DUALCOM PRO 4

CONNECTED • SECURE • LIVE

DualCom Pro 4

Introduction

The DualCom Pro 4 range offers installers easier, faster installation of a professional signalling system with even greater resilience, plus access to CSL Live, our ordering and management portal.

Using the onboard serial connections, pins triggering or dial capture, DualCom Pro 4 is compatible with a wide range of control equipment including systems installed to EN50136 & PD6662. The range consists of

- DigiAir Pro 4 Radio and DigiAir Pro 4 LAN - our single-path solutions that utilise either a Radio path or LAN to signal an alarm.
- GradeShift Pro 4 LAN Radio and GradeShift Pro 4 Dual Radio – our dual-path solutions that provide greater resiliency.

Figure 1 - Exploded View of DualCom Pro 4

DualCom Pro 4

Initial Setup

Step 1 – Site Preparation

DualCom Pro Radio Modules

Use a Signal Analyser (available from the CSL Installer Shop) to determine if enough base stations (2 or more) are available at the site and that they can supply sufficient signal strength (30% and above). This will determine the optimum location for the Dual Pro's aerial to be mounted.

If you do not have a Signal Analyser, we recommend powering up the DualCom Pro, connecting the aerial/s, going through the commissioning process then checking the reported signal strength before permanently fitting the aerial.

Press the A button to show the signal strength

> LED 1 should be green to show an acceptable level of Radio signal/quality.
>
> LED 2 should be green to show an acceptable level of second Radio signal/quality (where fitted)

See View Signal Strength section for more information.

DualCom Pro Ethernet Modules

DualCom Pro uses DHCP as the default IP settings. Ensure the customer's LAN socket is live and their network allows access to the CSL servers - see https://www.csl-group.com/uk/installer-zone/customer-it-survey-form4/ for more information on what is required.

Fixed IP settings can be added or amended using the My Base App.

Fit the Ethernet Adapter to the DualCom Pro 4 and connect an Ethernet cable from the adapter to the customer's router.

Once the DualCom Pro has been powered up, the LEDs in the Ethernet adapter will flash between red, amber and green to indicate the connection is operational and data is being seen on the local network link.

See Network Troubleshooting if it is not working as expected.

Step 2 – Installation

The DualCom Pro must be installed within an enclosure suitable for the installation certification. The unit should be fixed securely using the adhesive pads supplied or the optional dock that can be purchased in Shop.

Once installed, ensure:

- The aerial is connected and/or the Ethernet cable is installed, as appropriate.
- The alarm panel or PSU is powered down.
- Wire the DualCom Pro in this order.
    1. Negative (-) power
    2. Positive (+) power
    3. Serial cable or inputs
- If required, connect the serial cable - RS485, RS232 or TTL (panel dependent) – see Panel Connections section for more information.
- Connect any hardwired alarms from the panel to the device – see Pin Triggering section for more information.
- Connect the fault output.
- Restore power to the alarm panel or PSU.

In order to maintain compliance with the requirements for electrical safety the DualCom Pro should be powered from a fused connection with the following rating:	
For a 12V DC System (supply voltage in the range 10V to 14V DC)	A fuse rated at 1.25 A
For a 24V DC System (supply voltage in the range 20V DC to 30V DC)	A fuse rated at 600 mA
If the power source is not limited to these values, then a fuse with the correct rating must be fitted in line with the positive connection from the power source.	

Positioning Aerial

Do…	Install vertically in an open space. Complete a signal test before installing in the final position.
Don't…	Install close to metal or sources of interference e.g., wiring, lighting, electrical installations, computers, monitors, routers and other equipment.

Step 3 - Commissioning

On power-up, the DualCom Pro will automatically contact the Gemini Global Platform to perform its commissioning process, which can typically take between 5 and 8 minutes.

Once commissioned, all 3 LEDs will light green for 5 seconds. The device will then reboot.

