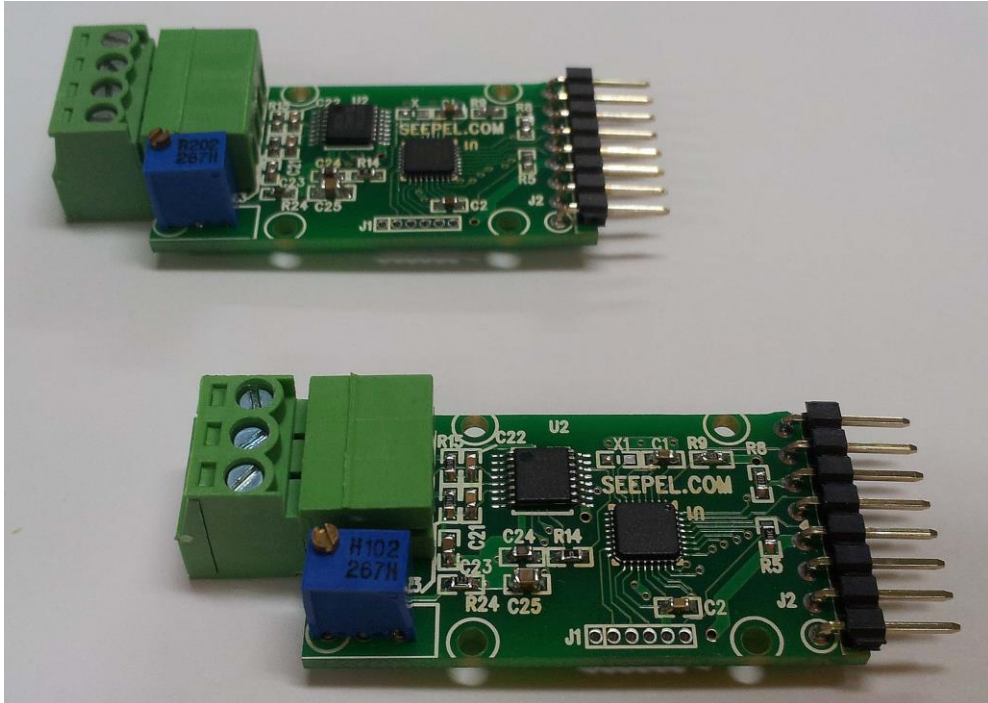

RTD(Pt100) Input Module



Hardware Module Specifications

Operating Voltage	DC +5V
RTD Input	100 ohm
Operating Environment	0°C ~ +60°C
Dimension	6mm H x 21mm W x 40mm D
Communication Mode	RS-232c (TTL Mode) & I2C (100KHz Mode)
Temperature Range	-200° C ~ +500° C
Resolution	0.05° C on channel.
Accuracy	+/- 0.1° C for all range
Single Inputs	3-wire/4-wire RTD, choice of Pt 385 or Pt 392.
Excitation Current	4-Wire(210µA)/ 3-Wire (420µA) constant current source
Analog-to-Digital	16-bit resolution

Software Module Specifications

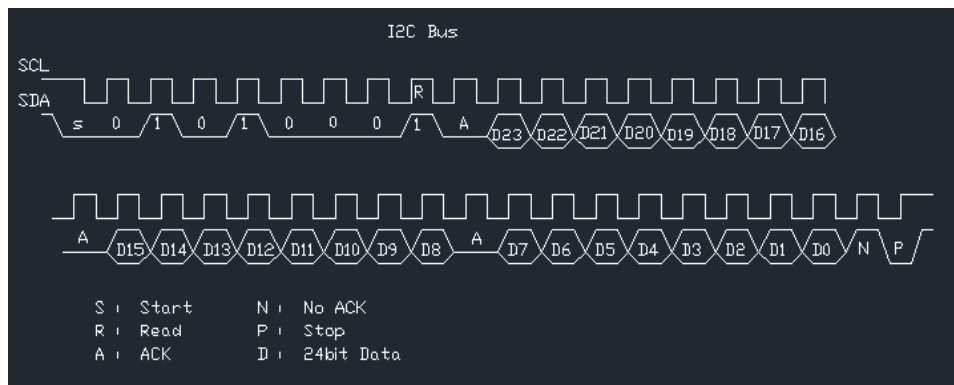
Input Type Selection	Select from either Pt 385 or Pt 392
Calibration	Easy calibration with wide operating temperatures

