



Consolite® Technology Ltd

St. Martins Business Park, Bells Lane, Zeals, Wiltshire, BA12 6LY, UK

Tel: +44 (0) 1747 840900 - E mail: sales@consolite.co.uk

www.consolite.co.uk - Certified to ISO9001:2015

CTL-900 LED Navigation Light and Control System

A complete Navigation Light System consisting of LED based navigation and signal lights and a touchscreen interface providing control and monitoring.

Features

- Software is tailored to mimic the ship systems
- Touchscreen allows easy selection of lighting groups and monitors the status of each light
- Individual light control and dimming
- Audible and visual alarms for fault notification
- Safe Return to Port system (SRTP)
- LED technology - low power, high reliability
- COLREG compliant light output
- IP68 rated lights
- Rugged construction
- Simple installation

Options

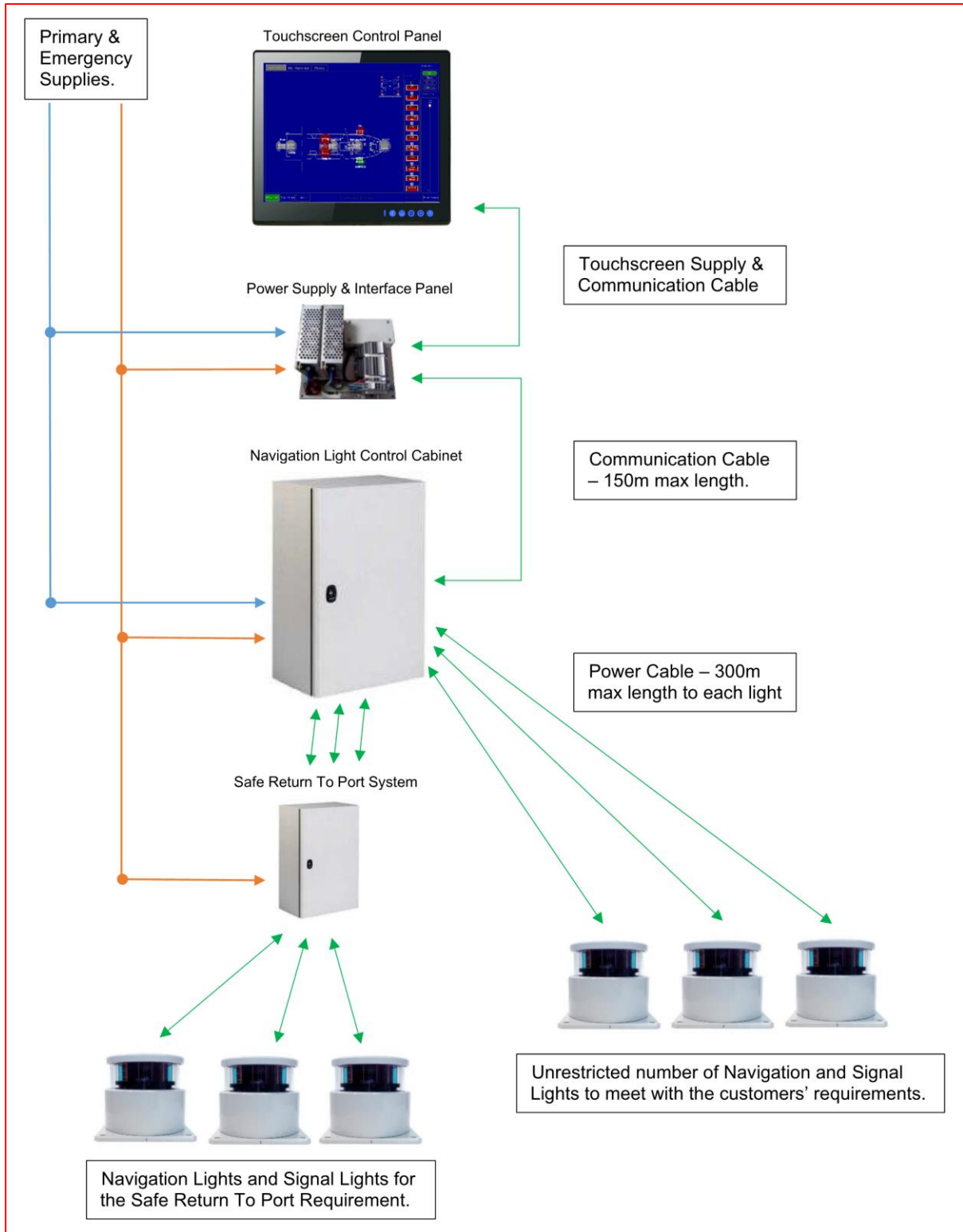
- Power Interfaces and control boxes to suit AC or DC secondary supplies
- Bespoke design with Integration of Whistle, IPMS and Signalling system
- Lights with heated glass
- Single or Dual circuit lights
- NVG compatible lights, COLREG compliant
- Can be configured to suit other requirements
- Lights can be ordered separately to operate on voltage driven systems



Installations

- RFA Tide Class, 4 shipsets
- RAN FFG, 2 shipsets
- HMAS Choules
- HMAS Sycamore
- RFA Fort Victoria
- RN Type 31

System Overview





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As shown in the pictorial overview the system consists of a Touchscreen Control Panel, a Power Supply and Interface Panel, a Navigation Light Control Cabinet, a Safe Return to Port (SRTP) cabinet and the current controlled Navigation / Signal lights.

