UK

703R

Four Channel Transmitter

Installation and Programming Guide

COOPER Security

Scantronic

UK

Contents

1. INTRODUCTION

The 703EUR-00 is a programmable, self contained, multi-function transmitter that can be used with the Scantronic 768r/769r and 762r radio receivers, or the 9955 and 9960 radio expanders. The 703r either uses replaceable alkaline batteries with a typical two year life time, or can be powered from an external 9-15VDC power supply. When powered from an external source the 703r uses its internal batteries as a standby supply.

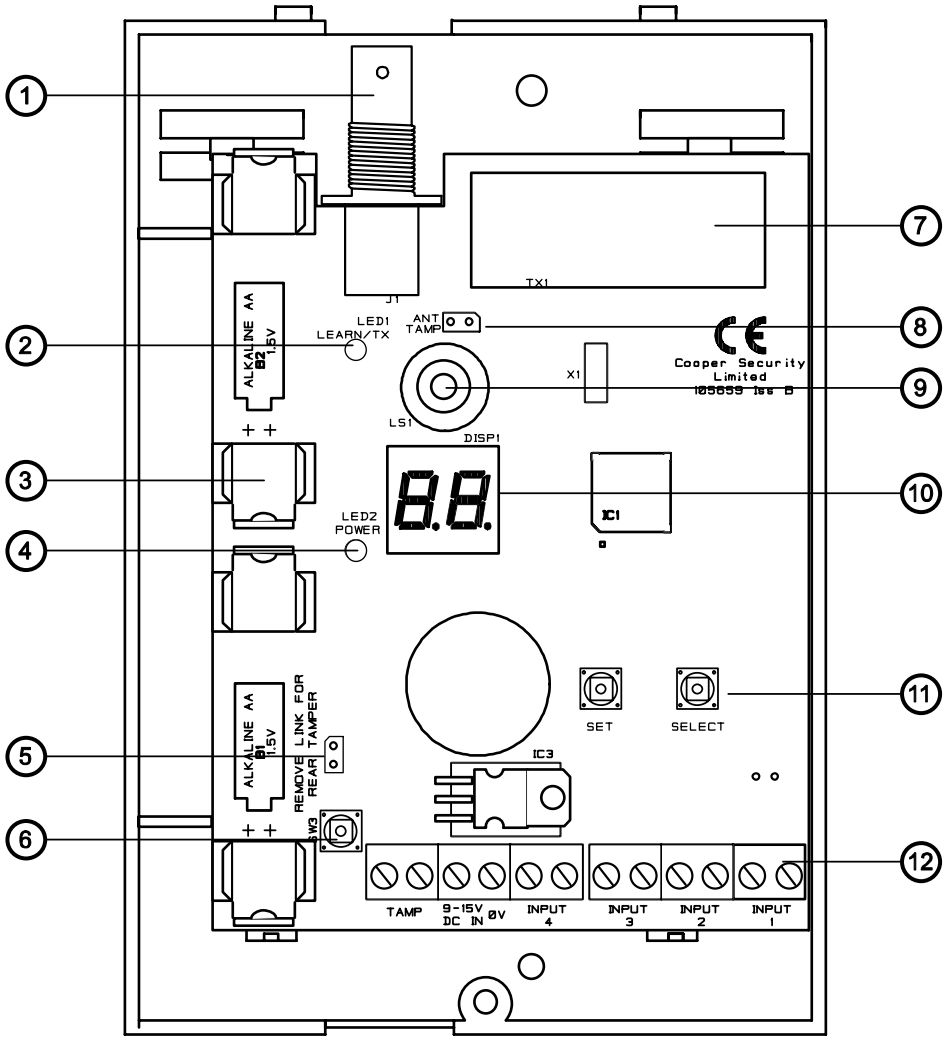
The 703r operates on 868.6625MHz, and can be used as a 1, 2 or 4 channel alarm transmitter, or a single zone alarm panel. The 703r has a typical open air range of 2km, and can be fitted with a range of external aerials.

