Generation 2 CANbus Keypads

Key Features

- Modern Flush Styling
- No-tool Snap-in Front Mounting
- LEDs on Ridges for Greater Viewing Angle
- Designed for ISO 13849 Safety Rated Vehicles
- Self-Diagnostics Include:
  - Supply Voltage Monitoring
  - Indicator “LED ON” Verification
  - Button Short Detection
- Low current sleep mode (<1.5 mA) with wake on:
  - CAN message
  - Button Press
  - Input Pin Signal
- CAN FD Tolerant
- 2 Configurable I/O Pins
- Dimmable LED indicators and legends
- Same Field-tested Reliability as Our Original Keypads - Over 1 Million in Operation
- Backward Compatible Firmware with Existing 3K Keypads

Custom Options

- Custom button top legends
- Up to 3 LED indicators per button

Ordering Information

Keypad Symbols:

- 0 = BLANK
- 1 = ISO SYMBOLS
- 2 = TARGETS (8 POSITION ONLY)

Number of Keys:

- 06 = 6 KEYS
- 08 = 8 KEYS
- 12 = 12 KEYS
- 15 = 15 KEYS

Number of Rows of Keys:

- 2R = 2 ROWS (6, 8 KEYS)
- 3R = 3 ROWS (15 KEYS)
- 4R = 4 ROWS (8, 12 KEYS)

Communication:

- C = J1939

Indicator Number/Color:

- 3A = 3 AMBER INDICATORS PER KEY (DEFAULT)
- G = GREEN
- W = WHITE

Backlight Colors:

- Green (Standard)
- White (Standard)
- Amber
- Blue
- Pure Green
- Red
- Yellow

Indicator Colors:

- Amber (Standard)
- Blue
- Green
- Pure Green
- Red
- White
- Yellow

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MIX & MATCH with Any Keypad and Symbol Form Factors

**BLANK VERSIONS SHOWN**

6 POSITION KEYPAD

8 POSITION KEYPAD (HORIZONTAL)

15 POSITION KEYPAD

**ISO SYMBOLS**

TARGET LEGENDS SHOWN

6 POSITION KEYPAD

8 POSITION KEYPAD (VERTICAL)

**CONNECTOR PINOUT**

<table>
<thead>
<tr>
<th>PIN</th>
<th>SIGNAL</th>
<th>6 BUTTON KEYPAD CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>POWER</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GROUND</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>i/o 1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>i/o 2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CAN_H</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CAN_L</td>
<td></td>
</tr>
</tbody>
</table>

Flexible I/O pins can be configured as
- Relay Driver
- 10mA Constant Current Push-Pull

**DIMENSIONS in inches (and millimeters)**

**6 POSITION KEYPAD**

3KX06-G2-2RX3AX

**8 POSITION KEYPAD (HORIZONTAL)**

3KX08-G2-2RX3AX

**PANEL CUTOUT AND MOUNTING INFORMATION**

**ALL DIMENSIONS ARE ± 0.50mm**

(PANEL THICKNESS TO BE 2.5 ± 1.0mm)
**Environmental Specifications**

- Operating temperature: ISO 16750-4 5.1.1.2
  - Low temperature: -40°C, High temperature: +85°C
  - Duration: 4 hours at Low Temp, 11 hours at High Temp
  - Maximum load applied

- Storage Temperature: ISO 16750-4 5.1.2.1
  - Low temperature: -55°C
  - High temperature: +105°C

- Thermal Shock (Ice Water Shock Test): ISO 16750-4 5.4.3
  - High temperature: +85 ºC

- Altitude (Barometric Pressure): MIL-STD-202G Method 105C Test Condition B
  - Sea level to 15240m (101.3 kPa to 11.6 kPa)
  - Exposure Time: 1 hour

- Sand and Dust: ISO16750-4 5.10
  - High temperature: +85 ºC

- Solar Radiation: ISO 4892-2 Method B
  - 1000 hours

- Ingress Protection: IEC 60529 / ISO20653 – IP67/IP69K
  - Dust – Talcum powder
  - Liquid - 1m submersion for 30 minutes
  - Wash down – 14L/min @ 8kPa 80°C

