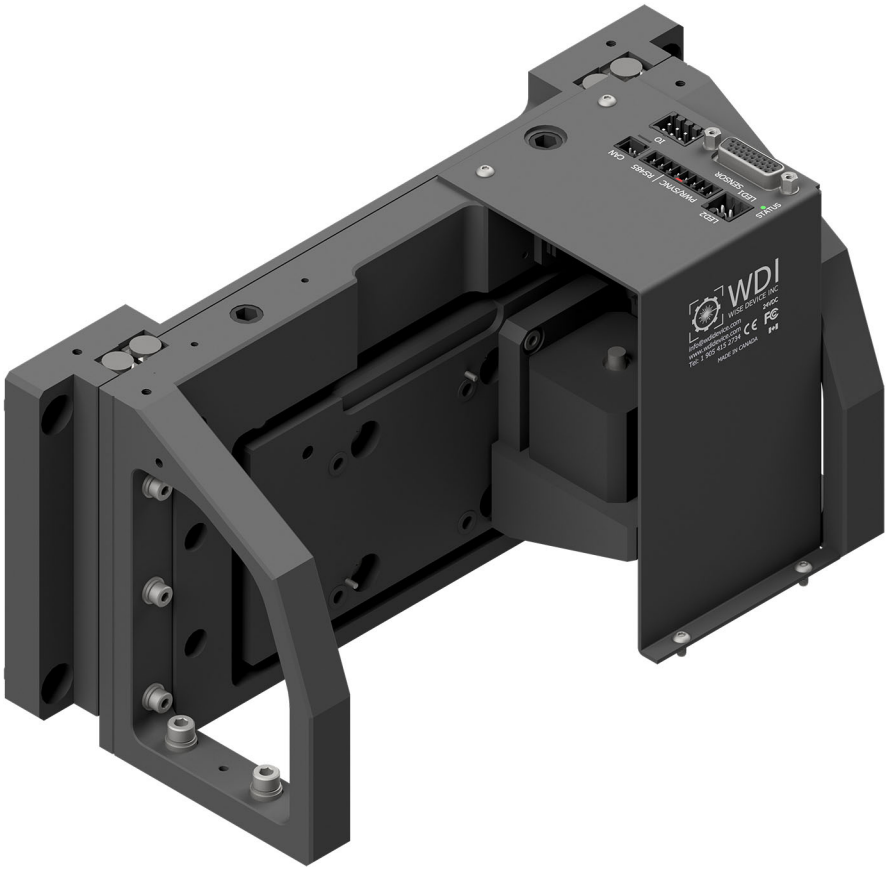
WDI
WISE DEVICE INC

iZPS Datasheet



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iZPS Description

The iZPS is a device designed to move objective lens(es) in the Z-axis. It is designed to integrate seamlessly with WDI's family of microscopy components, including the Modular Microscope System (MMS).

The iZPS 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. The iZPS 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.

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 iZPS has a robust mechanical design and an accurate, fast response, making it ideal for such applications.

The iZPS is also able to control either up to two 1.5 A illuminators, or one 3 A illuminator (purchased separately).

Ordering Info

Table 1 iZPS Types

Type	Part Number
Z Actuator (iZPS)	973100

Product Specifications

Table 2 iZPS Specifications

Parameters	Specification
Motor Rated Current (A)	1.0
Compatible Lens Changers	iLLC-LG, sLLC-LG, or Rotary
Motion Type	Stepper motor
Motion Controller	Integrated
Positional Feedback	PFA-DT or PFA-LN sensor
Maximum Travel (mm)	10
Weight (kg)	4.4
Maximum Load (kg)	6.5
Maximum Speed (mm/s)	10
Maximum Acceleration (mm/s^2)	100
Maximum Resolution (µm)	0.047 with 1/64 micro stepping

