

CKM-SERIES

CUSTOMIZABLE KEYPAD

The CKM-Series is a customizable keypad featuring laser etched legends and dimmable LED function lights for each button. The LEDs also provide diagnostics when fault conditions are detected.

With the rugged mechanical packaging (IP69), the CKM-Series can be installed inside or outside the cabin. The low-profile design offers a seamless dashboard look and it can be mounted either vertically or horizontally.

The CKM-Series offers significant advantages over traditional electromechanical switches such as longer actuation cycle (1,000,000), reduced wiring harness and reduced installation time.



Product Highlights:

- NMEA2000® CAN Protocol
- IP69 Front Panel Sealing Protection
- Configurable
- 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

Model Number:

- CKM12



CKM-Series

DESIGN FEATURES

LOW PROFILE DESIGN

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

Front View



SEALING PROTECTION

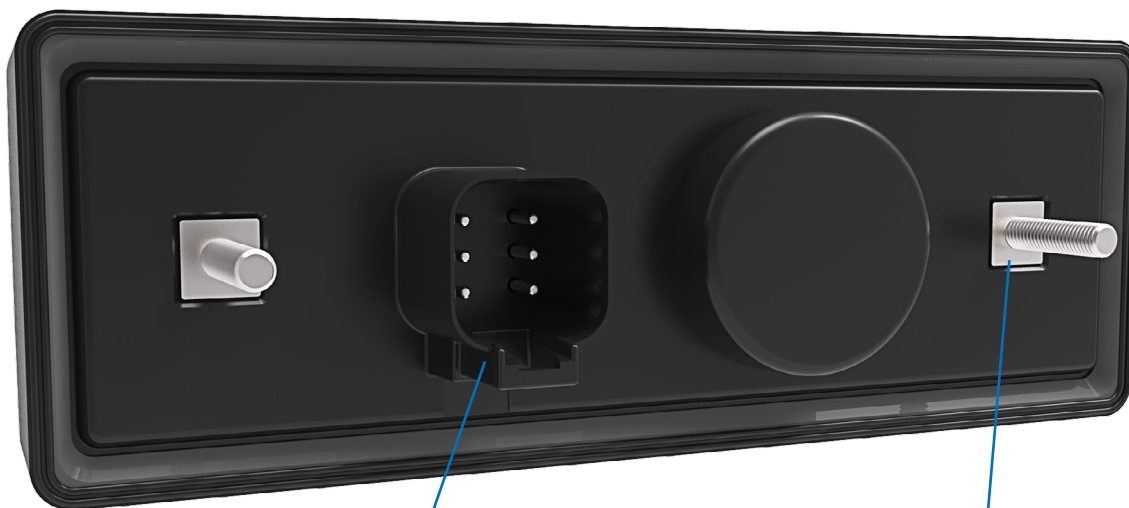
Fully sealed IP69 front panel

LED FUNCTION LIGHTS

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

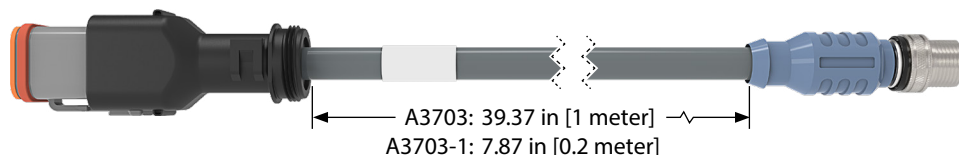
Mates to the Deutsch DT-Series Connector

10-32 MOUNTING STUDS (2x)

Max tightening torque 30 inch lbs.

INTERFACE ADAPTER CABLE

Deutsch to CAN
(Part Number A3703 & A3703-1)



A3703: 39.37 in [1 meter]
A3703-1: 7.87 in [0.2 meter]

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 NMEA2000®
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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 IEC 60068-2-13 Soak: IEC 60068-2-78, 93% RH (±3%), 10 days IEC 60068-2-30, test Db: Damp Heat Cyclic (12hr + 12hr cycle), variant 1, 6 cycles IP6k9k per ISO 20653 (front side) IP6k8 per ISO 20653 when connected (back side)
Solar Radiation:	IEC 60068-2-27, Shock 500 m/s ² 11 milliseconds, Bump 400 m/s ² 6 milliseconds 600 cycles IEC 60068-2-31, Free fall, Procedure 1, 1000 mm height, drop in all 3 axes in both directions
Low pressure Humidity	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
Cyclic	IEC 60068-2-74, Class B, Engine oil, Diesel, Hydraulic oil, Ethylene Glycol, Urea Nitrogen, Liquid Lime, NPK Fertiliser, Ammonia, Calcium Chloride, Brake fluid
Ingress Protection	IEC 60068-2-52, Test Kb, Severity level 4 ASTM D1171-99, method A, 72 hours 40 cycles of ASTM F2357 testing with 0.25" paper at 175 grams of force
Shock and Bump	
Drop test	
Vibration	
Chemical Resistance	
Corrosion Resistance	
Weathering/Cracking Resistance	
Abrasion/Wear Resistance:	

