

Bit Socket Tray LCD

4, 8, 12 and 16 Bit Holder Models
Compatible with MDCV1 and MDCV2



Bit Socket Tray Operation Manual

Bit socket tray (4pcs / 8pcs / 12 pcs / 16 pcs)

1. Specification

2.

Number of sockets	4, 8, 12 or 16 sockets with sensors (modification available)
Type of sensors	Magnet inductive sensor, 24V, 3-wire, PNP or NPN
Connection of sensors	Terminal block with fast connection (push/release type)
Number of LED	4, 8 , 12 or 16 selection lamps, power, alarm and running
Connection of Lamps	24V, 2-wire terminal block with fast connection
Display	1.3" AMOLED color display
Input power	24VDC, 1A
Number of sensor modification	Sensor installation is available by the customer. No using socket should always be activated by connecting the signal wire as below ; NPN sensor : Sensor out with negative (-24V) PNP sensor : Sensor out with positive (+24V)
Hole size of bit holder (Factory setting)	All positions with bit holder hole Ø 7.5 mm
I/O	25Pin D-Sub female connector 8 Inputs for indicating 8 sockets (direct or binary) 8 Outputs for selecting preset # (direct or binary) 1 analog signal Output (0 – 5V) 24V DC power output (Max 0.5A)
Com Port	RS-422

2. Layout of standard packing



LCD
(Setting & operation)

LED (Position)
Bit holder

Product Includes:

- 310185 Bit socket tray-4 / 4pcs bit holder for Ø 7.5mm (310107)
- 310186 Bit socket tray-8 / 8pcs bit holder for Ø 7.5mm (310107)
- 310187 Bit socket tray-12 / 12 pcs bit holder for Ø 7.5mm (310107)
- 310188 Bit socket tray-16 / 16 pcs bit holder for Ø 7.5mm (310107)



with



SMPS Adapter 24VDC 1A (310102)

UL 120V Power Cable

NOTE: for CE 230V Power Cable, order 310110 (not Included)

For different sizes of bit holders (not included), please order:



**Communication
cables MDC to Bit
Socket Tray (Not
Included):**

- 1) **Cable 25P I/O (M-M) 3 Meters Item 310112**
- 2) **Cable 25P I/O (M-M) 5 Meters Item 310115**

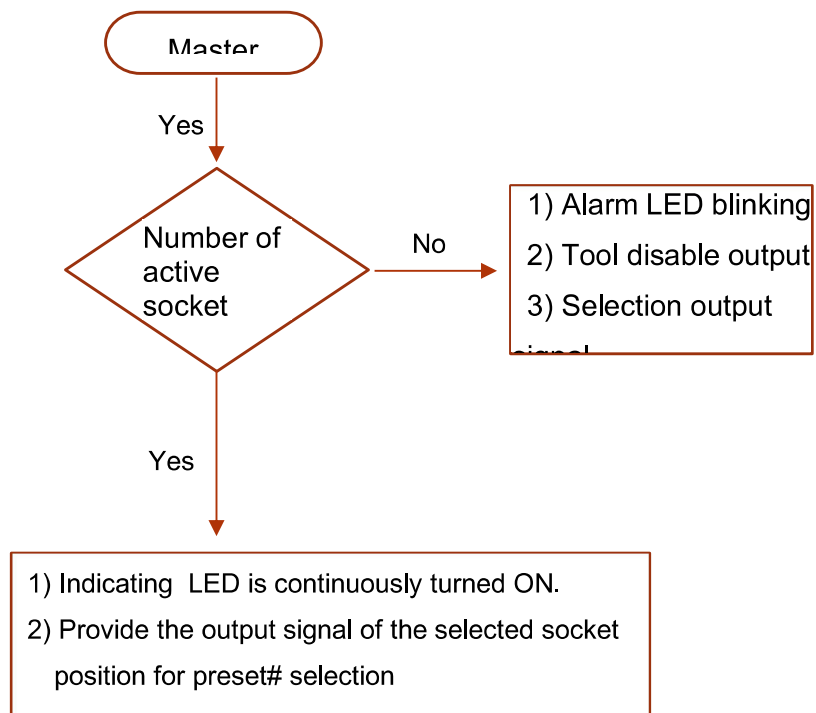
3. Operation

3.1 Master mode

A preset # of the MD tool or other tool is automatically by the I/O when the bit is selected on the bit socket tray.

