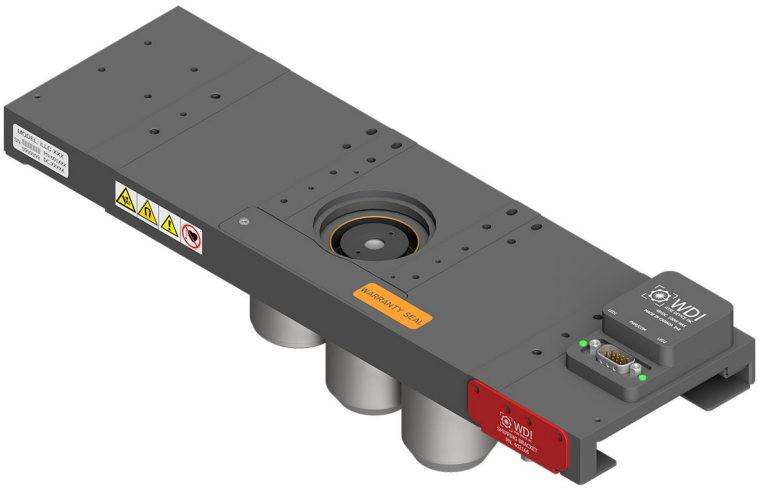
WDI
WISE DEVICE INC

iLLC-3MBD Datasheet



2025

iLLC-3MBD Description

The iLLC-3MBD is a linear lens changer that employs a high-power, linear servo motor (i.e., LMotor) to rapidly change the objective lenses that are being used with a microscope or other similar system.

The iLLC-3MBD includes integrated control electronics and is compatible with up to 3 Mitutoyo M40 thread BD objectives. It is also compatible with WDI's darkfield illuminators.

Ordering Info

Part numbers in *Table 1* include required cabling with corresponding use (either as part of MMS or standalone use).

Table 1 iLLC-3MBD Types

Type	Part Number
Lens Changer (iLLC-3MBD-SA)	971899
Lens Changer (iLLC-3MBD-MMS)	971900

Product Specifications

Table 2 iLLC-3MBD General Specifications

Parameter	Specification
Motor Shaft Diameter	16 mm
Motor Type Linear	Linear direct drive
Encoder Type Linear	Linear incremental encoder
Encoder Resolution	0.078125 µm
Controller Type	Digital servo drive
Controller Options	Integrated or separated
Positional Repeatability	±0.16 µm

Table 3 iLLC-3MBD Specifications

Specifications	Value
Maximum Number of Objectives	3
Objective Lens Type	Mitutoyo M40x36TPI
Lens Spacing Center to Center	54.75 mm
Weight for iLLC-3MBD, excluding lenses	1.91 kg
Controller	Integrated
Default Parameters[a]	
Acceleration (AC)	4500 mm/s^2
Deceleration (DC)	4500 mm/s^2
Speed (SP)	450 mm/s
S-Curve Time (SF)	10 ms
Maximum Speed (SP)	700 mm/s
Performance[b]	
Lens-to-Lens Change Time	0.3 s
First-to-Last Lens Change Time	0.5 s

a. *Default parameters with turret fully loaded and <2 m/s^2 external force.*
b. *Measured with turret fully loaded, default parameters, and 48 VDC power. Lower voltage may increase lens change times.*