Touchscreen Control Panel (the main HMI, normally located on the bridge)

- Panel (flush) mount.
- Anti-Reflective safety glass.
- Dimmable screen.
- Sunlight readable.
- NVG compatible display.
- Alarm test and reset button.
- Audible and visual alarms.
- Mimic diagrams tailored to match the ship's system.
- Lights can be controlled, either individually or in groups, and monitored for their status
- The switching of a group of lights is tailored to suit the functions and types of lights fitted to the ship. This is specified at point of order e.g. Navigation, Towing, Anchored, NUC, RIAM, CBD etc.
- Dimming of individual lights.
- Detector for main or emergency switching and a detector for LED failure with automatic reversion to a second LED set.
- Detector for automatically switching power to the second LED set after 50,000 hours of operation, allowing for the natural degradation in LED output, ensuring COLREG defined intensities are always maintained. An alert is set on the control panel and remains active until the LED module in the light is changed.

Power Supply and Interface Panel

- The Power Supply and Interface panel is normally fitted somewhere within the bridge, where space allows, and within 3m of the touchscreen.
- A cabinet can be supplied for mounting outside the bridge console, CTL-938.
- The interface panel includes two switching power supplies to provide 24V DC power supply to the Touchscreen Control Panel from the primary AC voltage, or the secondary AC or DC voltage, without interruption if both voltages are present at the same time.
- The interface circuits communicate with the Touchscreen Control Panel via the USB serial outputs.

Navigation Light Control Cabinet

The NLCC controls the DC driven LED navigation lights and includes:

- Two power supplies for primary AC voltage or the secondary AC or DC voltage input to provide power to the output power lines that control the DC LED navigation lights.
- A CPU to communicate remotely via RS485 with the touchscreen control panel.
- Communication with the control panel to read activation of lights and receive commands.
- Communication of status of the output power lines to the control panel application.
- Communication of commands to the output power lines.
- Automatic switch over from main to reserve lights in case of failure.
- The NLCC can be supplied with an IP44 steel cabinet, an IP44 aluminium (lo mag) cabinet or without a cabinet for building into the ship's console.



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SRTP (Safe Return to Port) System

- IP65 enclosure normally mounted in a separate room away from the main system.
- The SRTP system provides an emergency back up to switch on the five essential navigation lights in case of failure or inaccessibility of the main control system.

Navigation and Signal Lights

- Fully compliant with COLREG defined intensity distributions and colour and MED certified by DNV.
- Fully compliant with Def Stan 02-587 Part 3 defined requirements for NVIS Radiant Intensity.
- All Navigation and Signal lights are fed by DC current and controlled from the Touchscreen Control Panel.
- Duplex lights contain dual LED circuits so there is no need for separate main and emergency lights. Failure of an LED in the main mode is detected by the Control Panel and power is automatically switched to the second set of LEDs.
- The masthead obstruction lights are a derivation of the navigation lights, having a domed housing for all round visibility.
- Signal lights can be fixed brightness or dimmable.
- All lights are LED technology for long life and low power consumption.
- Supplied complete with cable entry glands to meet the IP68 rating.

Cabling

- Portable lights are supplied with a 5m cable and Scame industrial plug.
- The Obstruction light (CTL-928) is supplied with a 1.5m flying lead.
- The Touchscreen is supplied with DC power and USB communication cables.
- All other lights, the Power Supply and Interface Panel, the Navigation Light Control Cabinet and the SRTP cabinet, are supplied without cables.



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Control System Components and Part Numbers

Part Number	Description	Input Voltage	Power (W)	Weight (Kg)
CTL-916-xxx	Touchscreen – NVG	9 - 36VDC	< 80	5.5
CTL-953-xxx	Touchscreen – Non NVG	9 - 36VDC	< 80	5.5
CTL-925-001	PS & I – High/High	(P)115-230VAC (S)115-230VAC	< 250	1.8
CTL-925-002	PS & I – High/Low	(P)115-230VAC (S)24VDC	< 250	1.8
CTL-938	Cabinet to house the PS & I	n/a	n/a	2.5
CTL-952-001	NLCC - High/High	(P)115-230VAC (S)115-230VAC	< 250	43
CTL-952-002	NLCC - High/Low	(P)115-230VAC (S)24VDC	< 250	43
CTL-952-003	NLCP - High/High	(P)115-230VAC (S)115-230VAC	< 250	25
CTL-952-004	NLCP - High/Low	(P)115-230VAC (S)24VDC	< 250	25
CTL-952-005	NLCC Lo Mag - High/High	(P)115-230VAC (S)115-230VAC	< 250	43
CTL-952-006	NLCC Lo Mag - High/Low	(P)115-230VAC (S)24VDC	< 250	43
CTL-927	Safe Return to Port System (SRTP)	115-230VAC	< 200	9

PS & I = Power Supply and Interface Panel

NLCC = Navigation Light Control Cabinet

NLCP = Navigation Light Control Panel

(P) = Primary Input Voltage

(S) = Secondary Input Voltage

Navigation and Special Operation Lights

The lights are available with several options and the part numbering is defined as follows:

CTL - 9xx - ## - # - ###

Character	Use	Description
##		Power Supply Requirement
	CL	Current Limited – For use with the Control System
	24	24V DC
	115	115V AC
	230	230V AC
#		Heating Requirement
	H	Heating Included
	H2	Heating included, restricted to 2 cable entry glands.
	0	Heating not required
###		Night Vision Requirement
	NVG	Night Vision Compatible
	0	Night Vision Compatibility not required

Portable lights are only available in 24V versions and without heating.

