

Delta DE212

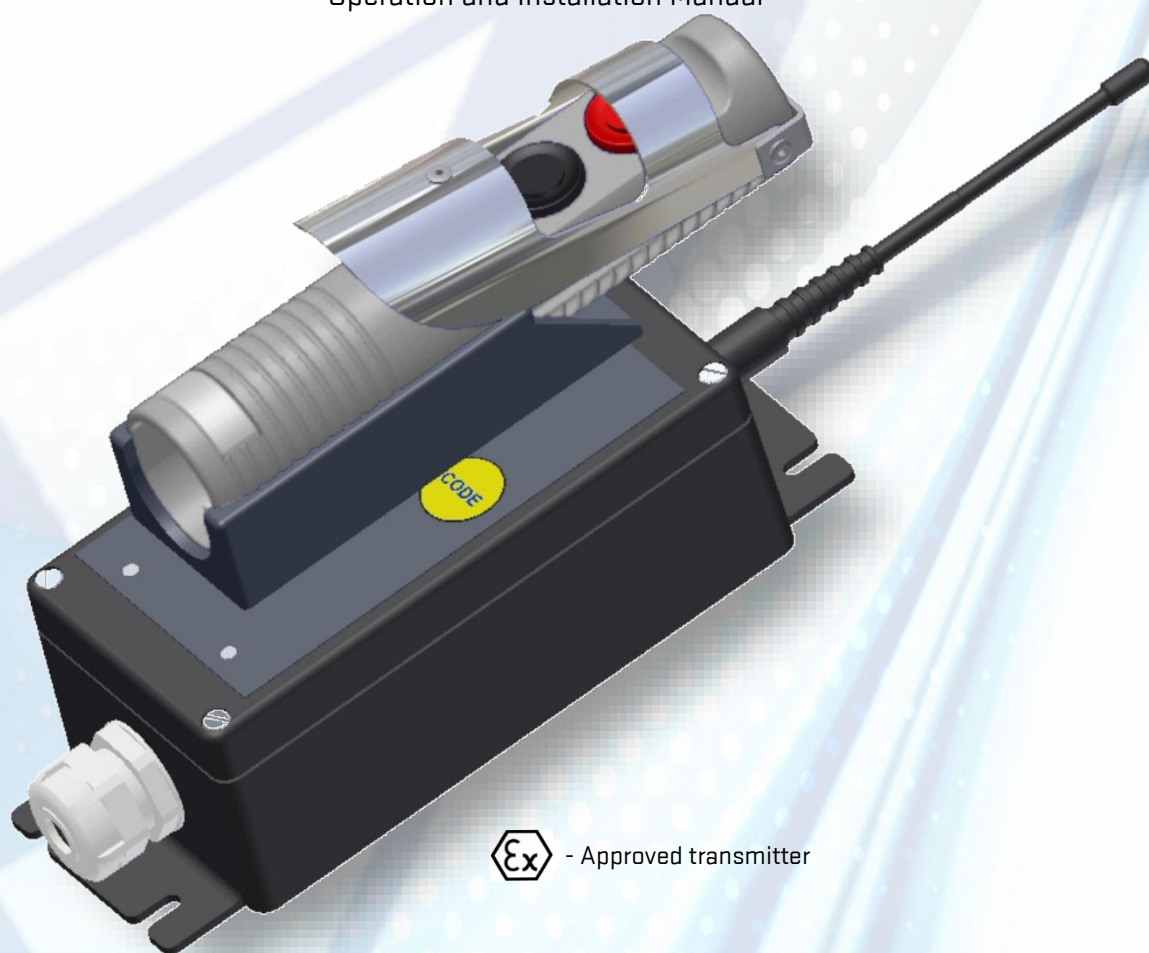
GLOBAL DM2 DP

Wireless Deadman System with Differential Pressure Switch Function

for Aero Plane Refuelling Trucks and Dispensers

For license-free, global operation.

Operation and Installation Manual



- Approved transmitter



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1. INTRODUCTION

The DE212 is a wireless Deadman control system, designed for aero plane refuelling trucks, hydrant dispensers and road trucks.

The handheld Deadman switch is Ex approved according to the ATEX and IECEx regulations.

NOTE: Due to changed Ex requirements for the hand-held transmitter, the new handsets have grey colour.

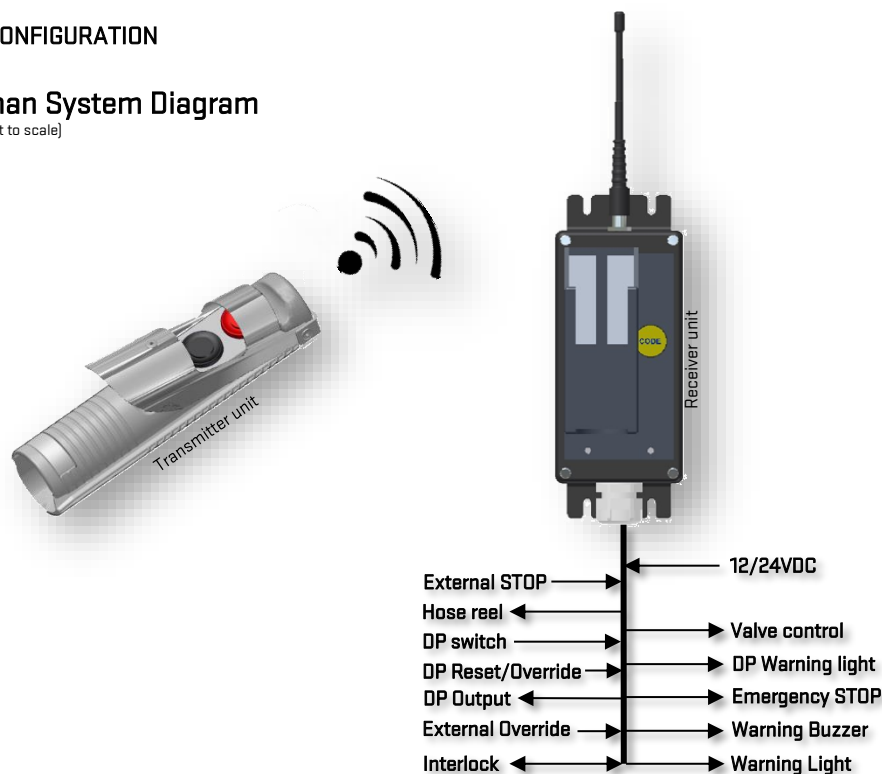
2.1 SYSTEM HIGHLIGHTS

- Operates wireless up to 30m from the refuelling vessel. Range can be adjusted in receiver.
- Integrated system, all you need for a safe Deadman operation is included.
- Several Delta wireless systems can operate in the same area without disturbing each other.
- Wireless operation improves efficiency and operational safety. No cable length limitations to move around the aero plane and no cable to brake.
- No risk for false activation, each wireless handheld unit has a unique code.
- Flexible and modular system, easy to operate and maintain.
- Built in timer, no risk for the operator to manipulate the handheld unit.
- Integrated output for timer warning light and beeper.
- Emergency stop is included.
- External override function.
- Integrated interlock, ensure safe operation.
- Long battery capacity, more than 12 hours with a fully charged battery.
- Receiver has integrated intelligent charger.
- Unique coding system between handheld unit and receiver, easy maintenance.

2.2 SYSTEM CONFIGURATION

Wireless Deadman System Diagram

(Not to scale)



2. INSTALLATION

2.1 INSTALLATION OF THE RECEIVER



Installation in drivers cabin



External long range antenna (Optional)

Figure 2.1 Receiver and Transmitter in the driver's cabin

The receiver unit with antenna is normally installed in the driver's cabin, out of EX defined area. The receiver must have connection to power supply/battery, 12 or 24VDC, and the fuel valve, controlling the filling of the aircraft.

The receiver front panel is also the charging station for the transmitters battery. It is important that the installation of the receiver is made so that it is easy to reach for the driver, in order to place the transmitter for charging each time it has been used.

The orientation of the receiver is not important regarding the antenna. It must however be considered that a lot of metal close to the antenna could reduce the radio signal strength, and reduce operational range and also the functional stability.

If an external antenna must be used, up to 1,5m from the receiver unit, it must be connected by a coaxial cable, and the antenna must be mounted vertically on a metal base.

If several antennas are installed on the truck, the DE212 antenna should be at a distance to other antennas of no less than 1m.

