



# CA111x-series Arming Station Installation and Programming Guide

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<b>Contact information</b>	For contact information, see <a href="http://www.aritech.com.au">www.aritech.com.au</a>

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# 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.

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**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.

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**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.

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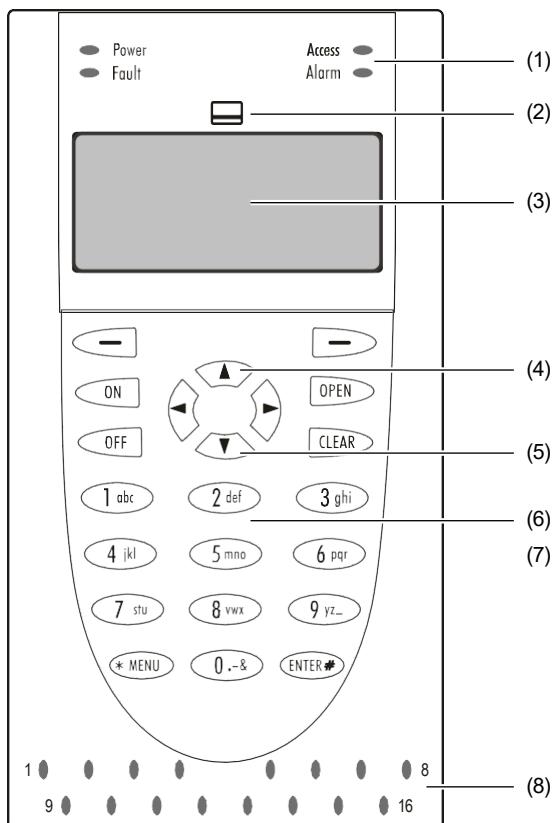
**Note:** Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

# Product overview

This Installation and Programming Guide covers the following CA111x-series LCD Remote Arming Stations (RAS):

- CA1110 — two-line LCD
- CA1111 — four-line LCD
- CA1115 — two-line LCD with Smart Card reader
- CA1116 — four-line LCD with Smart Card reader (see Figure 1 below)

**Figure 1: CA111x-series Arming Station overview**



- |   |  |
|---|--|
| (1) Status LEDs                             | (5) Down key   |
| (2) Smart Card reader icon (CA1115, CA1116) | (6) Keypad   |
| (3) LCD screen                              | (7) Smart Card reader behind keypad (CA1115, CA1116) |
| (4) Up key                                  | (8) Area LEDs  |

CA111x-series RASs are used for controlling Challenger security system alarm and access functions. Product features include:

- Keypad
- Beeper
- Integrated tamper switch
- Two- or four-line Liquid Crystal Display (LCD)
- Multiple text formats for four-line LCD models (CA1111 and CA1116)

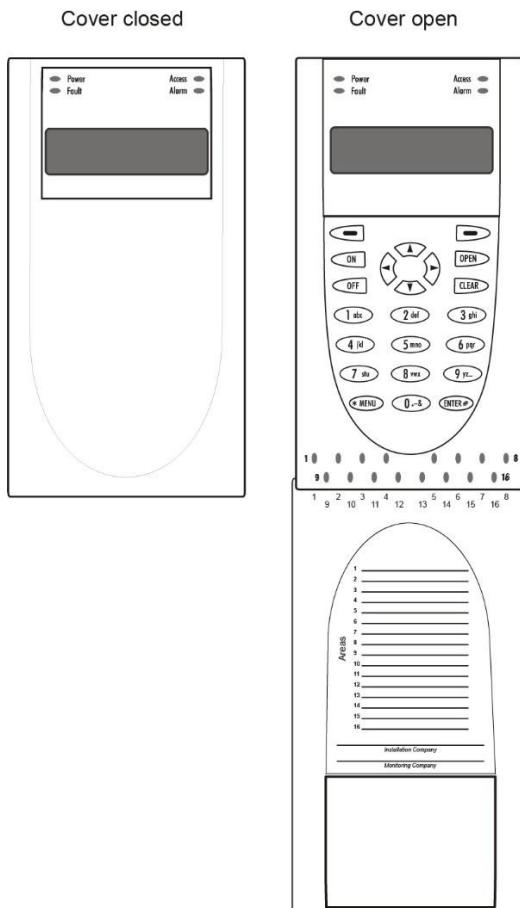
- Smart Card reader (CA1115 and CA1116)
- Access and system status Light Emitting Diodes (LEDs)
- The RAS may be used up to 1.5 km (cable length) from the panel or four-door controller DGP
- One open collector output is provided to drive a small relay, LED, etc. One input is provided for an egress function.
- Plastic hinged cover.

