

emerald™ TSR - Intelligent Access Terminal

Intelligent Access Terminal with VoIP Intercom & Remote Applications

Functional Description Document - Rev 3



Description

emerald TSR is a Door Access Controller. It controls access through doors by reading RFID identification tags and granting, or denying, individual access based on a database of users, or via instruction from a remote human supervisor. The door is locked, or released, by means of an electrically operated lock controlled by the TSR.

In conjunction with CEM's security management system, TSR also provides users with a multifunctional touch screen access terminal to access a range of remote server-based applications. TSR has built in Voice over IP (VoIP) intercom functionality which enables users to communicate directly with a human system supervisor.

Features

- Card Reader & Door Access Controller in one device.
- Supports wide range of RFID smart card technologies, including ISO-14443A and ISO15693 compatible cards.
- User-friendly 4.3" capacitive LCD touch screen with an intuitive Graphical User Interface at the door.
- Integrated VoIP intercom functionality and PIR motion detection.
- Ability to run Remote Applications from a Central Database Server using secure communications.
- Ethernet with onboard PoE+ technology to power the terminal and additional door furniture.
- Four analogue inputs to monitor alarm conditions.
- Two dry contact, changeover, relay outputs to activate door strikes or other equipment.
- Off-line database for up to 250,000 cardholder records, and up to 50,000 transaction events.

Specification

Physical

Size.....	157 x 108 x 49mm (At widest point) (6.1 x 4.25 x 1.9")
Weight.....	< 450g (16oz) with connectors
Housing.....	Flame retardant polycarbonate containing fully encapsulated electronics
LCD.....	Capacitive light touch 4.3" Diagonal, 480 * 272 square pixel 16 bit colour
Colour.....	Black
Voltage	10 – 14V DC

PoE Version	when powered from IEEE802.af compliant source
Current	350mA (typical) 500mA (peak)
Current available to power door furniture	None
PoE+ Version	when powered from IEEE802.at PoE+ compliant source

Current	350mA (typical) 500mA (peak)
Current available to power door furniture	850mA*

Environmental

IP Rating	IP65
Temperature PoE (IEEE802.3af).....	-20° to 70°C (-4° to 158°F)
Temperature PoE+ (IEEE802.3at).....	-25° to 55°C (-13° to 131°F)

Functionality

Inputs	Four analog inputs – voltage provided
Outputs.....	2 relays volt free contacts (dry contact)
Switchable wet outputs	
Rating	Internal: 12Vdc @ 1.6A External: Up to 30Vdc @ 2A (60W)

Memory.....	128 MB RAM, 256MB NAND Flash
Expansion	Micro SD slot for optional memory expansion
RTC Battery Backup	3.0V rechargeable Lithium-on
Off-line Database	
Cardholders.....	Up to 250,000 cardholders
Transactions	Up to 50,000 transactions
Card technologies.....	MIFare (CSN)/ DESFire(CSN)/ CEM DESFire/ iClass/ iClass SE

Communication Interface

To Exit Reader.....	RS485 (CEM S610 Exit Reader)
	Wiegand (3rd party read heads)
Cable Connection	M3 Screw terminals
To System Host.....	10/100 Base-T TCP/IP using CAT5e Unshielded twisted pair cable
Cable Connection	RJ45
Operating Modes.....	Door Mode, Interlock, Control Post, Passenger, Multi-swipe, Global PIN
Intercom	SIP, VoIP, VOX 2-way Half-duplex or Push-to-Talk (configurable), G.711 Audio Codec, Entry Checklist Mode

* Only PoE+ IEEE802.at provides power for both the terminal and additional door furniture (current available to power door furniture: 850mA). Power requirements beyond this limit will require the DIU230.

Ordering Information

Product Code	Description
TSR/300/105	emerald TS300 terminal (MIFare CSN/ DESFireCSN/ CEM DESFire)
TSR/300/106	emerald TS300 terminal (picopass)
TSR/300/108	emerald TS300 terminal (iClass/ iClass SE)

Key Features' Details

TSR Models

The TSR/100/105 is the base model of this intelligent access terminal with normal access control facilities.

The TSR/200/105 is the mid range model of intelligent access terminal with additional VoIP intercom facility enabled.

The TSR/300/105 is the top range model of intelligent access terminal with additional VoIP intercom and Remote Applications enabled.

All three models are electronically identical and also use the same version of firmware. A licensing code system is used to enable / disable different functionality in the units so a base system can be purchased and later upgraded without having to change hardware or firmware.

Off-Line Card Validation & Database

The TSR has a large internal database that enables it to operate in off-line mode. In off-line mode the terminal can hold up to 250,000 cardholder records. The database is stored in non-volatile FLASH memory. The TSR remains fully functional in the event of a communications failure or disconnect from the central server. The TSR has the facility to store a transaction record of up to 50,000 events, also in non-volatile FLASH memory.

The TSR has the ability to run Remote Applications that are hosted on the central server. These Remote Applications display critical statistics and important information for system maintenance, such as top system alarms and most recent alarms, directly at the door. Additional applications include 'First and Last swipes' for time and attendance purposes, 'Your Card Details' and 'Scheduled Visitors'.

LCD Touch Screen & User Interface

The TSR has a bright, full colour, touch sensitive, scrollable 4.3" graphical LCD screen. With hardened glass and an anti-glare coating, the TSR is durable enough for indoor and outdoor use. The TSR can display predefined messages and icons to cardholders depending on their privileges e.g. Wrong Door, Lost/Stolen Card, Expiring Card and Access Granted. The screen can also be used to display advertising and information announcements. It's built in mini PIR sensor provides energy saving motion detection and a multicoloured LED provides users with a visual indication of access status. The TSR can detect when a person approaches and lighten the display in response to the approach, or darken it to save energy.

RFID

The TSR is an RFID reader and door access controller in one. It can read a wide range of 13.56MHz RFID cards in multiple formats – ISO-14443A and ISO-15693. The TSR is compatible with multiple security formats, both cryptographic and encryption.

VoIP Intercom Functionality and Passive Infra-Red Detector (on TSR 200 & 300 models)

The TSR terminal features a built-in microphone and speaker to support fully integrated access control and intercom functionality. This allows for two-way conversation between the user at the terminal and a workstation operator. The operator has the ability to accept or reject the call request and can remotely open the door. The operator can also choose to initiate a call with the emerald terminal.

Remote Applications (on TSR 300 models only)

The TSR can run remote applications similar in concept to apps on smart phones. A range of apps have been produced for specific functions. These are available to the customer when the TSR is licensed as a TSR/300/105.

Interfaces

The TSR terminal features an on-board 10/100Mbps PoE+ compatible Ethernet connection and communicates directly with the host server.

The TSR can be used and configured through local and remote configuration. The TSR can communicate with local devices such as door interface units using its on board RS-485 and RS-232 serial communication interfaces. It can also communicate with third party read-heads using the industry standard Wiegand interface and can read 4 analogue input signals which can be configured by customer.

Mounting

The TSR consists of two parts: the back-box which has an I/O PCB and the front-box which has the main PCB, LCD and Core Board. The back-box is mounted to a fixture and the external connections are wired in. The front-box is then connected to the back-box by way of a flying ribbon cable, and the Ethernet connection is made (if used). The front-box is then screwed to the back-box to seal the complete unit.