



### Ordering Information

DTP - (1) - H(2)

(1) interface		(2) lens code	FOV
UART	UART 3.3V	04	3.814°
485	RS-485 Modbus	08	7.16°

\* DTP-UART-H04: UART interface, FOV=3.814°

\* DTP-485-H08: RS-485 interface Modbus protocol, FOV=7.16°

### Product Specifications

All of voltages refer to 3.3V, ambient temperature is 25°C unless otherwise note.

Parameter	min	Typ	Max	Unit
Supply voltage	3.2	3.3	3.6	V
Supply current	11	13		mA
Filter type	F5.5 (LWP cut on 5.5μm)			
Object temperature range	-40		380	°C
Operating temperature	-20		70	°C
IR refresh rate		10		Hz
Accuracy(*)		±2		%
Resolution digital		0.1		°C
Emissivity	0.1	0.97	1.0	ε
Standard start-up time		200		ms
Stabilization time	1			min
Weight	485	H04: 3.19g, H08: 2.96g		
	UART	H04: 3.13g, H08: 2.90g		
Communication interface	UART TTL(3.3V), RS-485			
Baud rate(Fixed)	19200bps			
Relative humidity	95% Max. non-condensing			

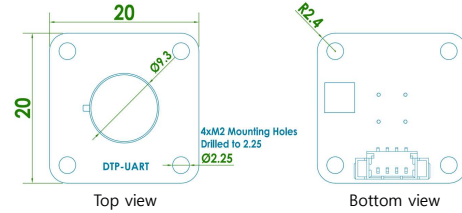
\*: ±2% of reading or ±2°C whichever is greater.

Accuracy is only effective if the object is fully covered by the sensor's FOV and applicable to stable temperature conditions.

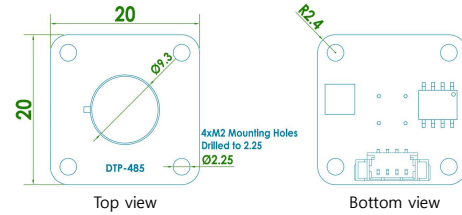
### Dimensions

unit: mm

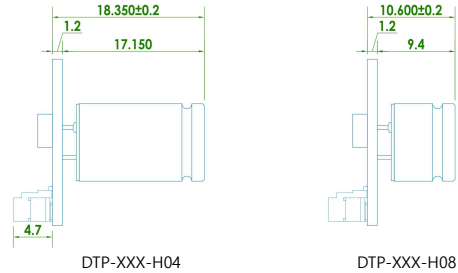
- DTP-UART



- DTP-485



- Side view



### Pin Configuration

No.	DTP-UART	DTP-485
1	GND	GND
2	RX	D+
3	TX	D-
4	3.3V	3.3V

### Accessories

	100mm length, four wire open cable	1 pc
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### Calculate Field of View

The FOV determines the size of the infrared measurement area according to the distance.

Angle	FOV
7.16°	<p>unit:mm</p> $2 \times \tan(7.16^\circ / 2) \times \text{distance}(\text{mm}) + 6.75 \text{ (mm)}$
3.814°	<p>unit:mm</p> $2 \times \tan(3.814^\circ / 2) \times \text{distance}(\text{mm}) + 8 \text{ (mm)}$

### Protocol downloads

DTP-UART: [https://www.diwellshop.com/web/en/DTP/DTP-UART\\_protocol\\_EN.pdf](https://www.diwellshop.com/web/en/DTP/DTP-UART_protocol_EN.pdf)

DTP-485: [https://www.diwellshop.com/web/en/DTP/DTP-485\\_protocol\\_EN.pdf](https://www.diwellshop.com/web/en/DTP/DTP-485_protocol_EN.pdf)

### Object Temperature To, Ambient Temperature: Ta

To is the object temperature derived from thermopile and ambient sensor outputs. Ta stands for ambient temperature.

0x016D(hex) = 365(dec) → means 36.5°C

0xFFFF(hex) → 0x000F(two's complement)=15 → means -1.5°C

- Output Data Limit

Ta: 0xFE83(-38.1°C) ... 0x4E2(120.0°C)

To: 0xFE70(-40.0°C) ... 0xED8(380.0°C)

### Emissivity Correction

The DTP is calibrated for an object emissivity of 0.97. It can be easily customized by the customer for any other emissivity in the range 0.1...1.0. Refer to the protocol pdf to adjust emissivity.

### Products handling precaution

- ※ When it comes to dust removal by air, the best method is to use a blower, and to avoid using compressed air.
- ※ Do not press the lens with your hands or any other object.
- ※ Do not scratch the lens surface with sharp objects.
- ※ Voluntary disassembly and modification of the product is prohibited.
- ※ Avoid direct sunlight, chemical substance, heat or fire.
- ※ Water resistance is not guaranteed.

