

Delta DE212

DEADMAN SYSTEM

Failsafe DP protection
Including wired deadman timer

for Airplane Refuelling Trucks and Dispensers

Installation Manual



Utgavestatus / Edition overview:

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1. INTRODUCTION

Delta DE212 is a deadman system for aircraft refuelling trucks and dispensers. The DE212 system can operate wireless or wired and different sensors can be connected.

This document describes the CU212-1S, the control unit installed in the drivers cabin. Connected to the wired deadman and the DP sensor.

The wired deadman differs from the wireless as it needs a cable connection between the two units to carry the needed signals.

The CU212 has a built in timer system, with timeout warning outputs for light and beeper. The standard timer is set to 2 minutes with the warning signals 30 seconds before the refuelling will shut down.

With more than 15 years of experience in developing and producing deadman systems, the DE212 system has all the security needed for a safe and reliable operation.

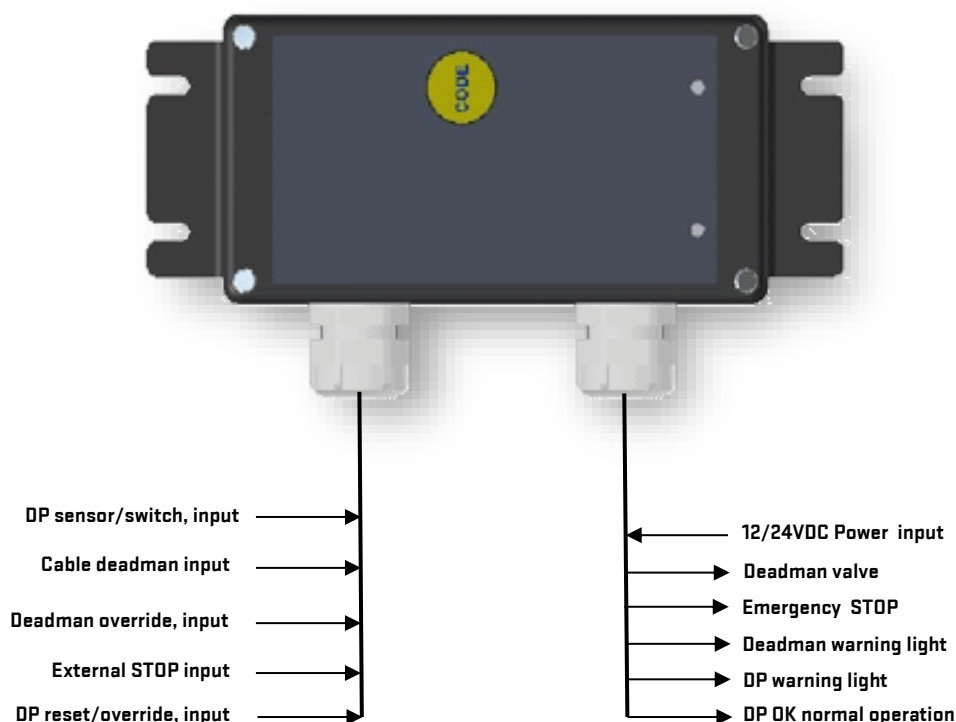
For special applications, the control unit has inputs for connection of wired deadman override and external STOP.

The DE212 system is based on the latest technology and has the flexibility to meet new operational demands by upgrading the software in the control unit.

1.1 SYSTEM DIAGRAM

CU212 System diagram

DP protection and wired deadman control



2. INSTALLATION

2.1 INTRODUCTION

The CU212 DP control unit is designed to monitor the DP Gauge modified by a switch or a sensor.

The control unit is available in two versions:

- a) Art.no. 02358, prepared for reading of a DP reed switch NO or NC.
- b) Art.no. 02865, prepared for reading of a DP proximity sensor or mechanical reed switch NO or NC.

2.2 INSTALLING THE CONTROL UNIT

The control unit should normally be placed in the drivers cabin. It must be installed outside EX area. Make sure that the control unit is easy accessible for service.

The control unit CU212-1S, has two cable glands. One is for the input signal from the deadman handle, the second is for input power and for output and input signals.

It is recommended to use 0,5 to 0,75mm² cable, and to use soft and multicore cables.

When connecting the cables, take off the two connectors, from the printed circuit board, and connect the cables to the connectors while they are free to move and easy to keep in the right position.

When all cables are connected, replace the connectors to the printed circuit board and fasten the front panel to the bottom section.

The installation of the control unit is now finished.

The cable used for the deadman handswitch is normally a coiled cable, witch can be stretched to about 14m.

