

## 1 EXpert™ Based Access Control System - Overview

TDSi EXpert™ type door controllers offer a fully featured door controller with up to 48,000 card memory.

EXpert2™ is capable of controlling 2 doors with the facility to expand using slave units. Up to 7 slave units can be connected to any one EXpert™ controller, providing control of up to 16 doors in any one master/slave cluster. Note that the memory available for card holder storage when connecting slave units will be decreased.

EXpert2™ is an intelligent door controller in that all card holder and access rules are stored allowing complete operation should communications to the host communications server be lost. All door controller types feature as standard storage for up to 1,000 events should this situation occur.

EXpert2™ utilises an 8-bit data, 16-bit address microcontroller, which handles central processing and control. A further microcontroller is fitted which handles low-level and background tasks.

The firmware is flash-upgradeable, providing a means to upgrade the embedded software when available.

A real-time clock (with integral battery backup) is fitted allowing the access decisions to be made and time-stamping of the access events to occur. The clock is updated by the host communications server regularly.

## 2 Features

### 2.1 Antipassback

EXpert2™ door controllers feature antipassback facility across all doors within any master/slave cluster, preventing sharing of cards. In the case where an EXpert<sup>2</sup>™ controller is mounted independently, antipassback operates across the 2 doors of that door controller only. Four types of antipassback are offered:

- Timed antipassback – where the same key may not be used to gain access more than once within a specified period. That key may however be used to gain access via another door within that specified period.
- True antipassback – used where there is both an in and an out reader. The key, once used to gain access cannot be used to gain access again until it is presented at the out reader.

Antipassback is 'hard' whereby an event is logged that antipassback has been infringed and the user is prevented from passing through the door. This is opposed to what is described as 'soft' antipassback whereby only the event is logged but the user is still allowed to pass through the door.

A forgiveness setting allows all cards that are currently subject to antipassback rules to have their antipassback status automatically cleared (either at midnight or midday).

It is not possible to achieve a global antipassback system whereby all doors within the access control system are covered unless our EXgarde Pro™ V4 software is used to a maximum of 100 readers.

## **2.2 Door Controller – Time Groups**

The system allows up to 64 time groups to be configured. Time groups determine when the access groups can gain access to controlled areas.

## **2.3 Door Controller – Mantrap**

EXpert™ controllers offer a mantrap feature that requires one door to be closed before another is opened. This functionality can be across any door or doors within the same master/slave cluster.

## **2.4 Door Controller – Communications**

EXpert2™ door controllers can be connected via an RS-485 network. It is recommended that no more than 20 controllers are connected to one portal on the communications server PC to ensure adequate system performance.

Alternatively, a direct connection can be made (PC to door controller) through an in-built RS-232 port.

EXpert2™ IP door controllers also feature 10/100 Base TCP/IP port for connection to an Ethernet over a Local Area Network (LAN) or Wide Area Network (WAN). Connection is made via a standard patch lead fitted with an RJ-45 plug. A built-in RS-485 converter allows connection of further units via an RS-485 network.

Should it be required to connect the door controllers using RS-485, a separate converter is available providing the facility to do so.

Communications to the EXpert<sup>2</sup>™ door controller is conducted at 38,400 baud.

LEDs are fitted to the door controller board providing visual indication of communications activity.

## **2.5 Door Controller – Enclosure and Design**

EXpert door controllers are fitted within a steel clamshell type painted enclosure with a single fixing (non-security type). The enclosure also includes a power supply providing power for both controller and locks.

Cable entry is made through the rear or through 'knock-out' pieces in both the top and bottom of the case.

The enclosure design features earth braid termination springs providing an easy method to terminate cable earth braid.

An aperture is provided at the front allowing for connection of the EXkeypad™ local programming device if this is being used.

A visible lens on the front of the enclosure provides indication of power to the door controller.

Adequate mounting space is provisioned allowing for easy installation.

