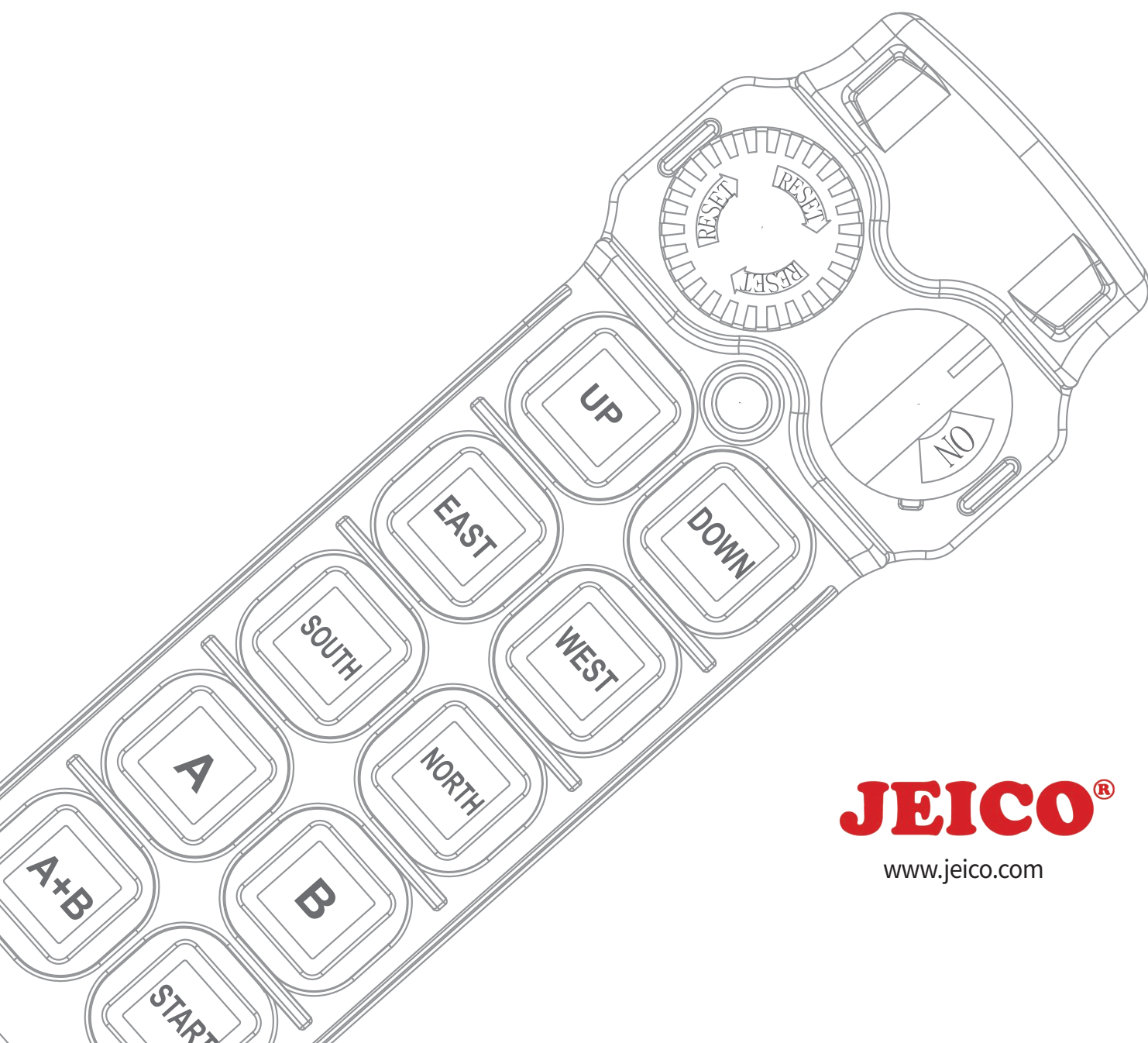


REMOTE CONTROL

JREMO 10EX

O&M MANUAL



JEICO®

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WARRANTY

JREMO® Remote Controllers must be handled, installed, operated, and maintained by (an) authorized and (a) qualified person(s), and

Upon the above condition guaranty period from the date of (delivery, installation, inspection) shall be one calendar year.

Subject to confirming defects not caused by improper installation, improper operation and/or insufficient maintenance, unauthorized modification, ignorance of environmental specifications, or improper interfacing, irresistible forces such as war(s), strike(s), Act(s) of God, and so on; all such the defects shall be treated as in no warranty.

