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1. SAFETY INSTRUCTION

The MEZ series are relatively simple to use, however, it is very important to observe the proper safety procedures before, during, and after operation. When used properly, the MEZ series will enhance safety, productivity and efficiency in the workplace.

The following procedures should be strictly followed:

1. Please note the polarity of the batteries and make sure two AA alkaline batteries are installed in the transmitter battery compartment correctly. To prevent battery leakage, do not remove the batteries from the battery compartment when the transmitter is not been operated for a long time.
2. Do not change the IDs on transmitter encoder and receiver decoder boards at will.
3. Check the transmitter casing and pushbuttons daily.
4. Check the transmitter voltage whenever it is operated. Please change battery as soon as battery is out or voltage is low. Do not operate the transmitter whenever voltage is low or sight is poor.
5. The red emergency stop button (EMS) should be checked at the beginning of each shift to ensure it is in proper working order and the "Stop" command is being received by the receiver.
6. In the event of an emergency press down the EMS button first to immediately deactivates the receiver MAIN relay and the transmitter power. Then turned the power "off" from the main power source to the crane or equipment.
7. Do not use the same RF channel and ID code as any other system in use at the same facility or within 300-meter distance.
8. Ensure the waist belt is worn at all time during operation to avoid accidental damage to the transmitter.
9. Rotate the power switch to OFF position when the transmitter is not operated temporarily or the operation is finished.
10. Any repairing or adjustment of radio remote controls should be proceeding or surprised by repair technician.
11. The operator should not change any electrical parts at will.

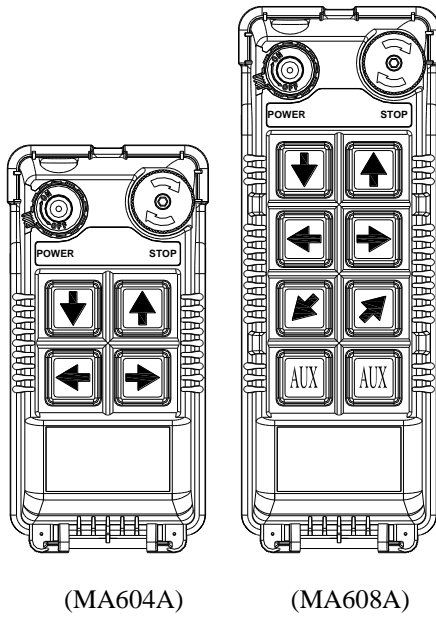
2. PUSHBUTTON CONFIGURATION

2.1 MA Model

★ with battery charger

MA 604A -- (4) single-speed pushbuttons

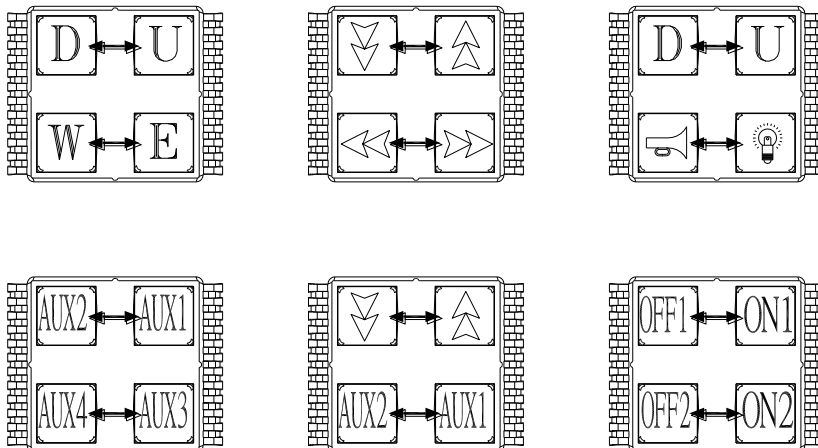
MA 608A -- (8) single-speed pushbuttons



(MA604A)

(MA608A)

Below are some of many types of pushbutton configurations that are also available, please contact your dealer for more details.



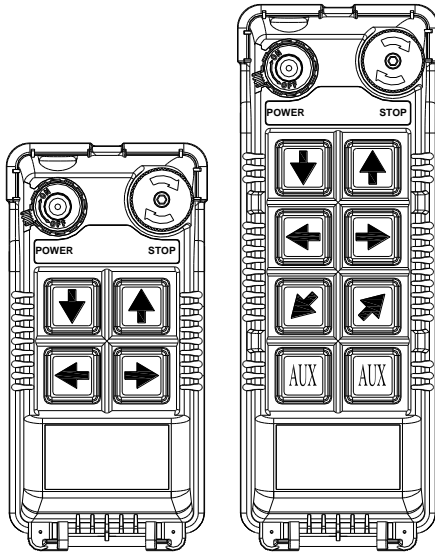
↔ Interlocked (Can also be set to non-interlocked via an external programmer unit).

2.2 MEZ Model

★ without battery charger

MEZ64 -- (4) single-speed pushbuttons

MEZ68 -- (8) single-speed pushbuttons



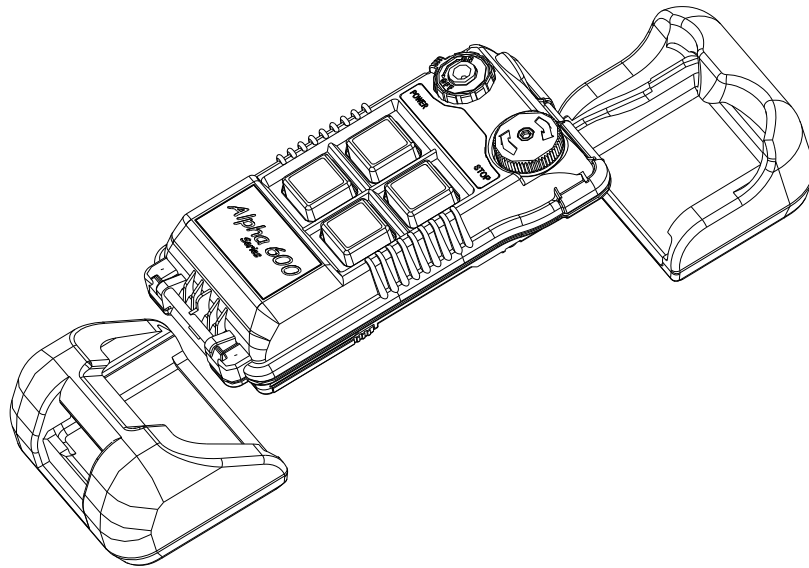
(MEZ64)

(MEZ68)

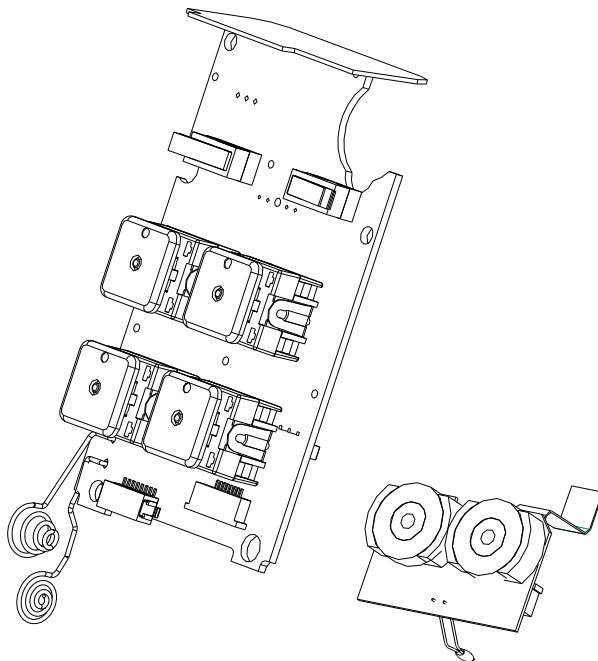
3. TRANSMITTER OUTLINE

3.1 MA 604A / MEZ64

3.1.1 SIZE : 140mm X 68mm X 30mm



3.1.2 TX INTERNAL MODULE – Encoder board & Induction charging board

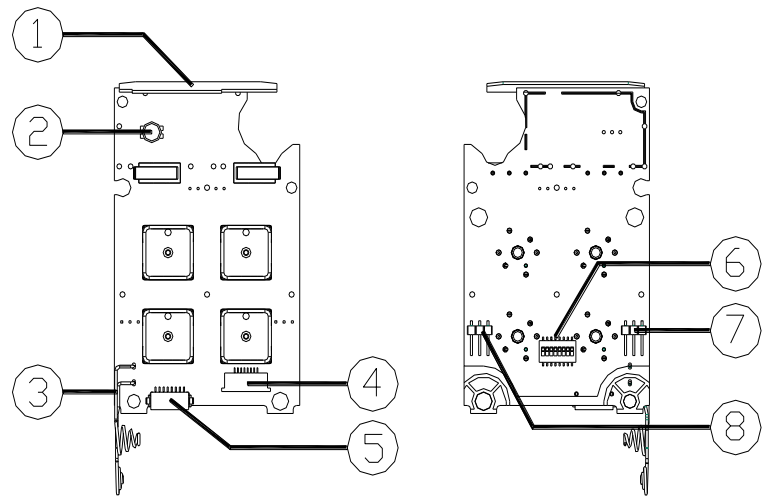


1) Encoder board

2) Induction charging board (MA604A only)