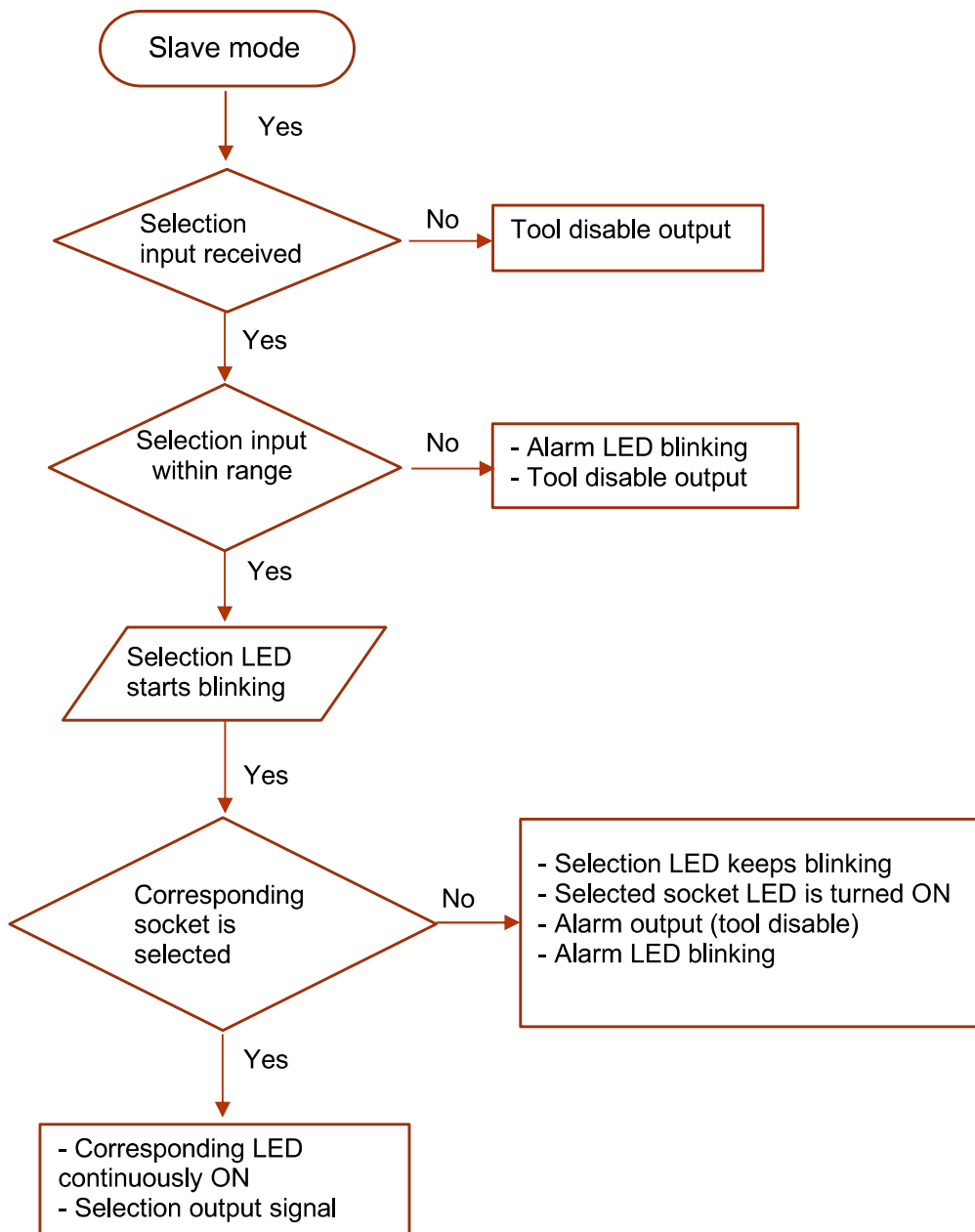
When one bit is selected, the corresponding output signals are provided to the tool controller in order to select the preset #.

