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IQAN-LC5-X05 Input Devices

Electronic Control Systems



ENGINEERING YOUR SUCCESS.

Application

The IQAN-LC5-X05 is a large, coordinate joystick that incorporates ruggedness, functionality, light weight with 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-X05 features a compact ergonomic design making it ideal for armrest and panel installations in mobile equipment. Fourth generation ICL4 type joysticks are easily replaced with the IQAN-LC5-X05.

Design and function

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

The IQAN-LC5-X05 is designed for outdoor use. The housing is rated IP65 above the flange, and has an integrated Deutsch transportation connector. The handle cable may be routed completely through the main, non-corrosive 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.

All proportional output signals 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 primary signal for each axis is 10%-90% of supply voltage. The corresponding secondary signal is 90%-10% of supply voltage.

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 IQAN-LC5-X05 is made using selected components and conforms to strict international requirements.

General (Lever base)

Weight	0.37 kg
Rated power supply (Vs)	5 Vdc
Load resistive (min.)	4.5k Ω
Load capacitive (max.)	1 μ F
Current consumption	16 mA (5Vdc)

Mechanical (Lever base)

Angle of movement	$\pm 18^\circ$
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 (Lever base)

Temperature range	
Operating, ambient	-40 to +85° C
Storage, ambient	-40 to +100° C
Sealing, above flange (with sealed handle and bellow)	IP65

Electrical (Lever base)

Over voltage range	11Vdc @ 10 min.
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Connection

Electrical connection	Deutsch DTM, 6 p.
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Analog outputs

Active range (Vdc out)	10%-90% V_s
Resolution	<2 mV

MP handle

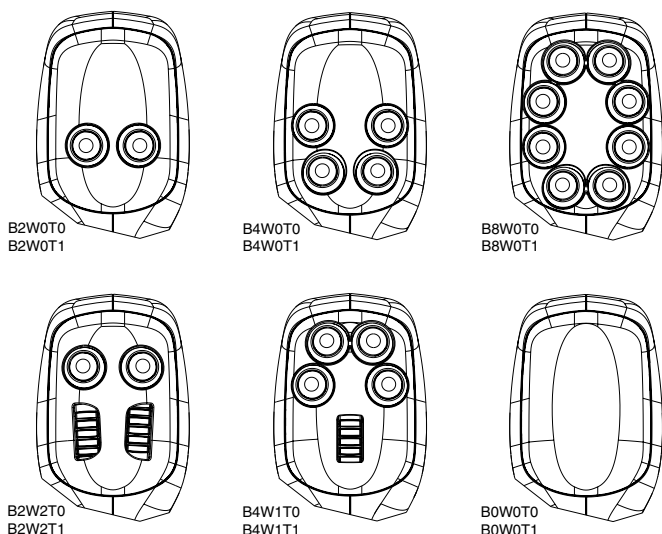
The MP handle option provides a variety of control interfaces in an ergonomic, multi-function handle that comfortably fits your hand. The handle is a robust design, able to withstand heavy use in outdoor installations, including exposure to a wide range of automotive chemicals. The MP features an ergonomic 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 thumb wheels in the faceplate. Combinations of buttons, thumb wheels, and trigger are also possible. The MP handle will be assembled to the IQAN-LC5-X05 base, and the cables are routed through the base. The push buttons and thumb wheel are easily connected to the vehicle wire harness by a Deutsch DTM connector.

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 thumb wheel 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 thumb wheels are rated for the outdoor environment. The design makes field mounting of new handles very easy to accomplish.

