

MKBE87

desktop version

- 87 full travel backlit keys
- IP65 sealing
- ergonomic 38mm trackball

MIL-SPEC RUGGED KEYBOARD WITH ERGONOMIC RUGGED TRACKBALL

The MKBE87 is a rugged keyboard with Integrated rugged trackball, designed to meet MIL-STD-810G / MIL-STD-461G standards for critical applications. With a high-spec 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, customizable via PWM signal. The QWERTY layout is customizable, and the aluminium construction provides robustness and protection. The integrated trackball module utilizes patented optical technology and IP rated mechanical switches, offering precise cursor control. It can withstand extreme conditions and is washable and sterilizable. Customize the MKBE87 with options for NVIS backlighting, key layout, and more.

MAIN FEATURES

- Designed to meet MIL-STD-810G / MIL-STD-461G
- IP65 sealed
- Backlit, waterproof, full travel switches with excellent tactile feedback
- High reliability key switch mechanisms
- Rugged 38mm diameter ball for precise cursor control (no scroll wheel)
- Infra-red optical navigation technology
- Anti-vibration feature
- Rugged aluminium machined enclosure, matt black
- Electrical Output: USB
- High level of corrosion resistance
- 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.



ORDER INFO

COUNTRY LAYOUT	PANEL MOUNT	DESKTOP VERSION
US Qwerty	MKBE87N0001USB	MKBE87S0001USB
UK Qwerty	MKBE87N0044USB	MKBE87S0044USB
DE Qwertzu	MKBE87N0049USB	MKBE87S0049USB

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

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



KEYBOARDS
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GENERAL TECHNICAL SPECIFICATIONS KEYBOARD

MECHANICAL

Weight	Panelmount Version: 2150gram/ Desktop Version: 2500gram
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), 300mA (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

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
Ball size / material	Ø38.1mm (1.5"), Epoxy resin
Ball colour	Metallic grey
Ball tracking force	20-40 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	Infra-red optical navigation technology
Removable ring material/colour	PC / ABS, black
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
Trackball resolution	850 counts per ball revolution @ 1 IPS (inches per second) +/- 10% 1700 counts per ball revolution @ 5 IPS (inches per second) +/- 10%

ENVIRONMENTAL

*The MKBE87 series is designed to meet the below standards:

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

- Re101, Radiated Emissions, Magnetic Field, 30 Hz to 100 kHz
- Re102, Radiated Emissions, Electric Field, 10kHz to 18 GHz
- Cs109, Conducted Susceptibility, Structure Current, 60 Hz to 100kHz
- Cs114, Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz
- 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
- RS103, Radiated Susceptibility, Electric Field, 2 MHz to 18Ghz, 60V/m

- Navy
- Helicopters
- Curve 5
- ± 8 kV Contact, ± 15 kV Air
- 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 MKBE87 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

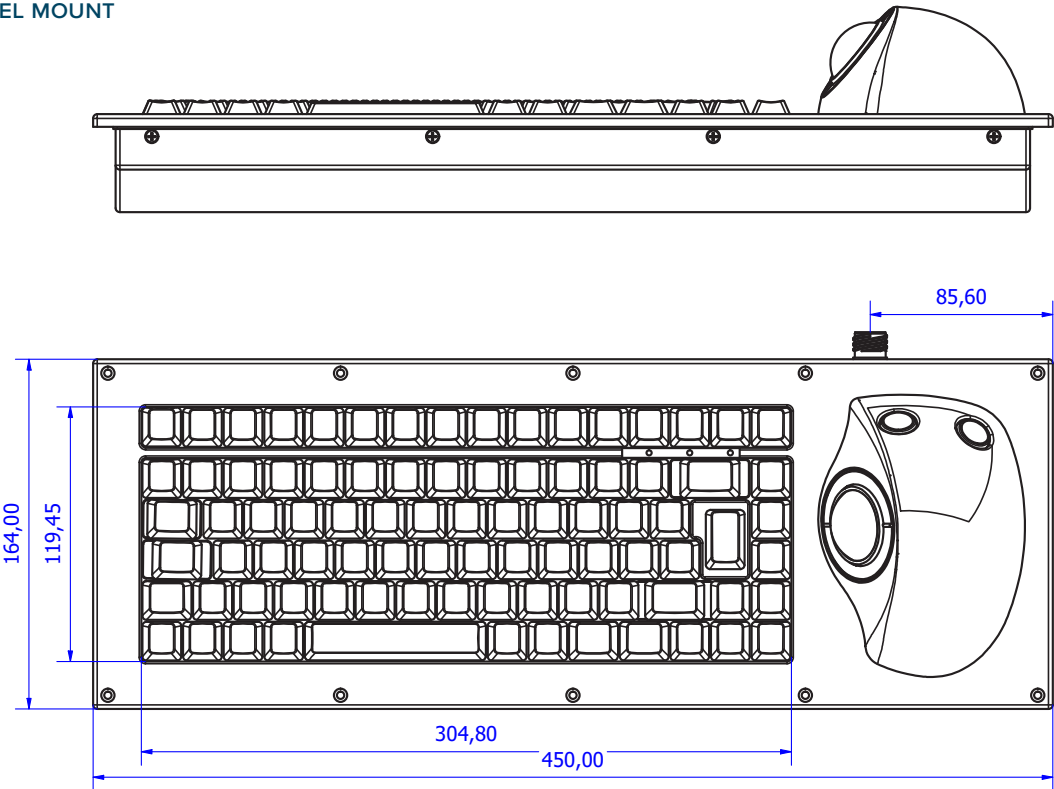
PIN	USB
1	VCC
2	D-
3	D+
4	0V
5	Do not connect
6	EARTH



