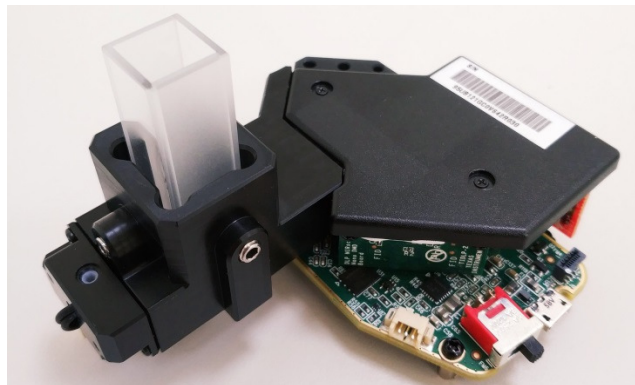




## Product Specification



**NIR-M-T1**

**Version 1.2  
2021/1/5**

<b>Revision History</b>			
<b>Revision</b>	<b>Date</b>	<b>Section</b>	<b>Description</b>
1.0	2016/12/14	All	Initial version
1.1	2020/11/06	All	Update product description
1.2	2021/1/5	B	Update 2D drawing

## Contents

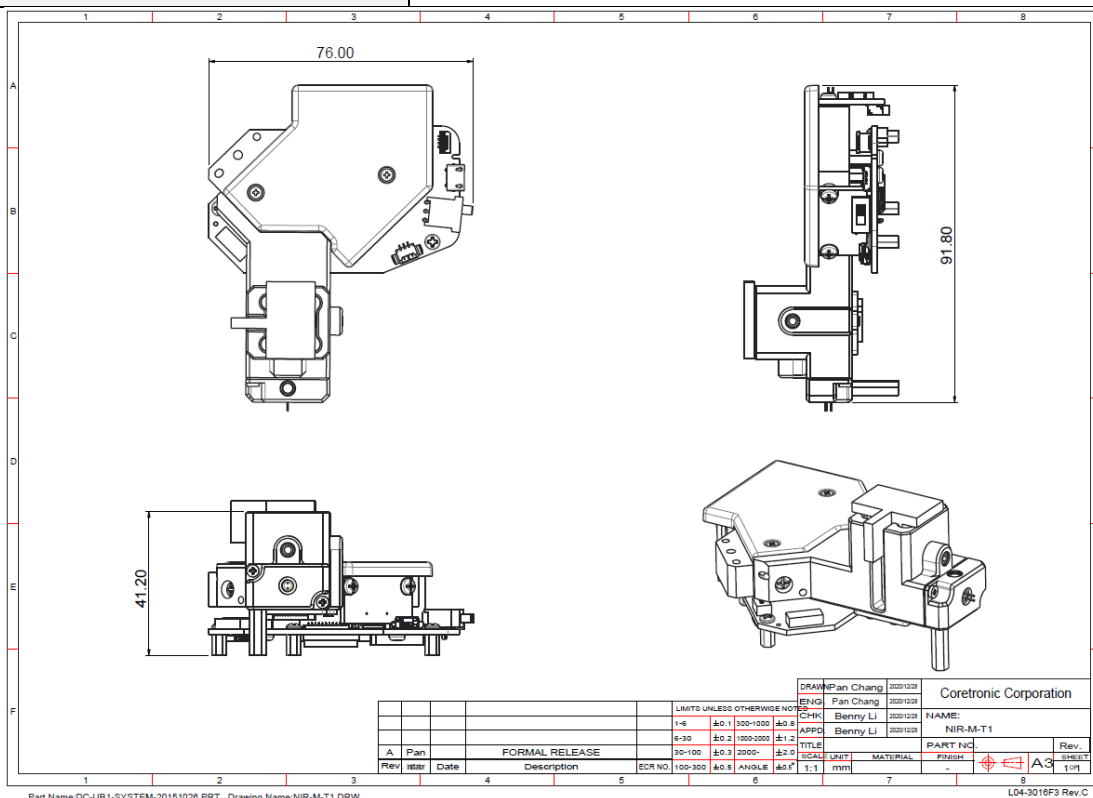
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## A. Product Highlights

