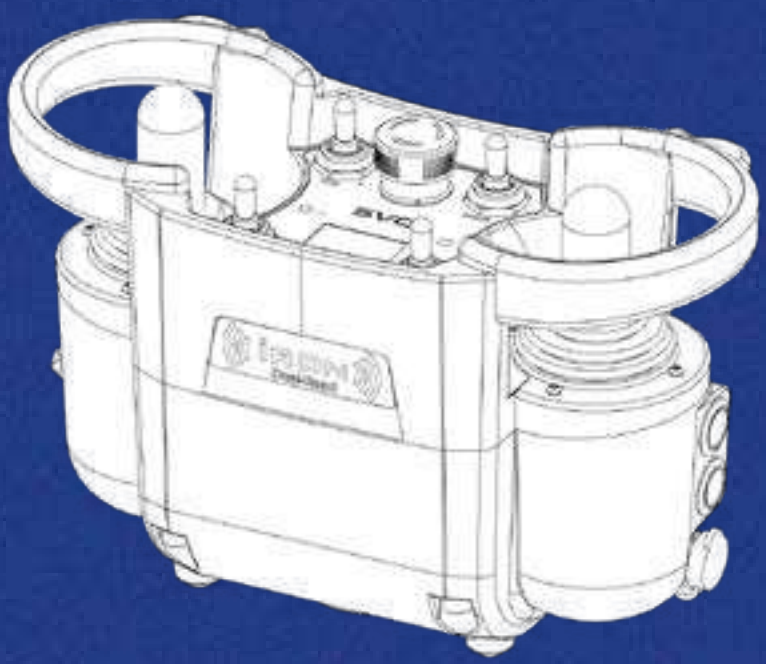
User Manual

WIRELESS REMOTE CONTROL

IRON-MD

USER'S MANUAL



1

Explanation of Symbol Used

The symbols below are explanetions of important information and safety symbols used in this manual.

This icon marks important information or point to note.

This icon marks information or cautions about very important matters. Failure to pay attention to this indication could result in personal injury or damage to the instrument's software.

This icon indicates warning that may result in electrical hazards or personal injury.

Basic Requirements

User of this document should basically have basic electrical knowledge about equipment control.

Safety Guide

Users of this document should follow the general machine safety guidelines below.

Use the product properly after fully understanding the features and specifications of this prodict and how to use it.

Do not disassemble the product as this product is not field serviece.
When supplying power to this product or system, a fuse must be installed externally.

In addition, the installation and wiring of this proxuct must be installed by referring ro the documentation.

Warranty

- The manufacturer disclaims any liability for products fir for ant particular purpose, other than as expressly stated in writing.
- The manufacturer's product warranty period is within 18months after delivery and 12months after application to the product.
- The manufacturer provides a liability warranty against defects in the product and associated firmware and hardware afising from defects in materials, design or workmanship.
- Manuracturer's sole obligation under this warrnty is, at Manufacturer's option, to replace the product, update the relevant firmware, or repair any defective product.
- The manufacturer is not responsible for any costs related to damage to the device in the event of a defect and does not bear any expenses.
- The warranty is void if the purchasher or other companies do not follow the user manual or change the product or firmware.

1

2

Product Overview

DAS wireless remote transceiver IRON series is a wireless transceiver for safe use of wireless control of construction equipment (arial work truck, crane, pump car, tower crane, wireless excavator, agrixultural machinary field, etc.). It uses the basic frequency of 443MHz and has built-in chammel change function to prevent crosstalk. Using 2.4GHz band bluetooth communication at the same time, it receives the staus of construction equipment wirelessly and displays it on the graphic LCD mounted on the transmitter. Help to operate safely. In addition, the wireless transmitter can be used continuoslt for more than 40hours with a single charge through a low power consumption design.