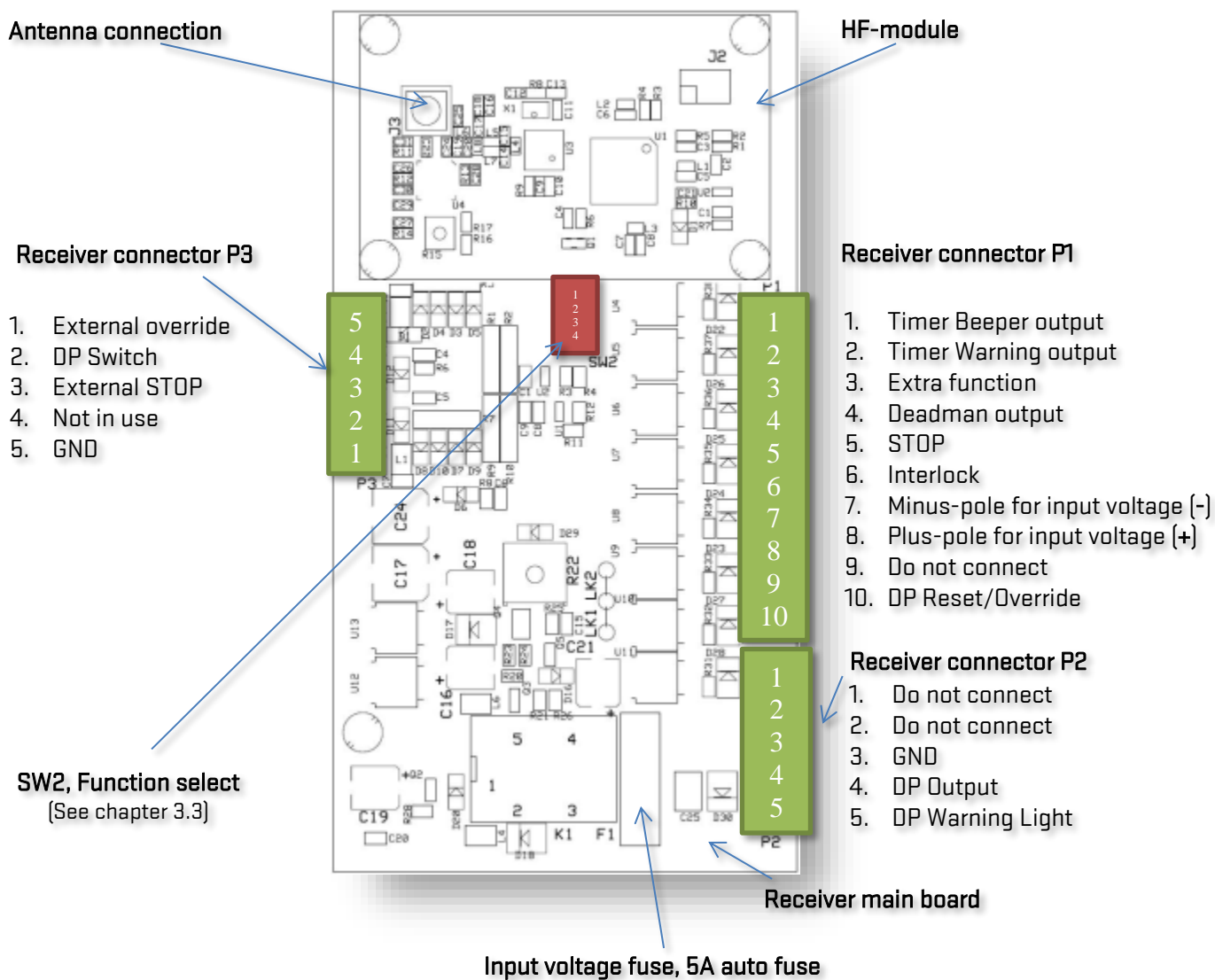
NOTE: When installing the receiver unit, it should be considered to installed it in a place with temperature within 0 and +50°C. This is because, the transmitter batteries, NiMH does not charge properly outside these temperatures.

If the temperature is outside these limits, it is recommended to use a mains battery charger, CH300 inside in a controlled temperature area. See section 5.2.

2.2 RECEIVER UNIT CONNECTIONS

All connections to the Deadman system are made in the receiver unit.

Receiver connections



In order to get the most stable range between the receiver and the handheld transmitter, it is recommended to install an antenna at the outside of the refuelling truck cabin. With an external antenna the path between the two units is less dependent on radio shielding from the driver's cabin walls and items between the two units.

Connector P1 in receiver	Functional description	Receiver function Select, SW2
1	Timer beeper output	SW2-1: 2 min. timer ON/OFF ON= timer active, OFF=No timer
2	Timer warning output	SW2-2: Extra function. Simultaneous or no simultaneous operation with the Deadman function. ON = Simultaneous operation
3	Extra function, for hose reel or pump speed control	
4	Deadman output	SW2-4: DP Enable
5	Normally closed=activated output, opens when STOP is pressed	
6	Interlock (transmitter is charging) Output is active when transmitter is charging	
7	Minus-pole for input voltage	
8	Plus-pole for input voltage	
9	Do not connect	
10	DP Reset / Override	

Receiver connections and functional selection.

Note: All outputs are 12 or 24V, same as the power supply voltage, when activated.

Receiver connections, connector P3:

Functions installed with receiver software program: 02046

Conn. P3	Functional description	
1	External override The Deadman function is active as long as this input is low, connected to GND	SW2-3 : External override ON= Ext. override active. OFF=Ext. override disabled
2	Not in use, for future expansion.	<i>Do not connect</i>
3	External STOP. Stops all functions in the receiver when connected to GND	This function is always enabled
4	Not in use, for future expansion.	<i>Do not connect</i>
5	GND, ground or common terminal. Same as P1, term. 7	

NOTES:

- Input voltage is 11 to 35 V DC. All outputs give input voltage when activated.
- NOTE: Input voltage above 35V, will shut down the receiver.
- Note that the potential between the minus pole and ground, must not be greater than 50VDC/AC peak.
- The timer warning output operates as follows: when the Deadman function is activated, the time warning output also go active, supplying 12/24V out. When 30 seconds are left of the 2 min. time period, the standard period, the output change from a steady output, to an off/on signal during the last 30 seconds of the time period. The output is intended for connection to an indicating lamp, visible for the operator. The on/off flashing lamp is intended to warn the operator to restart the time period.
- The timer beeper output is active only as long as the warning signal is flashing.

If external connection box is delivered, the connections are as follow:

Cable marking	Receiver connector	Function
YE-GN		Not in use
6	6	Interlock
5	5	STOP
4	4	Deadman output
3	3	Extra function
2	2	Timer warning
1	1	Timer beeper
7	7	Minus-pole, input voltage
8	8	Plus-pole, input voltage, 12/24VDC

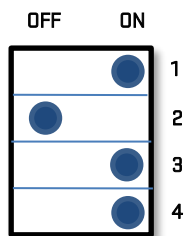
2.3 CHANGING THE FUNCTION OF THE RECEIVER UNIT BY SW2.

The function of the receiver unit can be changed according to operational requirements.

The following can be changed:

- SW2-1: Timed or no timed Deadman. **ON** is activated.
- SW2-2: Simultaneous or no simultaneous operation of the extra function, connection P1-3 when the Deadman is activated.
- SW2-3: External override, active or off.
- SW2-4: Differential Pressure Switch on or off.

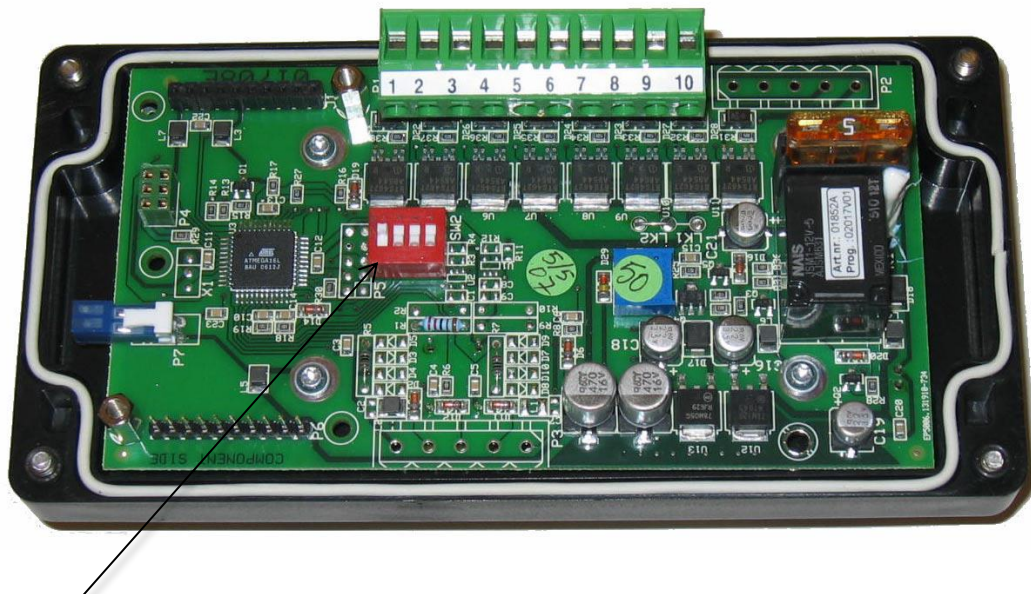
Standard factory setting of SW2 switches:



1. Deadman timer enabled, 2 min timer (Default **ON**)
2. Simultaneous operation of extra function (Default **OFF**)
3. Deadman override input disabled (Default **ON**)
4. DP Enabled (Default **ON**)

To change the settings:

1. Set the function switch, SW2 to the desired position
2. Take out the fuse, F1.
3. Press the receiver front button CODE while replacing the fuse. Press the CODE button for about 3 seconds, then the function is changed according to settings.
4. NOTE: SW2-2 must ALWAYS be set back to OFF after settings are changed.



