



panel mount

- Full travel backlit keys
- IP65 sealing
- X50 mm trackball

## MIL-SPEC RUGGED FULL TRAVEL KEYBOARD WITH TRACKBALL

The MKBL107 is a rugged keyboard with integrated trackball, designed to meet MIL-STD-810G / MIL-STD-461G standards for critical applications. With a high specification rubber dome key mechanism, 10 million actuations, and illuminated keys, it ensures durability and visibility in low-light environments. Backlighting is BUS powered over USB, although this can be externally controlled by the customers' PWM signal. The unique aluminium construction provides excellent impact strength, electrical shielding, and environmental protection. The keyboard provides an all-round robust solution for the most demanding of key input applications. As with all NSI products, this unit can be customized to suit your exact needs.

### MAIN FEATURES

- Designed to meet MIL-STD-810G / MIL-STD-461G
- IP65 sealed
- Backlit, waterproof, full travel switches with excellent tactile feedback
- Aluminium machined enclosure, matt black
- Integrated X50 trackball
- Electrical Output: USB
- High level of corrosion resistance
- High reliability key switch mechanisms
- Rugged Amphenol electrical connection system
- Panel mount version available
- Customization possible
- Manufactured to ISO 9001 quality system

### BACKLIGHTING

- The default backlighting system is powered by the USB port
- The backlight intensity can be controlled by using the "Fn" key + the UP / DOWN arrow keys.



### ORDER INFO

COUNTRY LAYOUT	PANEL MOUNT
US Qwerty	<b>MKBL107N0001USB</b>
Swedish Qwerty	<b>MKBL107N0046USB</b>
Turkish Qwerty	<b>MKBL107N0090USB</b>

Other lay-outs and languages on request.  
USB output over Amphenol connector.

Optional cable: A029-80-03    Optional USB output cable with Amphenol connector, 3 m

## GENERAL TECHNICAL SPECIFICATIONS KEYBOARD

### MECHANICAL

Weight	1100 grams (+/- 10%) (desktop / panelmount)
Enclosure material / finish	Aluminium 6082-T6 - Surtec 650 treatment, according to MIL-DTL-5541 Type II Classe 3 - 2K epoxy primer Black Layer thickness 30µm +/- 10µm Adhesion testing according to DIN EN ISO 2409 - 2K poly urethane finishing layer RAL 9005 30% gloss Layer thickness 30µm +/- 10µm Gloss according to DIN 67530/ ISO2813 ( measurement angle 60°) Adhesion testing according to DIN EN ISO 2409
Fastener material	A4 / 316 Stainless steel
Key switch actuation force	0.49N – 0.97N
Key switch lifetime	10,000,000 actuations
Key switch travel	3.0mm [0.1"] Nominal
Switch contact technology	Rubber dome / carbon pill
Keycap material / finish	POM / sprayed black and laser etched
Keycap Legend colour	White

### ELECTRICAL

Output	USB 2.0 (Full Speed)
Supply voltage	+4.4V +5.25V D.C
Supply current	100mA (nonbacklit), 250mA (typical), 400mA (backlit maximum)
Output connector	Amphenol TVP00ZN-09-35PN (6-way circular connector)
Mating output connector	Amphenol TV06ZN0935SN (6-way circular socket).
Cable requirement	As per USB 2.0 full speed cable requirements
Maximum cable length	5 metres
PCB protection	Acrylic conformal coating

## GENERAL TECHNICAL SPECIFICATIONS TRACKBALL

### MECHANICAL

Weight	285g +/- 10%
Body/shell	Material: Aluminium 6060-T6 Finish: Black powder coating – Corro-Coat PE Series 5091 (RAL9005) Pre-treatment: Surtec 650
Fastener and fixture material	A4 Stainless steel
Trackball module revision	002
Ball size / material	Ø50.8mm (2"), Epoxy resin
Ball colour	Metallic grey
Ball tracking force	30-80 grams – PTFE seal
Ball seal material/colour	PTFE / Grey
Ball load	100N (10Kg) maximum downward pressure for 2 minutes @ 20°C
Resolvable ball speed	30 IPS (inches per second)
Tracking engine	Optical tracking technology
Switch manufacturer/Part No.	2 x ITW / 59-111
Switch actuation force	3N Nominal
Switch travel	2.3mm nominal
Switch lifetime	1,000,000 cycles