Otherwise the socket tray will provide the tool disable



3.2 Slave mode

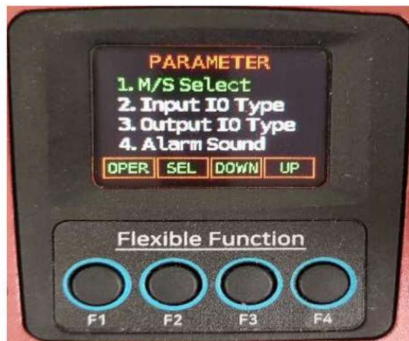
DPC-Touch or other device that provide the output signal of preset program no. or torque setting no. can guide operator to select one of the 4 or 8 sockets through LED lighting. The tool should provide the output signal for the selected preset # to the bit socket tray. The bit socket tray indicate the corresponding LED. When the wrong bit is selected, it provides Alarm LED and output signal.



3.3 Parameter list for LCD display

The operation mode, I/O and beep sound can be managed LCD key button.

No.	Title	Parameter description	Value		Factory setting
1	M / S select	Master or Slave mode	Master	Slave	Master
2	Input IO type	Input binary	Binary	Binary +1	Binary +1
3	Output IO type	Output binary	Binary	Binary +1	Binary +1
4	Alarm sound	Beep sound	OFF	On	Off
5	Para init	Parameter initialize	0 ~ 9999		0
6	Comm ID	Communication ID	0 ~ 9		1
7	Sensor num	Sensor enable number	1 ~ 16		16
8	Protocol	Input protocol type	I/O	Serial	I/O
9	Mapping enable	-	Off	On	Off
10	Bit mapping	-	0 ~ 16		0
11	LCD off time	-	0 ~ 60 (min)		10



[Parameter setting page]

Key	Name	Description
F1	OPER	Move operation page
F2	SEL	Select parameter
F3	DOWN	Select another parameter
F4	UP	Select another parameter



[Save parameter value page]

Key	Name	Description
F1	SET	Save parameter value
F2	SHIF	Increase number of digits
F3	DOWN	Decrease value
F4	UP	Increase value

3.3.1 Parameter Initialization (No.5)

Parameters can be return to the factory setting.



- Select no. 5 Para Init on the parameter list.
- Key in "77" .

3.3.2 Select Number on Socket (No.7)

Select number of socket to be used on the parameter list no.7.



- Select no. 5 Para Init on the parameter list.
- Key in the number to be used.
- Sockets are available from no.1 up to the selected no.

3.3.3 Serial Communication to select screwdriver Preset

Instead of screwdriver preset # section in Master mode, RS422 serial communication is also available to select screwdriver preset #.

To use this feature, select " Serial " on no.8 Protocol on the parameter list. Then, the I/O will not be activated.

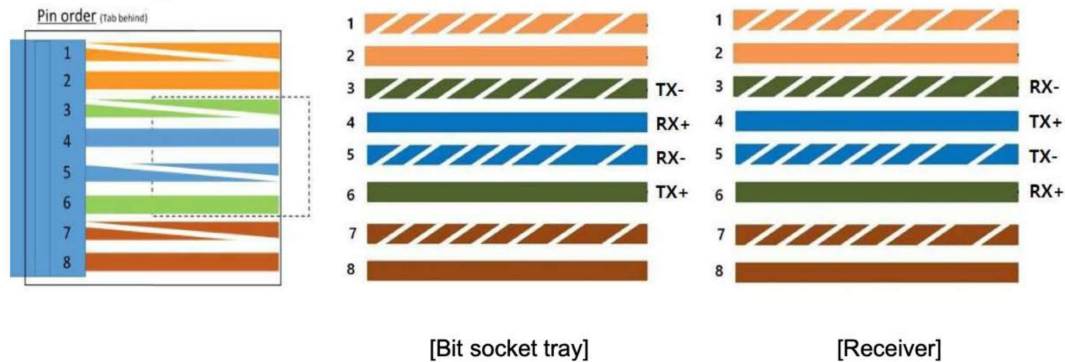
COM : Serial RS422
Baud rate : 115200 bps

◆ Parameter setting is required as below

- No.6 Comm ID : 1 – 9 (Socket tray ID no. when it was linked with other socket tray)
- No.8 Protocol : Serial

[COM cable details]

Use direct LAN cable for RS422 serial communication with following pin configuration.



