April 2009

Electronic Wiper Control

Type CT3EX



Cat. no. single station: 216324 • Cat. no. dual station: 216324.DCP

USER MANUAL

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Quality Marine Equipment

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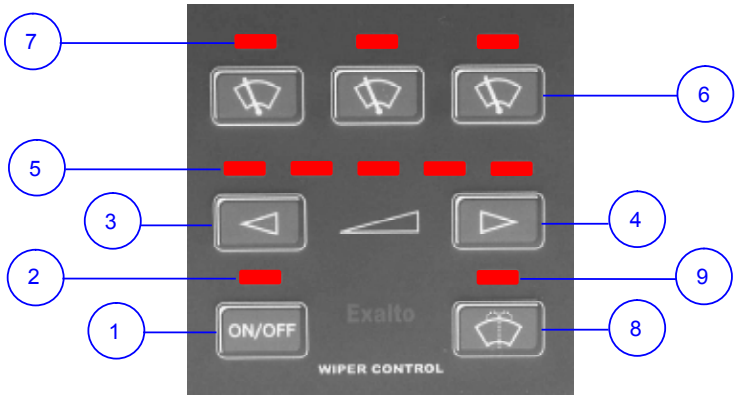
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1 General

1.1 Functions



Brief explanation of buttons and LED's on the control panel. Please check paragaraphs 1.6 and 1.7 and chapter 4 for complete operating instructions.

Pos.	Function
1	Main ON/OFF button *Turns the system ON and OFF*
2	Indication that power is ON *LED will be illuminated when power is ON*
3	Speed/intermittent button *Reduces the speed and increases the intermittent delay*
4	Speed/intermittent button *Increases the speed and decreases the intermittent delay*
5	Speed/intermittent LED indicator bar *Indicates the speed/intermittent setting*
6	Individual wiper ON/OFF buttons *Turns each wiper ON or OFF*
7	Individual wiper LED's *LED will be illuminated when wiper is active*
8	Wipe/wash button *Initiates wipe/wash function*
9	Wipe/wash indicator LED *LED will be illuminated when wipe/wash program is active*

1.2 Description

This (single station) electronic wiper control consists of:

- One touch pad
- One separate relay box
- One 4 m long connection cable to make the connection between the touch pad and the relay box
- One 0.5 m long power supply cable
- Three 0.4 m long wiper cables to connect the wipers to the relay box

All cables supplied are 'plug-and-play'. The operation is based on a microprocessor and controls up to three wipers. Each wiper can be switched ON and OFF individually, but they can also run in groups.

This wiper control offers the following functions:

- One continuous slow speed
- One continuous high speed
- Three intermittent settings
- Self parking
- Wipe/wash programs
- Synchronised wiping in each setting
- Option to disengage the synchronised wipers in the high speed

1.3 Power supply

This wiper control is a dual voltage control. This means that the wiper control can be used on both 12V and 24V DC installations.

1.4 Technical specifications

Power supply input:	12 and 24V DC
Standby consumption:	50 mA at 12V and 25 mA at 24V
Protections:	reversed polarity
Working temperature:	-10° + 50° C
Storage temperature:	-20° + 70° C
Outputs:	1 – 3 wiper contacts 1 pump/solenoid contact (+)
Max. amperage draw:	5 A for 12V wipers 4 A for 24V wipers 1 A for pump/solenoid

1.5 Default settings

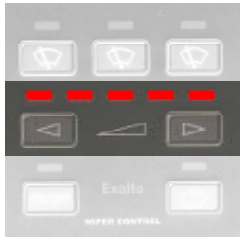
When the main power supply is switched on, an internal test will be carried out, followed by a LED test. When the ON/OFF button is pressed, all wipers will start in the continuous slow speed mode. The wipers will run synchronized in this mode.

1.6 LED indicator bar

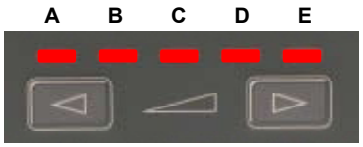
The LED's on the indicator bar indicate the following settings:

Intermittent mode:
Max. (8 sec.) delay:
Medium (4 sec.) delay:
Minimum delay (2 sec.):

Continuous mode:
Slow speed (synchronised):
High speed (synchronised):
High speed (not synchronised):



Individual LED's



1.7 Individual wiper buttons

When pressing the respective button (pos. 7), each wiper can be switched ON and OFF individually. Please refer to paragraph 3.2 for the relation between the button on the touch pad and the output signals of the relay box.



