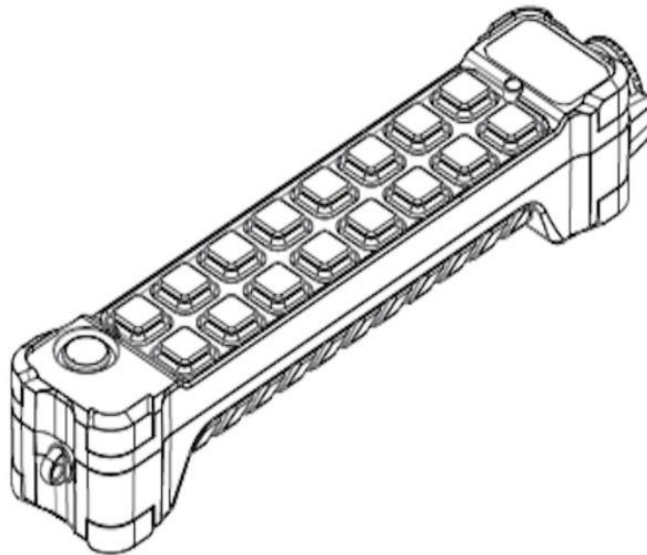




INMOTION Controls, Inc.

K1616 Series

Basic Installation Instructions



October 2023

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HS

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Guarantee, service, repairs and maintenance

Inmotion Controls, Inc. products are covered by a guarantee/warranty against material, construction and manufacturing defects. During the guarantee/warranty period, Inmotion may replace the product or faulty parts. Work under guarantee/warranty must be carried out by Inmotion Controls, Inc.

The following are NOT covered by the guarantee/ warranty:

- Faults resulting from normal wear and tear
- Parts of a consumable nature such as pushbuttons, relays, fuses etc.
- Products that have been subject to unauthorized modifications
- Faults resulting from incorrect installation and use
- Condensation and water damage

Maintenance:

- Repairs and maintenance must be carried out by qualified personnel.
- Use spare parts from Inmotion Controls, Inc. only.
- Contact your representative if you require service or other assistance.
- Keep the product in a dry, clean place.
- Keep contacts and antennas clean.
- Wipe off dust using a slightly damp, clean cloth.

Chapter 1: Customer Information



Thank you for purchasing an Inmotion Controls, Inc. radio remote control.

READ ALL INSTRUCTIONS CAREFULLY BEFORE MOUNTING, INSTALLING AND CONFIGURATING THE PRODUCT.

This manual includes general information concerning the operation of the radio remote control transmitter.

General Information on Safety

- Persons under the influence of drugs and/or alcohol and/or other medicine that impairs their reaction may not assemble, disassemble, install, put into operation, repair or operate the product.
- All conversions and modifications of an installation/system must conform to the relevant safety requirements. Work on the electrical equipment must be performed only by qualified, authorized personnel and in accordance with the relevant safety requirements.
- In the event of malfunctioning, visible defects or irregularities, the product must be stopped, switched off and the relevant master switches must be switched off.

Symbols and Definitions for Warnings	
	Warning against hazardous situation
	Warning against electrical voltage

FCC Part 15 FCC ID: TX – (RN489896162JK915S) / RX – (RN489896162JK915)

* This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

* You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

European Union Regulatory Notice

This device bearing the CE marking is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. This device complies with the following harmonized European standards.

Safety: EN 60950-1:2006+A11:2009+A1:2010+A12:2011

EMC: ETSI EN30 1489-1 V1.9.2 2001-09; ETSI EN 301 489-3 V1.4.1 2002-08

Radio: ETSI EN 300 220-1 v2.4.1: 2012; ETSI EN 300 220-2 v2.4.1: 2012

The following CE marking is valid for EU harmonized telecom products.