Normally on an installation, the coiled cable is connected to a connection box, positioned at a central place of the dispenser, where the operator can reach all the needed positions by stretching the coiled cable. The cable between the control unit and the connection box is not a part of the delivery.

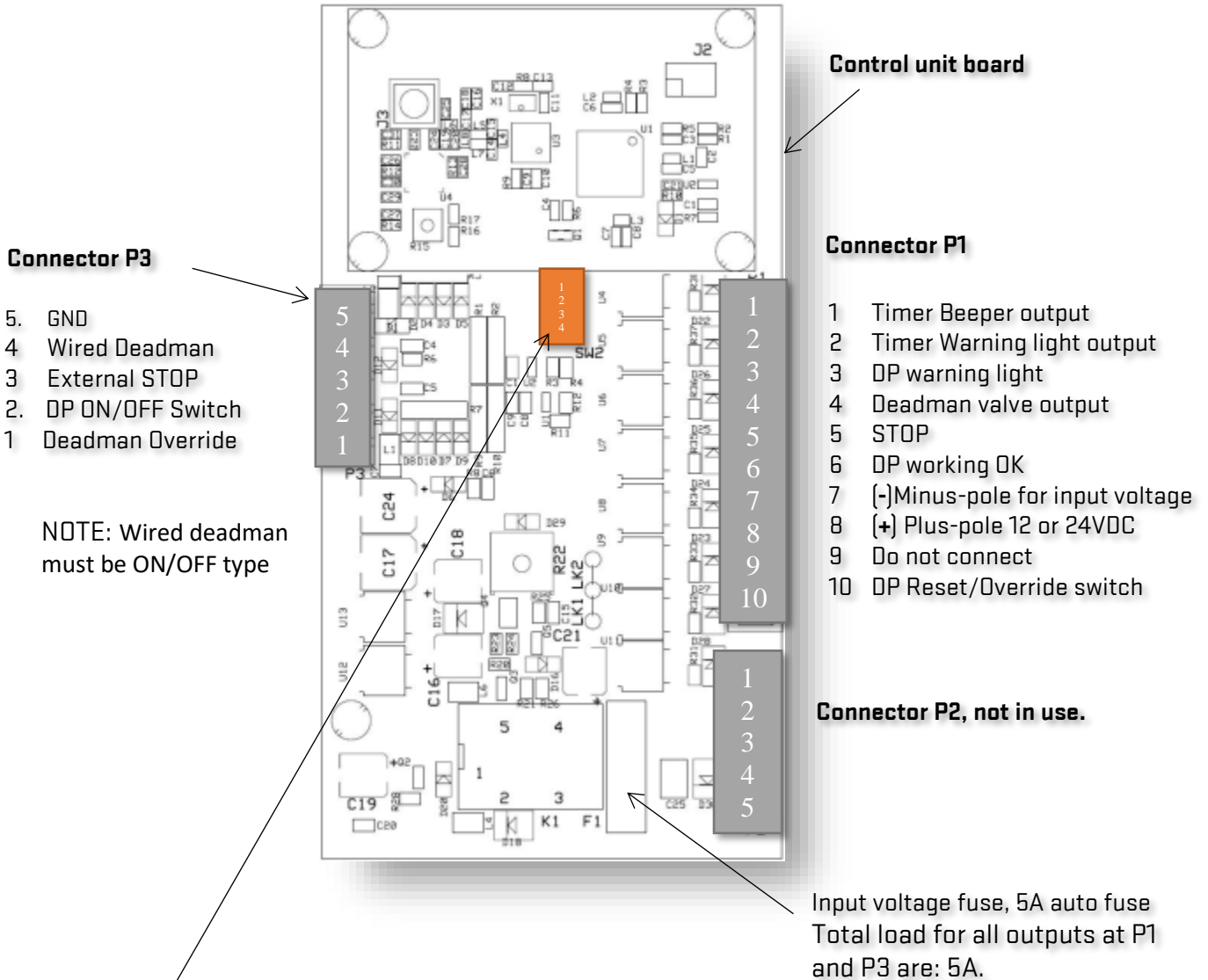
2.3 CONNECTIONS

2.4 CU212 DP REED SWITCH CONNECTIONS

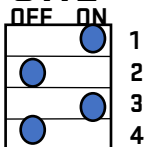
Valid for Art.no 02358, and SW/Program 02335. Only DP reed switch input, ON/OFF type.

The power supply can be 12 or 24VDC.

See figure below.



