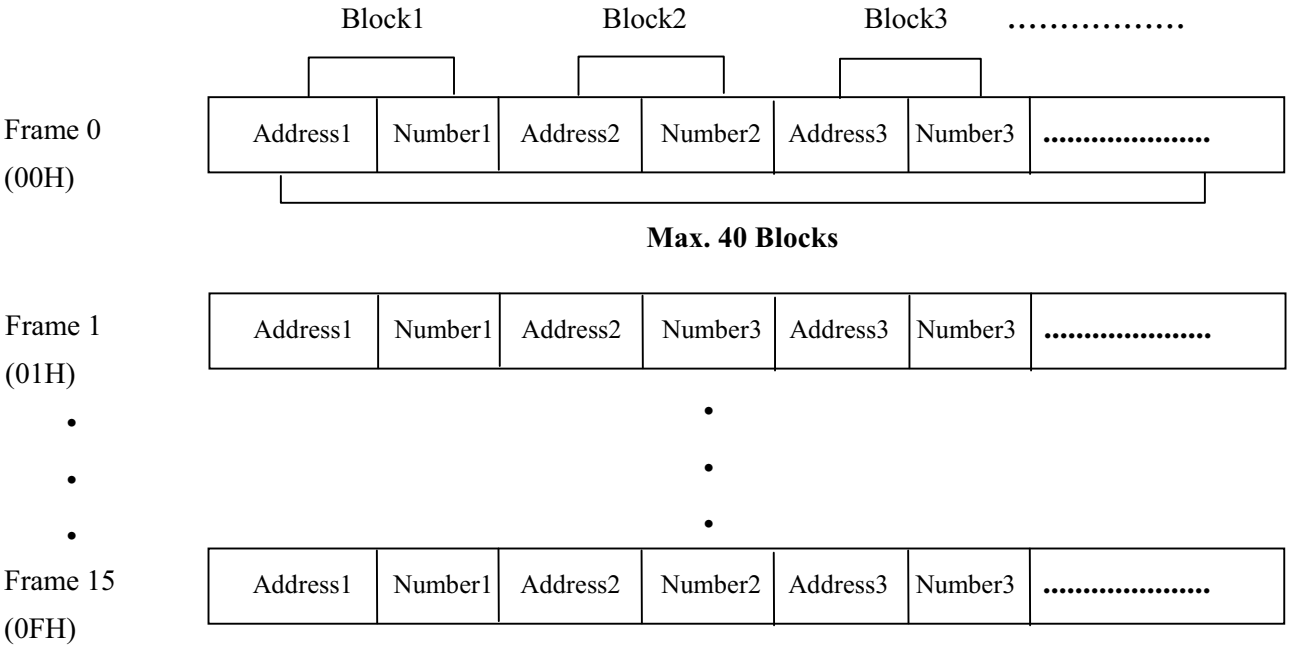
X: For registering to monitor word address without BCC(Block Check Character)

x: For registering to monitor word address with BCC(Block Check Character)

5. The number of registered Frame

You should register the Frame number to register in advance.

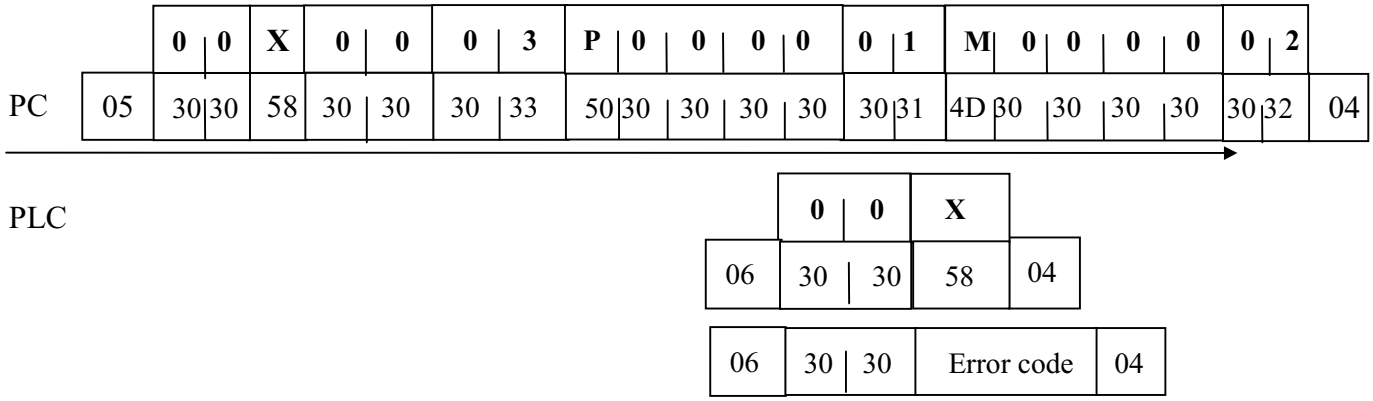
Reference) Frame and Block



The maximum number of Frame is **0F in Hex**(16 in decimal).
The number of word per one Frame is maximum **40 in Hex**(64 words in decimal).
(i.e : number1 + number2 + number3 +..... = Max. 64 words)
The number of Block per one Frame is maximum **40 in decimal.**