- Wash Down: SAE J1211 Section 4.4
  - ISO 60529 / ISO20653
  - 375 kPa and 8.3 L/min for 10 minutes @ 15ºC

- Humidity: ISO 16750-4 5.7
  - 96% Humidity at +35ºC, Duration: 240 hours

- Salt Fog: ISO 16750-4 5.5.1
  - 5% aqueous solution of NaCl @ 35ºC
  - and a pH between 6.5 and 7.2 for 48 hours

- Thermal Cycling: ISO 16750-4 5.3.1
  - Low temperature: -40°
  - High Temperature: +85°C
  - Profile per Table 2

- Chemical Resistance: ISO 16750-5
  - (All agents, Table 1)

- Radiated Immunity: ISO 11452-2 ALSE
  - 400MHz-2GHz, 100 V/m AW/CW modes

- Electrostatic Discharge: ISO 10605 8 powered-up test
  - ESD Capacitor Network 330pF, 330Ω
  - Conductive Surfaces
  - Contact Discharge +/-15kV
  - Non-Conductive Surfaces
  - Air Discharge +/- 25kV
  - Indirect Discharge +/- 20kV

- Electrostatic Discharge: ISO 10605 9 unpowdered test
  - ESD Capacitor Network 150pF / 2kΩ
  - Conductive Surfaces
  - Contact Discharge +/-15kV
  - Non-Conductive Surfaces
  - Air Discharge +/- 25kV
  - Indirect Discharge +/- 20kV

- Radiated Emissions: ISO14982
  - CISPR 25
  - CISPR 25 method

**Electrical Specifications**

- Maximum Load: ISO 16750-4 5.1
  - Low Temp = -40°C, High Temp = +85°C
  - Duration: 4 hours at Low Temp, 11 hours at High Temp
  - Maximum load applied

- Over-voltage: ISO 16750-2 4.3.2
  - High Voltage: 36V, Duration: 60 min
  - Tmax - 20°C

- Superimposed alternating voltage: ISO 16750-2 4.4
  - Severity 2 and 3
  - Ri = 50mΩ
  - Frequency Range: 50Hz to 25kHz
  - Sweep Duration: 120s
  - Number of sweeps: 5 (continuously)

- Reset behavior at voltage drop: ISO 16750-2 4.6.2
  - Class C

- Starting Profile: ISO 16750-2 Sec. 4.6.3
  - Formerly known as pulse 4
  - 12V, Level II Class B and Level IV
  - Class A
  - 24V, Level II Class A and Level III
  - Class A

- Load Dump: ISO16750-2 sec 4.6.4.2.2
  - Test A
  - Formerly known as ISO7637-2 pulse 5
  - 12V: Us = 101V, 12V case Ri = 4 ohm, tdi=400ms
  - 24V: Us = 202V, 24V case Ri = 8 ohm, tdi=350ms

- Reverse Polarity: ISO 16750-2 4.7.2.3
  - Voltage: -28V, Duration: 60s

- Open Circuit tests: ISO 16750-2 4.9.1.2
  - Relay and signal outputs to be connected to load TBD

- Short-circuit Protection: ISO 16750-2 4.10.2 Signal Circuits
  - Connect all signal inputs and outputs to Vmax and GND for 60s. One circuit tested at a time.

- Parallel inductive load: ISO7637-2 Pulse 1
  - Us = -600V

- Wire Harness Inductance: ISO 7637-2 Pulse 2a
  - Wire Harness Inductance

- Switching Spikes: ISO 7637-2 Pulse 3a
  - Pulse 3a: Us = -300V
  - Pulse 3b: Us = +300V

- Fast transients mutual coupling: ISO 7637-2 Pulse 3b
  - Pulse a: 24V class IV Us = -80
  - Pulse b: 24V class IV Us = +80

- Slow transients mutual coupling: ISO7637-3 4.3.2
  - DCC Slow + = +30
  - DCC Slow = -30
  - ICC Slow + = +6
  - ICC Slow - = -6

- Flexible IO 1 High Side Driver Digital Input: Maximum 200mA @ 24V 60K pull down

**Electromagnetic Compatibility Specifications**

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