SW2



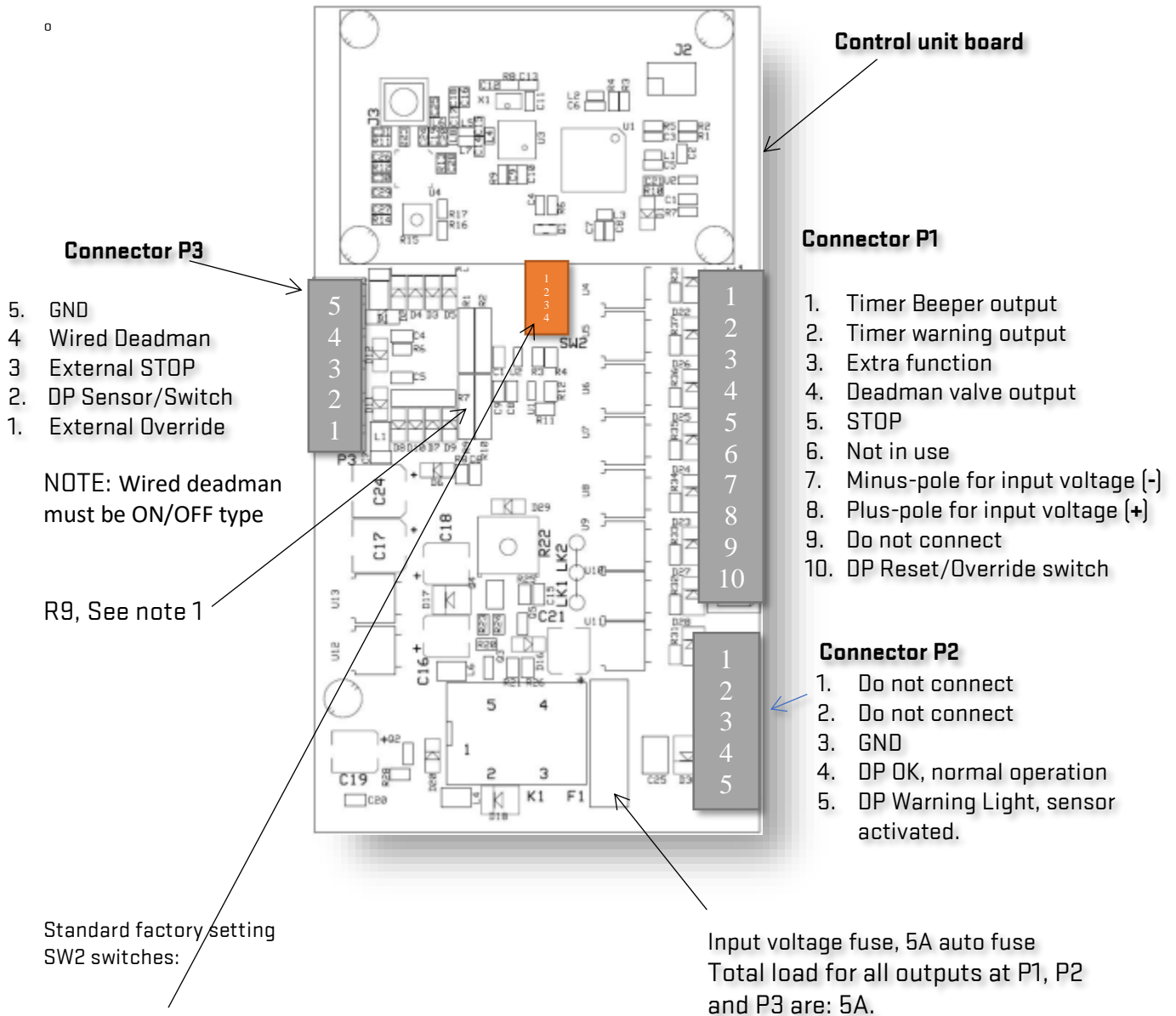
- 1. Deadman timer. ON= Enabled. OFF=Disabled
- 2. Not in use
- 3. Deadman override. ON= Enabled. OFF=Disabled
- 4. Not in use

2.5 CU212 DP CONNECTIONS

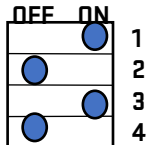
Valid for Art.no 02865, and SW/Program 02864. For Reed switch or Namur sensor NG500A, Ex certified.

