TYRO TRX2021

Remote control system

OWNERS MANUAL

CE

Tyro BV, Bedrijvenpark Twente 1B, 7602 KA Almelo, Netherlands
Tel. +31 546 588790 Telefax +31 546 579490 ✉ info@tyrocontrol.com

TABLE OF CONTENTS..... 2-3

1. WARRANTY,LIABILITY, LAW

1.1. IMPORTANT NOTICE:

Everyone who gets involved with this (wireless remote) control direct, through mounting or through practical use, fully or partial, is obliged to read and understand this manual completely BEFORE installation and/or use.

1.2 apprehension of the manual

When there is anything that you do not understand and/or you need more clearness or addition, you must contact your local supplier or Tyro BV

1.3 liability

The manufacturer and/or the supplier of this (wireless remote) control cannot be held responsible and thus warranty and liability will be voided, when, as a result of avoidable errors because of taking uncareful notice, or no notice at all, of the contents of this manual, damage is caused to this product or other products that are operated with this product or on which this product is mounted, personal injury explicit included.

1.4 age of use

The user of this product must be over 18 years old or at least having reached the adult age according to the law in the country of use or having reached the age, that is demanded by the law in the country of use.

1.5 law

This product is liable to the law in the country of use. Before using this product every supplier and/or every user is obliged to investigate if the use of this product is permitted under that law. Tyro BV cannot be held responsible when the use is not permitted, except for the original delivery to her customer(s)

2. USE

This (wireless remote) control is meant to be used to control machinery from a distance within the legal guide-lines and is thus to be considered as radio equipment as mentioned in the 1999/5/EC directive of March 9, 1999, art. 2 par. c). The directives to which this (wireless remote) control conforms and the tests to which it is submitted, are mentioned in this manual and/or in the added CE declaration of conformity.

3. INTRODUCTION

3.1 risk

The product that you are going to use is risk full with respect to the use. Before switching ON the control, the user is obliged to assure himself that these risks cannot arise because of the use and to take all necessary precautions to take away these risks. BEFORE the user is switching on the (wireless remote) control he has to convince himself that he ALWAYS can keep sight on the object that he is going to control and to keep away any (non)experts who find themselves in the danger zone and thus could be injured,

3.2 reliability

To be certain that the (wireless remote) control has a long and reliable duration of life, it is of great importance that both the receiver and the antenna are mounted in the correct way and that both the transmitter and the receiver are used correctly.
It may be obvious that the correct mounting and the correct use will lead to a longer duration of life and guarantee the best possible reach.

4. GENERAL

4.1 FM frequency and maximum distance of use

The Tyro Systems (wireless remote) control uses the 433.92 MHz frequency. The (wireless remote) control is FM modulated and is thus less accessible for interference of other transmitting sources.
Besides this the Tyro Systems (wireless remote) control is narrow banded, thus reducing the interference as well. This allows us to guarantee a 100% reach within a distance of 50 meters (150 ft) under ´normal´conditions. (Interference of environmental circumstances and more powerful transmitting sources such as radio installations emphatically excluded).

4.2 Interference of the signal

The operation of equipment that uses radio-frequency and wireless remote controls in particular, are influenced by the power of the received signal.
Because of the fact that the transmitting power on the 433,92Mhz frequency (and comparable frequencies), is reduced by law, the reach is thus reduced. As applicable with powerful transmitting sources (Radio-TV-, GSM-masts, atmospherics etc.) under circumstances the reach could be influenced by causes from the outside.
Because the transmitting power of this product is, by law, reduced to max. 10 mW, the reach is also reduced and the influence of transmitting sources with more power (e.g. Radio-, TV-, GSM-masts) is possibly getting bigger.
In spite of using the possibilities of GSM Technology, it is impossible to 100% prevent against influences from the outside.
However, by using PLC technique (Programmable Logic Control) we have a better control over the results of these influences, thus trying to prevent from accidents by timely interference of the PLC or taking over certain human actions.