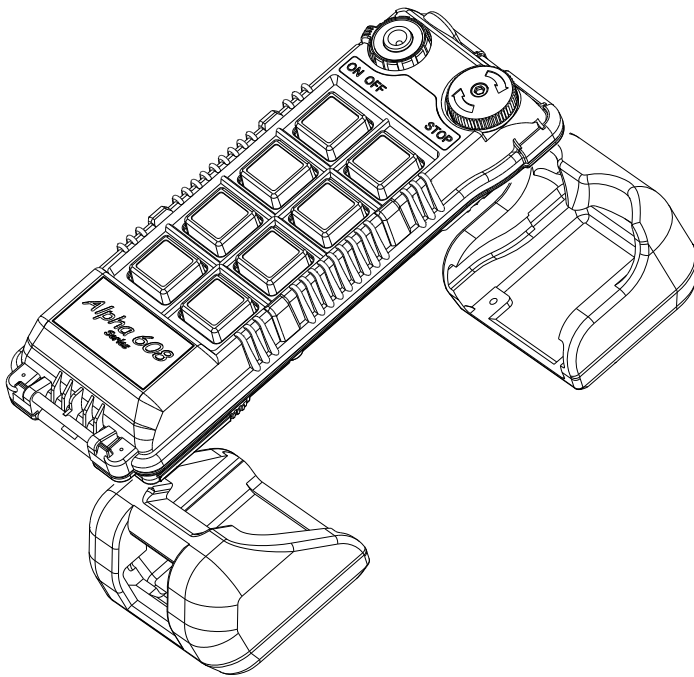
3.1.3 TRANSMITTER INTERNAL ASSEMBLY

- (1) Internal antenna
- (2) Status LED display
- (3) Battery contact
- (4) Transmitter induction charging port
- (5) Programming port
- (6) ID code dip-switch
- (7) JP2 setting pin
- (8) JP1 setting pin



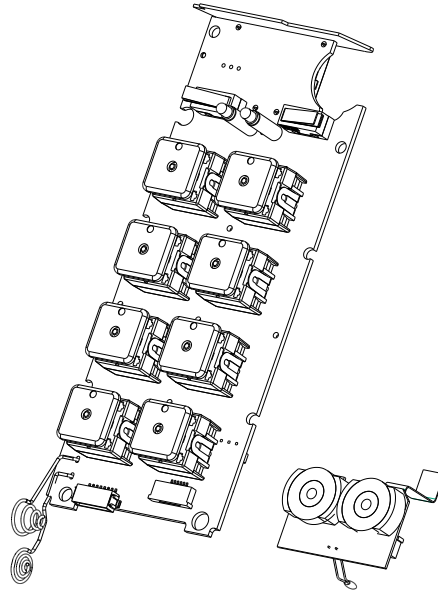
3.2 MA608A / MEZ68

3.2.1 SIZE: 189mm X 68mm X 30mm



(Fig.1) Transmitter Outline

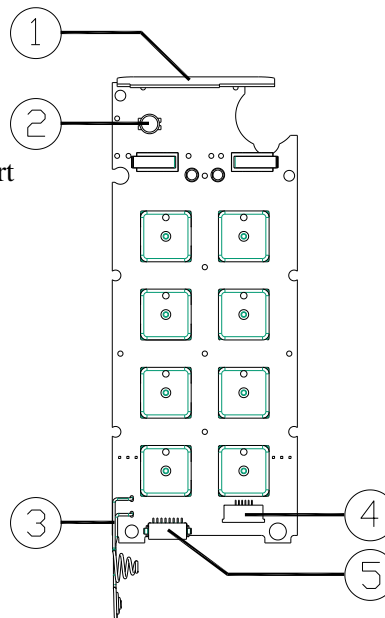
3.2.2 TX INTERNAL MODULE – encoder board 、electromagnetic induction charging board



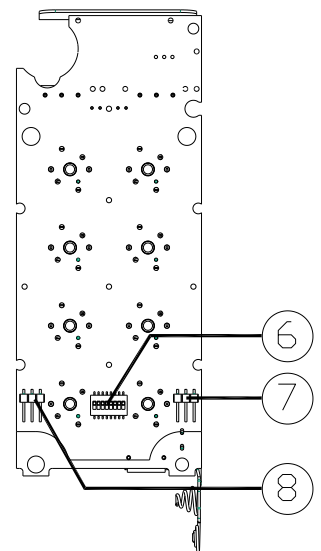
(Fig.4) Encoder board (Fig.5) Induction charging board (MA608A only)

3.2.3 TRANSMITTER INTERNAL ASSEMBLY

- (1) Internal antenna
- (2) Status LED display
- (3) Battery contact
- (4) Transmitter induction charging port
- (5) Programming port
- (6) ID code dip-switch
- (7) JP2 setting pin
- (8) JP1 setting pin

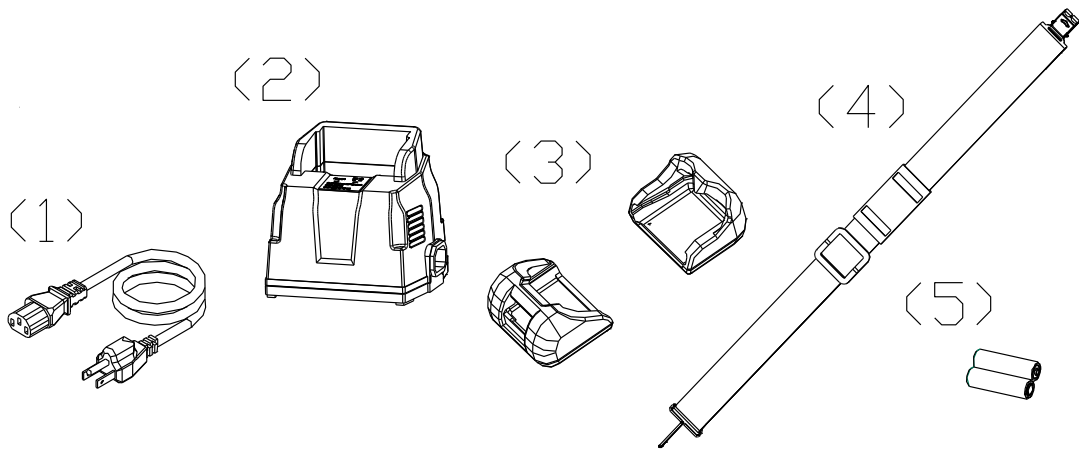


(Fig.2) Front View



(Fig.3) Back View

3.3 MA604A/ MA608A /MEZ64/MEZ68 Spare Parts



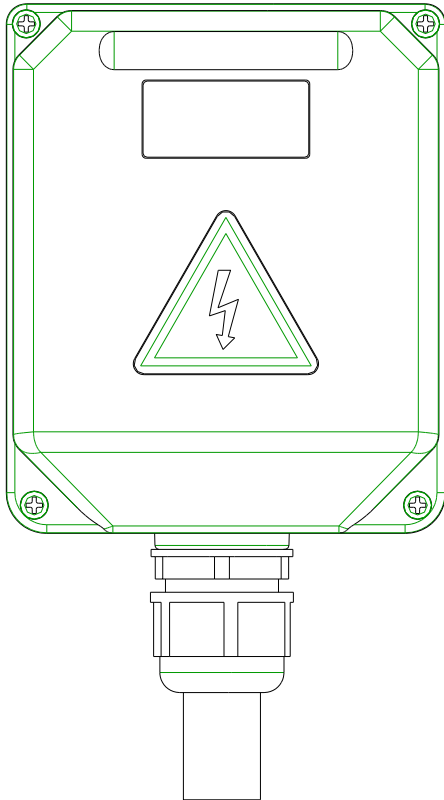
- (1) Charging cable (MA604A / MA608A only)
- (2) Charger (MA604A / MA608A only)
- (3) Transmitter shock-absorbing rubber
- (4) Shoulder strap
- (5) Rechargeable / AA alkaline batteries

4. RECEIVER OUTLINE

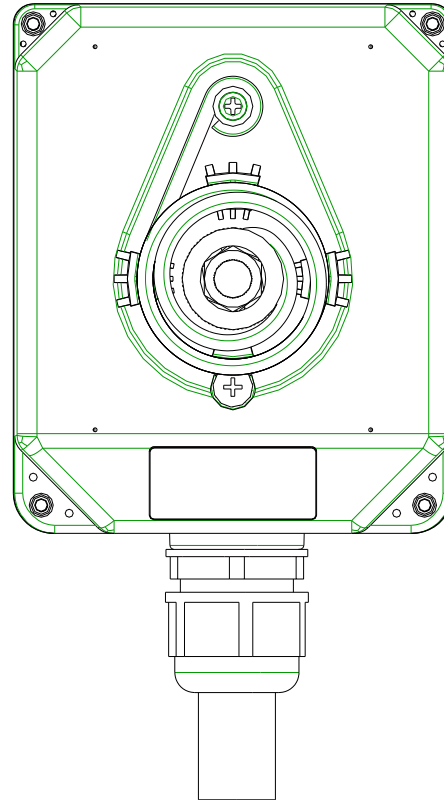
4.1 External Assembly

SIZE : 132mm X 110mm X 75mm (without Anti-vibration spring)

132mm X 110mm X 107mm (with Anti-vibration spring)