JEICO® INDUSTRIAL REMOTE CONTROLLER		
MODEL	JREMO 10EX	JREMO 10EX
Serial No.		
Channel No.		
Lot No.		

PRECAUTIONS	04
CHAPTER I. GENERAL SPECIFICATIONS	06
1.1. COMMON SPECIFICATION	06
1.2 Transmitter (Tx)	06
1.3 RECEIVER (Rx)	06
1.4 Model Suffixing	06
CHAPTER 2. JREMO 10EX Standard Set	07
2-1 Standard set	07
2-2 CONTROL CONTACTS WIRE DIAGRAMS	08
CHAPTER 3. INSTALLATION & FUNCTION SETTING	10
3-1 CAUTIONS FOR INSTALLATION	10
3-2 HOW TO INSTALL JREMO® SERIES TX	11
3-3 HOW TO INSTALL JREMO® SERIES RX	12
3-4 HOW TO START & USE PASSWORD(PWD)	13
CHAPTER 4. MAINTENANCE	14
4-1 STANDARD OPERATION	14
4-2 FUSES	14
CHAPTER 5. TROUBLESHOOTING	15
5-1 SELF DIAGNOSIS (LED SIGNAL ERROR MESSAGE)	15
5-2 LED Diagnosis	15
5-3 Troubleshooting	16
APPENDIX I - 433 BAND FREQUENCY TABLE	17
APPENDIX II - 447 & 173 & 429 FREQUENCY TABLE	18
APPENDIX III - OPTIONAL ACCESSORIES	19

A. ANNOUNCEMENT

- This O&M Manual is for **JREMO® 10EX** and the specification is referred to Chapter 1.
- Before installation and operation look through this manual and make sure having a full acknowledgement of this manual.
- **JREMO®** series' remote controllers compose a High-Tech systemized, and a full knowledge of this manual is a must in advance of installation as well as operation of this remote controllers.
- Do not try to dismantle or unscrew **JREMO®** series except a skilful, an expert, and an authorized.
- This manual is for reference and good for installation and for maintenance, for better functions and qualities it may be changed, modified, revised without notice in advance. For more details consult an adjacent agent and/or supplier.
- Each and all the **JREMO®** series' remote controller is tested under severe condition and passed without any default found at factory and is ready for an immediate use for a normal/insufficient condition or so, however, in an emergency and/or in an any dangerous possibility, do not use.
- After use switch off the main power of the equipment(ex. winch) and confirm the receiver power off, and also confirm EMS button of the transmitter is in a pressed down position.
- When not in use stay the transmitter in a safety area and do not allow an unauthorized to attempt to use it.
- Equipment(ex. winch) using this remote controller must have main relays, limit switches, separate COM lines, and other appropriate devices for safety operation.
- When metal container for receiver casing is used make sure Ground(GND) to be sure connected to metal part of equipment(ex. winch).
- Do not use in a severe interfered area and/or lightening or so.
- Make sure power sources are correct.
- Power off and do not use during installation and/or maintenance so as to avoid any electric shock or so.
- Do not try to copy, modify, or release this remote controllers without permission in advance by **JEICO**, such an action is illegal. **JREMO®** series' remote controller have many international patents, certificates, and so on.

- Without notice in advance and within **JEICO**'s discretion this manual may be revised, added, and/or deleted for better use.

B. GENERAL CAUTIONS

- Operator must be healthy both physically and mentally.
- Even though this remote controller is versatile, durable, and good for outdoor use try to avoid to contact directly by an excessive shock, pressure, wind, snow, rain, ices, or sunlight, high temperature, humid, gas, and etc.
- During operation when found power is weak replace all the batteries with all new AA batteries.
- When rechargeable batteries (however, it is not recommended because of shorter life) are used, use of AA 1.2V Ni-MH 2,500 mAH or above.
- When not in use take out batteries from the transmitter and put aside in a different area.
- In an emergency follow up the below emergency measures.

C. EMERGENCY MEASURES

JREMO® Series has designed for safety, meeting with various kind of emergencies and for self-recovering. Billions of different I.D. code, Self-Diagnoses, super qualified and isolated protection against voltage surges and/or interferences, etc. are the basic integral functions for solving any unexpected accident or trouble in an emergency. So when such an emergent function is detected, **JREMO**® series will off the work immediately and stop all the function automatically.

For emergency follow up the below procedure in advance and then call an adjacent **JEICO**® agent and/or supplier for an emergency service.

1. Press EMS(Emergency Stop) Button. (red mushroom at top left)
2. Off the rotary key and pull out the key. (green key at top right)
3. Power off receiver power. Power off main power of Equipment.
4. Inquire adjacent **JEICO**® agent and or supplier.

