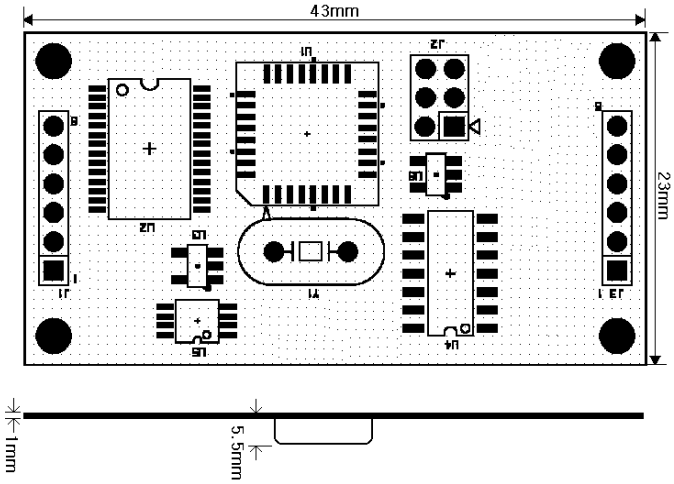
SpO2 Sensor Module

ICOM1 / ICOM2

Features

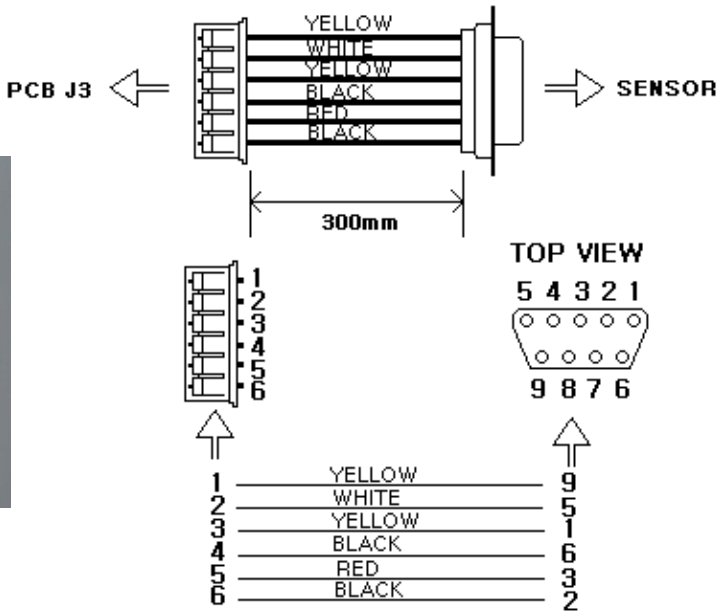
-Monitors for both neonates and adults.
-Low power consumption
-Easy interfacing optional RS-232C (ICOM1) or USB (ICOM2) communication.
-Compact size 43x23x5.5 mm.
-Digital signal processing enhances performance under low perfusion,
patient motion and other signal interference.

Module Dimension

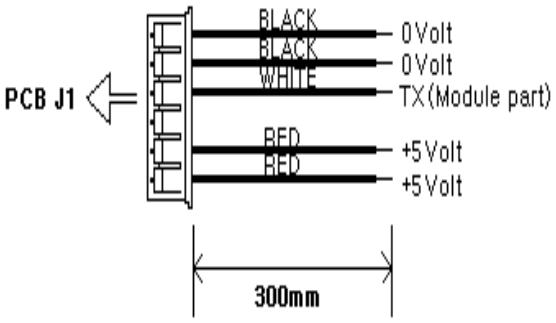


Accessory		ICOM1	ICOM2	Part No.
Finger Sensor	Resuable probe	●	●	ICOM#FA-01
Pin Connector for Sensor	PCB Connector for Sensor Harness	●	●	ICOM#C1
Pin Connector for Comm.	PCB Connector for Comm. Harness	●	●	ICOM#C2
Hole Connector for sensor Wire	Harness Wire	●	●	ICOM#C3
Hole Connector for comm. Wire	Harness Wire	●	●	ICOM#C4
Sensor Harness	PCB Connector for Comm. Harness	●	●	ICOM#C5
Comm. USB Harness	Harness for USB		●	ICOM#2US
Comm. UART Harness	Harness for UART	●		ICOM#1UA
RS-232C Adaptor	Adaptor for PC Com.	★(option)		ICOM#C6
PC Program SW	MS Windows Version	★(option)	●	ICOM#C7