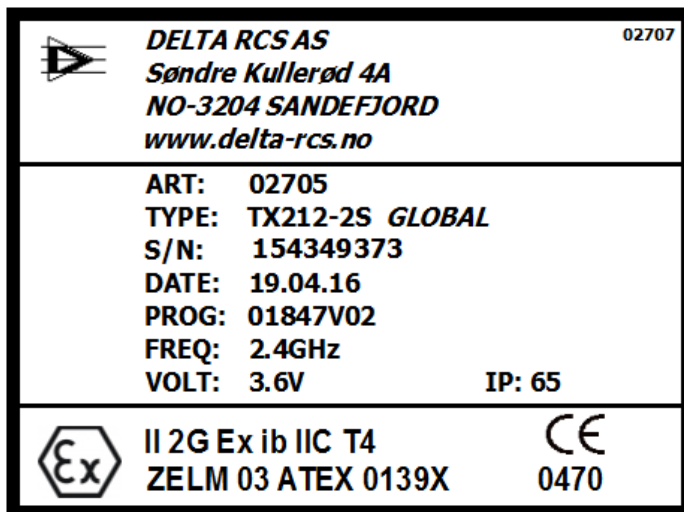
SW2 Switch for function selection

NOTE: The connector for external override and STOP is normally not installed. This function must be specified when ordering, see page 7.

2.4 EX CERTIFICATION.

The handheld unit, the TX212 transmitter is Ex approved, to verify this, look at the identification label located under the handle.

Note that the certification is no longer valid if the TX212 is repaired by an un-authorized workshop, or if the instruction given in this document is not followed.



The Ex-standards applied for this certifications are:

For the EU: II 2 G Ex ib IIC T4, EN 60079-0:2012 + A11:2013 and EN 60079-11:2012

IECEx: IEC 60079-0 Ed.6 and IEC 60079-11:2011

ATEX certification number: ZELM 03 ATEX 0139X

IECEs certification: IECEx ZLM 13.005X

The label tells the name of the producer and that the unit has an ATEX and IECEx certification, and is allowed to be used in Ex environment, Zone 1.

The ART: is the article number of the product

The TYPE: is TX212-2S, given that it is a transmitter of the DE212 system.
2S says that it has two functions and STOP.

The S/N: is the serial number of the unit, which is a unique number.

The DATE: gives the production date.

The PROG: gives the software version of the transmitter.

The FREQ: gives the radio frequency of the transmitter.

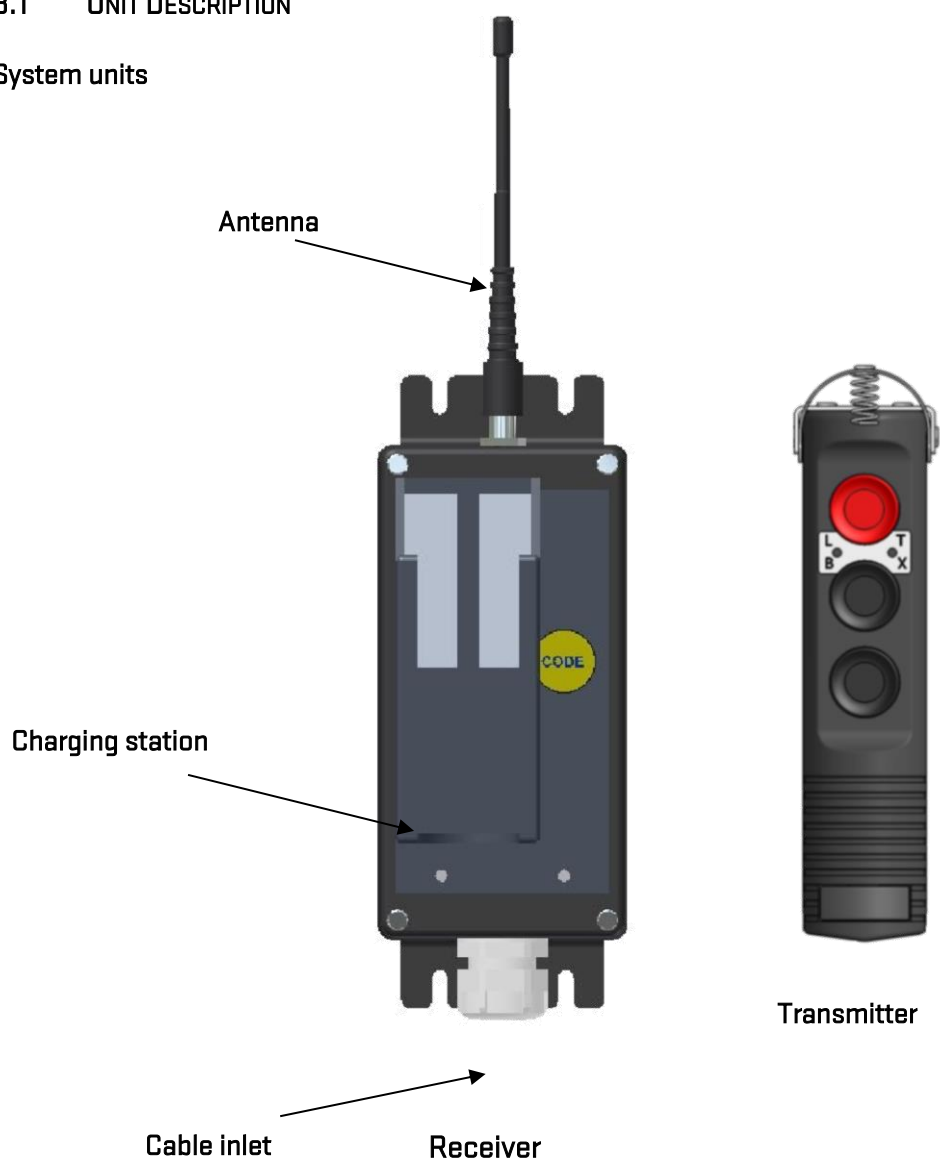
The VOLT: gives the nominal battery voltage.

The IP: gives the protection grade of the transmitter

3. OPERATION

3.1 UNIT DESCRIPTION

System units



The system unit includes the following parts:

- Portable and ergonomic transmitter, with battery and antenna.
- Receiver for fixed installation, with antenna connector, and cable gland for connection cable.
- Approx. 14 cm long antenna for installation on top of the receiver. OPTIONAL: external antenna with 1,5m cable for external mounting.
- Delta CH300, 115/ 230V mains-powered battery charger for transmitter, OPTIONAL.
See section 5.2.

3.2 FUNCTIONAL DESCRIPTION

3.2.1 TRANSMITTER UNIT:



The transmitter is controlled by a small microprocessor. It is always turned on in a standby mode, and will therefore discharge the battery after 3 to 5 months, depending on the state of the battery, if it is not recharged during that period of time.

A fully charged battery have a capacity of at least 12 hours of continues operation. The long operating time is made possible by the Delta timeshare transmission system, WTT.

The battery is charged by the stainless steel contacts at the back side of the transmitter. The transmitter must be charged on the charge station on the receiver front panel, or on a mains battery charger, CH300 delivered by Delta. The charging connections, are protected from discharging of the built-in battery.

The Deadman push-button is activated by a stainless steel handle as long as it is pressed.

The radio signal activates an output circuit in the receiver, supplying the output or the Deadman function on the receiver's connector. This is the output for the Deadman button for refuelling.

When the handle is released, the Deadman output is off after max 1,5 seconds.

If the STOP-button is pressed, all function stops instantly and the normally operated STOP output, used for emergency stop, in the receiver goes off as long as the button is pressed.

The third push-button called, extra function, is normally used for hose reel in control, or pump RPM control. Note that this function is on the standard delivery not possible to operate simultaneously with the Deadman function. For simultaneously operation, the receiver must be reprogrammed.

There are two light diodes, LED on the front panel marked "TX" and "LB".

The TX LED is yellow and is blinking when the transmission is active, and will continue to blink for a short time after the operative push-button is released, sending an active stop signal to the receiver.

The LB LED is a dual function LED. It blinks with a red light when the battery is at low voltage or capacity, and should be recharged. The transmitter can be used for about 15 min. after the red LED is turned on. At a lower battery voltage, the TX LED is turned off, indicating that the transmitter has stopped transmitting.