Chapter 1. GENERAL SPECIFICATIONS

1.1. COMMON SPECIFICATION

- Frequency Ranges & Channel Numbers
 - 433 Bands : 433.050~434.7750 Mhz, 70 channels
 - 447 Bands : 447.600~447.9875 Mhz, 32 channels
 - 173 Bands : 173.025~173.7875 Mhz, 35 channels
 - 429 Bands : 429.2500~429.7375Mhz, 40 channels
- I.D. Code : 2^{32} (Over 4 Billion)
- Temperature : -10 °C ~ +60 °C
- Remote Distance : 30 ~ 150 M.
- Ex Level : **Ex Ib IIC T4**
- Protection Grade : (Tx) IP55 / (Rx) IP66
- Case Construction : **ANTISTATIC ABS**

1.2 Transmitter (Tx)

- Modle : **JREMO 10EX**
- Batt. Power : 4 x 1.5 V Alkaline Batteries (LR6 AA Size)
- Type : Single or Double Push Button Type
- Size : 173 x 62 x 46 mm (L x W x H)
- Weight : Approx. 355/395/450 gr. (Batteries Incl.)

1.3 Receiver (Rx)

- Casing : **RX3**
- Power : AC110~440V, DC12~40V (OPT AC48V, DC 60V)
- Type : Remote Main Lamp Indication
- Ralay : AC => "A" Contact, 250VAC/5A, 125VAC/10A
DC => "A" Contact, 24VDC/15A, 120VAC/15A
- Size, mm : 90x152/215x105
- Weight, gr. : 950/1350/1220(Cable incl)

1.4 Model Suffixing

Model		Rx Casing Size
Type		10EX
A	Single P/B	RX3
B	Double P/B	RX3
C	U/D Creep	RX3
D	Double P/B	RX3
M	Mobile for DC Rx	RX3

CHAPTER 2. JREMO 10EX Standard Set

JREMO 10EX Standard Set comprises one transmitter and one receiver as following as a set

2-1 STANDARD SET

Tx



A/B/C/D/M
193 x 62 x 46 mm
Approx. 395 gr.
Refer to page 11 for suffix arr.

Rx3



RX3
90 x 215 x 105 mm
Approx. 1,350 gr.
24(16 for "10EX M") Core Cable

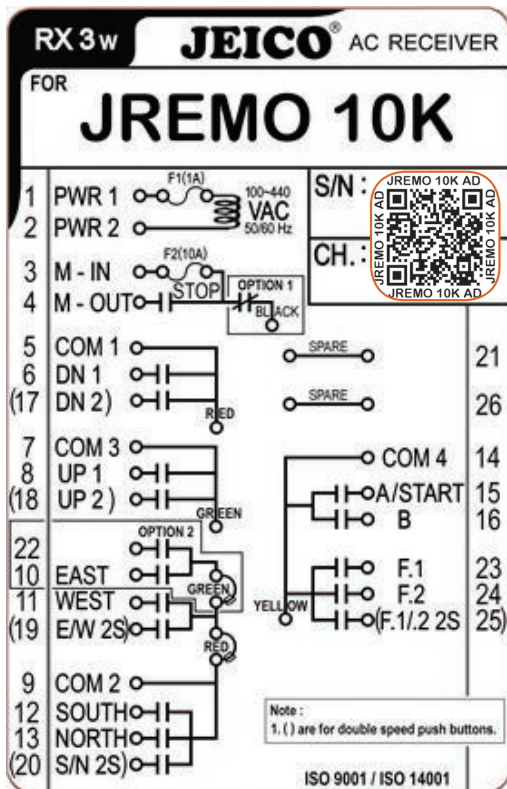
■ FUNCTIONS

	MODEL NAME	RECEIVER
Single P/B	: JREMO 10EX A	⇒ RX3 (26 Core Cable)
U/D Creep P/B	: JREMO 10EX C	⇒ RX3 (26 Core Cable)
6 Double P/B	: JREMO 10EX B	⇒ RX3 (26 Core Cable)
8 Double P/B	: JREMO 10EX D	⇒ RX3 (26 Core Cable)
Single P/B For D.C.	: JREMO 10EX M	⇒ RX3 (16 Core Cable)