## Removing the cover

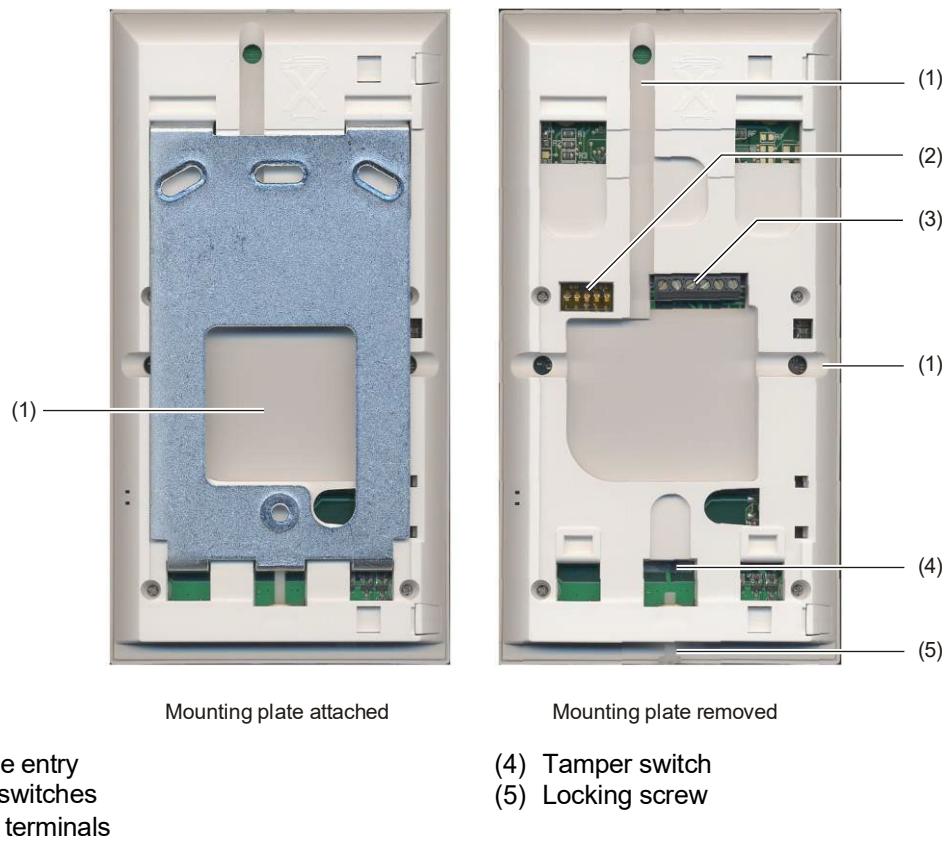
The RAS cover is hinged at the bottom. To open, grasp the cover at the sides or the top and pull gently — the cover will swing down on its pins. The cover may be fully removed by gently prising one of the pins away from the body of the RAS and pulling.

The metal mounting plate at the rear is held by a locking screw. To remove the metal mounting plate, loosen the screw by at least 8 mm, sliding the mounting plate down, and then pulling the bottom of the mounting plate away from the body of the RAS.

