



# DigiAir

## QUICK GUIDE & INSTRUCTION MANUAL

CONNECTED • SECURE • LIVE

## SPECIFICATIONS

Dimensions	71mm (h) x 111mm (w) x 18mm (d)		
Weight	65g including NVM and SIM		
Temperature	-20C to +60C transit, -10C to +50C operating		
Humidity	0 - 80% non-condensing		
Mounting	Any orientation		
Warranty	5 years		
Power Requirement	9.0v - 30.0v ---		
Current Consumption	Quiescent = 20 mA, signalling = 150 mA		
LED Indications	DigiAir	DigiAir UDL	Function
	GRN	SIG	Signal Strength
	YEL	COM	Communications
	SVC	SVC	Network Status
	RED	FLT	Fault
	-	RDY	Ready
Radio Path	3G/GPRS service on a GSM network		
Aerial	50 ohm (nominal) on MMCX socket		
Operation Method	Store and Forward		
CIE Interconnections	Input triggering (Standardised Parallel) Analogue (Dial Capture)		
RCT Protocols	Fast Format/Contact ID/SIA		
Input Terminals	Max +30v, Min 0v DC (reference supply 0v terminal) 100k pull-up resistor to +5v		
Low Battery	9.8v falling, 12.0v recovery		
Outputs	Changeover contacts, Max 60v, Max 100mA		
User Serviceable Parts	There are no user serviceable parts within the DigiAir or DigiAir UDL		
Standards	Suitable for use in alarm systems complying to: EN50136-1:2012 SP3 SSF 114 v2 Larmklass 2 EN50131-10 Type Y ATS Classification: EN50136 ATSS/SP3 ATS 5 parameters: D3/M3/T4/S2/I3/A3		
Environmental	EN50136/EN50131 Environmental class 3 Device should not come into contact with water		
Emissions	EN55022		
Installation	The CS5601/5600 shall be Installed by a service person and be powered by a Limited Power Source in accordance with Clause 2.5 of EN 60950-1 or equivalent, not exceeding the maximum voltage of 30 Vdc, capable of delivering a minimum current of 150mA and be current limited (fused) to 1A. It shall be installed inside an enclosure of another I&HAS component which shall be that of a CIE conforming to EN 50131-3, or a PSU conforming to EN 50131-6.		