The table on the next page lists the available lights and their descriptions.



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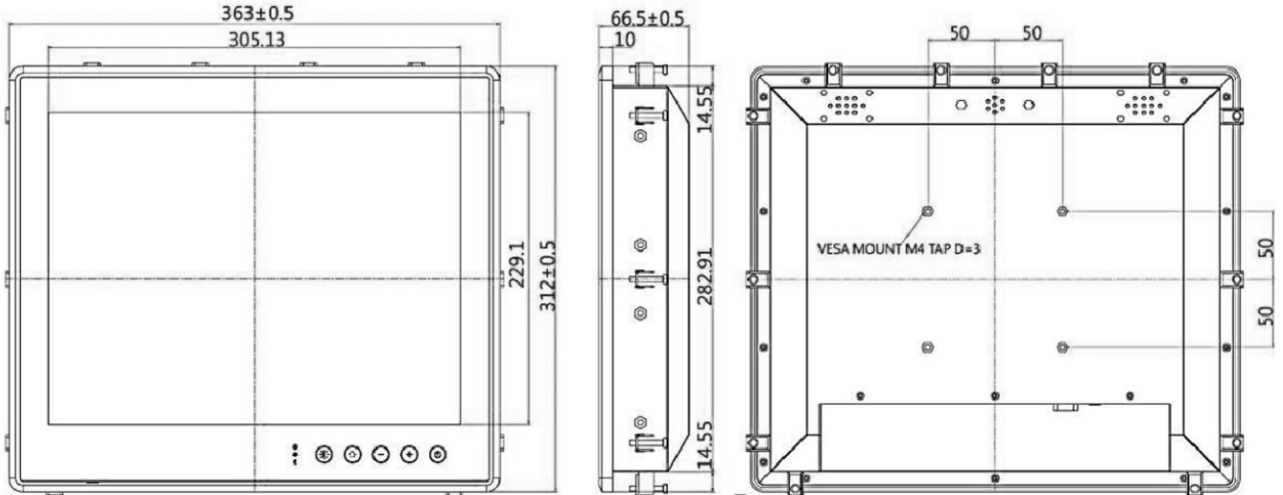
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Part Number	Description	Colour	Angle (°)	Type	Range (n.m.)	Power (W)	Weight (kg)
CTL-901-CL-#-###	Starboard	Green	112.5	Dual	3	< 2.5	4.6
CTL-902-CL-#-###	Port	Red	112.5	Dual	3	< 4.5	4.6
CTL-903-CL-#-###	Masthead	White	225	Dual	6	< 13	4.6
CTL-904-CL-#-###	Stern	White	135	Dual	3	< 3.5	4.6
CTL-905-CL-#-###	Towing	Yellow	135	Dual	3	< 6.5	4.6
CTL-906-CL-#-###	Signalling	White	360	Dual	3	< 3.5	4.6
CTL-907-CL-#-###	Signalling	Red	360	Single	3	< 6.5	4.6
CTL-908-CL-#-###	Signalling	Green	360	Single	3	< 3.5	4.6
CTL-909-CL-#-###	Signalling	Yellow	360	Single	3	< 6.5	4.6
CTL-910-CL-#-###	Signalling	Blue	360	Single	3	< 3.5	4.6
CTL-911-CL-#-###	Manoeuvring	White	360	Single	3	< 3.5	4.6
CTL-912-CL-#-###	Contour	Red	135	Single	3	< 4.5	4.6
CTL-913-CL-#-###	Panama Canal	Blue	30	Single	> 2	< 1.5	4.6
CTL-914-CL-#-###	Stern	Blue	135	Single	3	< 3.5	4.6
CTL-915-CL-#-###	Signalling	Red	**180/360	Single	3	< 6.5	4.6
CTL-917-CL-#-###	Manoeuvring	White	360	Single	5	< 13	4.6
CTL-918-24-#-###	Anchor (Portable)	White	360	Single	3	< 3.5	4.6
CTL-919-CL-#-###	Signalling	Red	360	Dual	3	< 3.5	4.6
CTL-920-CL-#-###	Signalling	White	180	Dual	3	< 3.5	4.6
CTL-921-CL-#-###	Signalling (Special)	White	220	Single	3	< 3.5	4.6
CTL-922-24-#-###	Suez (Portable)	Red	135	Single	3	< 4.5	4.6
CTL-923-CL-#-###	Panama (Portable)	Blue	30	Single	> 2	< 1.5	4.6
CTL-924-CL-#-###	Towing	White	225	Single	6	< 13	4.6
CTL-928-CL-#-###	Obstruction Light	Red	360	Single	3	< 3.5	1.2
CTL-929-CL-#-###	NUC	Red	**180/360	Dual	3	< 6.5	4.6
CTL-930-CL-#-###	RIAM	White	**180/360	Dual	3	< 3.5	4.6
CTL-931-CL-#-###	Station Light	Blue	90	Dual	> 2	< 1.5	4.6
CTL-932-CL-#-###	Wake	Blue	135	Single	> 2	< 1.5	4.6
CTL-933-CL-#-###	Signalling	Green	360	Dual	3	< 3.5	4.6
CTL-934-CL-#-###	RAS Contour	Blue	135	Dual	3	< 3.5	4.6
CTL-935-CL-#-###	Panama Canal	Blue	30	Dual	>2	< 1.5	4.6
CTL-936-CL-#-###	Obstruction (Sqr Base)	Red	360 dome	Single	3	< 3.5	4.6
CTL-937-CL-#-###	Obstruction (Sqr Base)	Red	360 dome	Dual	3	< 3.5	4.6
CTL-939-CL-#-###	Manoeuvring	White	360	Dual	5	< 13	4.6
CTL-940-CL-#-###	Signalling	Green	120	Single	3	< 2.5	4.6
CTL-941-CL-#-###	Signalling	Red	120	Single	3	< 4.5	4.6
CTL-942-CL-#-###	Signalling	White	15	Single	3	< 3.5	4.6