Commucation Protocol (RS-232C)

- 전송 형식 : RS-232c
- Stop Bit : 1
- Data Bit : 8
- No Parity
- Baud Rate : 9600bps
- Master : Host(PC)
- Slave : Taget

I2C Interface Timing Requirements

		MIN	MAX	UNIT
fsc1	I2c Clock Freq		100	KHz
tsch	I2c Clock High Time	4.5		uS
tscl	I2c Clock Low Time	4.5		uS
tsts	I2c start condition	2.5		uS
tsps	I2c stop condition	3		uS



-UART Commend -

주위) PC로 Data 통신하려면 “RS232C to TTL Converter” 를 반드시 사용해야 됩니다.

STX = FFh

1. Temperature Read (24bit Data를 읽는다 read only)

1) HOST -> TAGET

	STX	CMD1	CMD2	CheckSum
HEX	FFh	10h	03h	ECh

$$*\text{CheckSum}(1\text{Byte}) = \text{STX} \wedge \text{CMD1} \wedge \text{CMD2}$$

2) TAGET -> HOST

예) a) $0x00\ 27\ 1F = 10015\ D / 100 = 100.15\ \text{도}$

	High Data	Middle Data	Low Data
HEX	00h	27h	1Fh

예) b) $0x\ FF\ FF\ FF - 0xFF\ FB\ FF = 400\ H = 1024\ D / 100 = -10.24\ \text{도}$

	High Data	Middle Data	Low Data
HEX	FFh	FBh	FFh

2 Pt385 or Pt392 Select

CMD3 = 00h (Pt385) , 01h (Pt392)

1) HOST -> TAGET

	STX	CMD1	CMD2	CMD3	CheckSum
HEX	Stx	10H	09H	00H or 01H	xxH

*CheckSum(1Byte) = STX ^ CMD1 ^ CMD2 ^ CMD3

Pt385 = ff 10 09 00 E6

Pt392 = ff 10 09 01 E7

2) TAGET -> HOST

	STX	Data	CheckSum
HEX	stx	06H	f9H

-I2C BUS 전송 명령-

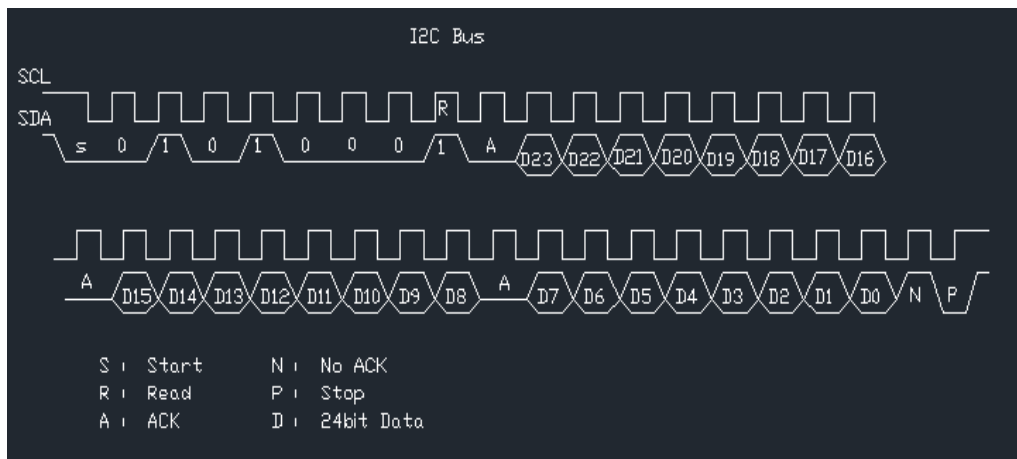
- 3 byte Hex data Read (Read Only)

