

TM-ETC-AMS

Integrated control system for operating theatres

The TM-ETC-AMS (TM-Enhanced Touch Control and Alarm Monitoring System) is an integrated control and monitoring system, specifically intended for operating theatre environments.

With the aid of the TM-ETC-AMS, it is possible to integrate various systems and device user interfaces into one straightforward package for the benefit of the users. At the same time, the use of electromechanical equipment can be avoided and a user interface can be realised in a way which fulfils the high aseptic and hygiene requirements of operating theatre environments.

When combining the TM-ETC-AMS with Telemerkki Oy's manufactured operating theatre control board, an entity is created where the same operational philosophy aimed at durability, user-friendliness and easy maintenance is followed in all the details of the product.

Properties

The system offers a uniform touch screen based user interface, for the technical control and monitoring systems of the operating theatre's environment, such as building automation, general lighting and speciality lighting.

The system also includes a general purpose alarm monitoring unit (gas alarms, earth leakage monitoring, etc.) and a real-time analogue or digital clock with timer functions.

With the system's built in macro functionality, a user can save different settings into easy to use one button controls, e.g. cleaning, room preparation and many other predefined occasions. The macros can be programmed through an easy "teach-in" method.

Company Profile

Telemerkki offers industry-leading mechanical and electrical design and production services. Our service concept includes skilled staff specialised in project production, sophisticated production methods and the control of production and logistics from sales to delivery in accordance with the requirements and needs of our clients. Our service is based on over 35 years of experience and the quality certificates granted by SGS Fimko Oy (ISO 9001-2000 and production EN60439).

The main product branches of our activities are:

- bridge and engine control room consoles of ships
- bridge consoles and equipments related to ship management simulators
- electronics, software and integrated control panels needed for the control of hospital operating theatres
- project-specific device manufacture

Our activities are based on fast lead times and the effective management of the order and delivery process of several simultaneous projects. Product manufacture includes mechanical and electrical project design, client approvals, overall logistics management, sheet metal mechanics, and the testing and manufacture of the electrical device carried out by our electrical engineering department.

The basic values of our activities are responsibility, reliability, quality, efficiency and transparency. By following these values, we offer our clients a flexible, reliable and competitive total delivery, whose purpose is to save the resources of the client for core know-how management.

In the future, we want to offer our clients an even broader aggregate delivery and a production service that also includes products or partial components for the client's systems.



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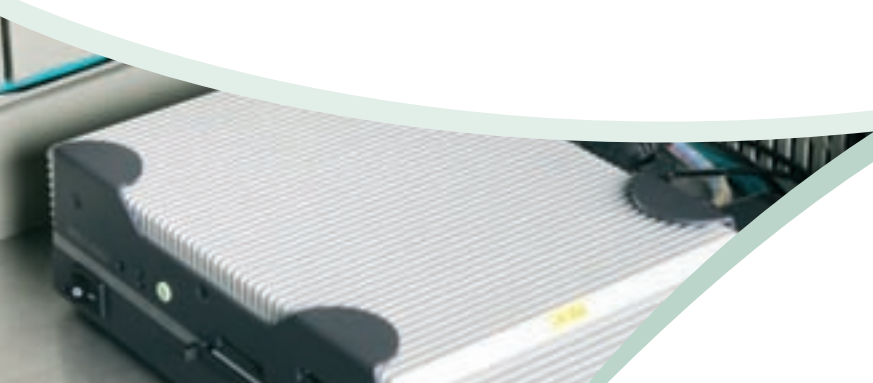
The structure of the system:

The main parts of the TM-ETC-AMS system are a TFT touch screen, a HMI application controller, and a TM-EFDC I/O controller. An available accessory is a LON ® Gateway for an interface to the building automation system and a DALI-interface unit for the lighting control. The I/O amount can be increased by simply equipping the system with additional TM-EFDC I/O units

The size of the touch screen can be up to 19 inches, where the visual and clear user interface collects the information of each control systems as its own groups. The standard user interface language is English, but other user languages are available as an option.

The HMI-application controller is an x86-based embedded control unit, without fans or other moving parts and designed for demanding conditions. The task of the unit is to control the touch panel, screen and the I/O control system. The software has been realised, based on an object oriented, modular and parametric control and monitoring application developed by Telemerkki Oy.

The I/O Controller TM-EFDC is a 32-bit microprocessor unit with versatile properties, containing digital and analogue inputs and outputs, a six channel-UART serial communication unit and a CAN-bus interface, as well as a LAN interface, which includes a built-in four-channel 10/100 Ethernet switch.



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System benefits

- An independent system interface for the control and monitoring of operation theatres, which is easy to use by the operator.
- Multi-language user interface.
- A clear, backlit display.
- An easily expandable system.
- Reduces space requirements for the control board, when compared to non integrated systems.
- A compact, hygienic and easy to care for structure.

Options

- Various power sources, other than the 12 and 24V nominal voltage.
- A LON @ gateway.
- DALI-interface unit.
- Programmatically realised customisation and function options.
- Commissioning services.
- Additional language options.



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Technical data

In general	
Input voltage Power requirement	12 and 24 VDC (other voltages with separate power supplies). 85 W (50 W Display, HMI Controller 25 W, and I/O control 10W).
Operating temperature	0..+40 °C
Operation Panel Protection degree	Up to 19-inch TFT touch screen. IP65 front, IP20 behind.
Connectors	1.5 mm ² plug type spring connectors for digital and analogue channels, plus series connectors. Other connectors, according to separate descriptions or project specific wiring.
Approvals	CE
HMI application controller	
Processor	x86 1.3 GHz
Memory	1 GB RAM ▪ 2 GB internal CF card for software. 128 MB external CF card for setting.
Connections	1 x LAN (10/100) ▪ 3 x USB ▪ DVI (max 1280x1024 pixels)
Air-conditioning control Setting the values	With analogue control signals and / or through the LON gateway. Pre-selection, step-by-step or as a direct feed.
Lighting control Buttons Status indicator	Through general-purpose I/O and / or a DALI bus interface. Impulse or toggle. As feed back or with program control.
Alarm and monitoring section Status outputs	Alarms as digital inputs, timer and / or analogue limit exceeding. As individual points and / or grouping. Switching-off through the user's acknowledgement and / or removal of the cause of the alarm.
Clock Timer	Analogue or digital display. The possibility to synchronise with a slave clock's 24 V pulse system. Elapsed time clock or timer. The operating state is selectable during use. Time setting with a virtual numeric keyboard.
Macros	Quick selection from any display page. Saving by teaching. Content review and editing functions.
TM-EFDC I/O control	
Ethernet switch External ports: Protocols	integrated 4-port 10/100 Ethernet switch. 2 x RJ45 ports and 2 x M12 (D-coding) connectors. MODBUS / TCP, UDP, and HTTP – protocols.
Serial connectors	2 x RS422/485, 3 x RS422 and 1 piece RS232/422 galvanic isolated serial channels. RS232 with RJ45 connector.
Digital inputs	32 x galvanic isolated digital inputs. Support for pulse-type clock systems.
Digital outputs	32 x galvanic isolated digital outputs.
Analogue inputs	4 x analogue inputs (± 10 V, 16 bits).
Analogue output	4 x analogue outputs (± 10 V, 16 bit).



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