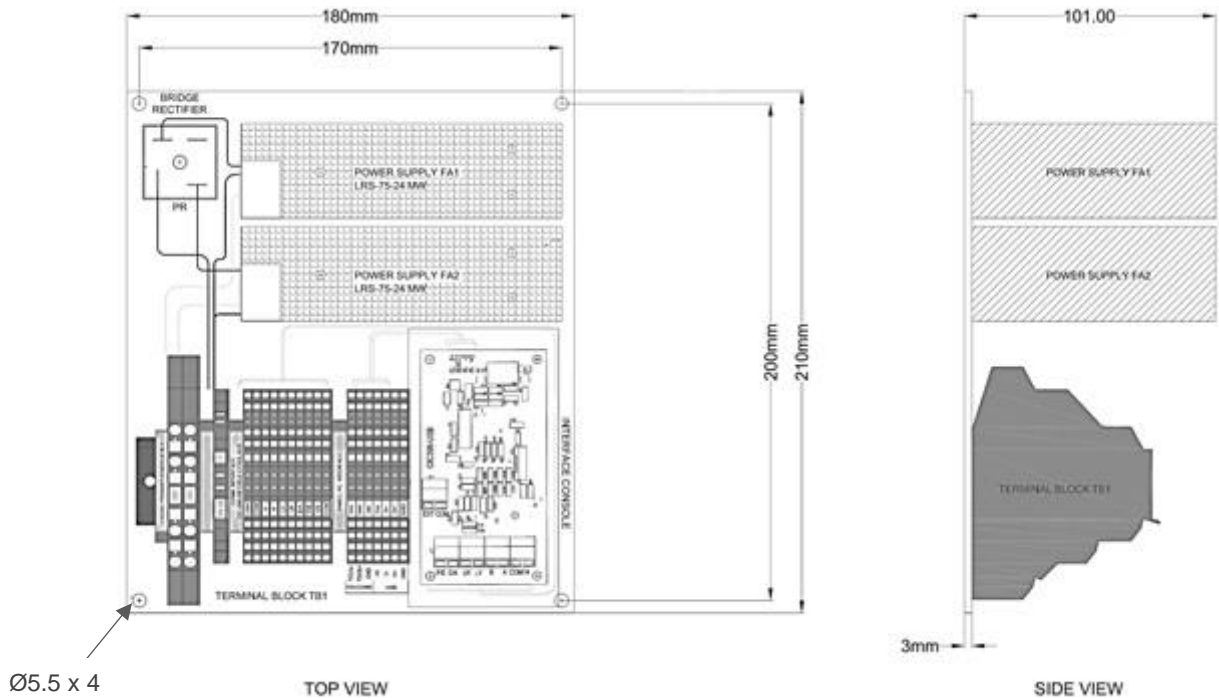
All descriptions are only a suggested use for the signal lights – customer specific description may differ.

** these lights have a 180° angle shield for either side of the mast

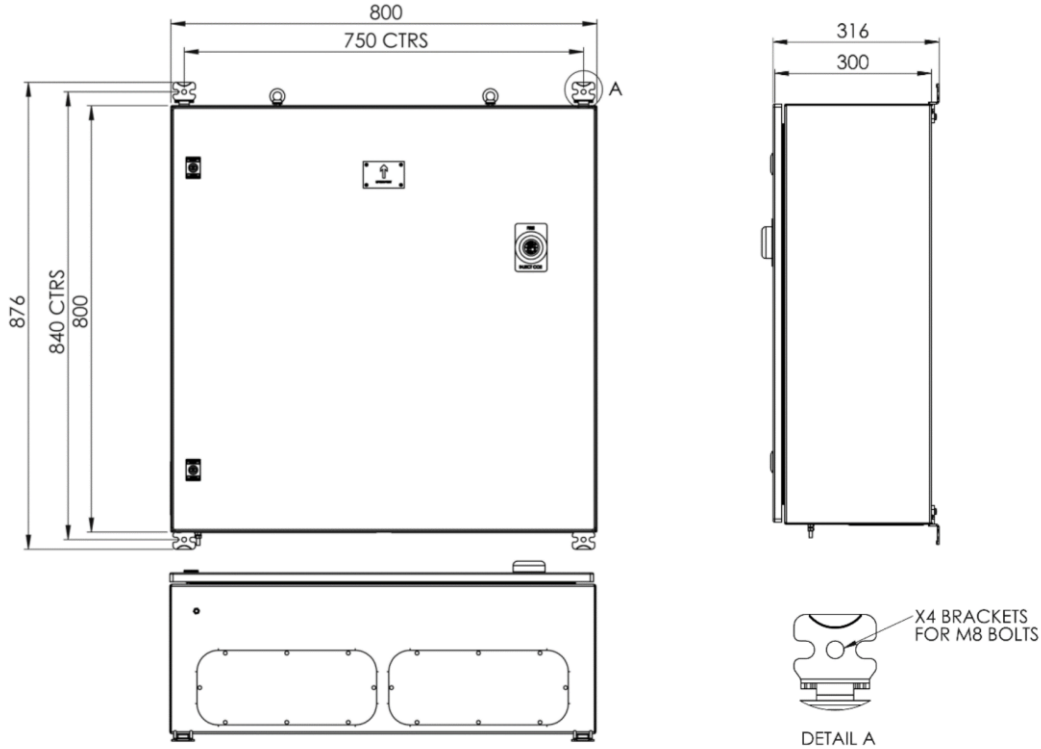
CTL-916 Touchscreen Control Panel – Dimensions



