Littelfuse® | Carling Technologies®
A Littelfuse® Brand

CKP-Series

J1939 Customizable Keypads

PRODUCT WEBPAGE

request sample, configure part, watch video

Compliant with SAE J1939 CAN standards, the CKP-Series is a customizable membrane keypad featuring laser etched legends and up to three dimmable LED function lights per button, which also offer diagnostic feedback by blinking if there is a fault. With above and below panel sealing protection, the CKP-Series can be installed inside or outside the cab.

12/24 VDC

1,000,000 Operations

IP6K9K Sealing for above panel components

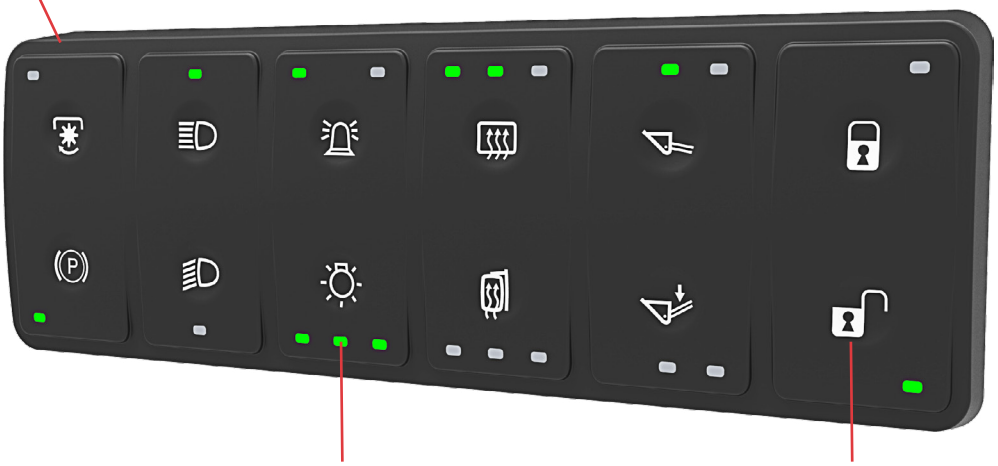
Typical Applications

- Commercial Vehicles
- Construction
- Mining
- Agricultural
- Military

www.carlingtech.com 860.793.9281 sales@carlingtech.com

Design Features

LOW PROFILE DESIGN
0.57 inch [14.48 mm] thickness (see dimensional specs for more detail)

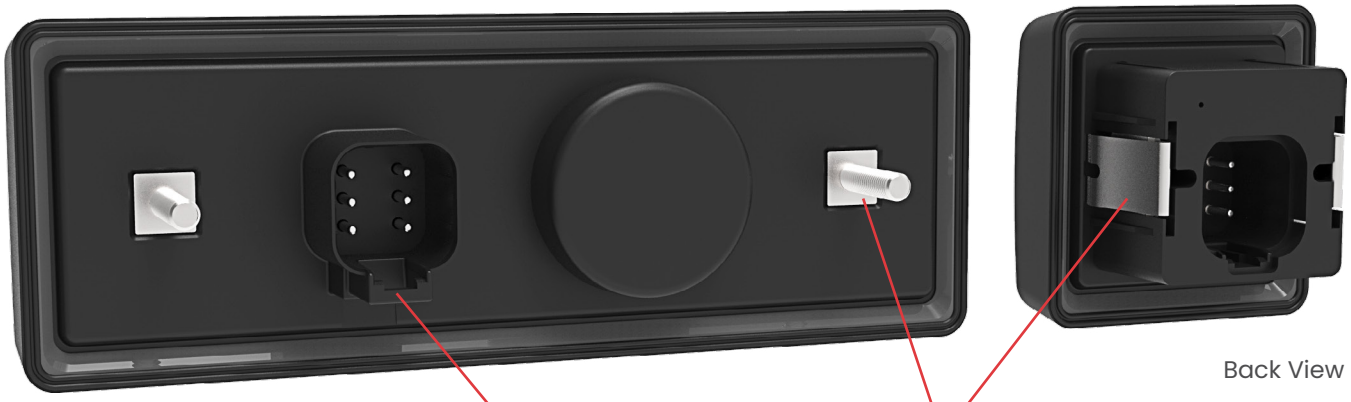


Front View

SEALING PROTECTION
Fully sealed IP6K9K above panel

LED FUNCTION LIGHTS
One, two, or three LED Function Lights per button.

