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ST- Win Standard is a Windows based Stress Test System. It enables accurate computation of ST measurements, complying full frequency response of 0.05 Hz to 150 Hz

Technical Specifications

1. Environmental

Operating Temp	: -5 °C to +50 °C
Operating & Storage Humidity	: 0 to 95 % non-condensing

2. Power supply


Input	: 230V AC+/- 10% @ 50Hz
Power consumption	: < 10 Watt

3. Performance

Display	: 1024 x 768 pixels,
Display area	: 320 mm x 240 mm
Language	: English
Alarm	: Audio alarms for HR and ST level at pre-configured Values
QRS Beep	: On each QRS

4. Acquisition

Frequency response	: 0.05 Hz to 150 Hz with notch at 50Hz
Filter	: DSP
Input impedance	: 10 MΩ
Time constant	: > 3.2 sec
A/D conversion	: 12 bit
Noise	: < 20μV _{p-p}
Leakage current	: < 10 μA
Patient isolation	: Optical isolation.
Gain	: 5, 10 & 20 mm/mV selectable.
CMRR	: > 120 dB
Sweep speed	: 25.0 mm/S.
Accuracy of HR	: +/- 2 BPM.
Sampling Frequency	: 250 samples per second simultaneous
Model	: STWin-Standard, STWin-Basic, STWin-Deluxe, All Models available with blue tooth facility
Storage	: 12 lead unaveraged ECG, 10 second Rhythm strips

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of 12 leads, Medians after every 8 sec along with HR, BP and fiducial points, full disclosure of entire test

Leads-Off detection : Yes

Protocols : Pre-programmed protocol including BRUCE, MODIFIED BRUCE, NAUGHTON, MODIFIED BALKE and user editable protocols

Printouts : Automatic and manual online printing with grid On/off facility. Print colour reports.

5. Treadmill

Power : 230V, 50Hz, 15A

Power consumption : 1.5KVA

Incline Range : 0-22%

Dimension : L X W - 2055 X 750 mm

Walking Area : 1440 X 500mm

Weight : 100Kg

Patient Weight : Up to 250kg

Belt Speed : Smooth, 0-15Kmph

In-House manufacturing : Yes

6. Minimum Requirement of PC for ST-Win system:

1. Motherboard : Recommended
 Make : D-Link, ASUS, INTEL, HIS.
 Chipset : Intel, VIA.
 Speed : FSB, 400MHz. and onwards.
2. CPU : Recommended
 Make : Intel P-5, Speed 2.4 GHz. 400 FSB.
3. RAM : Recommended
 Make : Symtronics, Hyundai, Transcend.
 Size : 512 MB.
 Speed : 266MHz.
4. Serial Ports (RS – 232)/USB port: Two working serial ports, one for mouse and other for ST-Win acquisition unit.
5. VGA card : 64 bit, 2 MB memory PCI VGA card.
6. Monitor : **15"** color monitor
7. SMPS : Recommended

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- Make : Priya, Mercury, and Intex.
Capacity: 300 Watt.
8. Hard disk : Recommended
Make : Seagate.
Size : Barracuda 40GB 7200 RPM.
9. Display Settings : Resolution - 1024 X 768.
10. Key board : with 101 keys.
11. Mouse
12. Operating system : Windows XP and onwards
13. 1 KVA stabilizer.
14. CD ROM : Recommended
Make : LG. Samsung Sony, ASUS.
Type : Speed 52X.
15. Printer : Recommended
Type : HP Laser Jet 1000, HP Laser Jet 1010,
HP Laser Jet 6L Gold/ Pro.
16. Independent earthing connection


Detailed features

❖ Acquisition

- Body level acquisition of 12 lead ECG
- Simultaneous acquisition of 12 Leads of ECG @ 250 samples per second per channel with ADC resolution of 12-bit.
- Frequency Response – DSP filter of 0.05 to 150Hz with notch at 50Hz
- Leads-Off detection
- Facility to store 12 lead unaveraged ECG
- Facility to record rhythm (10 second Rhythm strips of 12 leads)
- Beep on QRS
- Facility to Rerun test


❖ Acquisition display modes

- **12 lead display**
 - Display 12 lead, 4 second ECG on First screen. Enlarged Medians next to each lead are displayed.
 - In exercise stage Basal Enlarged medians and current Medians are superimposed.
 - Facility to move superimposed medians.
- **3 lead display**
 - 8 seconds display of 2 leads of ECG + 1 QRS detection Lead.
 - Facility to configure 3 leads to any of the 12 ECG leads
 - Display lead sets (I, II, III) OR (aVR, aVL, aVF) OR (V1, V2, V3) OR (V4, V5, V6)
 - An enlarged Exercise median of the minimum ST level lead with fiducial points marked is displayed. (The enlarged median can be any

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of the 12 leads in Manual Mode. In Automatic mode, the lead having maximum ST Depression is displayed by the system.)