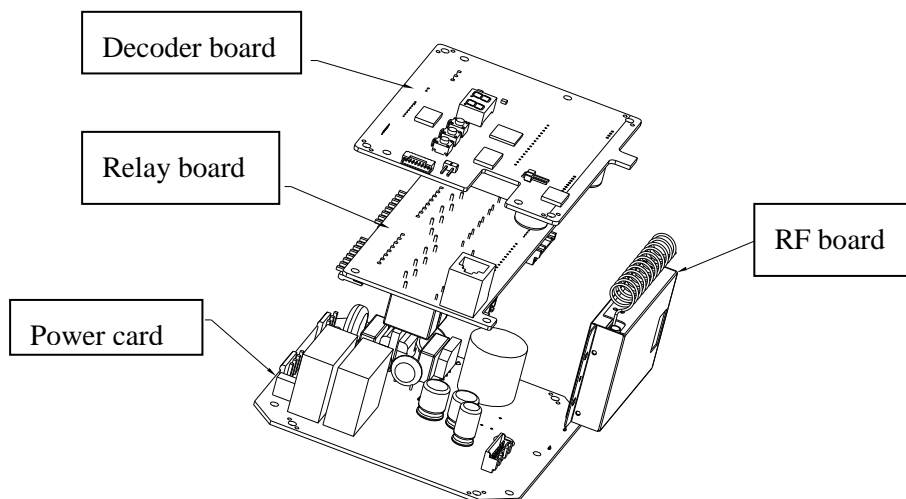


(Fig.7) Front View

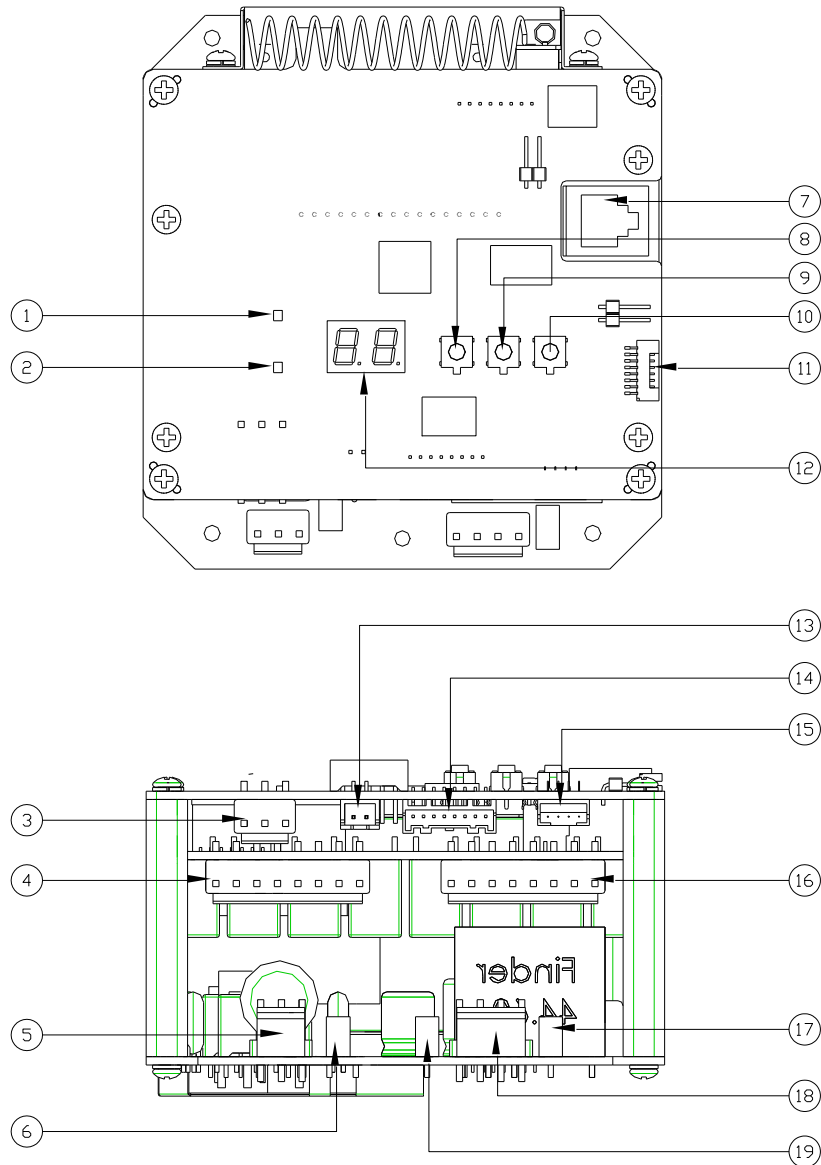


(Fig.8) Back View

4.2 Receiver internal assembly



4.3 Decoder board



- | | |
|--------------------------------------|---|
| (1) LED power light | (11) CPU programming port |
| (2) LED status light | (12) Segment display |
| (3) PWM (extension jack) | (13) 9.5V I/O |
| (4) Contact output seat (CN2) | (14) Extension RELAY connecting contact |
| (5) 100-240V power input seat (CN10) | (15) CAN BUS |
| (6) Fuse F1 1A/250V | (16) Cable output seat (CN1) |
| (7) Phone connecting port | (17) MAIN relay fuse F2 5A/250V |
| (8) Pushbutton S1=MODE/ENTER | (18) MAIN relay contact |
| (9) Pushbutton S2=EDIT/UP (+) | (19) MAIN relay fuse F3 5A/250V |
| (10) Pushbutton S3=SAVE/EXIT | |

5. **SYSTEM SETTING**

5.1 Transmitter function setting

5.1.1 Transmitter ID code setting

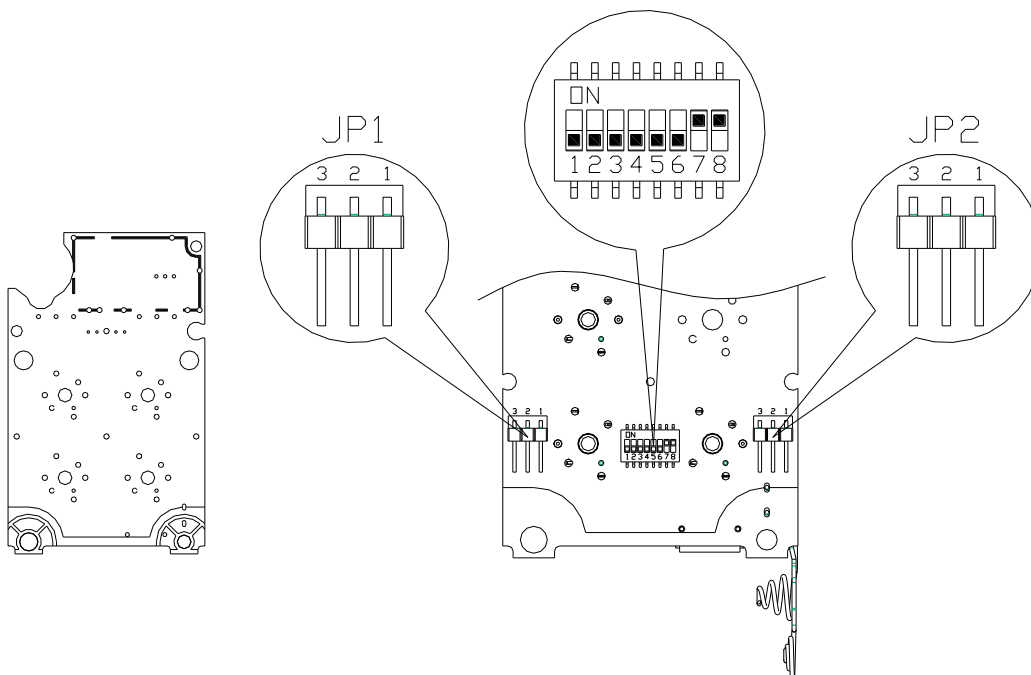
1). Set by programmer

2). Set by JP1, 1st 、 2nd pin and dip-switch of each encoder.

Setting steps:

- (1) Rotate transmitter power switch to OFF position
- (2) Remove transmitter shock-absorbing rubber
- (3) Place transmitter upside down and unscrew the transmitter bottom casing
- (4) Set the ID code by dip-switch and put the short pin into JP1 and 1st 、 2nd pin.
- (5) Make sure the batteries are installed securely
- (6) Rotate the transmitter power switch to ON position
- (7) Green status light ON for 0.1 sec, OFF for 0.1 sec and flashes for 1 sec (five times).
- (8) Green status light steady on (no more flashes), then the setting is completed. If the status light is red, then the setting is failed. Please repeat (1) to (7) until the setting is completed.
- (9) Remove short pin from JP1 and 1st 、 2nd pin.
- (10) Rotate transmitter power switch to OFF position.

Encoder board



As shown above, set dipswitch to ON position as 1 and OFF position as 0. So the ID code as shown above would be 00000011.

5.1.2 Transmitter frequency setting

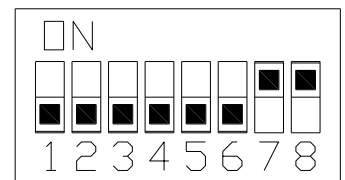
Maximum limit of channel is required.

★ 418MHz → 31 channels、 433MHz → 68 channels、 480MHz → 30 channels

- 1) Set by programmer
- 2) Set by JP1, 1st、2nd pin and dip-switch of each encoder.

When setting frequency by JP1 on encoder board, put the short pin into 1st、2nd pin, set the frequency ID code by dip-switch and follow setting steps (5)~(8) as shown on page 11 to complete the setting. (Note: count the dip-switch position from the 4th one)

For example : set channel as 03 →(00000011) → dip-switch will show as



5.1.3 Frequency (RF) Channels Table

CHANNEL	DIP-SWITCH	FREQUENCY	FREQUENCY	FREQUENCY
		418MHz/25k	433MHz/25k	480MHz/25k
01	00000001	418.950	433.0750	480.0500
02	00000010	418.975	433.1000	480.0750
03	00000011	419.000	433.1250	480.1000
04	00000100	419.025	433.1500	480.1250
05	00000101	419.050	433.1750	480.1500
06	00000110	419.075	433.2000	480.1750
07	00000111	419.100	433.2250	480.2000
08	00001000	419.125	433.2500	480.2250
09	00001001	419.150	433.2750	480.2500
10	00001010	419.175	433.3000	480.2750
11	00001011	419.200	433.8250	480.3000
12	00001100	419.225	433.8500	480.3250
13	00001101	419.250	433.8750	480.3500
14	00001110	419.275	433.9000	480.3750
15	00001111	419.300	433.9250	480.4000
16	00010000	419.325	433.9500	480.4250
17	00010001	419.350	433.9750	480.4500
18	00010010	419.375	434.0000	480.4750
19	00010011	419.400	434.0250	480.5000
20	00010100	419.425	434.0500	480.5250