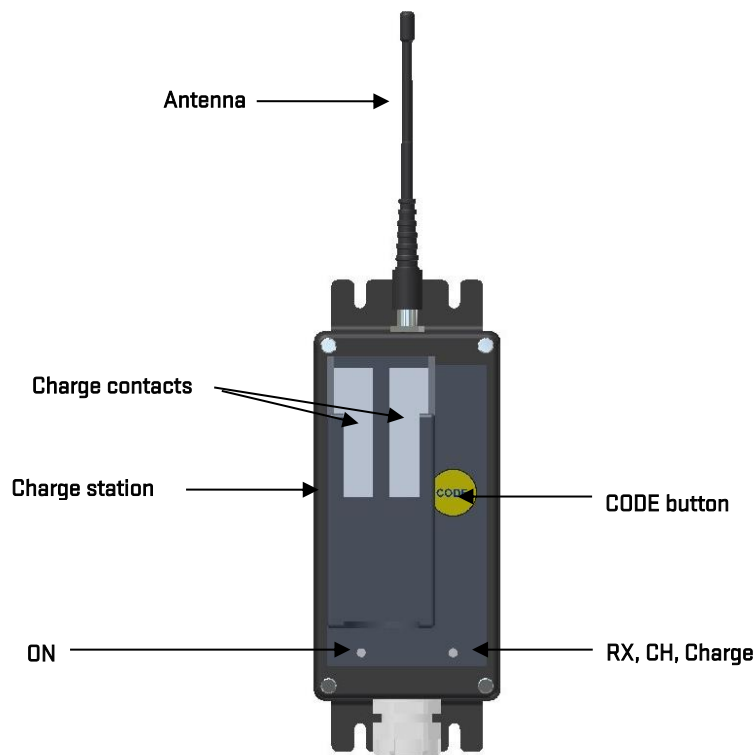
During normal operation, the LB LED is flashing green, indication that the connection with the receiver is good.

The LB red LED is active only when the transmitter is activated. By pressing the Stop- button, the battery can be tested during active transmission.

The Stop button turns off the functions in the transmitter and sends an active STOP, turning instantly off all the functions activated in the receiver. If the Deadman button is stuck, and the Stop-button is pressed, the transmitter cannot be operated again before the damaged button or switch is changed. Transmitter operation in low temperatures, lower than -20°C can be performed, but not for a long period of time. The transmitter must be warmed and charged at temperatures higher than 0°C when not in use.

Under normal use, the battery lifetime is 2-4 years.

3.2.2 RECEIVER UNIT:



The receiver front has a charging station for the transmitter unit, two LED indicators and one push button marked "CODE".

The energy charged to the battery, is calculated according to the time the transmitter has been used. This will ensure high capacity and reduced overcharging of the battery.

The CH LED has three stages when the transmitter is placed to charge:

1: CH is dark. No action.

2: CH burns continues. Full charge current.

3: CH flashes. Indicates trickle charging, battery is full according to the last operation.

The green light diode, marked ON, indicates that a correct voltage is supplied and the receiver is ready for operation. When coding the receiver and transmitter, this green LED flashes three times when the code is accepted and stored in the receiver.

When the receiver is in operation, receiving an accepted telegram from transmitter, the yellow CH LED is flashing rapidly.

3.3 CODING THE TRANSMITTER AND RECEIVER UNITS

In order to make the receiver execute a function, the code in the handheld unit, the transmitter, must be transmitted to the receiver and correspond with the code stored in the receiver.

The DE212 system has 65536 different codes available. Each code and serial number is logged by the producer, and a code is only used once. The transmitter is coded from the factory, while the receiver must be coded by the user before starting operation as follows:

Press the yellow CODE button on the receiver front panel. Simultaneously press the red transmitter STOP button. After about three seconds, the green ON-LED will flash three times, indicating that the code is stored. The system is now ready to operate. The code is stored in the receiver even if the power is turned off.

Erasing the code:

The stored code in the receiver is erased by pressing **first** the Deadman button on the transmitter then the CODE-button in the receiver, after some seconds, the green ON flashes 5 times, and the code is erased. To maintain normal operation again, the receiver must be re-coded.

3.4 MAINTENANCE

This equipment should be kept as clean as possible at all times.

The transmitter, TX212 is an Ex, ATEX/IECEx classified unit, which can be used in hazard areas, zone 1. This classification needs a special attention from the owner and user.

The TX212 design, both the electronic- and the mechanical part, is designed and controlled to meet the Ex requirements. To keep the classification, and the security, the TX212 unit should be inspected regularly.

In case of a damage of the TX212, it should be send for repair to Delta RC AS or an appointed service station immediately. All services and repairs of the unit, will be stored at the repair station, and by Delta RC AS store. In case of an accident, it is possible to see the "history" of the unit.



**Do not operate a TX212 which has a damaged housing.
A damaged unit must be taken out of service, and returned for repair.**

Damages like cracks or holes in the cabinet plastic or rubber, are a safety risk and must be repaired before further use.

The operator or owner can only change the battery module, following the instructions in chapter 4.

IMPORTANT NOTE:

Any unauthorized attempted repair, modification or other alterations of the product without prior written permission from Delta RC AS will render both ATEX/IECEx approvals and warranties invalid, and the responsible operator/owner will be held liable for any damages or injuries which may occur.

Delta RC AS shall not be liable for reimbursements, claims and damages that may result from the unauthorized repair, modifications or alterations of the product.

3.5 BATTERY RECHARGING

1. Before the transmitter is used for the first time, it should be recharged with continues charging for 3 hours. Place the transmitter in the charger on the receiver. Wait 30 seconds till the CH lamp start flashing, press the CODE button on the receiver for some seconds, and the CH lamp will start to light constantly, indicating that the transmitter battery is charged with maximum current. If the transmitter is left in the charger, this state will last for 3 hours leaving a completely fully charged battery. Note, if the battery is not completely empty, two hours charging is normally sufficient to start operation. Do not repeat the 3-hour full charging unless the red LB lamp on the transmitter is flashing.
2. When the transmitter is placed on the receiver charge station, the transmitter battery will be recharged according to the duration the transmitter has been used. The recharging will replace the used battery energy actually used during operation. This type of charging will secure maximum battery capacity and lifetime. Every time the transmitter is placed in the charger, it charges for 30 seconds with full current. After 30 seconds, and if the transmitter is unused, the charge current is reduced to maintenance charging and the CH lamp will start flashing.
If the transmitter has been in operation longer than 5 minutes, the CH lamp will light constantly, indicating that charging is at full current. When the battery energy has been restored, charging is reduced to maintenance as long as the transmitter is in the charger. If the power of the receiver is switched off, stored information regarding transmitter operation time, is erased.
3. The charging of the transmitter battery is controlled by the software in the receiver, and it is recommended always to leave the transmitter for charging. The charging current is limited to 50mA during full charge, and the charging time is regulated by the receiver software. The battery temperature will never rise above +50°C and will not be a hazard for the EX environment. In case of a short circuit of the battery connections, a build in temperature and current fuse, in the battery will secure a temperature allowable in EX environment. With a fully recharged battery the operational time is 12 hours. This means that the Deadman button on the transmitter might be held operated for 12 hours before it stops transmitting.

Note that operation of the transmitter in low temperatures reduces the capacity of the battery down to 30% of normal capacity at room temperature. At temperatures lower than -20°C, the battery may "freeze" and lose all its capacity.

4. **NOTE:** Charging the battery, should take place at temperatures not lower than 0°C and not higher than +50°C. Charging outside these limits will results in very low charging current, or no charging of the battery at all. The battery will however not be damaged.

When operating at low temperatures, lower than 0°C, do not leave the transmitter in a cold driver's cabin overnight or for a long period of time. Take the transmitter inside to keep the battery warm. Charging of the transmitter will normally be finished before the car is back to the depot.

It is recommended to use a CH300-230/115V mains charger, if the receiver is installed so that the temperatures often is outside the recommended temperatures.

Use only Delta chargers for charging the transmitter, other chargers might overload the battery and the ATEX/IECEx certification is no longer valid.

5. The type of battery used is a 3,6V 300mAh NiMH. The battery is a part of the end section of transmitter house. The connection to the printed circuit board is by a small connector. Defective batteries must be disposed at a proper place, where batteries can be disposed. Please see chapter 8 for further information. A normal lifetime for a battery is approximately 500 recharging.

NOTE: After July 1. 2003, the new ATEX norms are activated. For the DE212 system, the battery module and the transmitter circuit board must be replaced with parts produced according to this norms. This means that repair of the TX212 must take place at Delta RC AS or by a Delta RC AS appointed dealer. Otherwise ATEX certificate is no longer valid.

4. REPLACING THE BATTERY

Note: The battery module 02465 and all replaceable parts of the transmitter, must be original parts delivered by Delta RC AS. Otherwise the Ex certifications are lost, and the customer has to take all responsibilities. The operator is only allowed to change the battery module, nothing else.

From December 2013, the battery module is changed, in accordance with the IECEx certification. The new battery module for IECEx is 02465.

NOTE: Battery module 02465, cannot be replaced by the old 02166, but 02465 can replace the old 02166. Old 02166 battery modules are no longer valid for replacement and must be discarded.



WARNING:

THE BATTERY REPLACEMENT OPERATION MUST ALWAYS TAKE PLACE OUTSIDE EX-AREA.

When the battery module has to be replaced, this procedure needs to be followed strictly:

- Verify that the old battery module 02166 is replaced by 02465.
Battery module 02465 must be replaced by 02465 only.
- **Battery types other than specified must NEVER be used.**
- Open the bottom end of the transmitter, by pressing the two lock-sections in.
- Pull the battery module gently out of the housing without jamming the O-ring.
- Disconnect the battery from connector marked "P3" on the PCB, by lifting the connector up.
See section 5.3.2
- Put a thin layer of non-corrosive, acid-free Vaseline on the new battery module O-ring
- Connect the new battery, and push the battery module back into the housing. Carefully make sure the O-ring and connecting wires are not jammed during this operation.
- When the operation is finished, charge the battery for 3 hours, and test all functions.
See section 3.4
- Defective batteries must be disposed at a proper recycling facility.
Please refer to chapter 8 for further information.

