

CKP-SERIES

CKP-Series

SAE J1939 CAN KEYPAD

Compliant with SAE J1939 CAN standards, the CKP-Series is a customizable 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.

Sealed to an IP69 protection level, the CKP-Series can be installed inside or outside the cab making it ideal for any on/off-highway application. Its low profile design affords a seamless dashboard look and can be mounted either vertically or horizontally.

The CKP-Series offers significant advantages over traditional electromechanical switches such as 1,000,000 actuation cycles, reduced wire harnessing, and easy installation.



Resources:

[Download 3D CAD Files](#)

[IGS >](#) [STP >](#)

[Watch Product Video](#)



Product Highlights:

- ♦ SAE J1939 CAN 2.0b Protocol
- ♦ IP69 Front Panel Sealing Protection
- ♦ Up to 3 LED Function Lights Per Button
- ♦ Diagnostic Feedback
- ♦ Standard or Custom Laser Etched Legends
- ♦ 1,000,000+ Button Actuation Cycles
- ♦ Low Current Switching
- ♦ 8 to 32V Operating Voltage
- ♦ Tactile and Audible Feedback

Typical Applications:

- ♦ Military
- ♦ On/Off-Highway
 - Trucks & Buses
 - Construction
 - Mining
 - Agriculture
 - Among Others



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Carling Technologies, Inc.
60 Johnson Avenue, Plainville, CT 06062
Email: sales@carlingtech.com
Application Support: team2@carlingtech.com
Phone: 860.793.9281 Fax: 860.793.9231

www.carlingtech.com

CKP-Series

DESIGN FEATURES

LOW PROFILE DESIGN

0.57 inch [14.48 mm] thickness (see dimensional specifications for more detail)

Front View



SEALING PROTECTION

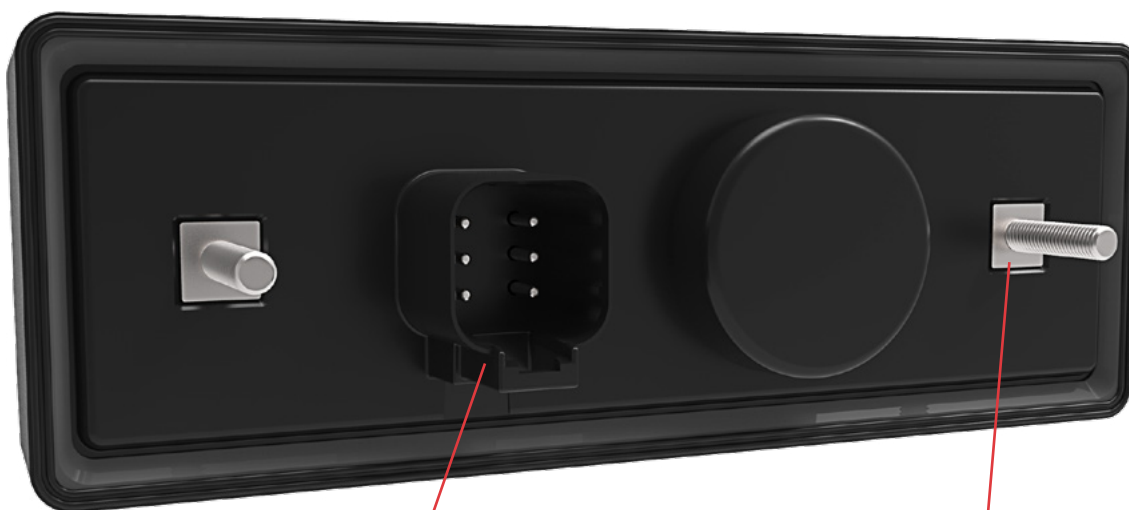
Fully sealed IP69 front panel

LED FUNCTION LIGHTS

One, two, or three LED Function Lights per button. Colors include Amber, Green, Red or Blue.

CUSTOMIZABLE ICONS

Choose from our standard library of icons or use custom icons.



Back View

SEALING PROTECTION

Fully sealed IP68 back panel when connected

CONNECTOR

Mates to the Deutsch DT-Series Connector

10-32 MOUNTING STUDS (2x)

Max tightening torque 30 inch lbs.

