TS0862 Smart Door Controller Installation and Programming Guide

Content

Important information

Disclaimer

The customer is responsible for testing and determining the suitability of this product for specific applications. In no event is KGS Fire and Security Australia Pty Ltd (trading as Aritech) responsible or liable for any damages incurred by the buyer or any third party arising from its use, or their inability to use the product.

Advisory messages

Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

WARNING: Warning messages advise you of hazards that could result in injury or loss of life. They tell you which actions to take or to avoid in order to prevent the injury or loss of life.

Caution: Caution messages advise you of possible equipment damage. They tell you which actions to take or to avoid in order to prevent the damage.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Product overview

The TS0862 Smart Door Controller is a low cost, compact door controller that provides access control functionality (via a Wiegand or magnetic swipe reader) for one door.

An outstanding feature of the Smart Door Controller is its offline database of users, which provides access control for up to 20 users in case the Smart Door Controller loses communications with the Challenger panel (offline use). User cards are learnt into the Smart Door Controller from a card reader arming station, even if the Smart Door Controller is offline.

Figure 1: TS0862 Smart Door Controller overview and terminal application
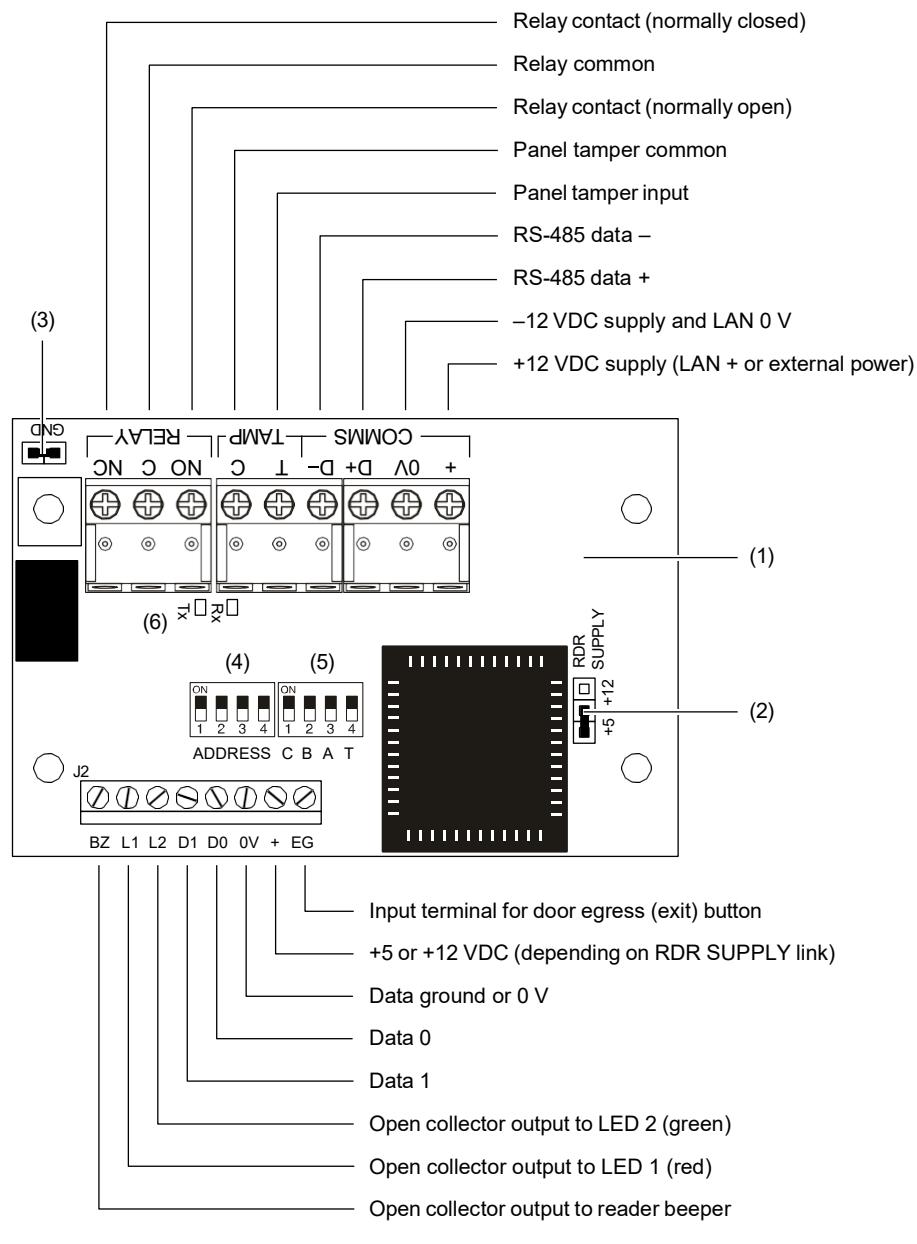
(1) TS0862 printed circuit board (PCB)
(2) Reader supply voltage link
(3) Ground link (do not remove)
(4) Address DIP switch
(5) Mode (and LAN termination) DIP switch
(6) Rx and Tx LEDs

