Delta DE212

GLOBAL DP

Wireless Deadman System

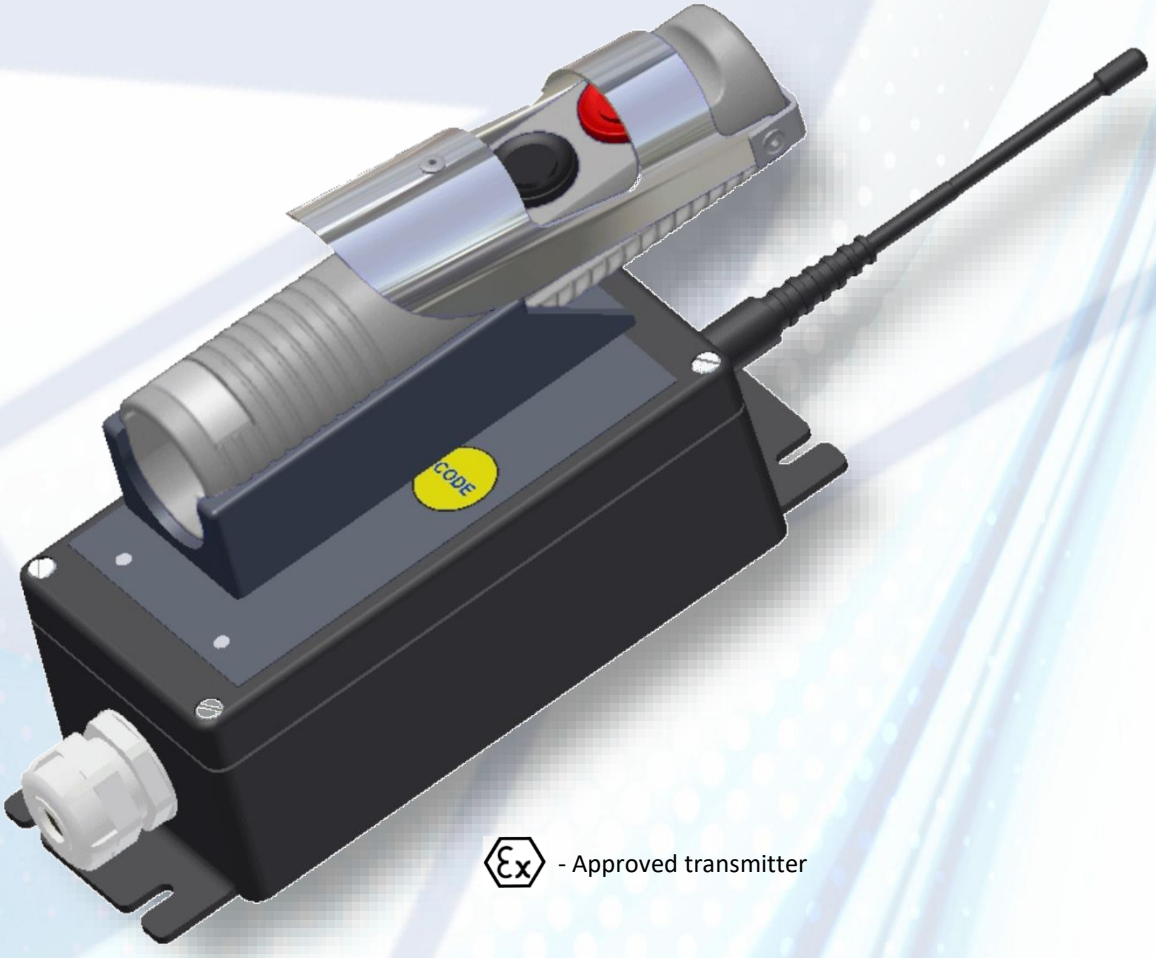
with

Differential Pressure Sensor Function

for Aero Plane Refuelling Trucks and Dispensers

For license-free, global operation.

Operation and Installation Manual



- Approved transmitter

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Document no: 02949
Last Revision: .04.2019

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1. INTRODUCTION

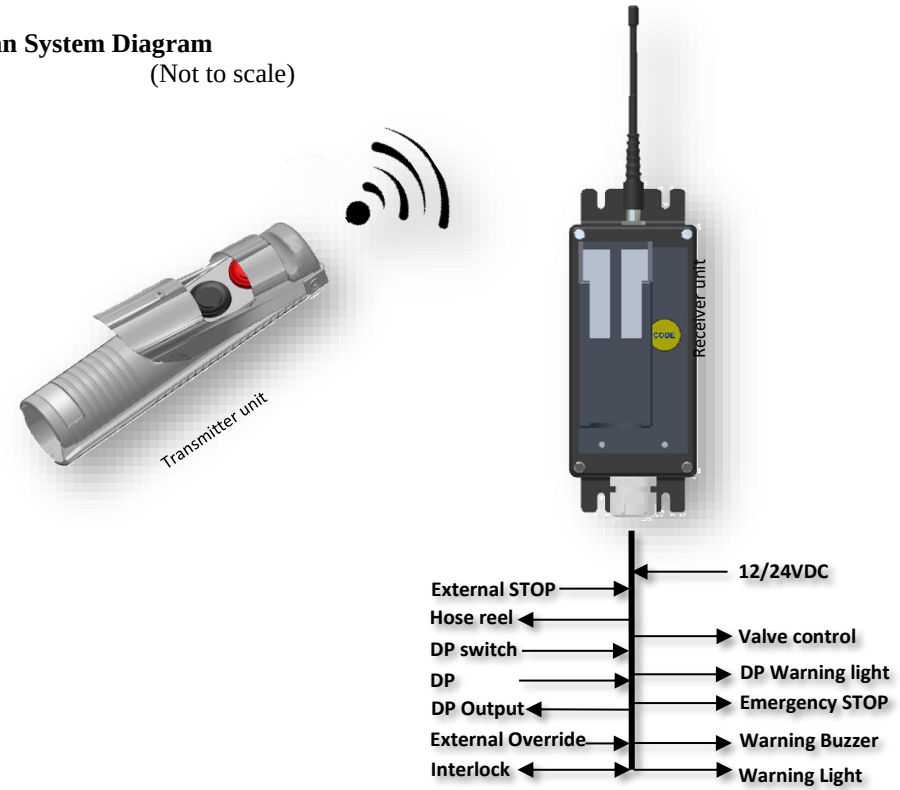
The DE212 is a wireless Deadman control system, designed for aero plane refuelling trucks, hydrant dispensers and road trucks.
The handheld Deadman switch is Ex approved according to the ATEX and IECEx regulations.
NOTE: Due to changed Ex requirements for the hand-held transmitter, the new handsets have a grey colour.
For complete information of the system, please visit our WEB site: www.deltarc.no

1.1 SYSTEM HIGHLIGHTS

- Operates wireless to about 30m from the refuelling vessel.
- 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 refuelling vehicle 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.