General

Illumination	LED backlit icons and function lights Up to 3 function lights per button Dimmable illumination, controlled by CAN messages
Connection / Wiring	Duetsch DT series connector (See Dimensional Specifications)

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 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 Specifications
Panel cutout	See Dimensional Specifications
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 ± 10°C)

Software

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

Thermal	-40°C to +85°C The following codes were passed: Cold Soak (IEC 60068-2-1) Heat Soak (IEC 60068-2-2) Cycling/Shock (IEC 60068-2-14) IEC 60068-2-5, procedure B, 10 cycles, Total irradiation per cycle = 22.4 kWh/m ²
Solar Radiation:	IEC 60068-2-13 Soak: IEC 60068-2-78, 93% RH (±3%), 10 days
Low pressure Humidity	IEC 60068-2-30, test Db: Damp Heat Cyclic (12hr + 12hr cycle), variant 1, 6 cycles
Cyclic	IP6k9k per ISO 20653 (front side) IP6k8 per ISO 20653 when connected (back side)
Ingress Protection	IEC 60068-2-27, Shock 500 m/s ² 11 milliseconds, Bump 400 m/s ² 6 milliseconds 600 cycles
Shock and Bump	IEC 60068-2-31, Free fall, Procedure 1, 1000 mm height, drop in all 3 axes in both directions
Drop test	IEC 60068-2-6, Swept sine wave section 8.2, 5 - 500 Hz 20 cycles 5g acceleration
Vibration	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 Fertiliser, 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:	40 cycles of ASTM F2357 testing with 0.25" paper at 175 grams of force

Software Interface Integration

Click below for details on integrating the CKP-Series into J1939 CAN network:

www.carlingtech.com/sites/default/files/documents/ckp-series_interface.pdf

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

Ordering Scheme: Part 1 (Keypad)

CKP **1** - **1** **A** **1** - **A** **B** - **A** - **J** **000** /

1 Series 2 Styling 3 Button Layout 4 Orientation 5 Keypad Color 6 Backlight 7 Function Light Color 8 Un-illuminated Image Code 9 Network Type 10 Source Address

1 SERIES
CKP Carling Keypad

6 BACKLIGHT
A White

2 KEYPAD STYLING
1 Standard

7 FUNCTION LIGHT COLOR
B Amber C Green D Red E Blue

3 BUTTON LAYOUT
1 Two by Six

8 NON-ILLUMINATED IMAGE CODE
A White

4 ORIENTATION
A Landscape C Reverse Landscape
B Portrait D Reverse Portrait

See "icon artwork button layout" section for details.

9 NETWORK TYPE
J J1939

5 KEYPAD COLOR
1 Black

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.

Ordering Scheme: Part 2 (Icon Artwork)

Button 1 Button 2 Button 3 Button 4 Button 5 Button 6
2 **RS** **2** **RA** **3** **UV** **3** **UW** **6** **MT** **8** **UB**
 11 Function 12 Icon Code 13 Function 14 Icon Code 15 Function 16 Icon Code 17 Function 18 Icon Code 19 Function 20 Icon Code 21 Function 22 Icon Code
 Button 7 Button 8 Button 9 Button 10 Button 11 Button 12
8 **NN** **8** **PU** **5** **PR** **5** **PP** **4** **RH** **4** **NU**
 23 Function 24 Icon Code 25 Function 26 Icon Code 27 Function 28 Icon Code 29 Function 30 Icon Code 31 Function 32 Icon Code 33 Function 34 Icon Code

FUNCTION LIGHT CODE (Select for positions 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33)

	Landscape	Portrait	Reverse Landscape	Reverse Portrait		Landscape	Portrait	Reverse Landscape	Reverse Portrait
1 No Function Light					5 Closed-Open-Open				
2 Open-Closed-Closed					6 Open-Closed-Open				
3 Closed-Open-Closed					7 Open-Open-Closed				
4 Closed Closed-Open					8 Open-Open-Open				

Additional function light colors available, please consult factory.

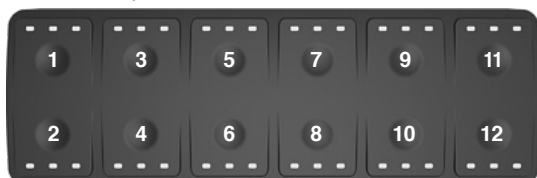
ICON CODE
00 For standard icons, see next page. For additional icons, please consult factory.

Continue to next page for layout and icons.

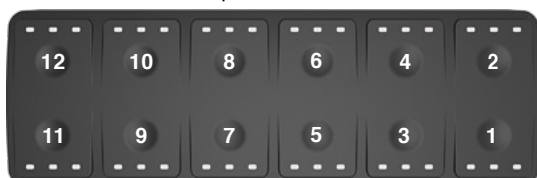
Orientation - Icon Artwork Button Number Layout

(see dimensional specifications for more detail)

A: Landscape



B: Reverse Landscape



C: Portrait



D: Reverse Portrait



Standard Icons Codes:

