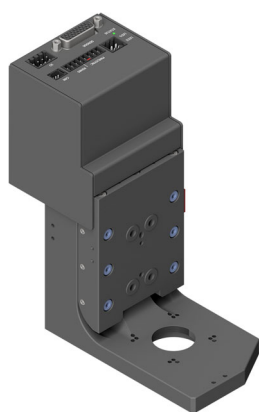
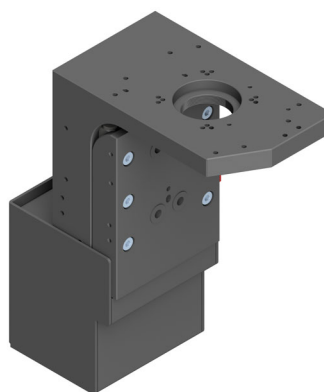


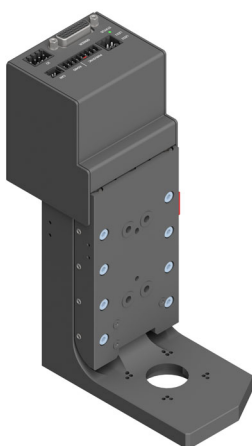
iZAA Datasheet



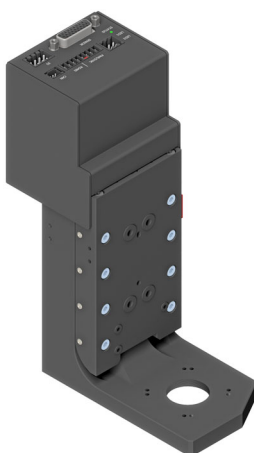
iZAA-SO/MO



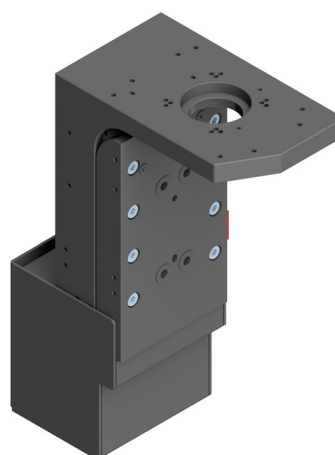
iZAA-SO/MO-INV



iZAA-LP



iZAA-WVMU



iZAA-LP-INV

iZAA Description

The iZAA is a device designed to move objective lens(es) in the Z-axis. It is designed to integrate seamlessly with WDI's Modular Microscope System (MMS) and some third party microscopes. These stages can be controlled either by WDI's autofocus sensors or as an independent motion stage.

The iZAA includes integrated control electronics. It uses a two-phase stepper motor to quickly and accurately move an objective lens as instructed, to bring your images into focus. Many applications require fast and accurate tracking of a moving sample. When coupled with a PFA-DT or PFA-LN sensor, it can be used for accurate stationary autofocus applications as well as high speed motion tracking. WDI's iZAA has a robust mechanical design and an accurate, fast response, making it ideal for such applications. The iZAA is also able to control either up to two 1.5A LEDs, or one 3 A LED (purchased separately).

The iZAA is meant to be used with a lens changer and the options are: WDI's iLLC-LG, sLLC-LG, Olympus rotary lens changer (RLC), and Mitutoyo RLC. For RLC adapter plate information see "RLC adapter plates" on page 38. The iZAA comes in seven models: Single Objective (iZAA-SO), Multiple Objective (iZAA-MO), Laser Port (iZAA-LP), their respective inverted (INV) models (iZAA-SO-INV, iZAA-MO-INV, iZAA-LP-INV), and the Mitutoyo Wide VMU Vertical (iZAA-WVMU). The iZAA-SO uses a 0.5A motor and the iZAA-MO uses a 1A motor. These two models are externally identical. The iZAA-LP is longer than the other two models in order to accommodate attaching a laser port with optical coupling filter for integration with WDI's MMS (i.e., for Confocal imaging or other laser applications), and is only available with a 1A motor. The iZAA-WVMU model has adjusted objective hole locations to allow for the use of this model with Mitutoyo VMU Wide Microscope bodies. The inverted iZAA models are designed to support inverted microscopy processes, but are otherwise functionally identical to their respective counterparts.