1.2 SYSTEM CONFIGURATION

Wireless Deadman System Diagram
(Not to scale)



2. INSTALLATION

2.1 INSTALLATION OF THE RECEIVER AND EXTERNAL ANTENNA

Photo 1 360 deg. antenna

Standard installation in drivers cabin

Photo 2 Long range sector antenna

External LR sector antenna (Optional)

2.2 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 fuel flow to 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, it must be connected by a coaxial cable, and the antenna must be mounted vertically on a metal base, normally on top of the drivers cabin. The LR sector antenna must normally be installed at the back on the drivers cabin, to be directed backwards, covering the area at both side of the tank truck.
If several antennas are installed on the truck, the DE212 antenna should be at a distance to other antennas of no less than 1m.
The standard antenna solution shown at Photo 1, gives normally satisfactory range. This antenna covers 360 Deg. Around the receiver.
In order to avoid disturbing radio signals from other transmitters, or to have a long range connection in a given sector, it is recommended to install a flat panel sector antenna. Se Photo 2-5. This solution gives very good signal within a given sector depending on the installation. See section 5 for optional antennas.
NOTE: When installing the receiver unit, it is recommended to installed it in a place with temperature within 0 and +50ºC. 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.

2.3 LONG RANGE SECTOR ANTENNA INSTALLATION

External long range LR, tilted sector antenna (Optional)

Photo 3

Photo 4

Photo 3 and 4 shows the LR sector antenna on a tank truck. The antenna is mounted on a Ø=40mm steel mast behind the drivers cabin and tilted 15-25º down in order to give good detection around the vehicle and reduced range to disturbing frequencies.

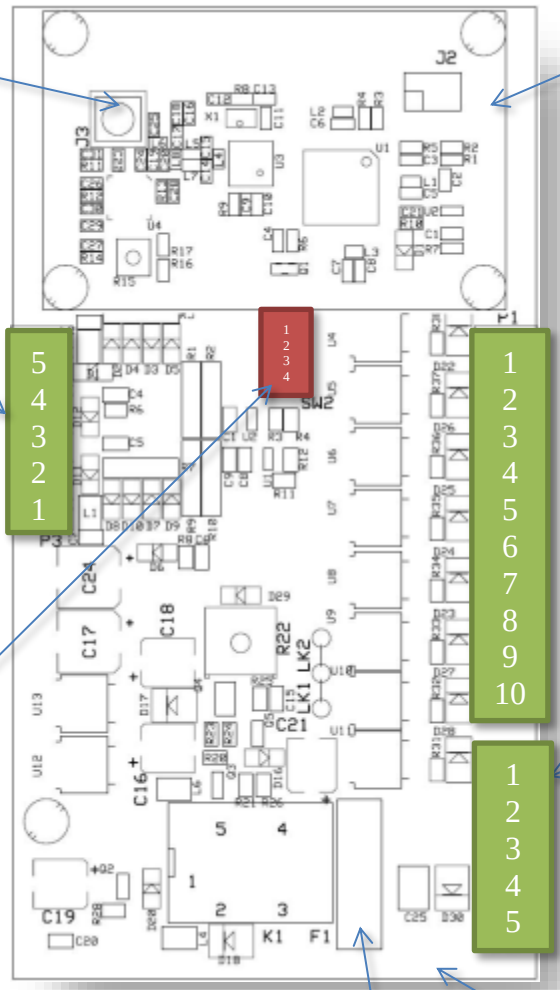
Photo 5

LR sector antenna on a flat wall.

2.4 RECEIVER UNIT CONNECTIONS

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

Receiver connections:



Total load for all outputs at P1, P2 and P3 are: 5A.

Receiver connections and functional selection.

Connector P1 in receiver	Functional description	Comments
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=12/24V opens when STOP is pressed	
6	Interlock (transmitter is charging) Output, 12/24V is active when transmitter is in the charging holder	
7	Minus-pole for input voltage/GND	
8	Plus-pole for input voltage, 12/24VDC	
9	Do not connect	
10	DP Reset / Override	Connection of DP key-switch.

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

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.

Receiver connections, connector P3:

Functions installed with receiver software program: 02864

Conn. P3	Functional description	Comments
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	**DP Sensor input. See note 1**	Active if SW2-4 enabled/ON
3	**External STOP.** **Stops all functions in the receiver when connected to GND**	
4	**Wired Deadman input.**	Only on GEN 2.
5	**GND, ground or common terminal.** **Same as P1, term. 7**	

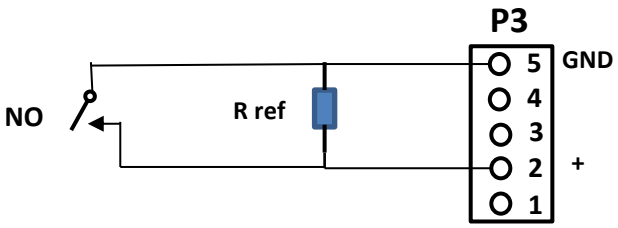
NOTE: Total load for all outputs at P1, P2 and P3 are: 5A.