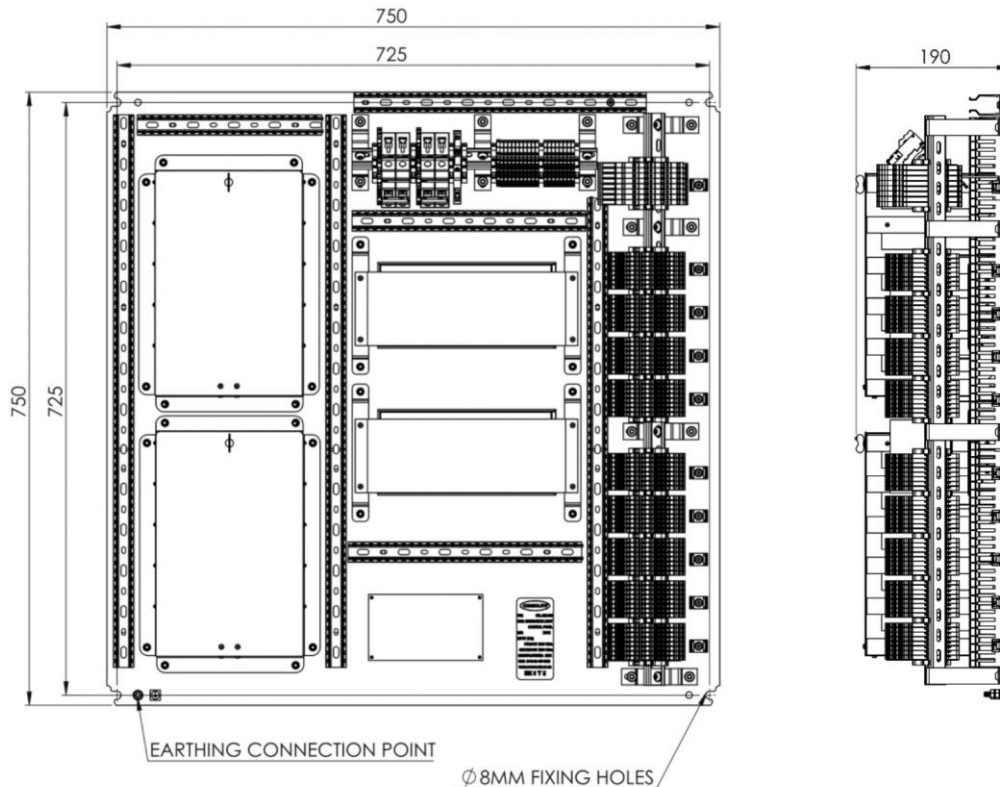
CTL-925-### Power Supply and Interface Panel – Dimensions



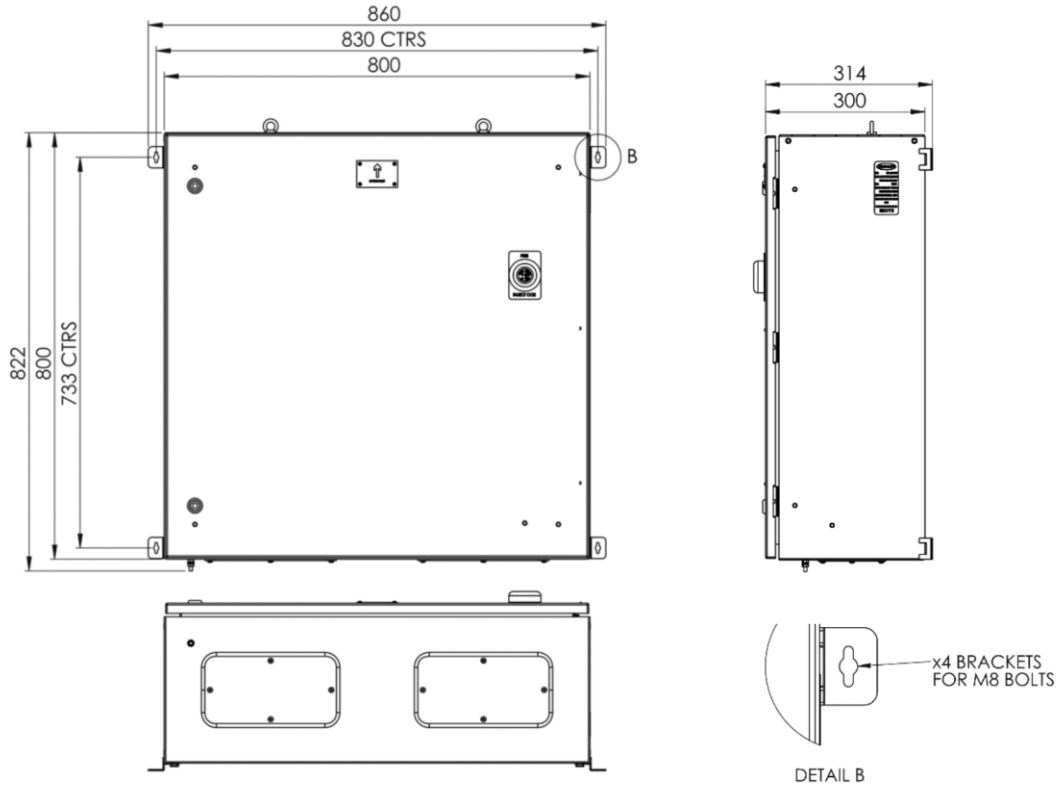
CTL-952-001 / CTL-952-002 Navigation Light Control Cabinet – Dimensions