2. TECHNICAL DESCRIPTION

SPECIFICATION

Channels	1, 2 or 4
Display	Two by seven-segment LED. Visible with case open.
Compliance	Product is CE tested to EN 50081-1 and EN 50082-1.
Radio Section	Operating frequency 868.6625MHz at 20kHz bandwidth. I-ETS 300 220. CE tested to I-ETS 300 339 (draft standard).
Transmitter range	Up to 2000m free space.
12V power	Quiescent current 15mA.
Battery	2 x AA 1.5V Alkaline
Battery Life	2 Years (30 days in Modes 7 and 8)
Dimensions	H x W x D = 152 x 104 x 30 mm.
Weight	0.206 kg (not including batteries)

PHYSICAL LAYOUT



1 BNC Aerial connector
2 Learn LED
3 Battery holder
4 Power LED
5 Rear tamper link
6 Tamper switch
7 Transmitter module
8 Antenna tamper jumper
9 Sounder
10 Display
11 Programming switches
12 Main connectors

Figure 1. 703r

Figure 1 shows a 703 transmitter with the case lid removed, and the location of the main components. When closed the case measures 104 mm wide, 152 mm tall, and 30 mm deep. A set of input terminals occupies the bottom of the circuit

card. Immediately above two push buttons and two seven-segment LEDs provide a means of programming the unit. The left side of the circuit card holds a BNC aerial connector.

Fixing holes and knock outs moulded in the base of the case allow the unit to be mounted on most surfaces. The case cover is plain, but internally has provision for drilling a hole to accept a keyswitch.

INPUTS

Connectors

The 703 provides four sets of input connectors: (see item 12 in Figure 1). Each set of two connectors comprises input and ground (Gnd).

Power

The 703r can operate using either two internal 1.5V AA alkaline batteries, or an external 9-15VDC power supply. Terminals for the external power supply are on the main connector.

When used with an external power supply the 703r uses the internal batteries as a standby source.

Tamper

The lower left corner of the circuit card holds the lid Tamper switch. The switch is connected to screw terminals to left of the main connector. You can connect this output to your own equipment,

or to one of the input channel connectors. The switch contact opens when the lid opens, and closes when the lid closes.

Note that there is also a rear tamper switch mounted on the back of the PCB. To use the rear tamper switch as well as the lid tamper remove the rear tamper link (see item 5 in Figure 1).

In addition, provided you have fitted a suitable antenna, the 703r can detect whether the antenna has been cut. Remove the jumper from the antenna tamper jumper pins to **enable** this function (see item 8 in Figure 1).

OUTPUTS

The BNC connector at the top of the card is a standard Scantronic aerial connection.

The green power LED lights when external DC power is present, and goes off when the unit is operating off internal batteries.

Just to the right of the battery a red LED shows when the unit is transmitting. This LED shines through a window in the case lid, and can be used to teach the transmitter's identity to receivers with infra-red learn functions. You may enable or disable this LED in programming.

The 703r transmitter contains an internal sounder to provide entry/exit tones in Mode 6.

CONTROLS AND DISPLAYS

The PCB provides a two digit LED display and two push buttons for programming modes and controlling the transmitter learning process. See Chapter 4 for details.

COMPATIBLE EQUIPMENT

The following Scantronic equipment is compatible with the 703r:

762rEUR-00	Two channel receiver
768rEUR-00	Eight Channel Receiver
769rEUR-00	
790rEUR-00	Signal Strength Meter.
792rEUR-00	¼ Wave Stainless Steel Antenna (supplied with 703r)
794rEUR-00	8 x 1/2 Wave Antenna with 3m coaxial cable
797rEUR-00	1/2 Wave Antenna with 3m coaxial cable.
9955EUR-50	9x5x RF Expander
9960EUR-08	9x5x RF Expander (8 zone)
9960EUR-16	9x5x RF Expander (16 zone)

Note: Do not fit any aerial other than those listed above. Doing so may make the 703r contravene the standards under which it was approved.
For compliance with EN300 220-3 use antenna 794rEUR-00.

3. INSTALLATION

PLANNING

General

Before Installation you should carry out a survey of the site.

You also need to assess where the unit(s) must be placed in order to communicate with the receivers successfully. To do this you may need to conduct Signal Strength Tests using a Scantronic 790 hand held signal strength meter. The 703r units provide a signal strength test transmission facility.

Siting The Transmitter

Do site the 703r units:

- Within a protected zone.
- As high as possible. However, do make sure that the receiver is on a similar level to the transmitter.