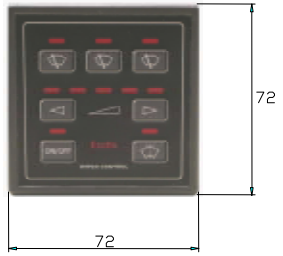
1.8 Declaration of conformity

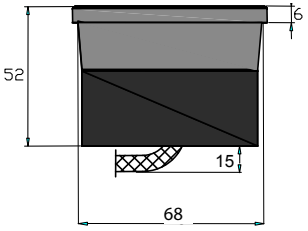
This wiper control complies with the European Requirements of Electromagnetic Compatibility of Security 72/23/EEC, 89/336/EEC, 92/31 EEC and 93/68/EEC directives.

Harmonized norm applied:
EN 61 010 Electric Safety
EN 90 945 Device of Maritime Navigation.

2 Installation

2.1 Dimensions of touch pad

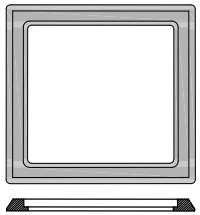




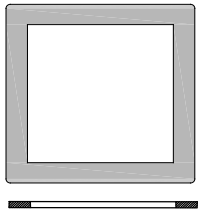
Dimensions in millimetres

For this control panel dark grey bulkhead mounts are available. These frames were designed to increase the flange size of the touch pad, reducing the need for accurate cutting of the hole in the dashboard. You can choose between a flat bulkhead mount or a higher, profiled frame. When using the profiled bulkhead frame, the height above the dashboard will be increased with 2 mm. When using the flat bulkhead frame, the height above the dashboard will be increased with 3 mm. The overall size of the touch pad with frame will increase from 72 x 72 mm to 88 x 88 mm.

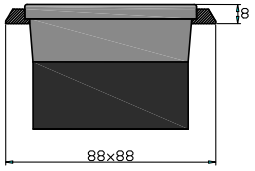
Sketch of profiled bulkhead frame



Sketch of flat bulkhead frame

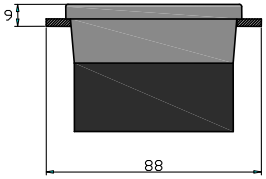


Sketch of touch pad with profiled bulkhead frame



Dimensions in millimetres

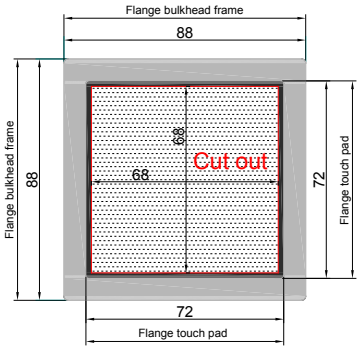
Sketch of touch pad with flat bulkhead frame



Dimensions in millimetres

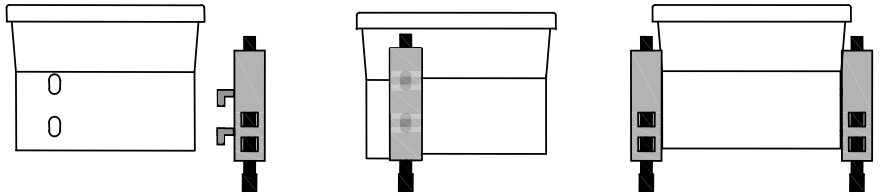
2.2 Installation of touch pad

The touch pad is to be fitted at a location that is within reach of the helmsman, allowing ease of operation.



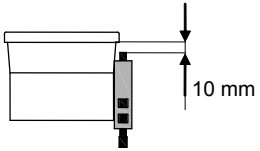
To install the touch pad, a hole of 68 x 68 mm is to be cut in the dashboard.
The built-in depth of the panel is 46 mm.
Please make sure that below the panel extra depth is available for the connection cable.

The wiper control comes complete with two clamping devices which secure the touch pad in the dashboard. These devices have hooks that clip into the holes at two sides of the touch pad housing (below the dashboard). After the hole has been cut and the touch pad has been inserted into the hole, these clamping devices can be fitted. Each device has a screw that, when tightened, will pull the touch pad down onto the dashboard.