LED 1	LED 2	LED 3
		
Power	Comms Path	Commissioned

Figure 2 – Commissioning complete

On next boot, just LED 3 will go green to indicate that the device is fully commissioned.

LED 1	LED 2	LED 3
		
N/A	N/A	Device Status

Figure 3 - Quiescent/Normal State

If using input pins Pin Triggering, whilst in quiescent/normal state, press button C for 5 second to self-learn the current panel input status.

LED 3 will flash amber then red and return to sold green once completed.

If using Dial Capture, Serial or DC09 to connect to the panel please follow Advanced Setup.

Step 4 - Testing

Before leaving site, you must test the DualCom Pro device, as per these steps.

1. Place device on test at the ARC and send a range of signals from the panel
2. Perform a path test by tapping button C whilst in quiescent/normal state
3. LED 3 will flash to show signals are being sent
4. Check signals are received at the ARC

See Troubleshooting for further details.

DualCom Pro 4

Advanced Setup

Configuring the DualCom Pro

All device configuration can be performed using the My Base App or website. Download the app from App Store or Google Play and enter your credentials. Alternatively in a browser go to My Base

If need be, you can use the one-time access page to install a device using your mobile phone or web browser without login details. Follow this link and enter the device serial number and connection ID.

Panel Integrations

Your device will come pre-configured to connect to the panel using Pin Triggering. In My Base it will show Panel Type = pins only.

If Pin Triggering is not being used, then use the Edit Pins option to set Pin Profile to 'No Pins'.

See Pin Triggering below for more details on using input pin.

A panel can also signal alarms to the DualCom Pro using

- Dial Capture (PSTN Modem)
- TTL
- RS232 (including ATS 7090)
- RS485
- Ethernet

To enable any of these connections to the panel, install the appropriate cabling then go to the My Base App and select the correct panel type. See Panel Integrations for more information.

Panel guides can be found by

- Clicking the panel type (after selection) via the My Base App
- Visiting the Installer Zone on our website.

Pin Triggering

For normal operation the device is triggered by removing or applying zero volts (ground) to each of the input terminals. No external pull-up resistors are required.

For EN54 Fire Mode operation, pull-up resistors are required. See Fire Setup below on configuring the device in Fire Mode.

On receiving an event on the pin terminals, the DualCom Pro will generate the

relevant messages and forward them via the Gemini Global Platform to the ARC. Installers are advised that the intended use should avoid situations where the rate of trigger exceeds the rate at which messages are received by the ARC receiver.

In the default configuration, pin inputs 1, 2, 3, 5 – 8 generate SIA untyped alarms UA/UR8001 to 8008 e.g.

[#123456|NUA8001|AChannel 1 Alarm]

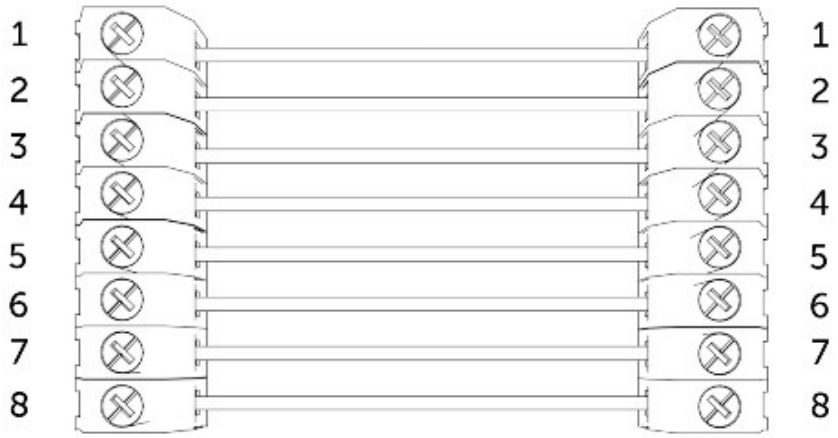
[#123456|NUR8001|AChannel 1 Restore]

And pin input 4 generates SIA alarm OP/CL8004 e.g.