The power supply can be 12 or 24VDC.
See figure below.

o



SW2



1. Deadman timer. ON= Enabled. OFF=Disabled
2. Not in use
3. Deadman override. ON= Enabled. OFF=Disabled
4. Not in use

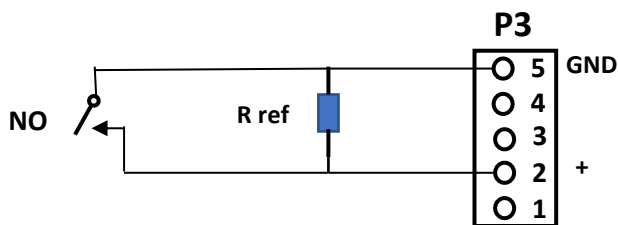
Note 1: R9 is a reference resistor for the DP sensor.
Voltage measured between P3-2 and P3-5 should be within 2,0 to 3,0V with correct sensor in normal working operation mode.

2.6 DP, DIFFERENTIAL PRESSURE INPUT P3-2.

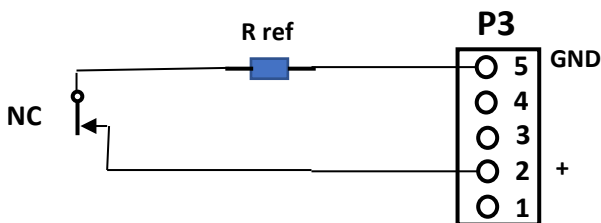
This function is added in order to prevent refuelling after a high DP signal is detected. The input signal can be generated by a ON-OFF switch or a Namur inductive proximity sensor. On CU220 art.no. 02865, the input terminal P3-2 is prepared for both versions.

The difference of the two types of sensors require two different way of connections:

- 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.
- Namur inductive sensor, see connection diagram below.

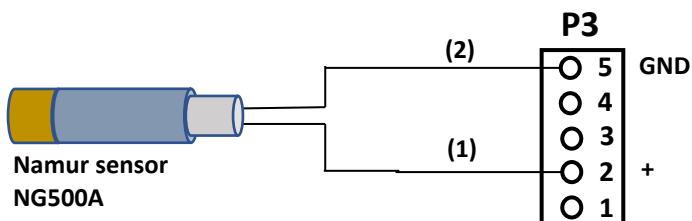


Connection of NO normally open sensor Switch.
Input voltage not active DP; 2,6V. Active DP; 3,6V
No polarity requirements.



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) Must be connected close to the switch, for failsafe installation.



Connection of Namur, inductive sensor NG500A.
Input voltage not active DP; 2,6V. Active DP; 3,6V

29.03.2019

3. TECHNICAL DATA

This equipment is designed for failsafe operation, meeting the stringent requirements for safe operation. It is in accordance to EU's demands to CE-label the equipment.