Do NOT site the 703r:

- In the entry or exit zones, or outside the area covered by the alarm system.
- Close to or on large metal structures.
- Closer than two metres from mains wiring and metal water or gas pipes.
- Lower than two metres from the floor (ideally).
- Inside steel enclosures.

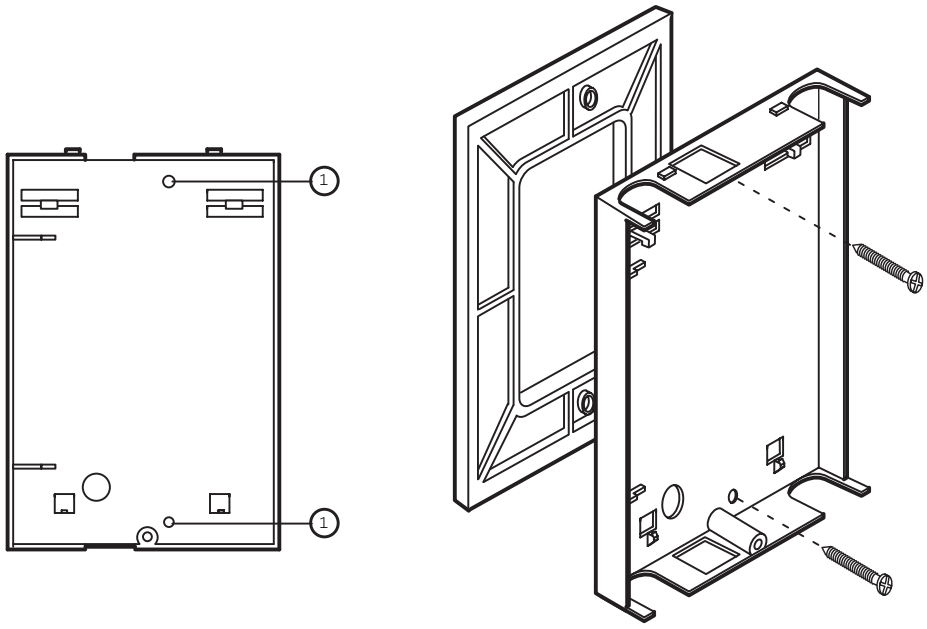
Next to electronic equipment, particularly computers, photocopiers or other radio equipment, CAT 5 data lines or industrial mains equipment.

STATIC PRECAUTION

Like many other electronic products, the 703r contains components that are sensitive to static electricity. Try not handle the main circuit card directly. If you must handle the card, take the standard precautions against damage by static electricity.

FITTING THE CASE

Mount the case on the wall using the fixing holes indicated on Fig 2. Fit the spacer as shown to ensure that the back tamper operates correctly. Do not over-tighten the fixing screws.



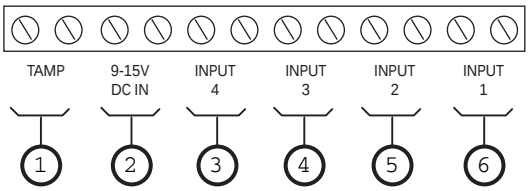
1. Mounting Hole

Figure 2. Mounting Hole Positions

INSTALLING THE AERIAL

The 703r can be fitted with one of three aerials (see "Compatible Equipment" on page 8). Fit the aerial onto the BNC connector at the top of the case.

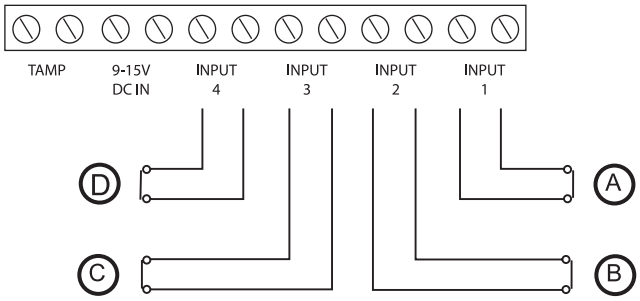
UNIT CONNECTION



1	Tamper	2	DC Power In
3	Input 4	4	Input 3
5	Input 2	6	Input 1

Figure 3. PCB Main Connector.