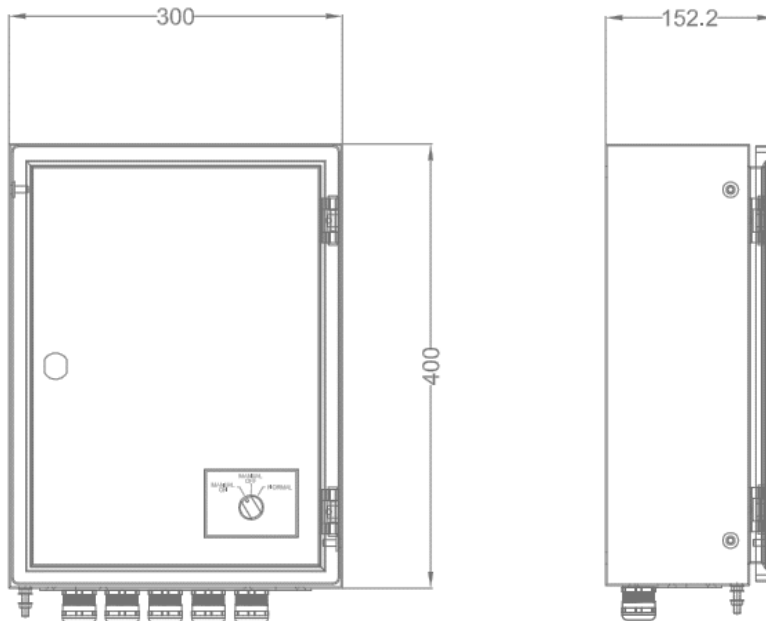
CTL-952-003 / CTL-952-004 Navigation Light Control Panel – Dimensions



CTL-952-005 / CTL-952-006 Navigation Light Control Lo Mag Cabinet – Dimensions



CTL-927 Safe Return to Port – Dimensions



Mounting positions on the rear are 4 off 10.3 holes at 350 x 250 centres.



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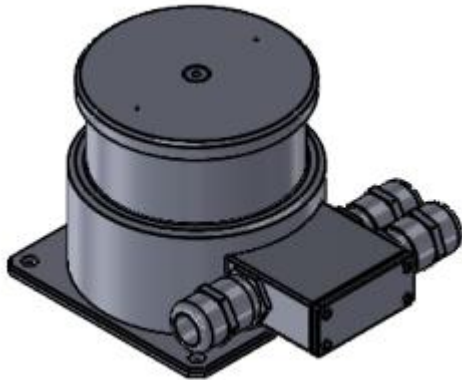
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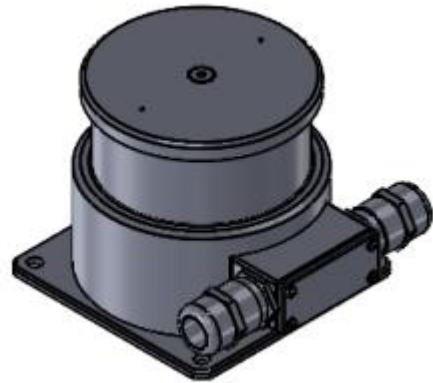
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CTL-9xx Navigation Light – Dimensions