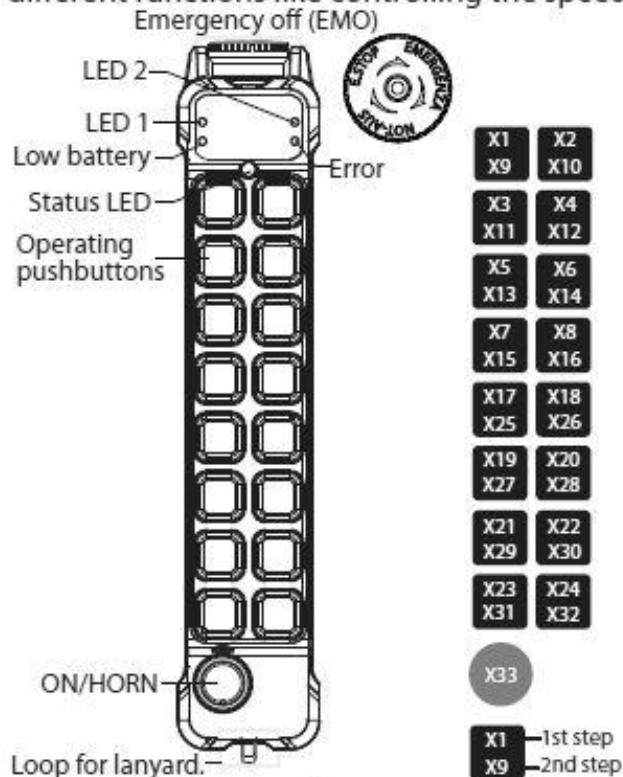
CE 0560

IC Statement (IC: 10821A-8989616201)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Chapter 2: General Description

The K series transmitter comes in different versions, featuring 16 pushbuttons. The transmitter also features 2-step pushbuttons. Both steps of each pushbutton can operate different functions like controlling the speed of a movement, step 1: slow, step 2: fast.



Technical data TRANSMITTER

Frequency range	915 MHz
Typical operating range	100M
Control system	PLL
Antenna impedance	50Ω
Typical response time for Stop command and commands	50mS~100mS
Power supply	LR6(AA)1.5V x2 / HR6(AA)Ni-MH x 2
Antenna	Internal
Average power consumption	30mA@DC3V (default setting)
Radio-frequency power	<10dBm (default setting)
Operating and storage temperature	(-20°C)~(+55°C) / (-40°C)~(+65°C)
Protection degree	IP65
Dimensions	291x57x51mm (14, 16 buttons)
Weight (including battery)	approx.520g
Housing material	PA6(30% GF)

Start/ Horn switch

The K series transmitter has a Start/Horn pushbutton on the left side. The Start/Horn switch has 2 functions:

1. Press to Start.
2. Press for horn while operating.

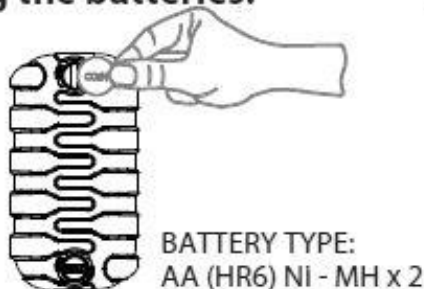
Start the transmitter in operating mode

1. Turn to release the Emergency Off button.
2. Press the "START" button.

Turning the transmitter off

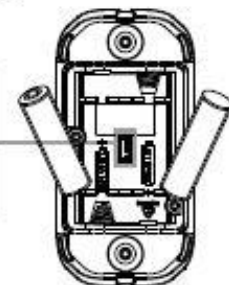
Turn the transmitter off by completely pressing the Emergency Off button. The transmitter turns off. All relays deactivate.

Changing the batteries:



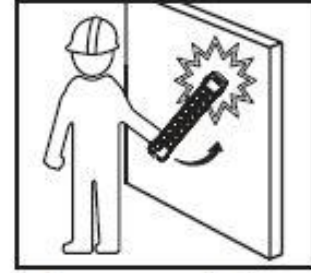
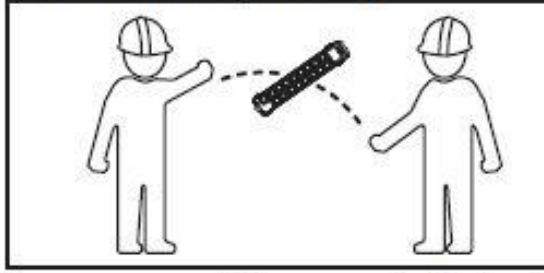
Program the transmitters