Main Features

- A joystick thay is easy rto use for extended periods of time
- Reduced fatigue by using AirCell shoulder straps
- User operation sensitivity setting function
- Enough use time on a single charge
  (18650 3.7V / 3A lithium ion battery that can be easily purchased)
- CAN communication output wupport
- Transmitter wired function support

2

제품 개요

Component List

Wireless Transmitter 1EA

Wireless Receiver 1EA

Shoulder Suspenders 1EA

Battery Charger 1EA

3

Product Specifications

Transmitter Specifications

Classification	Specifications
Display	GRAPHICS LCD 128*128 (OPTION)
Radio Frequency	434 MHz / 2.4 GHz
Used Battery	Li-ion 18650 3.7V / 3A
Battery Charging Time	5hours
Usage Time After One Charge	more than 40hours
Operating Temp.	-20˚C to + 70˚C
Storage Temp.	-40˚C to + 85˚C
Waterproof Rating	IP65
Weight	1.1 kg

3

Product Specifications

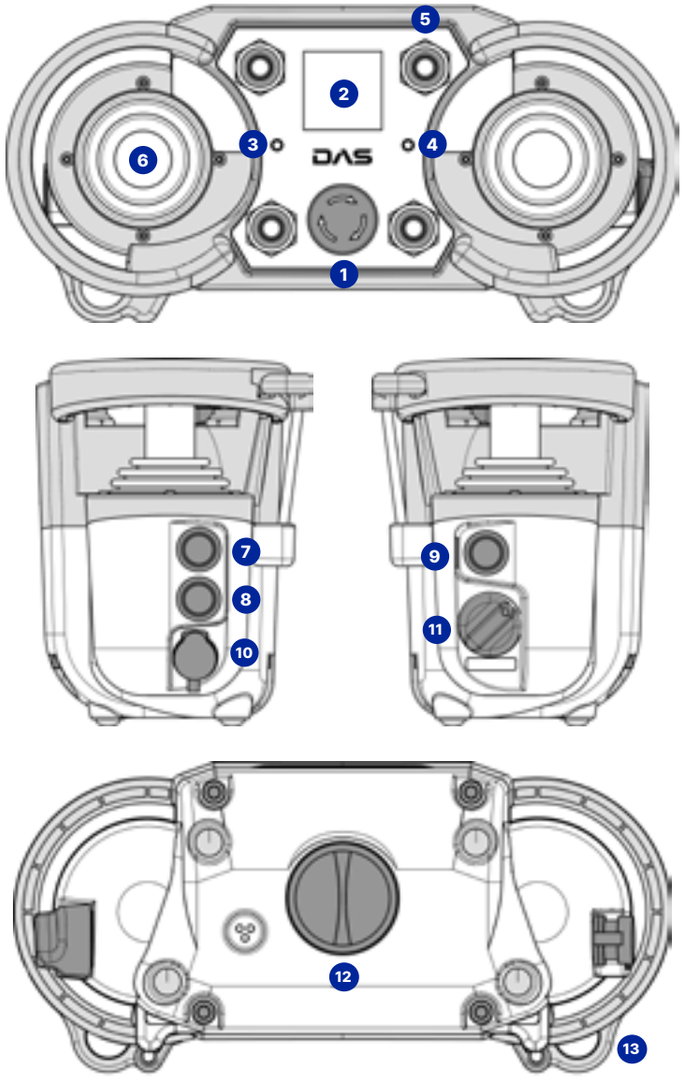
Receiver Specifications

Classification	Specifications
LED Status Indication	7 LED
Radio Frequency	434 MHz / 2.4 GHz
Supply Power	DC 8-26 VDC, 3A Min
Communication	CAN
Output Method	
Contact Output	RELAY 10A
Operating Temp.	-20˚C to + 70˚C
Storage Temp.	-40˚C to + 85˚C
Waterproof Rating	IP65
Weight	0.4 kg

3

Product Specification

Each Part of the Transmitter

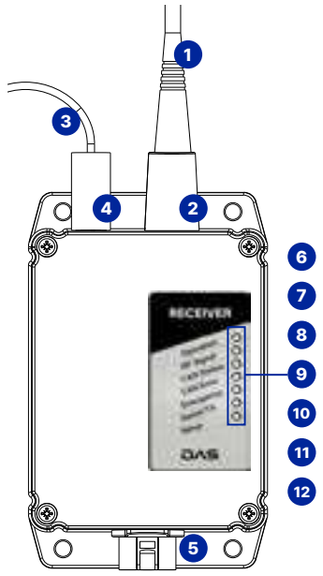


1. Emergency Stop Switch
2. Status Monitoring LCD (option)
3. RUN LED
4. PW LED
5. Function Selection Toggle Switch
6. 2-axis Joystick (front, back, right, left)
7. Engine START Push Button
8. Engine STOP Push Button
9. START, HORN Push Button
10. Wired Communication Connector
11. KEY LOCK Switch
12. Li-ion Battery Holder Cap
13. Shoulder Strap Loops