4.3 Personal interpretation

At all times, however, you have to bear in mind that circumstances could arise, where your personal interpretation is of greatest importance using safely with this product.

5. OPERATION

5.1 Switch delay

To switch ON the system, there is a delay of ±1 sec. This is done to let the user be aware that he activates the system.

5.2 Power IN

When the start button is pressed (the green button on the left bottom of the foil) In the display (if applicable) the text “press ON and wait” appears. If no display on the green button the LED will light up. After pressing the button ±1 sec. and releasing again, in the display the text “system active” appears, or the LED on the green button lights permanently. The control is now ready for use.
(Attention: when the button is released before the switch delay is over, the system will not become active.)

5.3 E.L. Light

The foil is foreseen with E.L. backlight, helping to improve the good use under difficult circumstances with bad (day) light. This E.L. light, however, is using current, diminishing the use of the battery of the transmitter with approx. 65% reduced (from ±20 hrs to approx ±7 hour).
We strongly advise to use the E.L. backlight only when there is reason to.

5.4 Switch ON and OFF the E.L. Light

The backlight could be switched OFF as follows:

- Press the upper side of the both function buttons at the same time
- Press de red button “O” for ± 0,5 sec. On the display the text “backlight OFF” appears.

When the backlight is set to OFF, both the light of the foil and the display are in OFF mode.

To switch the backlight ON again:

- Press the upper side of the both function buttons at the same time
- Press de red button "O" for ± 0,5 sec. On the display the text "backlight ON" appears.

6. TECHNICAL SPECIFICATIONS :

6.1 Use of the switch relays

The switch relays in the receiver can be used constantly.

6.2 User specifications

6.2.1 Receiver:

Voltage	12-24Vdc
Max. Voltage	34Vdc
Max. contact load	3Amp (at 24Vdc)
Max. contact load	50Vdc

6.2.2 Transmitter:

Max. charging voltage	26Vdc
Min. charging voltage	14Vdc
standby time battery	± 150-200 hrs
Max. use battery	± 7 hrs (with E.L. light)
	± 20 hrs (without E.L. light)
charging time to full	± 2 hrs

6.2.3 Reach:

Max. transmission 50 meters, 100% signal (under "normal" circumstances)

6.3 Control Master-Slave

The receiver has 2 modes (only with extra foil on the receiver).

Mode 1 "master mode"
Mode 2 "slave mode"

Mode 1

When pressing the "ON" button on the receiver the red LED is flashing. This means that the buttons on the receiver are "master". In "master" mode the system can only be used with the buttons on the receiver.

Mode 2

The "master" mode can only be set in "slave" by pressing the green button on the transmitter except when one or more of the buttons on the receiver are used..

6.4 Battery Pack

IMPORTANT:

The transmitter has a 1500mAh. NiMh. battery pack. In case it has to be replaced this battery has to be treated as "KCA" waste.

7. ENVIRONMENTAL TESTS AND SPECIFICATIONS:

Vibration	**MIL-STD 810F**. Basic Transportation acc 514.5C-1 (highway truck vibration exposure). Freq. Range: 5-500Hz
Shock	acc **IEC 68-2-27**, halfsinusform pulse, acceleration 50g
Bump	acc **IEC 68-2-29**, acceleration 25g
Dry heat	acc **IEC 68-2-2 test Bd**, temp. +85C
Cold	acc **IEC 68-3-1**, operational temp. –30C, storage –40C
Humidity	acc **IEC 69-2-30 test Db**, cycles betw. 25D en 55C, rel. humidity >90%
Salt mist	acc **IEC 68-2-11 test Ka**