Electrical Connections

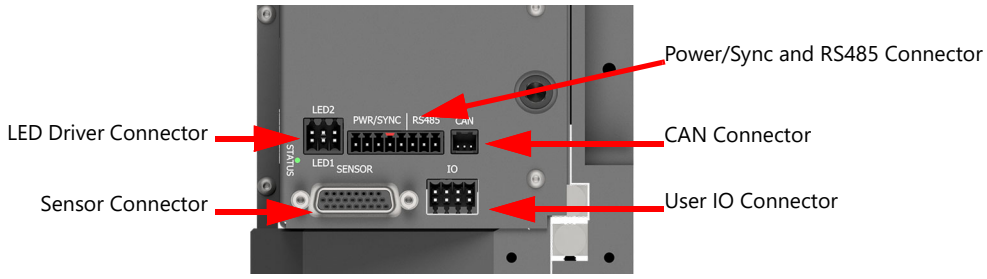


Figure 1 *iZPS Connectors*

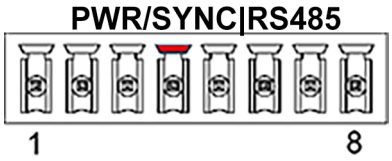


Figure 2 *Power/Sync and RS485 connector*

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.

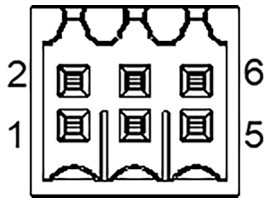


Figure 3 *LED Driver Connector*

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)

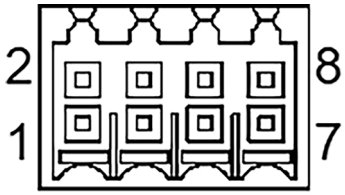


Figure 4 *User IO Connector*

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 1KΩ pull up to +5V.
6	INF	In Focus. Open Drain with internal 1KΩ pull up to +5V.
7	GND	AO Return.
8	AO	Analog Output.

Connector specifications

Table 6 Connector Kit

Item	Description	Manufacturer	Manufacturer Part #	Note
Power/Sync and RS485 Connector	A five position plug is provided for Power/Sync.	TE Connectivity	2213936-5	Keyed by WDI
	A three position plug is provided for RS-485.	TE Connectivity	2213936-3	
	Eight ferrules are included.	American Electrical Inc.	1181050	
User IO Connector	An eight position plug.	Weidmuller	1277480000	
	Eight ferrules are included.	American Electrical Inc.	11102050	
CAN Termination Plug		WDI	801437	

Electrical Specifications

Table 7 Power/Sync and Comm Electrical Specifications

Parameter	Minimum	Typical	Maximum	Units	Conditions
Power Supply					
Supply Voltage	22	24	26	VDC	
Supply Power	2.4		40	W	2 channels ILED=1.5A, max 5V LED fwd voltage when used with a PFA-DT or PFA-LN sensor
Supply Power	2.4		70	W	2 channels ILED=1.5A, max 20V LED fwd voltage when used with a PFA-DT or PFA-LN sensor
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		KΩ	
DO					
Output Type	Open Drain with 1KΩ pull up to 5V				
Output Voltage Low (VOL)		5		V	High impedance load
Output Voltage High (VOH)	0		0.4	V	
Output Impedance		5		KΩ	
Drain Current			100	mA	
RS485					
Differential Driver Output Voltage	2	3.3	V		
Receiver Differential Threshold Voltage	50	105	200	mV	

Table 7 Power/Sync and Comm Electrical Specifications (continued)

Parameter	Minimum	Typical	Maximum	Units	Conditions
Differential Termination Resistor		120		Ω	
Data Rate		115200		bps	