Ordering Info

Table 1 iZAA types

Type	Part Number
Z-Axis Stage (iZAA-SO-0.5A)	973070
Z-Axis Stage (iZAA-MO-1A)	973080
Z-Axis Stage (iZAA-SO-0.5A-INV)	973110
Z-Axis Stage (iZAA-MO-1A-INV)	973120
Z-Axis Stage (iZAA-LP-1A)	973130
Z-Axis Stage (iZAA-LP-1A-INV)	973140
Z-Axis Stage (iZAA-WVMU)	973150

Product Specifications

Table 2 iZAA specifications

Parameters	Specification			
	iZAA-SO	iZAA-MO	iZAA-LP	iZAA-WVMU
Motor rated current (A)	0.5	1.0		
Compatible Lens Changers	N/A (single objective)	LLC2, LLC3, iLLC-3MBD, iLLC-SM, sLLC-SM		
Motion type	Stepper motor			
Motion controller	Integrated			
Positional feedback	PFA-DT or PFA-LN sensor			
Maximum travel (mm)	10			
Weight (kg)	1.14	1.16	1.33	1.34
Maximum load (kg)	1.0	3.5		
Maximum speed (mm/s)	10			
Maximum acceleration (mm/s²)	120			
Maximum resolution (µm)	0.039 with 1/64 micro stepping			
Maximum extended length (mm)	185		214	
Motor fullsteps/mm	400			
Default Modbus node ID	2			

Electrical Connections

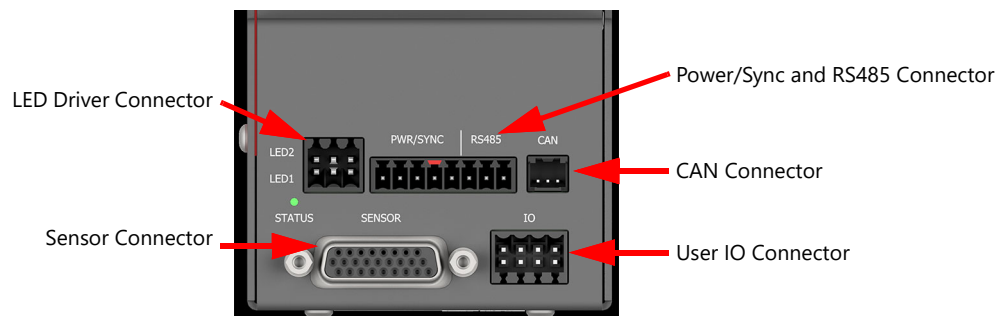


Figure 1 iZAA Connectors

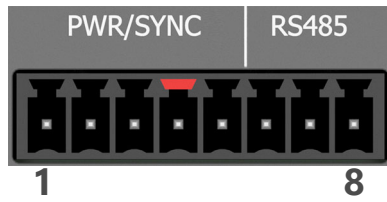


Figure 2 Power/Sync and RS485 Connector

Table 3 Power/Sync and RS485 connector pin assignments

Pin	Signal	Description
Power/Sync Connector		
1	+24V	+24V Power Supply.
2	GND	Power Supply Return.
3	ESTOP	Emergency Stop (Laser Enable), normally wired to supply voltage through a mushroom button. Actively drive high to enable the PFA-DT/LN laser diode.
4	DI	Digital input.
5	DO	Digital output.
RS485 Connector		
6	GND	IO Return.
7	RS485-	Inverting RS485 Receiver Input and Driver Output.
8	RS485+	Non Inverting RS485 Receiver Input and Driver Output.