3

Product Specification

Each Part of the Receiver



1. 434 MHz Antenna
2. 434 MHz Antenna Cap
3. 2.4 GHz Antenna Cable
4. 2.4 GHz Antenna Cap
5. I/O Connector
6. Indicator LED During Operation
7. Radio Signal Activity Indicator LED
8. CAN Status LED
9. CAN Communication Error Display LED
10. Emergenat Stop Operation Indicatior LED
11. Sefial Communication Transmit Indicatior LED
12. Setup Operation Indicator LED

4

Before Operation

Risk

DANGER

Do not drive unless you have been trained in the safety and operation of the remote control and know the features of the machine.

Be very cateful as the wifeless remote control can operate normally even in a place where are obstacles or where is no view.

It is safe to turn off the transmitter when not in use.

When moving away from the transmitter, it is safe to turn off the KEY LOCK switch. (To separate the KEY LOCK switch, hold the handle of the wsitch and pull it out.)

Preparation Before Operating

WARNING

Be sure to test and use the emergency stop function.
Never operate the machine when the emergency stop function is not functioning properly.

Transmitters should always be checked before operating and before stating a shift.
Make sure you read all safety lables.

WARNING

Visuallt inspect the transmitter for wear or damage.
If the transmitter has worn or damaged parts, do not operate it.

Transmitter Handling

The front of the transmitter should be facing forward, the text on the control panel should be clearly visible and legible, and the length of the shoulder strap should be adjusted to a height that is comfortable and easy to operate.

WARNING

Operation without holding the transmitter properly may cause equipment malfunction.

4

Before Operation

5

Start Transmitter Operation

Transmitter Inspection and Start-up Procedure

1) Check that the safety measures of the mechanical equipment are observed.
2) Make sure the battery is sufficiently charged.
3) Press the emergency stop button.
4) Turn the KEY LOCK switch clockwise to turn on the power.
5) Unscrew the emergency stop button.
6) If you press the START button on the right side of the tramsmitter, operation RUN LED (green) blinks quickly and transmission starts.
7) Check the function of the equipment to see operates normally.

WARNING Scince the equipment may move during this check, care must be taken to ensure that is functioningis safe and that there are no cbstructions around the equipment.

8) Press the emergency stop button and check once again whether the function of the machine is stopped.

WARNING If the equipment moves even through the emergency stop button is pressed, turn off the transmitter immediately, remove the battery, and contact a professional technician.

9) When START/HORN button is pressed, transmission operation preparation is completed.

Transmitter Shutdown

1) Press the emergency stop button.
2) Turn the KEY LOCK switch counterclockwise to turn off the power.
3) Temove the KEY LOCK switch.
   Keep the KEY LOCK switch in a safe place so that no one can operate it.

5

Start Transmitter Operation

Emergency Stop

1) Press the emergency stop button.
2) After confirming that the emergency situation has been lifted, resume operating.

Status Light Meaning

When the RUN LED (green) blinks, the joystick is operating.
When the RUN LED (green) turns off, the joystick operation is stopped.
When the PW LED (green) blinks, the power is on, the battery is normal.
When the PW LED (red) blinks, the power is turned on, and the battery charging time.

Battery Low Voltage Warning

If the battery is depleted during driving and the voltage becomes low, the buzzer sounds twice, and after 30 seconds, the buzzer sounds at 1-second intervals for 30 seconds, and then the transmitter automatically turns off for safety.
Secure the equipment during this time.