Table 8 User IO Electrical Specifications

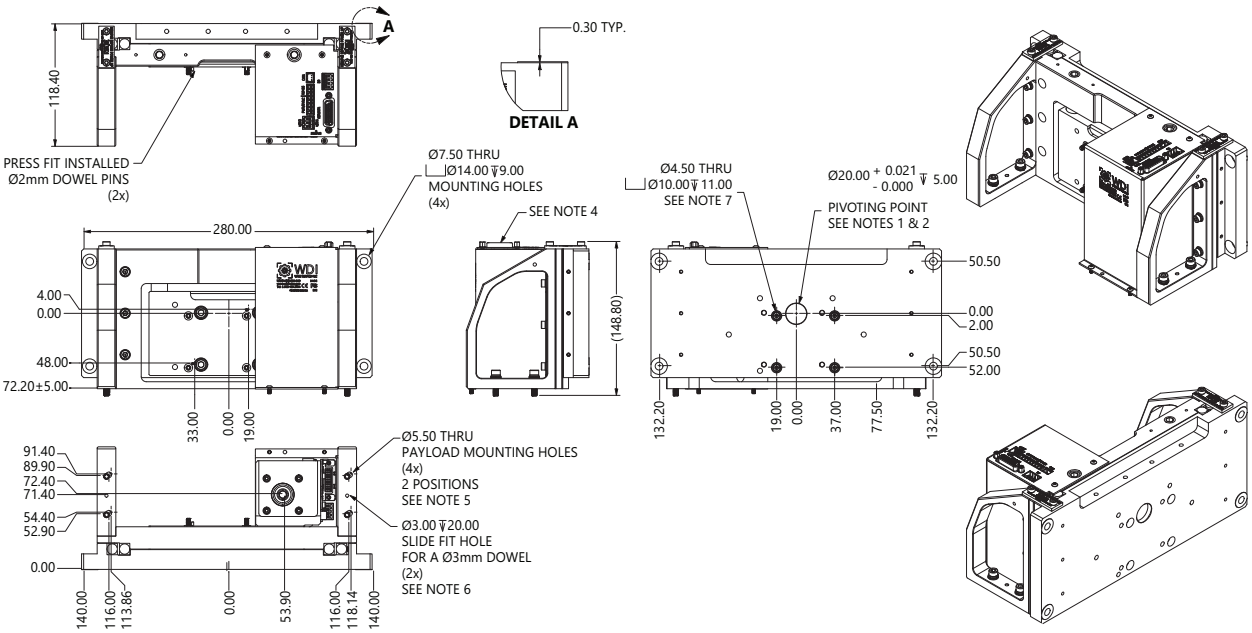
Parameter	Condition	Minimum	Typical	Maximum	Units
Digital Inputs (ESTOP, CSYNC)					
Input Voltage High (VIH)		2.8		28	V
Input Voltage Low (VIL)		-0.5		1	V
Input Resistance		21.4			KΩ
Digital Outputs (INF, MIV)					
Maximum Drain Current	Output active (low)			100	mA
Maximum Output (Pull-up) Voltage	Output 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

Environmental Specifications

Table 9 iZPS 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



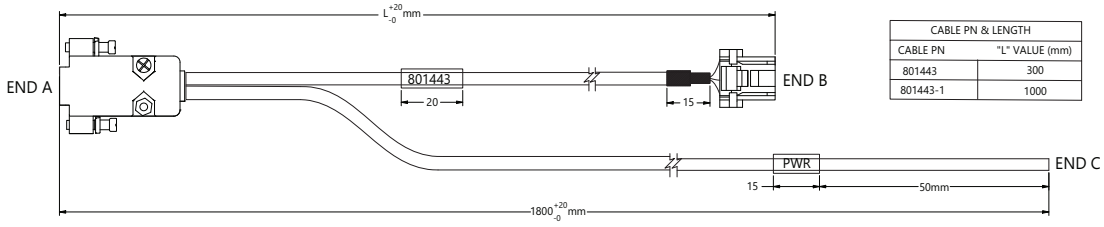
NOTES:
1. The 20mm diameter hole ("pivoting point") allows the ZPS to be slightly rotated along hole's axis and adjust the perpendicularity of the optical axis to the sample inspected.
2. A 20mm diameter dowel is recommended to be inserted into the structure holding the payload.
3. Linear travel range +/-5mm.
4. Allow extra 100mm space for connector and wire bend radius.
5. Support for different types of WDI objective lens changers as well as generic rotary lens changers, fasteners (4x set of M 5x20 screws with washers) included.
6. Ø3mm dowel can be use to precisely position payload. (fasteners not included).
7. Support for WDI MMS, fasteners (4x set of m4x40 screws with washers) included.
8. Approximate weight of 4.4 kG does not include cables.

