

User manual for

Exalto

Wiper Technologies  since 1965



Exalto wiper control type CT3N (Item no. 210321224 / 210351224)

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1. General

1.1 General description

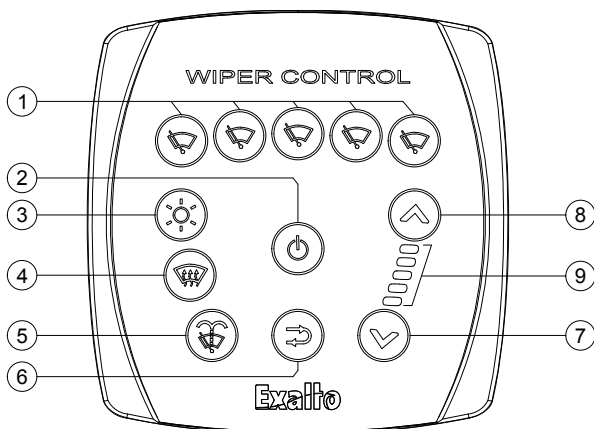
CT3N is an electronic wiper control system for up to five motors. CT3N is composed by one control panel and one relay box. The control panel and the relay box are connected by an CAT5 cable (CAN Bus cable).

- Double voltage supply: 12V - 24V
- Activates/deactivates each wiper one by one
- 2 continuous speeds (Slow/Fast)
- Three intermittent settings
- Synchronization in every mode
- Self parking due to dynamic brake
- Wipe/wash program
- Single wipe function
- Heater activation (additional relay box required)
- Selection of backlighting color and dimming facility
- Fault and error signaling

1.2 Standard supply

- 1 x Control panel
- 1 x Relay box
- 1 x 5 meter cable or CAN Bus connection
- 1 x 4-poles female connector for Relay box to motors connection (1 for each motor)
- 1 x female 6,3mm fast-on terminal for washing pump connection
- 2 x (or 4 if more than 3 wipers) female 9,5mm fast-on terminal for power supply connection

1.3 Functions



1. Single wiper ON/OFF button
2. General ON/OFF button
3. Backlighting color and brightness button
4. Heaters button (additional relay box required)
5. Wash /Wipe button
6. Single wipe buttonall wipers
7. Decrease speed
8. Increase speed
9. Selected mode led bar

1.4 Power supply

This wiper control is available to operate under a power supply of 12 or 24V DC. Check the power supply of the unit supplied, before connecting it to the ship's electric system.

1.5 Technical information

	EXALTO CT3N WIPER CONTROL SYSTEM		
Voltage supply	10V to 30V DC		
Internal fuses	12A self-resetting fuse for each motor		
Stand-by current	Less than 70 mA at 10V and less than 40 mA at 30V		
Protections	Polarity inversion		
Motors- output currents	Single or double speed – each motor 12 Amps max.		
Inputs	From 2 to 5 parking switches (open in park position)		
Outputs	From 2 to 5 SLOW speed I _{max} = 12A From 2 to 5 HIGH speed (if using two speed motors) I _{max} = 12A 1 wash pump (positive pole) SLOW I _{max} = 1A		
Functions	3 or 4 intermittent settings 1 or 2 continuous speeds (slow and high speed) Wash / wipe program		
Connections	Relay box SRM2/3P	Relay box SRM4/5P	Control panel CP4PX
	<ul style="list-style-type: none"> • 2 or 3 connectors with 4 poles • no. 2 - male 9,5 mm fast-on • no. 1 – male 6,3 mm fast-on • no. 2 connectors (jack) with 8 poles (CAN BUS network) 	<ul style="list-style-type: none"> • 4 or 5 connectors with 4 poles • no. 4 - male 9,5 mm fast-on • no. 1 – male 6,3 mm fast-on • no. 2 connectors (jack) with 8 poles (CAN BUS network) 	<ul style="list-style-type: none"> • 1 connector with 8 poles (CAN BUS network)
Case	Grey ABS		Plastic case Frontal panel Protection IP65
Dimensions (mm)	L: 191 - H: 40 - D: 109		L:100 - H:105 - D: 72
Working temperature	-25 °C / +50 °C		
Storage temperature	-30 °C / +80 °C		