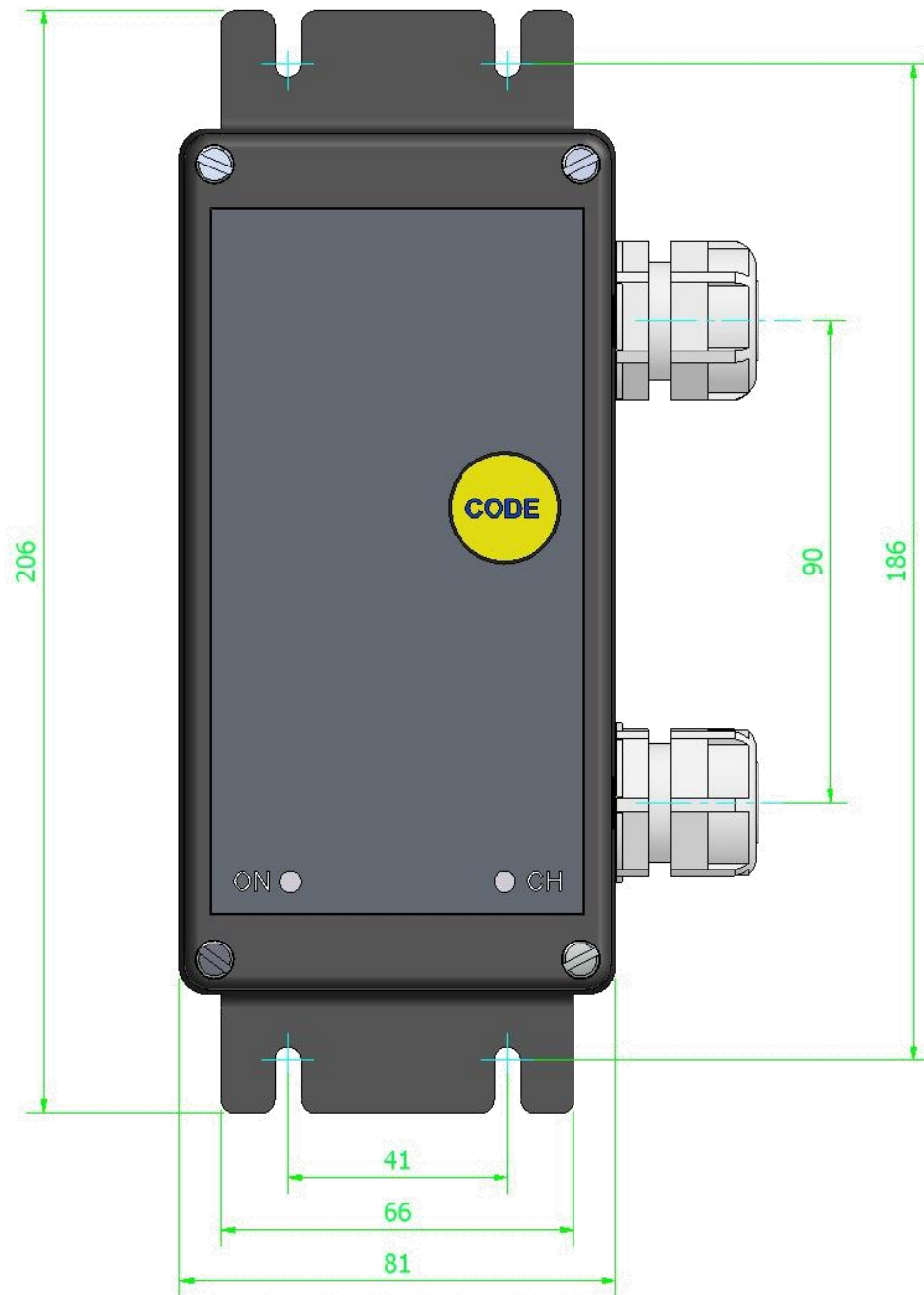
3.1 GENERAL SPECIFICATION

* Temperature Range: Operational and storage: -25 to +65° C.
* Shock Resistance: 2 m free-fall on concrete floor.

3.2 CONTROL UNIT, CU212-1S

* Power Supply: 11 to 35 VDC. Voltage above 35VDC shuts down the receiver.
* Power Consumption: Standby: 22 mA.
* Outputs: Semiconductor output. Temperature and overload protected. Output voltage is equal to power input; 12/24 VDC. Each output, max 3,5A total load, 5A. Fused inside by 5A slow blow Auto fuse.
* Deadman output. Active when deadman switch is operated.
* Warning light output, active during operation of the deadman
* Beeper warning output
* STOP output. When control unit is powered, this output is active, output is 12/24V. When STOP is detected, this output is switched off, 0V.
* Optional inputs *The CU212-1S is programmed to operate with a none failsafe handswitch.
* Deadman override, low input activates the override function
* External STOP, low input activates STOP of deadman function.
* Connections: Screw terminal on PCB connector.
* Indicators: Green light diode that indicates power on.
Yellow light diode that indicates active deadman.
* Housing: ABS polycarbonate, class IP52.
* Dimensions: L:160 mm, W: 80 mm, D: 60 mm.
* Weight: 0.7 kg

3.3 DIMENSIONS, CONTROL UNIT



3.4 MAINTENANCE

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

Physical damages that may result in cracks or holes on the cabinets should be repaired as soon as possible by competent personal. This, because there is a large risk of humidity, dirt and oil entering the unit. If the unit is, for example, exposed by hydraulic oil, it may cause severe damage on the circuit board. Hydraulic oil and other thin oils are largely penetrable, especially when the equipment housing is damaged. Dirty equipment should therefore always be cleaned.

As a rule, the equipment should be sent to service as quick as possible when such damages occurs, without waiting till the equipment does not work any longer - it might be too late to do any repairs.

4. SPARE PARTS.

The following spare parts are available: NOTE: Not Atex approved parts.

Order number	Unit name	Unit description
02978	CU212-DP RP	Control Unit with 2 min. timer. For Proximity sensor and reed switch
02358	CU212-DP R	Control Unit with 2 min. timer. For reed switch
02865	PCB RP	PCB, with 2 min. timer. For Proximity sensor and reed switch
02366	PCB R	PCB, with 2 min. timer. For reed switch

5. 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 immediately after recognition.

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 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 related charges.

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 written permission from Delta RC AS 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

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

If the repair work is done at the customer's location, by Delta RC AS 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 RC AS offer a service unit during the warranty time, the purchaser pays for the transportation, insurance and a weekly rent.

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

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