Figure 5 *iZPS Dimensions*

Available Accessories

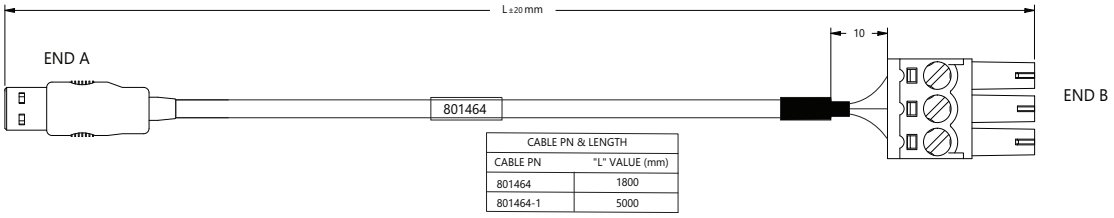
Table 10 iZPS Accessories

Accessory	Part Number	Remarks
Cable (CAB-LLC-MMS), (300 mm)	801443	300 mm length (for attached and integrated controller configurations) (see *Figure 6*)
Cable (CAB-LLC-MMS), (1000 mm)	801443-1	1 m length (for separated controller configuration) (see *Figure 6*)
Cable (CAB-USB-RS485), 1.8m	801464	Cable, USB to RS485, wire end, 1800 mm length (see *Figure 7*)
Cable (CAB-USB-RS485), 5m	801464-1	Cable, USB to RS485, wire end, 5000 mm length (see *Figure 7*)
Plate, Base, ZPS MIT ROT 5 Mitutoyo M to M20x0.5 adapter, MMS	401354+ 400184	Mitutoyo rotary lens changer plate and adapter for ZPS (see *Figure 8*)
Plate, ZPS FOR HRMMS-2 CAM-Olympus 5 Rotary Plate, ORLC to ZAA, no shift	401864+ 400757	Olympus rotary lens changer plate and adapter for ZPS (see *Figure 9*)