CUSTOMIZABLE ICONS
Choose from our standard library of icons or use custom icons



Back View

SEALING PROTECTION
Fully sealed IP6K8 below panel when connected

CONNECTOR
Mates to the Deutsch DT-Series Connector

MOUNTING STUDS OR WINGS
10-32 Mounting Studs (2x4, 2x5, 2x6)
Mounting Wings (2x2, 2x3)

Related Products

CLTM12-S-Series ›
Load Controller

CKJ-Series ›
Jog Switch

VM-Series ›
Operator Control Module

Tech Specs

General

Illumination	LED backlit icons and function lights. Up to 3 function lights per button. Dimmable illumination, controlled by CAN messages
Connection / Wiring	Deutsch DT-Series connector (See Dimensional Specs)

Electrical

Operating Voltage	Designed for 12/24 Volt systems Minimum 8 VDC Maximum 32VDC
Sleep Mode	Low current sleep mode draws less than 1.5 mA throughout the supply voltage range, and wakes on keypress or CAN message
Supply Voltage Ratings	The keypad passes SAE J1455 section 4.13.1 for power up, operating voltage, over voltage, reverse polarity, and short circuit
EMC	Transient immunity: ISO 11452-2, 100 V/m, 20 MHz to 2,000 MHz, Class A per ISO 11451-1 Conducted Transient immunity: ISO 7637-2:2004, Annex A Table A2 (for 24V systems), Class A ESD immunity: ISO 10605:2001, Test level IV (8 kV direct discharge, 15 kV air discharge)Transient Emission: ISO 13766, Broadband: Annex D, Narrow band: Annex E, 30-1000 MHz

Mechanical

Overall Dimensions	See Dimensional Specs
Panel Cutout	See Dimensional Specs
Endurance	Each button functions for at least 1,000,000 total actuations (100,000 actuations at -40°C, 100,000 actuations at +85°C, and 800,000 actuations at +25°C)

Software

CAN Protocol	CAN 2.0b type interface as defined by SAE J1939

Environmental

Thermal	-40°C to +85°C IEC60068-2-1 Cold Soak IEC60068-2-2 Heat Soak IEC60068-2-14 Cycling/Shock
Solar Radiation	IEC 60068-2-5, procedure B, 10 cycles, Total irradiation per cycle = 22.4 kWh/m^2
Low Pressure	IEC 60068-2-13
Humidity	Soak: IEC 60068-2-78, 93% RH (±3%), 10 day cycle IEC 60068-2-30, test Db: Damp Heat cycle (12 hr. cycles for each variant) 6 cycles total
Ingress Protection	ISO 20653, IP6K9K, for above panel components of actual switch only. IP6K8, for below panel components of actual switch only. (when connected)
Shock and Bump	IEC 60068-2-27, Shock 500 m/s^2 11 milliseconds, Bump 400 m/s^2 6 milliseconds 600 cycles
Drop Test	IEC 60068-2-31, Free fall, Procedure 1, 1000 mm height, drop on all 3 axes in both directions
Vibration	IEC 60068-2-6, Swept sine wave section 8.2, 5 - 500 Hz 20 cycles 5g acceleration. IEC 60068-2-6, Vibration sinusoidal, section 8.1, 10 - 2000 Hz, 5g acceleration. IEC 60068-2-64, Method 1, random excitation, 10 - 350 Hz, 5 hours in each axis
Chemical Resistance	IEC 60068-2-74, Class B, Engine Oil, Diesel, Hydraulic Oil, Ethylene Glycol, Urea Nitrogen, Liquid Lime, NPK Fertilizer, Ammonia, Calcium Chloride, Brake fluid
Corrosion Resistance	IEC 60068-2-52, Test Kb, Severity level 4
Weathering/Cracking Resistance	ASTM D1171-99, method A, 72 hours
Abrasion/Wear Resistance	ASTM F2357; 40 cycles with .25" paper at 175g force

Physical

Operating Force	10 ± 3 N [2.25 ± .67 lbs]
Mounting	Clips or studs (See Dimensional Specs), Vertically or horizontally
RoHS	Compliant
REACH	Compliant
Connector	Deutsch DT-Series 6 pin

Tech Specs continued on next page

GPS-0007 Rev: A, GPS-0021 Rev: B

*Manufacturer reserves the right to change product specification without prior notice.