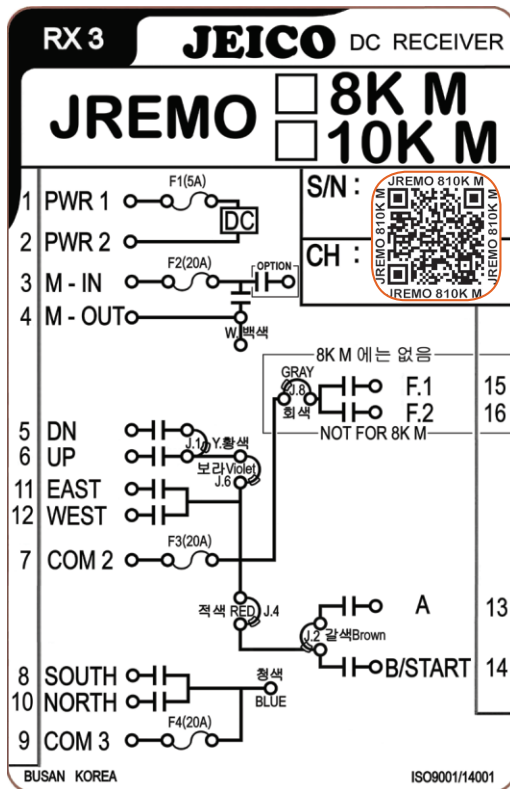
Note : RX casing for **JREMO 10EX** may not be used in case internal parts of RX to be placed in an Exp. Proof Box.

2-2 CONTROL CONTACT WIRE DIAGRAM▪ **JREMO 10EX(10EX) A/B/C/D**

Single & Double P/B AC Diagram

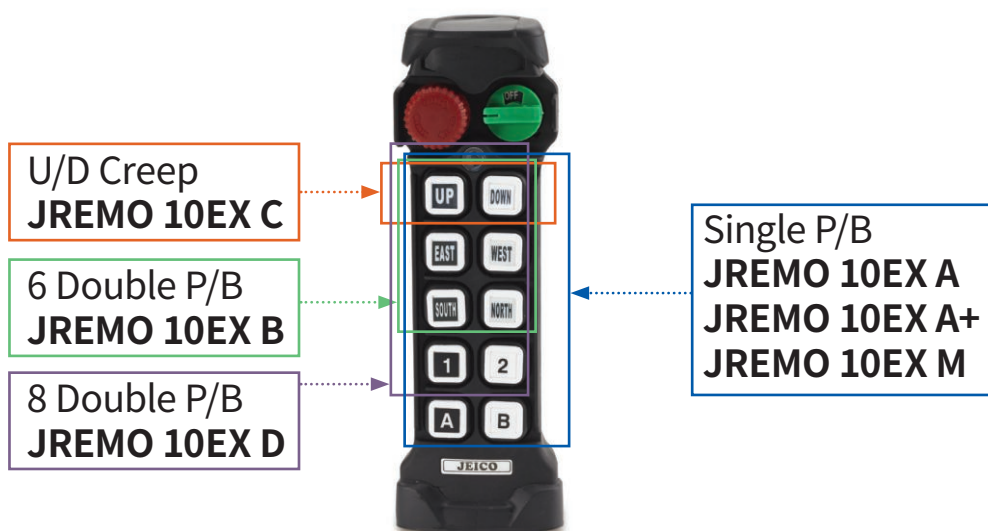
▪ **JREMO 10EX M**

Single P/B DC Diagram



	JREMO 10EX A~D	JREMO 10EX M
RECEIVER	RX3, 90 x 215 x 105 mm, approx. 1,350 gr.	
CABLE	26 Core Cable	16Core Cable
	0.75 Sq, 600VAC, approx. 1.7m long, numbered	
RELAY	250VAC/5A 125VAC/10A	24VDC/15A 120VAC/15A
FUSE	F1(1A) / F2(10A) 20MM Column Fuse	5A(F1) / 20A(F2,F3,F4)
INPUT POWER	AC110~440V Core Cable	DC 12~40V (opt. ~60V)

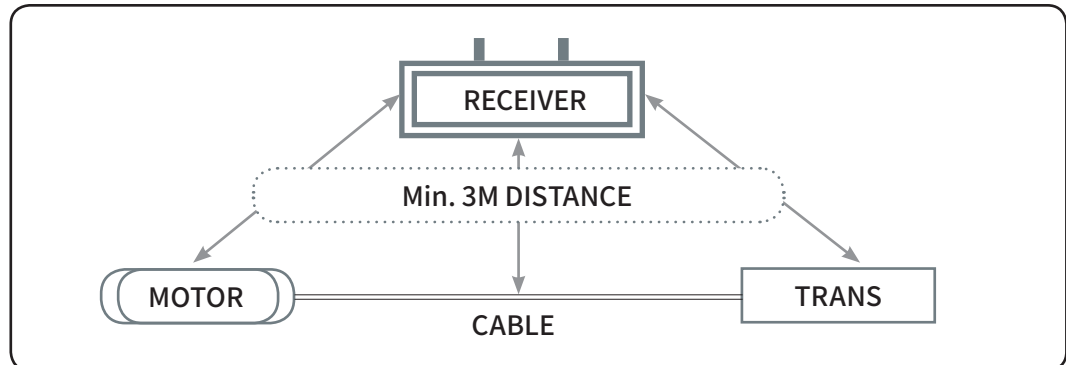
- **JREMO 10EX A+** (a special **JREMO 10EX** suffix model)
Standard Double P/B