[#123456|NOP8004|ASystem Set]

[#123456|NCL8004|ASystem Unset]

Control Panel	DualCom Pro



Configuring Pin Inputs

To have the DualCom Pro self-learn the current panel input status, press button C whilst in quiescent/normal state for 5 seconds. LED 3 will flash red twice once completed. The status of each pin will be sent to the Gemini Global Platform and ARC. Use My Base to confirm the messages are in the format expected.

To change the input from negative removed or applied to positive removed or applied, change the pin bias via My Base under the Hardware menu button.

Configuring Output Relays

Each relay is a pair of switches that can be used to notify the panel of an event on the DualCom Pro.

By default, relay 1 is configured to indicate a line fault (total path fail condition) to the control panel. This can be modified using My Base.

After initialisation, the switch between NO and C will be closed and the switch between NC and C will be open. If a line fault is detected then NO and C will open and NC and C will close.

Wire the outputs based on the panel zone to receive the correct notification.

For non-Fire installations, relay 2 is unused. Manually turning it on and off in My Base can be used to signal to an external device connected to the relay.

If the DualCom Pro 4 has EN54 Fire Mode enabled then the relays are configured as described in …..

Need to replace the text box and both diagrams below!

If the device is powered by a 24V (Fire Panel) supply, the A+ terminal will still deliver 12V

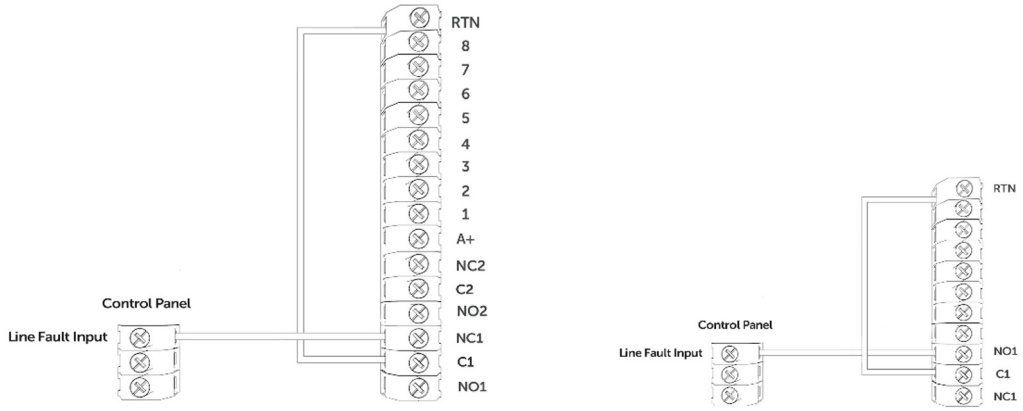


Figure 6 - Example of Fault Output Wiring

Dial Capture

DualCom Pro simulates and replaces the phone line connection to the control panel's Digi-Modem. The control panel's Digi-Modem must use one of the following alarm formats: Fast Format*, Contact ID or SIA. In the event the control panel needs to send a signal to the ARC, the DualCom Pro will capture the message and forward it, via the Gemini Global Platform, to the ARC. The Digi-Modem must have an ARC telephone number (ie 01) and account number (ie 1234) programmed for Dial Capture to work. If you want to monitor the Dial Capture connection, you will need to connect an output configured as PSTN line fault on your control panel, to one of the DualCom Pro's inputs. That input then needs to be designated as Dial Capture Fail at your ARC.

*Please confirm compatibility of Fast Format with DualCom Pro via your ARC.

DualCom Pro	Control Panel

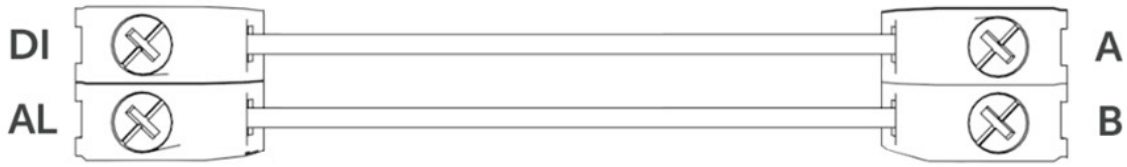


Figure 7 – Dial Capture Wiring

See the Dial Capture Guide for detailed set up instructions.