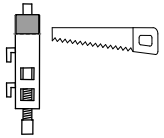


Instructions how to use the clamping devices:

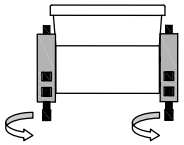
As standard, the max. thickness of the dashboard panel allowed is 10 mm.



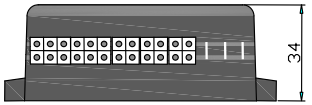
Cut top of clip to allow max. thickness of the dashboard panel of max. 25 mm.



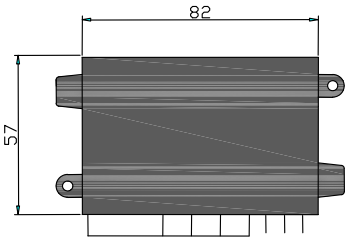
Tighten the plastic screws with controlled force not to break the clips



2.3 Dimensions of relay box



Dimensions in millimetres



2.4 Installation of the relay box

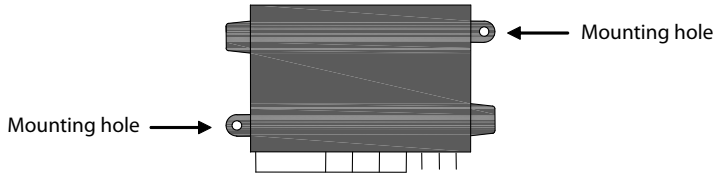
The connection cable of 4 m (16 ft) allows installation of the relay box at such a distance from the helm position, that the clicking of the relays will not disturb the helmsman.

The relay box must be mounted in a horizontal position and in a location that is free from vibration. Not complying with the above conditions may affect the performance of the relays.

It is advised to fit the relay box close to the wipers. This reduces the electrical current under the dashboard, and eliminates the risk of electro magnetic interference with other sensitive electronic devices on board.

The relay box must be fitted in such a way, that the connections are and will remain easy accessible for installation and service.

The relay box has four mounting feet whereas two of them have a pre-drilled hole of 3.5 mm. The relay box can easily and quickly be fitted using 3 mm screws of M3 bolts and nuts.



3 Electric connections

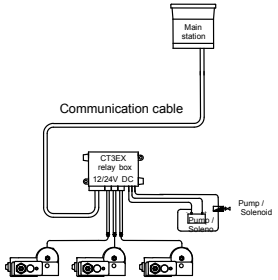
3.1 General lay outs of the wiper control

The touch pad is connected to the relay box by means of a 4 mm long pre-wired, plug and play communication cable. With multiple station control, the touch pads are to be connected by a serial cable.

3.1.1 Lay out of single station control

Control from one dasboard location only.
This system consists of:

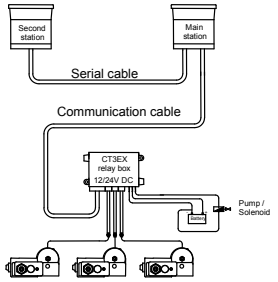
- One touch pad
- One relay box
- One communication cable
- Three wiper cables



3.1.2 Lay out of dual station control

Control from two dashboard locations.
This system consists of:

- Two touch pads
- One relay box
- One communication cable
- One serial cable
- Three wiper cables

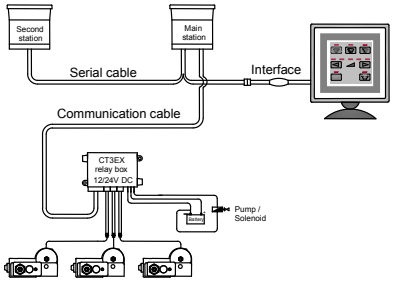


3.1.3 Lay out with triple station control

Control of wipers from three (dashboard) locations.
This system consists of:

- Two touch pads
- One relay box
- One communication cable
- One serial cable
- One USB interface
- Three wiper cables

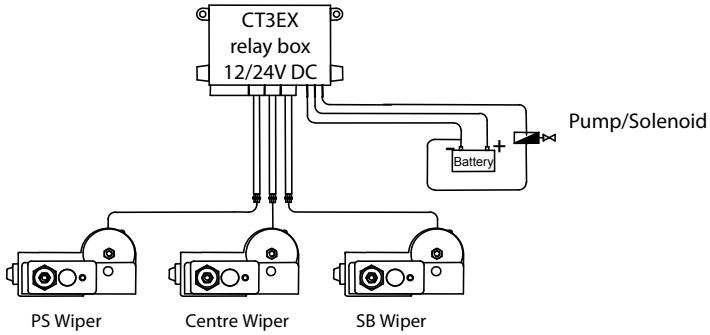
Also required but not part of the scope of supply: PC or touch screen.



