desktop version

panel mount

- Full travel backlit keys
- IP65 sealing
- MIL-SPEC

MIL-SPEC RUGGED FULL TRAVEL KEYBOARD

The MKB104 Series of rugged keyboards is designed and tested to MIL-STD-810G / MIL-STD-461G standards and will provide the user with a highly reliable input device for various critical applications. The keyboard is equipped with a high specification rubber dome key mechanism which ensures excellent tactile feel and a lifetime of 10 million actuations. Each key is sprayed black and laser etched to provide illumination in low light environments.
As standard, the backlighting capability is BUS powered over USB, although this can be externally controlled by the customers' PWM signal as part of a custom product offering. 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 and tested to MIL-STD-810G / MIL-STD-461G
- IP65 sealed
- Backlit, waterproof, full travel switches with excellent tactile feedback
- Aluminium machined enclosure, matt black
- Electrical Output: USB
- High level of corrosion resistance
- High reliability key switch mechanisms
- Rugged Amphenol electrical connection system
- Panel mount and desktop versions 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.
- The backlight light levels can also be controlled over USB communication

ORDER INFO

COUNTRY LAYOUT	PANEL MOUNT	DESKTOP VERSION
US Qwerty	**MKB104N0001USB**	**MKB104S0001USB**
Cyrillic Qwerty	**MKB104N0007USB**	**MKB104S0007USB**
Belgium Azerty	**MKB104N0032USB**	**MKB104S0032USB**
German Qwertzu	**MKB104N0049USB**	**MKB104S0049USB**
Korean Qwerty	**MKB104N0082USB**	**MKB104S0082USB**
Turkish Qwerty	**MKB104N0090USB**	**MKB104S0090USB**

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

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

GENERAL TECHNICAL SPECIFICATIONS

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

ENVIRONMENTAL

The MKB104 series have been fully tested and certified 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

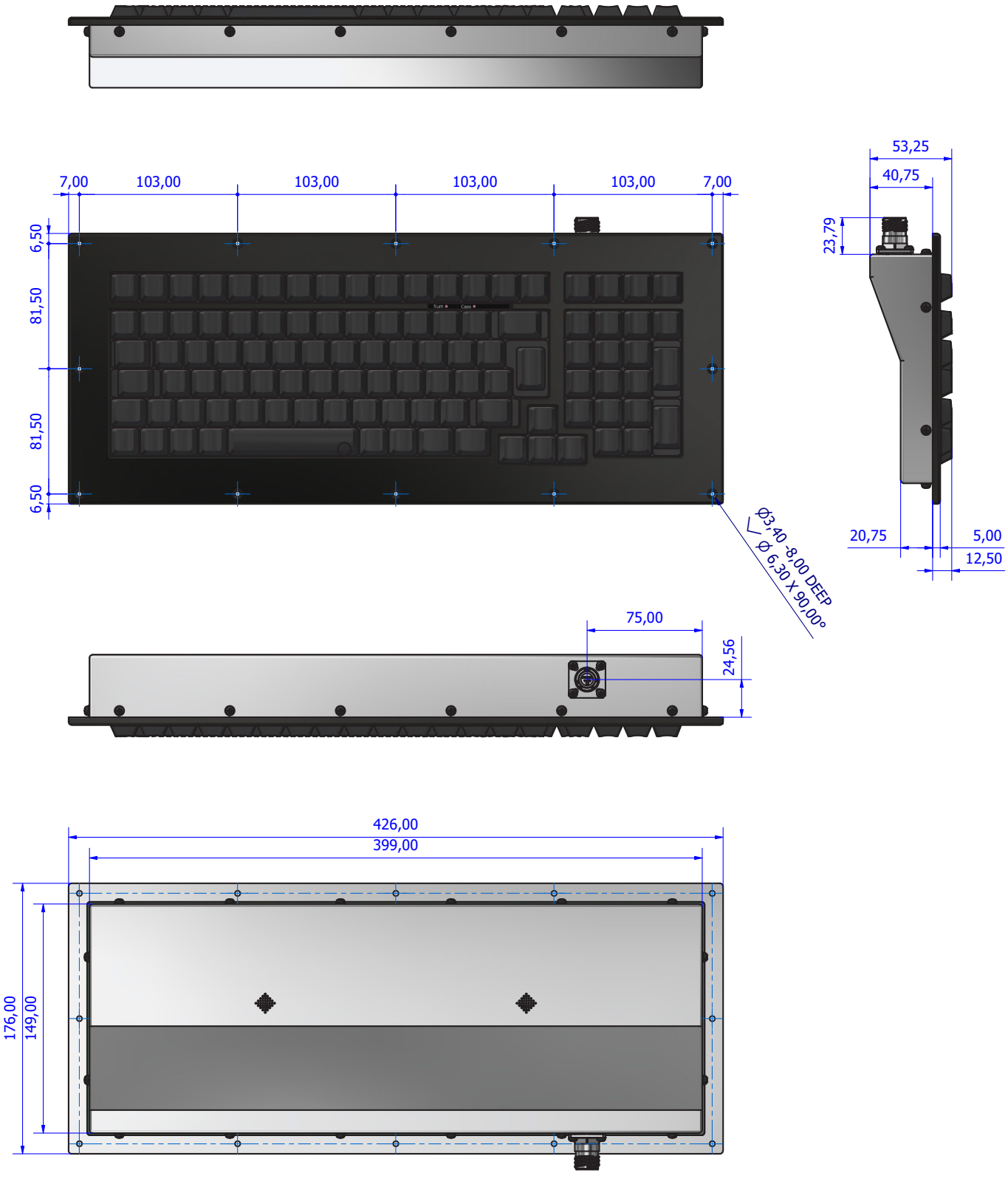
Connection is made to the MKB104 keyboards by means of a single 6-way MIL-DTL-38999 Series III circular connector.
Details output connector:

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



DIMENSIONAL DRAWING

DESKTOP VERSION