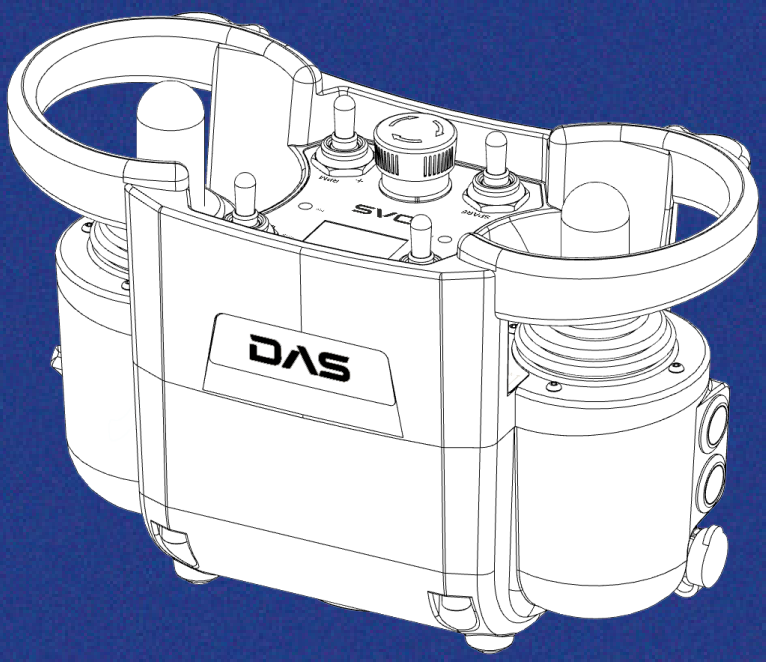
WIRELESS REMOTE CONTROL

IRON-MD

USER'S MANUAL



1

Before Start

Explanation of symbols used

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

This icon marks important information or points 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 warnings that may result in electrical hazards or personal injury.

Basic Requirements

Users 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 product and how to use it.
Do not disassemble the product as this product is not field serviceable.
When supplying power to this product or system, a fuse must be installed externally.
In addition, the installation and wiring of this product must be installed by referring to the documentation.

Warranty

- The manufacturer disclaims any liability for products fit for any particular purpose, other than as expressly stated in writing.
- The manufacturer's product warranty period is within 18 months after delivery and 12 months after application to the product.
- The manufacturer provides a liability warranty against defects in the product and associated firmware and hardware arising from defects in materials, design or workmanship.
- Manufacturer's sole obligation under this warranty 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 related to the product in case of a defect, and does not bear any expenses.
- The warranty is void if the purchaser or other companies do not follow the user manual or change the product or firmware.

1

Before Start

2

Product Overview

DAS wireless remote transceiver IRON series is a wireless transceiver for safe use of wireless control of construction equipment (aerial work truck, crane, pump car, tower crane, wireless excavator, agricultural machinery field, etc.).
It uses the basic frequency of 447 MHz and has a built-in channel change function to prevent crosstalk. Using 2.4 GHz band Bluetooth communication at the same time, it receives the status 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 continuously for more than 40 hours with a single charge through a low power consumption design.

Main Features

- A joystick that is easy to 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 support
- Transmitter wired function support
  (connecting cable sold separately)

Component List

Wireless Transmitter 1EA

Wireless receiver 1EA

Shoulder suspenders 1EA

Battery charger 1EA

3

Product Specifications

Transmitter Specifications

Classification	Standard
Display	GRAPHICS LCD 128*128 (OPTION)
Radio frequency	447 MHz / 2.4 GHz
Used battery	Li-ion battery 18650 3.7V / 3A
Battery charging time	5 hours
Usage time after one charge	40+ hours
Operating temperature	-20˚C to + 70˚C
Storage temperature	-40˚C to + 85˚C
Waterproof rating	IP65
Weight	1.1 kg

Receiver Specifications

Classification	Standard
LED status indication	7 LED
Radio frequency	447 MHz / 2.4 GHz
Supply power	DC 8-26 VDC, 3A Min
Communication output method	CAN
Contact output	RELAY 10A
Operating temperature	-20˚C to + 70˚C
Storage temperature	-40˚C to + 85˚C
Waterproof rating	IP65
Weight	0.4 kg