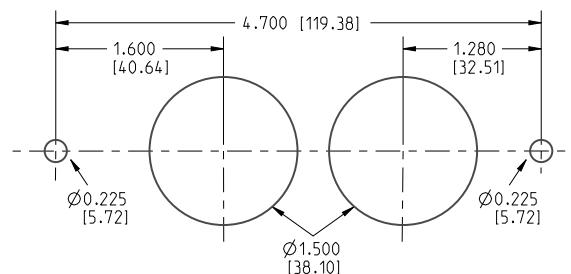
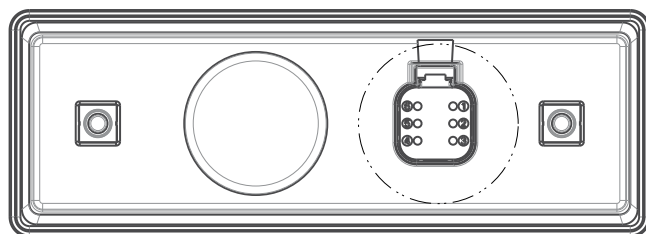
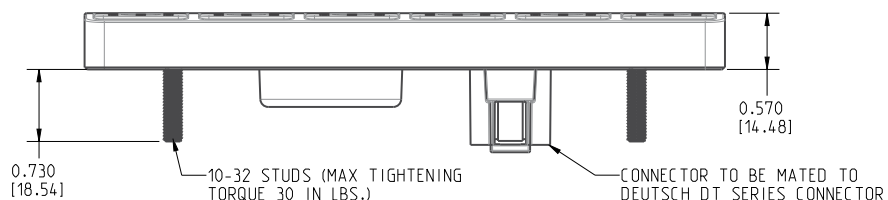
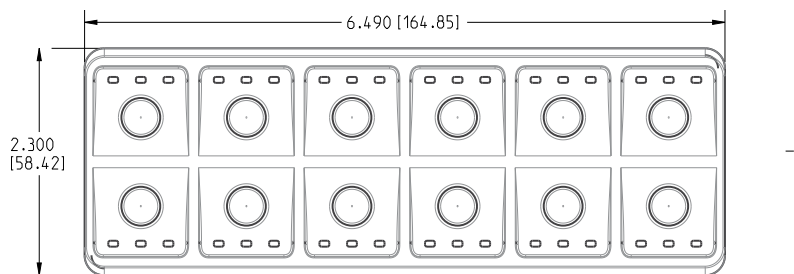
YK	UA	UB	US	UV	UW	UX	UY	MP	MR	PX	MS	MT
VU	MW	NZ	NX	NY	YM	VW	PS	PW	PZ	WG	WM	RN
			NAV LIGHTS	COURT LIGHTS	PANEL LIGHTS	ANCH LIGHTS	HEAD LIGHTS	FOG LIGHTS	DASH LIGHTS	DOCK LIGHTS	BEACON	LIGHT
RP	YG	TX	VD	VE	VF	VG	SH	SM	SN	SP	SR	SY
DIM	BRIGHT						BILGE PUMP	BILGE				
WY	WZ	UH	UJ	PD	PE	PF	VC	VJ	UF	UG	MU	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

Standard Icon Codes continued on next page.

Standard Icons Codes:

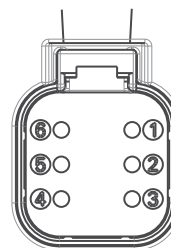
												
VS	UL	UM	WK	TS	VT	TCS WL	VP	YJ	PJ	RY	UP	NW
												
NP	RE	RF	PP	PR	TV	PC	YT	YU	PL	WJ	MV	RR
		SEAT					CRUISE					
TK	RT	SZ	VX	WF	WH	PG	SJ	YA	YB	RM	TM	RD
												
RS	UN	TP	TR	NT	MX	YC	TW	TJ	YF	TH	TF	TG
		AUX	ON OFF	OFF ON	I O	O I	OFF ON	ON	OFF	I	O	II
YS	YH	SX	RZ	YP	WN	WP	WW	WX	SA	SB	SC	SD
RAISE	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								

Dimensional Specifications: in. [mm]