5. OPTIONS, ADDITIONAL EQUIPMENT AND SPARE PARTS.

5.1 OPTIONS

The DE212 is a deadman control system designed for aero plane refuelling trucks and dispensers.

Both the receiver and transmitter are controlled by a microprocessor, making it possible to tailor special functions for a customer.

The following units of the DE212 GLOBAL are available:

Order number	Functional description
02705	Transmitter TX212-2S Global2 2,4GHz with 1 extra function. Ex approved
01836	Receiver RXA6 Global 2,4GHz operation. 2min timeout. Standard delivery.

Note: The receiver has in a standard delivery with functions as follows:

- Timer controlled deadman. Running for 2 min. continuously. Warning light, or beeper tells operator 30 sec. before end of the 2 min. to restart timer by a short release of the deadman function.
- An interlock output signal when the transmitter is placed in the charge station on the receiver front.
- **Emergency STOP.** An output signal as long as power is on.
The output is switched **OFF** when the STOP button on the transmitter is pressed.
- **External Override.** An input signal from an external unit, which overrides the deadman handset. Emergency STOP on the handset is still active, even if external override is used.

5.2 ADDITIONAL EQUIPMENT

The standard delivery of a deadman control system comprises one receiver, one transmitter and an 145mm antenna for installation on top of the receiver. For an installation require more than this, the following are available:

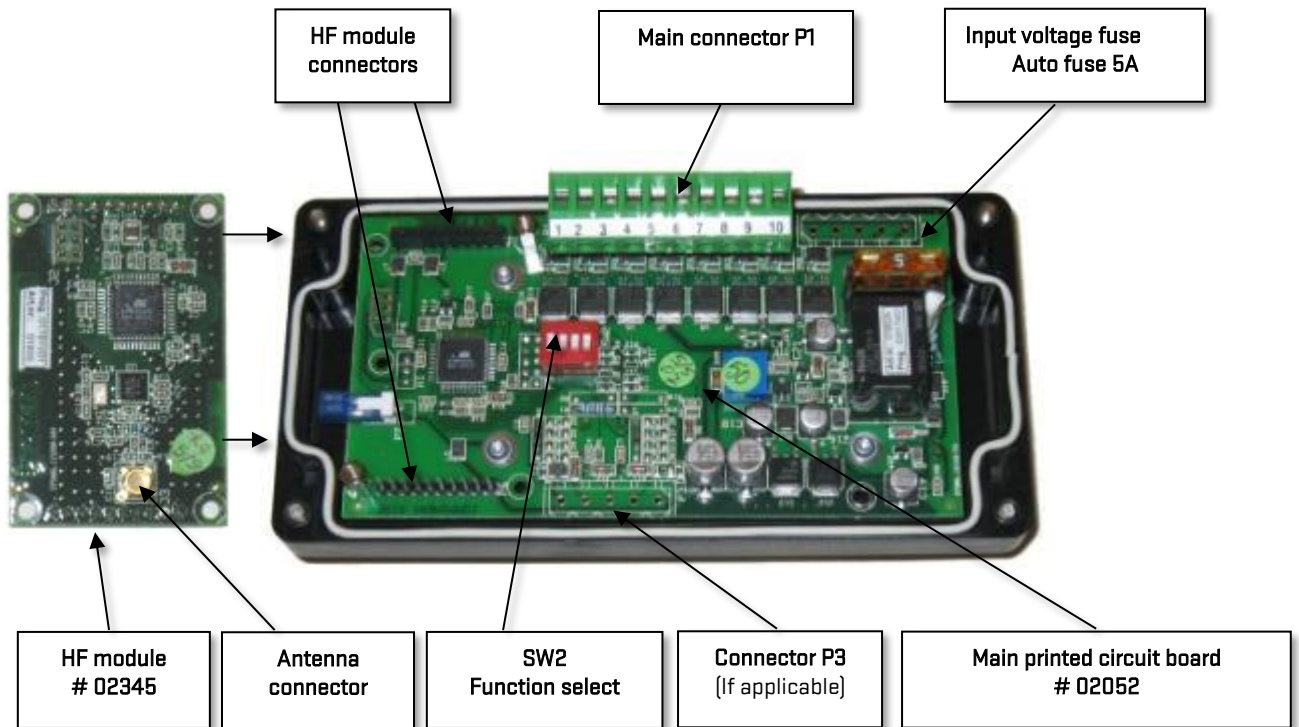
Order number	Item description
01780	Transmitter Charger CH300-2 110/230V AC.

5.3 SPARE PARTS

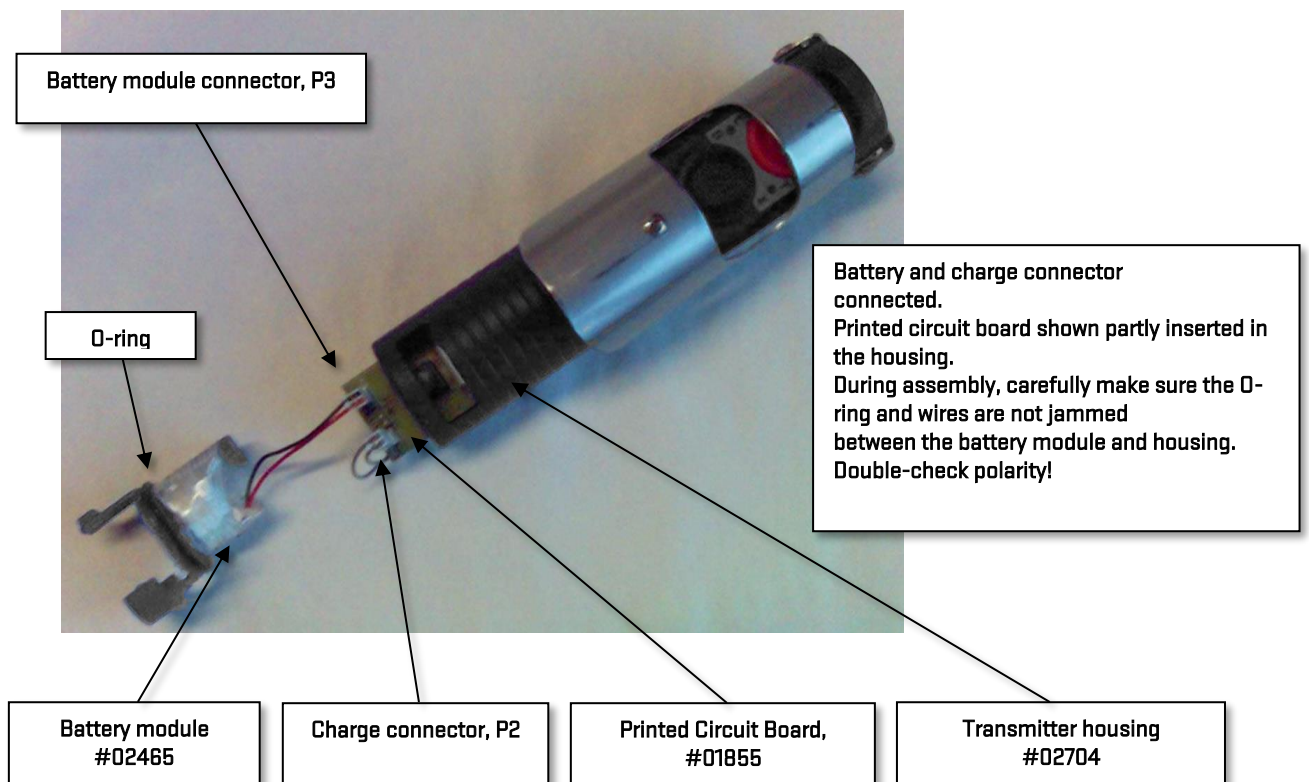
The following spare parts are available:

Order number	Item description
01855	Transmitter PCB TX212-2S Global 2,4GHz w/extra function. ATEX approved.
02704	Transmitter housing TX212-2S Global2 CH2 mount
02465	Transmitter battery module 3V6 NiMH 300mAh TX212. ATEX/IECEx approved.s
02052	Receiver PCB RXA mainboard
02345	Receiver PCB HF-module Global 2,4GHz.
01760	Receiver housing RXA Top CH2 mount
02258	Receiver housing RXA Bottom mount
02511	Receiver assembly set RXA Global
02477	Antenna for external installation, including 3m cable with FME connector

5.3.1 Receiver front unit, parts identification



5.3.2 Transmitter parts identification



6. WARRANTY CONDITIONS

Complaints

When receiving the product the buyer must inspect it, and eventually complain any obvious faults or missing items within 8 days from reception. Acceptance of complaint will otherwise not be considered. Complaints of any faults that could only first be discovered after mounting and testing the product must be reported at once.