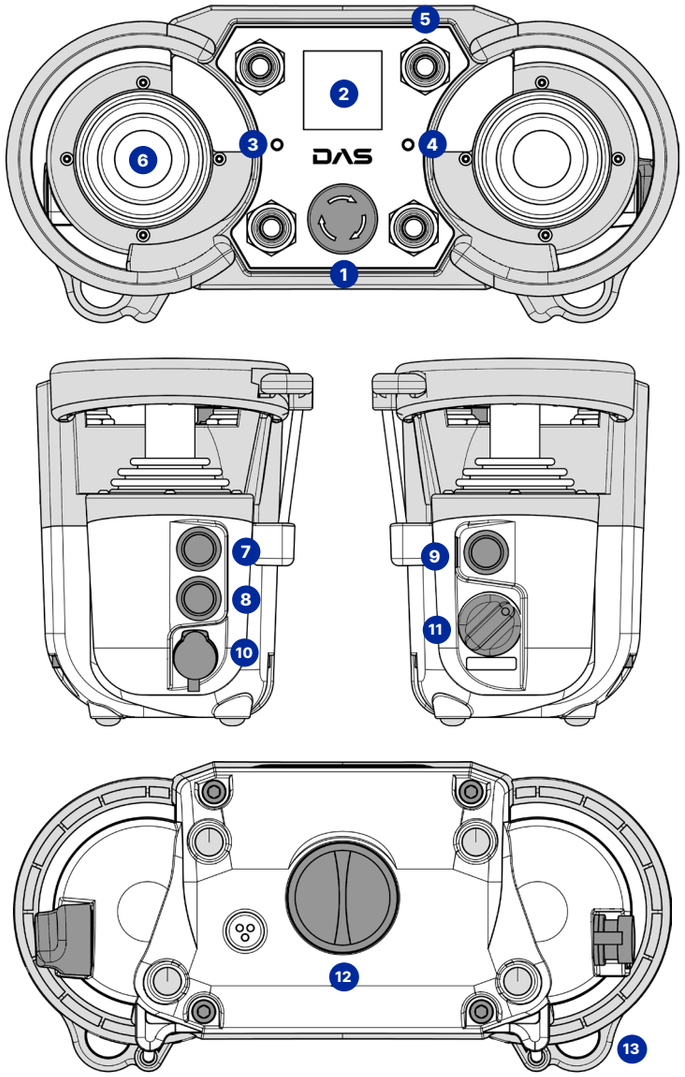
3

Product Specifications

3

Product Specifications

Name of each part of the transmitter

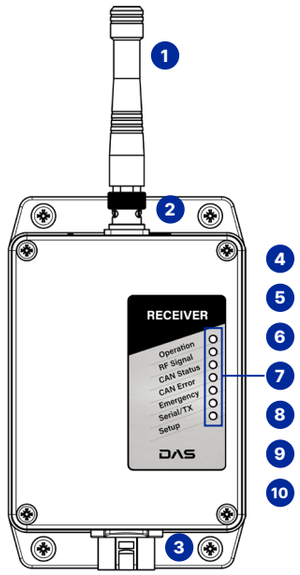


1. Emergency stop switch
2. Status Monitoring LCD (OPTION)
3. RUN LED
4. PW LED
5. Function selection toggle switch
6. 2-axis joystick - front, back, left, right
7. Engine START push button
8. Engine STOP push button
9. START, HORN pushbutton
10. Wired communication connector
11. KEY LOCK switch
12. Li-ion battery holder cap
13. Shoulder strap loops

3

Product Specifications

Name of each part of the receiver



1. Antenna
2. Antenna connector
3. I/O connector
4. Indicator LED during operation
5. Radio signal activity indicator LED
6. CAN status LED
7. CAN communication error display LED
8. Emergency stop operation indicator LED
9. Serial communication transmit indicator LED
10. 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 careful as the wireless remote control can operate normally even in a place where there are obstacles or where there 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 switch and pull it out.)

Preparation before operation

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 starting a shift.
Make sure you read all safety labels.

WARNING

Visually inspect the transmitter for wear or damage.
Never operate the transmitter if worn or damaged parts are found.

Transmitter Handling

The front side of the transmitter should be facing forward, and the text on the control panel should be clearly visible and recognizable, 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 transmitter, operation RUN LED (green) blinks quickly and transmission starts.
7) Check the function of the equipment to see if it operates normally.

WARNING Since the equipment may move during this check, care must be taken to ensure that its functioning is safe and that there are no obstructions 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 though 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) Remove the KEY LOCK switch.
   Keep the KEY LOCK switch in a safe place so that no one can operate it.

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 consumed and the voltage becomes low during operation, the buzzer sounds twice and after 30 seconds After the buzzer sounds for 30 seconds at 1-second intervals, the transmitter is automatically turned off for safety. Secure your equipment during this time.

