



Product Characteristics

Type
Lifetime at Full Stroke
Operating Temperature
Protection

Features

Options

Four Standard Form Factors for Keypads
Up to 1 million cycles per key
-40C° ~ +85C°
Sealed to IP67

J1939, CANopen and Modbus Versions
Vibration and Impact Resistant
Dimmable LED Indicators and Legends
Up to 3 LED Indicators Per Key
Programmable Parameters

Custom Legends and Configurations Available
Custom Keytop Legends
Indicators Colors : Red (default), other colors available upon request
Custom Backlight Colors : Blue (default), other colors available upon request

Electrical Data

Supply Voltage
Supply Current
Output

Reverse Battery Protection
Overvoltage Protection

8~32 V
50 mA (typical)
CAN Type: J1939 / CANopen
Modbus: RS485
Provided
Up to 45V

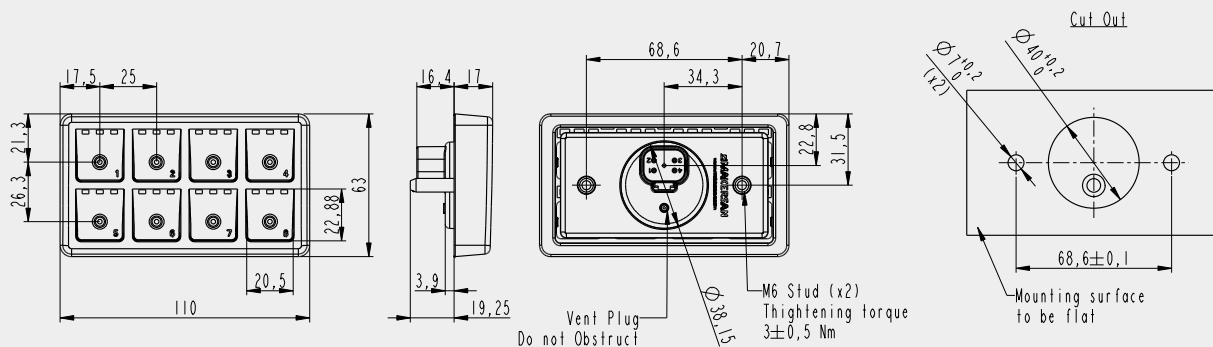
Environment

Chemical Load Tests
Mechanical Shock
Vibration Sinusoidal Test
Vibration Random Test

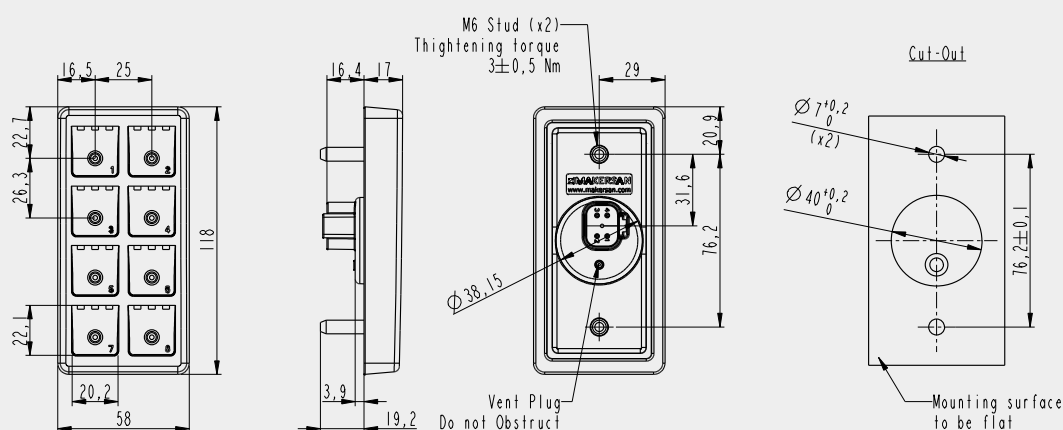
ISO 16750-5
DIN EN 60068-2-27
DIN EN 60068-2-6
DIN EN 60068-2-64

All the tests specified above were performed in Makersan's in-house testing facility for the purpose of design verification except EMC. The in-house testing facility does not hold an accreditation.