Receiver connections, connector P2:
Functions installed with receiver software program: 02864

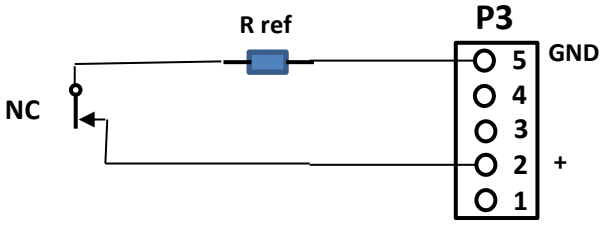
Conn. P2	Functional description	Comments
1	**Optional output**	Do not connect
2	**Optional output**	Do not connect
3	**GND**	
4	**DP is working OK, steady output**	
5	**DP Warning light. Intermittent output when DP is activated.**	

Note 1. DP, differential pressure input P3-2.
This input is added to the receiver functions in order to prevent refuelling after a high DP signal is detected. The input signal can be generated by a ON-OFF switch or a Namur inductive proximity sensor. The input terminal P3-2 is prepared for both versions.
The difference of the two types of sensors require two different way of connections:

a) DP, ON-OFF sensor. This is a mechanical switch or a reed relay. One solution has a NO (normally open) situation when the DP is not activated, and the other has a NC (normally closed) situation when the DP is not activated. In both cases a reference resistor, R ref, must be connected, see below.
b) Namur inductive sensor, see connection diagram below.

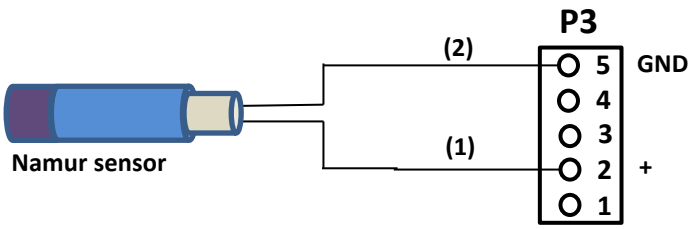


Connection of NO normally open sensor Switch.
Input voltage not active DP; 2,6V. Active DP; 0V
No polarity requirements.



Connection of NC normally closed sensor Switch.
Input voltage not active DP; 2,6V. Active DP; 3,6V
No polarity requirements.

NOTE: R ref is 2,8kohms (0,5W)



Connection of Namur, inductive sensor.
Input voltage not active DP; 2,6V. Active DP; 3,6V
Plus voltage to terminal 1, wire (1).

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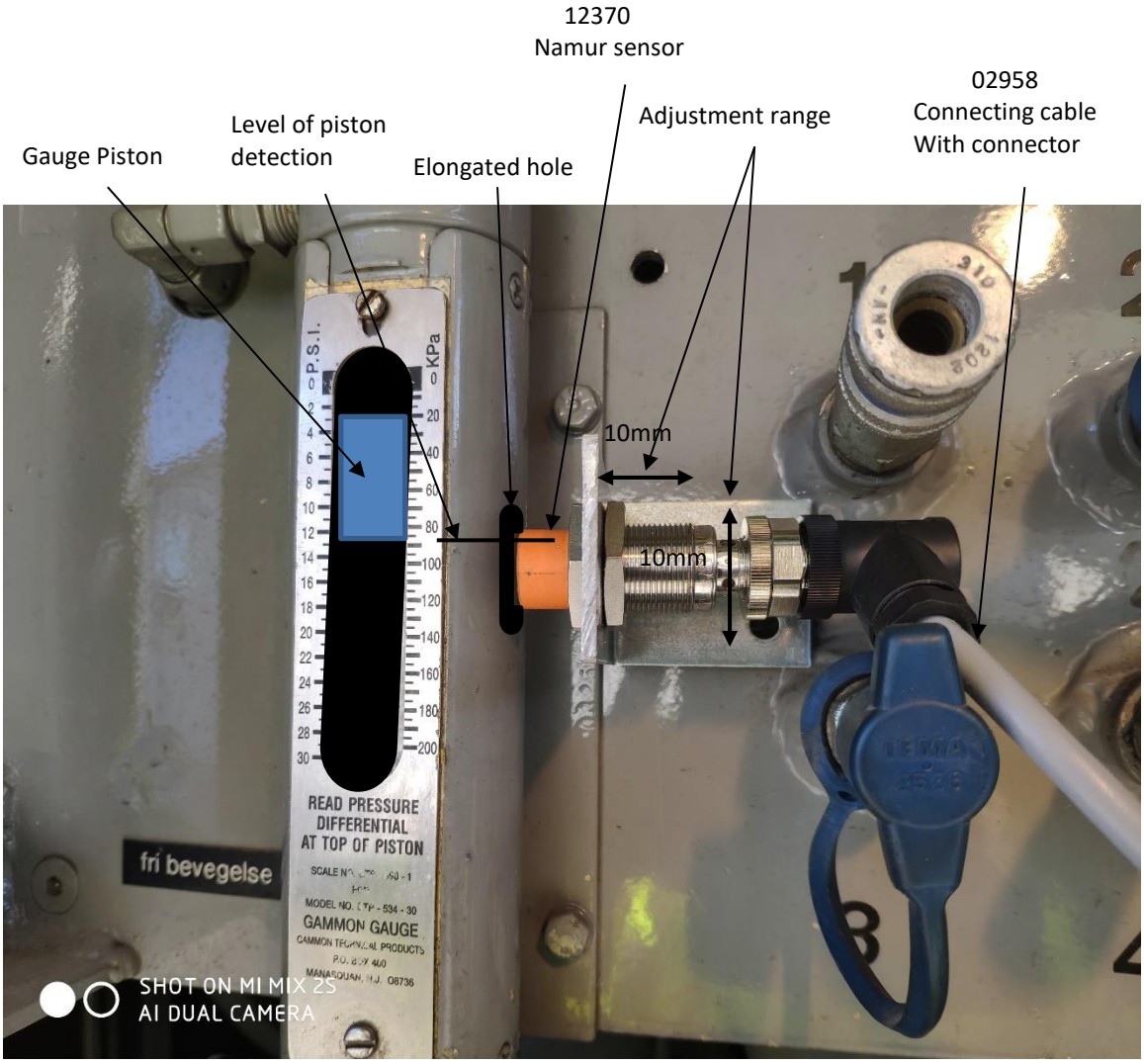
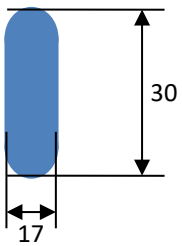
2.5 INSTALLATION OF THE NAMUR DP SENSOR.