PANEL CUTOUT +/- .020
PANEL THICKNESS TO BE .050 MIN AND .300 MAX

PIN OUT AS SHOWN BELOW

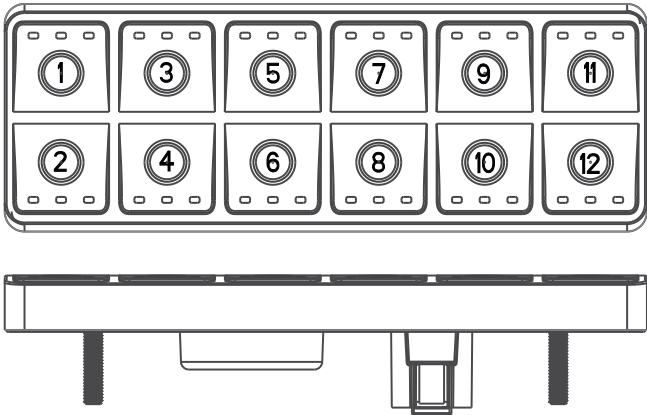


NO.	DESIGNATION
1	BATT +
2	CAN L
3	BATT -
4	IGN_ON
5	CAN H
6	CAN SHIELD

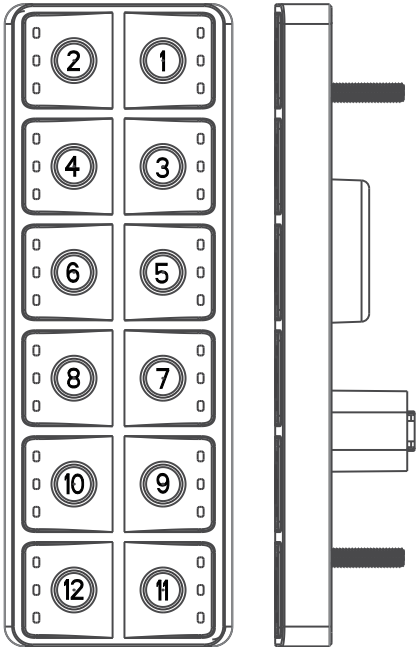
Dimensional Specifications: in. [mm]

ORIENTATION - ICON ARTWORK BUTTON NUMBER LAYOUT

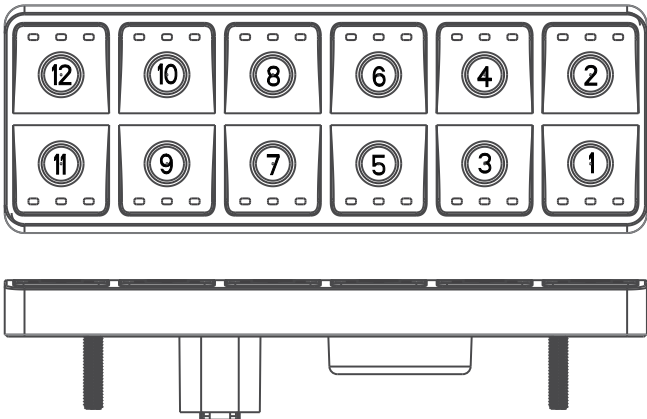
LANDSCAPE



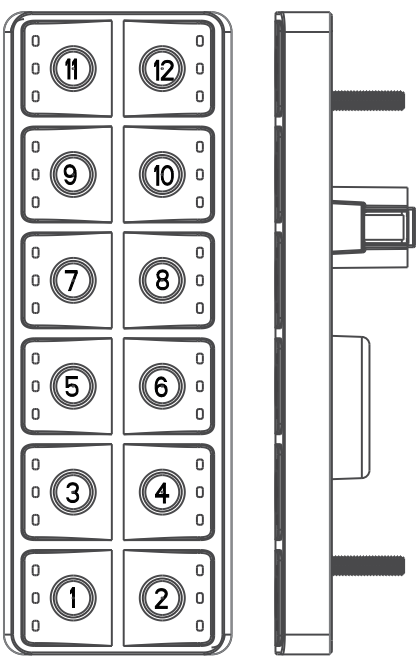
PORTRAIT



REVERSE LANDSCAPE



REVERSE PORTRAIT



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Worldwide Headquarters

Carling Technologies, Inc.
60 Johnson Avenue, Plainville, CT 06062
Phone: 860.793.9281 **Fax:** 860.793.9231
Email: sales@carlingtech.com

Northern Region Sales Office: nrsm@carlingtech.com
Southeast Region Sales Office: sersm@carlingtech.com
Midwest Region Sales Office: mrsm@carlingtech.com
West Region Sales Office: wrsm@carlingtech.com
Latin America Sales Office: larsm@carlingtech.com

Asia-Pacific Headquarters

Carling Technologies, Asia-Pacific Ltd.,
Suite 1607, 16/F Tower 2, The Gateway,
Harbour City, 25 Canton Road,
Tsimshatsui, Kowloon, Hong Kong
Phone: Int + 852-2737-2277 **Fax:** Int + 852-2736-9332
Email: sales@carlingtech.com.hk

Shenzhen, China: shenzhen@carlingtech.com
Shanghai, China: shanghai@carlingtech.com
Pune, India: india@carlingtech.com
Kaohsiung, Taiwan: taiwan@carlingtech.com
Yokohama, Japan: japan@carlingtech.com

Europe | Middle East | Africa Headquarters

Carling Technologies LTD
4 Airport Business Park, Exeter Airport,
Clyst Honiton, Exeter, Devon, EX5 2UL, UK
Phone: Int + 44 1392.364422 **Fax:** Int + 44 1392.364477
Email: ltd.sales@carlingtech.com

Germany: gmbh@carlingtech.com
France: sas@carlingtech.com



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