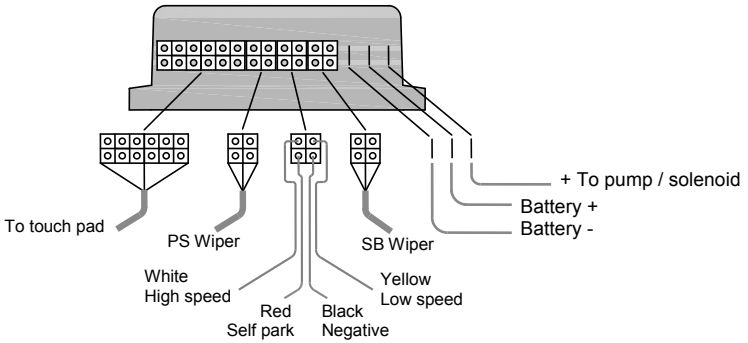
3.2 Relay box connections

3.2.1 General lay out

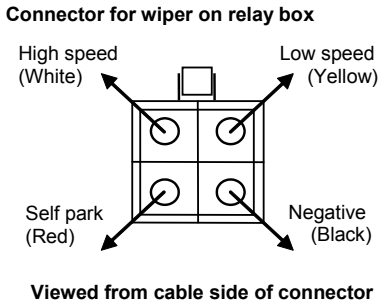
To allow easy connection from the relay box to the wipers wiring, the wiper cables have a plug and play connector at one end and four flying leads at the other end.



3.2.2 Wiring diagram relay box

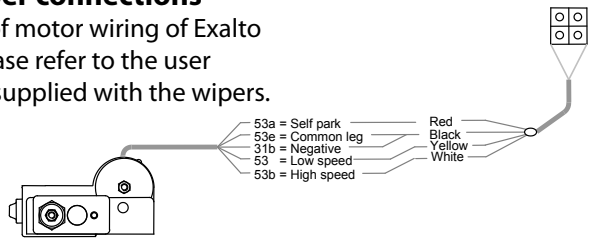


Wiring detail of wiper connections on relay box



3.3 Wiper connections

For colors of motor wiring of Exalto wipers, please refer to the user manual as supplied with the wipers.



3.4 Fuse sizes

To protect the electronics, an automatic fuse for each wiper outlet has been built in the relay box. These fuses do **not** protect the wipers! The trip off amperage is between 4.5 and 7.5A. Exact Amperage is subject to the air temperature around the relay box. To re-set these fuses after trip off, the system must be switched OFF and the main power supply has to be disconnected for a period of time (10 – 30 seconds) which again is subject to air temperature around the relay box. It is advised to fit an external fuse of the proper value in the power supply line to each wiper. These fuses are to protect the wiper motors.

Recommended fuse sizes

Motor power	Voltage	Fuse size	Voltage	Fuse size
30W	12	6A	24	4A
36W	12	6A	24	4A
50W	12	10A	24	6A
75W	12	10A	24	6A

3.5 Cable sizes

Use new cables that are undamaged and of sufficient diameter to prevent too much resistance in the cables for the required electrical current.

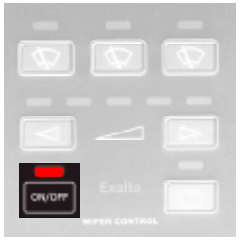
Recommended cable sizes

Watts	Voltage	Amperage	Max. length	Min. diameter
30	12	2.5	10 m	2.5 mm^2
30	24	1.2	10 m	2.5 mm^2
36	12	3.0	10 m	2.5 mm^2
36	24	1.5	10 m	2.5 mm^2
50	12	4.0	10 m	4.0 mm^2
50	24	2.0	10 m	2.5 mm^2
75	12	6.0	10 m	6.0 mm^2
75	24	3.0	10 m	4.0 mm^2

For larger cable lengths, diameters should be increased.

4 Operation

4.1 ON/OFF switching



With the ON/OFF button (pos. 1) the wiper control can be switched ON. When pressing this button once, an internal test is carried out and when no alarm is detected, all wipers will start in the default setting. The LED's in the LED bar (pos. 7) above the individual wiper buttons will illuminate during the test. The LED above the ON/OFF button (pos. 2) will stay illuminated as long as the panel is ON. When the ON/OFF button (pos. 1) is pressed again, all wipers will park and stop.