DC09 Ethernet Connections

If the DualCom Pro is using the onboard Ethernet connection for signalling, then an add-on Ethernet module should be installed for managing the panel connection.

See the DC-09 TCP/IP Guide for detailed set up instructions.

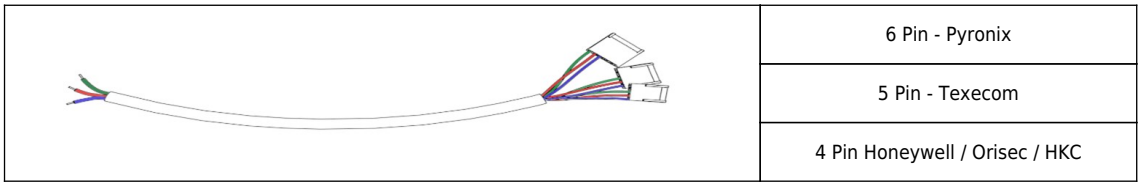
Serial Panel Connections (RS232, RS485 and TTL)

See the Panel Guide pages for individual panel set up instructions.

As standard, the DualCom Pro is supplied with a serial cable compatible with Honeywell (RS485), Orisec (TTL), Pyronix (RS232), Texecom (TTL) and HKC (TTL) panels. Other panel types may require an additional cable/plug-in that can be purchased on our Installer Shop. It is possible to use pins and serial cable together, if required.

Manufacturer	Panel	Connection	Cabel Plug	Wire	Connector
Honeywell	Galaxy	RS485	4 Pin	Green	RTN
				Blue	RS485-B
				Red	RS486-A
Orisec	All	TTL	4 Pin	Green	RTN
				Blue	TTL-T
				Red	TTL-R
Pyronix	Euro-Enforcer	RS232	6 Pin	Green	RTN
				Blue	RS232-R
				Red	RS232-T
Texecom	Premier/Elite	TTL	5 Pin	Green	RTN
				Blue	TTL-R
				Red	TTL-T
HKC	1070/10270	TTL	4 Pin	Green	TTL-R
				Blue	RTN
				Red	TTL-T

Figure 8 – Panel Connection Information



You must power down the control panel and DualCom Pro before connecting the serial lead, to avoid damage.

For RISCO, Eaton, UTC and other panels, please purchase the relevant cable from CSL Live. For other connections or further instructions on Control Panel programming, panel guides can be found by clicking the panel type (after selection) via the My Base App, or visiting the Installer Zone of our website.

Checking The Installation

Once commissioned, the DualCom Pro enters the quiescent or normal state. In this state, LED 3 will show the device status and there will be no other activity on LED 1 or 2. See Figure 3 - Quiescent/Normal State above. The LED colour indicates the current status

- Green = path and system are OK
- Amber = one path in a dual path installation is not working
- Red = error

From this state you can

- Press Button A to view the signal strength/LAN connectivity and test path fails
- Press Button B to check the LAN connection to the CSL Servers
- Press Button C to generate a Test Alarm
- Press and hold Button C to execute Pin Self Learn

View Path Connectivity

Press Button A once to view the connectivity. LED 1 will show the status of the primary path. If a second path is configured, then LED 2 will show the signal/connectivity status of that path.

Radio Connectivity

The LED will show the signal/connectivity status of your primary path.

- Solid green = good signal
- Flashing green = acceptable signal
- Flashing amber = emergency, only/low signal available (move aerial)
- Flashing red = SIM not ready/no signal available (move aerial).
- Red = error

LAN connectivity

The LED will show the connectivity status of your path.