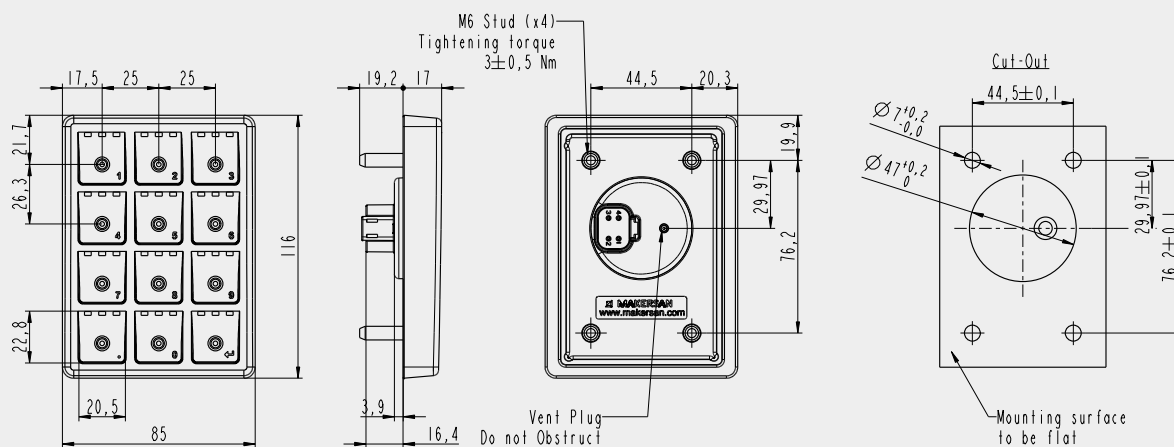
MO 405-H1X (KP 2x4)



MO 405-H2X (KP 4x2)

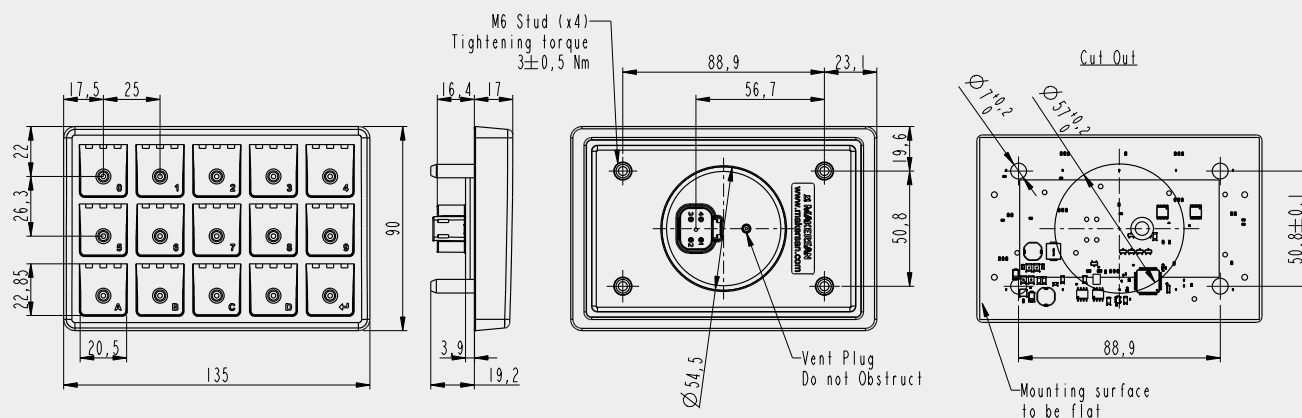


MO 405-H3X (KP 4x3)