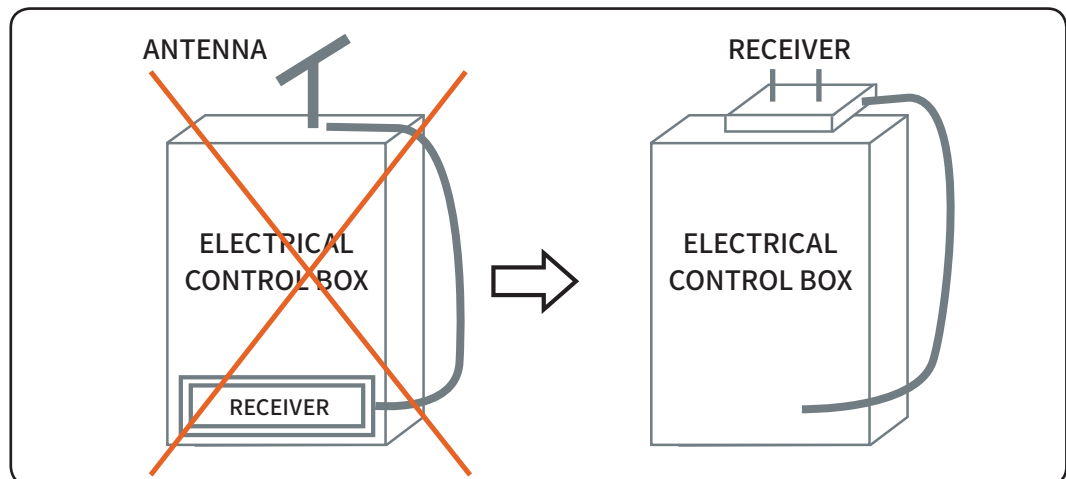
CHAPTER 3. INSTALLATION & FUNCTION SETTING

3-1 CAUTIONS FOR INSTALLATION

1. Follow up all the safety rule of equipment (ex. crane)
2. Switch off the main power of equipment (ex. crane) in a first action.
3. Install receiver where there will have any other obstructions.
4. Fix receiver firmly.
5. Use an optional external antenna in case receiver installs inside the metal closed box or electrical panel.
6. Check safety devices of equipment(ex. crane) before installation and confirm it is under utmost safety condition.
7. Do not try to install without gaining in skill for electrical circuit diagrams and operation circuits of equipment(ex. crane), remote controller's functions, etc for avoiding an unexpected accident, wrong functions, etc.
8. For avoiding any possible interferences install receiver far from motor and transducer as following illustration :



9. Install receiver top outside of electrical control box and installation in inside the control box is not a proper method.



3-2 HOW TO INSTALL JREMO® SERIES TX

3-2-1. BATTERIES

- A. Insert 2 AA batteries at right position with + and -. An opposite position will cause an excessive heat to cause battery leakage, burning, and so on, any malfunction caused by such the poor batteries' handling will not be of free recovery no matter how long the guarantee period remained.
- B. Precautions
 1. Do not use low power type rechargeable batteries.
Recommend : Use 2500mAH or above.
 2. Use all new & fully charged batteries for replacement.
Any un-fully charged one(s) may cause the same to the above clause 3-2-1 A matters.
- C. Change of Batteries : When led signals with red and green flashes in turn it shows battery powers are low. Replace them all 2 batteries immediately and simultaneously with new ones.
- D. When not in use press down the EMS button for saving battery life as well as off the battery power, and for safety as well.

3-2-2. FUNCTION SETTING & COPYING

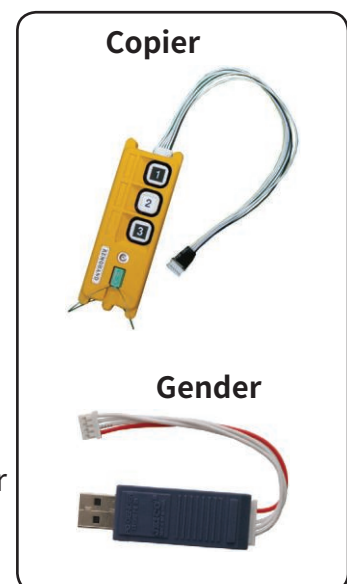
In case to change either Tx or Rx, or modify functions its mating transmitter and receiver must be identical and set both at the same time for sure identification. Function settings can be done either by the copier or by PC software, or from direct Rx-Rf at Rx to/from Tx. Either method is an optional.