Tech Specs

Software Interface Integration

Click below on integrating the CKP-Series into J1939 CAN network:
www.carlingtech.com/sites/default/files/documents/ckp-series_interface.pdf

Tables

Table A: Standard Illumination [1]

Type	Green	Amber	White
Backlight	---	---	Yes
Function	Yes	Yes	---

Note: 1. Additional colors are available. Consult factory.

Table B: Operation Current Values

	2x2	2x3	2x4	2x5	2x6
12V, 10% Luminance	---	---	---	---	---
Sleep (mA) Max	.9	.9	.9	.9	.9
Operate (mA) Max	16	19	29	30	40
24V, 10% Luminance	---	---	---	---	---
Sleep (mA) Max	.7	.7	.7	.7	1
Operate (mA) Max	9	10	15	16	35

GPS-0021 Rev: B
*Manufacturer reserves the right to change product specification without prior notice.

Ordering Scheme

Part 1: Keypad

Sample Part No.	CKP	1	-	1	A	1	-	A	B	-	A	-	J	000	/
Selection		1		2	3	4	5	6	7		8		9	10	

1. SERIES

CKP CKP-Series Keypad

2. KEYPAD STYLING

1 Standard

3. BUTTON LAYOUT

1 Two by Six
2 Two by Five
3 Two by Four
4 Two by Three (1.6~2.8mm Panel Thickness)
5 Two by Two (1.6~2.8mm Panel Thickness)
6 Two by Three (2.8~4.0mm Panel Thickness)
7 Two by Two (2.8~4.0mm Panel Thickness)

4. KEYPAD ORIENTATION

A Landscape
B Portrait
C Reverse Landscape
D Reverse Portrait

See Orientation Diagrams page

5. KEYPAD COLOR

1 Black

6. BACKLIGHT

A White

7. FUNCTION LIGHT COLOR [1]

B Amber
C Green

8. NON-ILLUMINATED IMAGE COLOR

A White

9. NETWORK TYPE

J J1939 (250K BAUD Rate)
K J1939 (500K BAUD Rate)

10. SOURCE ADDRESS

The Source Address is a unique number (**000-248**) assigned to each node on a CAN network, and is determined based on the specific CAN architecture of each customer application.

Note:
1 Additional illumination colors are available. Consult factory.

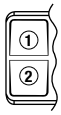
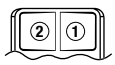
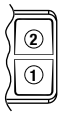
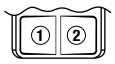
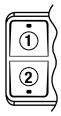
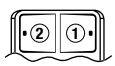
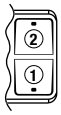
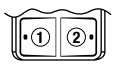
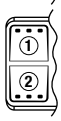
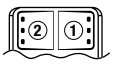
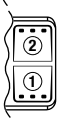
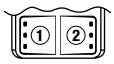
Configure Complete Part Number >

Part 2: Icon Artwork (Select 12 buttons for 2x6, 10 buttons for 2x5, 8 buttons for 2x4, 6 buttons for 2x3, and 4 buttons for 2x2.)

	Button 1	Button 2	Button 3	Button 4	Button 5	Button 6
Function	3	3	3	3	3	8
Icon Code	RS	RA	UV	UW	MT	UB

	Button 7	Button 8	Button 9	Button 10	Button 11	Button 12
Function	8	8	3	3	3	3
Icon Code	NN	PU	PR	PP	RH	NU

FUNCTION LIGHT CODE

		Landscape	Portrait	Reverse Landscape	Reverse Portrait
1[1]	No Function Light				
3	Closed-Open-Closed				
8	Open-Open-Open				

ICON CODE

00 For standard icons, see Standard Legends Code page. For additional icons, please consult factory.

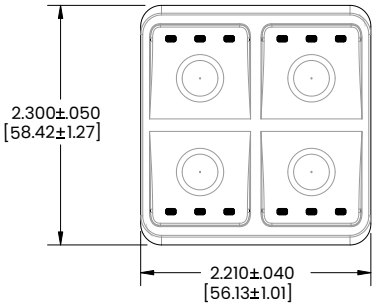
Note:
1 Non-noted Function Light Codes cannot be used unless certain commercial requirements are met. Contact factory to provide information regarding your business opportunity.