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

5

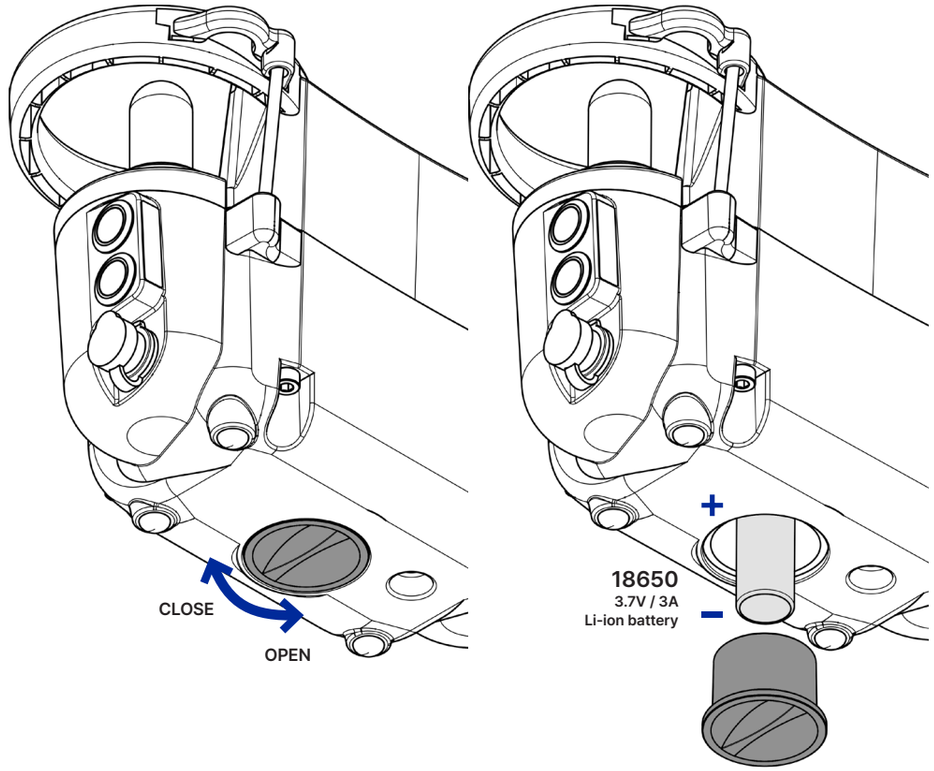
Start Transmitter Operation

6

Battery replacement and charging

Replacing Batteries

1) The battery is located on the underside of the transmitter.
2) Turn the battery cap counterclockwise to open the cap.
3) Remove the exhausted battery and replace it with a charged battery. (When replacing, pay attention to the polarity of the battery. Inside +, cap side -)
4) Turn the cap clockwise to lock.



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Battery replacement and charging

Battery Charge

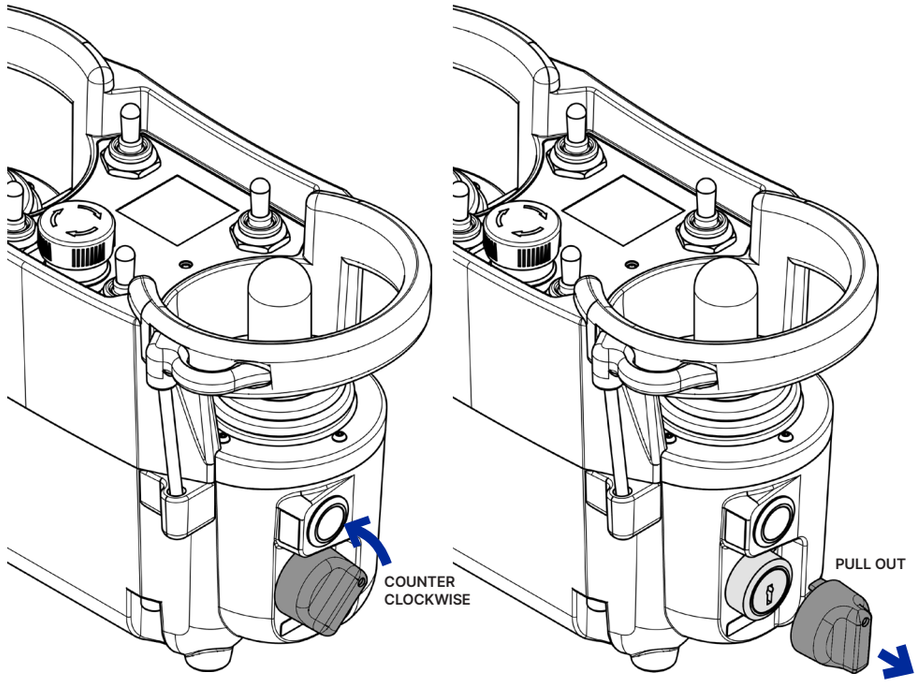
1) Insert the charger USB cable into the AC220V adapter or car cigar jack adapter.
2) Insert the dead 18650 battery into the battery charger. (Pay attention to polarity)
3) The charging progress is displayed on the lamp of the charger.
   Charging : Red lamp on
   Charging complete : green lamp on
   Error check : Red lamp blinks
4) When the green lamp lights up, charging is complete.