High-quality pluggable 'rising clamp' style connectors are utilised throughout the product for maximum reliability and to ease installation. All connections are marked by a removable terminal label.

## 2.6 Door Controller – Power Supply Unit

EXpert™ door controllers feature a high-quality, low noise fully regulated 90 to 264 VAC switched mode 13.8 VDC power supply providing power to both controller board and locks. The power supply unit is supplied with the EXpert™ door controller, mounted within the enclosure.

The power supply is rated at 4 Amps.

Provision is made for connection and charging of a 7 Ah back-up battery to allow operation of the controller and locks in the event of power failure. Switching between main power to battery power and back is seamless, requiring no user intervention. An event is logged when main power fails.

TDSi does not supply the back-up batteries; these are to be sourced by the installer or project company.

## 2.7 Door Controller – Memory

EXpert™ controllers are classed as intelligent, in that they store all card holders and access rules allowing complete operation should communications to the host communications server be lost. All door controller types feature as standard storage for up to 1,000 events should this situation occur.

However, it is possible to configure the memory partition such that more space is allocated for event retention by decreasing the space allocated for the number of card holders.

Events are automatically uploaded to the host communications server upon communications being restored. No user intervention is required.

The overall memory size is fixed and cannot be upgraded or expanded in any way.

Memory is battery backed so that all data is retained should power to the door controller be lost.

## 2.8 Door Controller – Programming

Programming of the EXpert2™ door controller is accomplished through use of the EXguard PRO™ access management software or through use of the EXkeypad™ local programming tool. This tool is available as an additional product. The EXkeypad™ tool connects to the EXpert2™ door controller through a 25-way D-type connector, positioned on the front of the controller.

## 2.9 Door Controller – Inputs

Expert2™ controllers feature 8 inputs per door controller, 2 being used per installed door for connection of a door contact and a request to exit button. The remaining inputs are available for third-party equipment point monitoring. Inputs can be used as either non-supervised or supervised in addition to being able to be configured as normally open or normally closed.

Each EXpert2™ door controller or slave allows an additional expansion card to be fitted providing further input capability. Three types of expansion card are available.

- 32 additional Input
- 32 additional Input and 16 additional Output

- 32 additional Output

Up to 320 inputs can be managed by one EXPert2™ controller

Inputs can be used to perform secondary tasks within the access control system.

### 2.10 Door Controller – Relay Output

EXPert2™ door controllers feature 4 changeover type relay outputs, 1 being used for each installed door for control of the lock strike. The remaining outputs are available for control of third-party equipment.

Each EXPert2™ door controller or slave allows an additional expansion card to be fitted providing further relay output capability. Three types of expansion card are available.

- 32 additional Input
- 32 additional Input and 16 additional Output
- 32 additional Output

Up to 160 inputs can be managed by one EXPert2™ controller

All relays are Form C with contact ratings of 2A at 30 VDC.

### 2.11 Door Controller – Reader Interface

EXPert2™ door controllers feature numerous reader interfaces. These include:

- Magnetic clock and data (ABA track 2 emulation)
- Wiegand (26 and 37 bit)
- TDSi Microcard (infra-red stripe)

Any reader with the above mentioned reader interface can be connected to EXPert2™ door controllers. However it should be noted that in the case of Wiegand, the card number reported by the door controller may differ to that printed on the card. TDSi provides as part of the EXguard PRO™ suite of tools an application, *EXcustom* that allows specific modification of Wiegand bit length and patterns to suit the cards in use.

EXPert™ controllers feature a ‘self learn’ function that allows the controller to discover the output format of any connected card reader.

### 2.12 Door Controller – Sounder

EXPert2™ door controls are fitted with an integral sounder, this being configured to produce a ‘door ajar’ alarm should the door be held open for a longer period of time allowed.

## 3 Door Controller – Specifications

EXPert2™ door controllers carry the following specification.