The Smart Door Controller may be powered from the Challenger panel or Intelligent Access Controller, or from a separate power supply (such as TS0073). The independent power supply and offline database ensures that service is maintained if communications from the Challenger panel or Intelligent Access Controller are lost.

The Smart Door Controller uses the memory of the connected Challenger panel and so supports the same card formats as the panel. When the panel is configured to use Intelligent User Memory (IUM), the panel (and the Smart Door Controller) supports numerous card formats up to 48 bits. A non-IUM panel is limited to Wiegand 26-bit, Tecom ASC, and Tecom Mag Swipe card formats.

Specifications

Voltage	Nominal 13.8 VDC (10.5 VDC to 14 VDC)
Power consumption (max. with no reader or other peripheral devices connected)	45 mA at 13.8 VDC
Max. distance from panel	1500 m (cable length) with Belden 8723
Readers supported	One Wiegand or magnetic swipe reader
Relay contact rating	1 A at 0 to 30 VDC, reducing to 300 mA at 48 VDC

Operating environment
    Temperature
    Humidity
	
	0 to 50°C
	0 to 95% noncondensing

Dimensions (W x H x D)	80 x 52 mm (Tecom "B" size)

Installation

Notice! A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Installation requirements

Technician qualifications: Only trained Challenger installation technicians should plan the programming of Challenger systems. Technicians must comply with and be trained in security and electrical industry installation regulations, as appropriate to this device.

Application: This document applies to:

- TS0862 v 1.6 or later
- PCB no. 3143C or later

Product contents

Table 1: TS0862 Smart Door Controller shipping list

Quantity	Item
1	TS0862 Smart Door Controller PCB
3	3-way (blue) screw terminal block
4	Stand-off mounts
4	10 mm M3 screws
1	This document

Mounting the Smart Door Controller

The Smart Door Controller PCB can be mounted in any existing Challenger metal enclosure which supports the BB format; or the single B enclosure TS0305 or double B enclosure TS0306, both of which may be purchased separately.

Note: All power should be turned off to the Challenger panel or Intelligent Access Controller before wiring the Smart Door Controller.

To install the Smart Door Controller:

1. Mount the Smart Door Controller PCB in a suitable Challenger enclosure.

2. Set the LAN address via the four-segment Address DIP switch (see "Address DIP switches" on page 6).

3. Set the LAN termination switch (DIP switch 5), if required (see "RS-485 LAN termination" on page 7.

4. Set the reader supply voltage link to 12 V or 5 V to suit the specific reader used (see Figure 1 on page 3, item 2).

5. Terminate the reader cabling (see "Reader wiring" on page 8).

6. Terminate the relay cabling (see "Relay wiring" on page 9).

7. Terminate the egress button cabling, if required (see "Egress control" on page 9).

8. Terminate the power cabling (see "Power supply wiring" on page 7).

9. Terminate the LAN cabling (see "Power supply wiring" on page 7).

10. Apply power to the Challenger panel (or Intelligent Access Controller) and to the Smart Door Controller.

11. Enable polling at the RAS address assigned to the Smart Door Controller. Both the Rx and Tx LEDs should begin flashing (see "LED Indications" on page 9).

