

Preliminary Specification

REFERENCE

March 18, 2025

High-Resolution Cooled Spectrometer Megrez & Megrez-NIR Series

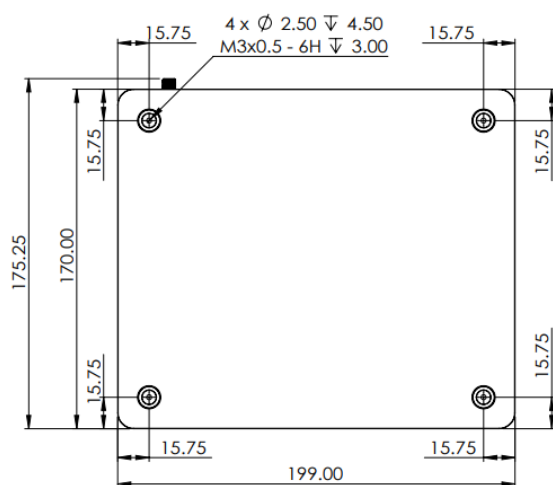
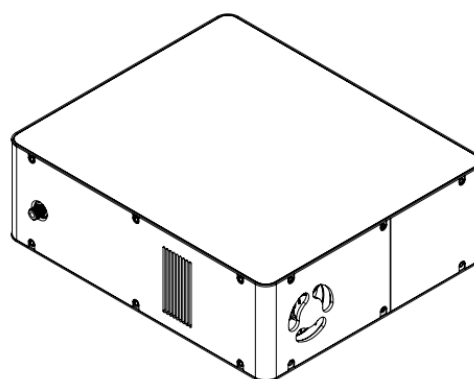
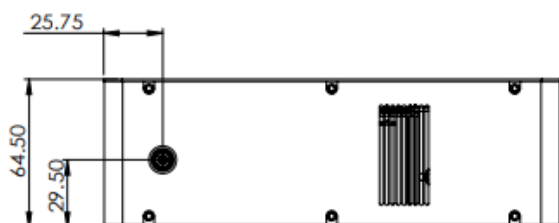
 MG1060/MG1110
 MG2870/MG6870

PRODUCT SPECIFICATION

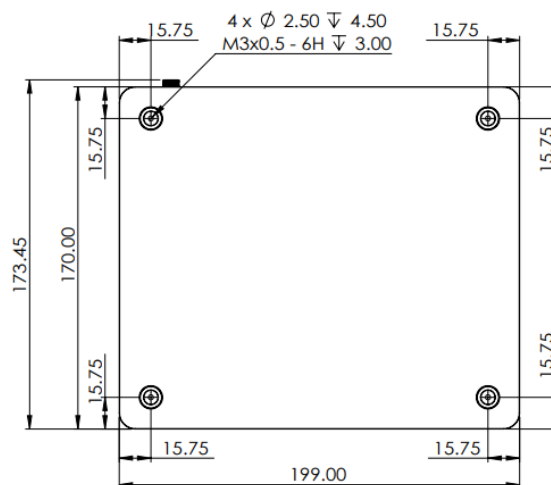
PARAMETER	MG		MG-NIR	
	MG1060S	MG1110S	MG2870S	MG6870ES
Image Sensor	2048-pixel back-thinned CCD		512-pixel InGaAs sensor	
Wavelength Range	Customizable range within 400-1100nm		Customizable range within 900-1700nm	
Optical system characteristics	f/#: 5, NA: 0.1, Focal Length (R1-R2): 85-101.5 Recommendation: the inlet numerical aperture (NA) of the user's design should be higher than that of the spectrometer			
Slit	10um/25um/50um			
Resolution (average)	0.31nm@slit 50um (560-635nm) 0.3nm@slit 25um (625-818nm) 0.33nm@slit 25um (790-960nm)	0.35nm@slit 10um (790-1050nm)	2.9nm@slit 150um (900-1050nm) 0.4nm@slit 10um (1060-1200nm) 0.2nm@slit 10um (1522-1578nm)	
Stray Light	<0.2%			
Integration Time	5ms~65s		0.1ms~24s	6us~24s
Dark Noise (average)	13		Low Gain: 7 High Gain: 9	Low Gain: 7 High Gain: 9
SNR(@0 ° C)	500		Low Gain: 4900 High Gain: 2700	Low Gain: 4900 High Gain: 2700
Dynamic range(@0 ° C)	5000		Low Gain: 9300 High Gain: 7300	Low Gain: 9300 High Gain: 7300
Dimension	199(L) x 170(W) x 64.5(H) mm			
Fiber Optic Interface	SMA905, FC/PC			
TE Cooling	One Stage TEC (Default : 0 ° C at Ambient of 25 ° C)			