**Figure 2: CA1110 (two-line LCD) with front cover closed and open**



**Figure 3: Locations of features on rear of RAS**



## Specifications

Voltage	Nominal 13.8 VDC (8.5 to 14 VDC)
Power consumption (CA1110, CA1111)	
Maximum	95 mA @ 13.8 VDC
Normal (all areas armed)	26 mA @ 13.8 VDC
Power consumption (CA1115, CA1116)	
Maximum	165 mA @ 13.8 VDC
Normal (all areas armed)	35 mA @ 13.8 VDC
Operating environment	
Temperature	0 to 50°C
Humidity	0 to 95% noncondensing
Dimensions with cover (W x H x D)	92 x 165 x 25.4 mm



# Installation

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

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## 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.

## Product contents

**Table 1: CA111x-series Arming Station shipping list**

Quantity	Item
1	CA111x-series Arming Station
1	Installers kit containing blanking plugs & mounting screws
1	Front cover
1	Metal mounting plate
1	Installation and Programming Guide

Inspect the package and contents for visible damage. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

## Mounting the RAS

Access to the internal parts of the RAS is not required for installation.

### To install the RAS:

1. Attach the metal mounting plate to the mounting surface using the three screws provided.
2. If rear cable entry is used (through the mounting plate), cut a hole in the mounting surface for cable access.
3. Set the RAS address using DIP switches 1 through 4 (see “DIP switches” on page 8).
4. Set the LAN termination switch (DIP switch 5), if required (see “DIP switches” on page 8).
5. Terminate the LAN cabling. **Note:** All power should be turned off to the control panel before wiring the RAS.

6. Insert plastic cable entry blanking plugs (provided) into the rear of the RAS to blank any unused cable entry channels.
7. Place the RAS onto the mounting plate and lock in place by moving the unit down by about 8 mm.
8. Tighten the locking screw at the base of the RAS until firm. Do not over-tighten.

## Tamper switch

The tamper switch must be sealed for the system to work correctly. The tamper switch is sealed by mounting the RAS onto the mounting plate, and then moving it to the locked position.

In operation, the LCD display will show “RAS Tamper” when not sealed.

## DIP switches

A five-segment DIP switch is located on the rear of the RAS (see Figure 3 on page 5) and is used for setting the RAS address and the LAN termination (TERM) condition.

Use the first four segments of the DIP switch to set the LAN address. 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

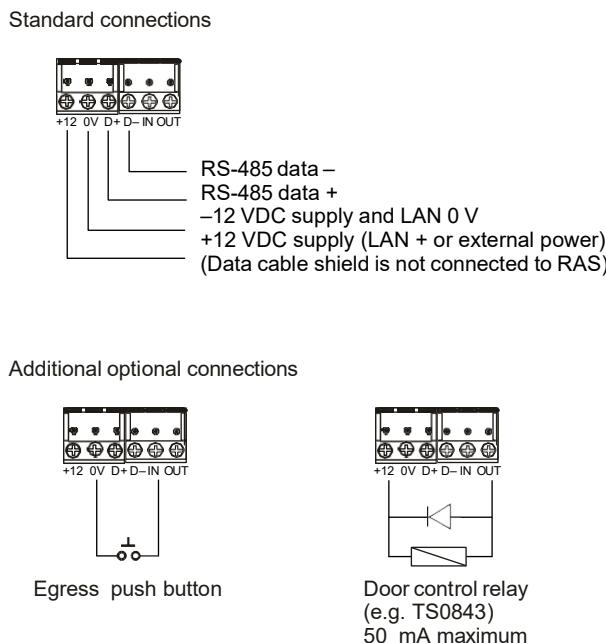
Use the fifth segment of the DIP switch to set TERM to 'ON', if needed.

If the RAS 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 RAS

A terminal block on the back of the RAS (see Figure 3 on page 5) is used for connections to the LAN, and optionally to an egress push button and to a relay.

**Figure 4: Terminal block connections**



### LAN connection (D+ and D-)

The RAS is connected to the Challenger panel via the RS-485 LAN, up to 1.5 km from the control panel or the four-door controller DGP. 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 CA111x RAS is not provided with an Earth connection for this purpose. If the LAN is 'daisy-chained' to the RAS, ensure that the shield of the cable is jointed to provide continuity of data cable shield.

- **D+** is the data positive connection of the LAN data bus.
- **D-** is the data negative connection of the LAN data bus.