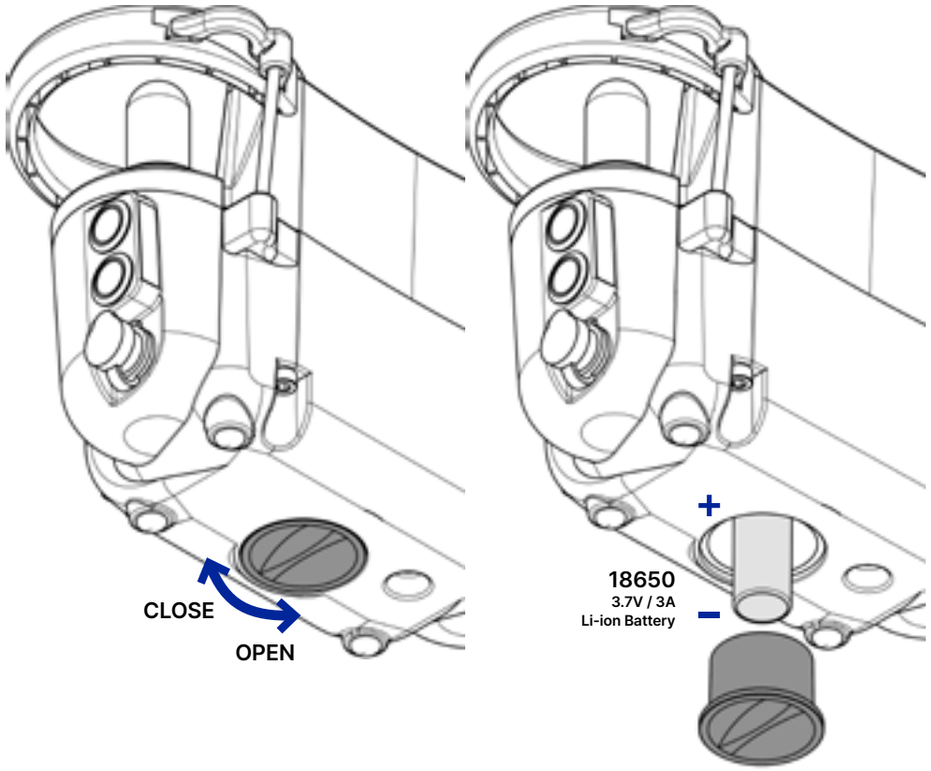
When using the transmitter again, replace the battery and start according to the proecedure for starting operation of the transmitter.

6

Battery Replacement and Charging

Replacing Batteries

1) The battery is located onthe undersideof the transmitter.
2) Turn the battery cap counterclockwiseto open the cap.
3) Remove the exhausted battery and replace it with a charged battery. (when replacing, pay attenton to the polarity of the battery. inside +, cap side -)
4) Trun the cap clockwise to lock.



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Battery Replacement and Charging

Battery Charge

1) Insert the charger USB cable into the AC220V adopter or car cigar jack adapter.
2) Insert the dead 18650 battery into the battery charger. (pay attention to polarity)
3) The charging progress is displayed o te lamp of the charger.
   Charging : RED LAMP on
   Charging Complete : GREEN LAMP on
   Error Check : RED LAMP blinks
4) When the green lamp lights up, charging is complete.