3.3.4 Bit socket mapping by I/O

Assignment of Socket no and screwdriver Preset # can be 1:1 direct single matching connection or flexible multiple matching connection as below examples

[Master mode]

- Bit socket #1 - Preset #1
- Bit socket #2 - Preset #1
- Bit socket #3 - Preset #2
- Bit socket #4 - Preset #2

[Slave mode]

- Preset #1 - Bit socket #1
- Preset #2 - Bit socket #1
- Preset #3 - Bit socket #2
- Preset #4 - Bit socket #2

◆ Parameter setting is required as below

- No.8 Protocol : I/O
- No.9 Mapping enable: ON
- No.10 Bit mapping: Bit or Preset number setting

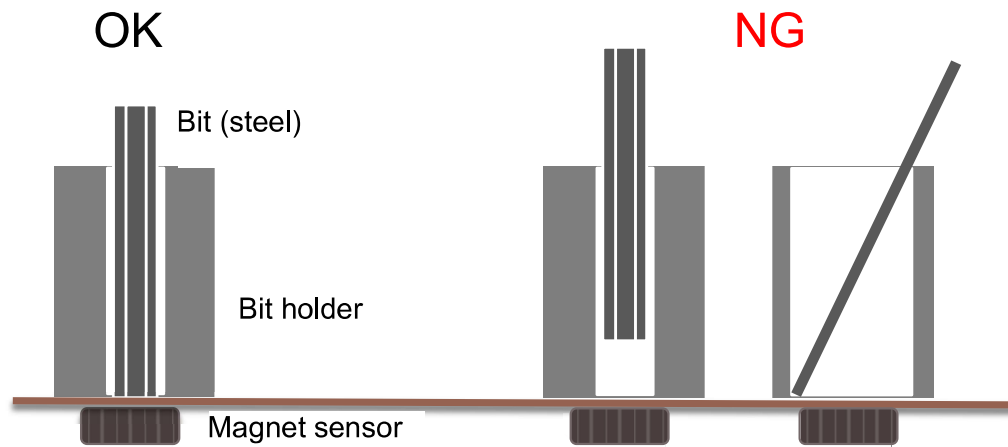
3.3.5 LCD Sleep mode

LCD display is turned off without operation.

- Setting unit : Minute (“ 0 “ : No use Sleep mode)

3.4 Magnet sensor to detect steel bit

There are sensors at the bottom of the bit holders. The sensor activates with the steel material. The sensor cannot be activated with the too much thin diameter of the bit. And the bit should be located at the closed to the sensor