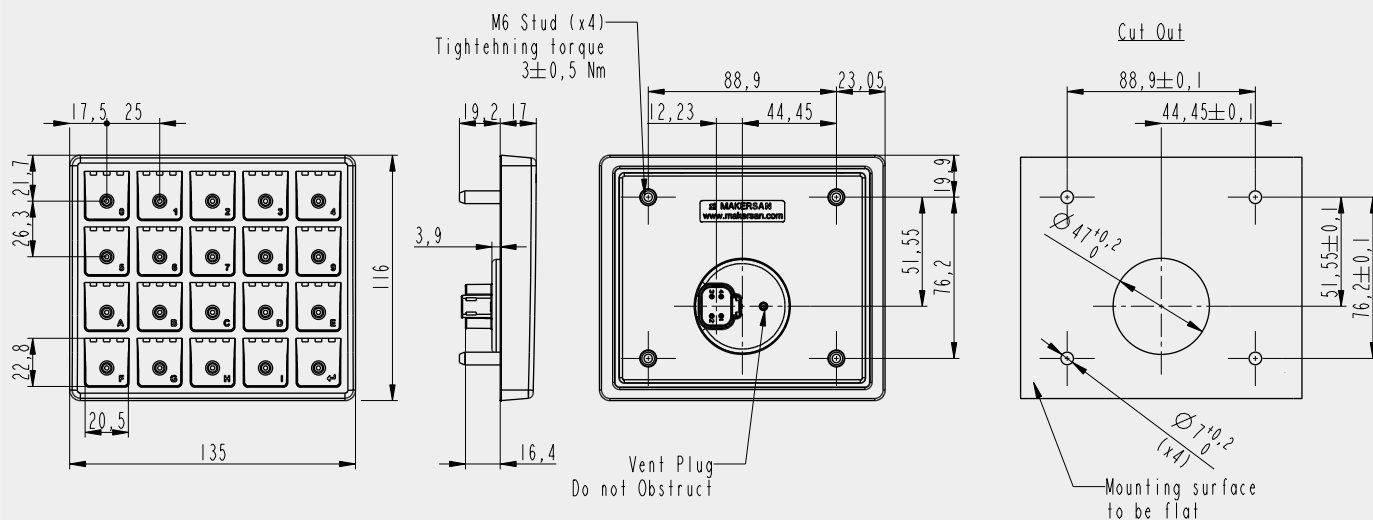


Technical Drawing

MO 405-H4X (KP 3x5)

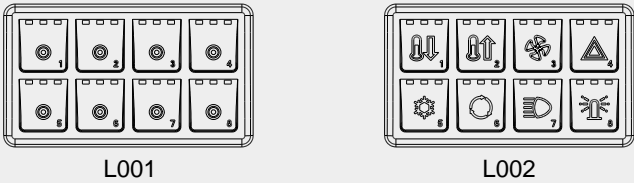


MO 405-H5X (KP 4x5)

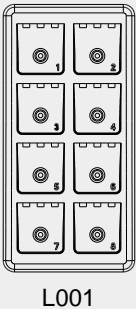


Standard Legends

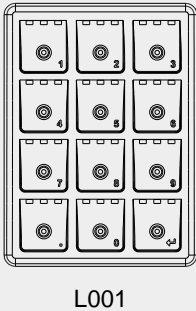
MO 405-H1X (KP 2x4)



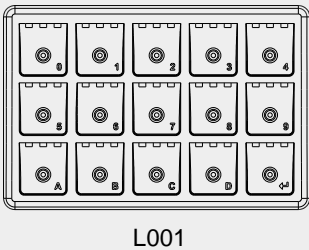
MO 405-H2X (KP 4x2)



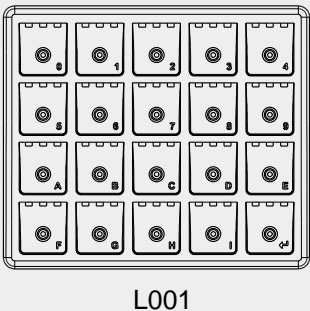
MO 405-H3X (KP 4x3)



MO 405-H4X (KP 3x5)

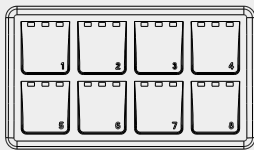


MO 405-H5X (KP 4x5)



Custom Legend Table

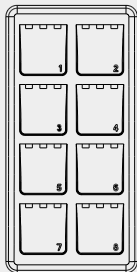
MO 405-H1X (KP 2x4)



Please fill the keytop legends code according to "Legend Table" :

Key 1 : K	Key 2 : K	Key 3 : K	Key 4 : K
Key 5 : K	Key 6 : K	Key 7 : K	Key 8 : K

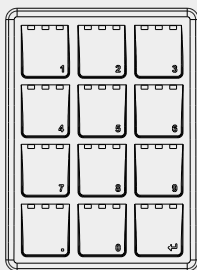
MO 405-H2X (KP 4x2)



Please fill the keytop legends code according to "Legend Table" :

