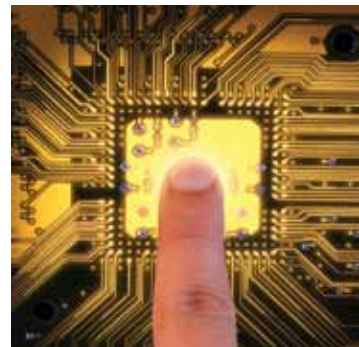




# IQAN-LC5-C01 Input Devices

Electronic Control Systems



ENGINEERING YOUR SUCCESS.

**Application**

The IQAN-LC5-C01 is a large, coordinate joystick that incorporates ruggedness, functionality, light weight, and has high flexibility for mobile market applications. The unit is extremely robust, able to withstand aggressive conditions during outdoor use and in outdoor installations, including EMI, vibrations and a wide temperature range. The IQAN-LC5-C01 features a compact ergonomic design making it ideal for armrest and panel installations in mobile equipment. The IQAN-LC5-C01 has a high I/O count and the ability to support up to 5 axes in IQANdesign platform applications. Fourth generation IQAN-LL joysticks are easily replaced with IQAN-LC5-C02 or -C03 versions.

**Design and function**

The mechanical life is greatly increased over previous generations of joysticks. Full stroke force in any direction is > 100 Nm. The torsional strength has more than doubled, compared to the previous generation.

The IQAN-LC5-C01 with MP handle is rated IP65 above the flange, and has integrated Deutsch connectors. The handle cable may be routed completely through the main housing. This makes field mounting of new handles or replacing a bellow very easy to accomplish. In case of water ingress (i.e. a damaged bellow), the built-in drainage from this design will protect the electronics. The base material was chosen for its non-corrosive properties.

All sensors are of contactless Hall effect type with dual sensors to provide redundancy for high safety and reliability. This make it easy for the application designer to meet high safety requirements functions by using IQAN software.

The IQAN-LC5-C01 levers are connected to other modules through a CAN bus which makes data exchange more efficient, simplifies installation and increases noise immunity. The high number of inputs makes the base an excellent input module for external signals.

The joystick has a heavy duty stem and tough base material for long life. The precise force configuration makes it easy to feel X and Y direction. The wide operating voltage range allows the IQAN-LC5-C01 to connect to both 12 VDC and 24 VDC systems. All inputs and outputs are protected against short circuit to ground and to main power supply. LED indicators show supply voltage and internal operation.

The IQAN-LC5-C01 is made using selected components and conforms to strict international requirements.

**General (base)**

Weight	.40 kg
Voltage supply	9 - 32 Vdc
Current consumption	45mA @ 14VDC 30mA @ 28VDC
CAN (ISO 11898) Protocol	CAN 2.0b ICP (IQAN CAN Protocol)

**Mechanical (base)**

Angle of movement	±18°
Expected life (full stroke cycles)	5 million
Lever force in neutral, XY	0.6 Nm
Full actuated, XY direction	1.4 Nm
One time loading (max.)	100 Nm

**Environmental (base)**

Temperature range	
Operating, ambient	-40 to +85° C
Temperature range	-40 to +100° C
Sealing, with MP handle	IPx5 (above flange)

**Electrical (base)**

Addressing	idTag (address 0-7 without termination)
Termination	idTag (address 0-7 with termination)

**Connection**

Electrical connection	Deutsch DTM, 2x6 pos., 1x12 pos.
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**Inputs**

Voltage inputs	8 <sup>1</sup>
Signal range	0-5 VDC
Resolution	5 mV
Digital inputs	5(13) <sup>1</sup>
Signal high	>4 VDC
Signal low	<= 1 VDC

**Outputs**

Digital output	1
Type	high side switch
Max load	200 mA

*1) The voltage and digital inputs share the same physical pins. The user defines the channels/pins with IQANdesign.*