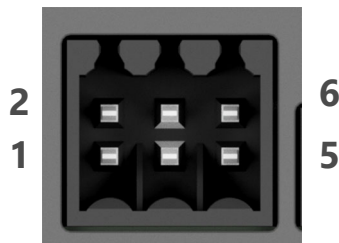


Figure 3 LED Driver Connector

Table 4 LED driver connector pin assignments

Pin	Signal	Description
1	LED1 Anode	LED1 Anode current output
2	LED2 Anode	LED2 Anode current output
3	NC	Not Connected, do not connect
4	NC	Not Connected, do not connect
5	LED1 Cathode	LED1 Cathode (return)
6	LED2 Cathode	LED2 Cathode (return)

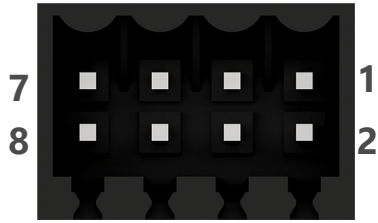


Figure 4 User IO Connector

Table 5 User IO connector pin assignments

Pin #	Signal	Description
1	CSYNC	Camera Sync Input, immediately disables the laser for the duration of the pulse. Active high.
2	ESTOP	Emergency Stop (Laser Enable), normally wired to supply voltage through a mushroom button. Actively drive high to enable the PFA-DT/LN laser diode.
3	GND	IO Return.
4	5V	5V for motor external opto-couplers (max 100mA).
5	MIV	Material In View. Open drain with internal 1K Ω pull up to +5V.
6	INF	In Focus. Open Drain with internal 1K Ω pull up to +5V.
7	GND	AO Return.
8	AO	Analog Output.

Connector Specifications

Table 6 Included connector kit^a

Item	Qty	Description	Manufacturer	Manufacturer Part #	Note
Power/Sync and RS-485 Connector	1	A five position plug for Power/Sync. CONN, TH, 5 POS, TERM Block, 3.5 MM, PLUG	TE Connectivity	2213936-5	Keyed by WDI (see <i>"Connector keying" on page 13</i>)
	2	A three position plug for RS-485. CONN, TH, 3 POS, TERM BLOCK, 3.5MM, PLUG	TE Connectivity	2213936-3	
	8	Ferrule, #20-24 AWG, Insulated, White, 10mm	American Electrical Inc.	1181050	
User IO Connector	1	An eight position plug, CONN, 8 POS, 3.5MM, 2 ROWS, PLUG	Weidmuller	1277480000	
	8	Ferrule, #20-24 AWG, Insulated, White, 10mm	American Electrical Inc.	11102050	
CAN termination plug	1	CONN ASSY, CAN TERMINATION, 120OHM, 3 POS	WDI	801437	
		• CONN, PLUG, 3POS Housing, 2mm, CRIMP PIN	MOLEX LLC	2127242031	
		• CRIMP PIN, FEMALE, 56134 SERIES, 22-24 AWG	MOLEX LLC	0561349001	
		• RES, TH, 120R, 1%, 1/4W, MF, AXIAL	STACKPOLE ELECTRONICS	RNMF14FTC120R	

a. These connectors are provided by WDI

Table 7 LED illuminator connector^a

Qty	Description	Manufacturer	Manufacturer Part #
1	CONN, 6 POS, 3.5MM, 2 ROWS, SPRING CAGE, PLUG	Weidmuller	1277470000
6	FERRULE, #20 AWG, INSULATED, ORG, 10mm	American Electrical Inc.	11102050

a. This connector is not provided by WDI, not required if illuminator is purchased from WDI.