2.3.1 Illustration of a Namur sensor installation.

Note 1:

1) The Namur sensor must be adjusted to be no longer than 5mm from the piston inside the glass tube.
2) The vertical position of the sensor should be aligned to be activated by the lower end of the piston, when the reading of the top of the piston is at the maximum allowable differential pressure.
3) The right or left side of the Gauge must be taken off, and a vertical elongated hole must be taken out to allow the sensor head to sense the piston inside the glass tube, and to allow for vertical adjustment.
4) The elongated hole must be positioned so that the centre is at the lower end of the piston when the top of the piston is at max diff pressure. See figure below.
5) The size of the elongated hole is recommended to:



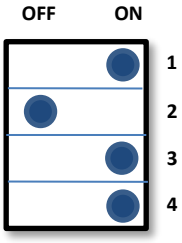
2.6 CHANGING THE FUNCTION OF THE RECEIVER UNIT BY SW2.

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 or Namur sensor

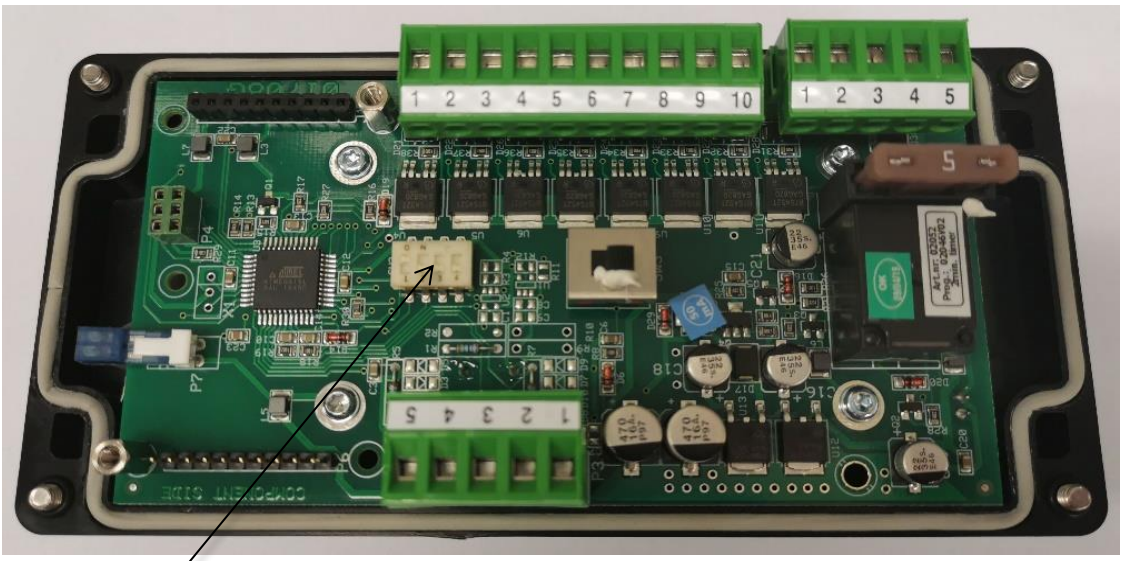
Standard factory setting of SW2 switches:



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:

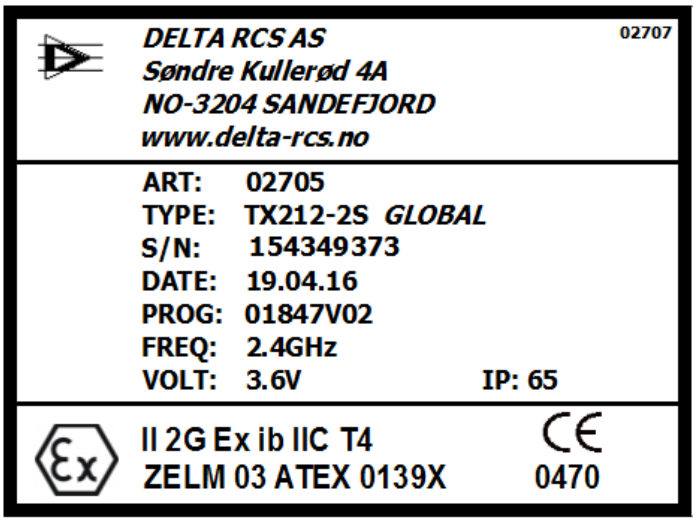
1. Set the function switch, SW2 to the desired position
2. Take out the fuse, F1.
3. Press the receiver front button CODE while replacing the fuse. Press the CODE button for about 3 seconds, then the function is changed according to settings.
4. NOTE: SW2-2 must ALWAYS be set back to OFF after settings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



