



PPG-2TF-660 2.0

Transmittance SpO₂ Module

Works with the AECG100 main console or SECG 5.0 AIO Multi Vital Sign Simulator as the first transmittance SpO₂ performance tester designed for R&D in oximeter manufacturers

Outputs R and IR analog signals to test heart rate and blood oxygen saturation (SpO₂) functions
 Individually adjustable AC, DC, and PI parameters of R/IR, and equipped with raw data playback function
 Suitable for the development of transmittance PPG products such as finger clip oximeters and patient monitors

- Works with the AECG100 main console or SECG 5.0 AIO Multi Vital Sign Simulator to test heart rate, PPG, PWTT, and SpO₂ functions
- Adjustable SpO₂ parameters, such as AC, DC, and PI (fine adjustment down to 0.01%, meeting FDA recommendations) values of R/IR, to confirm the accuracy of oximeters
- Built-in 14 types of ambient light signals and respiratory variation simulation – add-on signals for more authentic testing
- Equipped with Auto Sequence function – sorts the parameters of different test items into a designated order for automated testing while eliminating the need to develop automated testing programs
- Raw data playback – plays recorded raw data or customized waveforms for repeated verification to facilitate the development process
- Provides SDK supporting multiplatform for users to flexibly develop automated testing programs
- Equipped with MCX to BNC ports to connect to an oscilloscope – outputs amplified and stable signals for viewing the voltage of AC analog signals of R/IR, optical signals received by the PPG-2TF-660 2.0, and the switch status of R/IR LED of oximeter
- Adjustable PPG waveform characteristic points, such as the Systolic Peak (SP), Dicrotic Notch (DN), and Diastolic Peak (DP), in a wide range and precise values for flexible test settings ⁽¹⁾
- Exclusive Auto Test SpO₂ Mode ⁽²⁾ – automatically calculates the DUT's DC value of R/IR and fills in the SpO₂ table to rapidly build the R curve, bringing convenience for testing the consistency of quality on oximeters ⁽¹⁾
- Built-in 6 transmission rates – simulates 5 finger types varying in color brightness and thickness, and neonatal foot test mode for measuring newborns to optimize algorithms ⁽¹⁾

Note: (1) Only available when paired with the AECG100.

(2) This mode is mainly for developers to quickly test for reference, not for after-sales calibration and testing on oximeters. If users require development tests on SpO₂ parameters and specifications, please use the SpO₂ Mode.

Medical Standard Coverage

AECG100 main console: IEC 60601-2-47 IEC 63203-402-3:2024 YY 0885 YY 9706.247

SECG 5.0 AIO: IEC 60601-2-25 IEC 60601-2-27 IEC 60601-2-47 GB 9706.225 GB 9706.227

YY 9706.247 YY 1079 YY 1139 YY 0782 YY 0885 JJG 760 JJG 1042 ANSI/AAMI EC11 ANSI/AAMI EC13

• Testing Scenario



(The image illustrates the testing scenario of the PPG-2TF-660 2.0 and AECG100.
Please refer to the user manual for detailed installation and instructions when using PPG-2TF-660 2.0 with AECG100 or SECG 5.0 AIO.)

• Specifications

Parameters	Specifications	
Heart Rate	Setting Range	10 — 300BPM
	Minimum Step Size	1BPM
	Accuracy	±1BPM
LED DC Level	Setting Range ⁽¹⁾	300 — 3000mV
Reference Output	Minimum Step Size	1mV
LED AC Level	Setting Range ⁽¹⁾	0.1 — 300mV
Reference Output	Minimum Step Size	0.01mV
PI (AC level / DC level) ⁽²⁾	Setting Range	0.01% — 20% (AC / DC, varies with AC or DC level)
LED1 Absolute Irradiance (100%) [§]	Intensity	2.36mW / m ² nm
	Accuracy	±10%
LED2 Absolute Irradiance (ambient light) [§]	Intensity	0.25mW / m ² nm
	Accuracy	±10%
LED Scan Rate	Rate	50 — 40kHz (Normal mode / Standalone mode) ⁽³⁾
		10kHz (Raw data mode)
PD Sample Rate	Accuracy	±5μs
	Rate	250kHz (Single channel)
PD Response Time	Accuracy	±5μs
	Rising	1μs Typical ⁽⁴⁾
	Falling	1μs Typical ⁽⁴⁾
	Setting Range	1% — 100%
	Minimum Step Size	1%
SpO ₂ % SpO ₂ parameter specifications (SpO ₂ and PPG Test Modes)	Accuracy	91% — 100%: ±1% + specified accuracy of the DUT
		81% — 90%: ±2% + specified accuracy of the DUT
		71% — 80%: ±3% + specified accuracy of the DUT
		Below 70%: with unspecified accuracy
SpO ₂ % SpO ₂ parameter specifications (Auto Test SpO ₂ Test Mode)	Accuracy	91% — 100%: ±1% + specified accuracy of the DUT
		81% — 90%: ±3% + specified accuracy of the DUT
		71% — 80%: ±5% + specified accuracy of the DUT
		Below 70%: with unspecified accuracy

§ Data Collection Method : To connect the spectrometer with a 2-inch integrating sphere, and fix the integrating sphere on the DUT to measure the absolute irradiance of the LED of the DUT.

Note:

- (1) The AECG100 and SECG 5.0 AIO test systems adjust AC/DC output according to the linearity of LED electro-optical conversion.
- (2) The PI value may vary according to the different calculation methods of each manufacturer.
- (3) When used with the AECG100, it supports normal mode, standalone mode, and raw data mode; when used with the SECG 5.0 AIO, only the raw data mode is applicable.
- (4) PD response time varies with the light intensity of the DUT.

• Ordering Information
SpO₂ Module

Part No.	Description	Quantity
100-AE00018	Model No.: PPG-2TF-660 2.0 Model Name: Transmittance SpO ₂ module (30cm) Package contents: • PPG-2TF-660 2.0 x 1 • USB Type-C to Type-C cable (male to male, 150cm, black) x 1 • MCX (RF) male to BNC cable (30cm) x 2	1
	Model No.: PPG-2TF-660 2.0 Model Name: Transmittance SpO ₂ module (60cm) • PPG-2TF-660 2.0 x 1 • USB Type-C to Type-C cable (male to male, 150cm, black) x 1 • MCX (RF) male to BNC cable (30cm) x 2 • Signal expander module x 1	1

Compatible Products

Part No.	Description	Quantity
100-AE00001	Model No.: AECG100 The main console unit for ECG testing.	1
100-EC00002	Model No.: SECG 5.0 AIO Model Name: Multi Vital Sign Simulator The standalone ECG simulator with 12 leads (RA, LA, LL, N, V1 — V6) output for ECG performance tests.	1

Optional Accessories

Part No.	Description	Quantity
K27-1500301	USB Type-C to Type-C cable (male to male) (150cm) (black)	1
K29-0300601	MCX (RF) male to BNC cable (30cm)	1

Optional Calibration Service and Warranty Extension

Part No.	Description
YY0007	Model No.: C3 Provides (3) years of calibration service coverage. WhaleTeq equipment can be calibrated to original performance on the basis of (1) year interval.
YY0008	Model No.: R3 Extends the limited warranty from (1) year to (3) years.



PPG-2TF-660 2.0
Scan for
more information

www.whaleteq.com

service@whaleteq.com

8F., No. 125 Songjiang Rd., Zhongshan Dist., Taipei City 104474, Taiwan

+886-2-2517-6255

+886-2-2596-0702