Figure 1 - DigiAir

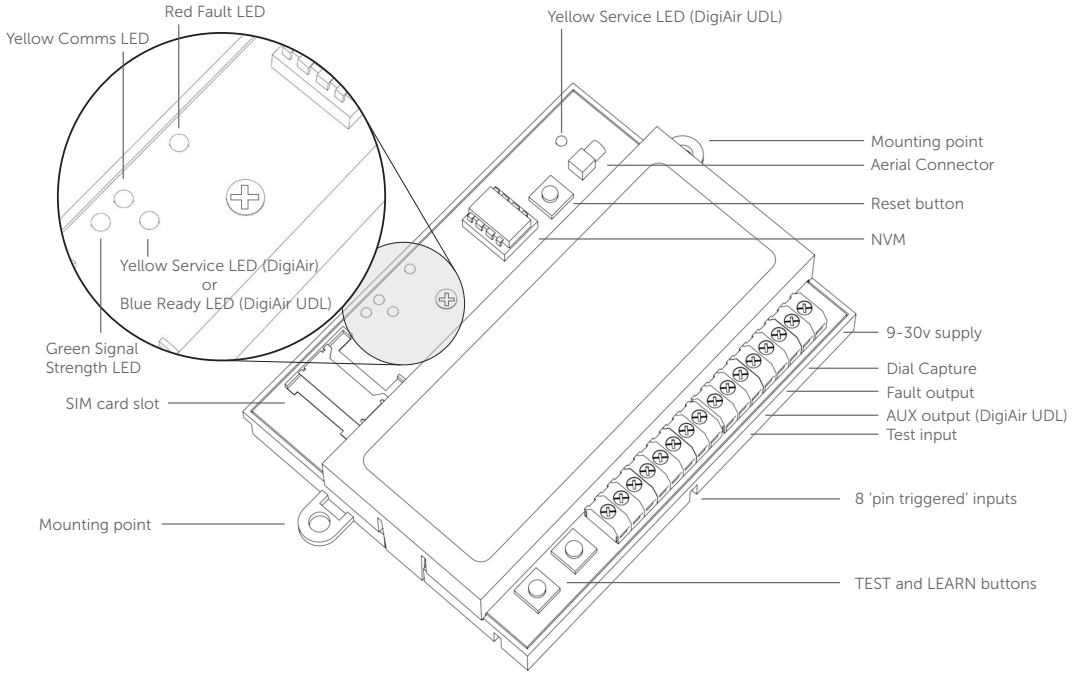


Figure 2 - LED Indications

LED Label	Description	LED STATUS			
		ON	Flashing	OFF	Other
Green	Signal Strength	Strong Signal Strength	Acceptable Signal Strength	Low Signal Strength, not acceptable	LED off and Fault LED on indicates no signal
Yellow	Communications	Input is triggered or Dial Capture is in progress	Sending a message to Gemini and ARC	No communication is in progress	Rapidly flashes to show successful communication
SVC	Network Status	Radio module initialising and registering to network	SIM card registered on network	There is insufficient power or no power connected to the DigiAir	Rapid flashing indicates unit is not registered to network
Red	Fault	Fault present see troubleshooting section	NVM contains factory defaults	No faults exist	On for 2 seconds indicates communication failure
Blue (DigiAir UDL)	Ready	Unit is ready to send messages to Gemini and ARC	N/A	Unit is busy and not ready to send new messages	LED off and Fault LED on indicates programming file is yet to be downloaded (usually takes 5-8 mins from power up with good signal)

# QUICK GUIDE

This section provides basic information to enable you to install and commission the DigiAir quickly. Additional information is contained in the main guide together with troubleshooting information.

Before installation or testing, the ARC should be contacted and system placed on test.

## STEP 1. INSTALLATION

- a. Complete a signal test by ensuring the antenna is connected, applying power and waiting 1-2 minutes for the unit to connect to the network. Once completed the Green Signal LED should be on or flashing indicating an acceptable signal. At this time DigiAir can be located into a suitable enclosure for grade of installation and antenna can be mounted, remembering the Dos and Don'ts outlined at the bottom of this page.
- b. Connect input triggers, or connect the Dial Capture terminals to a panel's Digi-Modem PSTN terminals (for further information please see 'Installation' on page 5).
- c. Connect the fault output terminals to the control panel if required.
- d. Connect 9-30v DC to the DigiAir.

IF USING A SEPARATE PSU TO POWER THE DIGIAIR MAKE SURE 0V IS COMMON BETWEEN THE PSU AND CONTROL PANEL.

## STEP 2. REGISTRATION AND CONFIGURATION

The DigiAir is supplied with 'factory default' settings. This is indicated by the Red Fault LED flashing regularly. The first call the DigiAir makes will be to the Gemini Platform at which point it will automatically download its operational settings, e.g. its chip number - please allow up to 5 minutes for download. This process may also be completed manually (if required) by pressing and holding the TEST button for 8 seconds. When the operational settings have been downloaded the Red Fault LED will be off and the Blue Ready LED will turn on (Blue Ready LED applicable to DigiAir UDL only).

In the case of PIN triggering, ensure the panel is in its normal state then press and hold the LEARN button (for 5 seconds) until the Green Signal LED and the Yellow Communications LED flash alternately. A power-up and registration sequence will follow. For installations using Dial Capture no DigiAir configuration is required, simply check your Digi-Modem has an ARC telephone number and account number, connect the DigiAir and test.

## STEP 3. TEST

Trigger control panel or press TEST button. Yellow Communications LED indicates comms progress. If the test is not successful the Red Fault LED will light for 2-3 seconds at the end of the sequence.

### SITING THE ANTENNA - DOS AND DON'TS

DO...

- INSTALL IN AN OPEN SPACE
- COMPLETE A SIGNAL TEST BEFORE INSTALLING INTO FINAL POSITION
- FIT VERTICALLY
- AVOID SOURCES OF INTERFERENCE I.E. ELECTRICAL INSTALLATION, MONITORS, OTHER WIRELESS EQUIPMENT

DON'T...

- INSTALL WITHIN THE CONTROL EQUIPMENT OR WITHIN 10CM OF A METAL OBJECT

# INSTRUCTION MANUAL

## 1. INTRODUCTION

DigiAir is an advanced digital communication device for secure alarm reporting to an Alarm Receiving Centre (ARC) utilising the Gemini Platform. Its compact design is ideal for situations where there is limited space within the control equipment and simple, fast installation is required.




Using either 'Dial Capture' or PIN triggering, DigiAir can be connected to a large range of alarm control panels or other control equipment to provide signalling in Fast Format, Contact ID or SIA for many types of applications including security systems installed to EN-50136 SP2 and PD6662:2017.

DigiAir is supplied with a WorldSIM and transmits alarm signals via the Gemini Platform to an ARC via any radio path. DigiAir monitors its radio communication path continuously and reports faults to the control panel via a relay output. In addition, Gemini continuously monitors the polling calls from the DigiAir to detect and report to the ARC total path or equipment failure in accordance with European requirements for Alarm Transmission Systems (ATS).