DIP switches

Address DIP switches

A four-segment Address DIP switch is located on the PCB (see Figure 1 on page 3, item 4) and is used for setting the RAS address (the Smart Door Controller is polled as a RAS). Refer to Table 2 below.

Table 2: RAS address DIP switch settings

Address	S1-1	S1-2	S1-3	S1-4
01	O	O	O	O
02	I	O	O	O
03	O	I	O	O
04	I	I	O	O
05	O	O	I	O
06	I	O	I	O
07	O	I	I	O
08	I	I	I	O
09	O	O	O	I
10	I	O	O	I
11	O	I	O	I
12	I	I	O	I
13	O	O	I	I
14	I	O	I	I
15	O	I	I	I
16	I	I	I	I

Legend: I = ON, O = OFF

Mode DIP switches

A four-segment Mode DIP switch is located on the PCB (see Figure 1 on page 3, item 5) and is used for configuring the Smart Door Controller and for terminating the RS-485 LAN, if required.

Set the Mode DIP switch segments as follows:

- Switch C ON to use a magnetic swipe reader.

- Switch C OFF to use a Wiegand reader.

- Switch B ON to use financial institution magnetic swipe cards.

- Switch B OFF to use Tecom format magnetic swipe cards.

- Switch A ON for offline programming mode.

- Switch A OFF for normal operation (offline programming mode off).

- Switch T ON to terminate the RS-485 LAN (see "RS-485 LAN termination" below).

- Switch T OFF when RS-485 LAN termination is not required.

RS-485 LAN termination

If the Smart Door Controller is the last device on the RS-485 LAN the LAN termination should be ON. In a star wiring configuration, the RS-485 LAN may consist of a number of cable runs (branches). LAN termination should be set to ON only at the devices at the far ends of the two longest branches.

A star LAN that has multiple branches in excess of 100 m may need to use TS0893 Isolated RS-485 to RS-485 Interface modules to isolate the LAN segments that do not have LAN termination set to ON.

Connecting the Smart Door Controller

Terminal blocks on the Smart Door Controller PCB provide connections to the LAN, panel tamper switch, a reader, a door relay, and optionally to an egress push button.

Power supply wiring

The Smart Door Controller can be powered using the LAN + and 0V power if the cabling distance does not exceed 100 m (if using Belden 8723) and when electrical isolation is not required. The Smart Door Controller draws 45 mA at 13.8 VDC (not counting the power needed for a reader and door relay).

If powering the module from the LAN is not practicable, then you must use a separate 12 volt DC supply (such as TS0073).

To power TS0862 with a separate 12 volt DC supply:

- Connect '+' of the local power supply to '+' on the J1 connector. **Do not** connect '+' from the LAN cable.

- Connect 0 volts from the power supply **and** 0 volts from the LAN connection to the J1 connector terminal marked '0V'.

For optimal performance, adjust the power supply to 13.8 VDC.

LAN wiring

The Smart Door Controller is connected to the Challenger panel or Intelligent Access Controller via the RS-485 LAN, up to 1.5 km cabling distance. We recommend that you use 2-pair twisted shielded data cable (such as Belden 8723) for the RS-485 LAN.

The shield of any LAN cable must be connected to system ground at one end only. The Smart Door Controller is not provided with an Earth connection for this purpose. If the LAN is 'daisy-chained' to the Smart Door Controller, ensure that the shield of the cable is jointed to provide continuity of data cable shield.

Tamper switch wiring

The panel tamper switch terminals T and C (Figure 1 on page 3) must be sealed for the system to work correctly. If a panel tamper switch is not connected to the Smart Door Controller, then the T and C terminals must be linked (interconnected) to seal the input.

Reader wiring

See Table 3 below for details of the Smart Door Controller's J2 terminal block.