EMC

CE-dir. (R&TTE) directive 1999/5/EC E-dir. (VD) Automotive of Vehicle Directive 95/54/EC
EN 61000-4-2 ESD, contact and air discharge up to 15 kV
ISO 11542-1 radiated immunity, 10 kHz – 18 GHz, am-modulated, horizontal and vertical polarization, dwell-time 1s, field 100 V/m
ISO 11542-4 conducted immunity, Bulk current injection, frequency range 1 MHz – 400 MHz, am-modulated, dwell time 2s, injection volt. 100 mA.
ISO 11452-7 Direct RF-injection, frequency range 0,25 MHz – 400 MHZ, am modulated, dwell time 2s, injection capacity 0,5 W
ISO 7637-0 conduction, transients
ISO 7637-1 electrical transient conduction along supply lines only, 12 V systems (to ensure proper vehicle operation, onboard testing is essential)
ISO 7637-2 electrical transient conduction along supply lines only, 24 V systems (to ensure proper vehicle operation, onboard testing is essential)
EN 55011 radiated emission, frequency range 30 MHz – 1 GHz via antenna

8. GENERAL RECOMMANDATIONS

8.1 risk

By meaning of operation the use of wireless remote controls can lead to injury or damage to property, direct or indirect, if used injudicious.
To limit those risks and/or to prevent against, one is obliged to take following precautions:

8.2 Safety switch

ALWAYS mount a safety switch in the system and use it accordingly, in order to be able to switch off the main power supply to the equipment. This safety switch must have a button that can be pressed when necessary, thus cutting off the power supply. Safety switches and other safety devices need to be maintained preventive at least every month. Grease or spray the terminals with an anti-corrosion product.
When a wireless remote safety switch is used, it has to be checked on proper operation as often as necessary or at least once every month.

8.3 recommended battery supply

Check the battery supply frequently. The battery supply to use this (wireless remote) control may not be less than 10V DC.This (wireless remote) control may not be used below these values as damage may occur. Is this (wireless remote) control used below these values anyhow, the proper operation cannot be guaranteed. The manufacturer cannot be held responsible for injury and/or damage that is the result of this.

8.4 before staring

Before switching the safety switch to ON and before switching the (wireless remote) control to ON, the user must be certain that no risks (can) arise by the use and has to take all necessary precautions to prevent against those risks.

BEFORE switching ON the control ALWAYS keep sight on the equipment that is to be moved and keep all (non) experts away who are in close vicinity and thus can be in danger,.

Switch ON the safety switch.

Next press the green button on the (wireless remote) control for ± 0,5 sec.
The system is active for use (the LED lights constantly)

8.5 proportional speed

The whole surface of the buttons can be used to move the equipment.
However, the buttons are foreseen with proportional speed. By sliding over the foil with your finger, the speed of the equipment will change, all to the possibilities.
To be able to use proportional speed the PLC needs to be foreseen with an analog part (this is an option).
Besides this the equipment also needs to be suitable for proportional speed.

A winch that uses solenoids (ON-OFF switch) does not have this possibility. When the winch is equipped with a so called motor control, thus controlling the power supply electronically, proportional speed can be used (ask your supplier).

Hydraulic winches that are foreseen with an electric-proportional valve already can use this proportional speed control.

9. HOW TO PROGRAMME SENDER ON RECEIVER

To be able to start data transmission between transmitter and receiver, they have to be programmed.
In general this is done in the factory. However, when this is not the fact, or when, for one or another reason, the data transmission does not work, you may follow the steps under 9.1.

9.1 Steps

- Cut off the systems power supply.
- On the receiver board, right below the PLC, you will see a button with the text “ADR”,
- Press
- Switch on the power supply.
- Press the green button on the transmitter and keep it pressed.
- As soon as the start relay on the PLC switches, loosen the start button
- The system is now ready for use.