1. Remove the battery cover
 2. Remove both batteries.
- The programming connector is placed behind the battery



Chapter 2: General Description

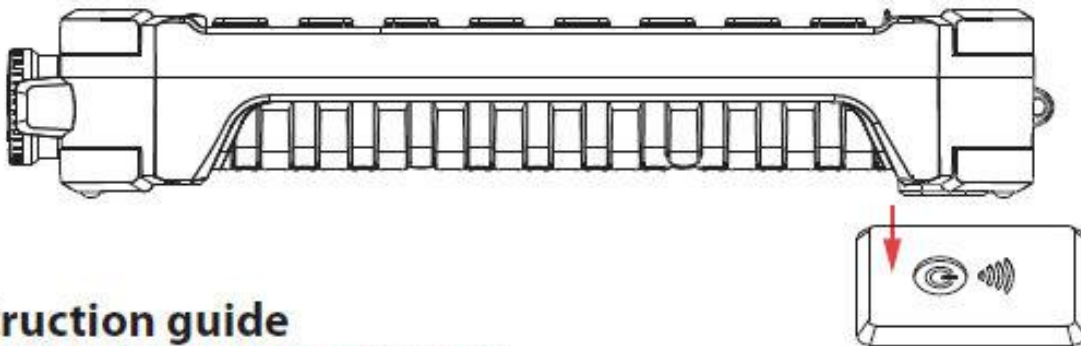
Zero-G safety (C2 version - Optional)



The zero-g safety function can prevent the uncontrolled output of commands in specific emergencies. The G sensor can detect if the transmitter receives a hard impact, dropped or thrown. These features can deactivate either the complete radio system or only the safety-relevant function relays. Alternatively, a pre-defined output (e.g. crane horn) can be triggered. Please contact your dealer for special settings.

How to use Qi wireless charging

1. Turn the transmitter off by completely pressing the emergency off button.
2. Place the transmitter on top of the wireless charging pad. You'll hear a beep, the battery LED flash every 1 second.
When it's finished charging the battery LED flash every 5 seconds.
3. Remove the transmitter from the pad.

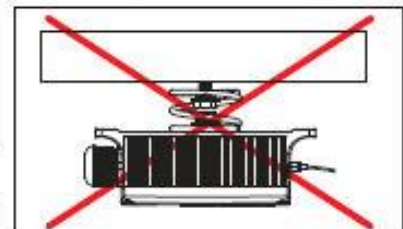
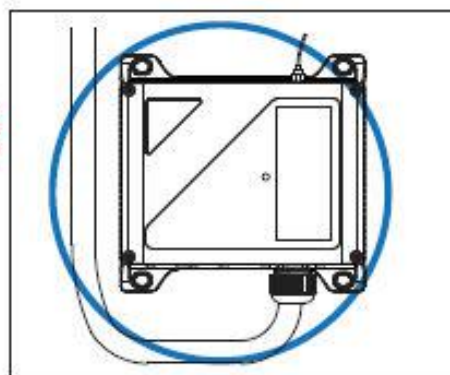
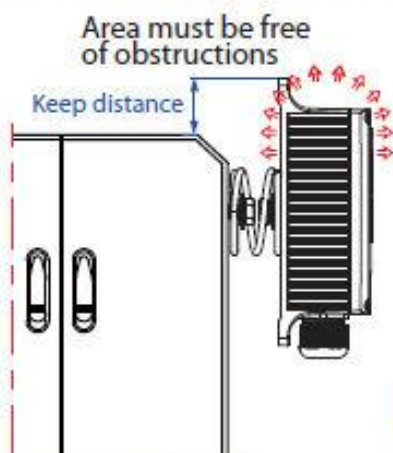


Instruction guide

TAKE TIME TO LOCATE THE BEST POSITION

If necessary, power the Receiver and move it around the vehicle until the required performance is achieved.

Operate the Transmitter and observe the Receiver internal LED's.

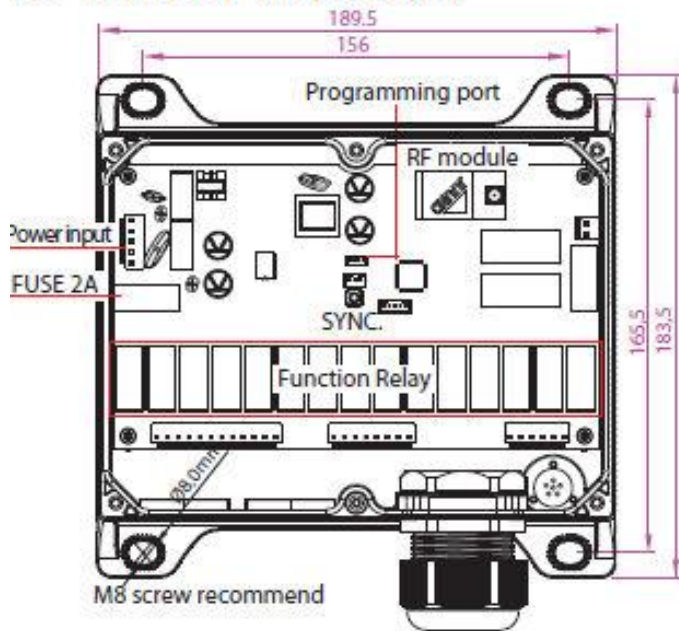


Chapter 3: Receiver

Receiver

WARNING! The receiver must NOT be opened by any other than a qualified installer. Make sure to turn the electricity off before opening the receiver.