Sensor Harness



UART Harness



Specification

<table>
<tr><td>Dimension</td><td colspan="3">43 ×23 ×5.5mm(Width ×Length ×Height)</td></tr>
<tr><td>Weight</td><td colspan="3">Appro. 70g</td></tr>
<tr><td>Power Source</td><td colspan="3">DC5Volt ± 5%(Option DC3.3V), 100mA</td></tr>
<tr><td rowspan="2">Power consumption</td><td colspan="3">ICOM#1 : (Max)183mWatt at DC5V, 121mWatt at DC3.3V
ICOM#2 : (Max)230mWatt at DC5V, 152mWatt at DC3.3V</td></tr>
<tr><td colspan="3">ICOM#1 : (Min) 50mWatt at DC5V, 33mWatt at DC3.3V
ICOM#2 : (Min) 150mWatt at DC5V, 100mWatt at DC3.3V</td></tr>
<tr><td rowspan="7">Measuring range</td><td rowspan="2">Pulse</td><td>Measuring range</td><td>25 - 255bpm</td></tr>
<tr><td>Accuracy</td><td>±1bpm</td></tr>
<tr><td rowspan="5">SpO2</td><td>Measuring range</td><td>0 - 100%</td></tr>
<tr><td rowspan="4">Accuracy</td><td>±1%(90-100%)</td></tr>
<tr><td>±2%(80-89%)</td></tr>
<tr><td>±3%(60-79%)</td></tr>
<tr><td>Unspecified (Under 60%)</td></tr>
<tr><td colspan="2">Perfusion Pulse Amplitude</td><td>0.2 - 20%</td></tr>
<tr><td>Respons Time</td><td colspan="3">≤4sec, in case of Pulse Rate 80bpm</td></tr>
<tr><td>Recovery Time</td><td colspan="3">≤4sec, in case of Pulse Rate 80bpm</td></tr>
<tr><td>Parameter Average</td><td colspan="3">Adaptive Pulse Rate. Ex) 10th, incase of 80bpm</td></tr>
<tr><td>Wide Patient Range</td><td colspan="3">Neonate - Adult</td></tr>
<tr><td rowspan="2">Interfacing</td><td>UART TTL</td><td colspan="2" rowspan="2">Asynchronous Operation
Baud rate 38400bps
8 Data bit, 1 Stop bit, no parity bit</td></tr>
<tr><td>USB COM Port</td></tr>
</table>

Protocol

-. UART [TTL Level (0~5[V])]

-. Asynchronous Operation

-. Baud rate : 38400bps

-. 8 Data bit

-. 1 Stop bit

-. no parity bit

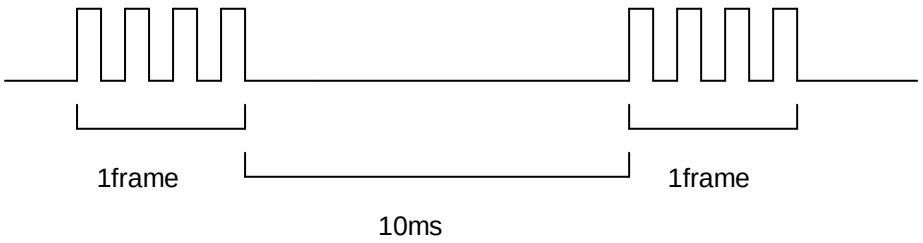
- Communication protocol

-. STX = 0xFA

-. ETX = 0xFB

-. Total 11byte Transmit

-. STX + Wave(2byte) + Hr(2byte) + Spo2(2byte) + Bar data(1byte) + Wave gain(1byte) + Status(1byte) + ETX



-. Wave, Hr and SpO2 are Decimal to Hex data

Ex1) Wave=3500, Hr=125, SpO2=98, Bar data=5, Wave gain=2, Status=3

0xFA + 0x35 + 0x00 + 0x01 + 0x25 + 0x00 + 0x98 + 0x05 + 0x02 + 0x03 + 0xFB

(STX) (Wave) (Hr) (Spo2) (Bar data) (Wave gain) (Status) (ETX)