## Power connection (+12 and 0V) to control panel

The RAS can be powered using the LAN + and – power from the control panel or DGP, if the cabling distance does not exceed 100 m (if using Belden 8723) and when electrical isolation is not required.

## Power connection (+12 and 0V) to separate power supply

The RAS can be powered by AUX PWR from a DGP, or by an auxiliary power supply.

When using an auxiliary power supply:

- Connect the ‘+’ of the local power supply to the +12 terminal of the RAS. **Do not** connect the + power of the LAN to the RAS.
- Connect the ‘–’ of the local power supply to the 0V terminal of the RAS **and** to the – power of the LAN.

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

## Egress Control and Open Collector (IN and OUT)

Terminals IN and OUT are optionally used for egress control and door relay operation:

- **IN** — An Egress button (normally open, momentary push-button switch) can be connected across the IN and 0V terminals (see Figure 4 on page 9). When pressed, the button controls the request to exit function to the panel.  
**Note:** Use the ‘Egress Only’ option in RAS menu option 4-Egress Control.
- **OUT** — Open collector output must be assigned with a number according to type of control panel. For Challenger panels use the first relay number of the relay control group assigned to the RAS (for example, assign relay control group 1 to use relay 1, assign relay control group 2 to use relay 9, and so on).

# Operating features

## Power up

Upon initial power up, the beeper will sound two beeps indicating that the internal non-volatile memory is OK. All of the area LEDs may illuminate, indicating that the system is armed. All areas must be disarmed in order to enable access to the installer programming menu options.

## LED indications

### Status LEDs

CA111x RASs have four LEDs above the LCD panel to provide the following indications:

- Green — The Power LED is on when the RAS is powered.
- Yellow — The Fault LED flashes when there is a system fault (i.e. comms fault, RAS fault, DGP fault, battery test fail, or hardware tamper).
- Blue — The Access LED is always off, except for a single flash when a card is badged at CA1115 or CA1116 RASs (subject to Valid Card Flash programming, see page 15).
- Red — The Alarm LED flashes when there is an access alarm, a 24-hour alarm, or a secure alarm.

### Area LEDs

When the RAS cover is open or removed, 16 red LEDs are visible at the bottom of the RAS. Each LED represents an area, and the indications are as follows:

- The LED illuminates when its corresponding area is armed.
- The LED flashes slowly when a fault is detected, or when an alarm occurs, in disarm.
- The LED flashes quickly when a fault is detected, or when an alarm occurs, in arm.

## Keyboard backlight and night light

By default, the keyboard backlight is on (bright) for approximately 4½ minutes following a key press and night light is on (dim). These settings can be changed from the RAS menu (see *List of RAS menu options* on page 14 for details).

## LCD contrast

The LCD contrast may be adjusted by pressing and holding the **[\* MENU]** key while momentarily pressing the **[UP]** or **[Down]** keys to change the display contrast. The default setting is 12.

## LCD backlight

The LCD backlight illuminates for 30 seconds following a key press.

## Beeper tone

The Beeper tone may be adjusted by pressing and holding the **[CLEAR]** key while momentarily pressing the **[UP]** or **[Down]** keys to change the beeper tone. The default setting is 16.

## LCD text format

CA1111 and CA1116 RASs have a 4 line x 16 character LCD and may display text in three alternative formats, as follows:

- Format 1 (default) wraps text using hyphens when a word is broken onto the next line.
- Format 2 wraps text without hyphens when a word is broken onto the next line.
- Format 3 wraps text to the next line without breaking words.

To change formats, press and hold the **[0]** (zero) key while momentarily pressing the **[UP]** or **[Down]** keys. This option is not available on CA1110 or CA1115 RASs with 2 line x 16 character LCD.

## Card reader (CA1115 & CA1116 only)

CA1115 and CA1116 RASs are fitted with a Smart Card reader, and may be identified by the Smart Card icon above the LCD (see Figure 1 on page 3). The reader uses the RAS address to communicate with the panel, and so does not need a LAN address.