Warranty

The warranty covers only damages caused by material faults and manufacturing errors.

The warranty ceases 12 months after the delivery date.

Delta RC AS or appointed repair workshop, is bound to repair and replace defect parts in its products, free of charge, in its main workshop during its normal working hours. Packages being sent to and from Delta RC AS are in the responsibility of the purchaser, as he is also economically responsible for paying the transportation charges, toll, insurance and other charges related.

Should the warranty repair be done at the customer's location, there will be charges for cost of travelling, accommodation and dieting, conforming to the government's assertions. There will also be an additional charge of 50% of travelling time by the current repair regulations.

The warranty is cancelled if:

- a) There has been done any modification or attempts in the product without a prior written permission from Delta RC A/S.
- b) The product has been handled wrongly or has not been maintained properly.
- c) The payment conditions have not been fulfilled.

Repair work

NOTE: DE212 transmitters, TX212-2S are Ex, ATEX/IECEx approved. This means that repair work on the transmitters **must** be performed by Delta RC AS or by a Delta RC AS appointed repair workshop. If repair of a Ex approved part is done by a non-appointed repair workshop, the Ex approval is lost, and the customer must take all responsibility.

*Note that for the TX212 transmitter, the customer can change the battery unit **only**, according to instruction in chapter 4.*

Repair work done after the warranty period is charged at full cost. Packages being sent to and from Delta's workshop are on the purchaser's cost and risk.

If the repair work is done at the customer's location, by Delta serviceman, there will be charges for costs of travelling, accommodation, dieting, travelling time and hours of work.

Warranty exceeding 3 months after repair work is limited to cover only the fault that was repaired. A new fault after the repair must be pointed by the customer.

Any other defect or missing part during this period is not covered by the warranty.

Should Delta offer a service unit during the warranty time, the purchaser pays for the transportation, insurance and a weekly rent.

6.1 APPROVED SERVICE STATIONS

Norway

Delta RC AS
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6.2 AGENTS

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GoExport Ltd.
5795, avenue De Gaspé, bureau 214
Montréal (Québec) H2S 2X3
Canada
Phone: +1 514 227 8490
E-mail : info@goexport.ca

7. TECHNICAL DATA

This equipment complies with the following standards:

Europe/EU: ERC 70-03 EN 300-400. USA: FCC 15.249. Japan: STD-T66.

It is in accordance to EU's demands in order to label the equipment with CE.

Transmitters are ATEX/IECEx approved, according to: EN 50 014:1997+A1+A2. EN 50 020:2013 and

For the EU : II 2 G Ex ib IIC T4, EN 60079-0:2012 + A11:2013 and EN 60079-11:2012

IECEx: IEC 60079-0 Ed.6 and IEC 60079-11 :2011

ATEX certification number: ZELM 03 ATEX 0139x

IECEs certification: IECEx ZLM 13.005X

General Specification

- Frequency: 2,4 GHz
- Modulation: GFSK
- Coding: Digital coding, 65.536 different pre-set codes from manufacturer.
- Functions: Three functions, Deadman, STOP and one extra.
- Temperature Range:
 - Operation: -20 to +50° C. For lower temperature, contact manufacturer.
 - Storage: -40 to +65° C.
 - Charging: 0 to +50° C.
- Shock Resistance: 1 m free-fall on concrete floor.

Receiver

- Antenna: External standard aerial, 14,5 cm long.
With FME connector on receiver top.
- Power Supply: 11 to 27 V DC. Voltage above 35VDC shuts down the receiver.
- Power Consumption: Standby: 55mA.
During full charging: 110mA.
- **Outputs:** Semiconductor. 2A, each. 12/24 V DC output when active.
 - Deadman output.
 - Interlock, output when transmitter is in the charging station.
 - Timer warning signal.
 - Beeper warning output.
 - Normally closed output, opens when STOP is activated.
- **Inputs:**
 - External STOP
 - External Override
- Transmitter charging: Front panel charging station for transmitter, max current 50mA.
- Connections: Screw terminal on PCB connector.
- Controls: 1 push-button CODE, for coding to the transmitter.
- Indicators: Green light diode that indicates power on.
Yellow light diode that indicates recharging and in operation.
- Housing: ABS polycarbonate, class IP52.
- Dimensions: L:160 mm, W: 80 mm, D: 60 mm.
- Weight: 0.3 kg

Transmitter

- Output Power: max. 1mW.
- Antenna: Internal.
- Power Supply: 3,6 V NiMH battery, 300mAh. Rechargeable by external contacts.
- Charging: Constant current charging,
50mA controlled by charging station on receiver front panel.
Charging contacts protected against short circuit.
The battery characteristics requires charging between 0 and +50°C.

- Controls: Three push-buttons: deadman button, extra function and STOP button.
The deadman button is operated by a stainless steel handle.

- Indicators: TX: Yellow light diode that indicates active transmission.
LB: Dual colour LED.
Green LED, that indicates good connection with the receiver.
Orange LED, indicates low battery, recharging is needed.

- Housing: Polyamide, PA6 B3L with 2% blend of "Beki Shield", Grey colour
Class IP65
- Dimensions: Length: 170 mm, diameter: 40 mm.
- Weight: 0.3 kg incl. Battery.

7.1 ATEX CERTIFICATES



Prüf- und Zertifizierungsstelle
ZELM Ex



(1) EC-TYPE-EXAMINATION CERTIFICATE

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
(3) EC-TYPE-EXAMINATION CERTIFICATE Number:

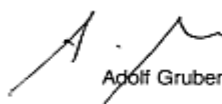
ZELM 03 ATEX 0139 X

- (4) Equipment: **Wireless deadman switches types TX212-1N and TX 212-2N**
(5) Manufacturer: **Delta RCS AS**
(6) Address: **N-3178 Våle**
(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
(8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the confidential report ZELM Ex 0190315233.
(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50 014: 1997+A1+A2 EN 50 020: 2002
(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.
(12) The marking of the equipment shall include the following:



II 2 G EEx ib IIC T4

Zertifizierungsstelle **ZELM Ex**


Adolf Gruber



Braunschweig, October 6, 2003

sheet 1/2

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.

Prüf- und Zertifizierungsstelle ZELM Ex • Siekgraben 56 • D-38124 Braunschweig



Prüf- und Zertifizierungsstelle

ZELM Ex

**SCHEDULE**

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0139 X**(15) Description of equipment

The wireless deadman switches types TX212-1N and TX212-2N are intended for the hand-held use together with the appropriated control system for monitoring of the personal behavior of the employers working at aeroplane service stations. The handheld unit is equipped with a large stainless steel deadman push-button and further partly optionally control and indicator elements.

The apparatus is build in a polyamide housing with integrated battery module. The charging of the battery module is only permitted outside the hazardous area by the appropriate charging station.

Electrical data

Supply circuit

by built-in battery module type 01416B
The internal circuit is intrinsically safe.

The permissible ambient temperature range is -20°C to $+50^{\circ}\text{C}$

(16) Report No.

ZELM Ex 0190315233

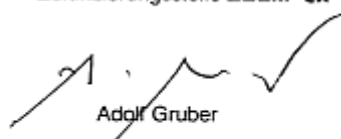
(17) Special conditions for safe use

1. The instruction manual has to be considered.
2. The permissible ambient temperature range is -20°C to $+50^{\circ}\text{C}$
3. Charging of the internal battery is only permitted by use of the appropriate charging station outside the hazardous area. Keep attention to the charging behavior (temperature rise, reduce of the working time because of decreased capacity). In any case of doubt an inspection at the manufacturer is to be initiated.
4. The permissible ambient temperature range during recharging is 0°C to $+50^{\circ}\text{C}$.
5. The internal battery may only be replaced outside the hazardous area by an original battery module type 01416B according to the instructions in the manual.

(18) Essential Health and Safety Requirements

In general met by standards.

Zertifizierungsstelle ZELM Ex


Adolf Gruber

Braunschweig, October 6, 2003

sheet 2/2

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Prüf- und Zertifizierungsstelle

ZELM Ex

1. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

to EC-type-examination Certificate

ZELM 03 ATEX 0139 X

Equipment: **Wireless deadman switches types TX212-1N, TX 212-2N and TX 212-2S**
Manufacturer: **Delta RCS AS**
Address: **N-3178 Våle**

Description of supplement

Purpose of this Supplement is the extension of the possible versions by the following components: Another housing (housing TX 212-2S) with a changed battery charge connection, a new transmitter PCB working at 2.4 GHz and a new battery module, type 01867, with NiMH battery (capacity 200mAh). These new components will be combined with all previous components.

Electrical data

Supply circuit by built-in battery module type 01416B respectively
built-in battery module type 01867

The internal circuit is intrinsically safe

All other data and the special conditions remain unchanged and apply for this first Supplement, too.


Report No.

ZELM Ex 1140515446

Essential Health and Safety Requirements

The essential Health and Safety Requirements are further on met by concordance with the standards scheduled in the EC-Type-Examination Certificate.

Zertifizierungsstelle ZELM Ex


Dipl.-Ing. Harald Zelm



Braunschweig, February 27, 2006

Page 1 of 1

EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.