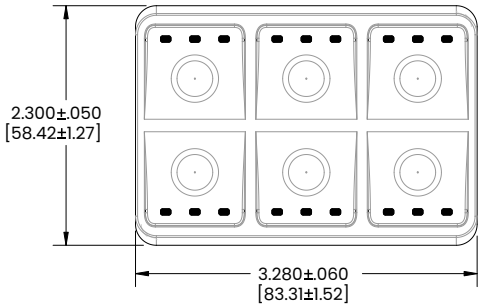
COS-0094 Rev: G
*Manufacturer reserves the right to change product specification without prior notice.

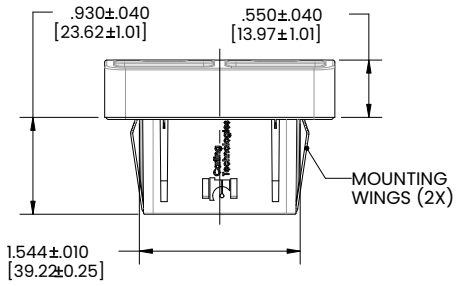
Dimensional Specs

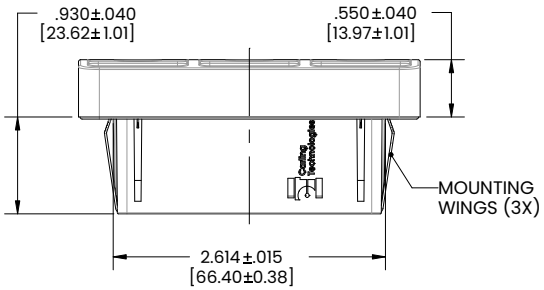
inches [millimeters]

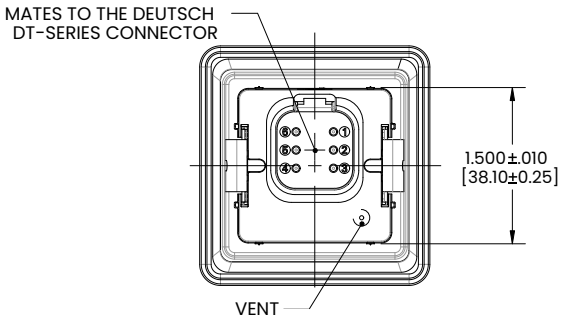
2x2 and 2x3 Configurations

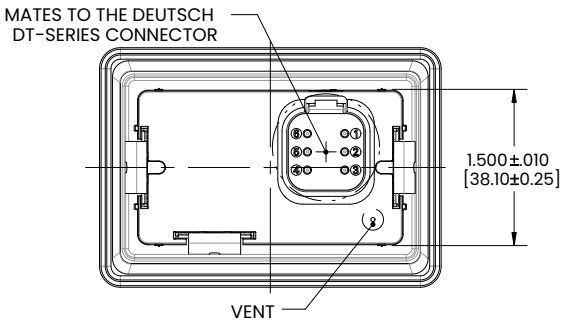


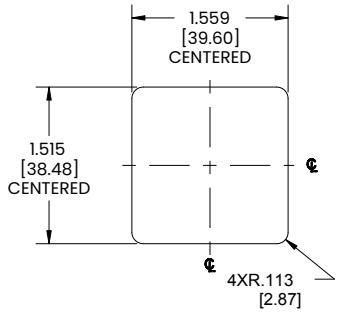




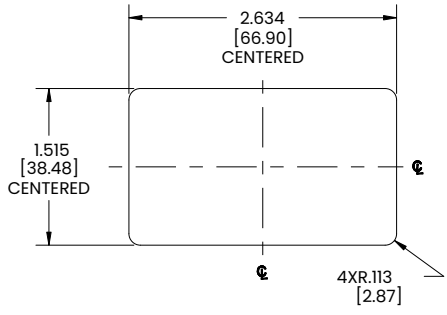








PANEL CUTOUT TOLERANCE .005[0.13],
PANEL THICKNESS TO BE .080[2.03] MIN AND .130[3.30] MAX.