- Solid green = good connection
- Amber = connection to local network is good but no access to internet/CSL
- Red = error – check the ethernet cable and ETH LED

Press Button A again to return to Quiescent/Normal State.

LED 1	LED 2	LED 3

		
Primary Path	N/A	N/A

Figure 4 - Connectivity

Verifying Path Failure Handling

This enables the installer to demonstrate the behaviour of path failure messages being received at the ARC and the Panel. Press Button A once to view connectivity, then

- Press and hold Button A for 5 seconds to simulate both interfaces being down
- Press and hold Button B for 5 seconds to simulate the primary interface being down
- Press and hold Button C for 5 seconds to simulate the secondary interface being down

LED 1 will show the primary interface and LED 2 will show the secondary interface. They will be set to flash red to indicate the start of the process.

The DualCom Pro will send a SIA Communication Fail alarm to the ARC

- YC9021 for both interfaces being down
- YC9015 for the primary radio interface being down
- YC9010 for the primary LAN interface being down
- YC9032 for the secondary (radio) interface being down

The appropriate line fault will also be triggered on the configured relay to notify the panel of the failure. Please check My Base – the default is only to signal the panel if both interfaces are down.

Tap the button again to stop the simulation.

The DualCom Pro will send a SIA Communication Restore (YK) and the Line Fault will be cleared.

Verify LAN Connectivity

This enables the installer to identify if there are any issues with the customer’s IT firewall configuration which may prevent the DualCom Pro connecting to the CSL Servers.

Press Button B once from the Quiescent/Normal State.

If there are no issues identified then all three LED will be set to green. Press button B again to return to Quiescent/Normal State.

Need to add whole section on what the different LEDs mean.

Generate a Test Alarm

Press Button C once from Quiescent/Normal State to send a Test Alarm

LED 3 will flash once and a test alarm (SIA NR) will be sent for each path to the CSL Servers. Two for a single path DualCom Pro and four for a dual path DualCom Pro.

Execute Pin Learn

From the Quiescent/Normal State, press and hold Button C for 5 seconds to allow the device to perform a self-learn of the current input pins. LED C will flash once complete. See Pin Triggering for more information.

Using The My Base App

My Base provides Installers with the ability to manage and configure DualCom Pro devices on a handy App/Web portal. Add link?

Simply download CSL My Base from your appropriate App store and obtain log-in information from CSL (or the CSL web administrator within your company) to access these great features:

	View path status		Remotely upgrade device firmware
	Check signal Strength		View alarms (you must stil check with your ARC that alarms are being received by them)
	View panel connection status		Test alarm
	Configure static IP information		Invert fault relay
	Amend panel connection		Configure outputs
	Change pin configuration		Amend Smart Reporting
	Check ATS path availability		Add estate name

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Troubleshooting

Interpreting the LEDs

The LEDs provide summary information as to the state of the device is. For further information go to My Base.

	LED Off
	Red Flashing
	Red Solid
	Amber Flashing
	Amber Solid
	Green Flashing
	Green Solid

Figure 10 - LED Key

As the DualCom Pro powers up for the very first time it will run through its commissioning process. You will need to wait for LEDs 1, 2 & 3 to go green before the unit reboots.

LED 1		LED 2		LED 3	
	No Power		No Comms		No Comms
	Power Start Up				Comms Path Found
	Power On				Commissioning server found. Contacting alarm server
					Fully Commissioned

Figure 11 – Commissioning LEDs

Once commissioned, the unit will return to its quiescent/normal state. LED 3 should be visible and LEDs 1 & 2 will be off. LED 3 will show you whether the unit has any errors or is transmitting data.

LED 3	
	Error found on the device (no commissioning performed)
	No errors found and the device is currently transmitting or receiving data
	Operating Normally

Figure 12 - Quiescent/Normal State LEDs

From the quiescent/normal state, press button A. Only LED 1 will show.