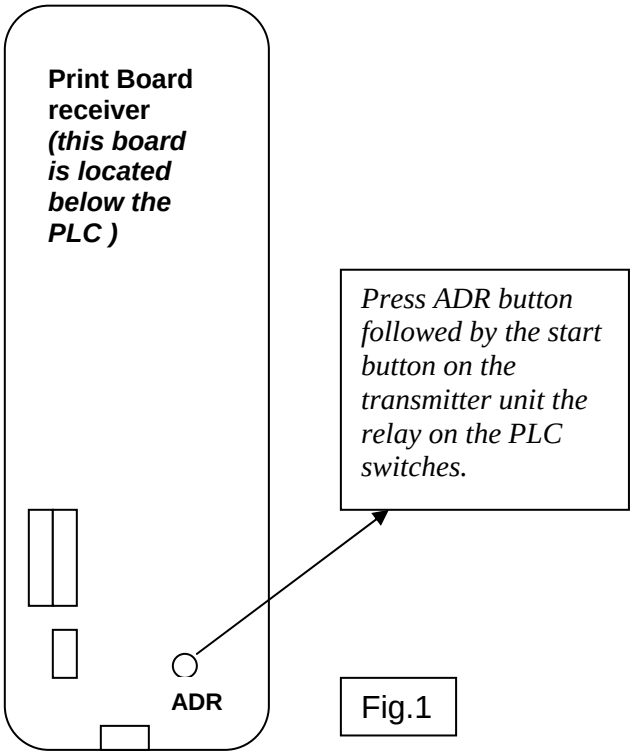
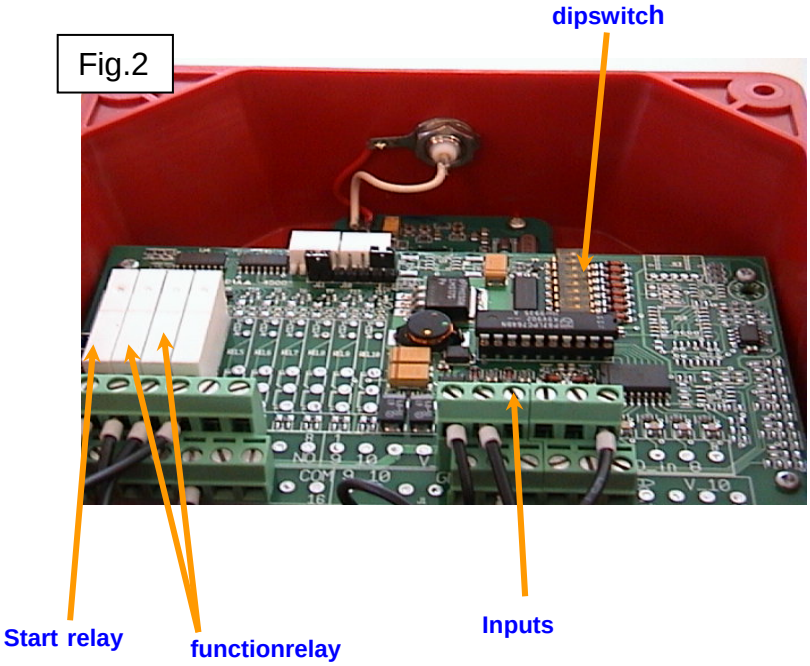