Ordering Scheme: Part 1 (Keypad)

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

CKM 1 - 1 A 1 - A B - A - N 000 /

1 SERIES

CKM Carling Keypad

2 KEYPAD STYLING

1 Standard

3 BUTTON LAYOUT

1 Two by Six

4 ORIENTATION

A Landscape C Reverse Landscape
 B Portrait D Reverse Portrait

See "icon artwork button layout" section for details.

5 KEYPAD COLOR

1 Black

6 BACKLIGHT

A White

7 FUNCTION LIGHT COLOR

B Amber C Green D Red E Blue

8 NON-ILLUMINATED IMAGE CODE

A White

9 NETWORK TYPE

N NMEA2000®

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
 3 UC 3 PA 3 PD 3 PE 3 UJ 3 WB
 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
 3 YK 3 US 3 VU 3 U2 3 UR 3 TY
 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 Reverse Portrait Reverse Landscape Portrait

3 Closed-Open-Closed

Additional function light colors available, please consult factory.

ICON CODE

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

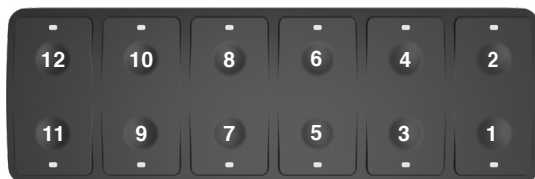
Orientation - Icon Artwork Button Number Layout

(see dimensional specifications for more detail)