LED 1	
	No signal / SIM not ready or LAN not connected
	Registering / Signal is unacceptable / LAN connected but cannot transmit data
	Signal is acceptable (3/10) but could be improved
	Signal 4/10 (or above) or LAN connected

Figure 13 – Connectivity Section

There is 1 additional LED labelled as PANEL.

LED	DESCRIPTION		LED DESCRIPTION
PANEL	Serial connection to panel		Indicates if any of the serial connections to a panel are in use. If the LED is flashing green, data is being transferred. This LED will not be lit if there is no serial integration to the panel.

Figure 15 – Additional LEDs

Radio Troubleshooting

My signal strength is 30% (3/10) or less or my LED is orange/red. What can I do to improve it?

- Avoid coiling the aerial cable
- Move the aerial away from electrical equipment/wiring
- Move the aerial to a higher point in the property or closer to a window/door
- Purchase and fit a high gain antenna

LAN Troubleshooting

Why is my LAN path not working if my Ethernet Adapter LED is flashing green?

This means the device can see it is connected to the customer's router but there is a network configuration error. This type of fault can be due to the below:

- The network administrator has not amended the firewall rules as required. The required information can be found in the Customer IT Survey Form on the installer zone.

Please refer to "Checking The Installation", Verifying the LAN connectivity for extra diagnostics.

Does my device require static IP addresses?

No, it will also work with DHCP.

Does the DualCom Pro 4 support any type of negotiation speed?

No, the DualCom Pro 4 will only support negotiation speeds of up to 100Mbps.

DualCom Pro 4

Technical Specifications

Dimensions	Radio or LAN: 70 mm (h) x 125mm (w) x 16mm (d) Dual Radio: 70 mm (h) x 125mm (w) x 21mm (d) Dual LAN: 70mm (h) x 125mm (w) x 23mm (d)
Weight	TBC
Temperature	-10 °C to + 55 °C
Humidity	0 - 90% non-condensing
Mounting	TBC
Warranty	5 years
Power Requirement	10 - 30 Volts DC In order to maintain compliance with requirements for electrical safety the Dualcom Pro should always be powered from a fused supply with following rating: • For a 12V DC system (supply voltage in the range 10 Volts DC to 14 Volts DC) a fuse rated at 1.25 • For a 24V DC system (supply voltage in the range 20 Volts DC to 30 Volts DC) a fuse rated at 600 mA If the power source is not limited to these values, then a fuse with the correct rating must be fitted in line with the positive connection from the power source. The SPT will shut down on detecting a low supply of 7.6 Volts DC +/- 0.5 Volts DC
Current Consumption	TBC
Radio Path	2G, 3G, 4G
Output Ratings	Maximum applied voltage = 60V Maximum current = 150mA
Aerial	50 ohms (nominal) on MMCX socket
Operation Method	Pass Through
CIE Interconnections	Input triggering (standardised parallel), Dial Capture, RS232, RS485, TTL, Ethernet
RCT Protocols	SIA
Input Terminals	Max +30v, Min 0 volts DC (reference supply 0v supply) 100k
User Serviceable Parts	There are no serviceable parts within the DualCom Pro Range
Environmental	Class II

Applicable Standards	Suitable for use in alarm systems complying to: • EN50131-1:2006+A2:2017 • EN50136-1:2012+A1:2018 • PD6662:2017 • PD6669:2017 Emissions Standard • Radio Equipment Directive 2014/53/EU (RED) Environmental Standard • EN 50130-5 Environmental Class II ATS Configuration EN 50131-10:2014 Type Y ATS Classification EN 50136-2:2013 SP2, SP3, SP4 ATS Classification EN 50136-1-1:1998 • Radio D3, M3, T4, S2, I3, A4 (ATS5) • LAN D3, M3, T4, S2, I3, A4 (ATS5)

DualCom Pro 4

DigiAir Pro 4

PATH	AVAILABLE GRADES	WHAT'S IN THE BOX	PART NUMBER
Radio	SP2	DigiAir Pro 4, serial cable & small aerial	CS.51.R2
LAN	SP2	DigiAir Pro 4, serial cable, ethernet cable	CS.51.L2