Electrical Connections

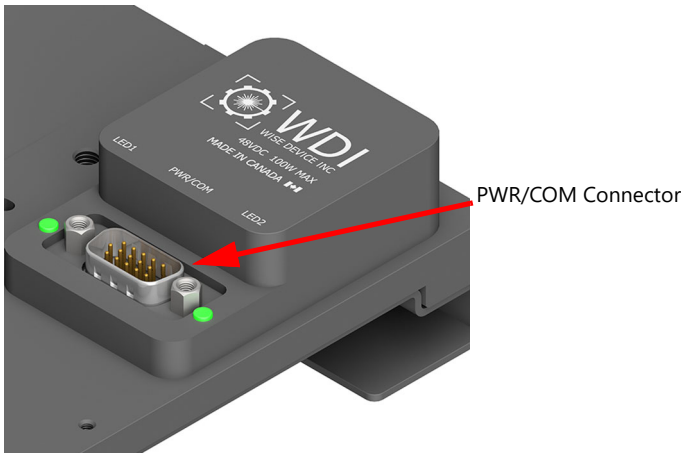


Figure 1 *Connectors – Integrated Controller*

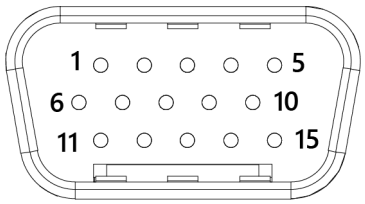


Figure 2 *PWR/COM Connector (DB15HD) Male Pins*

Table 4 PWR/COM Connector Pins

Pin #	Signal	Function
1	VCC	+24VDC or +48VDC
2	GND	Power supply return
3	DO1	Digital output 1
4	CANH	CAN BUS high
5	CANL	CAN BUS low
6	VCC	+24VDC or +48VDC
7	GND	Power supply return
8	GND	Power supply return
9	DI3	Digital input 3
10	DO2	Digital output 2
11	RS485-	RS485 Differential signal (negative)
12	RS485+	RS485 Differential signal (positive)
13	GND	IOs return
14	IO4/E-STOP	Emergency stop input. In order to de-activate emergency stop, drive high (+5VDC to +48VDC)
15	DO5	Digital output 5
Shield	GND	CH Chassis ground

Electrical Specifications

Table 5 iLLC-3MBD Electrical Specifications

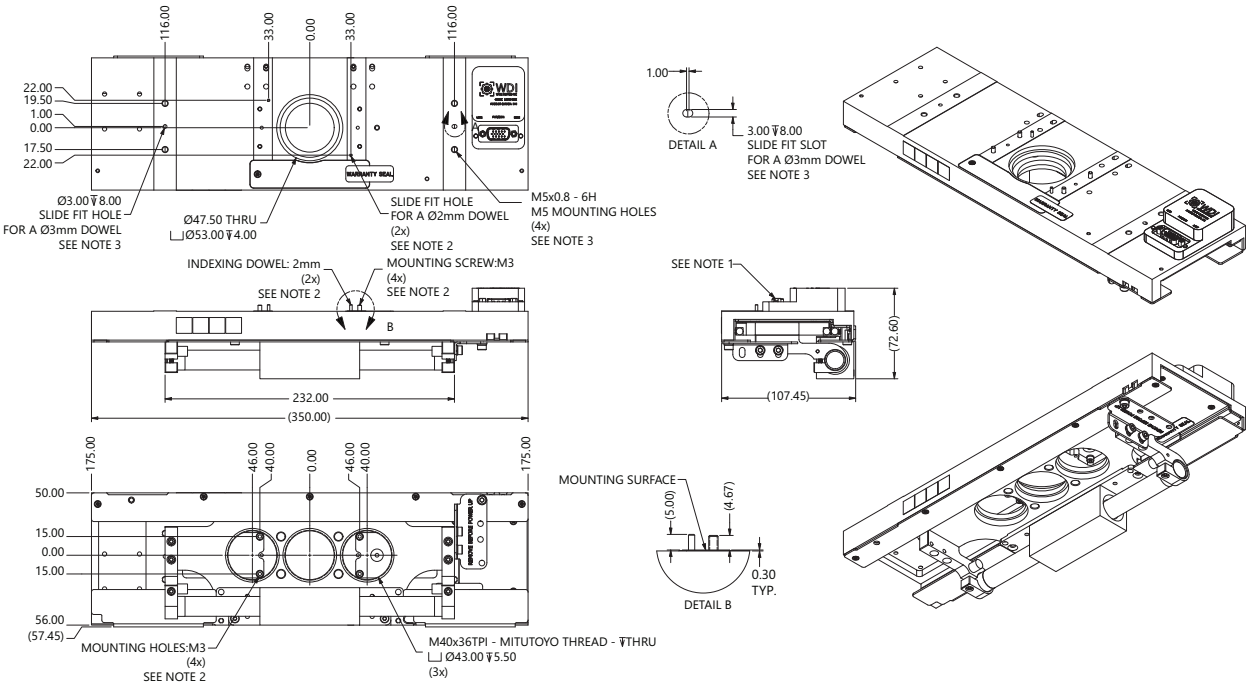
Parameter	Minimum	Typical	Maximum	Units
Operating Voltage	22	24 or 48	49	VDC
Operating Current			5	A
E-Stop Input Voltage High (VIH)	5	24 or 48	49	VDC
E-Stop Input Voltage Low (VIL)	-0.5		2	VDC
E-Stop Input Current		7		mA