You may connect detectors to the inputs using either four wire closed circuit or end of line resistor connections (see Figures 4 and 5). Use the IP command to program the unit for the correct type (see page 25).



A	Alarm Circuit 1	B	Tamper Circuit 1
C	Alarm Circuit 2	D	Tamper Circuit 2

Figure 4. Closed Circuit Four Wire Connection

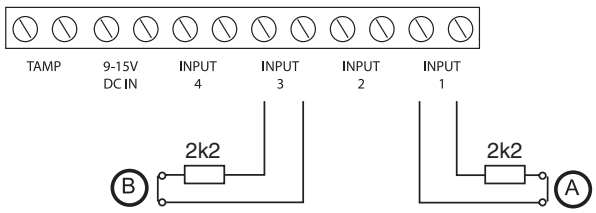


Figure 5. End of Line Resistor.

A Alarm Circuit 1 B Alarm Circuit 2

4. PROGRAMMING

In order to put the 703r to use, you must first program the unit. Programming involves first allocating a specific operating mode to the transmitter, and then making the receiver "learn" the identity of the transmitter. (These two tasks must be carried out in this order.) The rest of this chapter tells you how to do this.

PROGRAMMING CONTROLS

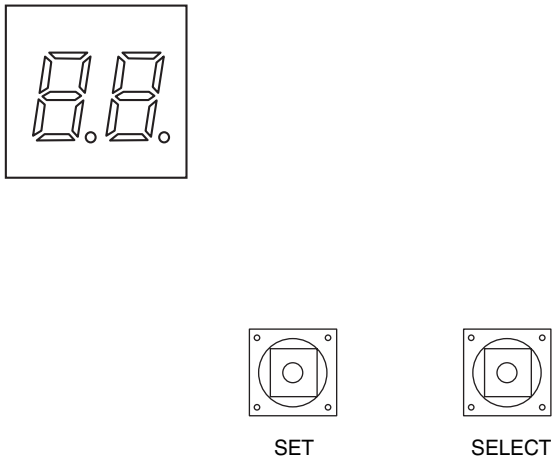


Figure 6. Programming Controls and Display

The main PCB contains a two digit LED display and two buttons that act as the programming controls. The user interface provides a menu of seven commands, each indicated by a two letter code on the display (see "Menu Structure" on page 15). Once you have entered programming mode, you select the appropriate command by pressing Select repeatedly. Pressing Set confirms that you wish to use that command. You can then go on to select options within the command by

pressing a combination of Select to chose the option and Set to confirm your choice.

ENTERING PROGRAMMING

To enter programming for the first time (while installing a new unit):

1. Fit the battery or DC supply (see Figure 3).
   The display shows: - -
2. Press and hold Select.
   The display shows: c
3. Release Select.
   The display shows the first command in the menu: oP
   If you wish to enter programming while the unit is operating then open the case lid. If the unit is connected to an alarm control panel the tamper alarm may sound. Follow steps 1 to 3 above.

LEAVING PROGRAMMING

To leave programming:

1. Press and hold Select for four seconds.
   The display shows: r
2. Release Select
   The transmitter stores any changed settings and returns to normal operating mode.

If you put the lid back on without pressing Select for four seconds then the 703r will return to normal operating mode after 60 minutes, but

without storing any of the changes you have made.

MENU STRUCTURE

There are seven commands available, arranged in a simple menu. To move between commands press Select. The table below shows the commands and their function.

Command	Function
oP	Set mode to one of m1 to m9.
iP	Input type. cc = four wire closed circuit. EL = End of Line resistor.
SP	Send supervisory messages. 04 = once every 4 minutes. 29 = every 29 minutes.
Lm	Enable LED. E = enabled. The 703r signals its identity through the LED every time the 703r sends a radio transmission. d = disabled. The 703r transmits its identity by radio (but not the LED)
PF	Power Fail. E = enabled. The 703r sends a radio signal if the external power supply fails d = disabled.

rL	Learn roller shutter pulse count (Mode 7 only). Value can be from 01 to 30.
rS	*No activity period (Mode 7 only). Value be either 01 or 02 minutes.
SS	*Learn shock sensor sensitivity value for alarm (Mode 8 only). Values can range from 01 to 30.
En	*Set entry time in seconds. (Mode 6 only) Values can range from 10 to 60 seconds in 5 second steps.
Et	*Set exit time in seconds (Mode 6 only) Values can range from 10 to 60 seconds in 5 second steps.