4. 25P I/O

4.1 I/O details

Connector : 25P D-sub female socket

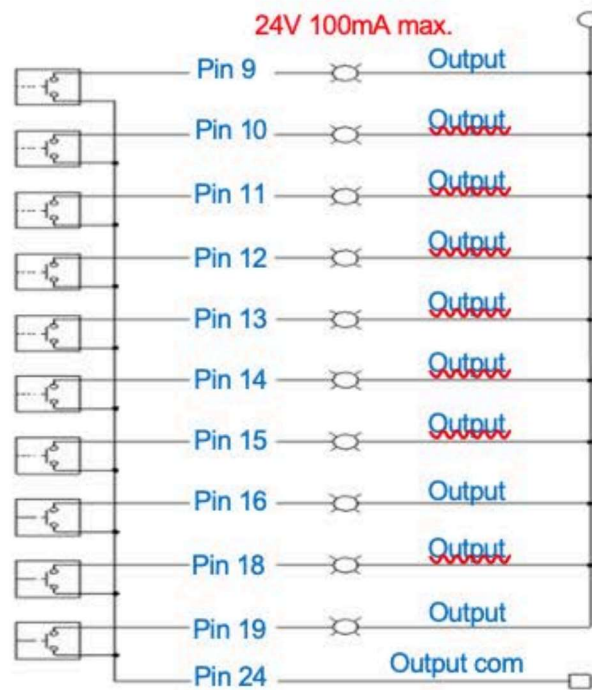
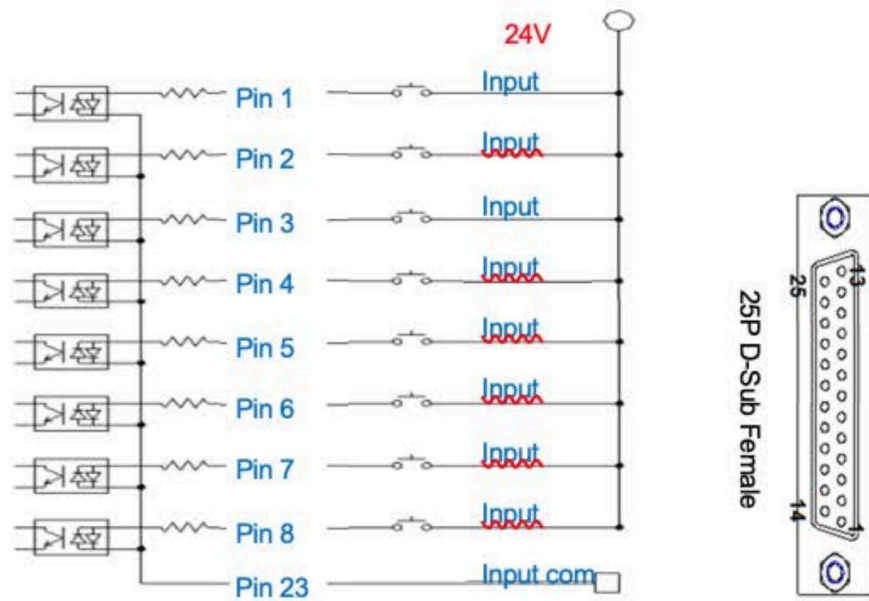
Pin No	Direct	Binary, Binary+1
1	Selection in1	Selection in1
2	Selection in2	Selection in2
3	Selection in3	Selection in3
4	Selection in4	Selection in4(for binary)
5	Selection in5	X
6	Selection in6	X
7	Selection in7	X
8	Selection in8	X
9	Selection out1	Selection out1
10	Selection out2	Selection out2
11	Selection out3	Selection out3
12	Selection out4	Selection out4(for binary)
13	Selection out5	X
14	Selection out6	X
15	Selection out7	X
16	Selection out8	x
17	Analog output signal 0 – 5V	Analog output signal 0 – 5V
18	Tool Enable	Tool Enable
19	Alarm (Tool Disable)	Alarm (Tool Disable)
20	GND	GND
21	24V	24V
23	COM IN	COM IN
24	COM OUT	COM OUT

Pin no. 17 provides the analog voltage output with pin no. 20 (GND) according to the sensor activation. The voltage details are as below ;

Sensor 1 200 mV
Sensor 2 300 mV
Sensor 3 400 mV
Sensor 4 500 mV
Sensor 5 600 mV
Sensor 6 700 mV
Sensor 7 800 mV
Sensor 8 900 mV

If multiple sensors are active, then values should be summed up.
Example: Sensor 1 + Sensor 3 + Sensor 8 = 200+400+900 = 1500 mV

◆ MDC 25P I/O schematic



4.2 (Master Mode) Binary coding with 4 pins I/O

Preset #	Out 4	Out 3	Out 2	Out 1
1	0	0	0	0
2	0	0	0	1
3	0	0	1	0
4	0	0	1	1
5	0	1	0	0
6	0	1	0	1
7	0	1	1	0
8	0	1	1	1
9	1	0	0	0
10	1	0	0	1
11	1	0	1	0
12	1	0	1	1
13	1	1	0	0
14	1	1	0	1
15	1	1	1	0

4.3 (Master Mode) Binary +1 coding with 4 pin I/O

Preset #	Out 4	Out 3	Out 2	Out 1
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