Fig.1

10. Emergency Switches and End Switches

Fig.2



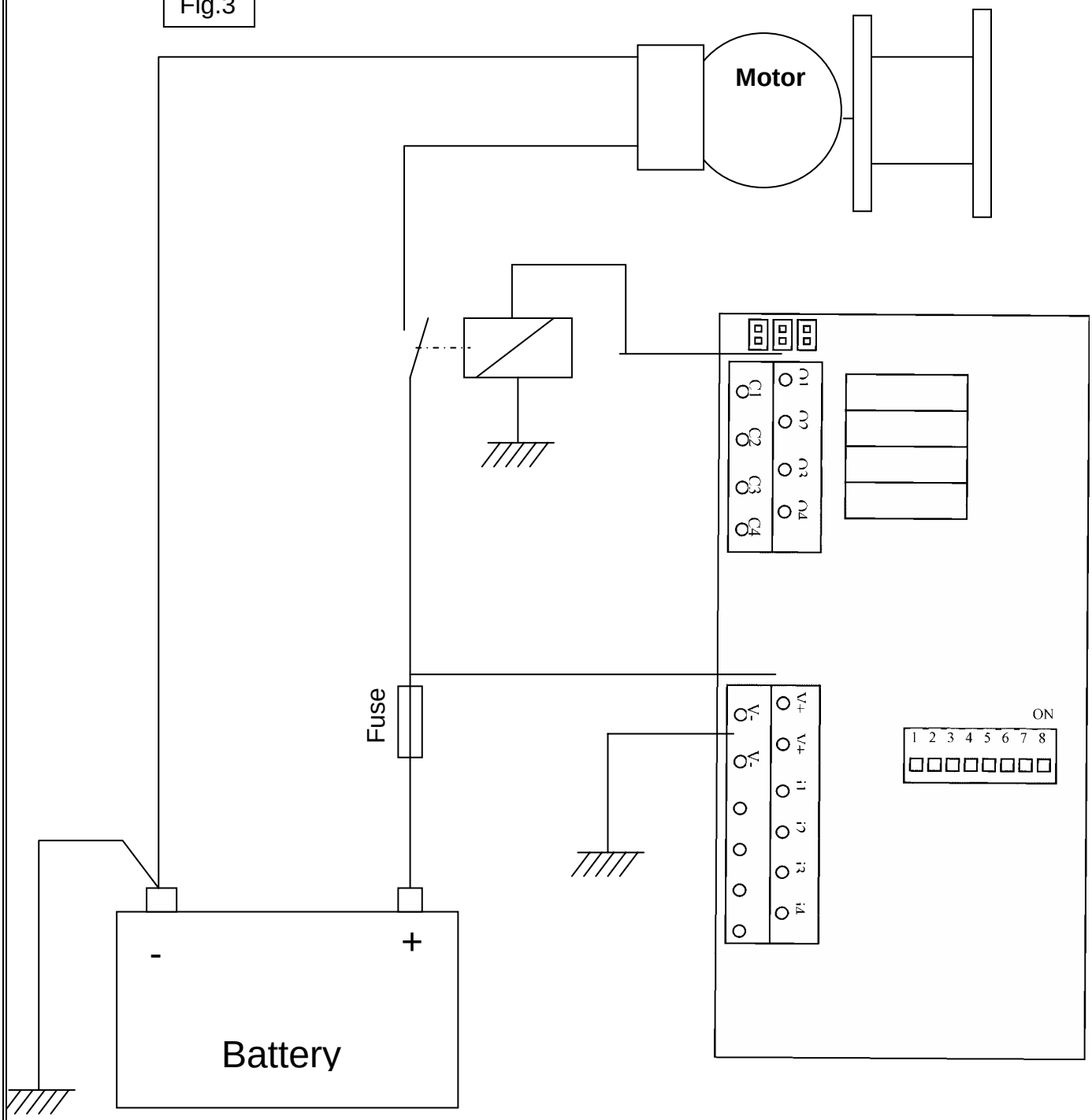
10.1 make - and break-contact
The PLC is foreseen with the possibility of connecting emergency switches as well as end switches. These can be connected as make- or as break contact. To switch between these contacts the dip-switches on the PLC board need to be set.

10.2 Directive 98/37/EC
Attention:
Following the Machinery directive 98/37/EC of June 22, 1998, you are obliged to mount this control according to the description of the break-contact. The settings of the make-contact is default "OFF" from the factory in order to be able to test the control without complete installation

10.3 how to connect make- or break contact
The make- or break contact can be set by using the dipswitches (fig. 3).
Dipswitch 1, 2 en 3 are corresponding with the inputs i1, i2 en i3.
Every input can be set individually.
If the dipswitch is set on “OFF” the corresponding input is in make-contact mode.
If the dipswitch is set on “ON” the corresponding input is in break-contact mode.