CHANNEL	DIP-SWITCH	FREQUENCY	FREQUENCY	FREQUENCY
21	00010101	419.450	434.0750	480.5500
22	00010110	419.475	434.1000	480.5750
23	00010111	419.500	434.1250	480.6000
24	00011000	419.525	434.1500	480.6250
25	00011001	419.550	434.1750	480.6500
26	00011010	419.575	434.2000	480.6750
27	00011011	419.600	434.2250	480.7000
28	00011100	419.625	434.2500	480.7250
29	00011101	419.650	434.2750	480.7500
30	00011110	419.675	434.3000	480.7750
31	00011111	419.700	434.3250	
32	00100000		434.3500	
33	00100001		434.3750	
34	00100010		434.4000	
35	00100011		434.4250	
36	00100100		434.4500	
37	00100101		434.4750	
38	00100110		434.5000	
39	00100111		434.5250	
40	00101000		434.5500	
41	00101001		434.5750	
42	00101010		434.6000	
43	00101011		434.6250	
44	00101100		434.6500	
45	00101101		434.6750	
46	00101110		434.7000	
47	00101111		434.7250	
48	00110000		434.7500	
49	00110001		434.7750	
50	00110010		433.3250	
51	00110011		433.3500	
52	00110100		433.3750	
53	00110101		433.4000	
54	00110110		433.4250	
55	00110111		433.4500	
56	00111000		433.4750	
57	00111001		433.5000	
58	00111010		433.5250	
59	00111011		433.5500	
60	00111100		433.5750	
61	00111101		433.6000	
62	00111110		433.6250	
63	00111111		433.6500	
64	01000000		433.6750	
65	01000001		433.7000	
66	01000010		433.7250	
67	01000011		433.7500	
68	01000100		433.7750	

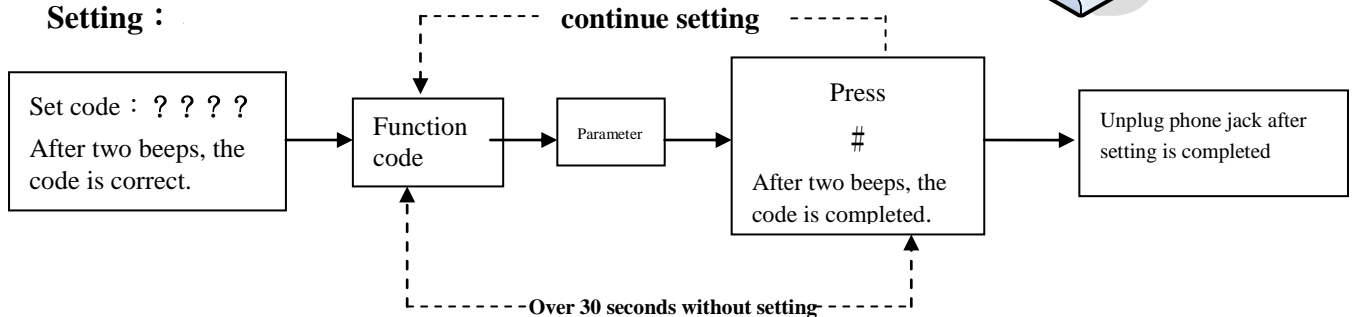
5.1.4 Receiver Function Set by Telephone

MEZ function can be set or changed by the connection of telephone and receiver.

Code : including 1~9、*、#... four codes (in-plant setting)



Setting :



★ Pushbutton setting inside receiver cannot be done with phone setting at the same time!

★ Setting is proceeding only when phone handset is picking up

Function Setting List

	ITEM	FUNCTION CODE	PARAMETER	REMARK
1	Frequency setting	*1048	Channel range 000~255	
2	Shutdown time setting	*1057	000~065. Range time: 00~64min 065 is set as non-shutdown	
3	Pushbutton/RELAY function Setting	*2067	AUX button + LV function setting AUX button 1 + AUX button 2	Except table 2 for MA608, table 1 is for the rest of them. ★ Except MA608 without LV relay, the rest of them with LV relay.
4	Over temperature protection	*1053	065~085. Protection range: 65~85°C	
5	Function_control double ID setting	*30720	1 as enable; 0 as disable	
6	Function_control Auto scan setting	*30721	1as enable; 0 as disable	
7	Auto_scan start channel setting	*1074	Start channel setting 000~255	The start channel has to be smaller then the ending channel.
8	Auto_scan ending channel setting	*1075	Ending channel setting 000~255	The ending channel has to be bigger then start channel.
9	Double ID setting	*207300	00~13. 15 will be kept from beginning to power off	Table 3
10	Country code setting: transmitter A	*2049	00 00~15 15 = 00h~FFh	Table 4
11	Country code setting: transmitter B (double ID only)	*2051	00 00~15 15 = 00h~FFh	Table 4
12	ID setting: transmitter A	*2050	00 00~15 15 = 00h~FFh	Table 4
13	ID setting: transmitter B (double ID only)	*2052	00 00~15 15 = 00h~FFh	Table 4
14	Back to in-plant setting	*52011		

Pushbutton/RELAY function Setting (for MA604, MEZ64 & MEZ68)

TABLE 1			
SPARE PUSHBUTTON	FUNCTION	LV	FUNCTION
00	Regular function	00	No function
01	Regular function	01	ID RELAY
02	Jogging function	02	Temperature RELAY
03	Jogging +controlled by e-stop button function	03	ID RELAY+ Temperature RELAY
04	No function	04	Low voltage RELAY
05	No function	05	ID RELAY+ low voltage RELAY
06	No function	06	Temperature RELAY+ low voltage RELAY
07	No function	07	ID RELAY+ Temperature RELAY+ low voltage RELAY
Example : Select “regular function” on AUX button + “temperature relay” on LV = 0102			

Pushbutton/RELAY function Setting (for MA608 only)

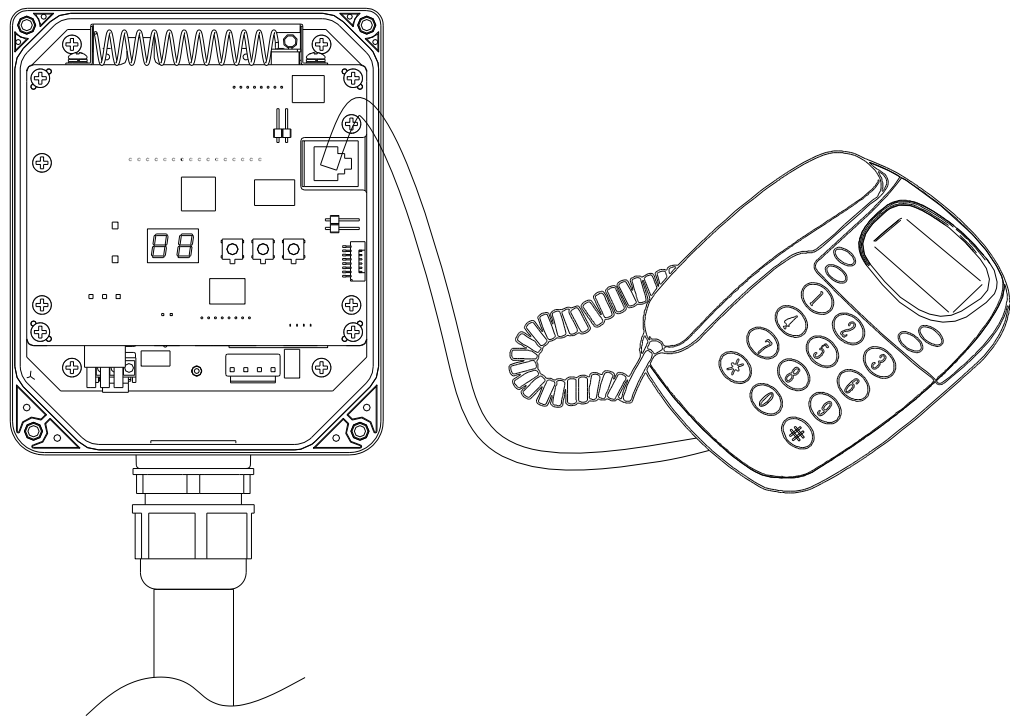
TABLE 2							
WITHOUT INTERLOCK FUNCTION			WITH INTERLOCK FUNCTION				
AUX button 1	+	AUX button 2	Parameter	AUX button 1	+	AUX button 2	Parameter
Regular function	+	Regular function	0000	Regular function	+	Regular function	0101
		Jogging function	0002			Jogging function	0105
		Jogging + controlled by e-stop button function	0003			Jogging + controlled by e-stop button function	0106
Jogging function	+	Regular function	0200	Jogging function	+	Regular function	0501
		Jogging function	0202			Jogging function	0505
		Jogging + controlled by e-stop button function	0203			Jogging + controlled by e-stop button function	0506
Jogging + controlled by e-stop button function	+	Regular function	0300	Jogging + controlled by e-stop button function	+	Regular function	0601
		Jogging function	0302			Jogging function	0605
		Jogging + controlled by e-stop button function	0303			Jogging + controlled by e-stop button function	0606
				OFF	+	ON	0404
				Safety OFF	+	Safety ON	0707

Double ID setting

TABLE 3	
TIME	PARAMETER
5 sec	00
10 sec	01
15 sec	02
20 sec	03
25 sec	04
30 sec	05
1 min	06
2 min	07
3 min	08
4 min	09
5 min	10
6 min	11
7 min	12
8 min	13
Not available	15
Example: 8min→13	