4.4 (slave Mode) Binary coding with 4 pin I/O

Preset #	In / Out 4	In / Out 3	In / Out 2	In / Out 1
1	0 / 0	0 / 0	0 / 0	1 / 1
2	0 / 0	0 / 0	1 / 1	0 / 0
3	0 / 0	0 / 0	1 / 1	1 / 1
4	0 / 0	1 / 1	0 / 0	0 / 0
5	0 / 0	1 / 1	0 / 0	1 / 1
6	0 / 0	1 / 1	1 / 1	0 / 0
7	0 / 0	1 / 1	1 / 1	1 / 1
8	1 / 1	0 / 0	0 / 0	0 / 0
9	1 / 1	0 / 0	0 / 0	1 / 1
10	1 / 1	0 / 0	1 / 1	0 / 0
11	1 / 1	0 / 0	1 / 1	1 / 1
12	1 / 1	1 / 1	0 / 0	0 / 0
13	1 / 1	1 / 1	0 / 0	1 / 1
14	1 / 1	1 / 1	1 / 1	0 / 0
15	1 / 1	1 / 1	1 / 1	1 / 1

4.5 (slave Mode) Binary +1 coding with 4 pin I/O

Preset #	In / Out 4	In / Out 3	In / Out 2	In / Out 1
1	0 / 0	0 / 0	0 / 0	0 / 0
2	0 / 0	0 / 0	0 / 0	1 / 1
3	0 / 0	0 / 0	1 / 1	0 / 0
4	0 / 0	0 / 0	1 / 1	1 / 1
5	0 / 0	1 / 1	0 / 0	0 / 0
6	0 / 0	1 / 1	0 / 0	1 / 1
7	0 / 0	1 / 1	1 / 1	0 / 0
8	0 / 0	1 / 1	1 / 1	1 / 1
9	1 / 1	0 / 0	0 / 0	0 / 0
10	1 / 1	0 / 0	0 / 0	1 / 1
11	1 / 1	0 / 0	1 / 1	0 / 0
12	1 / 1	0 / 0	1 / 1	1 / 1
13	1 / 1	1 / 1	0 / 0	0 / 0
14	1 / 1	1 / 1	0 / 0	1 / 1
15	1 / 1	1 / 1	1 / 1	0 / 0

5. Cable for connecting MDC (option)

Connecting cable pin assignment for MDC controller

25P D-Sub male		25P D-Sub male	
Pin No	Bit socket tray (Binary+1)	MDC controller	Pin No
1	Selection in1	Preset select OUT 1	10
2	Selection in2	Preset select OUT 2	11
3	Selection in3	Preset select OUT 3	12
4	Selection in4	Preset select OUT 4	13
5	X		
6	X		
7	X		
8	X		
9	Selection out1	Preset select IN 1	1
10	Selection out2	Preset select IN 2	2
11	Selection out3	Preset select IN 3	3
12	Selection out4	Preset select IN 4	4
13	X		
14	X		
15	X		
16	X		
17	X		
18	X		
19	Alarm (Tool Disable)	Driver Lock	6
20	GND (24V-)	Out COM	21
21	24V	In COM	22
23	COM IN		
24	COM OUT		

25P D-sub cable for MDC to Socket tray, 3m long (310112)

25P D-sub cable for MDC to Socket tray, 5m long (310115)

Remark :

*** PNP wiring : 20(GND) – 24(Out com), 21(24V+) – 23(In com)

*** NPN wiring : 20(GND) – 23(In com), 21(24V+) – 24(Out com)

5.1 Basic setting of MDC controller for Bit socket tray

The Input setting is required to select the Preset # of the MDC controller

I/O setting

Input #1 = Preset select 1 (Pin 1)

Input #2 = Preset select 2 (Pin 2)

Input #3 = Preset select 3 (Pin 3)

Input #4 = Preset select 4 (Pin 4)

Input #6 = Driver Lock (Pin 6)

5.2 Basic setting of Bit socket tray for MDC controller

No.	Name	Value		Factory setting
1	M / S select	Master	Slave	Master
2	Input IO type	Binary	Binary+1	Binary+1
3.	Output IO type	Binary	Binary +1	Binary+1
4	Alarm sound	Off	On	Off
5	Para <u>init</u>	-		0
6	<u>Comm</u> ID	-		1
7	Sensor <u>num</u>	-		16
8	Protocol	I/O	Seral	I/O
9	Mapping enable	Off	On	Off
10	Bit mapping	-		0
11	LCD off time	-		10

6 Communication Protocol

Protocol : ASCII

Request & Response message. Do not request again until receiving response or time out.