Ex2) Wave=1234, Hr=85, SpO2=96, Bar data=10, Wave gain=10, Status=0

0xFA + 0x12 + 0x34 + 0x00 + 0x85 + 0x00 + 0x96 + 0x10 + 0x10 + 0x00 + 0xFB

(STX) (Wave) (Hr) (Spo2) (Bar data) (Wave gain) (Status) (ETX)

-. Communication data range

Wave=0 ~ 5000 (sensor or finger is open = 0x2500)

Hr=0 ~ 255 (sensor or finger is open = 0x9999)

SpO2=0 ~ 100(sensor or finger is open = 0x9999)

Bar data=0~10

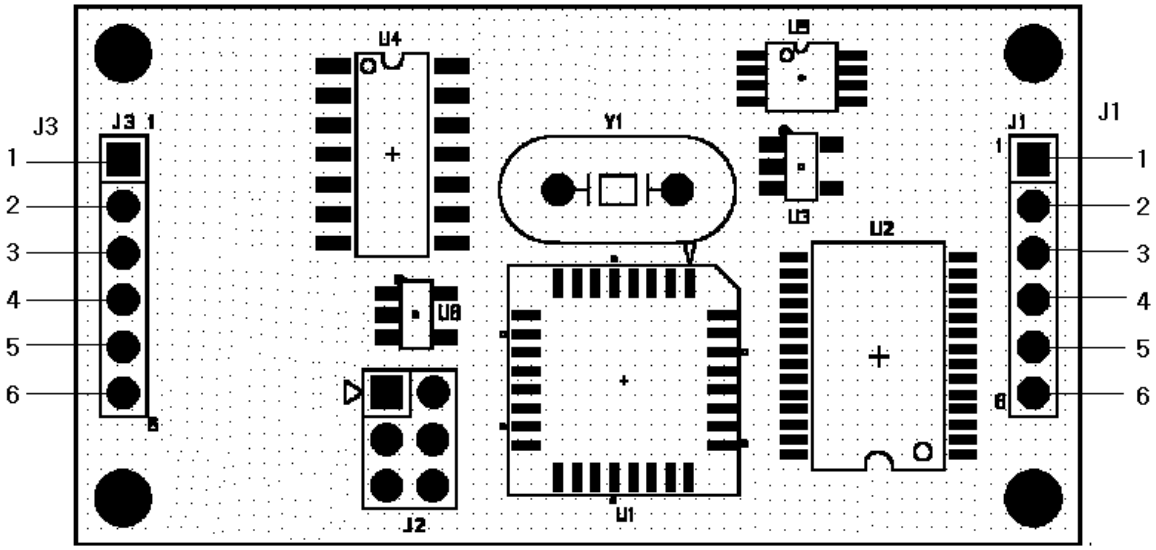
Wave gain=0~10

Status= refer to the Status

- Status

Bit	Showing	
Bit0	0	Sensor Open
	1	Sensor In
Bit1	0	Finger Open
	1	Finger In
Bit2	0	Reserve
	1	Reserve
Bit3	0	Reserve
	1	Reserve
Bit4	0	
	1	Moving while measuring
Bit5	0	
	1	No signal for a period
Bit6	0	
	1	Pulse beep
Bit7	0	Reserve
	1	Reserve

SpO2 sensor / Power connection



- Power connection (PCB J1)

Pin NO.(PCB J1)	Name	Description
1	VCC	+5Volt
2	VCC	+5Volt
3	RX(Module part)	0~5Volt
4	TX(Module part)	0~5Volt
5	GND	0Volt
6	GND	0Volt

- Sensor connection (PCB J3)

Pin NO.(PCB J3)	Name	Description	D-sub(9pin) connector's NO.
1	- Photodiode	- Photodiode in Probe	9
2	+ Photodiode	+ Photodiode in Probe	5
3	Sensor	Sensor ID	1
4	GND	GND	6
5	IR Photoled	Input IR drive voltage from module	3
6	RED Photoled	Input RED drive voltage from module	2