**Please note that these function are only available when you select the appropriate mode.*

MODES

To program the transmitter to a selected mode:

1. Place the transmitter in programming mode. The display shows oP.
2. Press Set.
3. Press Set again until the display shows the mode number you require. For example, for mode 8 the display shows: n8

4. Press Select.

   The 703r now reboots into its new mode. (Note that the 703r always reboots when you change its mode.)

The rest of this section describes each mode in turn, and any further programming that individual modes may need.

Note: If you wish to change the mode in which the 703r operates then you must delete the transmitter from the receiver first. Change the mode at the transmitter and make the receiver learn the transmitter's identity when the 703r is operating in the new mode.

1 – Momentary

Four channel transmitter using Normally Open non-latching inputs. The transmitter signals when the inputs short circuit. This mode can be used for personal attack or call buttons. This mode does not provide Restore signals. Note that when using this mode with a 768/9r or a 762r receiver then you must change the receiver mode to momentary as well.

2 – Latched (Normally Closed)

Four channel transmitter using Normally Closed inputs. The transmitter signals when the inputs open circuit. Each channel follows the state of its associated input. This mode provides both alarm and restore signals.

3 – Latched (Normally Open)

Four channel transmitter using Normally Open inputs. The transmitter signals when the inputs short circuit. Each channel follows the state of its associated input. This mode provides both alarm and restore signals.

4 – Two Zone (Normally Closed)

In this mode the 703r provides two alarm channels and two tamper channels. The transmitter signals when the inputs open circuit. Use this mode to connect two alarm devices, each with one alarm and one tamper contact.

Inputs 1 and 2 provide alarm and tamper for device one, 3 and 4 provide alarm and tamper for device two.

5 – Two Zone (Normally Open)

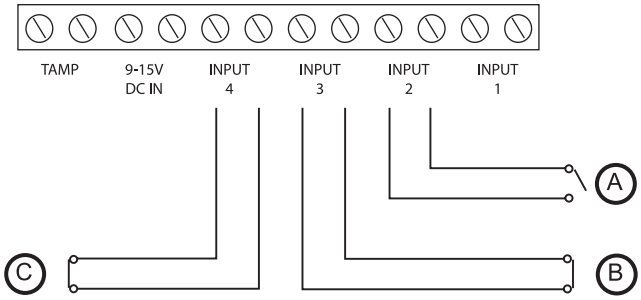
Two Zone transmitter using Normally Open inputs (otherwise similar to mode 4). The transmitter signals when the inputs close circuit.

Inputs 1 and 2 provide alarm and tamper for device one, 3 and 4 provide alarm and tamper for device two.

6 – Single Zone Alarm Panel

In this mode the 703r can be used as a Single Zone Alarm Panel to transmit alarm conditions to a remote on-site monitoring center.

Connect a detector alarm circuit (normally closed) to input 3 and its normally closed tamper circuit to input 4. Connect an arming switch (for example a key switch) to input 2 (see Figure 7).



A Keyswitch
B Detector Alarm contact
C Detector Tamper contact

Figure 7. Single Zone Alarm Panel Mode

The transmitter is unset while input 2 is closed. While the transmitter is unset, it monitors the condition of input 4 and ignores input 3. If input 4 opens the transmitter sends a tamper signal.

To set the transmitter, open the contacts on input 2. The transmitter starts the exit timer and gives an exit tone from its internal sounder. At the end of the exit time the sounder stops and the transmitter is set.

While the transmitter is set it monitors both inputs 3 and 4. If the detector opens the circuit on input 4 then the transmitter sends a tamper signal. If the detector opens the circuit on input 3 then the transmitter starts the entry timer and gives the entry tone from the internal sounder. If the user closes the switch connected to input 2 before the end of the entry time then the

transmitter unsets. If input 2 remains open at the end of the entry time then the transmitter sends an alarm signal. At the end of the transmission the 703r rearms input 3.