1.6 Declaration Of Conformity

This wiper control is in conformity at requisition of electromagnetic compatibility and of security with directives, 2014/30/EU 9EMC) and 2011/65/EC (RoHS)

Harmonize norms apply:

- CEI EN 60945 ed 2003 + IEC 2018-04: MARITIME NAVIGATION EQUIPMENT AND SYSTEMS
- EN 50581 ed 2012: RoHS

Supplementary information:

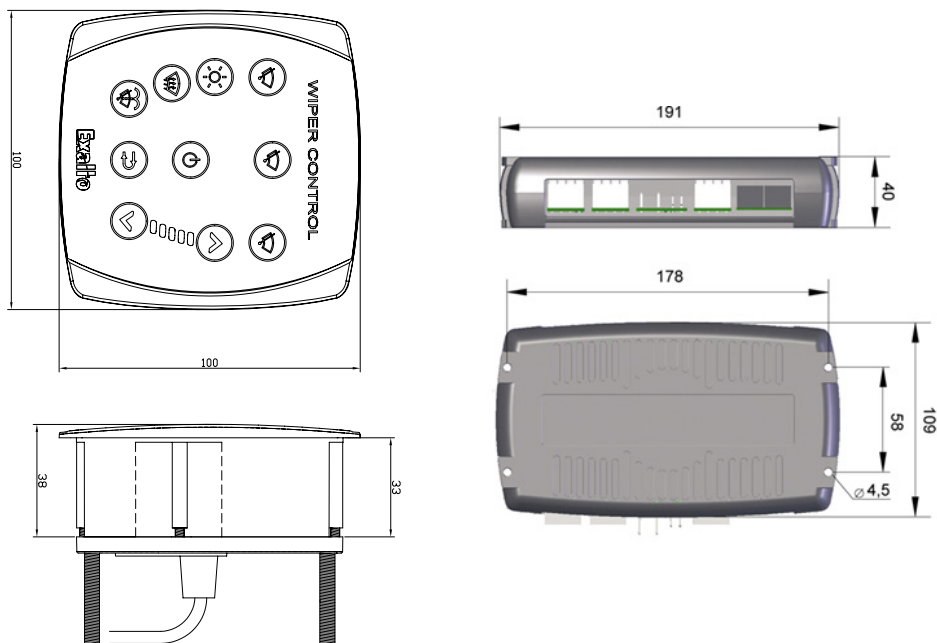
- The European directive 2014/35/EU (Low Voltage) is not applicable to this product as this device is powered by voltage values below 50Vac or 75Vdc.
- The cabling systems that will be installed on the product, should be conform their own safety requirements. The system complied with the requirements of IMO A.813 Decision about protection against interference on maritime radio communications.

Model	No. of wipers	Control panel	Relay box	Art. code
CT3N2	2	210321224.P	210321224.R	210321224
CT3N3	3	210331224.P	210331224.R	210331224
CT3N4	4	210341224.P	210341224.R	210341224
CT3N5	5	210351224.P	210351224.R	210351224

If user need two stations, wire up the adding panel (optional) via CAN BUS to the relay box.