GradeShift Pro 4

PATH	AVAILABLE GRADES	WHAT'S IN THE BOX	PART NUMBER
LAN + Radio	DP2, DP2+, DP3, DP4	GradeShift Pro 4, serial cable, aerial and ethernet cable	CS.53.LR2 CS.53.LR2P CS.53.LR3 CS.53.LR4
Radio + Radio	DP2, DP2+, DP3	GradeShift Pro 4, serial cable, 2 x aerial	CS.53.RR2 CS.53.RR2P CS.53.RR3

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DualCom Pro 4
CSL DualCom ltd. Building 4, Croxley Park, Hatters Lane, Watford, WD18 8YF

EN 54-21:2006 Fire detection and fire alarm systems / Alarm transmission and fault warning routing equipment EN 50131-10:2014 EN 50136-1:2012/A1:2018 EN 50136-2:2013 PD6662:2017 / PD6669:2017
Type of transmission system: Type 1 SP5 / DP4 Security Grade:1-4 depending on the I&HAS housing in which it is installed.
Environmental Class: II
https://www.csl-group.com/uk/

DualCom Pro 4

Fire Setup

DualCom Pro Fire Guide

This document covers the requirements of a Fire installation and is a supplement for the GradeShift Pro 2 and DigiAir Pro 3. The guide uses DualCom Pro Fire to refer to both product variants.

Mounting

The enclosure requirements for the DualCom Pro Fire are the same as for the Fire Alarm Panel itself which must meet the requirements of the EN54-21 standard.

The DualCom Pro Fire should be mounted inside the Fire Alarm Panel or inside a separately powered housing that meets the requirements of section 7.3 of the EN54-21 standard.

Input Pins

The default pin profile configured at installation is “PinLearn Fire”. With this, pins 1 and 2 are configured for use with fire alarm panels (EOL mode) and will generate a SIA Tamper Alarm/Restore in response to additional conditions along with Alarm and Restore with the other pins:

- Open circuit and open circuit restore
- Short circuit and short circuit restore
- Fault

If additional pins are required in EOL mode, use My Base to configure the DualCom Pro Fire to use pin profile “PinLearn EOL Pins 1-12”. In this configuration all pins on the DualCom Pro Fire will respond to the additional conditions and generate the corresponding events to the Gemini Global Platform.

Pin 1: intended for receiving the Fire Alarm/Restore signal from the Fire Alarm Panel.

Pin 2: intended for receiving Fault/Restore signal from the Fire Alarm Panel.

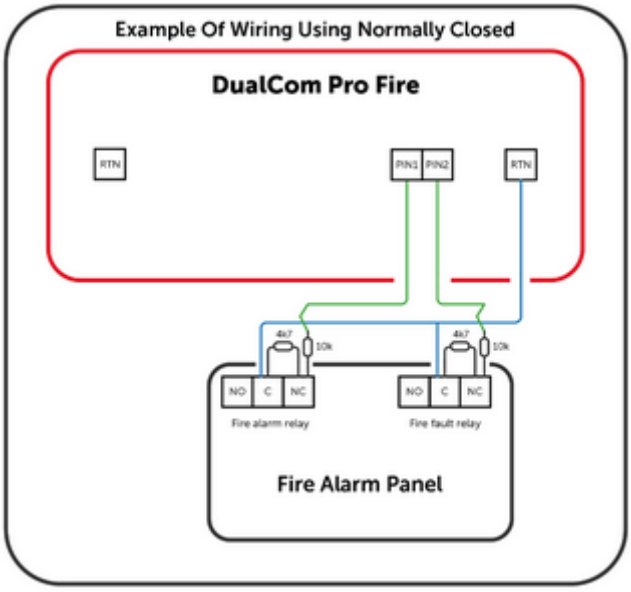
Remaining Pins: used for receiving notifications from any other device (e.g. an Intruder Panel). These pins take a lower priority than pins 1 & 2 when signalling to the Gemini Global Platform.