Power Specification		Power by USB: 330mA at +5 VDC DC Jack for TEC: 500mA at +5VDC Supply voltage: 4.75-5.25	Powered by USB : 350mA at +5 VDC DC Jack for TEC : 1300mA at 5VDC	DC Jack : 2000mA at 5VDC
Data transfer interface		USB2.0 480 Mbps	USB2.0 480 Mbps	USB2.0 480Mbps & Ethernet 100Mbps
Environmental requirements	Storage temperature	-30°C to +70°C		
	Operating temperature	0°C to +50°C		
	Relative humidity	0% - 90% (non-condensing)		

Mechanical Drawing

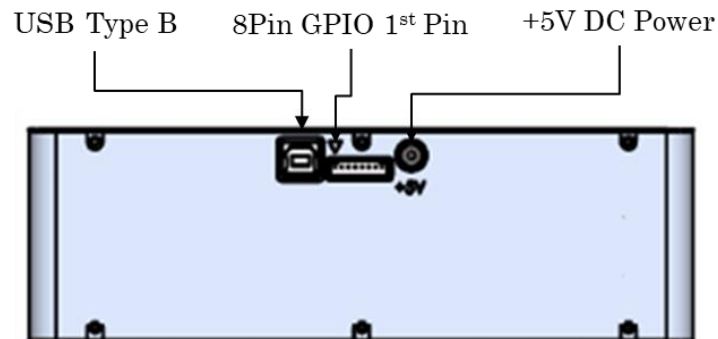


Fiber Optic Interface :SMA905

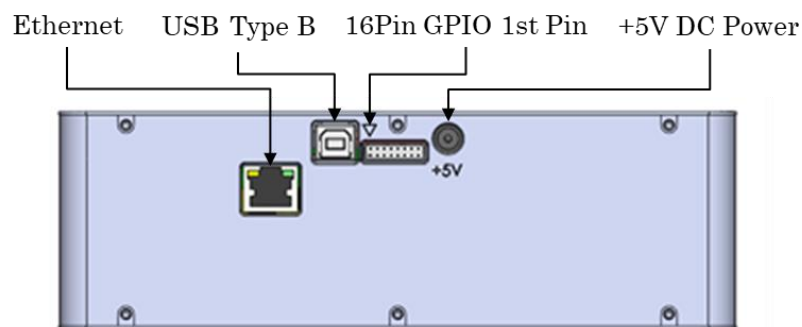


Fiber Optic Interface :FC/PC

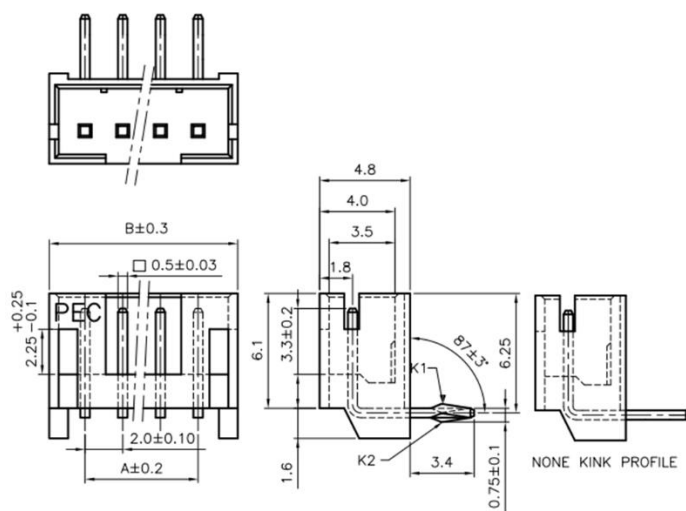
External Ports_MG1060S/MG1110S/MG2870S



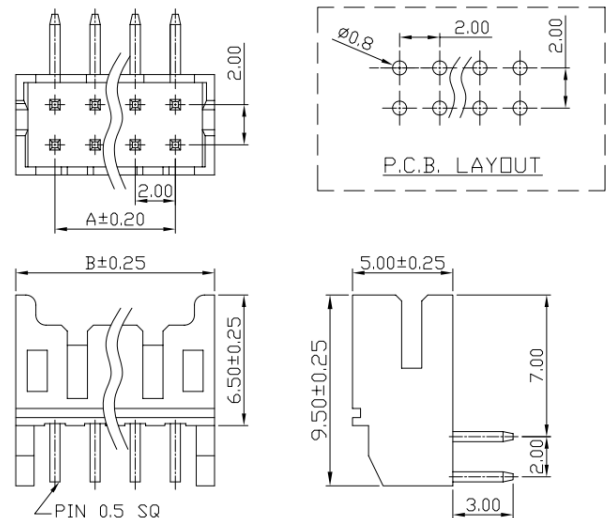
External Ports_MG6870ES



GPIO Drawing

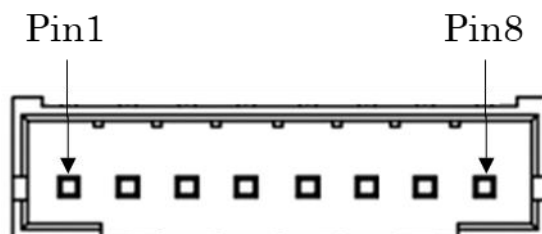


MG1060S/MG2870S



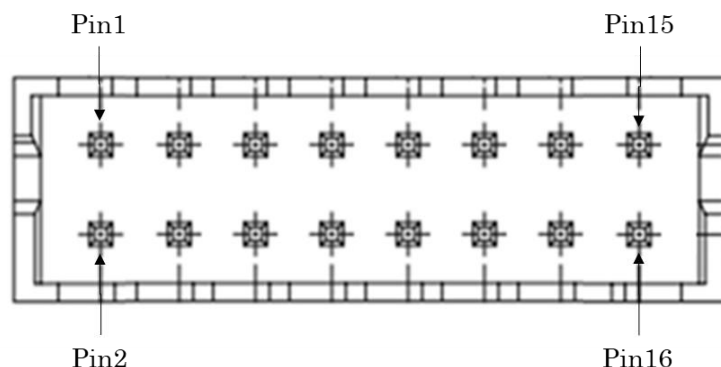
MG6870ES

PIN CONNECTION_MG1060S/MG1110S/MG2870S



Pin Number	I/O direction	Pin Name	Description
1	Input /Output	5V	When the spectrometer is connected via USB to a computer, this pin connects to the VBUS.
2	Output	TX	UART TX. TX is the output from the Spectrometer RISC microcontroller
3	Input	RX	UART RX. RX is the input to the Spectrometer RISC microcontroller