Dimensions	390 x 410 x 90 mm
Weight	7.3 kg
Operating Temperature	-5 °C to +40 °C
Operating Humidity	0 %RH to 95 %RH (non-condensing)
Power Supply Input	90 to 264 VAC, 50 or 60 Hz
Power Supply Output	13.8 VDC, 4 A including battery back-up charging output
Card Holders	2 door (EXPert2™ alone) 48,000

	4 door (EXpert2™ plus one slave) 36,000
	6 door (EXpert2™ plus two slaves) 30,000
	8 door (EXpert2™ plus three slaves) 25,000
	10 door (EXpert2™ plus four slaves) 21,000
	12 door (EXpert2™ plus five slaves) 19,000
	14 door (EXpert2™ plus six slaves) 17,000
	16 door (EXpert2™ plus seven slaves) 15,000

#### 4 Door Controller – Approvals

EXpert2™ door controllers are CE approved and carry the CE logo. The product has been tested in accordance with the following Standard:

- EN60950-1: 2001 IT Equipment Safety
- EN55022: 1994 EMC Electromagnetic Emissions
- EN50130-4: 1995 Electromagnetic Immunity

#### 5 Readers – Overview

TDSi supply a number of reader options covering the following technologies

- Contactless EM410x and compatible – EXprox™ and Optica™ models
- Contactless mid range EM410x and compatible – up to 90 cm read range
- Contactless EM410x and compatible panel mount reader
- Contactless MIFARE® serial number reader – in accordance with ISO 14443
- Magnetic swipe - reader
- Microcard™ infra red reader

##### 5.1 Readers – EXprox™

TDSi EXprox™ readers are contactless, EM410x (and compatible) card readers. Readers are supplied with Magnetic clock and data (ABA track 2) and 26-bit Wiegand outputs.

EXprox™ readers can be supplied in a vandal resistant stainless steel housing providing increased resistance to attack. These readers are designated eXprox VR.

Readers are fully encapsulated and are suitable for external mounting.

##### 5.2 EXprox™ Reader – Specifications

Dimensions	40 x 101 x 18 mm
Weight	205 g (EXprox™) 280 g (EXprox VR™)
Operating Temperature	-20 °C to +55 °C
Operating Humidity	0 %RH to 95 %RH (non-condensing)
Power Supply	5 to 14 VDC, 100 mA maximum
Operating Frequency	125 kHz
Card Technology	EM4102 and compatible
Sounder	Integral with external control
LEDs	Red and Green
Read range	<150 mm (eXprox), <70 mm (eXprox VR)
Output formats	Magnetic stripe ABA track 2 emulation, 26-bit Wiegand

##### 5.3 Readers - MIFARE®

TDSi MIFARE® readers are contactless card readers able to read the serial number from the following card types

- ISO 14443-A: MIFARE<sup>®</sup> Ultralight MF0 ICU1
- ISO 14443-A: MIFARE<sup>®</sup> Standard MF1 ICS50 (1 k)
- ISO 14443-A: MIFARE<sup>®</sup> Standard MF1 ICS70 (4 k)
- ISO 14443-A: MIFARE<sup>®</sup> DESFire MF3 ICD40

Readers are fully encapsulated and suitable for external mounting.

## 5.4 MIFARE® Reader - Specifications

Dimensions	42 x 104 x 18 mm
Weight	160 g
Operating Temperature	-5 °C to +60 °C
Operating Humidity	0 %RH to 95 %RH (non-condensing)
Power Supply	6 to 14 VDC, 120 mA maximum
Operating Frequency	13.56 MHz
Card Technology	ISO 14443-A
Sounder	Integral with external control
LEDs	Red and Green with external control
Read range	<50 mm
Output formats	Magnetic stripe ABA track 2 emulation, 26-bit Wiegand

## 6 Support and Installation

TDSi provide chargeable training and commissioning services. TDSi do not supply an installation service.

Service and Support contracts are also available. Details are available upon request.

## 7 General – Warranty and Support

Please refer to the general TDSi warranty statement, available on request.