A. Function set by Copier

1. Unscrew Battery Cap at Tx and Open the top cover at Rx.(Please note when the Copier to use both Tx and Rx power should be shut down.)
2. Connect Copier either to Tx or Rx.
3. Follow the instruction of Copier Manual that will be provided as an optional order.

B. Function set by Software

1. Software can be provided as an optional order and,
2. It needs another connector (i.e. Gender) with



the software.

C. Direct Copying from Rx

1. Connect Tx and Rx by a connector cable (an optional provision).
2. Place the COPY-RUN s/w nob to COPY position, and Tx Led will blink with green light.
3. Pairing (Copying) from Rx to Tx done.
4. Unplug the connector and place the s/w to RUN position.

D. Consult **JEICO** distributor and/or agent for further support.

3-3 HOW TO INSTALL JREMO® SERIES RX

3-3-1. PREPARATIONS

A. Prepare tools.

B. Select a proper place for installation.

1. Choose a safe area, a visible area of receiver or antenna.
2. Avoid a spark area (ex. motors, relays, magnet switches, electric cables are likely generating sparks and interferes)
3. Avoid high voltage and current area.
4. Receiver is to be distanced at least 3cm from obstacles.

C. Match receiver power

1. Check input power source and make sure to connect to the right position.
2. In case DC power, make sure receiver is also for DC.

3. AC Power

Use AC Receiver.

Standard AC power source is 110 ~ 440V Free Volts.

24V, 48V etc. are optional.

4. DC Power

Use DC Receiver.

Standard DC power source is DC12 ~ 40V Free Volts.

For 48VDC, 60VDC consult **JEICO** distributor and/or agent.

3-3-2. INSTALLATION SEQUENCE

- A. Power off equipment(ex. crane).
- B. To install receiver always try to use with the Rx Fixing Plate or Rx Fixing Bracket when applicable.
- C. Connect each wire end of receiver cable to a mating connector of equipment(ex. crane).
 - 1. Confirm both circuit diagram of receiver and equipment(ex. crane) are in sequence and connected correctly.
 - 2. Confirm ground is o.k.
 - 3. Check and confirm power source.
 - 4. Make sure the selector switch positioned to pendent.
- D. Power on transmitter :
 - 1. Turn on the rotary s/w after released up the EMS button.
 - 2. Press Start Pushbutton of the transmitter and,
 - 3. Confirm if the receiver MAIN Lamp is on.
- E. Press each function button of transmitter and confirm remote operation in a good working condition by confirming led lights inside the relay board of receiver.
- F. Close upper case of receiver and set the selector switch to remote position.

3-4 HOW TO START & USE PASSWORD(PWD)

For the safety and secure operation **JREMO** series has adopted several types of start functions as following to achieve enhanced safety :

■ Main ON Function

Std : EMS UP ⇒ Rotary S/W ON ⇒ (PWD) ⇒ Any button, Main ON

Opt. : EMS UP ⇒ Rotary S/W ON ⇒ (PWD) ⇒ Start P/B, Main ON

■ PWD setting

An optional setting method may be used by referring to a separate PWD setting manual which is not included for a standard provision.

CHAPTER 4. MAINTENANCE

4-1 STANDARD OPERATION

- A. Twist up the EMS button of Tx and do as START ON function procedure preset and find the Rx Main Lamp ON. During normal operation see if the Tx led shows Green light which is normal, and if the battery power of Tx goes weak then the Tx led light will turn to red and green color. In this case stop the operation before any abnormal functions such as delay responses, intermitting runs, no stops, etc during working with red and green led signalling.
- B. Push the EMS button when every normal operation finished and/or in any emergency situation may occur do the same immediately, and position the Rotary S/W to OFF after the EMS button pushed down.
- C. In case not in use for a long-term operation, take off all the batteries from tx for avoid of any contamination and/or unnecessary consumption of battery power.

4-2 FUSES

- A. A replaceable fuse is put inside the fuse column.
- B. For replacement of fuse, use a flathead screwdriver or by hand to push down head of the fuse cap by rotating 90°anticlockwise to open the cap.
- C. Replace with a new fuse and close the cap in opposite procedure.