Electrical specifications

Table 8 Power/Sync and RS-485 electrical characteristics

Parameter	Minimum	Typical	Maximum	Units	Conditions
Power supply					
Operating voltage	22	24	26	VDC	
Operating power	2.4		40	W	See <i>Table 9 "WDI LED output specifications"</i>
DI					
Input voltage low (VIL)	-0.5	0	1.5	V	
Input voltage high (VIH)	3.5	5	5.5	V	
Input resistance		7.5		K Ω	
DO					
Output type	Open Drain with 1K Ω pull up to 5V				
Output voltage low (VOL)	0		0.4	V	
Output voltage high (VOH)		5		V	High impedance load
Output Impedance		5		K Ω	
Drain current			100	mA	
RS-485					
Differential driver output voltage	2	3.3		V	
Receiver differential threshold voltage	50	105	200	mV	
Differential termination resistor		120		Ω	
Data rate		115200		bps	

Table 9 WDI LED output specifications

Parameter	Condition	Min	Typical	Max	Units
Dual Channel LED Driver, Each Channel					
LED forward voltage	V _{supp} = 24 V	1.6		22	V
Output current		0.05		1.5	A
Output current (Parallel mode)		0.1		3	
LED output power (each channel)				15	W
LED output power (Parallel mode)				30	W
Output current ripple			15	25	mA
Pulse width		5 ^a			μ s
Analog dimming range			30:1		
PWM dimming range			1000:1 ^a		

Table 9 WDI LED output specifications (continued)

Parameter	Condition	Min	Typical	Max	Units
PWM frequency		1		100000	Hz
Pulse edge position accuracy			1		μs

a. Minimum pulse width can restrict minimum duty cycle, and dimming range, in PWM mode.

Table 10 User IO electrical specifications

Parameter	Condition	Minimum	Typical	Maximum	Units
Digital Inputs (ESTOP, CSYNC)					
Input Voltage High (VIH)		2.8		28	V
Input Voltage Low (VIL)		-0.5		1	V
Input resistance		21.4			KΩ
Digital Outputs (INF, MIV)					
Maximum drain current	Output active (low)			100	mA
Maximum output (Pull-up) voltage	Output inactive (high)		5	5.5	V
Output Voltage Low (VOL)	Output active (low)	0	0.35	0.5	V
Internal pull up resistor value		1			kΩ
Analog Output					
Output voltage range		-10		10	V
Maximum output current				±10	mA
Output resistance		20			Ω