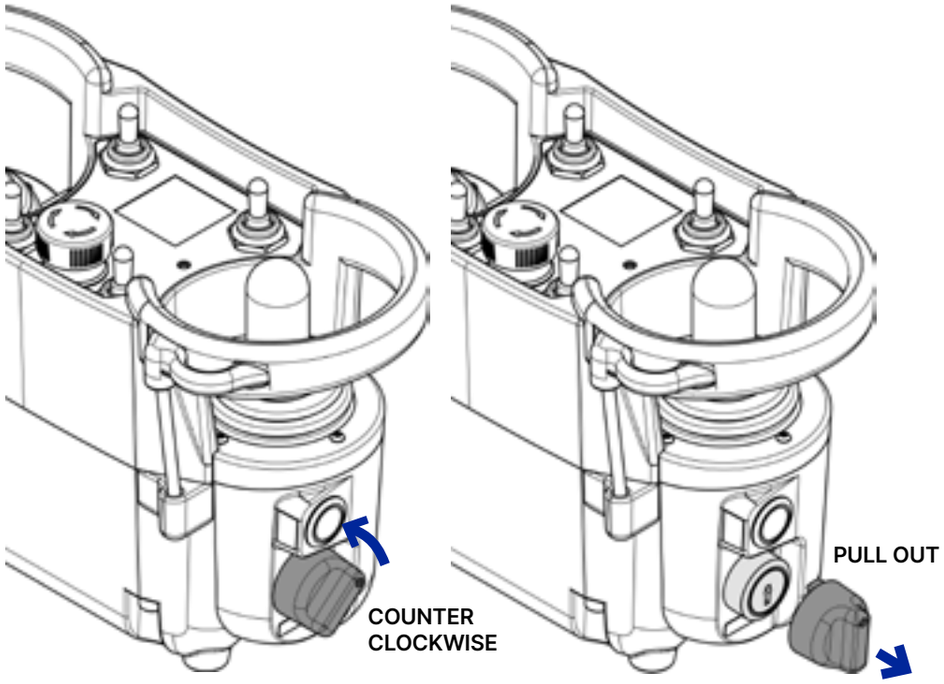
18650 CHARGER

7

Manufacturer
Debugging Mode

How to Remove KEY LOCK Switch

Turn the KEY LOCK switch counterclockwise and pull it out.
Forcibly pulling out without turning it may cause a mallfunction.

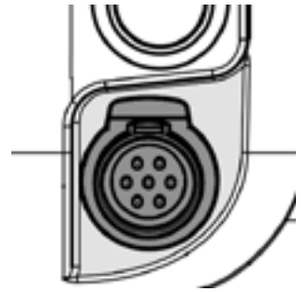


7

Manufacturer
Debugging Mode

Debugging Connector Pin Definition

1) USB-5V
2) USB-DP
3) CAN-H
4) Power 24V
5) CAN-L
6) USB-DN
7) USB GND / Power24V GNG



7 Pin connector

Debugging Connector PC Connection

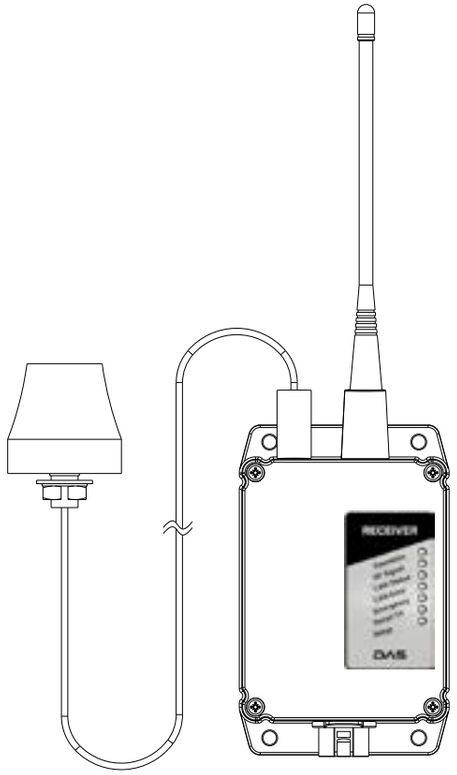
Insert the debugging plug into the 7Pin connector.

8

Wireless Receiver Installation

Receiver Installetion and Verification

1) Turn off the power of the equipment before installing the receiver.
2) Adjust the wireless receiver to the installation location of the wireless receiver with bolts.
3) Insert the receiver's Pin connector plug.
4) After turning on the power of the equipment, check the operatiom LED on the top of the receiver.
5) Operatr the transmitter and confirm that the RF signal LED is blinking and the equipment is operating.



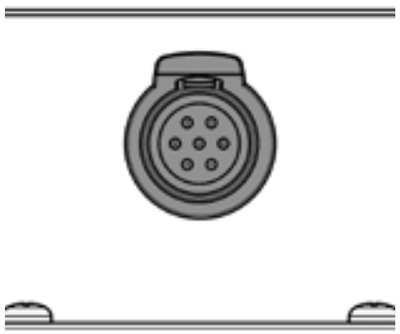
8

무선 수신기 설치

Wireless Receiver Installation

Wireless Receiver 7Pin Connector Pin Specification

1) CAN_L : Data output from transmitter
2) CAN_H : Data output from transmitter
3) N.C : Not used
4) GND : - Power supply terminal
5) V+ (8~30V) : + Power supply terminal
6) RS 232-TX : RS-232C for debugging
7) RS 232-RX : RS-232C for debugging



7 Pin connector

9

Breakdown Repair

Battert does not charge.