CABLE PN & LENGTH	
CABLE PN	"L" VALUE (mm)
801443	300
801443-1	1000

Figure 6 *CAB-LLC-MMS Cable Wiring*



CABLE PN & LENGTH	
CABLE PN	"L" VALUE (mm)
801464	1800
801464-1	5000

Figure 7 *CAB-USB-RS485 Cable Wiring*

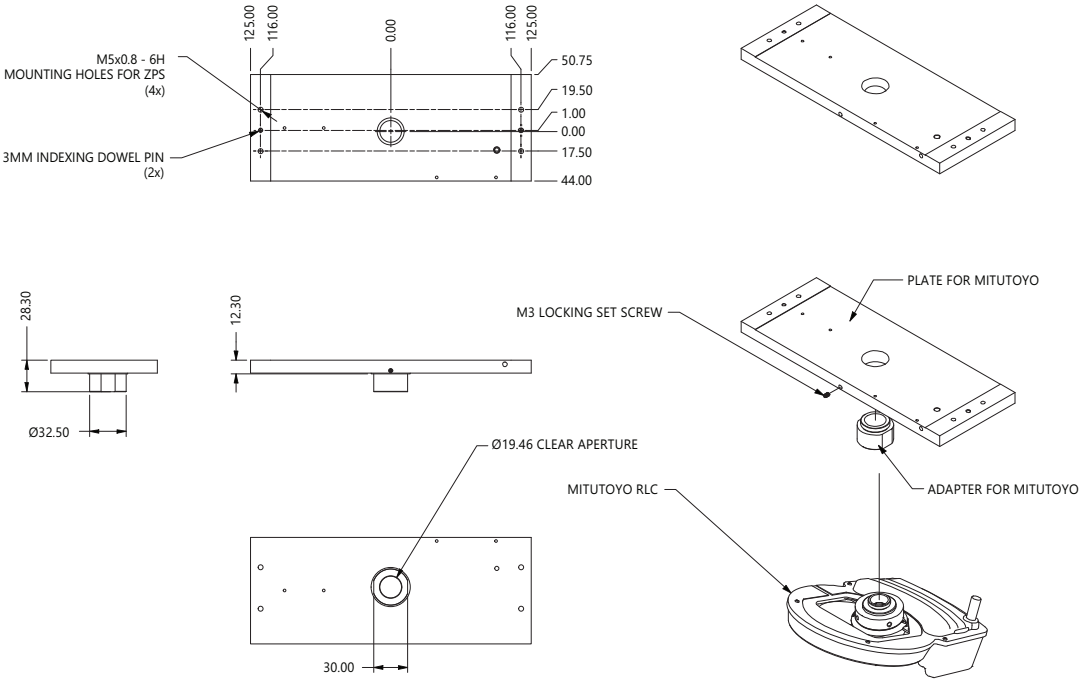


Figure 8 *Mitutoyo Rotary Lens Changer Plate and Adapter*

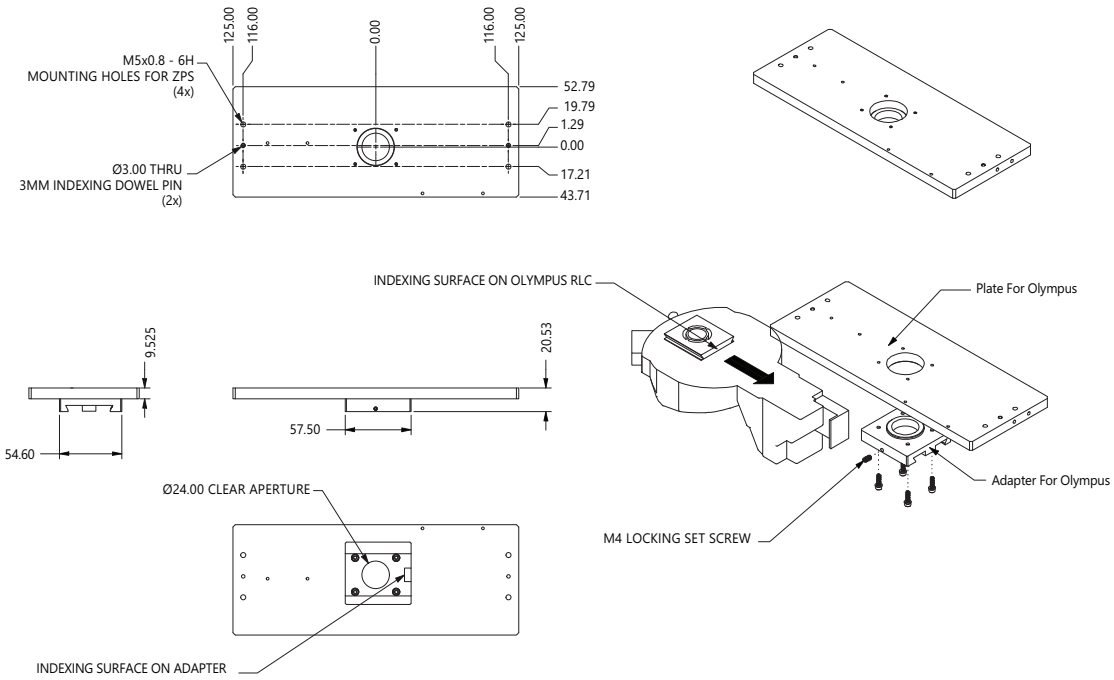


Figure 9 *Olympus Rotary Lens Changer Plate and Adapter*