SW2 Switch for function selection

2.7 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

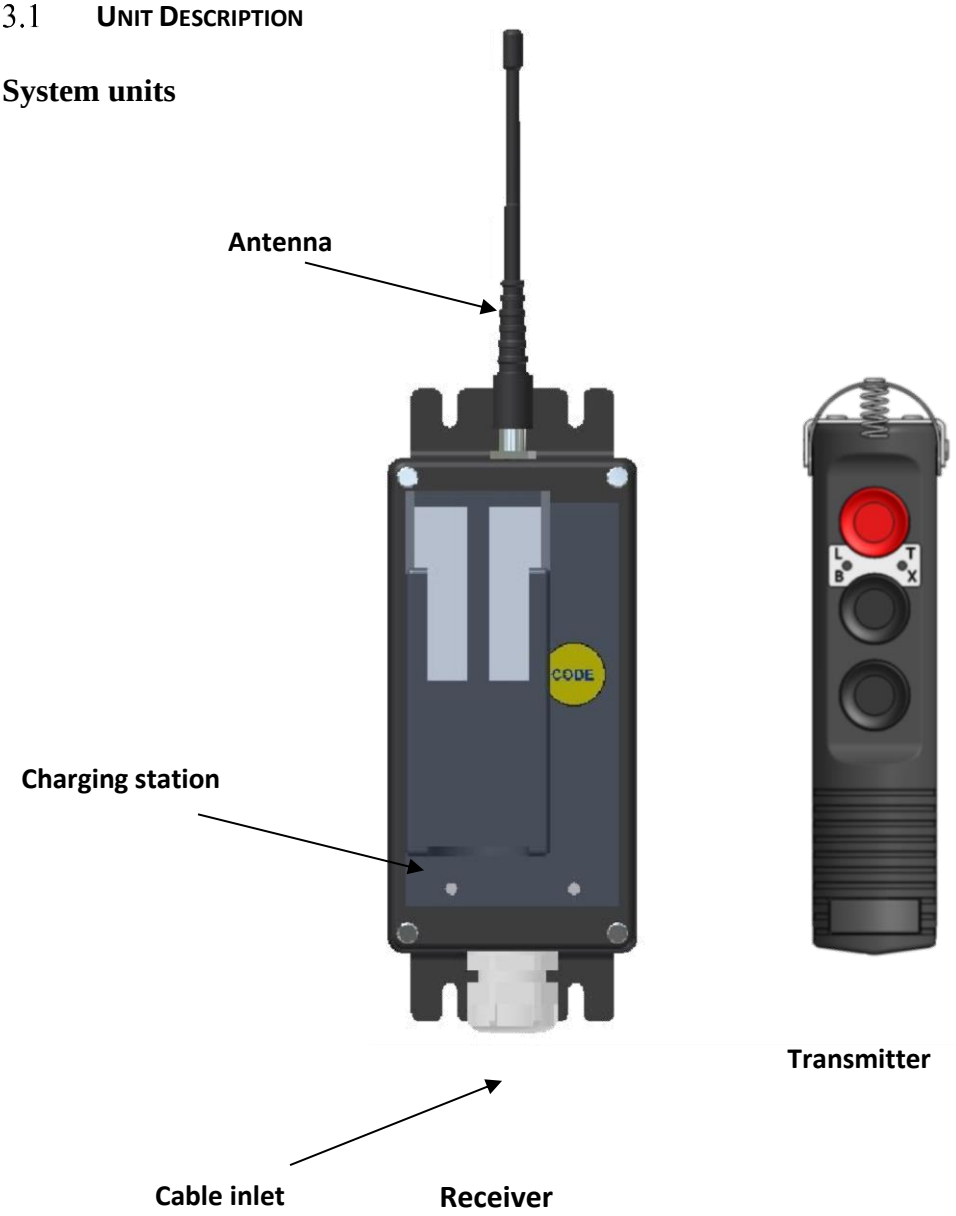
The label tells the name of the producer and that the unit has an ATEX and IECEx certification, and is allowed to be used in Ex environment, Zone 1.

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 input and output connection cable.
Approx. 14 cm long antenna for installation on top of the receiver.
OPTIONAL: external antenna for external mounting. See section 6.2.
Delta CH300, 115/ 230V mains-powered battery charger for transmitter, OPTIONAL.
See section 6.2.

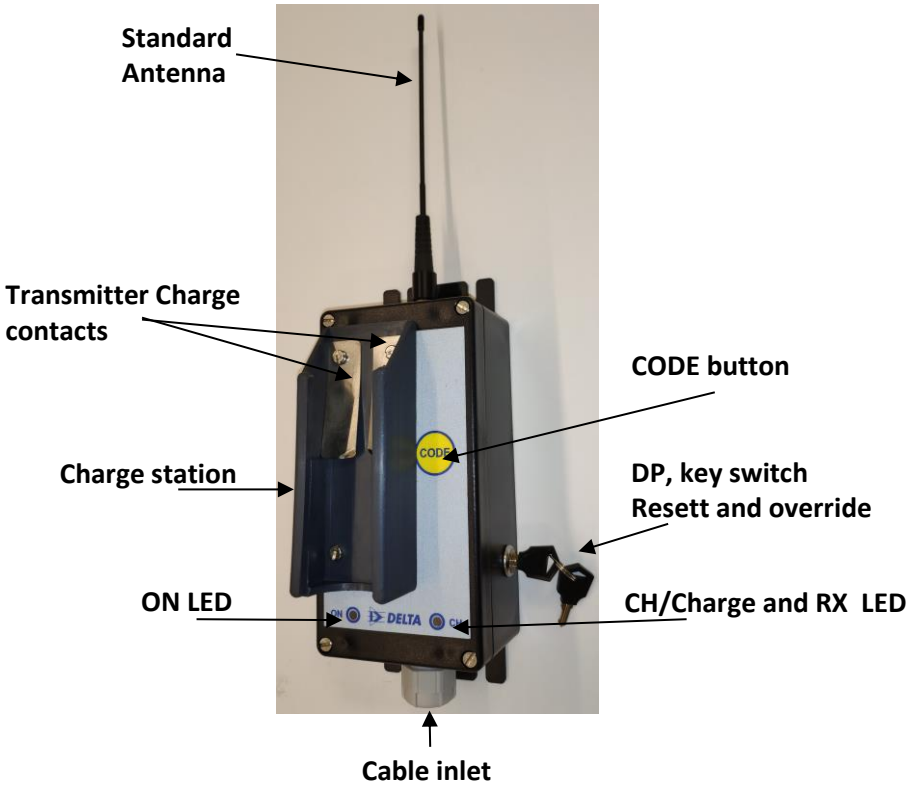
3.2 FUNCTIONAL DESCRIPTION

3.2.1 TX212, 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 RX212 Global DP, 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 DP Key Switch is normally not left in the switch. This switch is for resetting of the receiver to normal operation after a too high DP level is detected. The witch has a spring return function and by keeping the switch in the reset mode, the receiver can operate normally. This is for emergency use only.
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 recharged after the last operation.
The green light diode, LED 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 +50ºC 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 0ºC and not higher than +50ºC. 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 0ºC, 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
- Used/defective batteries must be disposed at a proper recycling facility. Please refer to chapter 8 for further information.

5. STORAGE OF BATTERY MODULE 02465.

- The battery module is delivered sealed in a plastic bag. This is to prevent it from aggressive environment. In the sealed bag, the normal storage time is 12 months from the date printed on the plastic bag. After 12 months the energy level is reduced by 50%, and the battery must be recharged before use. Recharge time by 50mA constant current is estimated to 3 hours.
- If the storage is more than 12 months, the battery must be recharged for at least 5 hours.
- Note that the battery module is Ex certified, and is protected from short circuit by a 65mA built-in fuse. Charging by a higher current than 50mA will break the fuse, and the module cannot be used.

- Do not try to repair or use other type of batteries. This will invalidate the Ex certification.
- The storage temperature for the battery module is recommended to, +10 to +30ºC.

6. OPTIONS, ADDITIONAL EQUIPMENT AND SPARE PARTS.

6.1 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. Ex approved
02950	Receiver RX212 Global DP

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.