Country code & ID setting

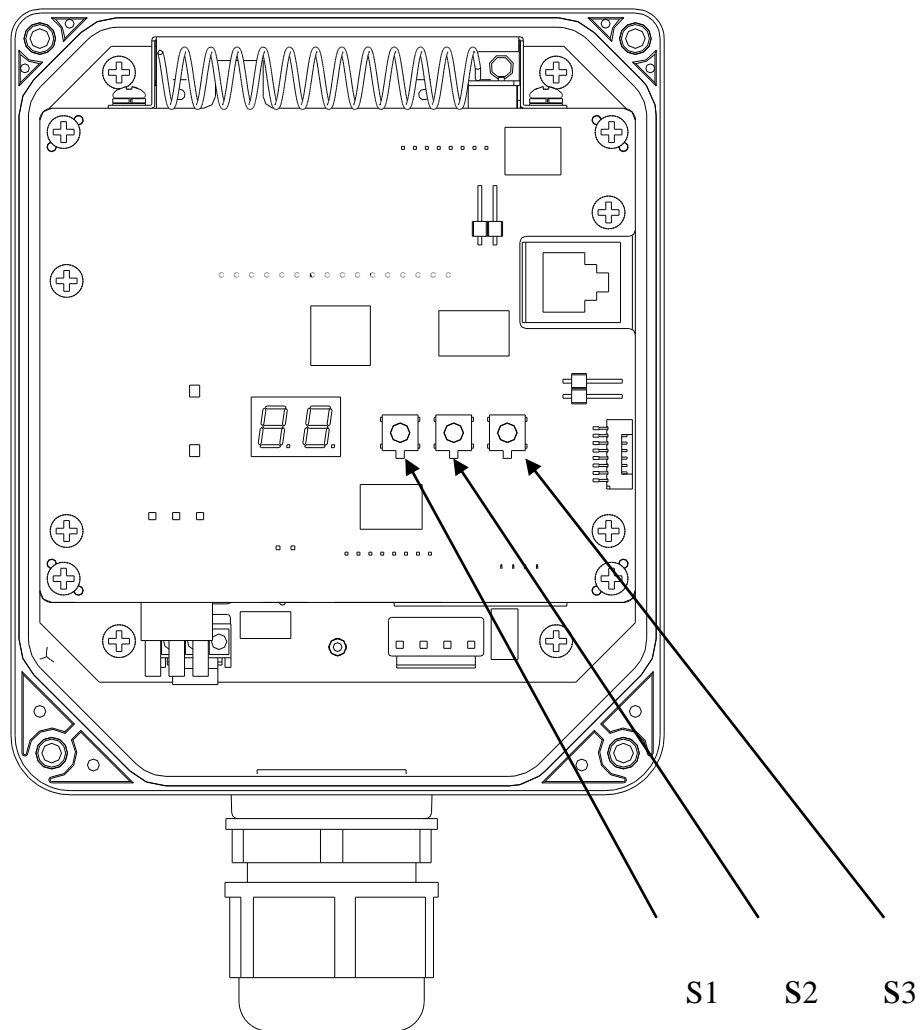
TABLE 4			
TENS	PARAMETER	DIGITS	PARAMETER
0	00	0	00
1	01	1	01
2	02	2	02
3	03	3	03
4	04	4	04
5	05	5	05
6	06	6	06
7	07	7	07
8	08	8	08
9	09	9	09
A	10	A	10
B	11	B	11
C	12	C	12
D	13	D	13
E	14	E	14
F	15	F	15
Example: A+F=1015			



5.1.4.6 List of phone setting and two 7-segment displays

NO.	ITEM	TERM	SEGMENT DISPLAY AND DESCRIPTION	
1	Phone setting connection completed	Connect with phone	-- (Up)	Digits + tens: "--" steady ON (system auto shutdown)
2	Phone setting press button	Press phone set key	#,*	"*" , "*" & "#" auto-switch between digits and tens
3	Enter password to phone set. Password incorrect.	4 numbers are incorrect		E7 flashes ON 0.1S / OFF 0.1S display 5 sec
4	Overtime	Without pressing any phone key over 30sec	middle	Clear number --(middle) "--" steady ON
5	Enter password to phone set. Password correct.	4 numbers have to correct		If the 4-digit password is entered incorrectly, then back to NO.1-- (Up) and enter again.
6	The input number of digit on phone is out of range.	Over maximum number of input digit.		Display flashes ON 0.1S / OFF 0.1S for 10 sec
7	Phone input data is out of range.	Over maximum data input range		Display flashes ON 0.1S / OFF 0.1S for 3 sec
8	Enter password to phone set. Password errors for 3 times.	Enter password set. Password errors for 3 times.		Display flashes ON 0.1S / OFF 0.1S. Re-start to input again.

5.2 Receiver Manual Setting



★Setting is proceeding only when phone handset is picking up

Definition (S1~3)

S1=MODE/ENTER; S2=EDIT/UP(+); S3=SAVE/EXIT

FUNCTION	SETTING
Check S/N.	Press S1 once display as d1 → Press S2 S/N. is displayed. Press once, display as 1 , press twice to the 6 th time, display as 20 11 00 06 → Press S3 to exit.
Check Channel	Press S1 twice display as d2 → Press S2 Channel is displayed → Press S3 to exit.
Check ID_a	Press S1 three times display as d3 → Press S2 once country code is displayed; twice ID_a is displayed → Press S3 to exit.
Check ID_b	Press S1 four times display as d4 → Press S2 once country code is displayed; twice ID_b is displayed → Press S3 to exit.
Back to in-plant setting	Depress S1 >3sec then [1] is displayed (flashed) → Depress S2 [3] is displayed (flashed) → Depress S3 >3 sec then [3] is displayed (steady) (back to in-plant setting and then exit) ★back to original when standby time is over 30 sec.
Auto-matching	Depress S1 >3sec then [1] is displayed (flashed) → Depress S3 [2] is displayed (flashed), transmitter “Up” & “Down” buttons are depressed at the same time until [2] is displayed (steady) → Depress S3 save Channel & ID_a & exit, then to start operation. (If S3 is not pressed to exit within 30sec, the matching will not be saved.) ★If scanning is continued for 90sec without matching successfully, then the scanning will be stopped.

★Receiver manual setting cannot be used with telephone setting at the same time !

5.3 Auto-Matching Mode

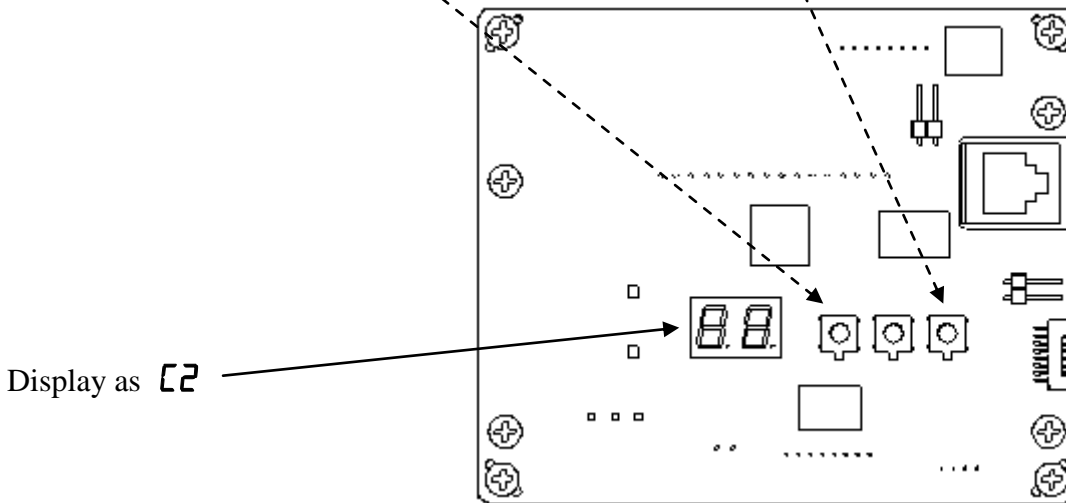
Purpose for auto-matching mode:

It's for the replacement of a new transmitter or one receiver works with one transmitter changes to one receiver receives signal from two different transmitters. In this way, the operator doesn't need to take much time to change the setting, in case the original transmitter is breakdown and spare transmitter is needed. ★The auto-matching function is available only when system type for transmitter and receiver is the same.

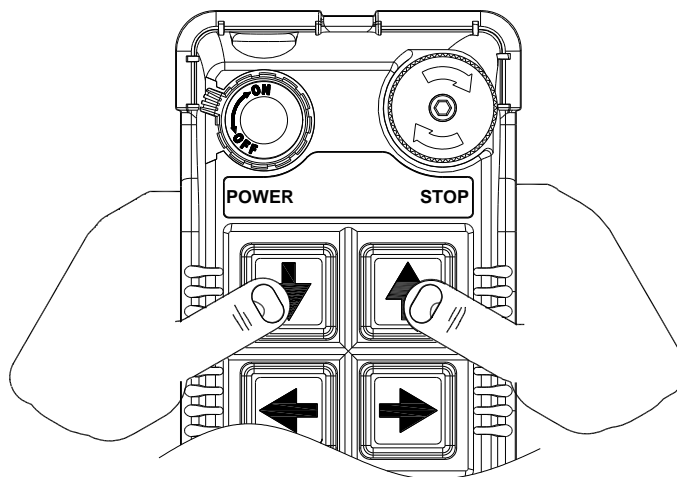
Operation :

Depress S1 > 3sec then [1] is displayed (flashed) → Press S3 [2] is display (flashed), transmitter "Up" & "Down" buttons are depressed at the same time (as fig.1) until [2] is displayed (steady) Depress S3 save & exit, then to start operation. (If S3 is not pressed to exit within 30sec, the matching will not be saved.)

★ If scanning is continued for 90sec without matching successfully, then the scanning will be stopped.



★Note: For vertical type transmitter, Up/Down pushbutton will be in different order from below figure.