11. HOW TO CONNECT EMERGENCY SWITCH AND SAFETY SWITCH ON THE PLC AND REMOTE CONTROL

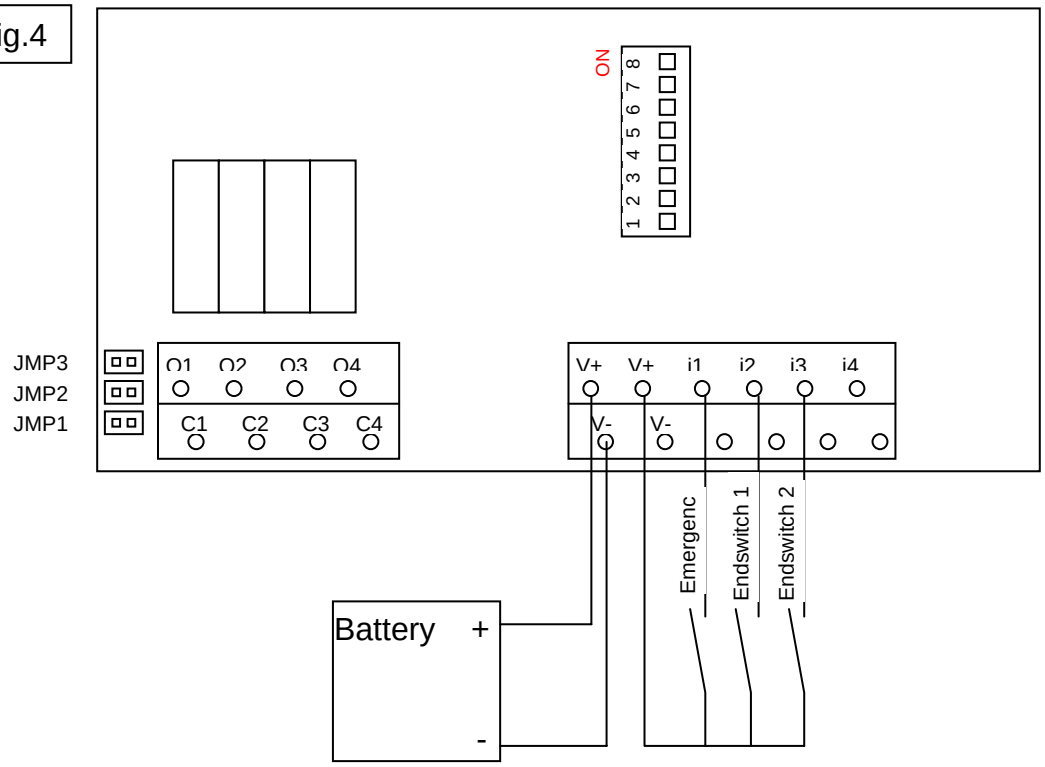
Fig.3



11. HOW TO CONNECT THE MAKE-CONTACT (DEFAULT)

Normally Dipswitches are set on "ON"

Fig.4



11.1 system circuit

When the make-contact is set on "ON" the system works as follows:

If voltage is on “i1” (emergency stop) all relays (outputs "Q") are cut out immediately.
If **NO** voltage is on “i1” (emergency stop) the system is active

If voltage is on “i2” (End switch 1), “Q2” (function) is cut out immediately.