The Smart Card reader is located behind the keypad. The sensitivity of the reader is dependant on the environment on which it is mounted (large metal surfaces will reduce the reader's sensitivity).

# Programming guide

## Introduction

CA111x-series RASs have a number of options that are programmable at the time of installation to help integrate the keypad into the local environment.

CA1115 and CA1116 RASs are fitted with a Smart Card reader. The reader-related options (menu options 7 to 12 on page 15), may be programmed either by using the RAS or by using a reader configuration card.

**Note:** Reader configuration cards are programmed via a TS0870P Smart Card Programmer and appropriate Aritech software.

## Accessing the RAS main menu

The programming menu of the CA111x-series RAS is structured into two sections:

- Menus 1 to 6 are common to all CA111x-series RASs.
- Menus 7 to 12 apply only to CA1115 and CA1116 RASs (with Smart Card reader).

In the following instructions, key presses 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 CA111x-series menu system works in the same manner as all other remote units on the LAN.

### To access the RAS main menu:

1. With all areas disarmed, press **[\* MENU]**, **[installer code]**, **[ENTER #]**.
2. Press **[19]**, **[ENTER #]**, **[28]**, **[ENTER #]**, **[2]**, **[ENTER #]** to access the RAS menu.

3. Press **[RAS address]**, **[ENTER #]**. The main menu displays and lists the product name and firmware revision number.

### Navigating the RAS main 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 RAS main menu.

### Navigating RAS 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.

## List of RAS menu options

RAS Menu Option	Description
1-Access LED	Controls the blue Access LED ( <b>enabled</b> by default). The blue Access LED may be disabled if not required.
2-Night Light	A dimly lit keypad backlight provides the night light to easily locate the keypad in dark locations ( <b>enabled</b> by default). The Night Light may be disabled if not required.
3-Keypad Backlight	The keypad backlight turns on bright for night-time illumination of the key labels ( <b>enabled</b> by default). If the keypad backlight is not required, it may be disabled.
4-Egress Control	<p>The RAS is fitted with an Egress (Exit) control port (labelled IN) on the wiring connector. When connected to a simple push button or TS0064 Expanded Button Interface (discontinued product). The OUT (open collector terminal) may be used to control a door relay.</p> <p>There are three options to choose from:</p> <ul style="list-style-type: none"><li>• <b>Egress Only.</b> This option requires a simple push button to be connected to the IN terminal. A press of the button will release the door lock relay. Used for a quick exit from an Area. (<b>enabled</b> by default).</li><li>• <b>Egress + Arm/Disarm.</b> This option is used with the TS0064 Expanded Button Interface (discontinued product) to Arm and Disarm areas. See the alarm panel programming guide for details.</li><li>• <b>Egress Disabled.</b> When the IN terminal is not used, it is recommended that it be disabled.</li></ul>