6.2 ADDITIONAL EQUIPMENT

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

Order number	Item description
02877	Antenna, high gain sector, for external installation, including 5m cable
02477	Antenna for external installation, including 3m cable.
02836	Transmitter Charger CH300-2 12/24V DC.
01780	Transmitter Charger CH300-2 110/230V AC.
02965	Namur DP sensor, including 12m cable with connector

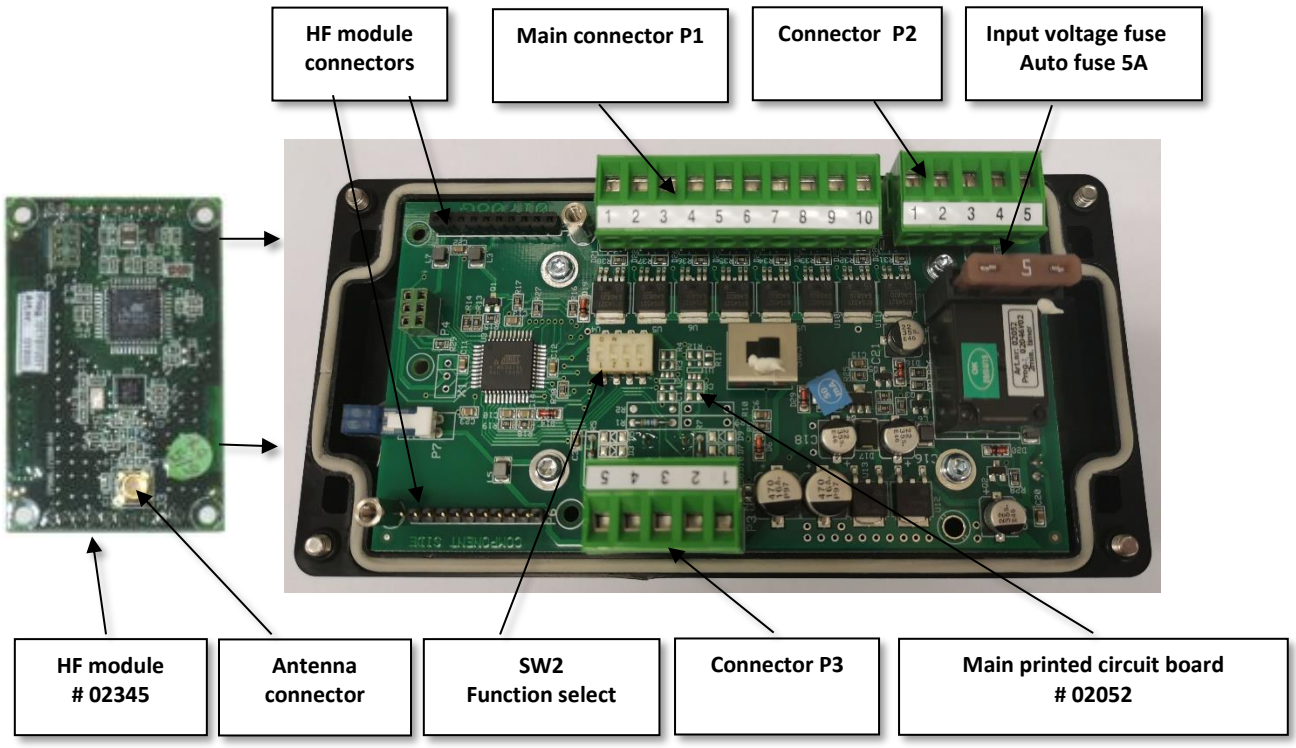
6.3 SPARE PARTS

The following spare parts are available:

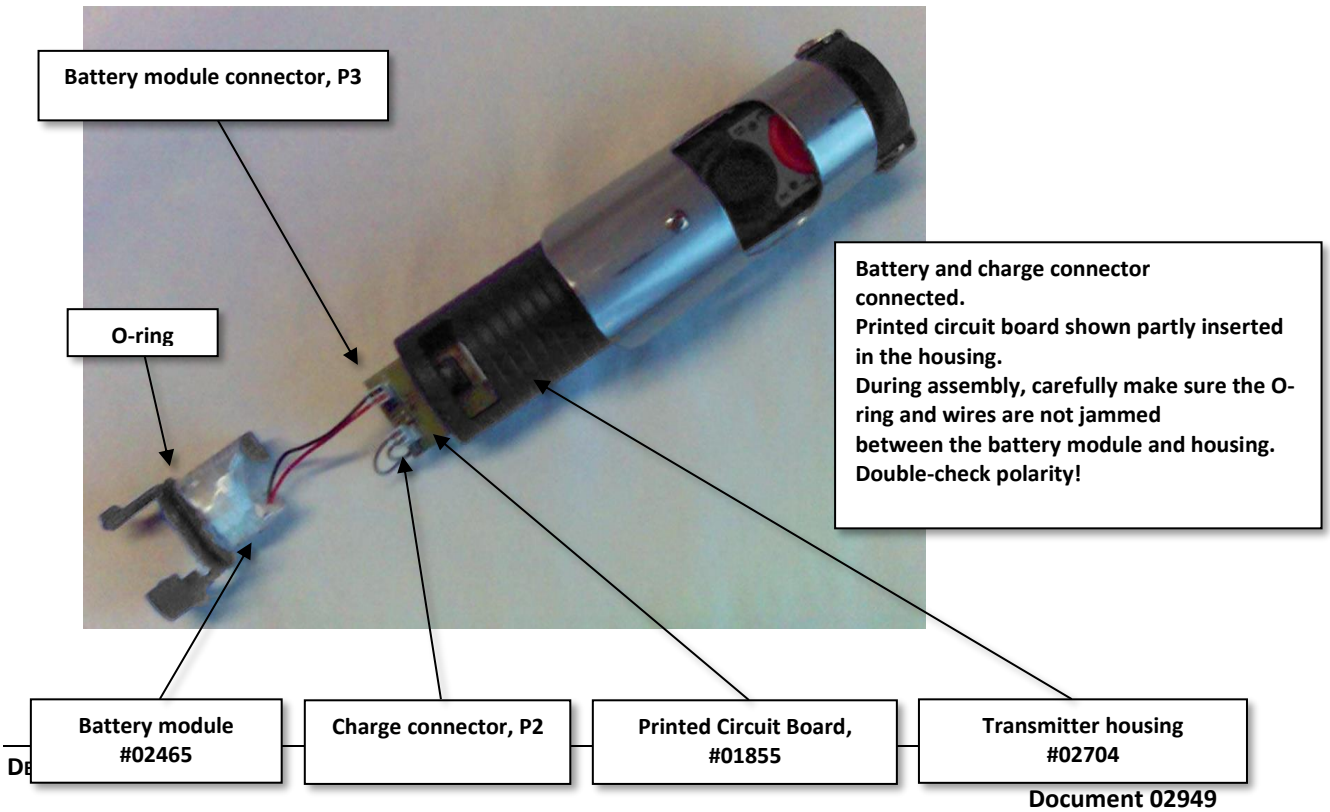
Order number	Item description
01855	Transmitter PCB TX212-2S Global. Ex approved.
02704	Transmitter housing TX212-2S Global. Ex approved.
02465	Transmitter battery module 3V6 NiMH 300mAh TX212. Ex approved
02865	Receiver PCB RX212 DP mainboard
02345	Receiver PCB HF-module Global.
01760	Receiver housing RX212 Global Front assy
02955	Receiver housing RX212 Global DP Bottom assy
02957	DP Key Switch for RX212 DP
10203	Antenna original
02877	Antenna LR sector, including 5m cable