**MP handle**

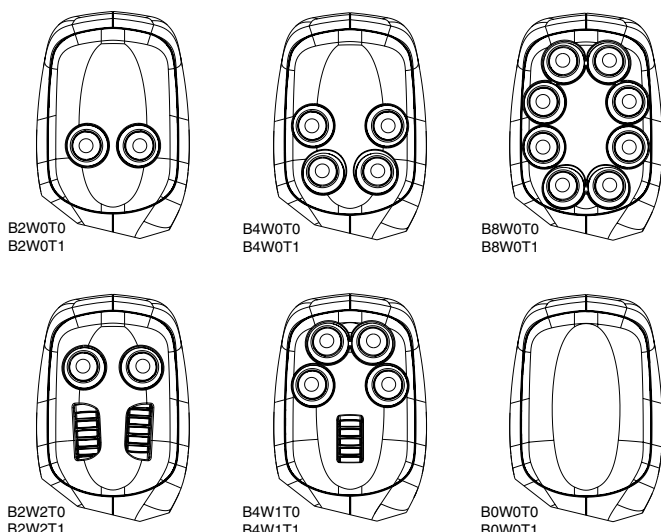
The MP handle option provides a variety of control interfaces in an ergonomic, multi-function handle that comfortably fits your hand. The handle is a robust design, able to withstand heavy use in outdoor installations, including exposure to a wide range of automotive chemicals. The MP features an ergonomic design making it ideal for repetitive motion functions during extended periods in mobile equipment applications. The handle has the capability to have a maximum of 8 buttons or 2 proportional thumbwheels in the faceplate. Combinations of buttons and thumbwheels, with or without a trigger are also possible.

**Design and function**

The MP handle is made to fit either the right or left hand, reducing inventory part numbers. The options are flexible and include many combinations of buttons, thumbwheels, and trigger to satisfy virtually any operator interface requirements. The buttons are large, and have a nice tactile feel. The proportional thumbwheel has dual sensors providing 2 crossed outputs that may be compared in IQAN modules for safe operation.

The MP handle is designed for outdoor use. The buttons and thumbwheels are rated for the outdoor environment. The cable is routed completely through the base housing making field mounting of new handles very easy to accomplish.

**MP standard faceplate configurations**



**General (handle)**

Weight	.25 kg
Temperature range	-40 to +100° C
Sealing	outdoor use

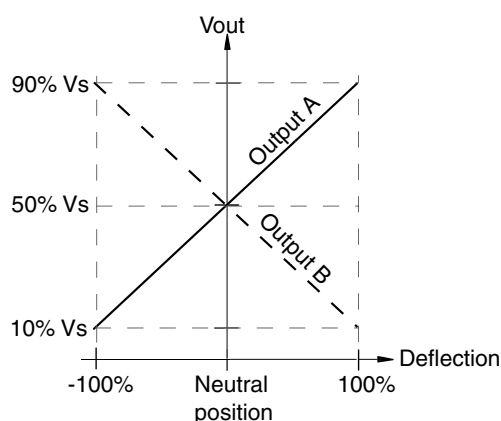
**Buttons/Trigger**

Expected life (electrical)	0.5 million
Expected life (mechanical)	1 million
Travel	1.5 mm
Actuating force	2 - 5 Nm
Switching current (max)	400 mA, 32 VAC, resistive load

**Thumbwheel**

Rated power supply (Vs)	5 VDC
Load resistive (min)	4.5 kohm
Load capacitive (max)	1 uF
Current consumption (typ)	16 mA
Analog output active range (Vout)	10%-90% Vs
Resolution	< 2 mV
Angle of movement	± 25 degrees
Expected life (operations)	5 million

**Deflection vs. output diagram**



**Model code**

**IQAN - LC5 - C01 - MP B2 W0 T0**

Code	Description
L	lever
C	co-ordinate
5	fifth generation

Code	Description
C01	CANbus (ICP)
C02	repl. IQAN-LL

Code	Description
T0	no trigger
T1	1 trigger

Code	Description
U1	no handle, without bellow
U2	no handle, with bellow, Ø40mm [Ø1.57"]
G	handle, with extra proportional function
MP	multi-purpose, see handle options