18650 CHARGER

7

How to remove the KEY LOCK switch

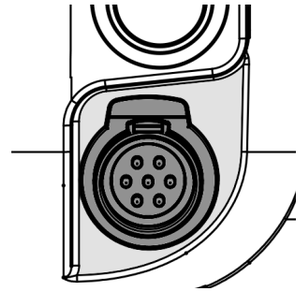
1) Turn the KEY LOCK switch counterclockwise and pull it out.
Forcibly pulling it out without turning it may cause a malfunction.



7

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

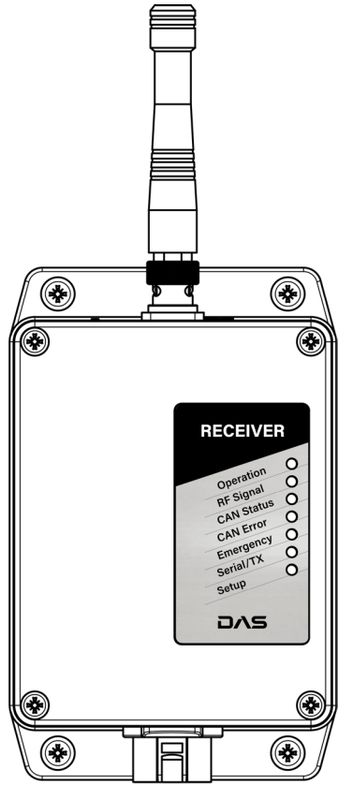
1) Insert the debugging plug into the 7 PIN connector.

8

Wireless Receiver Installation

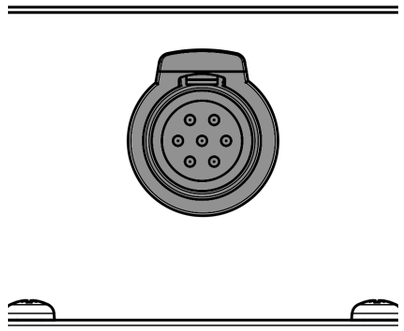
Receiver installation and verification

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 7 PIN connector plug.
4) After turning on the power of the equipment, check the Operation LED on the top of the receiver.
5) Operate the transmitter and confirm that the RF Signal LED is blinking and the equipment is operating.



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

8

Wireless Receiver Installation

9

Breakdown Repair

Battery does not charge.

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

I 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 battery again, if normal. → A/S request

System does not work even after START.

- Check the battery and replace if necessary.
- Check if the KEY LOCK switch is off. (If it is bad or there is no contact, the power switch 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 charged, there is a malfunction inside the transmitter. → A/S request

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 power supplied to the receiver.
- There is an electronic fuse inside, so check the valve output for short circuits.
- If the frequency channels of the transceiver do not match, and it does not operate even after turning the power off and on. → A/S request
- The transmitter and receiver device IDs are missing internally or do not match. → A/S request

All functions of the device are working or not working.

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

Some of the features of the device work and don't work.

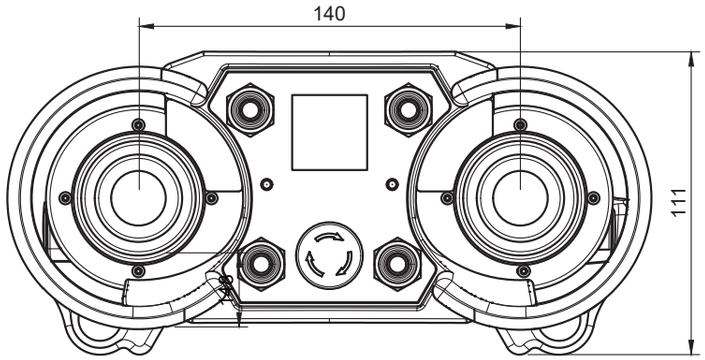
- After checking whether the wiring connected to the equipment is loosely connected, check the wiring between the receiver and the valve controller, and between the valve controller and the actuator.
- The connector inside the receiver is loose.