For additional information, please visit: www.deltarc.no

6.3.1 Receiver front unit, parts identification



6.3.2 Transmitter parts identification



7. 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 guaranty 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.

8. AGENTS AND APPROVED SERVICE STATIONS

Norway

Delta RC AS
P.O.Box 1065
NO-3204 Sandefjord
Phone: +4733448390
E-mail: hello@deltarc.no

Germany

Henniger Electronics
Untere Dorfstrasse 24
DE-38304 Wolfenbüttel
Germany
Phone: +495331904103
Fax: +495331904115
E-mail: a.henniger@henniger-electronics.de

UK and Ireland

Aljac Fuelling Components Ltd
Pitfield House, Station Approach,
Shepperton
Middlesex TW17 8AN
U.K.
Phone: +441932269869
Fax: +441932269230
E-mail: sales@aljac.com

Sweden

BeWe Elektronik
P.O. Box 78
SE-43905 Åsa
Sweden
Phone: +46340655677
Fax +46340655677
E-mail: beweasa@gmail.com

8.1 AGENTS

Denmark

Temac Automation ApS
Kastanie Alle 16
DK-6760 Ribe
Denmark
Phone: +45 43443900
Fax +45 43447800
E-mail: info@temac.dk
Web: www.temac.dk

Thailand

Aviation Enterprise Co.
54/116 Soi3. Baranee Village
Klongsam. Klongluang, Pathum Thanee
12120 Bangkok
Thailand
Phone: +6628327253
Fax: +6625997662
E-mail: aviation_enterprise@yahoo.com

France

Marco Tech
5, Rue Jean Jaures
FR-33310 Lormont
France
Phone: +33557306300
Fax: +33557306301
E-mail: info@marcotech.eu

Canada/Northern America/Southern America/Caribian Area

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

Malaysia

OGCF Engineering SDN BHD
No. 65, Jalan TS 6/5
Taman Industri Subang
47510 Subang Jaya
Selangor Darul Ehsan
Malyasia
Phone: +603-5634 5444
+603-5638 3082
Fax: +603-56376193
E-mail: sales@ogcf-eng.com
Covering the following territories:

a) Malaysia, b) Singapore, c) Indonesia, d) Brunei,
e) Philippines, f) Cambodia, g) Myanmar, h) Vietnam, i) Laos, j) Bangladesh,
k) Hong Kong, l) Taiwan.

Australia and New Zealand

Fuelcraft T/A Liquip Victoria
476 Boundary Rd
Derrimut, Victoria 3026
Australia
Phone: +61 39311 7822
Fax: +61 39311 8784
E-mail: sales@liquipvictoria.com.au

Japan

J.Macdonald & Co., Ltd
1-2, Sawatari
Yokohama 221-0844
Japan
Phone: +81-45-313-3791
Fax: +81-45-313-3792
E-mail: main@j-macdonald.com

9. 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 (2.415 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 +50º C. For lower temperature, contact manufacturer.
- Storage: -40 to +65º C. Less than 30 days.
- Charging: 0 to +50º C.

Shock Resistance: 1 m free-fall on concrete floor.

Receiver

Antenna: External standard antenna, 14,5 cm long vip,
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.
- DP working OK
- DP warning, DP-signal has sensor has stopped refuelling

Inputs:
- External STOP
- External Override
- DP sensor
- DP reset and 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. - DP Key Switch for reset and override
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, 0dBm
Antenna:	Internal.
Power Supply:	Battery module 02465; 3,6 V NiMH battery, 300mAh. Rechargeable by external contacts. Chapter 8.
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 +50ºC.
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.

9.1 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:

Ex **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.

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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 °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 °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°C.
5. The internal battery may only be replaces 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

Zertifizierungsstelle ZELM Ex

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 batterymodule, 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

Zertifizierungs- und Prüfstelle ZELM Ex

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 RCS AS**
Anschrift:	**N-3178 Våle**

Beschreibung der Ergänzung:

Gegenstand dieser Ergänzung ist eine Erweiterung der möglichen Versionen um folgende Komponenten: Ein weiteres Gehäuse (Gehäuses 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

Zertifizierungsstelle ZELM Ex

Braunschweig, 27.02.2006

Seite 1 von 1

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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2. Ergänzung

(Ergänzung gemäß ATEX-Richtlinie 94/9/EG Anhang III, Punkt 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:	**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:

Ex 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 07/80919732

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

ZELM ex
Zertifizierungs-
stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

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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 Überbearbeitung 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

ZELM ex
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**

Braunschweig, 2016-04-19

ZELM ex

Zertifizierungs-
stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

ZELM ex
Prüf- und Zertifizierungsstelle
Siekgraben 56 · D-38124 Braunschweig

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 replaces 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.