- Check that the charger has power.
- Check that the battery insertion polarity is correct.

Replaced the battery with a charged one, but the power on operation does not work.

- Make sure the battery is inserted upside down.
- Check the voltage and polarity of the battert again, if normal → **Request** A/S

System does not work even after START.

- Check the battery and replace if necessaty.
- Check if the KEY LOCK wwitch os off.
  (If it is bad or there is no contact, the power wwitxh LED turns off and on twice)
- Check that the receiver power is on.

Transmitter is on but not transmitting.
(GREEN LAMP not blinking)

- Check the battery and replace if necessary.
- If the battery is sufficiently chargedm there is a malfunction inside the transmitter. → **Request** A/S

9

Breakdown Repair

It transmits, but the machine does not move.

- If the equipment is out of range, restart within the range of operation.
- Check that + and - are properly supplied to the powe supplied to the receiver.
- If the frequency channels of the transmitter and receiver do not match, and it does not operate even after turning the power off and on. → Request A/S
- The transmitter and receiver device ID are missing internally or do not match. → Request A/S

All functons of the device are working or not working

- Check receiver antenna siring and grounding.
- Check for confusion.
- Check the receiver internal connector.

Some if the features of the decice working or not working.

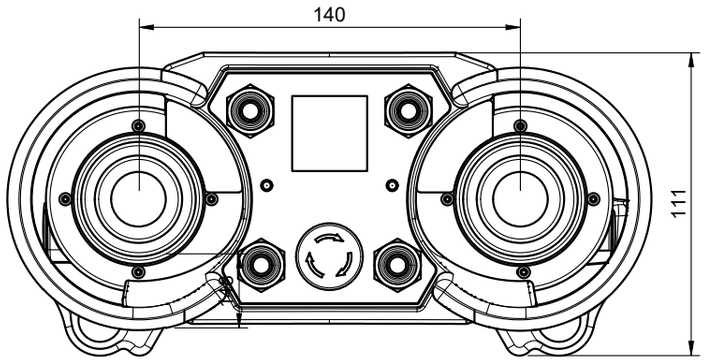
- After checking whether the wiring connectedto the equipment is loosely connected, check the wiring between the receiver and the valve controller, and between the valve controller and the acuator.
- The connector inside the receiver is loose.

10

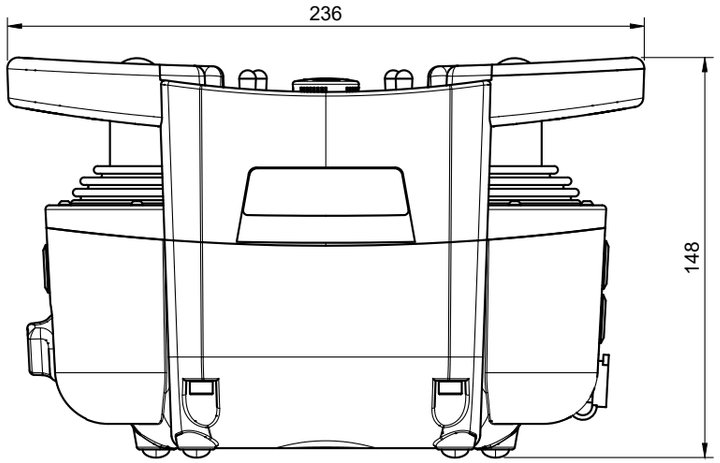
Product Dimensions

Transmitter Dimensions

TOP VIEW



FRONT VIEW



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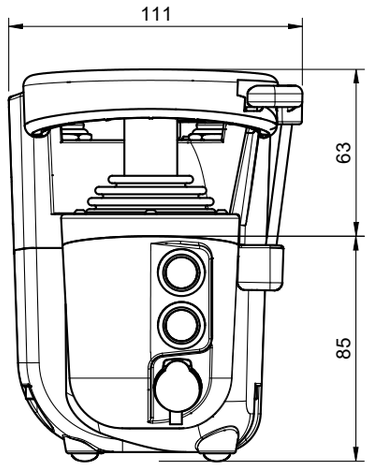
Product Dimensions