2. Installation

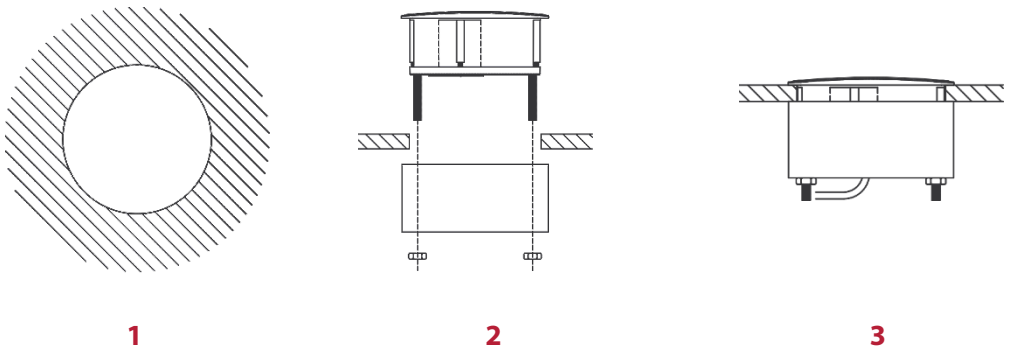
2.1 Dimensions



2.2 Installation

The control panel is to be fitted at a location that is within reach to allow ease of operation. Make sure that sufficient room is available for the cables and the connectors. The required mounting hole for the control panel is 90mm dia. There should be at least 100 mm space available below the front of the control panel for easy connection of cat5 cable to panel

IMPORTANT: protect the power supply line(s) by a thermal/magnetic circuit breaker. Thermal/magnetic circuit breaker and cables diameter must be sized according to the motor consumption and the regulations. Please make sure you insert the connector (linked to the wiper motors) before connecting the power supply!



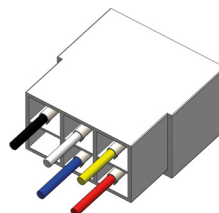
1. Drill the support with a 90mm diameter circular hole;
2. Set the panel on the hole and insert the threaded bar on the hole of the cap sit on the back of the support;
3. Fix the panel to the support by the supplied bolts and connect it to the relay box by the 8-pole cable.

3. Electrical connections

To make the connection between the control panel and control box a 5 mtr cat5 cable as part of the supply as standard.

3.1 Colour coding for the wiper motor

Function	Polarity	Motorcode	Switch code	Cable
High speed	+	53b	H	white
Low speed	+	53	L	yellow
Negative	-	31		black
Stop - self park		31b	P	blue
positive	+	53a	B	red



3.2 Wiring diagram

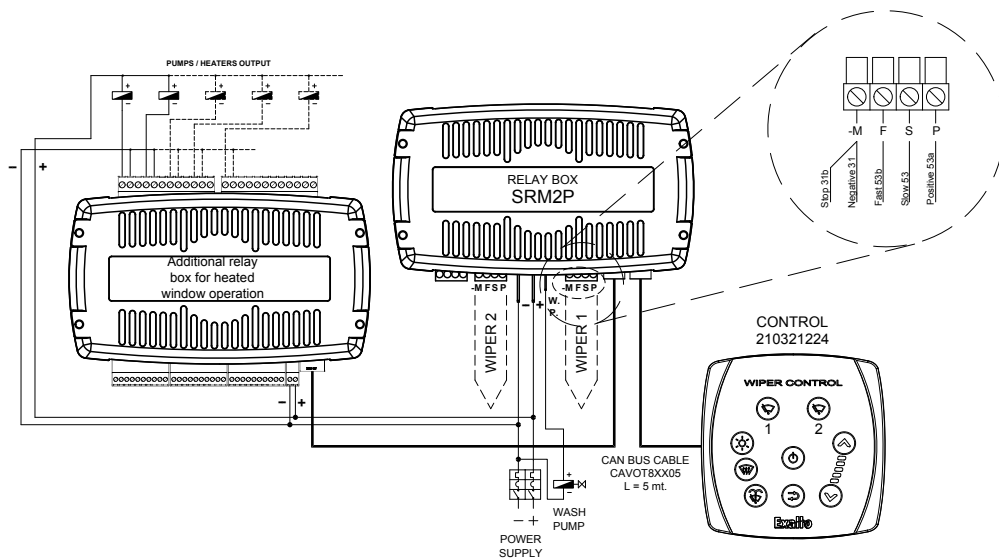
Colour code and connection of wiring coming for the wiper motor to the Control box