HS Receiver (Not to scale)



Technical data

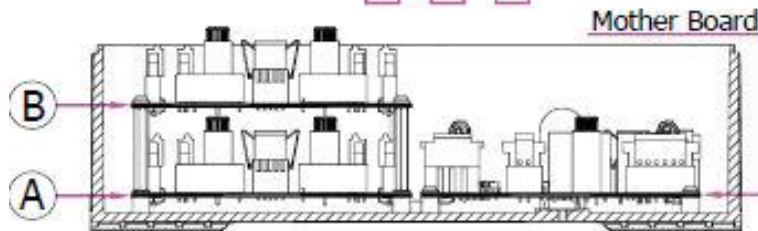
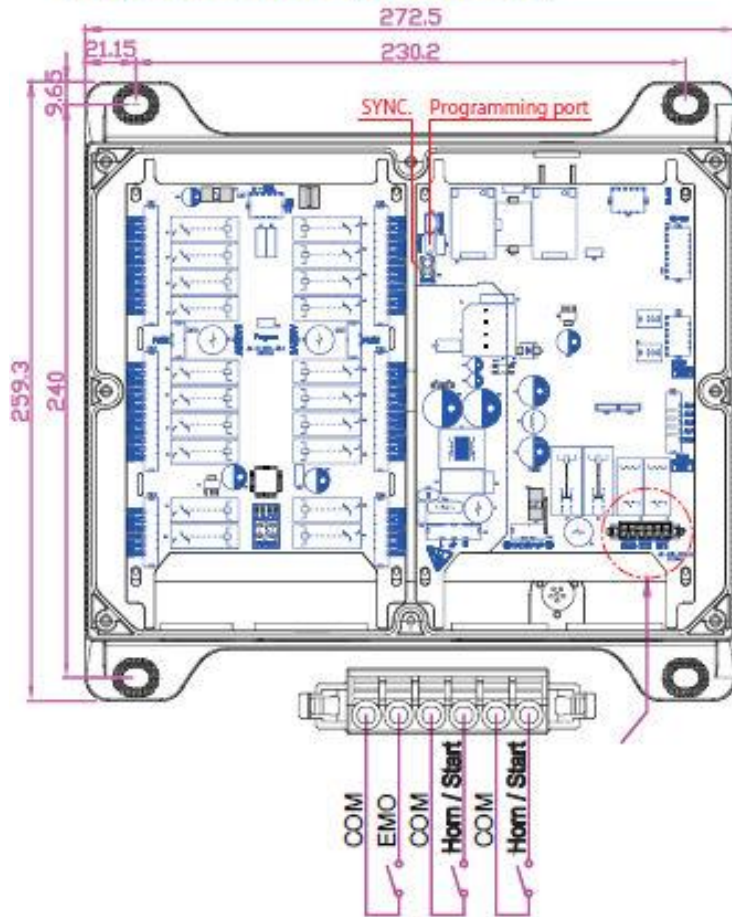
Frequency range	915 MHz
Sensitivity	-112dBm@baud1.2K bps
Control system	PLL
Antenna impedance	50Ω
Typical response time for Stop command and commands	50mS ~ 100mS
Power supply	24~264V / 90~460V AC/DC
Power consumption	AC : 8.3W · DC : 12.8W
Antenna	Internal (External as optional) SMA 2M / 5M cable magnetic
Standby Power	0.97W
Operating temperature	(-20°C) ~ (+55°C)
Storage temperature	(-40°C) ~ (+65°C)
Protection degree	IP65
Dimensions	189.5×183.5×64mm
Weight	approx. 1800g
Housing material	PA6(30% GF)



1. The Receiver is designed to carry a maximum of 15 Amps. That is, for example, 15 Amps through one output or 5 Amps each through 3 outputs.
2. Master Output. It is used to operate the pump of an electro-hydraulic power pack or maybe a clutch pump. It can also be used for powering a dump valve, master valve etc. It can be configured to work continuously, that is ON when START is pressed and OFF when STOP is pressed; or in parallel with any output (default setting).
3. Safety Feature. Both the Transmitter and the Receiver will "time out" after 30 minutes of inactivity. This can be altered, ask your dealer.