PANEL CUTOUT TOLERANCE .005[0.13],
PANEL THICKNESS TO BE .080[2.03] MIN AND .130[3.30] MAX.

Notes:
1. Do not puncture or plug the vent

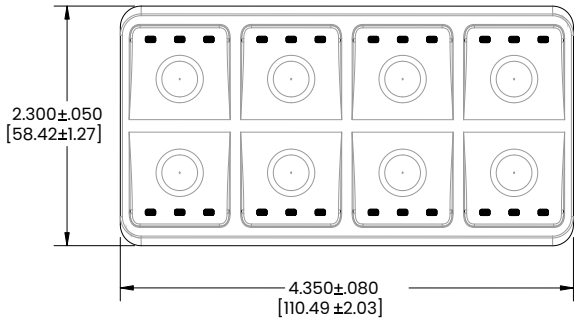
CLA-0163 Rev: A

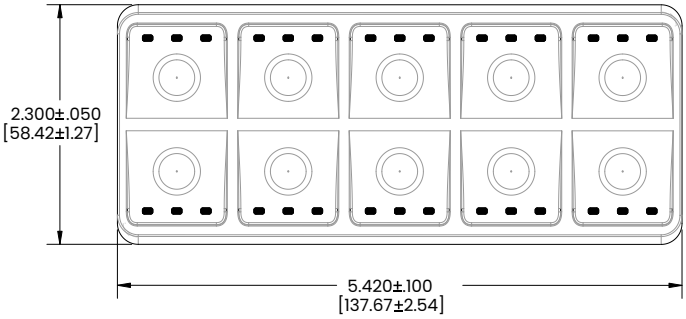
*Manufacturer reserves the right to change product specification without prior notice.

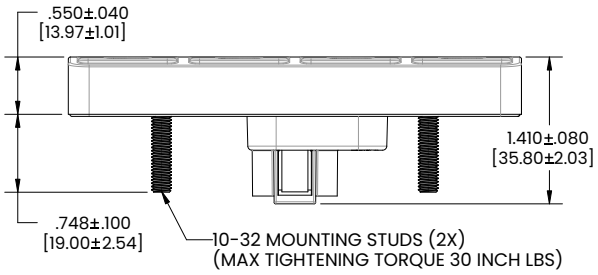
Dimensional Specs

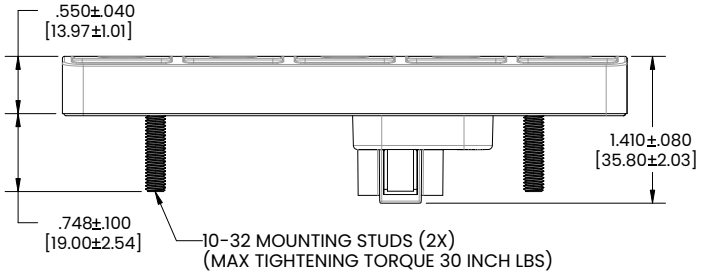
inches [millimeters]