MP standard faceplate configurations



General (handle)

Weight .25 kg
 Temperature range -40 to +85° 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

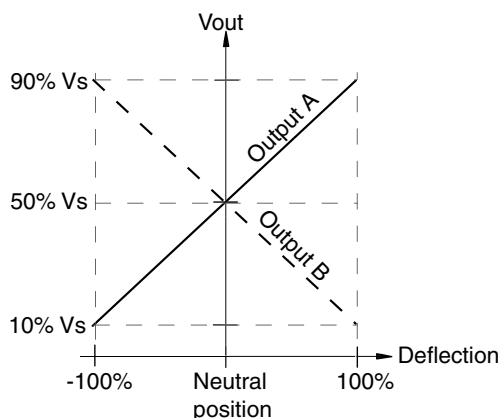
Thumb wheel

Rated power supply (Vs) 5 Vdc
 Load resistive (min) 4.5 kΩ
 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

Connection

B0W0T1/ B2W0T0 / B2W0T1 Deutsch DTM, 6 p.
 B4W0T0 Deutsch DTM, 12 p.
 B4W0T1/ B4W2Tx / B2W4Tx Deutsch DTM, 12 p.
 B8W0Tx

Deflection vs. output diagram



Model code

IQAN - LC5 - X05 - MP B2 W0 T0

Code	Description
L	lever
C	co-ordinate
5	fifth generation

Code	Description
X	Crossed outputs
0	0 VDC min range
5	5 VDC max range

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

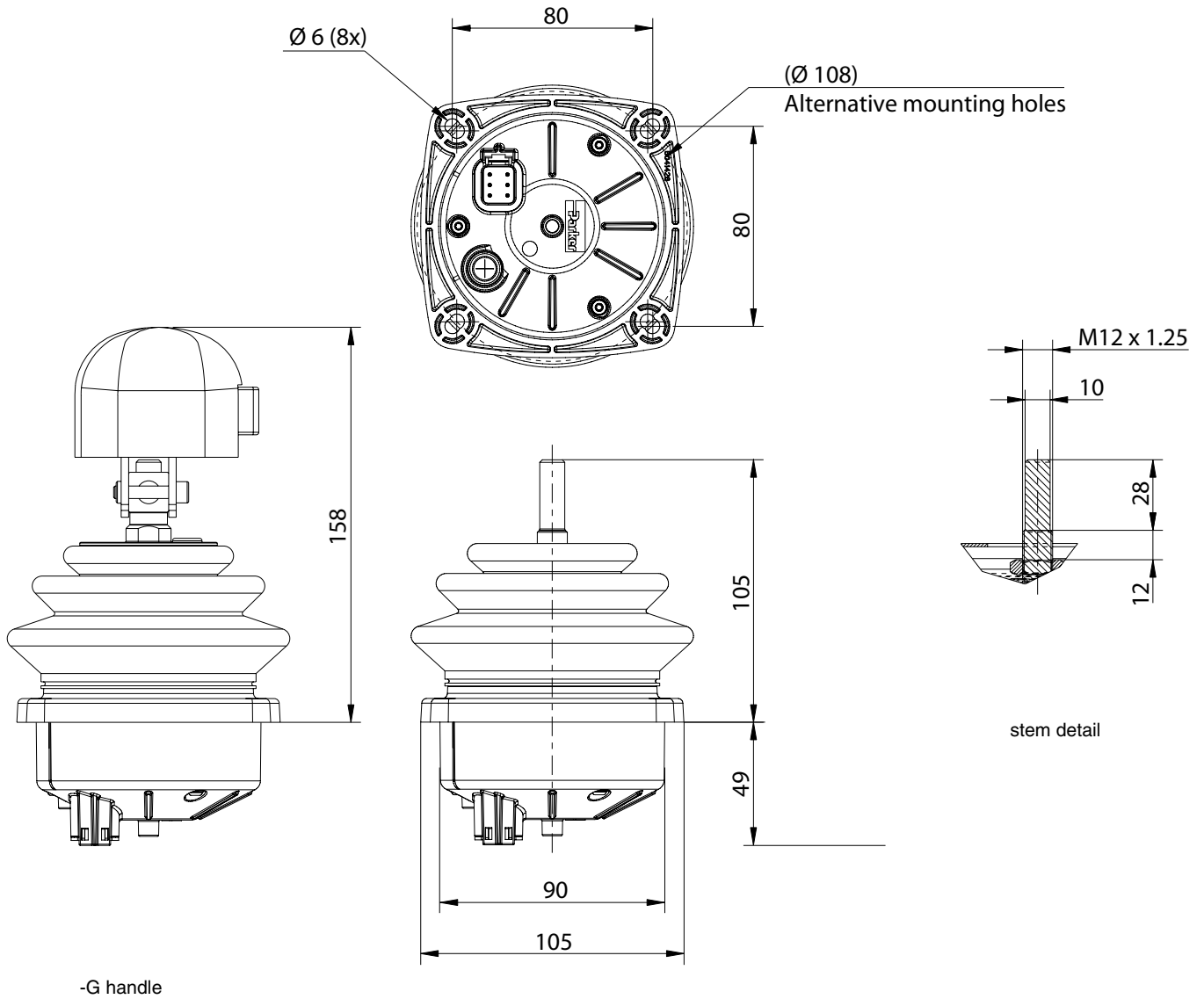
Code	Description
B0	no buttons
B2	2 buttons
B4	4 buttons
B8	8 buttons