SETTING ENTRY TIME

To set the entry time:

1. Place the transmitter in programming mode (if it is not already there).
2. Make sure that you have selected Mode 6.
3. Press Select until the display shows En.
4. Press Set.
5. Press Set again until the display shows the desired entry time. The display shows the entry time in second. Every time you press Set the display adds five seconds. If the display shows 60 seconds and you press Set then the entry time reverts back to 10 seconds.
6. Press Select.

   The transmitter stores the selected entry time and displays oP

SETTING EXIT TIME

To set the exit time.

1. Place the transmitter in programming mode (if it is not already there).
2. Make sure that you have selected Mode 6.
3. Press Select until the display shows Et.
4. Press Set.
5. Press Set again until the display shows the desired entry time. The display shows the exit

time in second. Every time you press Set the display adds five seconds. If the display shows 60 seconds and you press Set then the exit time reverts back to 10 seconds.

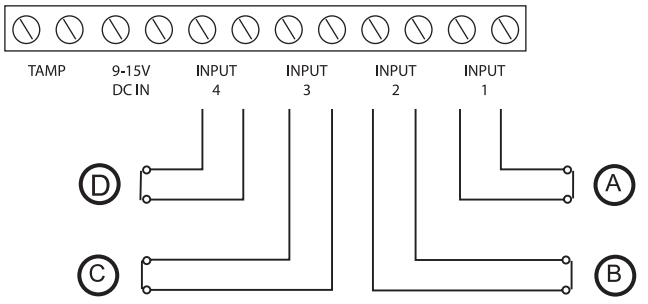
6. Press Select.

   The transmitter stores the selected exit time and displays oP

7 - Roller Shutter

Note: In Mode 7 the 703r consumes more current than in modes 1 to 6. Cooper Security Ltd advise that you use an external 12VDC power supply for this application. The internal batteries will provide 30 days backup power if the external supply fails.

Use this mode when connecting a roller shutter sensor to the 703r. The roller shutter contacts take up one zone, and the (optional) door contacts take up the second zone. Figure 8 is a diagram of a suggested connection method.



A	Roller Shutter Sensor (Alarm)	B	Roller Shutter Sensor (Tamper)
C	Optional Door Contact (Alarm)	D	Optional Door Contact (Tamper)

Figure 8. Roller Shutter.

If you wish to use the door contact option shown in Figure 8 then as well as teach the receiver the channel for the roller shutter sensor, you must also make the receiver learn the door contact channel into another free zone in a separate operation.

LEARNING ROLLER SHUTTER PULSE COUNT

When programming the 703r for use with a roller shutter you can make the transmitter send an alarm after a set number of open/close events on the roller shutter sensor. By default the 703r will send an alarm after detecting six closures on the sensor. To change this number:

1. Place the transmitter in programming mode (if it is not already there).
2. Make sure that you have selected Mode 7.
3. Press Select until the display shows rL .
4. Press Set.
5. Operate the roller shutter sensor for the required number of open/close events. (Make sure that all the open/close events occur within 20 seconds.)
6. Press Select.

The transmitter will now signal an alarm condition after the programmed number of open/close events.

SETTING THE ROLLER SHUTTER ACTIVITY PERIOD

Use this command to reduce the possiblity of false alarms caused by small, infrequent movements of the roller shutter (caused by the wind, for

example). These movements may be enough to cause single pulse counts separated by several hours. The accumulated counts can start a false alarm.

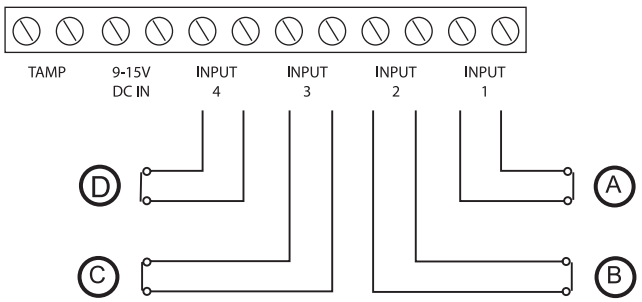
1. Place the transmitter in programming mode (if it is not already there).
2. Make sure that you have selected Mode 7.
3. Press Select until the display shows r-S.
4. Press Set.
5. Press Set until the display shows the desired sensitivity time (1 or 2 minutes).
6. Press Select.

