



General description

The PTME system is a desktop terminal for pre-trip and pre-shift medical examinations under the remote supervision of a healthcare professional. The terminal identifies the employee by face, conducts a questionnaire and measures breath ethanol, body temperature, blood pressure, pulse and SpO₂ and, with physician approval, prints an admission label with a QR code.

All measurement channels, microcomputer, cameras and thermal printer are integrated into one enclosure. Runs on Debian OS; data is transmitted to the healthcare professional over the network.

Developed by CTZD LLC under TU 26.60.12-001-58727345-2024 as a Class 2b medical device.

Features and advantages:

[1] Identification by facial recognition or employee ID, plus video conferencing with a healthcare professional via the built-in cameras, microphone, and speaker.	[2] Electrochemical breathalyzer: measures ethanol vapor concentration in exhaled air within 10 seconds after sampling.	[3] Complete wizard-guided examination cycle: questionnaire, measurements, summary results on a 10-inch touchscreen, physician clearance decision, and printing of a label with a secure QR code. The remote administration module maintains a terminal registry, collects diagnostics, and updates software.
[4] Non-contact infrared thermometer: three consecutive measurements with averaging, 0.1 °C resolution.	[5] Oscillometric blood pressure monitor with external cuff and SpO₂ pulse oximeter: blood pressure, pulse rate, and blood oxygen saturation in a single measurement.	

Supported standards

The system complies with GOST R 50444, GOST R IEC 60601-1 (Protection Class II, Type BF applied part), GOST R IEC 60601-1-2, and GOST R IEC 62304. External surfaces withstand disinfection in accordance with MU-287-113.



TECHNICAL
SPECIFICATIONS

The terminal runs Debian OS on a microcomputer powered by a Rockchip RK3588S processor. The software guides the user through the examination stages, while the remote administration module tracks installed terminals, collects diagnostic information, updates software, and uploads questionnaires. The enclosure is made of plastic with a steel base and rear cover; the front panel is protected by glass. All measurement channels are integrated into the terminal; an external cuff is connected for blood pressure measurement. Power is supplied by an external 24 V adapter.

Key specifications

Housing	Plastic; steel base and rear cover; glass front panel
Display	10.1-inch, 1280 × 800 touchscreen
Processor	Rockchip RK3588S
RAM	8 GB LPDDR4X
Cameras	5 MP main camera; 2 MP secondary camera with 120° field of view
Audio	2 W speaker, microphone
Printer	Thermal label printer, paper width up to 80 mm
Environmental sensors	Ambient light; air temperature and humidity
External interfaces	Gigabit Ethernet, power, external cuff, headphones
Software	Debian OS, examination software, remote administration module

Measurement channels

Ethanol vapor in exhaled air	Electrochemical; 0-1.5 mg/L; ±0.05 mg/L up to 0.5 mg/L, ±10% above; no more than 10 s
Blood pressure and pulse	Oscillometric; 20-300 mmHg, ±3 mmHg; pulse 40-200 bpm, ±5%
Body temperature	Non-contact IR; 32.0-42.0 °C, ±0.3 °C, 0.1 °C resolution; no more than 60 s
Oxygen saturation	SpO ₂ 50-100%, ±5%; pulse 30-240 bpm, ±2 bpm

Power and operation

Power supply	24 V, 3.75 A adapter; 100-240 V AC, 50/60 Hz
Power consumption	No more than 60 W
Ready time	No more than 3 min; continuous operation for at least 24 h
Operating conditions	+10...+35 °C, relative humidity up to 80%
Reliability	MTBF at least 10,000 h; service life 5 years

Physical characteristics

Dimensions	331 × 167 × 345 mm (W × D × H)
Weight	7.5 kg
Package contents	Terminal, power supply, power cable, external cuff, documentation