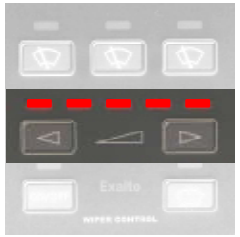
4.2 Choice of wipers

When pressing one of the wiper buttons on pos. 6, each wiper can be switched ON and OFF individually. The LED's in the LED bar (pos. 7) above these buttons will indicate which wiper is ON. Switching ON a wiper when other wipers are already running may cause a short delay with the start of that wiper. This is caused by the automatic synchronisation. For more detailed information on this subject, please refer to paragraph 4.6.

4.3 Continuous mode

To activate the continuous low speed mode when the wipers are running in the intermittent mode, press button pos. 4 until four LED's in the LED bar (pos. 5) are illuminated. To activate the continuous high speed mode when wipers are running in the continuous low speed mode, press button pos. 4 again. All five LED's in the LED bar (pos. 5) will be illuminated. As a standard, all wipers will run synchronised in each setting. To eliminate the synchronisation in the high speed mode, press the button on pos. 4 once again (refer to paragraph 4.6).

4.4 Intermittent mode



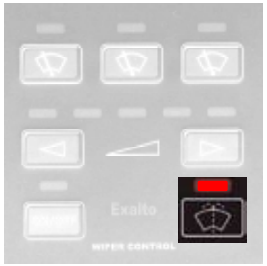
To activate the intermittent mode when the wipers are running in the high speed mode, press the button on pos. 3 until three LED's in the LED bar (pos. 5) are illuminated.

To activate the intermittent mode when the wipers are running in the low speed mode, press button 3 once, until three LED's in the LED bar (pos. 5) are illuminated.

For actual delays in the intermittent mode, please refer to table below.
(Please check paragraph 1.6 for A till E).

LED's illuminated	Speed setting	Delay	Synchronised
One LED (A)	Intermittent	8 Seconds	Yes
Two LED's (A+B)	Intermittent	4 Seconds	Yes
Three LED's (A+B+C)	Intermittent	2 Seconds	Yes
Four LED's (A+B+C+D)	Continuous (slow)	None	Yes
Five LED's (A+B+C+D+E)	Continuous (fast)	None	Yes
One LED (E)	Continuous (fast)	None	No

4.5 Wipe/wash program

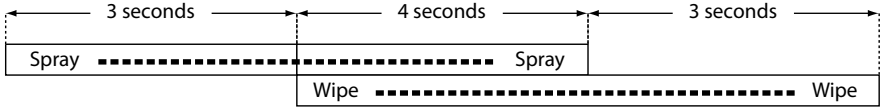


This wiper control has a built in 'smart' wipe/wash program which can be activated by pressing the wipe/wash button (pos. 8). When shortly pressing this button, the standard program will be started:

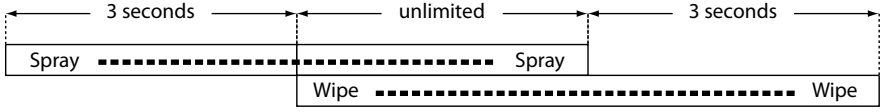
- The pump or solenoid will be activated allowing water to be sprayed onto the screen.
- After three seconds, all wipers will start to run in the low speed mode for a period of four seconds. Water will still be sprayed.
- After four second, the water supply will be stopped and the wipers will run for another three seconds.
- After the program has been completed, the wipers will go back to the setting that was previously used.

Besides the standard wipe/wash program as described before, you can also choose a personalised program. The available programs are visualised here:

Standard program: press the wipe/wash button (pos. 8) once:



Personalised program: keep the wipe/wash button (pos. 8) pressed:



As long as the wipe/wash program is active, the LED on pos. 9 will be illuminated. After the wash program has ended, all active wipers will go back to the setting that was previously used.

4.6 Synchronised operation

All wipers run synchronised in each mode. In the high speed mode, this synchronisation can be disengaged by pressing the button on pos. 4 once. For engaging the synchronisation again in the high speed mode, press the speed button (pos. 4) again. For LED indication, please refer to paragraph 1.6.

4.7 Self parking

When pressing the ON/OFF button (pos. 1) the wipers will go to the corner of the screen and park, providing the wiper motors are equipped with a self-park function.