Mechanical dimensions

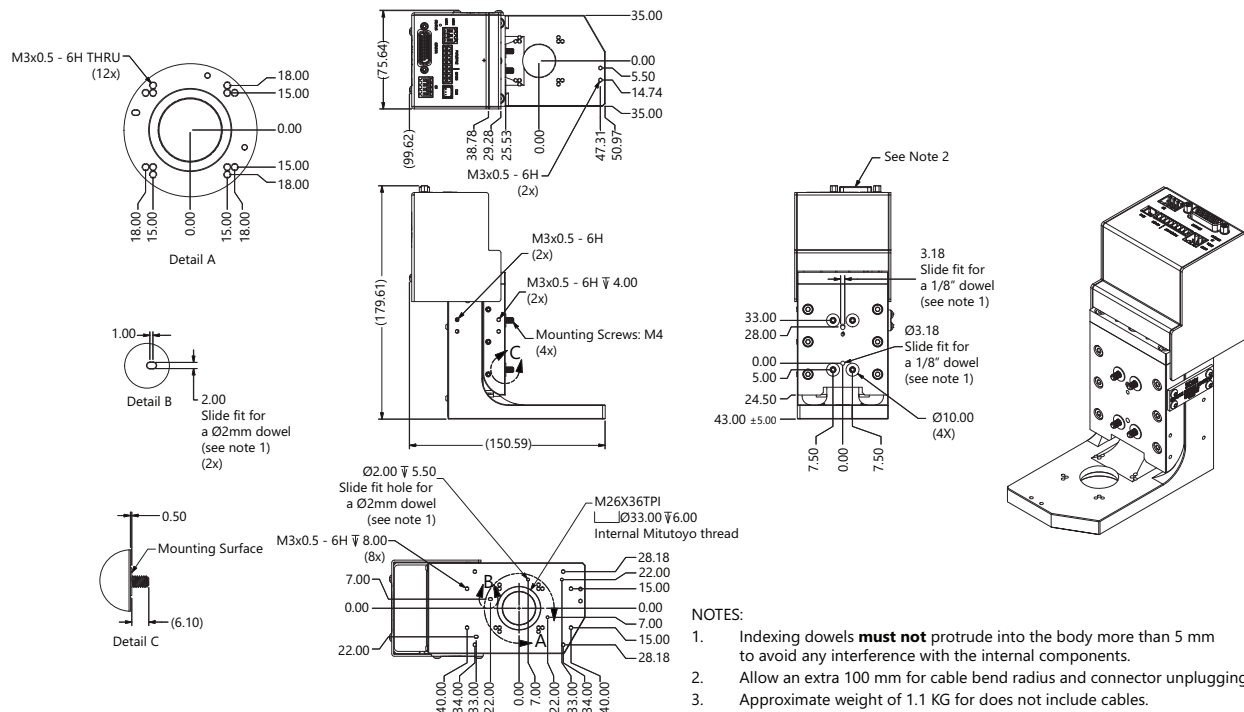


Figure 5 iZAA-SO dimensions

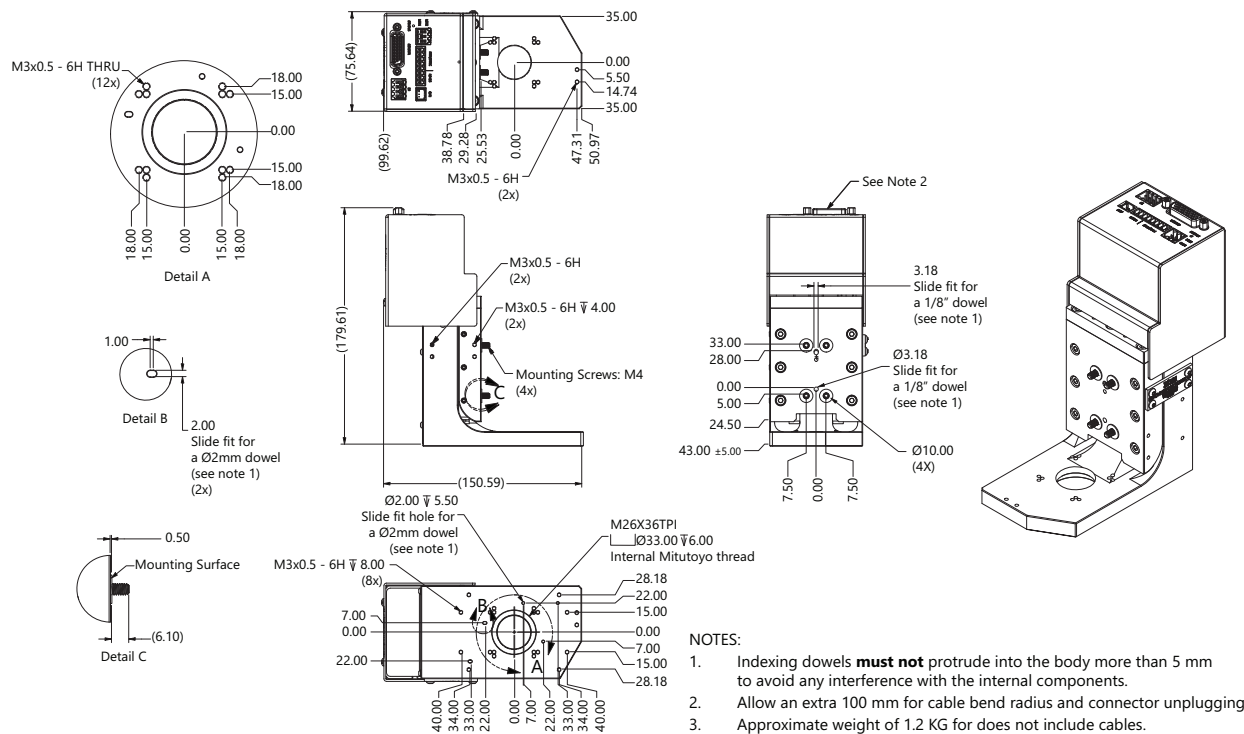


Figure 6 iZAA-MO dimensions

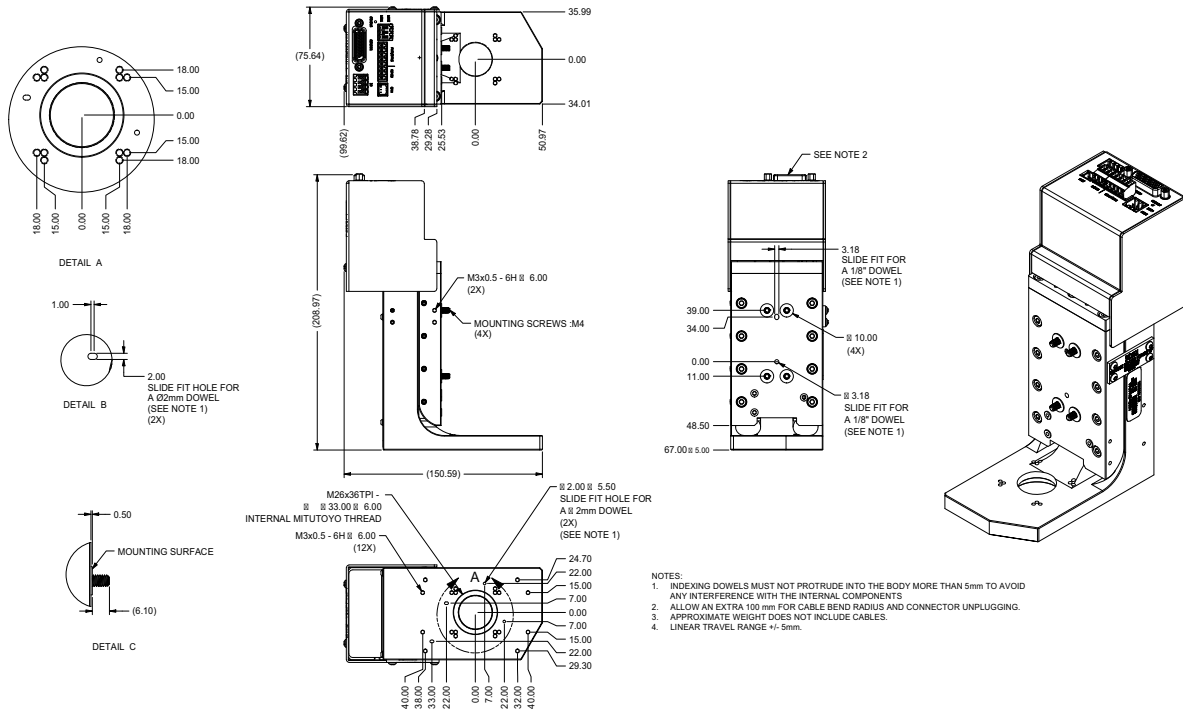


Figure 7 iZAA-LP dimensions

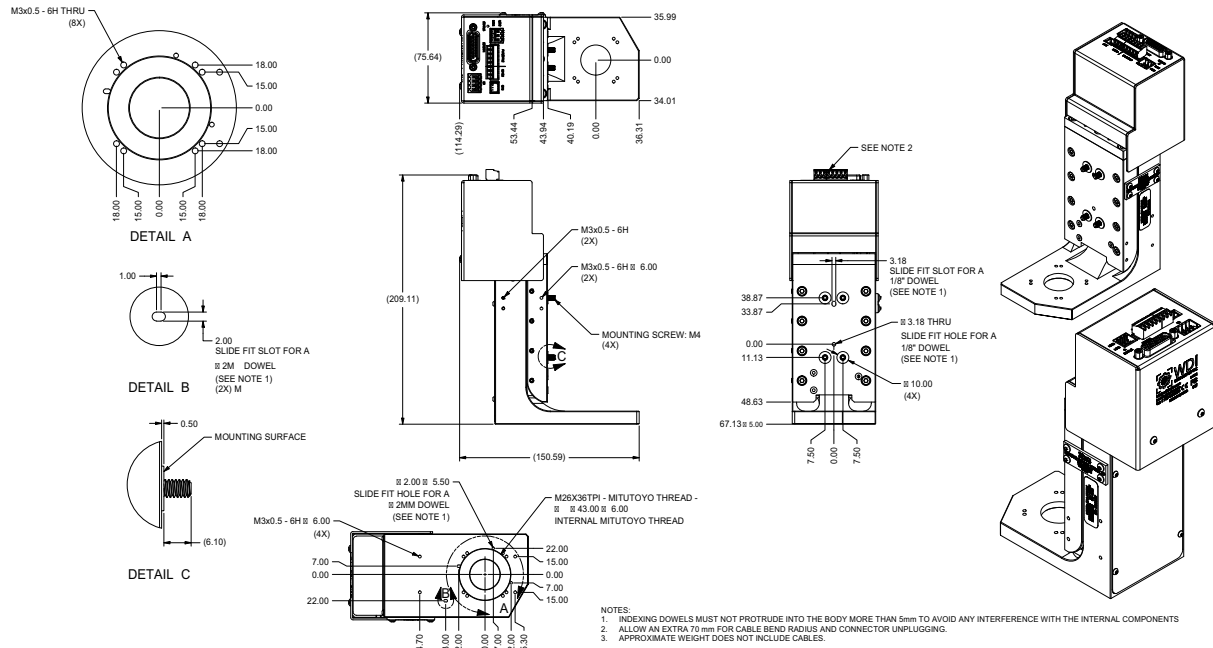


Figure 8 iZAA-WVMU dimensions