Input Pin Wiring

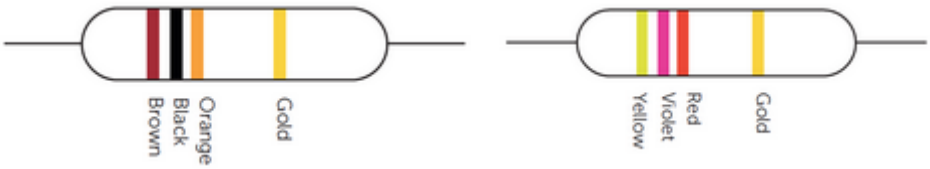
Input pins, which are configured in EOL mode, require 10k and 4k7 Ohm resistors to be wired in line as shown below.

The DualCom Pro Fire uses a normally closed configuration so that a power fail on the Fire Alarm Panel will signal an alarm to the Gemini Global Platform.

- If the circuit is broken, then an open circuit tamper alarm will be generated
- If it detects 0v, then a short circuit tamper alarm will be generated
- If the wrong resistor values have been used, then a fault tamper alarm will be generated



Resistors



These are the colour code markings for the 10k Ohm and 4k7 Ohm resistors respectively.

Self-Learn

If the self-learn functionality (Press Button C for 5 seconds) is invoked when an EOL pin is Alarm State then the DualCom Pro Fire will switch to generating a Restore event when a high voltage is detected for that pin going forward and an Alarm event when a low voltage is detected.

Relays

The relays are intended to notify the Fire Alarm Panel of events on the DualCom Pro, Gemini Global Platform or from the ARC. Their configuration is fixed in Fire Mode and cannot be changed via My Base.

When the DualCom Pro is unpowered, NC is connected to C and NO is not connected

to C.

When the DualCom Pro is powered and in a quiescent state, Relay 1 has the NO1 connected to C1 and the NC1 is not connected to C1.

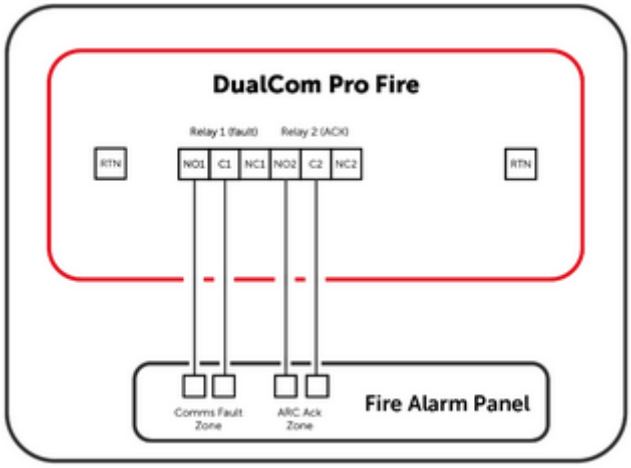
If a fault occurs then, Relay 1 changes such that NO1 is not connected to C1 and NC1 is connected to C1. When the fault is cleared it will revert.

Fault conditions include:

- If any of the input pins being monitored enter a fault state
- If there are communication path issues (Line Fault)
- If there is an alarm/restore that is sent to the ARC for one of the monitored pins and a response is not received within the configured timeout
- If there is a power failure

Relay 2 will connect NO2 to C2 and disconnect NC2 from C2 relay for 5 seconds to indicate that the ARC has acknowledged successful receipt of an event.

Relay Wiring



Fault Reporting

To meet the EN54-21 requirements for monitoring on Type 1 Fire systems, this device sends regular polling calls to the Gemini Global Platform on all connected and active transmission paths. The Installer shall ensure that appropriate reporting actions have been agreed with the ARC for all alarm codes, transmission path failure notifications and polling failure reports from the Gemini Global Platform.