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Prüf- und Zertifizierungsstelle ZELM Ex



1. Ergänzung

(Ergänzung gemäß EG-Richtlinie 94/9 Anhang III Ziffer 6)
zur EG-Baumusterprüfbescheinigung

ZELM 03 ATEX 0139 X

Gerät: **Drahtloser Totmann-Schalter Typen TX212-1N, TX212-2N
und TX212-2S**

Hersteller: **Delta RC3 AS**

Anschrift: **N-3178 Völe**

Beschreibung der Ergänzung:

Gegenstand dieser Ergänzung ist eine Erweiterung der möglichen Versionen um folgende Komponenten: Ein weiteres Gehäuse (Gehäuse TX212-2S) mit einer geänderten Ladeverbindung zur Batterie, eine neue Senderplatine mit der Arbeitsfrequenz 2,4 GHz sowie ein neues Batteriemodul, Typ 01867, mit einer NiMH Batterie (Kapazität 200 mAh). Diese neuen Komponenten werden mit allen bisherigen Komponenten kombiniert.

Elektrische Daten

Stromversorgung aus internem Akku, Typ 01416B bzw. Typ 01867

Der interne Stromkreis ist eigensicher.

Alle weiteren Daten und die besonderen Bedingungen bleiben unverändert und gelten auch für diese erste Ergänzung.


Prüfbericht Nr.

ZELM Ex 1140515446

Grundlegende Sicherheits- und Gesundheitsanforderungen

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden weiterhin erfüllt durch Übereinstimmung mit den in der EG-Baumusterprüfbescheinigung aufgeführten Normen.

Zertifizierungsstelle ZELM Ex


Dipl.-Ing. Harald Zelm



Braunschweig, 27.02.2006

Seite 1 von 1

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Stempel haben keine Gültigkeit.
Diese EG-Baumusterprüfbescheinigung darf nur unverändert weitervertrieben werden.
Auszüge oder Änderungen bedürfen der Genehmigung der Prüf- und Zertifizierungsstelle ZELM Ex.

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2. Ergänzung

ZELM ex

(Ergänzung gemäß IEC-Richtlinie 94/9/EG (Atemschutzgerät))

zur EG-Baumusterprüfbescheinigung

ZELM 03 ATEX 0139 X

Gerät: Drahtloser Totmann-Schalter Typen TX212-1N, TX212-2N und TX212-2S
Hersteller: Delta RCS AS
Anschrift: NO-3178 Våle

Beschreibung der 2. Ergänzung

Die 2. Ergänzung betrifft Änderungen am Layout der Version TX212-2N, sowie die Änderung der Herstelleranschrift und die Überprüfung der Geräte auf Übereinstimmung mit den aktuellen Normen. Die Kennzeichnung wurde entsprechend aktualisiert und lautet künftig:

Zündschutzart/Kennzeichnung:

 II 2 G Ex ib IIC T4

Die Anschrift des Herstellers lautet künftig wie folgt: DELTA RCS AS
Skolmar 12
NO-3232 Sandefjord

Die „Besonderen Bedingungen“, die elektrischen Daten und der zulässige Umgebungstemperaturbereich gemäß EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0139 X und deren 1. Ergänzung bleiben unverändert und gelten auch für diese 2. Ergänzung.

Die drahtlosen Totmann-Schalter dürfen nur noch unter Berücksichtigung dieser Ergänzung hergestellt werden.

Prüfbericht Nr.

ZELM Ex 0780919732

Grundlegende Sicherheits- und Gesundheitsanforderungen

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden weiterhin erfüllt durch Übereinstimmung mit folgenden Normen:

EN 60079-0:2006 EN 60079-11:2007

Braunschweig, 03.11.2009

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Zertifizierungs-
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Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm


Seite 1 von 1

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Stempel haben keine Gültigkeit.
Diese EG-Baumusterprüfbescheinigung darf nur unverändert weiterversteuert werden. Ausfertigung
oder Änderungen bedürfen der Genehmigung der Prüf- und Zertifizierungsstelle ZELM ex.

ZELM ex
Prüf- und Zertifizierungsstelle
Stiefgaden 55 - 31574 Braunschweig

4. Ergänzung

(Ergänzung gemäß EG-Richtlinie 94/9 Anhang III Ziffer 6)

ZELM ex

zur EG-Baumusterprüfbescheinigung

ZELM 03 ATEX 0139 X

Gerät: **Drahtloser Totmann-Schalter Typen TX212-1N, TX212-2N und TX212-2S**
Hersteller: **Delta RCS AS**
Anschrift: **Skolmar 12, NO-3232 Sandefjord**

Beschreibung der Ergänzung

Die 4. Ergänzung betrifft die Änderung der Herstelleranschrift, des Layouts der eingesetzten PCB, die Verwendung einer anderen Druckknopfbauform, die Aktualisierung des Typs des Totmann-Schalters und die Verwendung eines neuen Akkupacks.

Diese 4. Ergänzung berücksichtigt ebenfalls die Änderung des Designs des Gehäuses, die Verwendung eines neuen Gehäusematerials sowie die Überarbeitung der Dokumentation und die Überprüfung des Geräts auf Übereinstimmung mit den aktuellen Normen. Das Typenschild wurde entsprechend angepasst.

Die Typenbezeichnung des Totmann-Schalters lautet künftig wie folgt:

Drahtloser Totmann-Schalter Typ TX212-2S GLOBAL

Die Anschrift des Herstellers lautet künftig wie folgt:

Delta RCS AS
PO Box 1065
Søndre Kullerød 4a
NO-3241, Sandefjord

Elektrische Daten:

Stromversorgung aus internem Akku, Typ 02645
Der interne Stromkreis ist eigensicher.

Die besondere Bedingung Nr. 5 ändert sich wie folgt, die anderen Punkte bleiben unverändert und gelten auch weiterhin.

5. Der interne Akkumulator darf nur außerhalb des explosionsgefährdeten Bereiches durch das Original- Akkumodul Typ 02645 gemäß Anweisung in der Betriebsanleitung ausgetauscht werden.

Die Kennzeichnung und der zulässige Umgebungstemperaturbereich gemäß EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0139 X inklusive der 1, 2, und 3. Ergänzung bleiben unverändert und gelten auch für diese 4. Ergänzung.

Seite 1 von 2

EG-Baumusterprüfbescheinigungen ohne Unterschrift und ohne Stempel haben keine Gültigkeit. Diese EG-Baumusterprüfbescheinigung darf nur unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung der Prüf- und Zertifizierungsstelle ZELM ex.

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Prüf- und Zertifizierungsstelle
Siekgraben 56 · D-38124 Braunschweig

**4. Ergänzung
zur EG-Baumusterprüfbescheinigung ZELM 03 ATEX 0139 X**

ZELM ex

Der drahtlosen Totmann-Schalter Typ TX212-2S GLOBAL darf künftig nur unter Berücksichtigung dieser 4. Ergänzung gefertigt werden.

Prüfbericht Nr.

ZELM Ex 13715241125

Grundlegende Sicherheits- und Gesundheitsanforderungen

Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden weiterhin erfüllt durch Übereinstimmung mit den folgenden Normen:

EN 60079-0:2012 + A11:2013

EN 60079-11:2012

ZELM ex

**Zertifizierungs-
stelle**

Braunschweig, 2016-04-19



Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

**ZELM
ex**

Seite 2 von 2

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4. Supplement

(Supplement according to EC-Directive 94/9 Annex III letter 6)

ZELM ex

to EC-type examination Certificate

ZELM 03 ATEX 0139 X

Equipment: **Wireless Deadman Switch types TX212-1N, TX212-2N and TX212-2S**
Manufacturer: **Delta RCS AS**
Address: **Skolmar 12, NO-3232 Sandefjord**

Description of supplement

The 4th Supplement to EC-Type-examination Certificate concerns the change of manufacturers address, a new layout of the used PCB, the use of a new push-button, the updating of the type designation of the Deadman Switch and the use of a new battery pack.

This 4th Supplement also takes into consideration a change in the design of the casing, the use of a new material for the housing as well as the review of the documentation and the assessment of the apparatus in accordance with the current Standards. The nameplate has been adapted correspondingly.

The type designation of the Deadman Switch is in future:

Wireless Deadman Switch type TX212-2S GLOBAL

The manufacturer address is in future:

Delta RCS AS
PO Box 1065
Søndre Kullerød 4a
NO-3241, Sandefjord

Electrical data

Supply circuit by built-in battery module type 02645
The internal circuit is intrinsically safe

The "Special condition for safe use" Number 5 is changed; the other Points remain unchanged and are still valid.

5. The internal battery may only be replaced outside the hazardous area by an original battery module type 02645 according to the instructions in the manual.

The marking and the permissible ambient temperature range according to the EC-type examination Certificate ZELM 03 ATEX 0139 X, including the 1, 2, and 3. Supplements remain unchanged and are also valid for this 4. Supplement.

Sheet 1 of 2

EC-type-examination Certificates without signature and stamp are not valid. This EC-type-examination Certificate may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.

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**4. Supplement
to EC-type examination Certificate ZELM 03 ATEX 0139 X**

ZELM ex

The Wireless Deadman Switch type TX212-2S GLOBAL shall only be manufactured in future according to this 4th Supplement.