- Positive (53a) of the motor loom connects to position P in control box.
- Stop (31b) and Negative (31) connects to position M of the control box
- Low speed (53) connects to position S of the control box
- High Speed (53B) connects to position F of the control box
- Pump or solenoid connects to position WP terminal of the control box

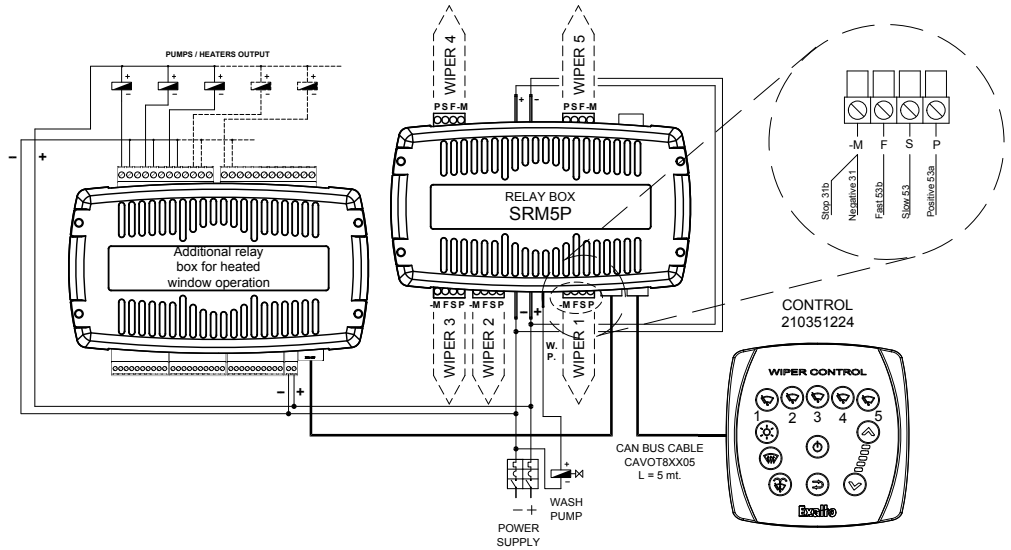
Always refer to the User Manual as supplied with the Exalto Wiper before connecting the Exalto wiper to the wiper control.

The schemes below detail the connections from 2 to 5 wiper motors.

210321224 for 2 wipers

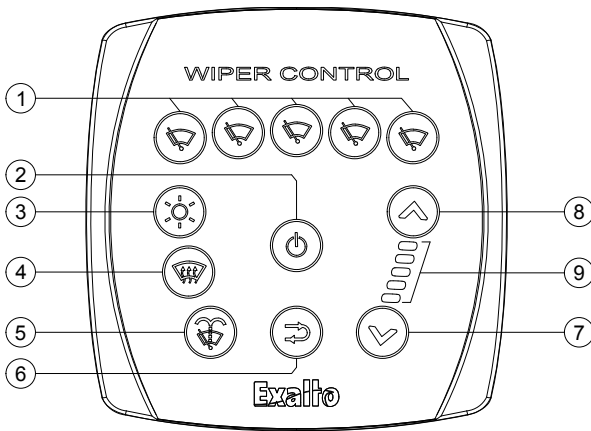


210351224 for 5 wipers



NB: Please note that for window heat, wash jet or individual screen wash an extra relay box is required. This is not supplied in the standard kits and will be project specific. For this option please contact Exalto for further information.

4. Operation



4.1 Functions and push buttons

1. Single wiper ON/OFF button
2. General ON/OFF button
3. Backlighting color and brightness button
4. Heaters button (additional relay box required)
5. Wash /Wipe button
6. Single wipe buttonall wipers
7. Decrease speed
8. Increase speed
9. Selected mode led bar

4.2 ON/OFF Switching

Switching on:

By selecting button 2 all wiper will be activated in slow speed. By selecting anyone of the related button 1's for individual motors, this will activate that selected motor only.