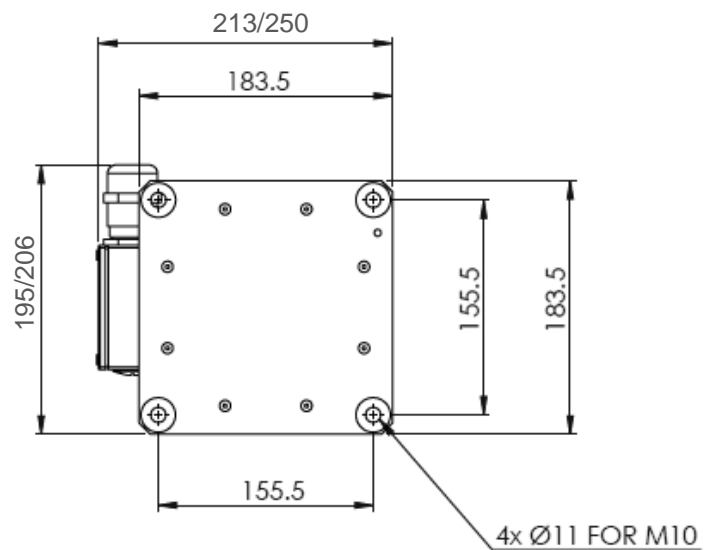
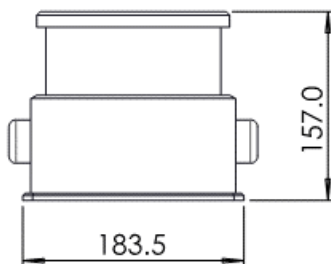
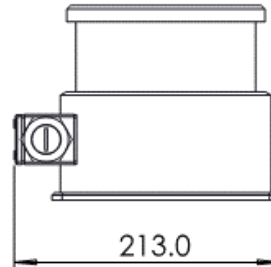
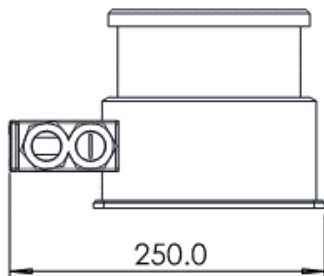
Dual light with Heating



Dual light without Heating
(Or Single Light with Heating)



Note: Single light without heating will have only one cable entry gland





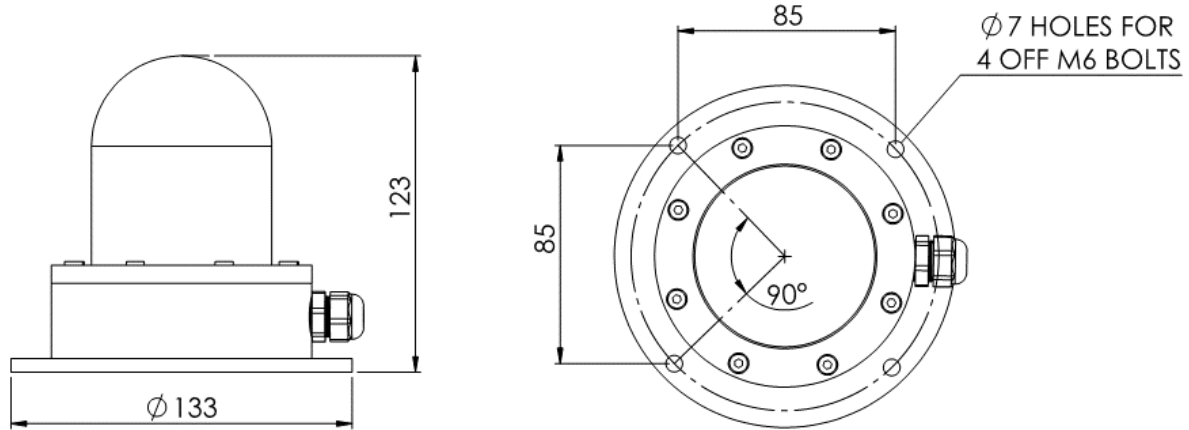
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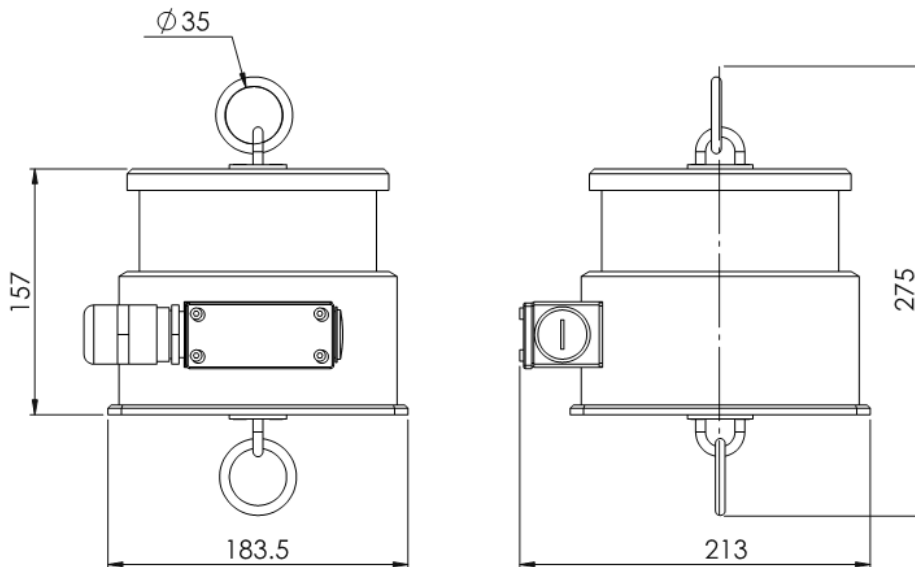
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CTL-928 Obstruction Light – Dimensions



NOTE: a domed obstruction light is also available with a larger square base with variants CTL-936 and CTL-937.

Portable Lights (CTL-918 and CTL-923) – Dimensions





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Standards

The Navigation Light System and Lights comply with the following standards.