RAS Menu Option	Description
5-Reserved	Menu 5 is reserved for future development.
6-Factory Defaults	<p>This option returns all RAS settings to the factory default condition. Settings will be set to default for the following options (as applicable):</p> <ol style="list-style-type: none"> <li data-bbox="558 316 887 350">1) Access LED — <b>enabled</b></li> <li data-bbox="558 361 871 395">2) Night Light — <b>enabled</b></li> <li data-bbox="558 406 950 440">3) Keypad Backlight — <b>enabled</b></li> <li data-bbox="558 451 971 485">4) Egress Control — <b>Egress Only</b></li> <li data-bbox="558 496 1030 530">7) Security Mode — <b>Unsecured Mode</b></li> <li data-bbox="558 541 934 575">8) Valid Card Flash — <b>enabled</b></li> <li data-bbox="558 586 1035 620">9) Protocol Options — <b>Wiegand format</b></li> <li data-bbox="558 631 887 665">10) Card Beep — <b>enabled</b></li> <li data-bbox="558 676 891 710">11) Option Card — <b>enabled</b></li> </ol>
<b>NOTE:</b> Menu options 7 to 12 apply only to Smart Card reader (CA1115 and CA1116) RASs.	
7-Security Mode	<p>Smart cards may be used in either the default unsecured mode or in secured mode. The card reader must be programmed to use the same security mode as the cards. The modes are as follows:</p> <ul style="list-style-type: none"> <li data-bbox="558 912 1384 1035">• <b>Unsecured</b> mode allows the reader to recognise blank or un-programmed user cards by using the card's unique serial number. Unsecured mode can be used in Intelligent User Memory (IUM) systems only.</li> <li data-bbox="558 1047 1400 1204">• <b>Secured</b> mode requires the use of a Smart Card Programmer to program user cards and reader configuration cards with a card security password. The card security password ensures that a reader configuration card or a reader default card from one system cannot be used to reprogram readers in another system.</li> </ul>
<p>Refer to the <i>TS0870P Smart Card Programmer Installation Sheet</i> for details.</p>	
8-Valid Card Flash	<p>This option enables (default setting) and disables the blue LED flash when a valid card is badged at a CA1115 or CA1116 reader.</p>
9-Protocol Options	<p>This option selects the method by which a CA1115 or CA1116 reader sends data to the panel. The options are as follows:</p> <ul style="list-style-type: none"> <li data-bbox="558 1451 1400 1541">• <b>Wiegand</b> — Smart Card data is transmitted in the Wiegand protocol by default. The TS0870P programmer sets the number of bits (26- or 27-bit) when user cards are programmed.</li> <li data-bbox="558 1552 1400 1620">• <b>Magnetic Stripe</b> — The reader sends data to the panel in a 32-bit magnetic stripe card format.</li> <li data-bbox="558 1631 1400 1698">• <b>Tecom Smart Card</b> — This format is not implemented in the panel and should not be selected.</li> </ul>
10-Card Beep	<p>This option enables the beep sounded when a card is badged at the reader (default setting) and disables the beep.</p>
11-Option Card	<p>This option enables (default setting) and disables the use of reader configuration (option) cards at the CA1115 and CA1116 reader. If an installer wishes to prevent the modification of the reader setup by configuration card, this option should be disabled.</p>
12-Last Card	<p>This option displays the number of the last card badged at a CA1115 or CA1116 reader, in the format: Facility Code, ID Number.</p>

## Offline mode

If the RAS has power available but loses communication with the panel, the RAS will go into offline mode. In this mode, all LEDs will flash at the slow rate and the LCD will display “ **- System Fault -** ”.

This condition may be caused by the following:

- RAS is set to an address that is not polled by the panel or 4-door controller DGP.
- D+ or D– wires disconnected.

## Text scrolling speed

The text scrolling speed may be changed (for all the LCD RASs in the system) from the Challenger Install menu, option 7 System Options (Rotate Speed). Refer to the Challenger programming guide for details.

# Troubleshooting

## General faults

No LED or LCD display:

- Verify the +13.8 and 0V wire connections on both the RAS and the power supply.
- Verify power output on the DGP or external power supply.

Area and status LEDs are flashing and the display reads, “ - **System Fault** - ”:

- Verify the D+ and D– wire connections (may be reversed or open circuit).
- Verify the address DIP switches of the RAS are set to the proper address.
- Verify that the control panel or 4-door controller DGP is polling the RAS address.

A RAS with Smart Card reader does not respond to a Smart Card:

- The RAS may be a CA1110 or CA1111 type that is not fitted with a Smart Card reader.
- The RAS may not be programmed correctly. See “Programming guide” on page 13.
- The Smart Card may not be programmed (blank).

## RX and TX LED Indications

RX and TX LEDs are provided on the circuit board to assist in fault diagnosis, and are visible when the rear plastic cover is removed.

- **Rx** — The yellow Rx LED flashes to indicate polling data is being received on the system LAN from the panel. If the LED does not flash, the control panel is not operational or the LAN is faulty (usually cabling).
- **Tx** — The red Tx LED flashes to indicate the RAS is replying to polling from the control panel. If the Rx LED flashes but the Tx LED does not, the RAS is not programmed to be polled in the control panel or is addressed incorrectly.