Table 3: Terminals at J2

Terminal	Function	Wire Colour	Wiegand Reader	Magnetic Stripe Reader
BZ	Buzzer	Blue	Open collector output to control reader beeper, if fitted.	BZ (B2)
L1	LED 1	Brown	Open collector output to control reader LED (red).	L1
L2	LED 2	Yellow	Open collector output to control reader LED (green).	L2
D1	Data 1	White	Data 1's connection to reader	Data (D1) Magnetic swipe
D0	Data 0	Green	Data 0's connection to reader	Clock (D0) Magnetic swipe
0V	Data Ground	Black	Data ground	0V
+	Reader power supply	Red	+5V or +12V depending on setting of RDR Supply link to suit reader. 100mA max. at 5V for 2 seconds and 75mA constant.	PWR +5V, at 75mA

Terminal	Function	Wire Colour	Wiegand Reader	Magnetic Stripe Reader
EG	Egress	Violet	Input connection for door egress (exit) button or TS0064 Expanded Button Interface (discontinued product).	
			Shorting EG to 0V will activate Egress (i.e. Egress Button requires Normally Open contacts). See "Egress control" below.	
			Connecting this input to the TS0064 Expanded Button Interface EIP terminal provides In/Out button inputs including the Egress button function.	

Reader wiring requires 4-pair multi-strand, Level 5 UTP data cable (50 metres maximum).

Note: If the cable is run in a noisy electrical environment and/or a long length of cable is used, use a suitable shielded 7- or 8-core data cable.

Relay wiring

The following relay terminals are provided at J3:

- NO (normally open)
- C (common)
- NC (normally closed)

During online operation, the Smart Door Controller's onboard relay can be used as a Challenger system relay. The following Challenger programming is required:

- Assign a relay control group number to the Smart Door Controller's RAS address (via Install menu option 3. RAS Database).
- Map an event flag number to the Smart Door Controller relay (via Install menu option 16. Map Relays).

Egress control

The EG terminal is optionally used for egress control and door relay operation

An Egress button (normally open, momentary push-button switch) can be connected across the EG and 0V terminals (see Figure 1 on page 3). When pressed, the button controls the request to exit function to the panel.

Note: Use the 'Egress Only' option in the Smart Door Controller menu option 2- Egress Control.

LED Indications

RX and TX LEDs are provided to assist in fault diagnosis (see Figure 1 on page 3, item 6). Refer to Table 4 on page 10.

Table 4: RX and TX LED indications

Rx LED	Tx LED	Indication
Flashing	Flashing	Rx flashing indicates polling from the Challenger panel.
		Tx flashing indicates replies to polling from the Challenger panel.
No activity	Flashing once per second	Operating without a LAN connection (offline mode).
Flashing	no activity	RAS is not programmed to be polled or is addressed incorrectly.

Programming guide

Overview

The Smart Door Controller is typically used in online mode (connected to the RS-485 LAN), but it can also be used on offline mode. Offline mode enables up to 20 users to operate the Smart Door Controller's door even if communications to the Challenger panel is lost.

This functionality requires the offline users to be learnt into the Smart Door Controller's onboard database, either when online (via Smart Door Controller menu option 10) or when offline.

Refer to the following sections for details:

- "Online programming" below
- "Offline programming" on page 15

Online programming

Introduction

In the following instructions, key presses on the LCD RAS are indicated by the use of square brackets, as follows:

- "Press **[ENTER #]"** means to press the key labelled **'ENTER #'**.

- When a series of numbers is required, all the numbers are combined in one set of square brackets. For example "press **[19]"** means to press the 1 key and then press the 9 key.

- When a variable series of numbers is required, the variable is displayed in italics. For example, **[***installer code***]** means to press the key or keys that correspond to your installer code (4346 is the default installer code).

- Key presses are separated by a comma where the keys are pressed in sequence (except when a series of numbers is combined in one set of square brackets).

- Key presses are separated by a plus symbol where the keys are pressed simultaneously.

The Smart Door Controller menu system works in the same manner as all other remote units on the LAN.

To access the Smart Door Controller menu:

1. With all areas disarmed, press **[* MENU]**, **[**_installer code_**], [ENTER #]**.

2. Press **[19], [ENTER #], [28], [ENTER #]**.

3. Press **[2], [ENTER #]** to access the RAS menu.

4. Press **[**_RAS address_**], [ENTER #]**. The main menu displays and lists the product name and firmware revision number.

Navigating the Smart Door Controller menu

The navigation sequence varies depending on where you are in the menu hierarchy. The main menu is used in the following manner:

*   Press **[ENTER #]** to scroll forward through the main menu options. Alternatively, press **[* MENU]** to scroll backward through the main menu options.