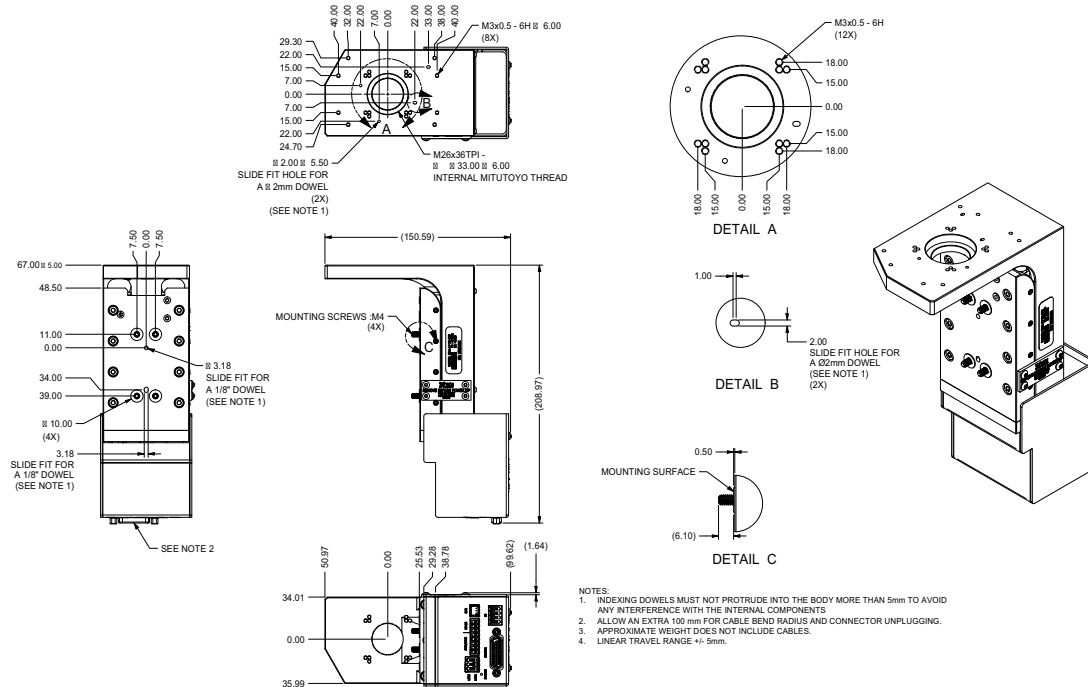


Figure 11 *iZAA dimensions - LP-INV*

Available accessories

Table 11 iZAA accessories

Accessory	Part Number	Remarks
Cable (CAB-USB-RS485), 1.8m	801464	Cable, USB to RS485, wire end, 1800 mm length
Cable (CAB-USB-RS485), 5m	801464-1	Cable, USB to RS485, wire end, 5000 mm length