EN14744	Inland Navigation Vessels & Sea-going Vessels – Navigation Light
EN60529	Degrees of protection provided by Enclosures
EN60945	Maritime Navigation and Radio communication equipment & systems – General Requirements – Methods of testing & required test results
IEC60068	Environmental Testing
COLREGS	International Regulations for Preventing Collision at Sea 1972
Def Stan 02-587 Pt 3	Requirements for Lighting Systems Part 3 – Night Vision Device (NVD) compatibility
MED certification	Approved by DNV

Consolite is a long established leader in night vision lighting for military platforms, designing and manufacturing lighting for NVGs for over 25 years, including lighting for aircraft, ships and ground use.

Consolite's design facility permits the calculation of lighting requirements for any space from a single compartment to an entire ship.

Consolite's test facility includes the latest equipment required for testing night vision compliance to any relevant standard plus goniophotometric equipment for full 360 degree light characterisation of luminaire output.



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Order Form

- Table 1. Control System. You will need only one of the Power Supply and Interface panels and one of the Navigation Light Control Cabinets, dependent upon the voltages for primary and secondary supplies.
- Table 2. Functions/Lighting Groups. Specify the requirements for the grouping of lights and any requirements for integration with the whistle, signalling etc. Include as much detail as possible.
- Table 3. Lights. Tick which options you require. Note that only the CL (current limited) versions will operate from the control system. Voltage driven lights will be controlled separately.

Table 1. Control System:

Part Number	Description	Qty
CTL-916-xxx	Touchscreen Control Panel - NVG	
CTL-953-xxx	Touchscreen Control Panel - Non NVG	
CTL-925-001	Power Supply & Interface Panel, 115-230VAC Prim. & Sec.	
CTL-925-002	Power Supply & Interface Panel, 115-230V Prim./ 24VDC Sec.	
CTL-938	Cabinet for Power Supply & Interface Panel	
CTL-952-001	Navigation Light Control Cabinet - 115-230VAC primary & secondary	
CTL-952-002	Navigation Light Control Cabinet - 115-230VAC Prim. / 24VDC Sec.	
CTL-952-003	Navigation Light Control Panel - 115-230VAC primary & secondary	
CTL-952-004	Navigation Light Control Panel - 115-230VAC Prim. / 24VDC Sec.	
CTL-952-005	Navigation Light Control Lo Mag Cabinet - 115-230VAC primary & secondary	
CTL-952-006	Navigation Light Control Lo Mag Cabinet - 115-230VAC Prim. / 24VDC Sec.	
CTL-927	Safe Return to Port System (SRTP)	

Table 2. Functions/Lighting Groups:

	Functions:	Required?
1	Underway	
2	Not Under Command (NUC)	
3	Not Under Command (NUC) making way	
4	Man Over Board (MOB)	
5	Restricted in Ability to Manoeuvre (RIAM)	
6	Restricted in Ability to Manoeuvre (RIAM) making way	
7	Constrained by Draught (CBD)	
8	Constrained by Draught (CBD) making way	
9	Aground	
10	Towed	
11	Towing	
12	Anchored	
13	<i>other</i>	
	Integration:	Required?
1	Whistle Input to operate signal lights	
2	Morse Key Input to operate signal lights	
3	<i>other</i>	



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Table 3. Lights:

Part Number	Current Limited or Voltage Controlled				Heating		NVG compatible		Description	Colour	Angle (°)	Type	QTY
	CL	24V	115V	230V	H	0	NVG	0					
CTL-901-									Starboard	Green	112.5	Dual	
CTL-902-									Port	Red	112.5	Dual	
CTL-903-									Masthead	White	225	Dual	
CTL-904-									Stern	White	135	Dual	
CTL-905-									Towing	Yellow	135	Dual	
CTL-906-									Signalling	White	360	Dual	
CTL-907-									Signalling	Red	360	Single	
CTL-908-									Signalling	Green	360	Single	
CTL-909-									Signalling	Yellow	360	Single	
CTL-910-									Signalling	Blue	360	Single	
CTL-911-									Manoeuvring	White	360	Single	
CTL-912-									Contour	Red	135	Single	
CTL-913-									Panama Canal	Blue	30	Single	
CTL-914-									Stern	Blue	135	Single	
CTL-915-									Signalling	Red	180	Single	
CTL-917-									Manoeuvring	White	360	Single	
CTL-918-		✓				✓			Anchor (Portable)	White	360	Single	
CTL-919-									Signalling	Red	360	Dual	
CTL-920-									Signalling	White	180	Dual	
CTL-921-									Signalling (Special)	White	220	Single	
CTL-922-		✓				✓			Suez (Portable)	Red	135	Single	
CTL-923-		✓				✓			Panama (Portable)	Blue	30	Single	
CTL-924-									Towing	White	225	Single	
CTL-928-									Obstruction Light	Red	360	Single	
CTL-929-									NUC	Red	180	Dual	
CTL-930-									RIAM	White	180	Dual	
CTL-931-									Station Light	Blue	90	Dual	
CTL-932-									Wake	Blue	135	Single	
CTL-933-									Signalling	Green	360	Dual	
CTL-934-									RAS Contour	Blue	135	Dual	
CTL-935-									Panama Canal	Blue	30	Dual	
CTL-936-									Obstruction (Sq Base)	Red	360	Single	
CTL-937-									Obstruction (Sq Base)	Red	360	Dual	
CTL-939-									Manoeuvring	White	360	Dual	
CTL-940-									Signalling	Green	120	Single	
CTL-941-									Signalling	Red	120	Single	
CTL-942-									Signalling	White	15	Single	