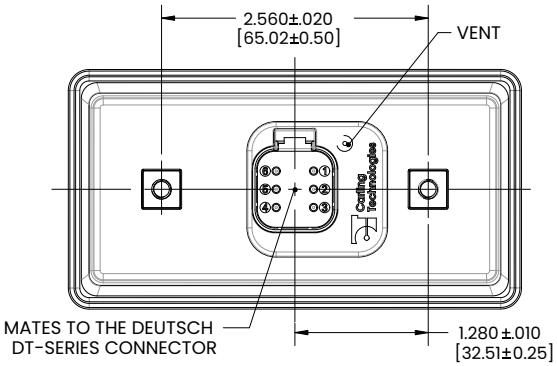
2x4 and 2x5 Configurations

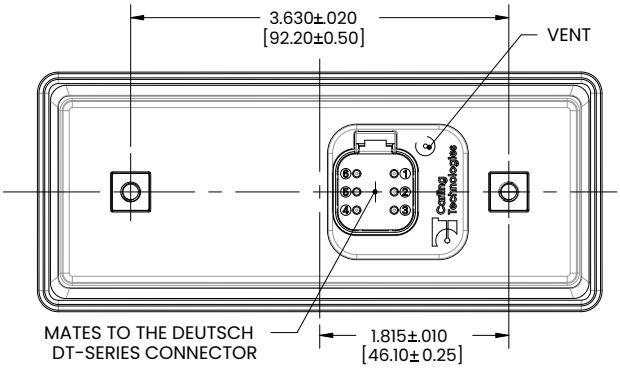


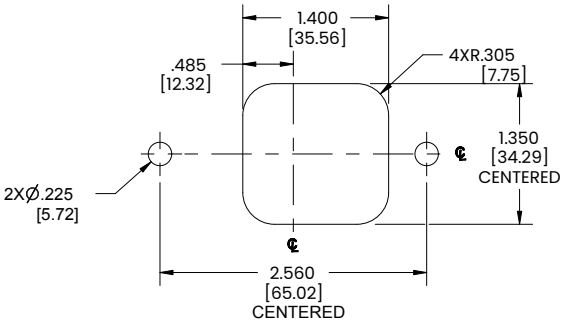




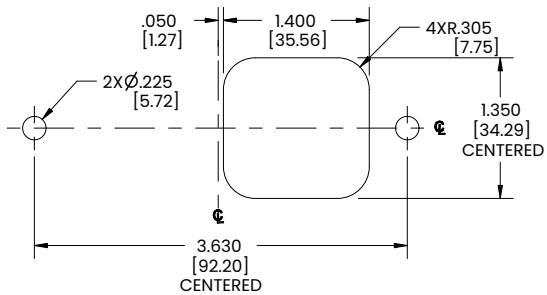








PANEL CUTOUT TOLERANCE .005[0.13],
PANEL THICKNESS TO BE .050[1.27] MIN AND .300[7.62] MAX.



PANEL CUTOUT TOLERANCE .005[0.13],
PANEL THICKNESS TO BE .050[1.27] MIN AND .300[7.62] MAX.

Notes:
1. Do not puncture or plug the vent

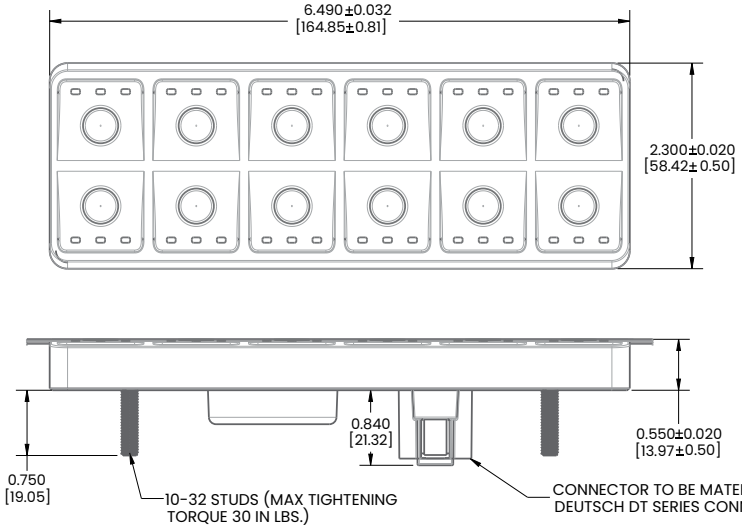
CLA-0163 Rev: A

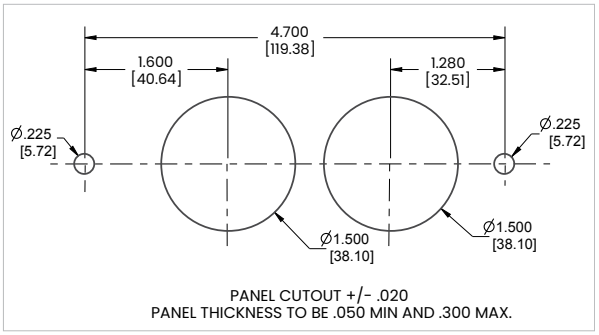
*Manufacturer reserves the right to change product specification without prior notice.