Code	Description
W0	no thumbwheel
W1	1 thumbwheel
W2	2 thumbwheels

Code	Description
B0	no buttons
B2	2 buttons
B4	4 buttons
B8	8 buttons

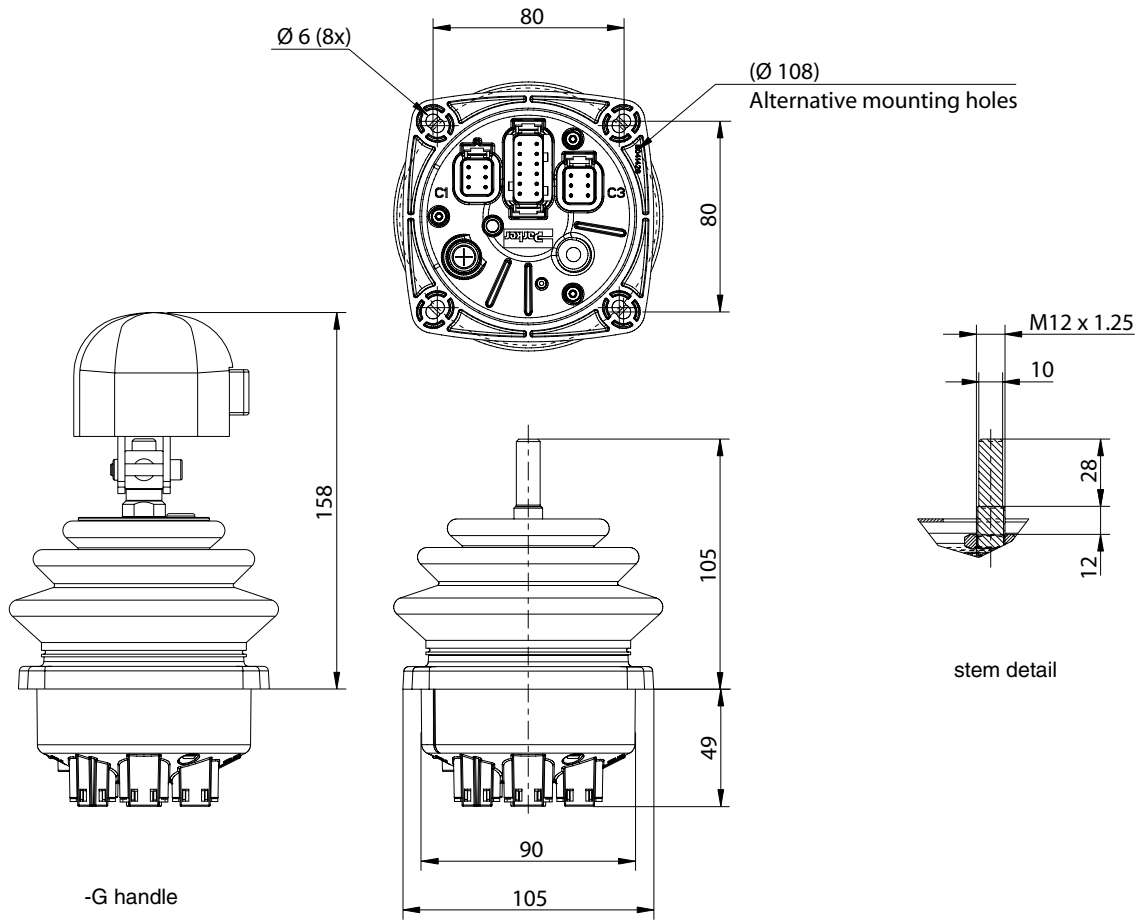
**Ordering part numbers**

IQAN-LC5-C01-U1	20076330
IQAN-LC5-C01-U2	20076331
IQAN-LC5-C01-G	20077750
IQAN-LC5-C01-MPB0W0T0	20077723
IQAN-LC5-C01-MPB0W0T1	20077724
IQAN-LC5-C01-MPB2W0T0	20076996
IQAN-LC5-C01-MPB2W0T1	20076997
IQAN-LC5-C01-MPB2W2T0	20076998
IQAN-LC5-C01-MPB2W2T1	20076999
IQAN-LC5-C01-MPB4W0T0	20077000
IQAN-LC5-C01-MPB4W0T1	20077001
IQAN-LC5-C01-MPB4W1T0	20077002
IQAN-LC5-C01-MPB4W1T1	20077003
IQAN-LC5-C01-MPB8W0T0	20077004
IQAN-LC5-C01-MPB8W0T1	20077005