*   Each menu option has an associated option number. To select a menu option and open its sub-menu, press **[**_option number_**], [ENTER #]**.

*   Press **[0.-&], [ENTER #]** to exit the Smart Door Controller menu.

Navigating sub-menus

Sub-menus typically offer a choice between two options: a default setting and an alternative setting. Sub-menu are used in the following manner:

*   Press **[ENTER #]** to accept the currently-displayed setting, and to return to the main menu.

*   Press **[* MENU]** to select the alternative setting.

Smart Door Controller menu options

The Smart Door Controller menu options are described in the following sections.

Note: If you want to use (or start with) the factory default settings, go to "8. Factory Defaults" on page 13 as the first step.

Table 5: Default factory settings

Setting	Default value
Onboard user database	Empty
Access Time	5 seconds
Egress	Egress Only
Card Format	Mode Switch C Setting
Card Type	Mode Switch B Setting
LED 1	Secure + Door Open
LED 2	Door Open Only

Setting	Default value
Door Relay	Relay + LED opens door

1. Access Time

By default the door open relay operates for 5 seconds. Use this option to program a new time in the range 0 to 255 seconds.

2. Egress Control

By default egress control is set to Egress Only (applicable to a single poll push button (see "Egress control" on page 9). Use this option to disable the push button, or to select Egress + Arm/Disarm, which is applicable to TS0064 Expanded Button Interface (discontinued product).

3. Display Card Format

This option is for installer's information and can only be changed through mode switch C (see "Mode DIP switches" on page 7). Effectively, this is displaying whether mode switch C is set to Wiegand Reader or Magnetic Stripe.

4. Display Card Type

This option is for installer's information and can only be changed through mode switch B (see "Mode DIP switches" on page 7). Effectively, this is displaying whether mode switch B is set to Tecom or Financial.

5. LED 1 Options

LED 1 is normally the red LED. By default this value is "LED 1 Secure + Door Open", where LED 1 is on when the area is secured and flashes when access is granted.

Use this option to change the value to "LED 1 Secure", where LED 1 is on when the area is secure and LED 2 flashes when access is granted.

6. LED 2 Options

LED 2 is normally the green LED. By default this value is "LED 2 Door Open Only", where LED 2 flashes when access is granted, it is off at all other times.

Use this option to change the value to "LED 2 Door Open + Access", where LED 2 flashes when access is granted and is continuously on when the area is in access.

7. Door Relay

By default this value is "Relay + LED Opens Door". Use this option to change the value to "Relay Opens Door" if required.

- "Relay + LED Opens Door" activates the onboard relay for the access time based on the relay control group number assigned (via Challenger RAS programming) to the Smart Door Controller's RAS address OR when the LED is flashing when access is granted.

- "Relay Opens Door" activates the onboard relay for the access time based on the relay control group number assigned (via Challenger RAS programming) to the Smart Door Controller's RAS address.

8. Factory Defaults

Option 8 is used only when you want to restore default settings and clear the database of all card numbers programmed by an installer (see Table 5 on page 11).

When you select option 8, the RAS displays "Clear Database?". Press * (menu) key to clear the database and return all settings to the factory default (you will be asked to confirm the action). Alternatively, press ENTER to return to the main menu without making any changes.

9. Version Number

Use this option to see the Smart Door Controller's firmware version number.

10. Learn Mode

Use this option to add up to 20 user cards into the Smart Door Controller's onboard user database for offline access control.

The onboard database is not used for online access control because when the Smart Door Controller is online it is under the control of the Challenger's user database.

Before entering Learn mode, decide which users' cards may be required for offline mode and obtain the cards for learning.

Notes

- When learning cards in online mode, normal door access control functions continue to operate. So, if a user is valid for access, then access is granted even though you are only adding the card into the onboard database.

- When the learn mode option is on, a timeout period of four minutes applies if no programming is taking place.

- When badging a card, there can be no more than three seconds between badges, or else the process must start again.

To learn cards into the onboard user database:

1. Select Smart Door Controller menu option 10. Learn Mode, and then press ENTER.

2. Badge the card four times at the card reader.

3. Repeat for each additional card.

During card learning the reader will beep to indicate progress.