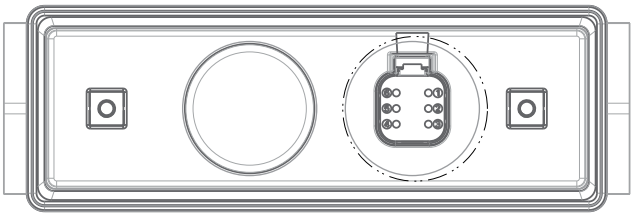
Dimensional Specs

inches [millimeters]

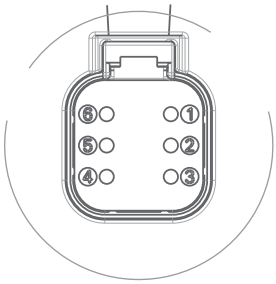
2x6 Configuration







PIN OUT AS SHOWN BELOW FOR ALL CONFIGURATIONS (2x2, 2x3, 2x4, 2x5, and 2x6)



NO.	DESIGNATION
1	BATT +
2	CAN L
3	BATT -
4	IGN_ON
5	CAN H
6	CAN SHIELD

Orientation Diagrams

Icon Artwork Button Number Layout

A: Landscape

B: Portrait

D: Reverse Portrait

C: Reverse Landscape

CLA-0145 Rev: A

*Manufacturer reserves the right to change product specification without prior notice.

Standard Legend Codes

YK	UA	UB	US	UV	UW	UX	UY	MP	MR	PX	MS	MT
VU	MW	NZ	NX	NY	YM	VW	PS	PW	PZ	WG	WM	RN
			NAV LIGHTS	COURT LIGHTS	PANEL LIGHTS	ANCH LIGHTS	HEAD LIGHTS	FOG LIGHTS	DASH LIGHTS	DOCK LIGHTS	BEACON	LIGHT
RP	YG	TX	VD	VE	VF	VG	SH	SM	SN	SP	SR	SY
DIM	BRIGHT						BILGE PUMP	BILGE				
WY	WZ	UH	UJ	PD	PE	PF	VC	VJ	UF	UG	MU	TN
		WIPER										
NS	PB	SE	VZ	YE	NN	RW	PU	WA	YN	UE	NM	RJ
				ENG FAN	BLWR					HORN		
NR	YD	TL	VR	SL	VA	UC	VN	PK	VY	UZ	RH	NU
							UP	DOWN				
NV	RB	RC	RK	RL	MZ	RG	WS	WT	UD	UR	WD	TY
		WATER PUMP			ANCHOR							
PA	UK	WR	UU	UT	YR	PM	VV	WB	TB	TC	TD	TE
											ENG HATCH	ENG BRAKE
MY	PV	TA	TZ	WC	PT	PN	PH	RA	TU	TT	YL	SK
						TCS						
VS	UL	UM	WK	TS	VT	WL	VP	YJ	PJ	RY	UP	NW
NP	RE	RF	PP	PR	TV	PC	YT	YU	PL	WJ	MV	RR
		SEAT					CRUISE					
TK	RT	SZ	VX	WF	WH	PG	SJ	YA	YB	RM	TM	RD
RS	UN	TP	TR	NT	MX	YC	TW	TJ	YF	TH	TF	TG
		AUX	ON OFF	OFF ON	I O	O I	OFF ON	ON	OFF	I	O	II
YS	YH	SX	RZ	YP	WN	WP	WW	WX	SA	SB	SC	SD
RAISE	LOWER	HIGH	LOW	FWD	REV	DEPTH	TRIM TAB	ACC	NAV ANCH	WIND LASS UP/DN	LIVE WELL	REAR
ST	SU	WU	WV	SV	SW	VB	VH	VK	VL	VM	WE	SF
PARK	AUTO											
SG	SS	RU	RV	RX								

CLA-0146 Rev: A

ISO compliant symbols. Consult factory for custom legends.