- Along with enlarged median, basal median is displayed in exercise stage and peak exercise median is displayed in recovery for comparison
- **Online display of following parameter in all display modes**
 - Sweep speed
 - METS
 - Heart rate is updated every 4 seconds with symbol and Target heart rate with percentage of completion target heart rate.
 - BP in mmHg
 - ST measurement Mode (Manual / Auto)
 - Current ST Level and ST Slope of enlarged median
 - ECG gain with standardization pulse
 - Test and Phase duration in hh:mm format
 - Exercise protocol stage name
- ❖ **Online printouts**
 - Facility to print selected online reports
 - Linked Median report (12 linked medians with ST Levels of selected long lead)
 - 12 lead Raw ECG report
- ❖ **Automatic Reports**
 - Facility to print selected stage reports automatically
 - Linked Median report (12 linked medians with ST Levels 1 long lead)
 - 12 lead Unaveraged ECG report
 - 12 lead Raw ECG report
 - Rhythm report – 12 leads of 5 seconds or 6 leads of 10 seconds
 - Mixed Median report with one Median complex + 2.5 seconds ECG of each lead
 - Extended Mixed Median Report - One Median complex + One Basal Median complex + 2.5 seconds ECG of each lead
 - Selected median report
 - Stage reports configuration includes
 - Reports at stage end
 - At set interval in 'EXERCISE' and 'RECOVERY' stage
 - Automatic 'PEAK EXERCISE' Linked Median printout
 - 6 leads of 10 seconds OR 12 leads of 5 seconds selection for Rhythm Report
 - Automatic 'PEAK EXERCISE' Linked Median printout (10 seconds after Exercise is stopped).
 - Grid On/Off
- ❖ **Acquisition settings**
 - Facility to enter BP 50 seconds before end of each exercise stage
 - Relearn the median template
 - Facility to enter a stage comment in each phase
 - Gain: 0.5, 1.0, 2.0 mV/cm
 - Change the QRS detection lead
 - Automatic/Manual detection of fiducial points (E, J, Post J)
 - Hold/Release treadmill stage

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- QRS beep On/Off
- NASAN filters ON/OFF

❖ **Review**

- Review data of selected patient
- Grid/Graph/No grid option on all review screens
- Facility to edit HR and BP of any stage
- Facility to edit Patient Details

❖ **Review display modes**


- 12 medians screen
 - 12 medians are displayed with ST-level
- Mixed Median report with one Median complex + 2.5 seconds ECG of each lead
- Facility to zoom median of selected lead and edit fiducial points
- Trends
 - Trends of HR, BP, ST Level, ST Slope, J Amplitude
 - 8, 16, 32, 48, 56 seconds resolution.
- View and print rhythm strips marked during acquisition. Facility to select 12 leads of 5 sec. OR 6 leads of 10 seconds for each printout
- View unaveraged ECG
- Superimpose medians of any 2 stages in different colours.
- Full wave disclosure of 1 minute of any lead
- Edit and print Summary Report using standard edit options

❖ **Reports**

- 12 lead linked median (single / all stages)
- Mixed Median Report
- 6 lead Rhythm report of 10 seconds (single / all stages)
- 12 lead Unaveraged ECG report
- Extra Comments report
- Stage Report
- Brief Summary Report
- Trends Report (HR, BP, ST Levels / ST Slopes, J Amplitude of 3 configured leads)
- Full wave disclosure of 1 minute of any lead
- Facility to print superimposed medians of any 2 stages in different colours
- Summary Report (Hospital Address and referring doctor designation to be printed in Summary reports)
- ST-Levels & Slopes Table
- Extended Mixed Median Report
- Selected median report

❖ **Settings**

- Hospital details
- Referring Doctor list
- Standard Summary report option
- ST-Win system configuration
- Treadmill protocol
 - Available standard protocols
 - BRUCE
 - MODIFIED BRUCE
 - NAUGHTON
 - MODIFIED BALKE
- Printing details configuration

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- System configuration
 - Speed in km/hr or m/s
 - TM speed at exercise stop (slow-0 km/hr, Fast-0 km/hr / 1.2 km/hr)
 - ST Level lead in Summary
 - Long lead in reports
 - Screen Display leads (3)
 - 3 Leads in Trend Report
 - Stage Report Leads
 - Treadmill Support: Compact, Treadstar, TreadstarXP, Trackmaster
 - COM Port Selection for amplifier.
 - Median update time is configurable to 1 to 8 sec.
- ❖ **Utilities**
 - Test Treadmill
 - Test acquisition unit
 - Calibrate TM Speed
 - Calibrate TM Grade
 - Delete printout from printer queue
- ❖ **Display**
 - Resolution – 1024 X 768
 - 15" monitor

* Due to our continuous product improvement programme, features can be enhanced.