Environmental Specifications

Table 6 iLLC-3MBD Environmental Specifications

Description	Value
Operating Ambient Temperature	20°C to 30°C
Transport Temperature (sealed container)	-20°C to 50°C
Storage Temperature	10°C to 40°C
Humidity Temperature	10% to 80% non-condensing

Mechanical Dimensions



NOTES:
1. Allow an extra 100mm space for connector and wire bend radius.
2. Mounting option 1: Index the LLC with 2x Ø2mm dowels and use 4x M3 screws from the bottom to secure it.
   Mounting option 2: Index the LLC WITH 2x Ø3mm dowels and use 4x M5 mounting screws from the top to secure it.
   The dowels should be removed once the LLC is secured. The dowels and the screws must not protrude into the main body by more than 8mm.
3. Approximate weight of the LLC is 1.9 Kg.

Figure 3 *iLLC-3MBD Dimensions*

Accessories

Table 7 iLLC-3MBD Accessories

Accessory	Part Number	Remarks
Cable (CAB-LLC-MMS), (300 mm)	801443	300 mm length (for attached and integrated controller configurations)
Cable (CAB-LLC-MMS), (1000 mm)	801443-1	1 m length (for separated controller configuration)
Cable (CAB-LLC-USBRS485), (1800mm)	801444	1800 mm in length (for standalone use)

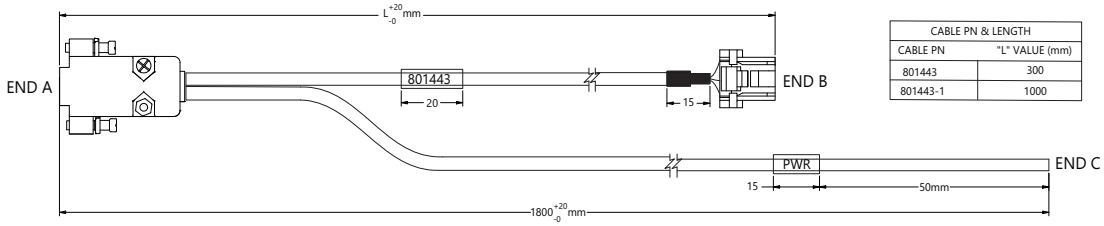


Figure 4 *CAB-LLC-MMS Cable Wiring*

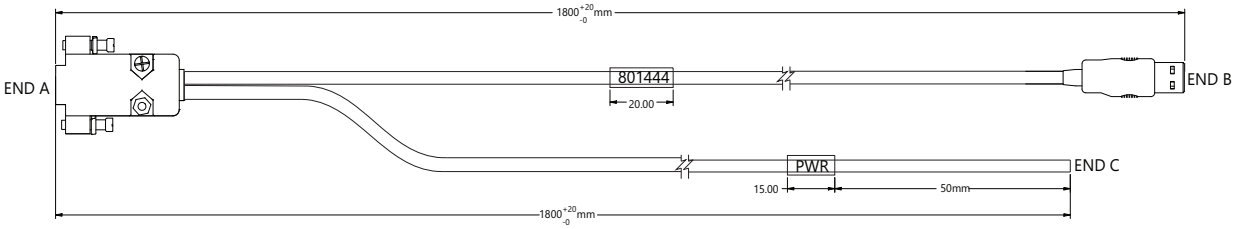


Figure 5 *CAB-LLC-USBRS485 Cable Wiring*