Report No.

ZELM Ex 13715241125

Essential Health and Safety Requirements

The essential Health and Safety Requirements are fulfilled by compliance with the following Standards:

EN 60079-0:2012 + A11:2013

EN 60079-11:2012

ZELM ex

**Zertifizierungs-
stelle**

Braunschweig, 2016-04-19



**Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm**

**ZELM
ex**

Sheet 2 of 2

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7.2 DECLARATION OF CONFORMITY



Declaration of conformity

We, Delta Remote Control Systems AS, company organisation no: NO 981252454

P.O. Box 1065, NO 3204 Sandefjord Norway,

www.delta-rs.no

Declare under own responsibility that the product DE212-2S GLOBAL is covered under this declaration.

The product DE212-2S GLOBAL comprises two units, one transmitter and one receiver.

The transmitters are:

1. TX212-2S Global DM,
2. TX212-2S Global RT

The receivers are:

1. RXA GLOBAL DM
2. RXA GLOBAL RT

All units operate at 2,4GHz Channel 9 at max output power of: 0dBm/1mW.

All units conforms to the standards: EN300 2 V2.1.1 and EN301 489-3V1.4.1 according to directive 1999/5/EC or the R&TTE directive.

The Ex-standards applied for the Ex certifications are:

For the EU : II 2 G Ex ib IIC T4 Gb, EN 60079-0:2009 and EN 60079-11: 2012

IECEx: IEC 60079-0 Ed.5 and IEC 60079-11 Ed. 5

ATEX certification number: ZELM 03 ATEX 0509

IECEx certification number: IECEx ZI M 13.005X

Sandefjord 06.11.2013



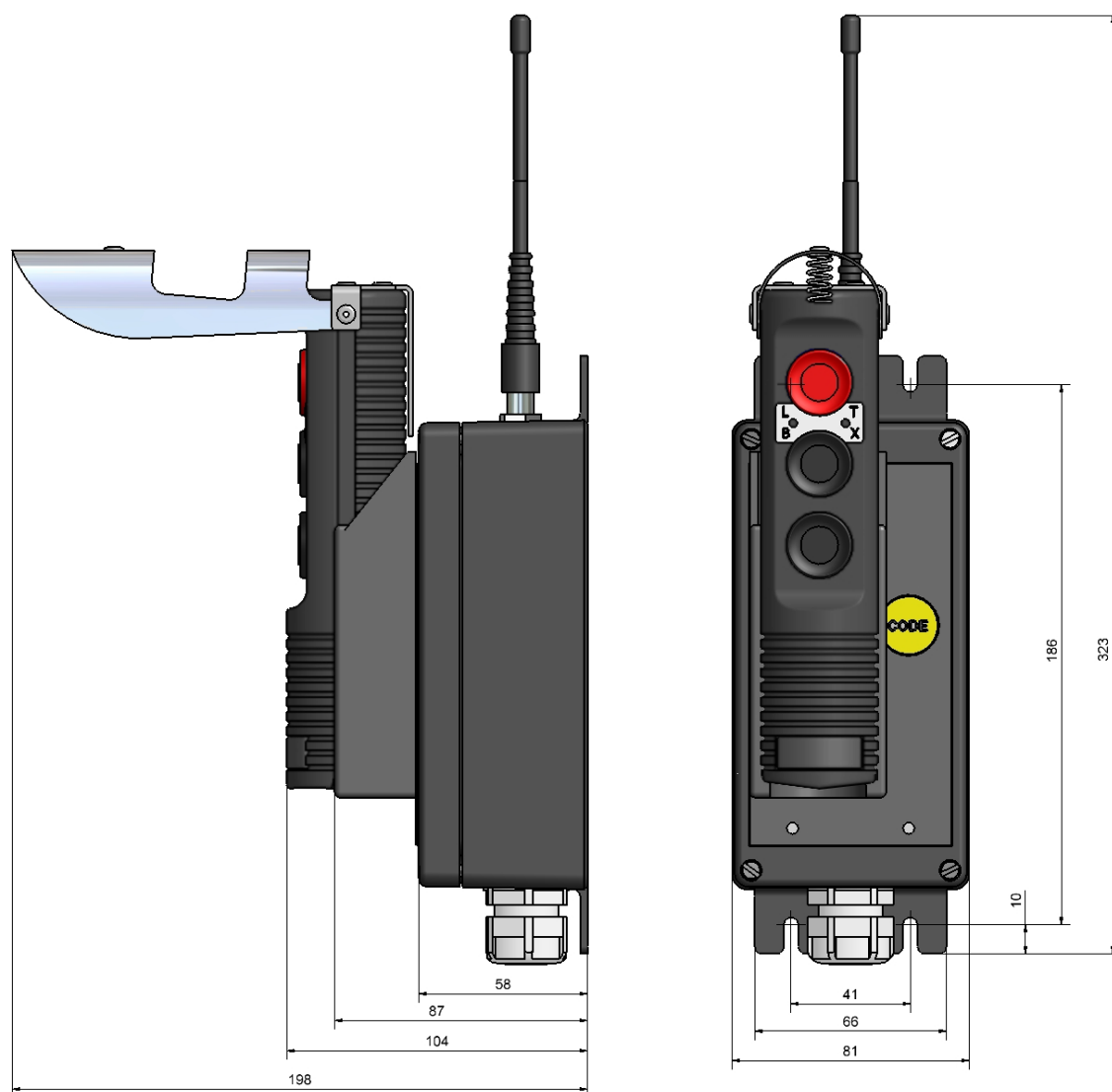
Zacharias Backer



P.O. Box 1065, NO-3204 Sandefjord, Norway
NO 981 252 454 MVA

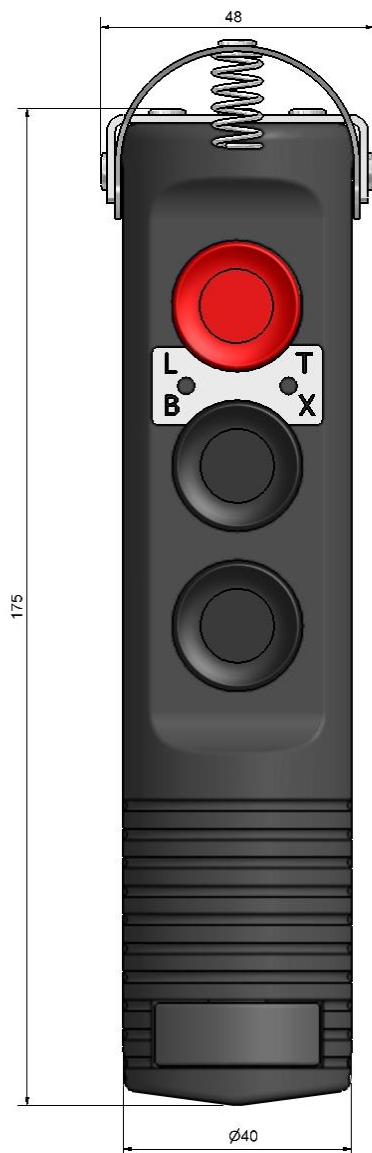
7.3 DIMENSIONS

Receiver and transmitter unit



Note: All dimensions in mm.

Transmitter unit



Note: Dimensions in mm.

Delta RC AS reserves the right to make changes without further notice to the product, to improve reliability, functions and design. Delta RC AS does not assume any liability arising out of the application or use of the product if used according to this document.

8. ENVIRONMENTAL INFORMATION

Care has been taken while producing this units, to ensure that all excess materials are disposed properly, and recycled accordingly. Please help us with this process in the future.

This means:

Do not dispose this devices into the trash when discarding.

To minimize pollution and ensure environment protection, please recycle properly, to ensure the smallest possible environmental footprint.

The PCB (Printed Circuit Board) in this units should be disposed as E-waste.

E-waste is electrical and electronic equipment of any kind that has been discarded. This includes practically anything powered by an electrical source (e.g., from a power socket or a battery).

The batteries should be disposed properly at a battery recycling facility.

The housings should be disposed as general waste.

Please look for these symbols at the recycling facility:



PCB's



Batteries



Housings

European Union (EU) Waste of Electrical and Electronic Equipment (WEEE) directive.

The European Union's WEEE directive requires that products sold into EU countries must have the crossed-out wheeled bin label on the product (or the package in some cases). As defined by the WEEE directive, this crossed-out wheeled bin label means that customers and end-users in EU should not dispose of electronic and electrical equipment or accessories as household waste. Customers and end-users in EU countries should contact their local equipment supplier or service centre for information on the waste collection system in their country.



Check our website for updates: www.deltarc.no

Delta RC AS
P.O. Box 1065
Søndre Kullerød 4A
NO-3204 Sandefjord
Norway

Tel +47 33 44 83 90

E-mail: hello@deltarc.no

www.deltarc.no

Delta RC AS reserves the right to make changes without further notice to the product, to improve reliability, functions and design. Delta RC AS does not assume any liability arising out of the application or use of the product if used according to this document.

This manual is printed on chlorine-free recyclable paper.



www.deltarc.no