6. The number of Block
   The number of 'Address + number'

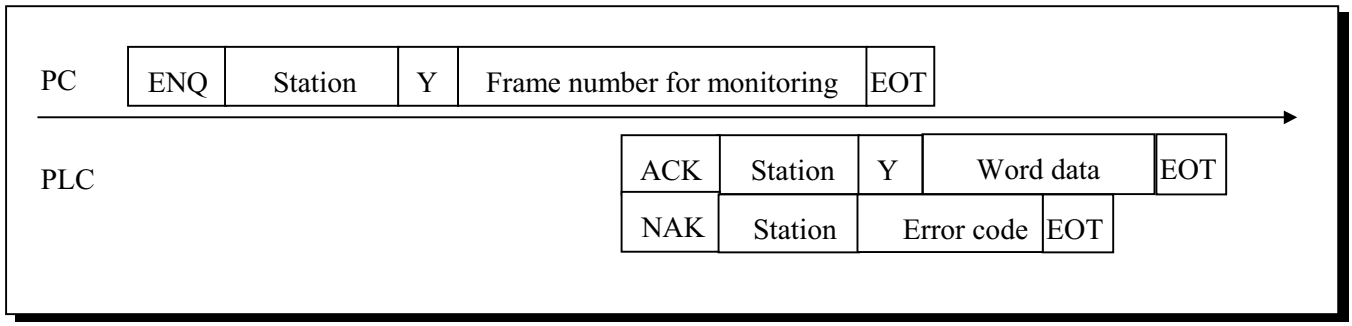
7. Example : The below data are expressed by Hex code.



5.5.9. Execution command for word monitor in K500H/1000H

1. This is so available for monitoring word data from several different area.
   After you register the area which you are about to do a word monitor , you should execute the follow step.
   This is your second step for word monitoring also.
2. Let's suppose we want to monitor 'P00, M000 and M001 cards(These are word addresses).
   (3 Blocks in '00' Frame) Also let's suppose the word data of them are 'C156, 0000 and FFFF'

3. The protocol to execute a bit monitor is as follows.



4. Station

00: For RS-232C communication

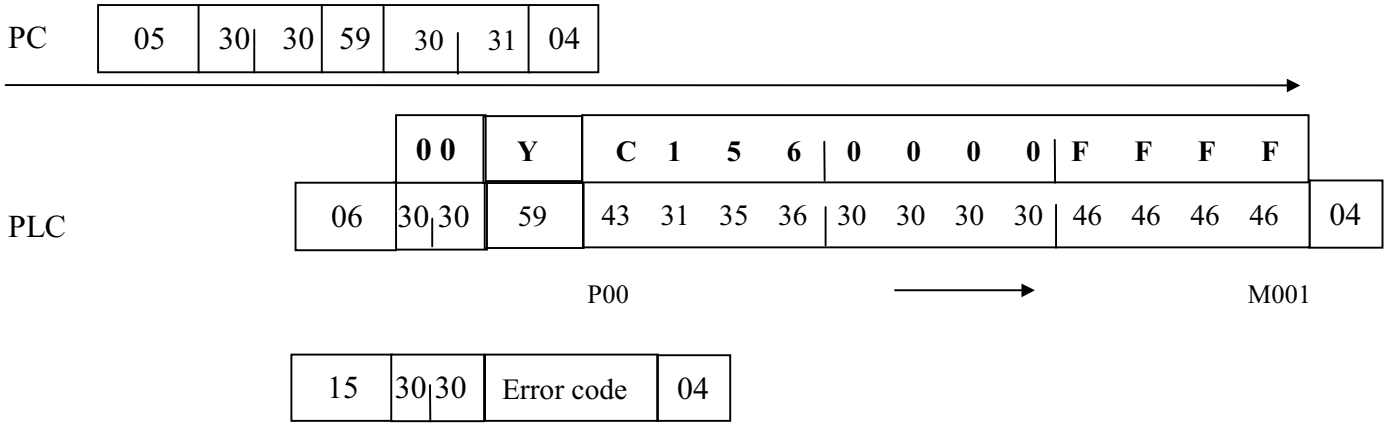
01 ~ 1F: For RS422 communication

5. Command

Y: For executing word monitor without BCC(Block Check Character)

y: For executing word monitor with BCC(Block Check Character)

6. Example



6. Error code of K10S/K100S/K500H/K1000H(distinguished by ASCII code)

Error code	Kinds of errors	Contents	Solution
021H(!)	Address error	When data is out of area	Check device area
022H(“)	Bcc check error	Bcc check sum error	Check Bcc sum routine
023H(#)	Command error	When use command not being used	Check command
024H($)	Station setting error	When out of 00H ~0FH station	Check stations
025H(%)	Frame setting error	When protocol for communication is wrong	Check protocol
026H(&)	Mode error	When can’t execute program in present mode	Re-communicate after change mode
027H(‘)	Mode change error	When change modes except . RUN ↔ PAUSE . RUN ↔ STOP . STOP ↔ DEBUG . PAUSE ↔ STOP	Change mode into available mode
028H(()	Number over error	When the number of execution is out of 64 words for communication.	Set number of data lower than 64 word
029H())	Data error	When convert ASCII data to Hex(0~F) incorrectly	Check routine converted into ASCII
02AH(*)	EPROM mode error	You can’t write program or parameter in EPROM mode.	
02BH(+)	Monitor execution error	When do not register the area for monitoring	Register the area additionally