Key 1 : K	Key 2 : K
Key 3 : K	Key 4 : K
Key 5 : K	Key 6 : K
Key 7 : K	Key 8 : K

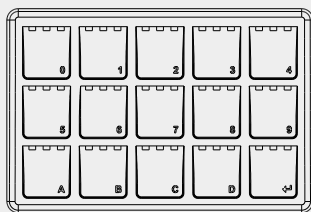
MO 405-H3X (KP 4x3)



Please fill the keytop legends code according to "Legend Table" :

Key 1 : K	Key 2 : K	Key 3 : K
Key 4 : K	Key 5 : K	Key 6 : K
Key 7 : K	Key 8 : K	Key 9 : K
Key 10 : K	Key 0 : K	Key 11 : K

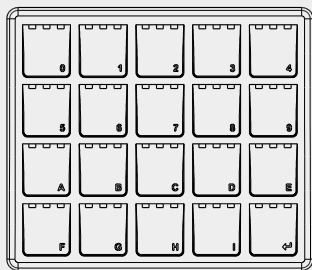
MO 405-H4X (KP 3x5)



Please fill the keytop legends code according to "Legend Table" :

Key 0 : K	Key 1 : K	Key 2 : K	Key 3 : K	Key 4 : K
Key 5 : K	Key 6 : K	Key 7 : K	Key 8 : K	Key 9 : K
Key A : K	Key B : K	Key C : K	Key D : K	Key : K

MO 405-H5X (KP 4x5)



Please fill the keytop legends code according to "Legend Table" :

Key 0 : K	Key 1 : K	Key 2 : K	Key 3 : K	Key 4 : K
Key 5 : K	Key 6 : K	Key 7 : K	Key 8 : K	Key 9 : K
Key A : K	Key B : K	Key C : K	Key D : K	Key E : K
Key F : K	Key G : K	Key H : K	Key I : K	Key : K

Electrical Connection

4 Pin Deutsch DT Connector

Pin 4 : CAN_L / Data+

Pin 3 : CAN_H / Data-



Pin 1: Power

Pin 2 : Ground

Mating Connector : DT06-4S

Ordering Code

MO 405 - H X X S X X - L X X X

Electronic Config

H10.S10	KP2x4 S:8-32V / O: CANJ1939
H10.S11	KP2x4 S:8-32V / O: CANopen
H11.S12	KP2x4 S:8-32V / O: Modbus
H20.S10	KP4x2 S:8-32V / O: CANJ1939
H20.S11	KP4x2 S:8-32V / O: CANopen
H21.S12	KP4x2 S:8-32V / O: Modbus
H30.S10	KP4x3 S:8-32V / O: CANJ1939
H30.S11	KP4x3 S:8-32V / O: CANopen
H31.S12	KP4x3 S:8-32V / O: Modbus
H40.S10	KP3x5 S:8-32V / O: CANJ1939
H40.S11	KP3x5 S:8-32V / O: CANopen
H41.S12	KP3x5 S:8-32V / O: Modbus
H50.S10	KP4x5 S:8-32V / O: CANJ1939
H50.S11	KP4x5 S:8-32V / O: CANopen
H51.S12	KP4x5 S:8-32V / O: Modbus

* Legend Config

* Legend L001 is standard, other symbols are available upon request with minimum order quantity.

Example: MO 405 - H10S10 - L001 Keypad - KP2x4 S:8 - 32V / O: CANJ1939 - L001 Legend

Safety Instructions

- *Do not use keypad in hazardous and explosive environment.
- *Keep the keypad away from radio equipment .
- *Do not place the keypad to the direct air flow of vehicles heating cooling air duct due to the high temperature stress.
- *Screen with the vehicle's ground the electric cables connected to keypad. Far away the keypad cable from power-conducting lines.
- *Provide a clean power supply to the keypad. Otherwise voltage transients may damage the keypad.
- *Do not direct the pressure washing jet to keypad.
- *Unplug connectors from the keypad during electrical welding operations.
- *Damages which result from improper use, all warranty and liability claims with respect to the manufacturer void.
- *To perform a risk analysis of the system is customer's responsibility at use in safety-related functions of the keypad.
- *These products are ESD (Electrostatic Discharge) sensitive devices. ESD may cause permanent damage. When handling these devices please observe standard ESD precautions.

Makersan reserves the right to make corrections, enhancements, improvements and other changes to its products at any time and without notice.