(Timeout: 200ms)

1. Request

STX	ID	COMMAND	STATUS	Data	ETX
-----	----	---------	--------	------	-----

1. Start with STX, end with ETX.
2. Command : RD, RT, WD, WT, XX (Ascii)
3. ID : Bit socket tray ID
4. " 0 " has No meaning in STATUS in the request message
5. No of Byte (fixed) : STX [1], ID[1], COMMAND [2] , STATUS[1] , Data [2], ETX [1]

form	STX	ID	COMMAND High	COMMAND Low	STATUS	Data High	Data Low	ETX
Ex)	STX	1	R	D	0	0	8	ETX

2. Response

ACK	STX	ID	COMMAND	STATUS	Data	ETX
-----	-----	----	---------	--------	------	-----

1. Response from Bit socket tray start with ACK(0x06) of message head.
2. Status - 0: Tool OK, 1: Tool NG
3. ID가 다르면 무시한다.

NAK

4. If the Reques message has wrong Command or wrong message, Bit socket tray response with only NAK(0x15).

6.1 Command type

6.1.1 RD

RD : Number of Bit sockets in use.

STX	ID	COMMAND	STATUS	Data	ETX
STX	1	RD	0	00	ETX

6.1.1.1 No meaning of the Status data

6.1.2 RT

RT : Response against RD

ACK	STX	ID	COMMAND	STATUS	Data	ETX
ACK	STX	1	RT	0	03	ETX

6.1.2.1 Data 03 : Socket #3 is activated in use.

6.1.2.2 When 2 or more sockets are in use, Status will provide "1" (NG), Data will provide the last Socket #

6.1.3 WD

WD : Select Bit Socket #

STX	ID	COMMAND	STATUS	Data	ETX
STX	1	WD	0	10	ETX

6.1.3.1 Available on Slave mode only

6.1.3.2 Data is the Socket # (ex. Socket # 10)

6.1.3.3 If the data is out of the range, response with Command "XX"

6.1.3.4 If the Bit socket tray is rebooted, it will loose the setting

6.1.4 WT

WT : Response against WD

ACK	STX	ID	COMMAND	STATUS	Data	ETX
ACK	STX	1	WT	0	10	ETX

6.1.4.1 Data is the same requested Bit socket #.

6.1.4.2 If setting is not possible, response with Command "XX"

6.1.5 XX

XX : NG or Error response

ACK	STX	ID	COMMAND	STATUS	Data	ETX
ACK	STX	1	XX	0	00	ETX

6.1.5.1 Status and Data : 0 & 00

6.1.5.2 Response for wrong message or out of range for setting

6.1.5.3 Response in parameter setting with Mater mode, I/O mode

6.2 Examples

6.2.1 RD (check the activated Bit socket

) [Request]

TYPE	STX	ID	COMMAND	STATUS	Data	ETX
ASCII	STX	1	RD	0	00	ETX
HEX	0x02	0x31	0x52, 0x44	0x30	0x30, 0x30	0x03

[Response]

ACK	STX	ID	COMMAND	STATUS	Data	ETX
ACK	STX	1	RT	0	01	ETX
0x06	0x02	0x31	0x52, 0x54	0x30	0x30, 0x31	0x03

6.2.1.1 Bit socket #1 is activated in use

6.2.2 WD (select Bit socket # in slave mode

) [Request]

STX	ID	COMMAND	STATUS	Data	ETX
STX	1	WD	0	05	ETX
0x02	0x31	0x57, 0x44	0x30	0x30, 0x35	0x03

6.2.2.1 Bit socket #5 is selected. LED #5 is activated

[Response]

ACK	STX	ID	COMMAND	STATUS	Data	ETX
ACK	STX	1	WT	0	05	ETX
0x06	0x02	0x31	0x57, 0x54	0x30	0x30, 0x35	0x03



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