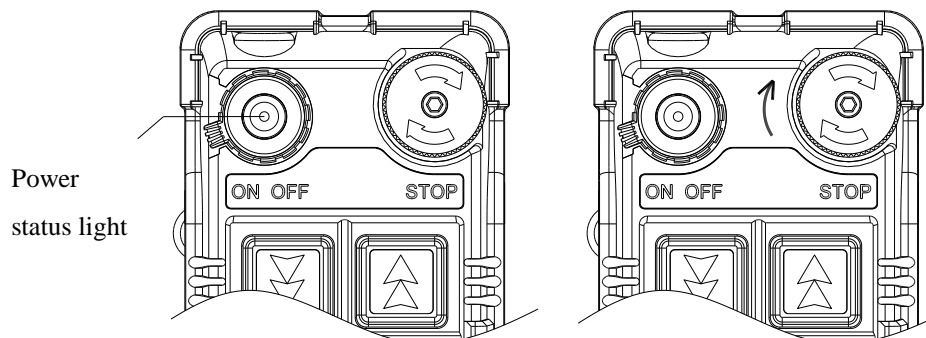


(Fig.1 as pointed by the fingers)

6. TRANSMITTER OPERATION & STATUS LIGHT

6.1 Transmitter Operating Steps

1. Make sure the two “AA” NiMH rechargeable batteries are installed correctly. Please note the polarity of the batteries.
2. **Status lights**_To operate the transmitter, please rotate the power key on the top-left corner clockwise to “on” position. The status LED (green and red) will be steady “on” for 2 seconds and then “off”. If the transmitter Status LED displays a red blinking light that is “on” → 0.1 second and “off” → 1.9 seconds, or no light at all, this indicates the transmitter with batteries needs to be recharged. For battery charging or replacement, please refer to instruction next page.
3. When any function pushbutton is depressed, the transmitter Status LED displays a red blinking light that is “on”→ 0.1 second and “off”→ 1.9 seconds. If the voltage is low, the transmitter Status LED will be “on”→0.1 second and “off”→1.9 seconds, this indicates the transmitter with batteries needs to be recharged. Continuous operation will cause the transmitter battery power exhausting and cannot operate at all.
4. **EMS & Restarting** _ In case of an emergency, press down the red emergency stop button (EMS) will immediately deactivates the transmitter and receiver MAIN relay. The transmitter Status LED will be blinking “on”→0.5 second and “off”→0.5 second for 30 seconds (Mode 0). Then turn off the transmitter power.
5. The emergency stop button is a right-rotate momentary spring-return type. To turn on the transmitter and activate the MAIN relay, please elevate the emergency stop button again and rotate the transmitter power key to “ON” position.
6. Note that the transmitter cannot be hit by outer force, so that malfunction can be prevented.
7. The operating temperature is $-10 \sim +60^{\circ}\text{C}$. Avoid operating the transmitter in high temperature workshop. If operating temperature is higher than 60°C , the auto shutdown protection installed inside CPU will shut down the transmitter and deactivate the MAIN relay.
8. To operation normally, the battery power has to be over 2.2V. If the voltage is lower than 2.2V, the system cannot be started and low voltage will be showed until the MAIN is completely shutdown.
9. If the power voltage is lowered than 2.2V when transmitter is operated, the LV code will be “1” and low voltage status light will be shown. The transmitter will stop sending signals when voltage is lower than 2.0V.



STOP: press → lock (emergency stop)

STOP: Elevate clockwise → reset (Turn on the transmitter at any time)

6.2 Transmitter Status Light

Type	Status	Solution	LED Indication
1	Charging	Place transmitter into charger	Red light ON
2	Power on when voltage is low	BATT<2.2V	Red light flash ON_0.1/OFF_1.9 sec (until power off)
3	Setting failed or invalid	Set data by using JUMPER & dip-switch without following rules	Red light ON_0.1/OFF_0.1 sec
4	Setting completed	JP1 or JP2 inserted	Green light ON until power off.
5	EEPROM ID error	EEPROM ID code does not match CPU requirement	Red light ON until power off
6	RF module abnormal	PLL UNLOCK	Red light ON_0.1/OFF_0.1 sec
7	ID even number error	Setting error	Red light ON_1/OFF_1 sec
8	Pushbutton locked	Power on when pushbutton relay is closed	Red light ON_1.9/OFF_0.1 sec (until power off)
9	Normal power on	BATT>=2.2V and all the pushbuttons are not depressed	All the lights ON_2 sec
10	STOP status	STOP button is pressed	MODE 0: Red light ON_0.5/ OFF_0.5sec, flash 30sec. MODE 1: all lights are OFF
11	Low voltage during operation	BATT<2.2V and press pushbutton	Red light flash ON_0.1/OFF_1.9sec
12	Normal operation	Press pushbutton	Green light flash ON_0.1/OFF_1.9 sec

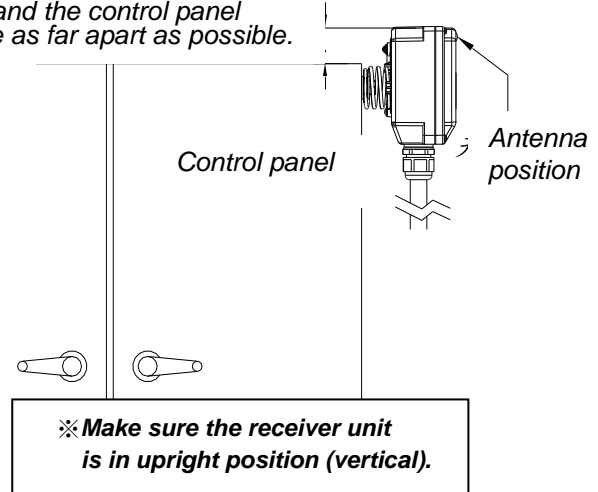
7. RECEIVER INSTALLATION

7.1. Preparation for Installation

1. Required Tools for Receiver Installation:

- (1) Flat Head Screwdriver (-)
- (2) Phillips Head Screwdriver (+)
- (3) Multi-Meter
- (4) 14mm Wrench x 2
- (5) Power Drill with \varnothing 10.5mm Drill-Bit

The distance between receiver antenna and the control panel should be as far apart as possible.



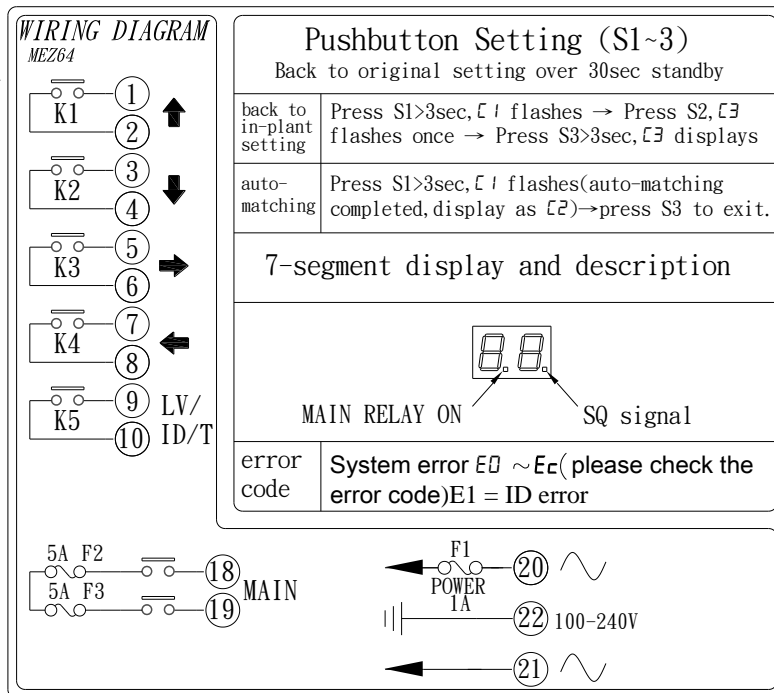
2. Check to ensure that your receiver is not set to the same RF channel and ID code as any other systems in operation at the same facility or within 300-meter distance.
3. Prior to installation, make sure that the crane or equipment itself is working properly.
4. Use a multi-meter to check the voltage source available and ensure the receiver voltage setting matches your power source.
5. Prior to installation, switch off the main power source to the crane or equipment.

7.2 Step By Step Installation

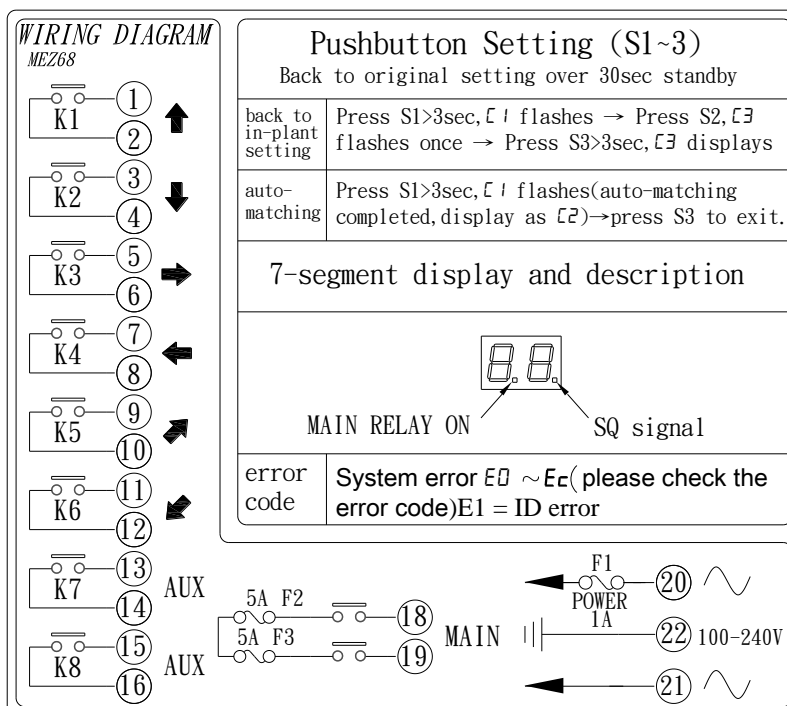
1. For better reception, the location selected should have the antenna visible from all areas where the transmitter is to be used.
2. The location selected should not be exposed to high levels of electrical noise. Mounting the receiver next to an unshielded variable frequency control (inverter) may cause minor interference. Always locate the receiver unit as far away from inverter controls as possible.
3. Ensure the selected location has adequate space to accommodate the receiver enclosure.
4. Make sure the receiver unit is in upright position (vertical).
5. The distance between the antenna and the control panel should be as far apart as possible (refer to the fig. on page 22).
6. If a crane or equipment's runway is longer than 100 meters, an external antenna should be added.
7. Drill a hole on the control panel (10.5mm).
8. Tightened the bolt nuts provided.
9. **If the control panel has a plastic surface, extended grounding wire should be used.**
10. For system wiring, please refer to the output contact diagrams from page 4.
11. Ensure all wiring is correct and safely secured and all screws are fastened.