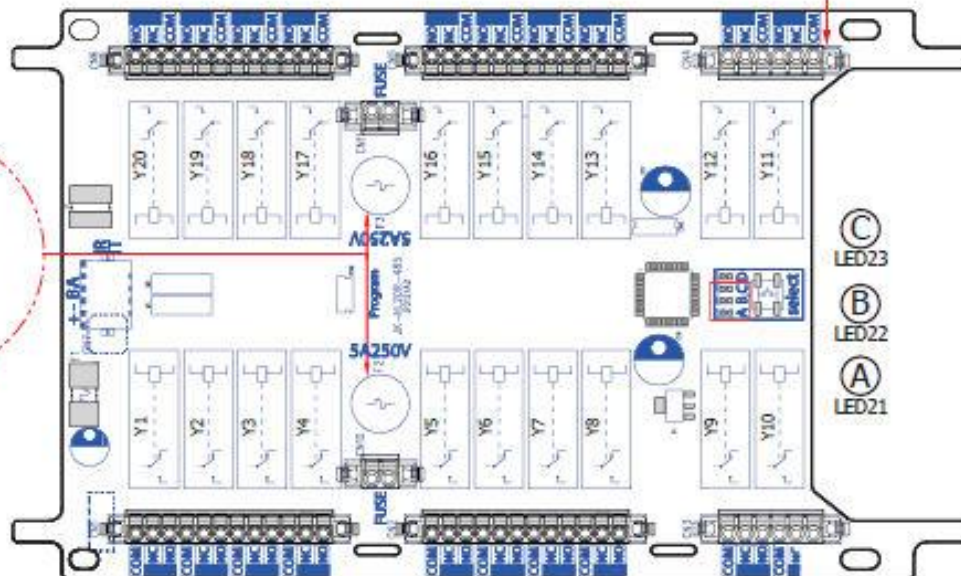
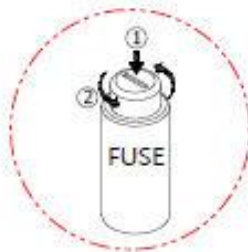
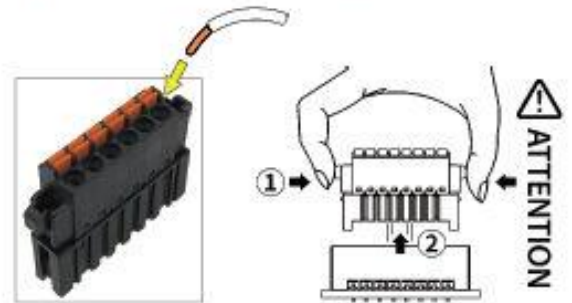
Chapter 3: Receiver

HML Receiver (Not to scale)








Technical data

Frequency range	915 MHz	
Sensitivity	-112dBm@baud1.2K bps	
Control system	PLL	
Antenna impedance	50Ω	
Typical response time for Stop command and commands	50mS ~ 100mS	
Power supply	24~48V / 90~460V AC/DC	
Power consumption	AC:10.4W + DC:22.4W	
Antenna	Internal (External as optional) SMA 2M / 5M cable magnetic	
Standby Power	0.97W	
Operating temperature	(-20°C) ~ (+55°C)	
Storage temperature	(-40°C) ~ (+65°C)	
Protection degree	IP65	
Dimensions	272×260×96mm	
Weight	HML2400	approx. 1850g
	HML4400	approx. 2150g
	HML6400	approx. 2450g
Housing material	PA6(30% GF)	



Chapter 4: Troubleshooting

Transmitter

LED Signal			SHORT LONG	Failure Analysis	Solution
STATUS	LED red	LED green			
	•••••			-Corrosion on the battery terminals. -Low battery. -Damage batteries.	-Clean the battery terminals. -Replace the batteries.
		•••••		-Transmitter is not communicating with the receiver.	-Check the power supply of the receiver. -Check the fuse in the receiver
	—••			-Push button damaged.	-Contact the dealers.
	—•••			-RF error	-Check the antenna and make sure it is not loose. -Change a new RF module. -Contact dealer
	•••••			-G-force Exceeded	-Re-Start System

Receiver

Should an error occur, the LED of the receiver will indicate the cause.

LED Signal			SHORT LONG	Failure Analysis	Solution
STATUS	LED red	LED green			
	—•••			-RF error	-Check the antenna and make sure it is not loose. -Change a new RF module. -Contact dealer
				-Receiver is not powered.	-Check the fuse. -Check the power supply.

STATUS	LED red	LED green
		—

The receiver is receiving data.