If **NO** voltage is on “i2” (End switch 1), “Q2” (function outputs "Q2" en "C2") is active (e.g. winch IN)

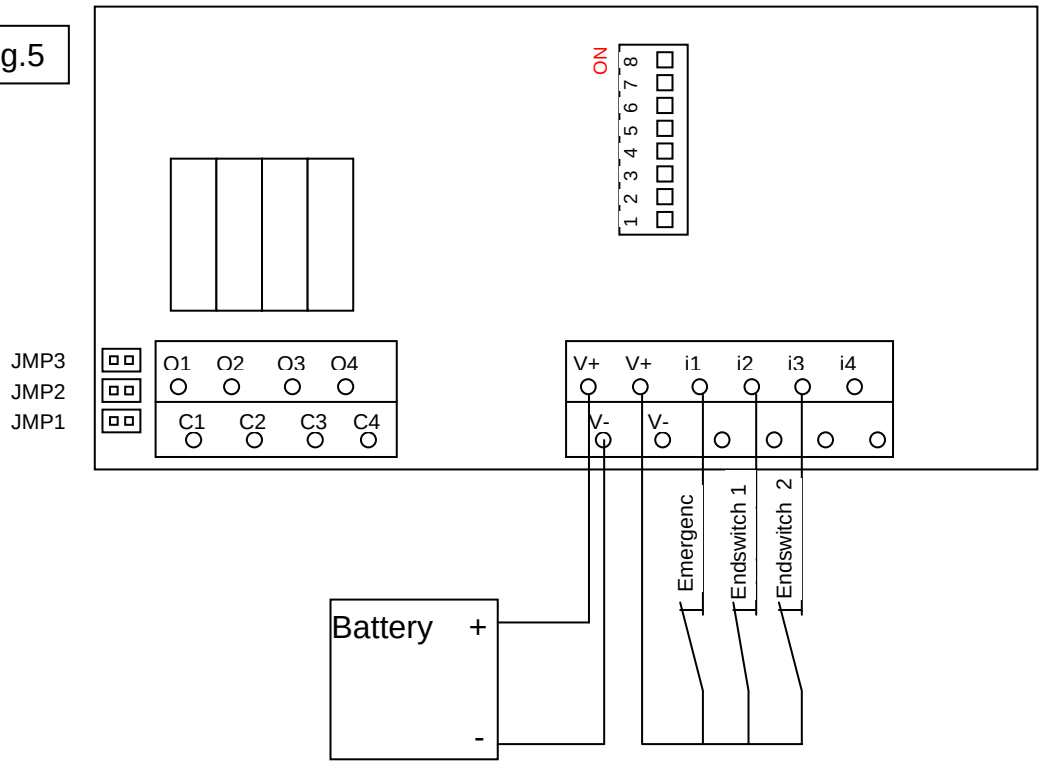
If voltage is on “i3” (End switch 2), “Q3” (function) is cut out immediately.

If **NO** voltage is on “i3” (End switch 2), “Q3” (function outputs "Q3" en "C3") is active (e.g. winch OUT)

12. HOW TO CONNECT THE BREAK CONTACT

(according to the Machinery directive 98/37/EC of June 22, 1998)

Fig.5



12.1 system circuit

When the break-contact is set on "OFF" the system works as follows:

If **NO** voltage is on “i1” (emergency stop) all relays (outputs "Q") are cut out immediately.

If voltage is on “i1” (emergency stop) the system is active

If **NO** voltage is on “i2” (End switch 1), “Q2” (function) is cut out immediately.

If voltage is on “i2” (End switch 1), “Q2” (function outputs "Q2" en "C2") is active (e.g. winch IN)

If **NO** voltage is on “i3” (End switch 2), “Q3” (function) is cut out immediately.

If voltage is on “i3” (End switch 2), “Q3” (function outputs "Q3" en "C3") is active (e.g. winch OUT)

13. WIRING THE RECEIVER

How to wire the relays.