7.3 Output Contact Diagrams

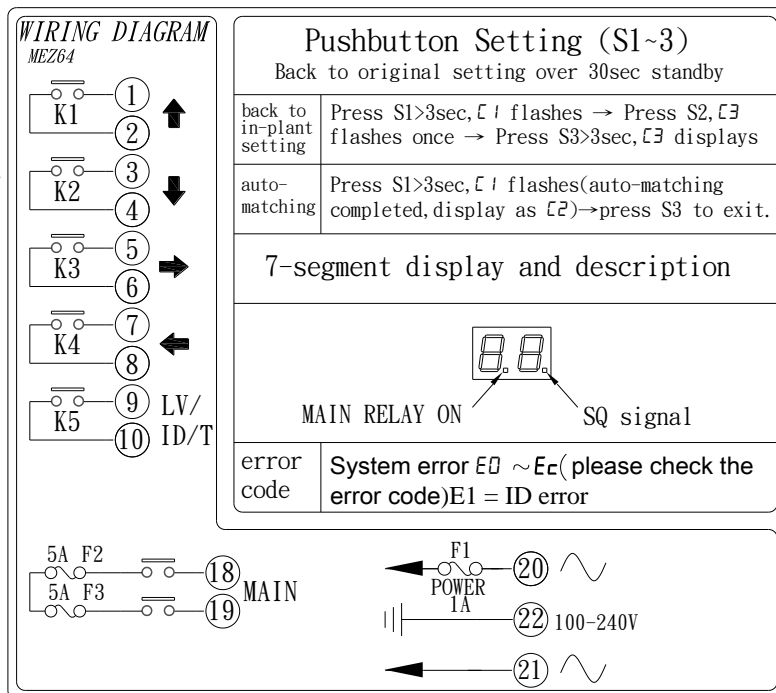
7.3.1 MA604A (4) single-speed pushbuttons



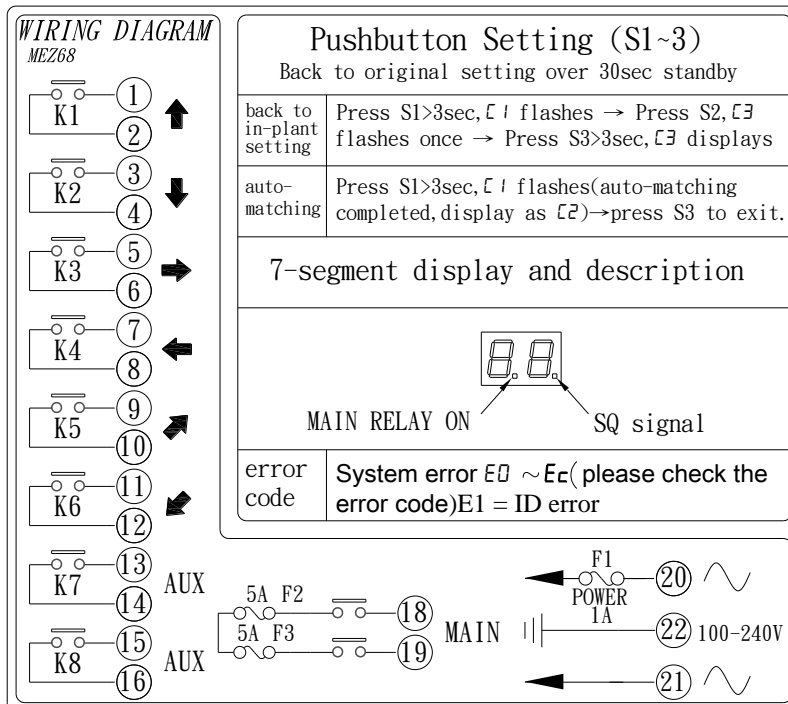
7.3.2 MA608A (8) single-speed pushbuttons



7.3.3 MEZ64 (4) single-speed pushbuttons



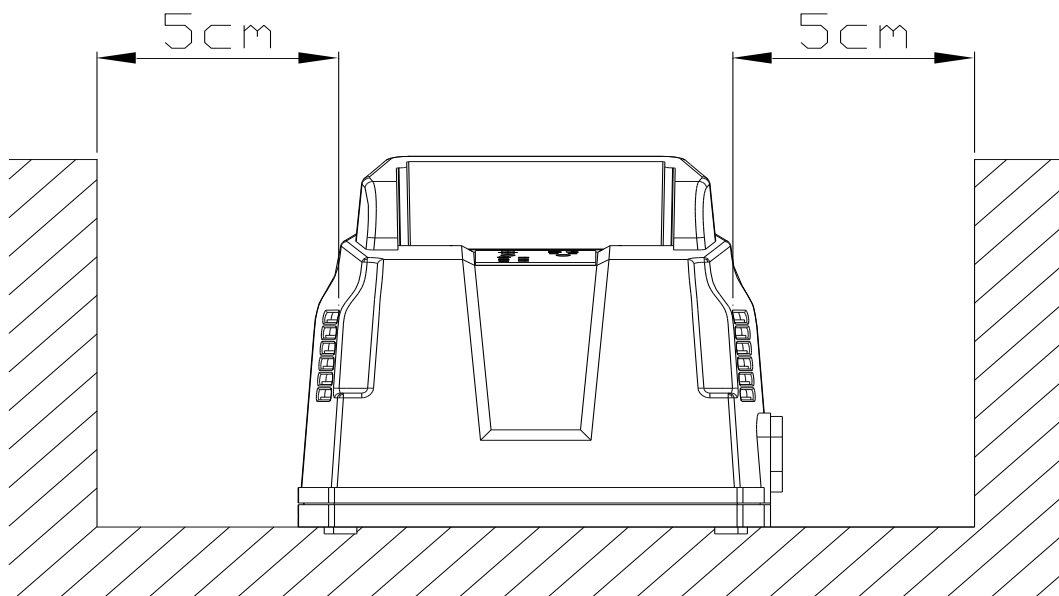
7.3.4 MEZ68 (8) single-speed pushbuttons



8. Charger Operation

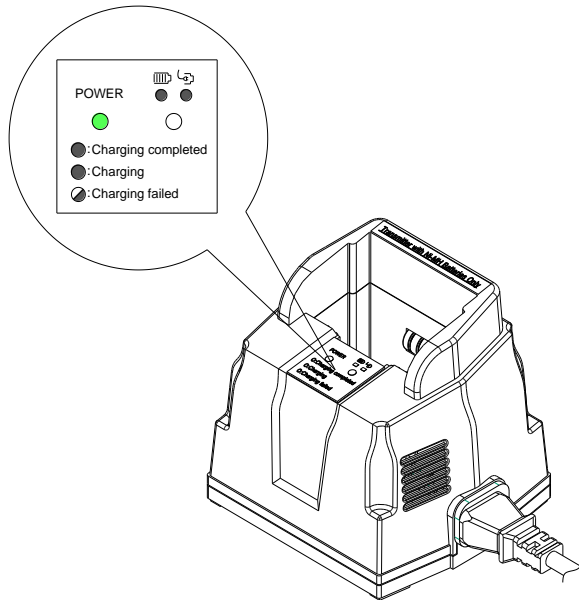
8.1 Electromagnetic Induction Charge

- The electromagnetic induction charger with undisclosed metal charging contacts on transmitter provides immediate charging simply by sliding in the transmitter into the charger. No need to open the battery cover to replacing batteries.
- To avoid rain, high temperature, humidity and corroding air, please place or install the battery charger indoor with good ventilation. Keep 5cm space for two sides of the charger to keep the heat out. The suggesting temperature range is 0 ~ 40°C.

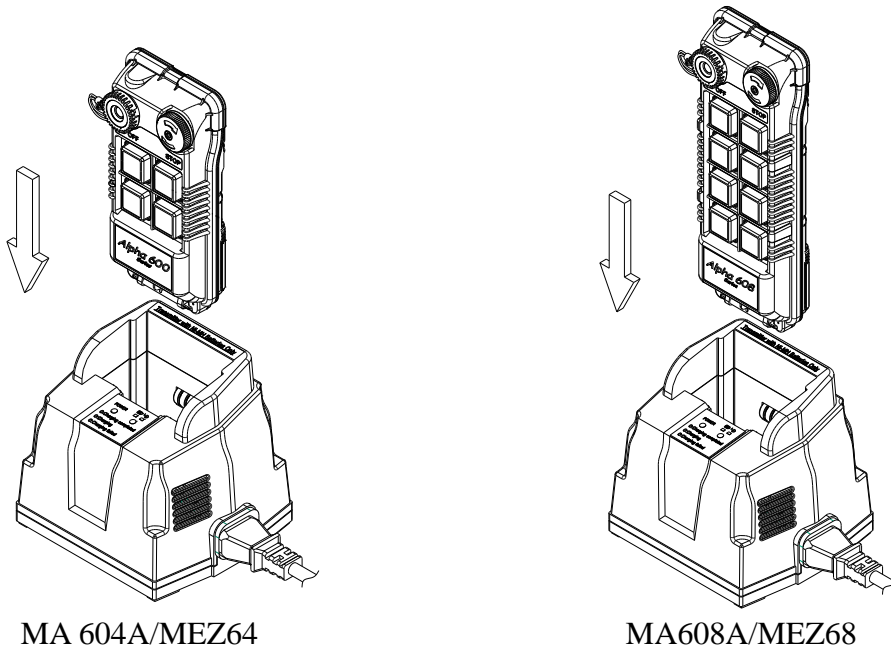


(Fig. 10) Front view

- Battery charger voltage AC100~240V 50/60Hz, power consumption 7W ◦
- Use Nickel-Metal Hydride (NI-MH) 2500mA, AA size*2 rechargeable batteries. Charging can be completed in 5 hours.
- Set the power switch on the OFF position whenever transmitter is not operated. Press E-STOP button and slide-in the transmitter into the charger to charge. The transmitter is suggested to be charged whenever it is not operated.
- The charger status light shows red when transmitter is charging; transmitter status light will be off when charging is completed or failed. Please refer to below Battery Charger LED Status Light for details. After charging is completed, the charger status light shows green.
- Charger power LED: green