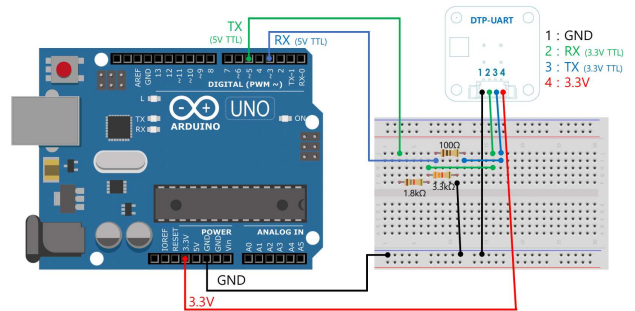
### Tutorial 1(Arduino UNO)

#### - Connection Diagram

- DTP-UART: [https://www.diwellshop.com/web/en/DTP/DTP-UART\\_Arduino.zip](https://www.diwellshop.com/web/en/DTP/DTP-UART_Arduino.zip)

Hardware: Arduino Uno, DTP-UART Sensor, 100Ω, 1.8kΩ, 3.3kΩ

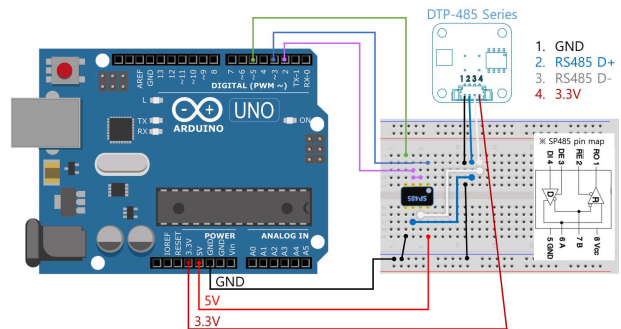
Software : Arduino IDE



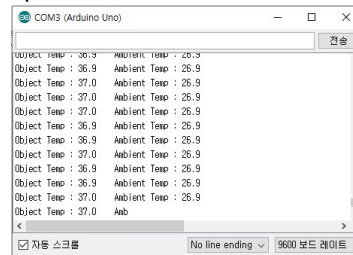
- DTP-485 : [https://www.diwellshop.com/web/en/DTP/DTP-485\\_Arduino.zip](https://www.diwellshop.com/web/en/DTP/DTP-485_Arduino.zip)

Hardware: Arduino Uno, DTP-485 Sensor, RS-485IC,

Software : Arduino IDE



#### - Expected Results.





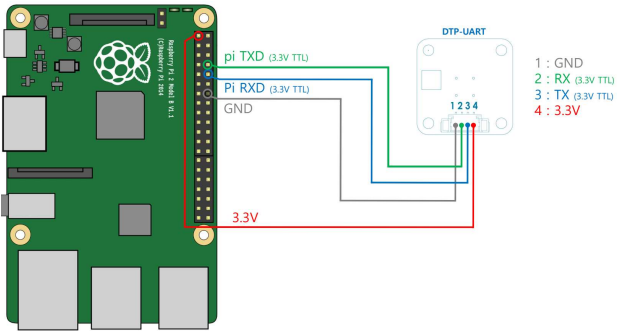
### Tutorial 2(Raspberry pi 2)

#### - Connection Diagram

- DTP-UART: [https://www.diwellshop.com/web/en/DTP-UART\\_Raspberry.zip](https://www.diwellshop.com/web/en/DTP-UART_Raspberry.zip)

Hardware: Raspberry Pi 2, DTP-UART Sensor.

Software : wiringPi library

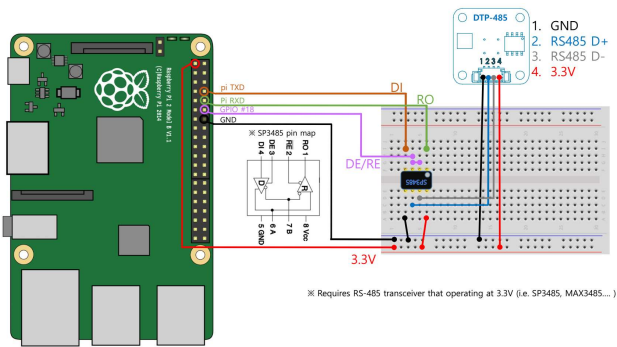


#### - Connection Diagram

- DTP-485: [https://www.diwellshop.com/web/en/DTP-485\\_Raspberry.zip](https://www.diwellshop.com/web/en/DTP-485_Raspberry.zip)

Hardware: Raspberry Pi 2, DTP-485 Sensor, RS-485 transceiver(3.3V operating)

Software : wiringPi library



#### - Expected Results.

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1- Object: 33.2 Ambient: 26.0
2- Object: 33.2 Ambient: 26.1
3- Object: 33.2 Ambient: 26.0
4- Object: 33.2 Ambient: 26.0
5- Object: 33.0 Ambient: 26.1
6- Object: 33.2 Ambient: 26.1
7- Object: 33.4 Ambient: 26.1
8- Object: 33.1 Ambient: 26.1
9- Object: 33.4 Ambient: 26.1
10- Object: 33.2 Ambient: 26.1
11- Object: 33.1 Ambient: 26.0
    
```

### Additional information

Manufacturer: DIWELL Electronics Co., Ltd. (South Korea)

Technical support: <mailto:expoeb2@diwell.com>, <mailto:dsjeong@diwell.com>

### Revision history

Version	Date(Y,M,D)	Description
1.0.0.	2022.7.26	First version is released
1.0.1	2022.10.27	Fix Dimension Errors(page 1)