10

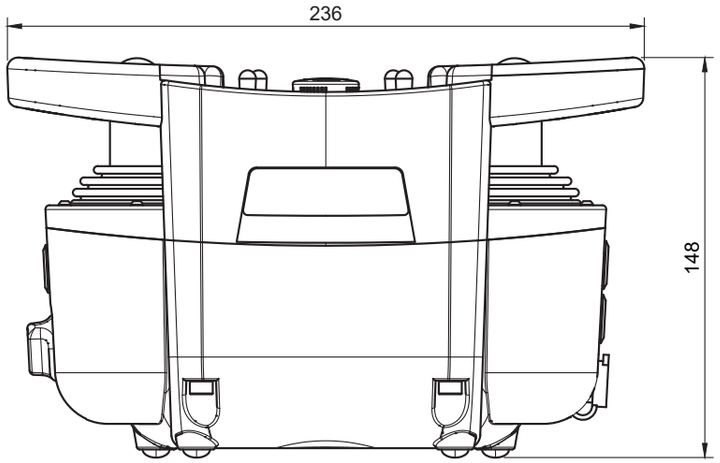
Product Dimensions

Transmitter Dimensions

TOP VIEW



FRONT VIEW



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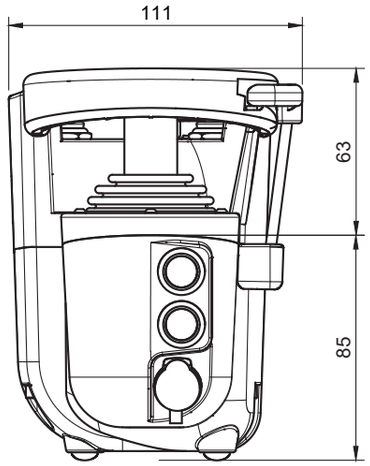
Product Dimensions

SIDE VIEW



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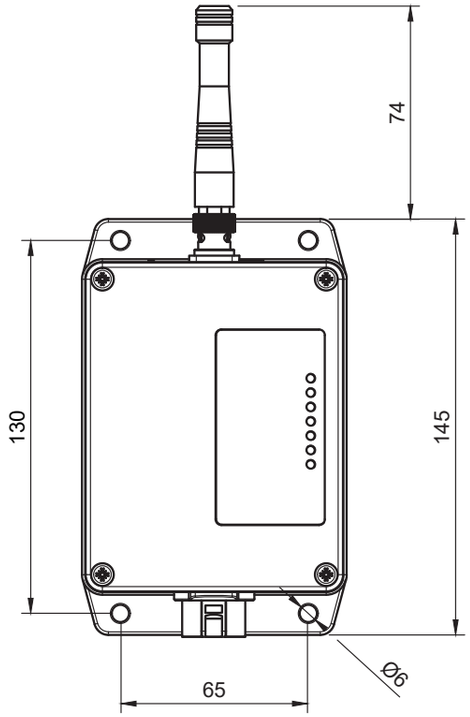
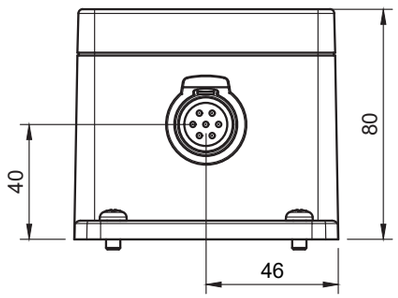
Product Dimensions

Receiver Dimensions

TOP VIEW



FRONT VIEW



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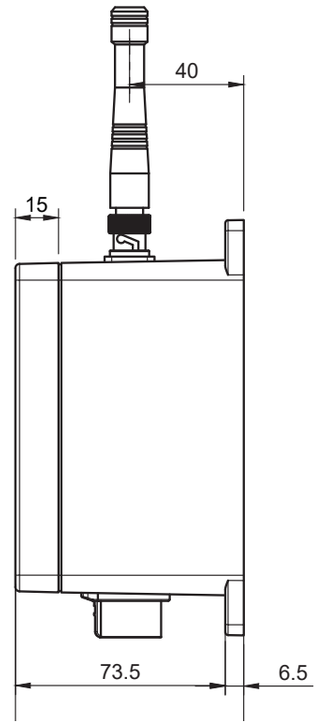
Product Dimensions

SIDE VIEW



11

Precautions when welding

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

Carefully follow these guidelines.

Disconnect all connectors on the control unit before welding.

11

Precautions when 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.

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