### ELECTRICAL

Protocol	USB output
Supply voltage	4.4V to 5.25V DC
Supply current	<50mA (35mA typical)
Trackball resolution	1256 counts per ball revolution @ 1 IPS (inches per second) +/- 10% 2512 counts per ball revolution @ 5 IPS (inches per second) +/- 10%
Output connector	10-way JST, Vertical header, part no. B10B-PH-SM4-TB
Mating Connector	10-way JST connector, part no. PH, CR or KR types (e.g. PHR-10)

## ENVIRONMENTAL

The MKBL107 series is designed to meet the MIL-STD-810G / MIL-STD-461G to the below standards, a detailed test report is available on request.

EMC test standard: MIL-STD-461G: 2015

Re101, Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz	Navy
Re102, Radiated Emissions, Electric Field, 10kHz to 18 GHz	Helicopters
Cs109, Conducted Susceptibility, Structure Current, 60 Hz to 100kHz	
Cs114, Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz	Curve 5
Cs115, Conducted Susceptibility, Bulk Cable injection, Impulse Excitation, 33MHz	
Cs116, Conducted Susceptibility, Damped Sinusoidal Transients, 10 kHz to 100 MHZ	
Cs118, Conducted Susceptibility, Personnel Borne Electrostatic Discharge	± 8 kV Contact, ± 15 kV Air
RS103, Radiated Susceptibility, Electric Field, 2 MHz to 18Ghz, 60V/m	Helicopters

Environmental Testing:

Operating Low Temperature:	MIL-STD-810G, Method 502.5, Procedure II, -40°C, duration 2hrs
Storage Low Temperature:	MIL-STD-810G, Method 502.5, Procedure I, -55°C, duration 2hrs
Operating High Temperature:	MIL-STD-810G, Method 501.5, Procedure II and RTCA/DO-160G, +70°C, duration 2hrs
Storage High Temperature:	MIL-STD-810G, Method 501.5, Procedure II and RTCA/DO-160G, +85°C, duration 3hrs
Humidity:	MIL-STD-810G, Method 507.5, Procedure II, Aggravated Cycle, 24hrs, 60°C 10 cycles (240hrs)
Vibration and Shock:	
Resonance Search:	MIL-STD-810G, Method 514.6 and CAF 3793, 10HZ to 2000Hz, 0.5g acceleration, 3axis
Random vibration:	MIL-STD-810G, Method 514.6, Procedure I and CAF 3793, Category 24, 20Hz to 2000Hz, 3 axis, 1 hour/axis
Functional Shock:	MIL-STD-810G, Method 516.6, Procedure I, SRS, 20g 45hz to 2000Hz, 3 in each direction
Altitude:	RTCA/DO-160G, Section 4.6.1 and CAF 3794, 25.000ft, 376mbar, 2hrs
IPX5:	BS EN 60529:1992+A2:2013
Temperature variation:	RTCA/DO-160G, Section 5, Category B, -45°C +70°C

## CONNECTION DETAILS

Connection is made to the MKB104 keyboards by means of a single 6-way MIL-DTL-38999 Series III circular connector.

Details output connector:

Description	6 way circular connector
Manufacturer	Amphenol (or equivalent)
Part No	TVP00ZN-09-35PN
Mating Connector	TV06ZN-09-35SN or equivalent

PIN	USB
1	VCC
2	D-
3	D+
4	0V
5	Do not connect
6	EARTH



## DIMENSIONAL DRAWING

## PANEL MOUNT VERSION