The relay contacts are connected to the board as follows:

Fig.6

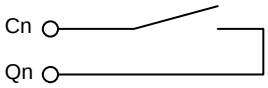
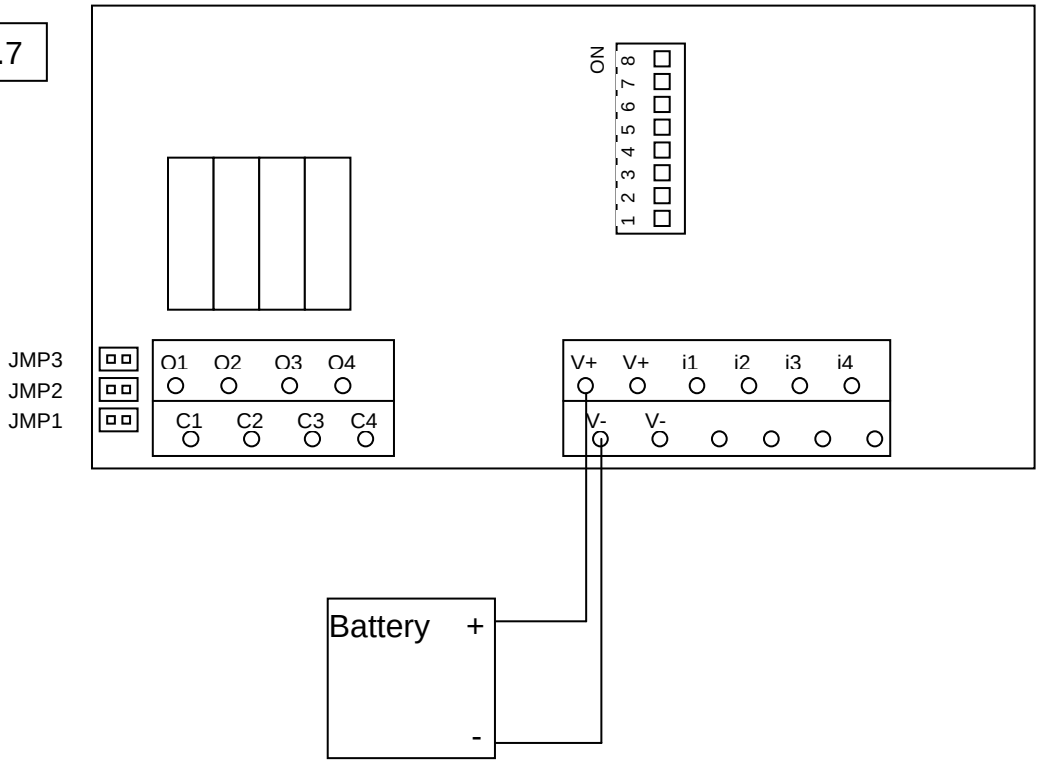


Fig.7



Q1 = system active
Also a solenoid can be switched that is used as emergency cut out for the whole system.
Q2 = function 1 (winch "IN") (Up)
Q3 = function 2 (winch "OUT") (Down)

Default function C1, C2 and C3 are connected to V+ through Jumper JMP1, JMP2 en JMP3. The advantage is that no wiring is needed.

CE Declaration of Conformity

following directive 1999/5/EC of March 9, 1999
and their consequences (mem (10) and (11))
following directive 73/23/EC of february 19, 1973,
following directive 98/37/EC of June 22, 1998
and following the EMC Directive 89/336/EC of may 3, 1989 (95/54/EC),
both modified by directive 93/68/EEC of august 30, 1993

We, **TYRO BV**,
Bedrijvenpark Twente 1b, 7602 KA Almelo

Declare in solemn responsibility,
that the product

WIRELESS REMOTECONTROL TY-TRX2021

Manufactured by
TYRO BV

On which this declaration is based,

Conforms to the health and safety demands of EC directive **89/336/EC (95/54/EC)**, and the demands of the conforming directive **73/23/EC,** both modified by directive **93/68/EC** of August 30, 1993

For a correct use of the health and safety demands in these directives following norms and/or technical specifications were used

ETS 300220
ETS 300683

Wijk bij Duurstede 20-02-2001

Herman Albers Spierings
Managing director