Ordering part numbers

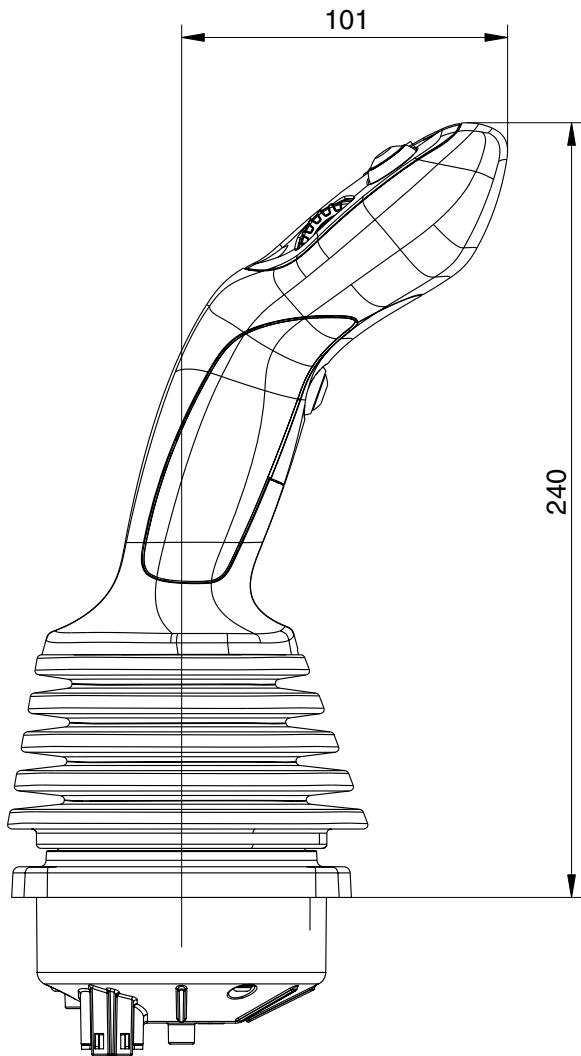
IQAN-LC5-X05-U1	20076317
IQAN-LC5-X05-U2	20076318
IQAN-LC5-X05-G	20077753

Ordering part numbers

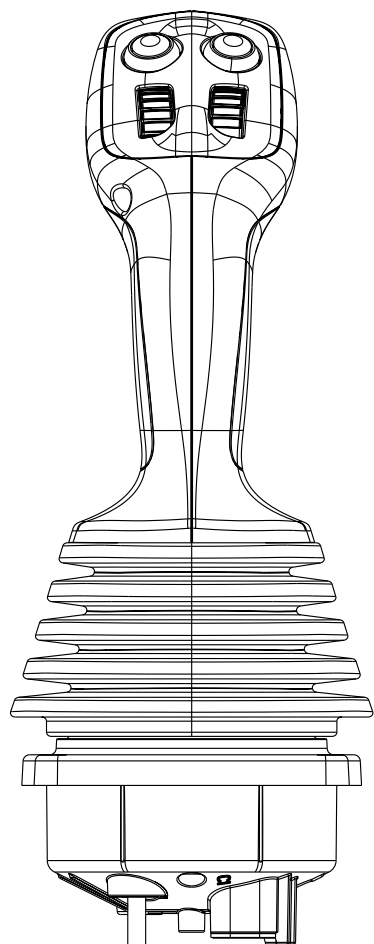
IQAN-LC5-X05-MPB0W0T0	20077721
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IQAN-LC5-X05-MPB2W0T0	20076320
IQAN-LC5-X05-MPB2W0T1	20076321
IQAN-LC5-X05-MPB2W2T0	20076322
IQAN-LC5-X05-MPB2W2T1	20076323
IQAN-LC5-X05-MPB4W0T0	20076324
IQAN-LC5-X05-MPB4W0T1	20076325
IQAN-LC5-X05-MPB4W1T0	20076326
IQAN-LC5-X05-MPB4W1T1	20076327
IQAN-LC5-X05-MPB8W0T0	20076328
IQAN-LC5-X05-MPB8W0T1	20076329