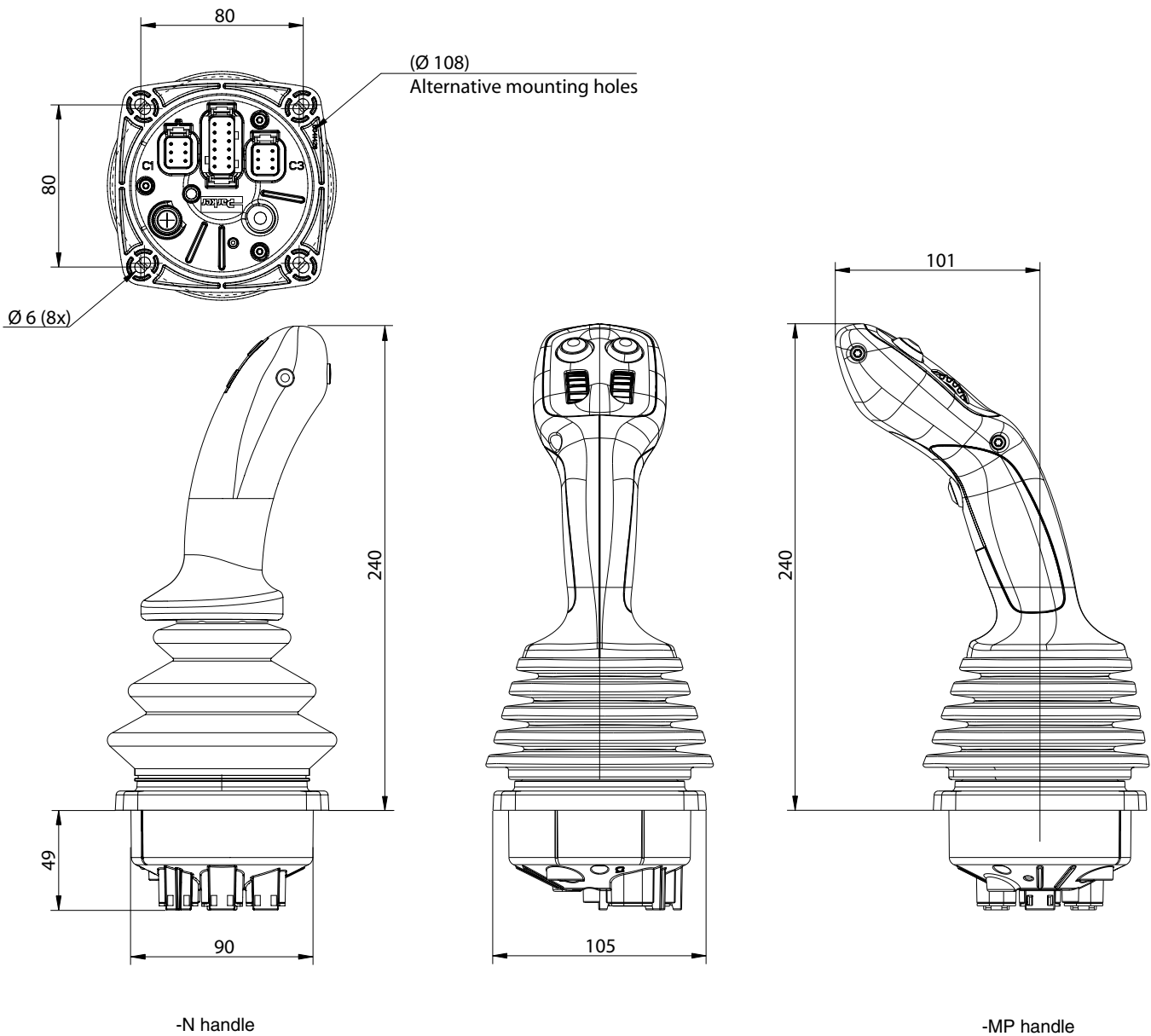
**Ordering part numbers for -LL compatible units**