The transmitter will now signal an alarm condition only if the pulse count exceeds the value set by command r-L within the time period selected.

8 - Shock Sensor

Note: In Mode 8 the 703r consumes more current than in modes 1 to 6. Cooper Security Ltd advise that you use an external 12VDC power supply for this application. The internal batteries will provide 30 days backup power if the external supply fails.

Use this mode when connecting a shock sensor to the 703r. The shock sensor contacts take up one zone, and the (optional) door contacts take up the second zone. Figure 9 is a diagram of a suggested connection method.



A	Shock Sensor (Alarm)	B	Shock Sensor (Tamper)
C	Optional Door Contact (Alarm)	D	Optional Door Contact (Tamper)

Figure 9. Roller Shutter.

When using the 703r with a shock sensor you can program the sensitivity level.

LEARNING SHOCK SENSOR SENSITIVITY LEVEL

By default the shock sensor sensitivity level is 20.

To program sensitivity level, first make sure that you have programmed the transmitter for mode 8, then:

1. Place the transmitter in programming mode (if it is not already there).
2. Press Select until the display shows 55.
3. Press Set.
4. Strike or jar the surface the sensor is mounted on, about four or five times.
5. Press Select.
6. Leave programming mode.

The transmitter will now ignore any shocks milder than those you used in step 4.

Mode 9 – Test Transmitter

In this mode the 703r acts as a test transmitter. The unit transmits its identity every seven seconds for half an hour. At the end of the half hour the transmitter stops signalling. To restart the transmissions enter programming mode and select mode 9 again.

INPUT CONNECTION TYPE

To program the transmitter to a selected input connection type:

1. Place the transmitter in programming mode.
   The display shows oP.
2. Press Select until the display shows IP.
3. Press Set.
3. Press Set again until the display shows the connection type you require.
   For 4 wire closed circtui the display shows: cc
   For end of line resistor the display shows: EL
4. Press Select.
   The display shows: IP.

TEACHING RECEIVERS

The 703r units teach their identity to receivers either by radio or by infra-red LED (if the LED is enabled in programming).

To allocate transmitters to specific channels you must program the receiver during the learning

process, see the Installation and Programming Guides for each receiver.

To disable the LED (and save battery power):

1. Enter programming mode if the 703r is not already there.
   The display shows: OP
2. Press Select until the display shows Ln.
3. Press Set until the display shows d.
4. Press Select.

To enable the 703r LED:

1. Enter programming mode if the 703r is not already there.
   The display shows: OP
2. Press Select until the display shows Ln.
3. Press Set until the display shows E.
4. Press Select.

The 703r will now transmit its identity using both the LED and radio.

SUPERVISON

If you wish the receiver to signal that it can no longer detect the 703r, then you must enable Supervision in the transmitter as well as in the receiver. With Supervision enabled, the transmitter sends an "I'm here" signal every few minutes. If the receiver does not detect that signal within a set period, it raises an alarm.

There are two Supervision settings on the 703r: the “04” setting corresponds to approximately 15 minutes delay between signals, while the “29” setting corresponds to approximately 120 minutes delay. You must set the Supervision period on the receiver to match the period you have selected on the transmitter.

To enable Supervision:

1. Enter programming mode if the 703r is not already there.
   The display shows: 0P
2. Press Select until the display shows SP
3. Press Set.
   The display shows d if Supervision is disabled.
4. Press Set again until the display shows the option you require (either 04 or 29).
   The display shows (for example): 04
5. Press Select.
   The display shows: SP

Make sure that you set the 768/9r or 762r receiver to the same setting.

POWER FAIL SIGNALLING

The 703r can send a signal to the receiver to inform it that the 703r has lost its external DC supply.

To enable the power fail signal:

1. Enter programming mode if the 703r is not already there.
   The display shows: OP
2. Press Select until the display shows PF
3. Press Set.
   The display shows d if power fail signalling is disabled.
4. Press Set again until the display shows E
5. Press Select.
   The display shows: PF

Printed and published in the U.K.

www.scantronic.co.uk
Product Support (UK) Tel: +44 (0) 870 757 5400.
Available between:
08:15 and 17:00 Monday to Friday.
Product Support Fax: (01594) 545401
Part Number 496942 Issue 2