



Product Overview

The Building Management System (BMS) Trainer is a comprehensive, modular, and expandable training platform designed to simulate real-world building automation and control systems. The trainer demonstrates the integration of HVAC systems, lighting automation, energy monitoring, security/access systems, and alarm management under a centralized BMS platform.

The system is developed for educational and industrial training purposes and supports hands-on learning in building automation technologies using industry-standard communication protocols such as BACnet and Modbus.

The trainer provides practical exposure to monitoring, control, diagnostics, communication setup, and troubleshooting of integrated building systems.

3. System Architecture Requirements

Open Protocol System

- BACnet (Required)
- Modbus TCP/IP
- Modbus RTU

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

Multi-Level Architecture

Field Level

- Sensors
- Actuators

Control Level

- DDC Controllers
- PLC Controllers

Management Level

- SCADA / BMS Server

Communication Features

- Ethernet-based network with IP addressing
- RS-485 communication network
- Expandable for IoT and cloud integration

4. Hardware Components

4.1 Central Supervisory System

Industrial Grade Workstation

- Intel i7 / Ryzen 7 Processor or higher
- 16 GB – 32 GB RAM
- Dual monitors (Minimum 24")

Software

- Licensed BMS / SCADA software

Data Server Features

- Trend logging
- Alarm database
- Historical reporting
- Remote monitoring capability (LAN-based)

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

4.2 Controllers (DDC / PLC)

Programmable Controllers

Each controller includes:

- Minimum 16 Digital Inputs / Outputs
- Minimum 8 Analog Inputs / Outputs

Communication Support

- BACnet IP / MS-TP
- Modbus TCP / RTU

Programming Methods

- Function Block Programming
- Ladder Logic
- Graphical Logic Programming

4.3 Human Machine Interface (HMI)

HMI Features

- Touchscreen display (Minimum 10")
- Real-time visualization
- HVAC, lighting, and alarm control
- Customizable dashboards

5. Field Devices (Sensors)

Minimum Included Sensors

- Temperature sensors (Room type & Duct type)
- Humidity sensor
- CO₂ / Air Quality sensor
- Light (Lux) sensor
- Occupancy sensor (PIR)

6. Actuators and Controlled Equipment

- Motorized control valve (2-way / 3-way)
- Damper actuator

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

7. Additional Modules

Variable Frequency Drive (VFD)

- Motor simulation support

Fan Motor Module

- Speed-controlled fan module

Lighting Control System

- Dimmable lighting control
- Relay-based lighting control

Smart Energy Meter

- kWh energy monitoring

8. HVAC Simulation Modules

The trainer includes functional HVAC simulation modules such as:

Air Handling Unit (AHU) Model

- Airflow and temperature control simulation

Fan Coil Unit (FCU) Simulation

- Cooling and airflow control demonstration

Temperature Control Loop

- Closed-loop PID control system

9. Electrical and Energy Monitoring

Energy Monitoring Features

- 3-Phase digital power meter
- Energy monitoring dashboard
- Load simulation bank

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

10. Security and Auxiliary Systems

Basic Integration Modules

- CCTV simulation interface (Optional)
- RFID-based access control module
- Fire alarm simulation panel

11. Communication Network

Network Components

- Managed industrial Ethernet switch
- RS-485 network for Modbus RTU
- Structured cabling with patch panel

12. Software Requirements

Licensed BMS Software Platform

Software Features

- Graphical floor plan interface
- Real-time monitoring and control
- Alarm management system
- Historical trending and reporting
- Controller programming software
- Energy analytics module
- Multi-user access capability

13. Training Capabilities

The system supports practical training and experiments for the following applications:

Core Modules

- HVAC control
 - Temperature control
 - Fan control
 - Damper control
- Lighting automation
 - Manual control
 - Scheduled control

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

- Sensor-based control
- Energy monitoring and load management
- Alarm handling and fault diagnostics

Advanced Modules

- BACnet communication setup
- Modbus device integration
- PID control tuning
- System fault simulation
- Troubleshooting exercises

14. Physical Construction

Mechanical Construction Features

- Modular training racks
- Mobile workstation structure
- Clearly labeled wiring and components
- Industrial-grade panel enclosure
- Transparent/open layout for visibility

15. Power Supply

Input Supply

- 220–240V AC
- 60 Hz

Protection Features

- Circuit breakers
- Emergency stop button
- Overload protection.

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com