IQAN-LC5-C02-U1 <sup>1</sup>	20076333
IQAN-LC5-C02-U2 <sup>1</sup>	20076334
IQAN-LC5-C03-G <sup>1</sup>	20077752
IQAN-LC5-C02-N2 <sup>1</sup>	20077690
IQAN-LC5-C02-N2T <sup>1</sup>	20077685
IQAN-LC5-C02-N4 <sup>1</sup>	20077688

*1) use adapter cable 2830018 to get one-to-one replacement of old IQAN-LL products*



units=mm



units=mm

### Environmental Protection

#### EMI

ISO 13766/ISO 14982 (radiated emission)  
EN 55025:2003 (conducted emission)  
ISO 11452-4:2005 (conducted susceptibility)  
ISO 11452-2:2004 (radiated susceptibility)  
ISO 7637-3:2007 (immunity vs supply transients)  
ISO 7637-2:2004 (conducted transient susceptibility)

#### ESD

ISO 10605:2001, (Handling)

#### Climate Environment

IEC 60529:2001 IP65 (water)<sup>1</sup>  
IEC 60068-2-78:2001 (damp heat, steady state)  
IEC 60068-2-30:1985 Db (var1,damp,cyclic)  
IEC 60068-2-14:1984 Nb (change of temp.)  
IEC 60068-2-2:1993 Bb (dry heat)  
IEC 60068-2-1:1993 Ab (cold)

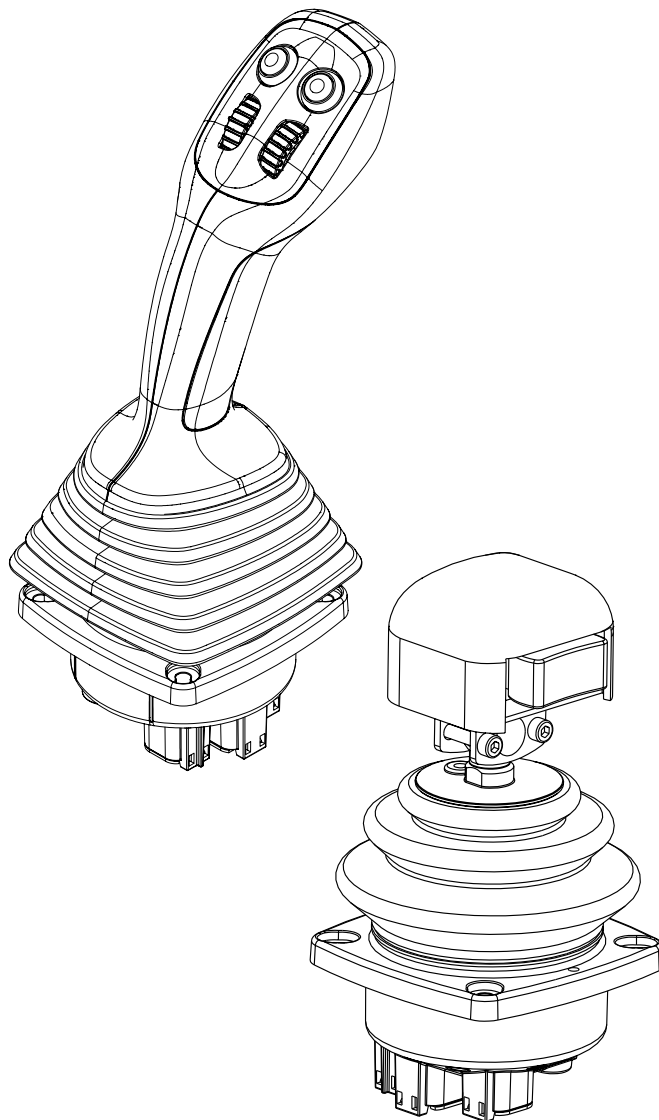
#### Mechanical

IEC 60068-2-29:1987 Eb (bump)  
IEC 60068-2-64:1993 Fh, Fh (random vibration)

#### Chemical environment

IEC 60068-2-52:1996 Kb (salt,mist,cyclic)

*1) with sealed handle and bellow*



## **WARNING**

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