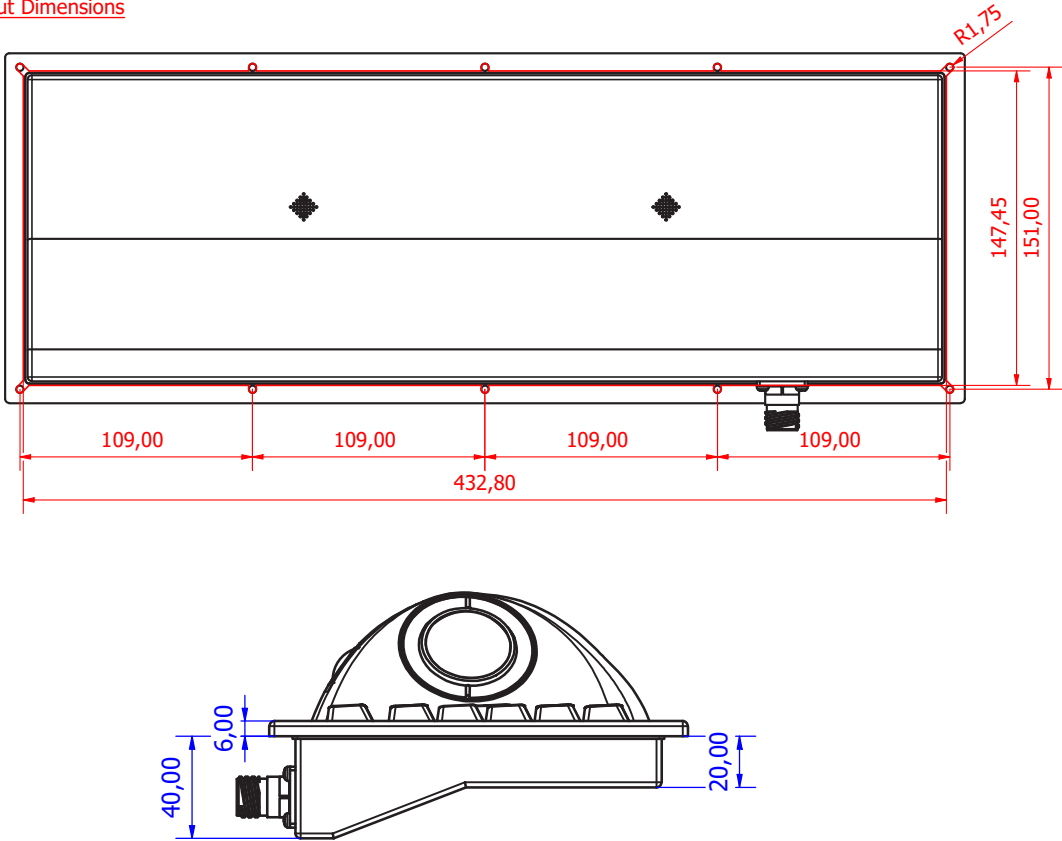
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DIMENSIONAL DRAWING

PANEL MOUNT



Cutout Dimensions



MKBE87

DIMENSIONAL DRAWING

DESKTOP