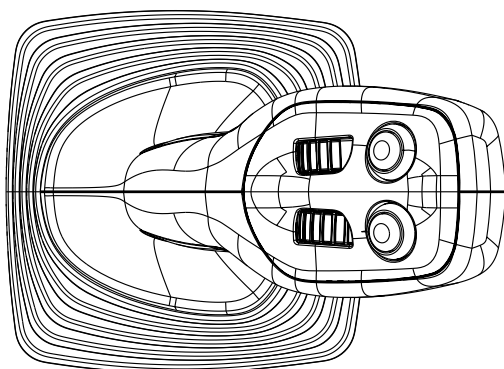
units=mm



-MP handle



6 or 12 position connector,
depending on handle type



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)

ESD

ISO 10605:2001, (Handling)

Climate Environment

IEC 60529:2001 IP65 (water)¹
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)

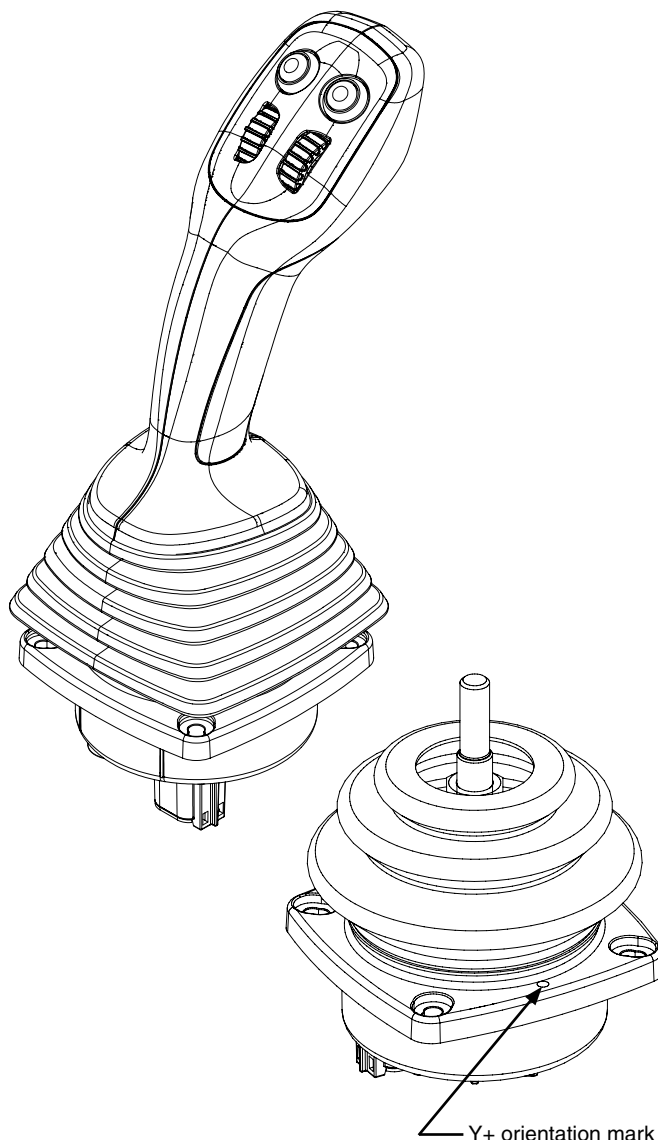
Mechanical

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 bellows.



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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