A: Landscape



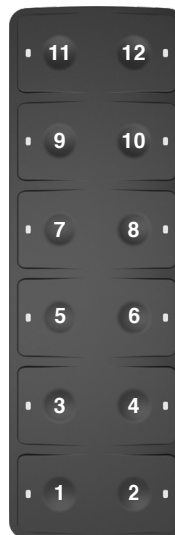
B: Reverse Landscape



C: Portrait



D: Reverse Portrait

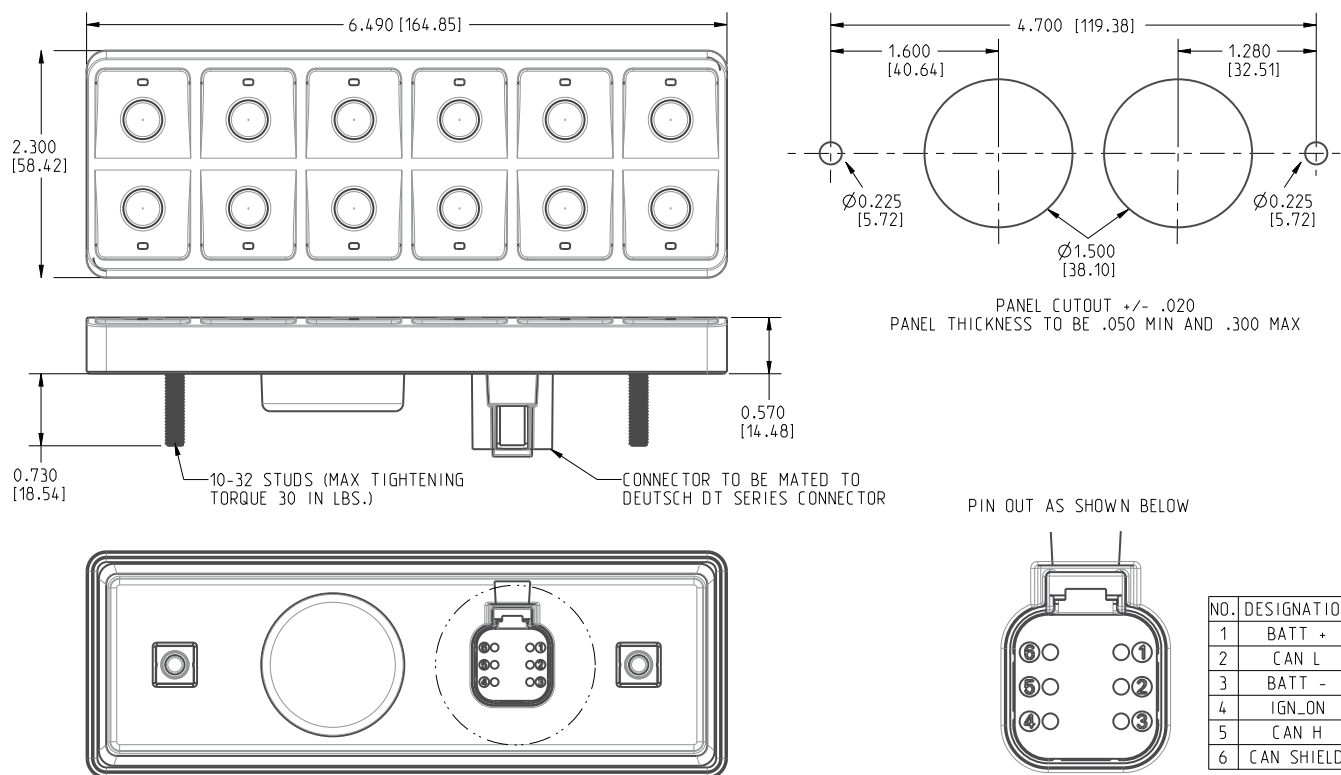


Standard Icons Codes:

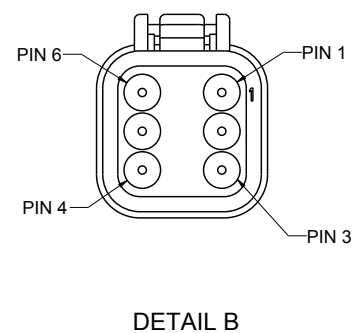
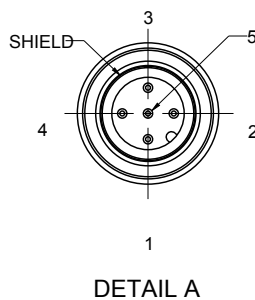
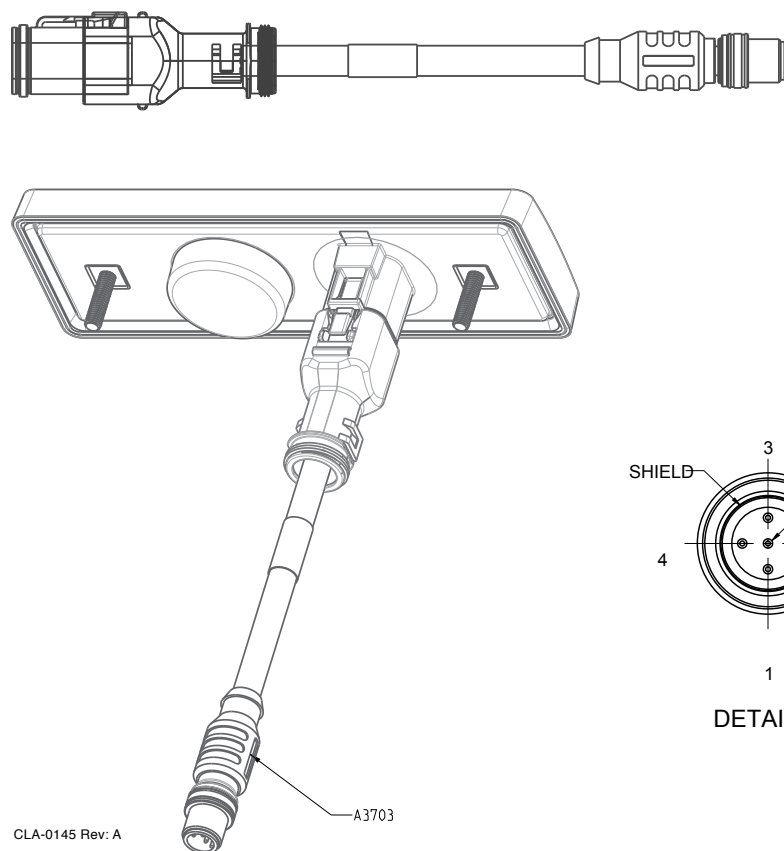
YK	UA	UB	US	UV	UW	UX	UY	MP	MR	MT	VU	PS
WM	RN	RP	NAV LIGHTS	COURT LIGHTS	PANEL LIGHTS	ANCH LIGHTS	HEAD LIGHTS	FOG LIGHTS	DASH LIGHTS	DOCK LIGHTS	BEACON	LIGHT
DIM	BRIGHT	UH	UJ	PD	PE	PF	VC	VJ	UF	UG	MU	TN
NS	PB	WIPER	VZ	YE	UE	NM	RJ	NR	BLWR	VA	UC	VN
VY	HORN	RB	RC	RK	RL	MZ	RG	UP	DOWN	UD	UR	WD
TY	PA	UK	WATER PUMP	UU	UT	ANCHOR	VS	UL	UM	VP	YJ	UN
YF	TH	TF	TH	TF	TG	YS	YH	AUX	ON OFF	OFF ON	I O	O I
WW	ON	OFF	I	O	II	RAISE	LOWER	HIGH	LOW	FWD	REV	DEPTH
VH	ACC	NAV ANCH	WIND LASS UP/DN	LIVE WELL	REAR	PARK	AUTO	RU	RV	RX		

Standard Icon Codes continued on next page.