- ◆ Wavelength Range: 900 to 1700nm
- ◆ Signal-to-Noise Ratio (SNR): 5,000:1 in 1 second scan
- ◆ Optical Resolution: Typ. 10nm, Max. 12nm
- ◆ Wavelength Accuracy: Typ.  $\pm 1$  nm (verified with RM-NIR), Max.  $\pm 2$  nm
- ◆ Detector: 1mm InGaAs (Uncooled)
- ◆ Slit Size: 1.8mm \* 0.025mm
- ◆ Scan Capability: Linear / Hadamard / Slew Scan
- ◆ Illumination Module: One integrated tungsten filament lamp
- ◆ Cuvette Holder : Standard 10 x 10 mm cuvette
- ◆ Communication Interface: Micro USB / UART / Bluetooth Low Energy (BLE)
- ◆ Sensors: Humidity and temperature sensor
- ◆ Power: Micro USB / UART / Li-ion battery
- ◆ Dimensions: 76mm \* 91.8mm \* 41.2mm
- ◆ Weight: < 106 g
- ◆ Operating Temperature: 0 ~ 40 °C, RH Max. 85%

## B. Mechanical Specifications

1. Dimensions (WxLxH)	76mm * 91.8mm * 41.2mm <b>Please contact ISC for CAD file.</b>
2. Weight	< 106 g
3. Cuvette Holder	Standard 10 x 10 mm cuvette*
4. Package	White box



## C. Electrical Specifications

1. System Controller	TI TM4C1297NCZAD TIVA Microcontroller
2. DLP Controller	TI DLPC150
3. PMIC	TI DLP2005 Power Management
4. SDRAM	256Mbit
5. Flash Memory	32Mbit Serial Flash
6. Humidity & Temperature Sensor	TI HDC1010
7. 24bit ADC	TI ADS1255
8. Interface	<ul style="list-style-type: none"> <li>● Micro USB</li> <li>● UART*</li> <li>● BLE*</li> <li>● Operation Panel (OP) *</li> <li>● Battery*</li> </ul>
9. Switch	Slide switch for power on/off
10. Battery Charger	TI BQ24250 (Up to 1A charge current)
11. OP PCBA (Optional)	<ul style="list-style-type: none"> <li>● Push button switch</li> <li>● Green LED: Power</li> <li>● Blue LED: BLE</li> <li>● Yellow LED: Scan</li> <li>● Red LED: Battery</li> </ul>
12. BLE PCBA (Optional)	TI CC2564MODN & on-board antenna
13. Battery	Offering reference design*

## D. Software Specifications

1. Embedded OS	RTOS
2. GUI OS Support	Windows 7, 8, 10
3. APP	iOS & Android
4. Scan Capability	Linear / Hadamard / Slew Scan
5. Device UUID	Each module has an unique device ID for identification

## E. Optical Specifications

1. Micro Mirror Array	TI DLP2010NIRAFQJ 0.2 WVGA Near-Infrared DMD
2. InGaAs PIN Photo Diode	HAMAMATSU G12180-010A
3. Wavelength Range	900 to 1700nm
4. Wavelength Accuracy	Typ. $\pm 1$ nm (verified with RM-NIR), Max. $\pm 2$ nm
5. Thermal Stability	-0.05nm/C
6. Optical Resolution	Typ. 10nm, Max. 12nm
7. Signal-to-Noise Ratio (SNR)	5,000:1 in 1 second scan

8. Slit Size	1.8mm * 0.025mm
9. Light Source	ILT Lens End Lamp (ILT-1088-1) 0.7W* 1

## F. Power Specifications

1. Power Supply	DC 5V@500mA (USB or UART inputs)
2. Power Consumption	<ul style="list-style-type: none"> <li>● Standby: Typ. &lt; 0.5 W</li> <li>● Scan (Lamp OFF): Typ. &lt; 1 W</li> <li>● Scan (Lamp ON): Typ. &lt; 1.8 W</li> </ul>

## G. Accessories

- ◆ USB Standard-A to Micro-B cable (1000mm)

\*Please contact ISC for more information.