One short beep is sounded by the Wiegand card reader each time a card is badged, in addition to the number of beeps listed in the programming instructions. This is because the first beep is generated by the Wiegand card reader indicating it has read the card.

On the first badge:

- If the card is not in TS0862 onboard user database, seven beeps (error) will be sounded.

- Alternatively, two beeps will be sounded.

On the second and third badges two beeps will be sounded.

On the fourth badge (if the database is not full):

- The card code is entered into the TS0862's database.

- One long beep followed by two short beeps are sounded.

On the fourth badge (if the database is full):

- The card code is discarded.

- Three long beeps are sounded.

To remove cards from the onboard user database:

1. Select Smart Door Controller menu option 10. Learn Mode, and then press ENTER.

2. Badge the card six times at the card reader.

   On the sixth badge, one long beep is sounded to indicate that the card has been removed (this does not affect the Challenger panel's user database).

3. Repeat for each additional card to be removed.

Note: To remove a card from the Smart Door Controller 's database, the card format and type settings of the Smart Door Controller must match the card.

To exit learn mode do one of the following:

1. Allow learn mode to time out after four minutes.

2. Select Smart Door Controller menu option 10. Learn Mode, and then press ENTER.

3. Exit the Smart Door Controller menu.

11. Number of Cards

Use this option to see how many cards are currently stored in the Smart Door Controller's onboard user database.

12. Last Card Code

Use this option to see the card data from the most recently badged card at the Smart Door Controller's reader. For (a Wiegand reader) example, the display might show "01, 1B, 34, 26, 78, 95".

13. Delete card

Use this option to find and delete a specific card from the Smart Door Controller's onboard user database.

To delete a card from the onboard user database:

1. Select Smart Door Controller menu option 13. Delete card, and then press ENTER. Card data is displayed for the first (of up to 20) cards.

2. If the displayed card is the one you want to delete, press the * key.

3. Alternatively, press the # key to display the next card in the database.

4. Repeat as required.

5. To return to the Smart Door Controller menu at any time, press '0' (zero), then press #.

Offline programming

For offline programming, mode switch A must be on (see "Mode DIP switches" on page 7). It is normally off.

If communications between the Challenger panel and the Smart Door Controller fail, the Smart Door Controller can operate as a standalone unit (if it has its own power supply). In offline mode, up to 20 cards programmed into the Smart Door Controller's onboard user database determine access control.

It is important to decide which users' cards may be required for offline mode because they will be the only users who have access when the Challenger user database is not accessible. During this time the integrity of the security system is under suspicion.

Before entering Learn mode, decide which users' cards may be required for offline mode and obtain the cards for learning.

Notes

• When learning cards in offline mode, normal door access control functions continue to operate. So, if a user is valid for access, then access is granted even though you are only adding the card into the onboard database.

• When badging a card, there can be no more than three seconds between badges, or else the process must start again.

To learn cards into the onboard user database:

1. Badge the card four times at the card reader.

2. Repeat for each additional card.

During card learning the reader will beep to indicate progress.

One short beep is sounded by the Wiegand card reader each time a card is badged, in addition to the number of beeps listed here. This is because the first beep is generated by the Wiegand card reader indicating it has read the card.

On the first badge:

• If the card is not in TS0862 onboard user database, seven beeps (error) will be sounded.

• Alternatively, two beeps will be sounded.

On the second and third badges two beeps will be sounded.

On the fourth badge (if the database is not full):

- The card code is entered into the TS0862's database.

- One long beep followed by two short beeps are sounded.

On the fourth badge (if the database is full):

- The card code is discarded.

- Three long beeps are sounded.

To remove cards from the onboard user database:

1. Badge the card six times at the card reader.

   On the sixth badge, one long beep is sounded to indicate that the card has been removed (this does not affect the Challenger panel's user database).

2. Repeat for each additional card to be removed.

Note: To remove a card from the Smart Door Controller 's database, the card format and type settings of the Smart Door Controller must match the card.

Ensure that mode switch A is turned off when programming is complete, otherwise the Smart Door Controller will always been in learn mode when offline.