CHAPTER 5. TROUBLESHOOTING

5-1 SELF DIAGNOSIS (LED SIGNAL ERROR MESSAGE)

JEICO remote controllers have a renewed method of self diagnostic troubleshooting against so much complicated and riddled electronic structures, and yet it is easy to check and find causes and measures for any malfunctions may occur. **JEICO** takes a type of Led signaling error message for better, quick restoration in normal even at site.

5-2 LED Diagnosis

	Causes	LED Signals	Measures
Transmitter (TX)	EMS Button not up	Red Light	Pull up EMS Button
	Rotary S/W not ON	Red Light	Set to ON position
	Push Button defect	Red Flash	Replace with new button(s)
	Encoder Module defect	No Signal	Replace with a new module
	Batteries Consumed	No Signal	Replace with new batteries
	Low Power	Red & Green Flashes	Replace with new batteries
Receiver (RX)	Decoder defect	Lamp Off	Replace with a new Rx/Rf
	Wrong Power Source	Lamp Off	Replace Fuses and/or Replace Relay Board Connect Right Power
	Main Relay defect	Lamp Off	Replace Main Relay
	Rx-Rf COPY position	Lamp Off	Set to RUN position
	Main Power Off	Lamp Off	Engage Main Power

5-3 Troubleshooting

Appearances	Causes	Measures
Tx Led No Signal & Not Working	<ol style="list-style-type: none"> 1. Wrong Bat. Direction 2. Battery Consumed 3. Old Batteries 4. Encoder Module defect 	<ol style="list-style-type: none"> 1. Place in right pole direction 2. Replace with new batteries 3. Replace with new batteries 4. Replace with new module
Tx Led Red Light & Not Working	<ol style="list-style-type: none"> 1. EMS Button Not Up 2. Very Low Batteries 3. Old Batteries 4. Button Jam 	<ol style="list-style-type: none"> 1. Twist Up EMS Button 2. Replace with new batteries 3. Replace with new batteries 4. Replace with new buttons
Tx Led Red and Green Flashes & Working	<ol style="list-style-type: none"> 1. Low Battery Power 2. Old Batteries 	<ol style="list-style-type: none"> 1. Replace with new batteries 2. Replace with new batteries
Tx Led Green Flashes & Not Working	<ol style="list-style-type: none"> 1. Tx Antenna defect 2. Rx/Rf Module defect 3. Rx Antenna defect 4. Wrong Rx Power 5. Cable Short-circuit 6. No Remote Positioned 7. Frequency Interferes 	<ol style="list-style-type: none"> 1. Replace with new antenna 2. Replace with new Rx/Rf 3. Replace with new antenna 4. Correct Rx power source 5. Change with new Cable 6. Set to Remote Position 7. Set to other channel
Rx Lamp ON & Not Working	<ol style="list-style-type: none"> 1. Cable Short-circuit 2. No Remote Positioned 3. Frequency Interferes 4. Relay defect 6. Out of distance 	<ol style="list-style-type: none"> 1. Change with new Cable 2. Set to Remote Position 3. Set to other channel 4. Replace relay with new one 6. Be in a running area
Rx Lamp OFF & Not Working	<ol style="list-style-type: none"> 1. Tx Antenna defect 2. Rx Antenna defect 3. Rx/Rf Module defect 4. Power Short-circuit 5. Frequency Interferes 6. Main Fuse Burned 7. Main Relay defect 8. Rx-Rx COPY position 	<ol style="list-style-type: none"> 1. Replace with new antenna 2. Replace with new antenna 3. Replace with new Rx/Rf 4. Change with new Cable 5. Set to other channel 6. Replace fuse with new one 7. Replace relay with new one 8. Set to RUN position

APPENDIX I : 433 BAND FREQUENCY TABLE

TOTAL NUMBERS : 70 CHANNELS

Channel Spacing : 25 Kc

CH. NO.	MHz	CH. NO.	MHz
001	433.050	036	433.925
002	433.075	037	433.950
003	433.100	038	433.975
004	433.125	039	434.000
005	433.150	040	434.025
006	433.175	041	434.050
007	433.200	042	434.075
008	433.225	043	434.100
009	433.250	044	434.125
010	433.275	045	434.150
011	433.300	046	434.175
012	433.325	047	434.200
013	433.350	048	434.225
014	433.375	049	434.250
015	433.400	050	434.275
016	433.425	051	434.300
017	433.450	052	434.325
018	433.475	053	434.350
019	433.500	054	434.375
020	433.525	055	434.400
021	433.550	056	434.425
022	433.575	057	434.450
023	433.600	058	434.475
024	433.625	059	434.500
025	433.650	060	434.525
026	433.675	061	434.550
027	433.700	062	434.575
028	433.725	063	434.600
029	433.750	064	434.625
030	433.775	065	434.650
031	433.800	066	434.675
032	433.825	067	434.700
033	433.850	068	434.725
034	433.875	069	434.750
035	433.900	070	434.775