4	Output	GPIO0	General purpose output #0
5	Output	GPIO1	General purpose output #1
6	Output	LS_ON	Lamp on
7	Input	Trigger_IN	External trigger in signal
8	GND	GND	Ground

PIN CONNECTION_MG6870ES



Pin Number	I/O direction	Pin Name	Description
1	Input /Output	5V	5V Power. Connect to DC Jack 5V power input. But it is still recommended to use DC Jack for whole system power input.
2	Input	PWR Reset	Reset the device
3	Output	TX	UART TX. TX is the output from the Spectrometer RISC microcontroller
4	Input	PWM1	Pulse-width modulation
5	Input	RX	UART RX. RX is the input to the Spectrometer RISC microcontroller
6	Input	PWM2	Pulse-width modulation
7	Output	GPO	General purpose output
8	Output	GPO(S1+)	General Purpose Output #1 (Positive Signal)
9	Output	GPO	General purpose output
10	Output	GPO(S1-)	General Purpose Output #1 (Negative Signal)
11	Output	LS_ON	Lamp on
12	Output	GPO(S2+)	General Purpose Output #2 (Positive Signal)
13	Input	Trigger_IN	External trigger in signal
14	Output	GPO(S2-)	General Purpose Output #2 (Negative Signal)
15	GND	GND	Ground
16	GND	GND	Ground

NOTE

This document is a tentative version, and the specification data is for reference only. Please check the latest version of the spec sheet, as it may change in the future.