ZELM ex
Prüf- und Zertifizierungsstelle
Siekgraben 56 · D-38124 Braunschweig

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**

Braunschweig, 2016-04-19

ZELM ex

Zertifizierungs-
stelle

Zertifizierungsstelle ZELM ex
Dipl.-Ing. Harald Zelm

ZELM ex

ZELM ex
Prüf- und Zertifizierungsstelle
Siekgraben 56 · D-38124 Braunschweig

9.2 DECLARATION OF CONFORMITY

DELTA
Remote Control Systems

Declaration of conformity

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

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

www.delta-rcs.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 ZLM 13.005X

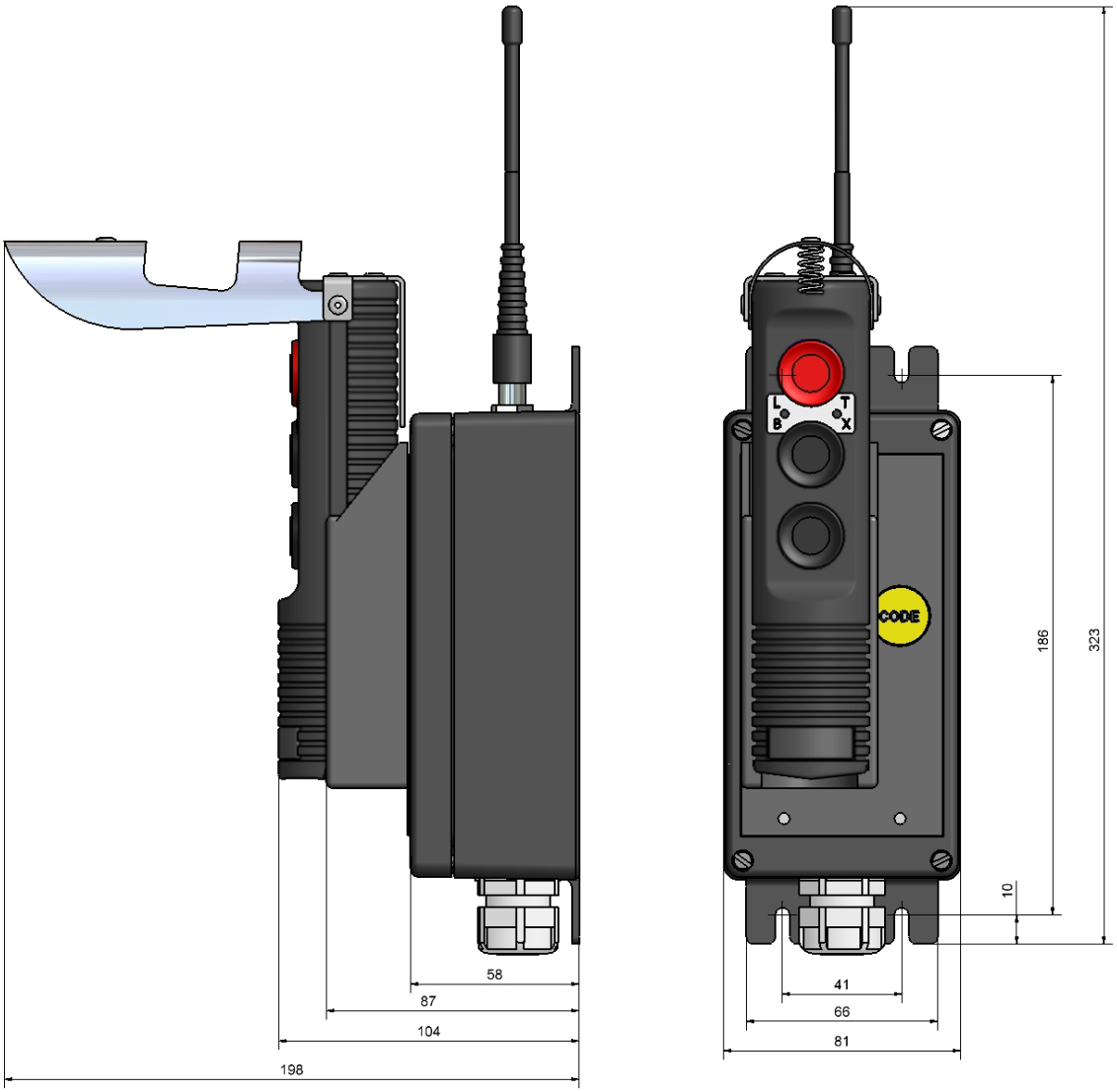
Sandefjord 06.11.2013

Zacharias Backer

DELTA
Remote Control Systems
P.O. Box 1065, NO-3204 Sandefjord, Norway
NO 981 252 454 MVA

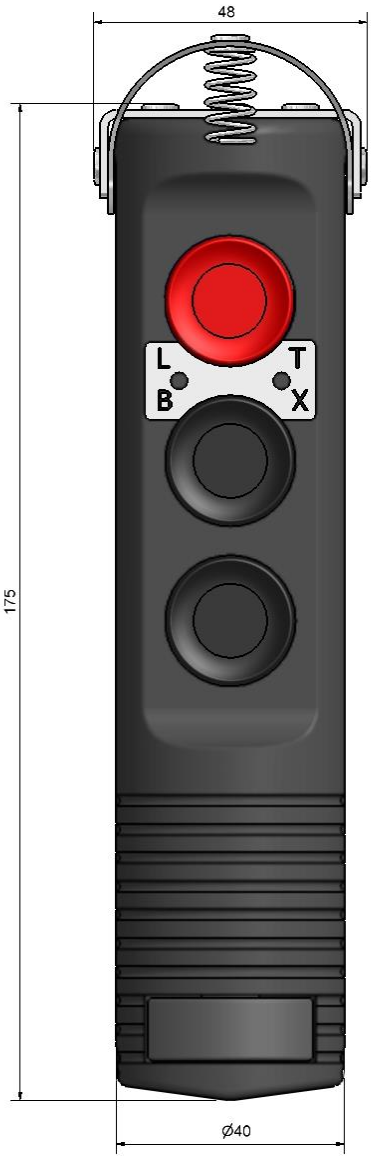
9.3 DIMENSIONS

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.

10. 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.

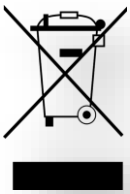
This means:
Do not dispose this devices into the trash when discarding.
To minimize pollution and ensure environment protection, please recycle properly, to ensure the smallest possible environmental footprint.

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 wheelie bin label on the product (or the package in some cases). As defined by the WEEE directive, this crossed-out wheelie 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

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Norway

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This manual is printed on chlorine-free recyclable paper.