Dimensional Specifications: in. [mm]



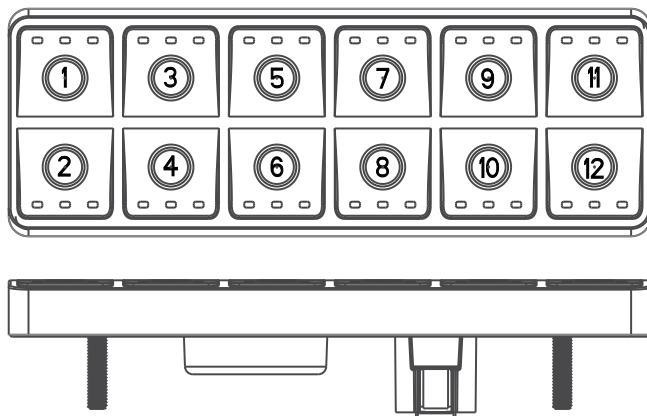
Interface Adapter Cable: Deutsch to CAN (A3703)



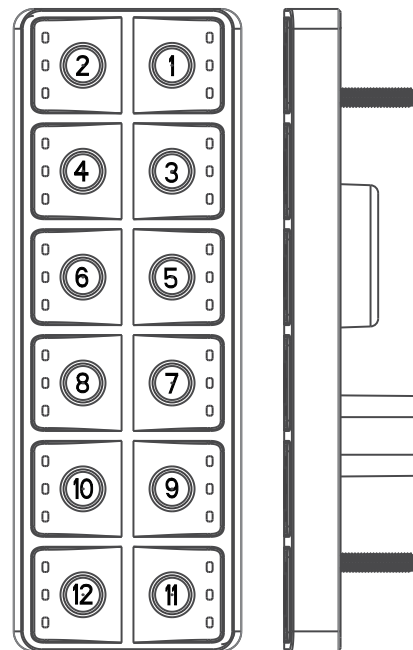
Dimensional Specifications: in. [mm]

ORIENTATION - ICON ARTWORK BUTTON NUMBER LAYOUT

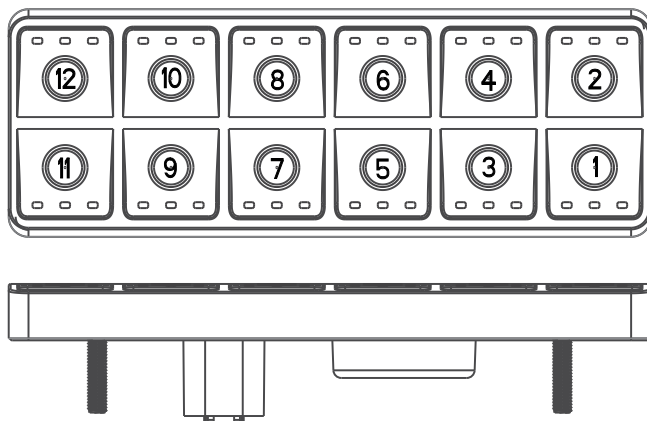
LANDSCAPE



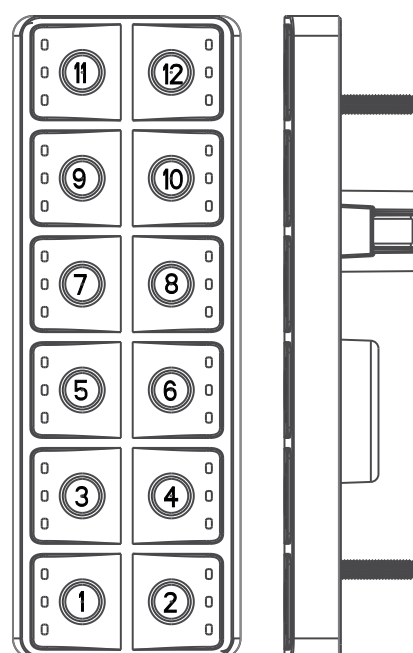
PORTRAIT



REVERSE LANDSCAPE



REVERSE PORTRAIT



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