Switching off:

By selecting button 2 all wipers active will return to park position and stop. By pressing the selected button 1 the respective wiper motor will return to park position and stop.

4.3 Increase/decrease speed and intermittent mod selection

Buttons 7/8/9:

The motors will always start in slow speed.

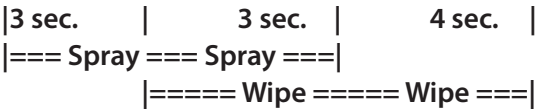
By pressing button 8 this will increase the speed mode

By pressing button 7 this will decrease the speed mode

Speed bar	Waiting time	Mode
All Leds OFF	-	Stand-by
1 x Led ON	8 seconds	Intermittent
2 x Led ON	4 seconds	Intermittent
3 x Led ON	2 seconds	Intermittent
4 x Led ON	-	Continuous (slow)
5 x Led ON	-	Continuous (fast)

4.4 Wash/wipe program

By selecting button 5 this will operate the wash wipe function. The solenoid or pump will be powered and spray the window for 3 seconds. Then spray and wipe mode will continue for 3 seconds. Then spray mode will stop and wipe mode will continue for 4 seconds. After the wash cycle finished, the motors will return to the previous mode



4.5 Single wipe function

The single wipe function is allowed only when all the wipers are off. Push the button 6 to perform the single wipe. Keep pushed to perform more than one wipe.

4.6 Heating function (optional)

The control panel has the optional mode to activate/deactivate the heaters, heated windows, power sun blinds but only with the addition of any extra control box is installed (not supplied in standard system). The button 4 actives the heaters when pushed. To deactivate push the button again. When the heaters are active, the button is illuminated. This feature is project specific and cannot be installed to a operational system due to programming features.

4.7 Backlight brightness and colour function

The button 3 performs the brightness adjustment and the color selection. Pushing it momentary the brightness level will change. Four brightness levels are available. Keeping it pushed the backlighting color will change. The available colours are Red, Green, Blue.

5. Power supply

The Exalto wiper control will operate correctly if powered from 10V to 30V. Insert the motor connectors before applying power source. When powered the control will execute a lamp test and then will go into standby mode.

NB: it is important that all wiper motors are connected to the control before power

6. Failures and signalling's

6.1 Reset function

With any failure we recommend first that you perform a reset process to the control system:

- turn power off at distribution panel
- remove the positive and negative feed to the relay box
- make sure all motors are connected correctly to the relay box
- please leave for 30 seconds
- reconnect positive and negative feeds to relay box
- turn power on at distribution panel
- the system will execute a lamp test

If problems continues check notes on section 4.1 or 4.2.

6.2 Motor fault

The flashing of a wiper button indicates that CT3N detects an error on a wiper.

This may happen if:

- the parking switch is unconnected or damaged
- the motor doesn't run (internal self-resetting fuse in protection, motor unconnected or damaged)
- the motor doesn't run in FAST or in SLOW speed
- the motor can't be synchronized
- the motor connectors have been inserted after supplying power.

6.3 Communication error

A shifting effect of the mode bar led indicates that control panel can't communicate with the relay box; this may happen if the flat cable is damaged or improperly connected or if there is a problem with the CAN Bus terminations.

7. Available models

As standard the systems are supplied for 2 to 5 wiper motor operation. We can also offer the system for larger numbers of wipers with grouped operation. These systems are project specific and can be configured to your operational requirement.

Wiper control system (control panel + relay box + cable)	Control panel	Relay box	Cable	No. of wipers
210321224	210321224.P	210321224.R	CAVOT8EX05	2
210331224	210331224.P	210331224.R		3
210341224	210341224.P	210341224.R		4
210351224	210351224.P	210351224.R		5

If the operator requires two stations, this can be completed by adding an extra panel via a CAN BUS to the relay box.

Exalto

Wiper Technologies  since 1965

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