SIDE VIEW



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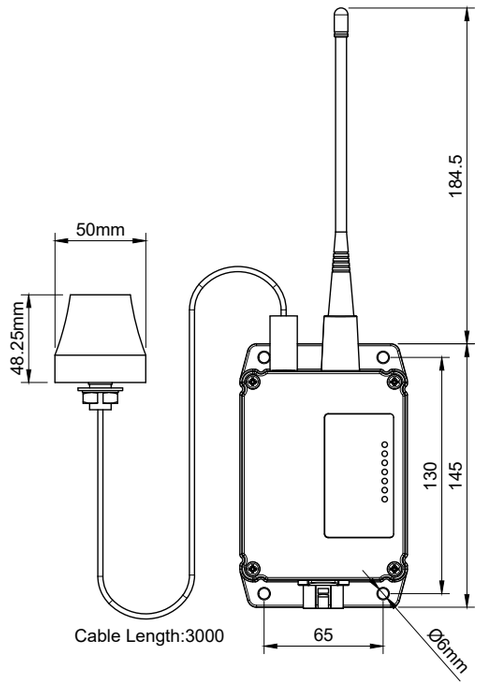
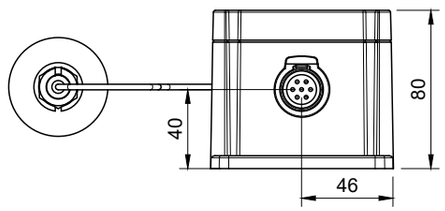
Receiver Dimensions

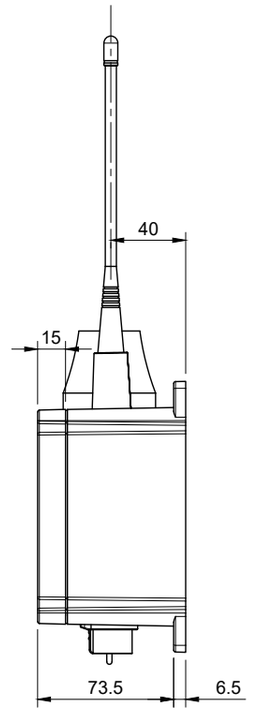
TOP VIEW



FRONT VIEW



SIDE VIEW



10

Product Dimensions

11

Precautions when Welding

Some welding devices have high cuttent flow and voltage peaks.
It sould be noted that components of the control system may be damaged if this welding current passes throuth the control module itself.
When welding, care must be taken to avoid high currents going through the comtoller or CAN bus.

Carefully follows these guidlines.
Disconnect all connectors on the control unit before welding.

Even if the control system is de-energized, welding must be carried out carefully and with appropriate safety precautions. A welding ground must be connected near the welding point to prevent high currents from flowing over long distances through the machine frame.

11

Precautions when Welding

12

FCC/IC Compliance Statement

FCC/IC Compliance Statement

This device complies with Part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s).

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.

CAUTION : Any Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

12

FCC/IC Compliance Statement

(For Receiver)A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

(For Transmitter)A minimum separation distance of 6 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

Enonce d'Industrie Canada(IC)

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

Tout changement ou modification non expressement approuve par la partie chargee de la mise en conformite peut annuler le droit de l'utilisateur a utiliser l'equipement.

(For Receiver)Pour le récepteur)Une distance de séparation minimale de 20 cm doit être maintenue entre l'antenne et la personne pour que cet appareil satisfasse aux exigences d'exposition aux RF.

(For Trnsmitter)Pour émetteur)Une distance de séparation minimale de 6 cm doit être maintenue entre l'antenne et la personne pour que cet appareil satisfasse aux exigences d'exposition aux RF.

DIGITAL ADVENCED SENSORS

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