S	CNTL + R	ACK	Data	ACK	Data	ACK	data	no ACK	P
	8bit 51H	1bit	8bit H Data	1bit	8bit M data	1bit	8bit L Data	1bit	

S + 0x51 + Ack + H data + Ack + M data + Ack + L data + no Ack + p

예) a) 0x00 27 1F = 10015 D / 100 = 100.15도

b) 0x FF FF FF-0xFF FB FF = 400 H =1024 D / 100 = -10.24 도



-RTD Input Calibration -

- 1) 100ohm 저항을 Fig1, Fig2와 같이 연결하고 PC에서 Temperature Read commend를 보내면 3byte 온도 HEX 값이 PC로 전송된다 . 이때 Trimpot를 조정하여 0xFFFFFFFF~0x000000 이 되도록 Setting 한다.

영하의 온도는 24bit 2의 보수 형식으로 나타내며 아래 예)와 같이 표현됩니다.

주위) PC로 Data 통신하려면 “RS232C to TTL Converter” 를 반드시 사용해야 됩니다.

예) 온도값 범위 표시 = 0x fffffa(-0.05도) ~0x 000005 (+0.05도)

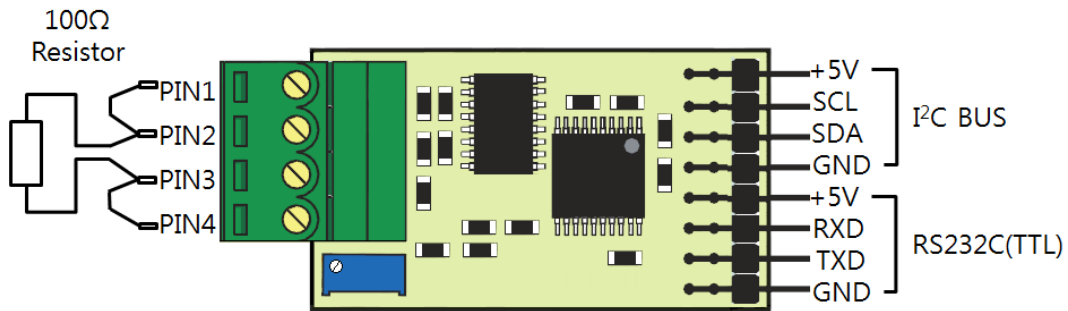


Fig1

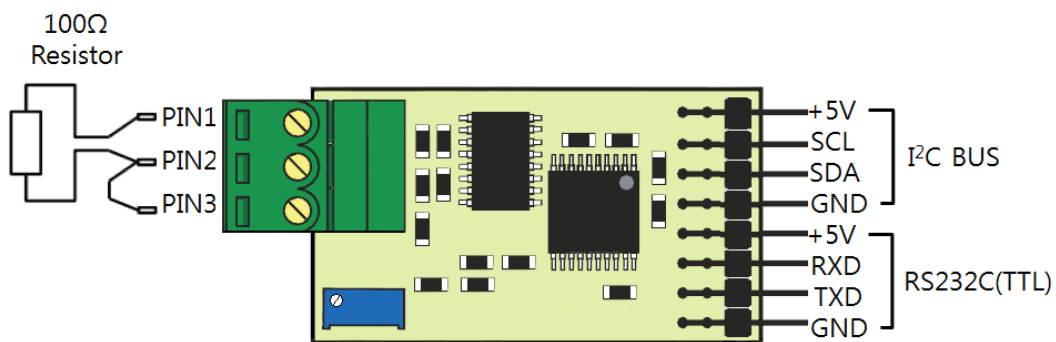


Fig2