TECHNICAL SPECIFICATIONS OF

Treadmill Stress Test System

S.N.	Description of function
1.1	In this system the patient exercises on a treadmill according to a standardized protocol and the cardiac abnormalities can be studied under stress conditions which we may miss under resting
S.N.	**Operational requirements**
2.1	The Treadmill Stress Test System should be complete with acquisition of resting and stress ECG, Treadmill Unit with interface with all the protocols and provision of printing the resting as well as Stress ECG and analyzing the same.
2.2	Should be able to be interfaced to Hospital Information System/ LAN/WLAN
S.N.	**Technical Specifications**
3.1	Should acquire and analyze 12/15 simultaneous ECG Leads
3.2	Should have facility for display of all 12/15 leads real time Rhythm ECG on screen
3.3	Should have facility of on line storage of patient ECG data. Storage of at least 500 patients on HDD. In addition the storage on floppy drive or CD should be possible
3.4	Updated medians with elimination of artifact ectopy and aberrancy in all leads
3.5	Filters with facility to eliminate artifact due to respiration muscle/noise, AC interference, baseline wandering without compromising/distortion in ST segment changes
3.6	Should have facility to do the reanalysis of stored ECG report with reanalysis of the current stress report by changing the measurement point i.e. E, J and post J points
3.7	The monitor should display auto comparison of resting versus current lead of maximum ST depression separately with color coded protocol, stage, clocks for elapsed time, total time, Target HR, Treadmill speed & grade, PVC counts/minute, warning messages & prompts, lead check torso.
3.8	The system should have user defined report generation in different formats including the ST/HR loops and ST/HR index up to 15 leads formats for close diagnosis.
3.9	Should have facility for 12 lead resting electrocardiogram with full interpretation
3.10	Should have provision of software driven, user programmable exercise protocols or standard protocols. Facility should be available for choice for both staged and ramp protocols
3.11	System should print comprehensive final report on a minute by minute record of ST segment changes ST segment trend plot and acceleration of ST segment
3.12	Display should have facility to amplify a normal gain along with a sample of resting ECG complex for close test.

3.13	System should have dynamic scan facility to display automatically the worst ECG lead
3.14	Signal acquisition from patient and analysis should be performed at the patient itself to eliminate the environmental noise
3.15	Automatic arrhythmia detection and documentation
3.16	Facility for display of processed ECG vectors after signal averaging allowing view of artifact free ECG complexes.
3.17	Should have beat to beat online storage and event review
3.18	System should be able to provide the real time printing by auto or manual mode in desired formats. Writer resolution should be thermal 1000 line/sec x 200 dpi for printing
3.19	System should have automatic noise free programmable treadmill FDA/CE/ISI approved/certified.
3.20	System should be able to be integrated with HIS/LAN/WLAN
3.21	Should be able to transfer data through modem card(optional)
3.22	The treadmill should always start from 0 mph and has load capacity of 450 lbs. And speed range of 0-13.5mph and elevation 0-25% and should have facility to run the self-calibration programme. Treadmill should have minimum 60" walking surface
3.23	Treadmill should have two stop modes with digital Microprocessor control, including one patient activated stop mode. The same should be interfaced to the main analysis system
S.N.	**System Configuration Accessories, spares and consumables**
4.1	Stress Test System -01
4.2	Treadmill -01
4.3	Interface cable -01
4.4	Printer -01
4.5	Patient cable -02
4.6	Body wear -01
4.7	Paper -1000 A4 Sheets/ standard ECG paper recording
4.8	Any standard accessories required for running the system
4.9	UPS of requisite strength with standby for 30 minutes.

The system should contains all the above accessories in Integrated or as separate accessories..

S.N.	Environmental factors
5.1	The unit shall be capable of operating continuously in ambient temperature of 10 -40^0 C and relative humidity of 15-90%
5.2	The unit shall be capable of being stored continuously in ambient temperature of 0 -50^0 C and relative humidity of 15-90%
5.3	Shall meet IEC-60601-1-2 :2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility.
S.N.	**Power supply**
6.1	Power input to be 220-240VAC, 50Hz, appropriately fitted with Indian plug
6.2	Resettable over current breaker shall be fitted for protection
6.3	Suitable Servo controlled Stabilizer/CVT
6.4	UPS of suitable rating conforming to IS-302 shall be supplied for ECG/computer system
S.N.	**Standards and safety**
7.1	Should be FDA or CE approved product
7.2	Electrical safety conforms to standards for electrical safety IEC-60601-1 General Requirements and IEC-60601-2-25 Safety of Electrocardiograms . (OR EQUIVALENT BIS Standard)
7.3	Electrical safety conforms to standards for electrical safety IEC-60601 / IS-13450
7.4	Manufacturer should have ISO certification for quality standards.
S.N.	**Documentation**
8.1	User manual in English
8.2	Service manual in English
8.3	List of important spare parts and accessories with their part number and costing.
8.4	Certificate of calibration and inspection from factory.
8.5	Log book with instruction for daily , weekly, monthly and quarterly maintenance checklist. The job description of the hospital technician and company service engineer should be clearly spelt out
8.6	List of Equipments available for providing calibration and routine Preventive Maintenance Support. as per manufacturer documentation in service/technical manual.