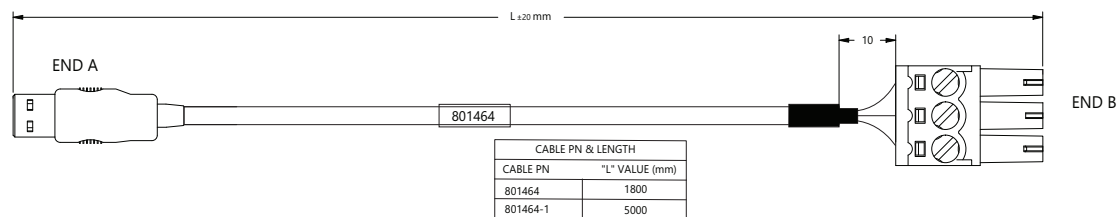


Figure 12 CAB-USB-RS485 Cable Wiring

Connector keying

This information is provided for reference. WDI provided connectors are already keyed.

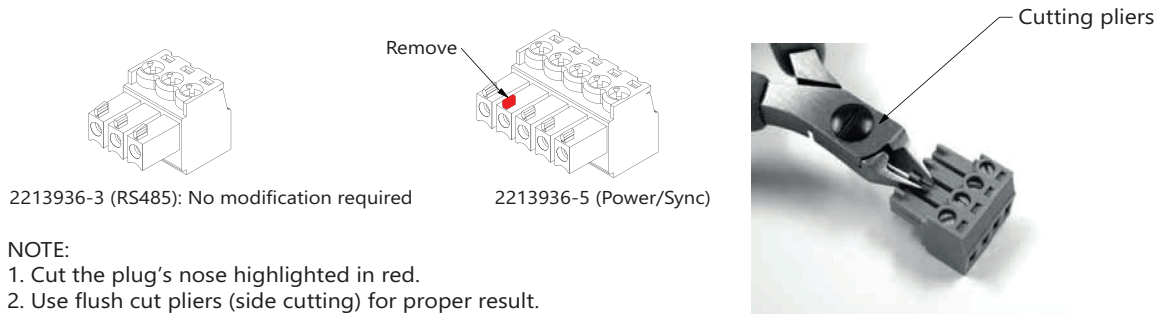


Figure 13 Power/Sync and RS-485 connector keying

Environmental specifications

Table 12 iZAA environmental specifications

Description	Value
Transport temperature (sealed container)	-20°C to 50°C
Transport relative humidity (sealed container)	10% to 90% non-condensing
Storage temperature	10°C to 40°C
Storage relative humidity	10% to 90% non-condensing
Operating ambient temperature	20°C to 30°C
Operating ambient humidity	10% to 80% non-condensing