Calculation : Mhz = 433.050 + (N-1) x 0.025, 01 ≤ N ≤ 70

APPENDIX II : 447 & 173 & 429 FREQUENCY TABLE

TOTAL NUMBERS : 32 (447 Bands) / 35 (173 Bands) / 40 (429 Bands) CHANNELS
Channel Spacing : 12.5Kc

CH. NO.	MHz	CH. NO.	MHz	CH. NO.	MHz
001	447.6000	001	173.0250	001	429.2500
002	447.6125	002	173.0375	002	429.2625
003	447.6250	003	173.0500	003	429.2750
004	447.6375	004	173.0625	004	429.2875
005	447.6500	005	173.0750	005	429.3000
006	447.6625	006	173.0875	006	429.3125
007	447.6750	007	173.1000	007	429.3250
008	447.6875	008	173.1125	008	429.3375
009	447.7800	009	173.1250	009	429.3500
010	447.7125	010	173.1375	010	429.3625
011	447.7250	011	173.1500	011	429.3750
012	447.7375	012	173.1625	012	429.3875
013	447.7500	013	173.1750	013	429.4000
014	447.7625	014	173.1875	014	429.4125
015	447.7750	015	173.2000	015	429.4250
016	447.7875	016	173.2125	016	429.4375
017	447.8000	017	173.2250	017	429.4500
018	447.8125	018	173.2375	018	429.4625
019	447.8250	019	173.2500	019	429.4750
020	447.8375	020	173.2625	020	429.4875
021	447.8500	021	173.2750	021	429.5000
022	447.8625	022	173.2875	022	429.5125
023	447.8750	023	173.3000	023	429.5250
024	447.8875	024	173.3125	024	429.5375
025	447.9000	025	173.3250	025	429.5500
026	447.9125	026	173.3375	026	429.5625
027	447.9250	027	173.3500	027	429.5750
028	447.9375	028	173.3625	028	429.5875
029	447.9500	029	173.3750	029	429.6000
030	447.9625	030	173.3875	030	429.6125
031	447.9750	031	173.4000	031	429.6250
032	447.9875	032	173.4125	032	429.6375
033	-	033	173.4250	033	429.6500
034	-	034	173.4375	034	429.6625
035	-	035	173.4500	035	429.6750
				036	429.6875
				037	429.7000
				038	429.7125
				039	429.7250
				040	429.7375

Calculation : $Mhz = 447.6000 + (N-1) \times 0.125, 01 \leq N \leq 32$

Calculation : $Mhz = 173.0250 + (N-1) \times 0.125, 01 \leq N \leq 35$

Calculation : $Mhz = 429.2500 + (N-1) \times 0.125, 22 \leq N \leq 40$

APPENDIX III : OPTIONAL ACCESSORIES

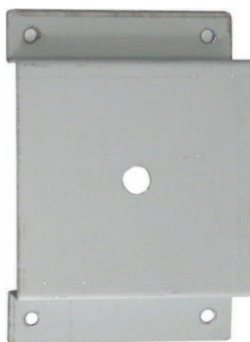
RAIN/DUST COVER



Tx Hook



MAGNET ANTENNA



Rx Fixing Plate

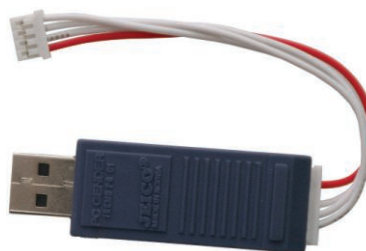
or



Rx Fixing Bracket

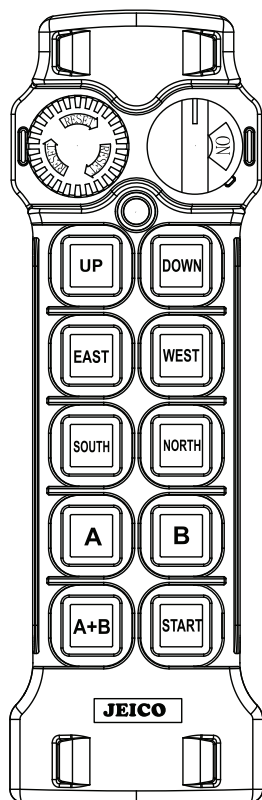


Copier



PC Gender & Software

Full Cover
(Water & Oil free)Silicon &
Leather Cover



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