Slide-in transmitter into battery charger (transmitter vinyl protective cover and transmitter bottom rubber casing has to be taken off)



8.2 Battery Charger LED Status Light

Item	Status	Condition	Status Light
1	Startup check	Within 2 seconds after power is on	Red + Green LED ON for 2 sec
2	Charging failed	No battery inside transmitter battery holder or non-rechargeable battery is used.	Red LED OFF_0.1/ON_1.9 sec
3	Charging	Charging procedure is normal	Red LED ON
4	Charging completed	Charging procedure is completed	Green LED ON
5	Standby	No transmitter in the charger	Not lit

9. TROUBLE SHOOTING

Definition for 7-Segment Display

	ITEM	Condition	7-segment display and description	
1	Low voltage	Power lower than 8.5V		Not lit
2	Transmitting strength	Press Up / Down pushbutton at the same time	00 - 99	(The display of peak for receiving sensitivity. Update every 1sec)
3	Pushbutton motion	Depress the pushbutton	00-XX	Display the latest relay number
4	START checking	Power on, system check OK	The 7-segment light will run clockwise to check if the display is in good condition.	
5	AUTO SCAN	Auto scanning status	The 7-segment light will run counterclockwise continuously.	
6	MAIN RELAY	MAIN RELAY ON	-	Tens decimal(display individually)
7	Receiving status & SQ signal	Complete code when MAIN RELAY is ON (incl. empty code) or SQ signal when MAIN RELAY is OFF	-	Digits decimal(display individually) MAIN RELAY ON → receiving condition, one set of code ON 50ms MAIN RELAY OFF →SQ signal
8	STANDBY	MAIN RELAY OFF, no decoding status	--	Digits + tens underline flash
9	Back to in-plant setting completed	By procedure	C3	Lit until S3 is pressed
10	Self-feedback testing completed	test completed	C4	Lit until power is shut off
11	MAIN RELAY checking error	MAIN RELAY function checking error	E0	flash ON 0.1S / OFF 0.1S
12	ID error	ID error (AUTO_SCAN is not included)	E1	flash ON 0.1S / OFF 0.1S
13	RELAY checking error	RELAY check error	E2	flash ON 0.1S / OFF 0.1S
14	Old ID error	GID、ID check	E3	flash ON 0.1S / OFF 0.1S
15	No type	No type is selected	E4	flash ON 0.1S / OFF 0.1S
16	COM cannot be activated	Relay board NG	E5	flash ON 0.1S / OFF 0.1S
17	Dynamic EE_ID error	EE_ID check error	E6	flash ON 0.1S / OFF 0.1S
18	RF module connect error	Connect error	E8	flash ON 0.1S / OFF 0.1S
19	Over temperature protection	Temperature over set value	Eb	flash ON 0.1S / OFF 0.1S

Should the operator find the *transmitter* not operating normally, please check the chart below for simple trouble shooting tips:

Problem	Possible Reason	Solution
Transmitter does not communicate with the receiver.	Transmitter and the receiver are not on the same RF channel (SQ lamp not lit) or ID code.	Ensure the transmitter is setting correctly. The labels on the receiver and the transmitter will identify the RF channel and ID code in use.
Transmitter does not communicate with the receiver.	Low or no transmitting power from the transmitter unit.	Elevate the EMS button and rotate the transmitter power switch to "ON" position. If the status LED shows blinking red light or no light at all, then rotate the transmitter power switch to "OFF" position and replace two alkaline "AA" batteries.
No power to the receiver (AC power indicator on the receiver unit is not lit).	Blown fuse or no input power connection.	Ensure power input to the receiver unit is correct. If the power indicator (AC) is still not lit, please check the receiver for any open fuse.
Outputs do not operate correctly.	Receiver configuration is not set properly or output wiring is incorrect.	Please refer to section 6 and 7 to ensure receiver is correctly wired and configured for your application.
Transmitter does not communicate with the receiver.	Transmitter is turned on with the EMS activated (pressed down).	Elevate the EMS first and then rotate the power switch to "OFF" position and then "ON" again.

Should the operator find the *receiver* not operating normally, please check the chart below for simple trouble shooting tips:

Problem	Possible Reason	Solution
MAIN RELAY checking error E0	MAIN RELAY function error	Send back to manufacturer for repairing or replacement
RELAY checking error E2	RELAY function error	Send back to manufacturer for repairing or replacement
ID odd number error E3	Country code ID setting error	Re-setting or back to in-plant setting
Type setting error E4	Type setting error	Send back to manufacturer for re-setting
COM cannot be activated E5	RELAY board connecting PIN assembled incorrectly or RELAY board error	Re-plug connecting PIN or change the new relay board
Dynamic EE_ID error E6	Internal data is deleted	Re-update by distributor
RF module connecting error E8	RF module disconnected or RF module error	Re-plug or change the new RF module
Over temperature protection Eb	Environmental temperature over setting range	Check if environmental temperature is too high or setting temperature is low (parameter is low)

10. **SYSTEM SPECIFICATION**

Transmitter Unit

Source Voltage	:	Ni-MH AA size battery 1.2V x 2 (no contact charging) Or AA alkaline batteries 1.5V x 2
Antenna Impedance	:	Internal Antenna 50 ohms. External antenna is available.
Dimension	:	
	:	MA604A/MEZ64 : 140mm × 68mm × 30mm
	:	MA608A/MEZ68 : 189mm × 68mm × 30mm
Weight	:	
	:	MA604A/MEZ64 : 240g (incl. batteries)
	:	MA608A/MEZ68 : 300g (incl. batteries)
Enclosure Rating	:	IP-66
Operating Temperature	:	-10°C ~ +60°C (>70°C±10°C transmitter auto shutdown)
Transmitting Power Consumption	:	< 30mA @ 3.5V (Various from encoding mode and transmitting power)
Continuous Operating Time	:	100hrs @batteries full (2000mA), band 433MHz, transmitting power 1mW (rechargeable battery)

Transmitting RF Board Unit

Frequency Range	:	433 MHz
Transmitting Power	:	0.1Mw – 10mW
Frequency Control	:	TCXO + PLL
Frequency Deviation	:	< 1ppm @ 25°C
Spurious Emission	:	< - 50dB
Emission	:	F1D
Antenna Impedance	:	50 ohms
Operating Temperature	:	-10°C ~ +50°C
LV Voltage	:	2.2V – 2.0V

Charger Unit

Dimension	:	120mm x 105mm x 105mm
Voltage	:	100~240V 50/60Hz
Power Consumption	:	Max 7 Watt
Operating Temperature	:	0°C ~ +40°C
Heat Ventilation	:	Temperature Control Fan
Charging Current	:	About 600mA @3V
Charging Time	:	About 5hrs @2000mA
Charging Detection	:	- Δ V + Temperature

Receiver Unit

Frequency Band	:	BRX - 433 MHz
Channel Spacing	:	25KHz (BRX-433)
Frequency Control	:	Synthesizer (PLL)
Frequency Drift	:	< 5ppm @ -20°C ~ +70°C
Frequency Deviation	:	< 1ppm @ 25°C
Sensitivity	:	<-115dBm
Spurious Emission	:	- 50dB
Antenna Impedance	:	50 ohms
Responding Time	:	40ms (Normal)
Enclosure Rating	:	IP-65
Source Voltage	:	AC100V-240V, AC380V @50/60Hz
Power Consumption	:	11VA
Operating Temperature	:	-10°C ~ +50°C
Output Contact Rating	:	250V @ 10A
Dimension	:	132mm x 110mm x 107mm (exclude cable gland, include receiver mounting spring) 171.7mm x 110mm x 107mm (include cable gland, receiver mounting spring with nuts)
Weight	:	730g

11. PARTS LIST

Transmitter

	Part No.
1. Encoder board (MA604A/MEZ64)	BEN604A
Encoder board (MA608A/MEZ68)	BEN608A
2. Transmitter enclosure (MA604A - yellow)	BCT604Y
Transmitter enclosure (MA608A - yellow)	BCT608Y
Transmitter enclosure (MEZ64 – orange)	BCT604O
Transmitter enclosure (MEZ68 - orange)	BCT608O
3. Battery cover	BC600
4. 1-step pushbutton	B50002
5. Pushbutton rubber boot fixing holder	BCH608
6. Pushbutton rubber boot (MA604A / MEZ64)	PRB01
Pushbutton rubber boot (MA608A / MEZ68)	PRB02
7. Transmitter shock-absorbing rubber (MA604A / MA608A / MEZ64 / MEZ68)	SAR02
8. Transmitter vinyl protective cover (MA604A / MEZ64)	VPC01
Transmitter vinyl protective cover (MA608A / MEZ68)	VPC02
9. EMS pushbutton	B50003
10. EMS red cap (all models)	EMS01
11. A600 waist strap	WS01
12. Rechargeable battery	RCB01
Alkaline AA battery	AAB01
13. A600 pushbutton direction label	DL01

Receiver

1. Decoder board (MA604A/MEZ64)	BDE604A
Decoder board (MA608A/MEZ68)	BDE608A
2. 433MHz receiver RF module (All models)	BRX433
3. Receiver enclosure (All models)	BCRMEZ
4. Receiver mounting spring (All models)	RMSMEZ
5. Regular Output Contact Relay-ivory (All Models)	RRMEZ
6. Safety MAIN Contact Relay-DC12V (All Models)	SREMEZ
7. Power module (100-240VAC)	T100-240VAC
Transformer (380VAC)	T380VAC
8. Optional External 433 MHz Antenna (All Models)	ANT433