When a message is initiated by the changing voltage situations on DigiAir's input terminals, or the Dial Capture connection, the DigiAir will establish a communication to the receiving equipment. Successful communication will be indicated to the DigiAir by an encrypted acknowledgement signal from the receiving equipment, which will result in call completion and the return of the DigiAir to its quiescent condition. Where the correct encrypted acknowledgement signal is not received from the receiving equipment then the DigiAir will repeat the call process for a pre-set number of attempts or until the call is successfully passed to the receiving equipment. If the message cannot be successfully passed, then upon request the fault output may be programmed to operate.

## 2. BEFORE YOU BEGIN... SITE SURVEY

Before installing a DigiAir it is strongly recommended that a network site survey is performed to ensure adequate signal strength is available. This can be completed by using a Signal Analyser (see Installer Shop) or by using the DigiAir signal test feature. In either case the test should be completed in the location where the aerial is going to be installed (usually beside the control equipment). Note the Dos and Don'ts section on page 4 regarding mounting the antenna ensuring that it is inside the protected area and not near any metal objects or sources of interference. Ensure the antenna is connected to the aerial connector (see figure 1), apply power to the unit and wait 1-2 minutes for the unit to connect to the network. During this time the Yellow Service LED will flash regularly and once completed the Green Signal LED will indicate the radio signal strength.

On constantly		Strong Signal
Flashing		Acceptable Signal
Off		Low Signal (aerial should be re-sited or alternative version used)

## 3. INSTALLATION

DigiAir should be installed within an enclosure suitable for the overall security grade to which the system is being certified. The unit should be fixed securely using the mounting points provided.

DigiAir can be triggered via outputs from control equipment or using Dial Capture.

IF DIGIAIR IS UNABLE TO CONNECT TO THE NETWORK, OR THE SIGNAL IS TOO LOW FOR USE, THE RED FAULT LED WILL LIGHT. DIGIAIR SHOULD ONLY BE USED WITH STRONG OR ACCEPTABLE SIGNAL STRENGTH. IF THE SIGNAL IS LOW, OR THE GREEN SIGNAL LED IS OFF AND THE RED FAULT LED IS ON, TRY TO RE-SITE THE AERIAL - OR USE AN ALTERNATIVE VERSION UNTIL ACCEPTABLE SIGNAL STRENGTH IS ACHIEVED.

### 3.1 CONNECTION USING INPUTS (PIN TRIGGERING)

In this operation, DigiAir is triggered by applying, or removing, zero volts to the input terminals 1-8. No external pull-up resistors will be required. This is generally achieved via the digital communicator outputs of an intruder alarm or similar control panel. DigiAir will signal alarm conditions and will generate the relevant messages, and forward them via Gemini to the ARC. Users are advised that the intended use should avoid situations where the rate of triggering exceeds the rate at which messages may be sent to, or received by the ARC's receiver.

Connection of the input to outputs, fault relay and power connections are shown in figure 3.

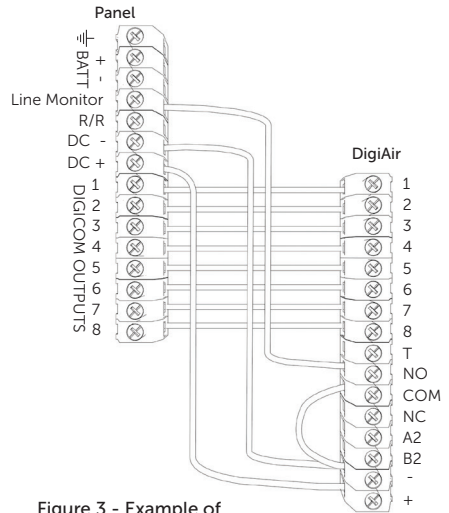


Figure 3 - Example of connection with control panel

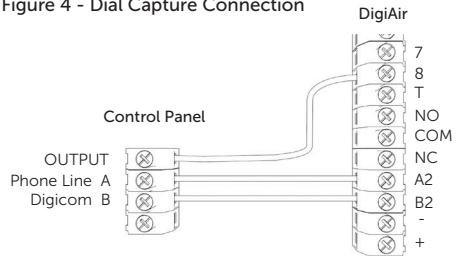
IN CERTAIN SITUATIONS THE INPUTS MAY BE TRIGGERED FOR OTHER APPLICATIONS I.E. ENVIRONMENTAL CONTROLS, CCTV, EQUIPMENT MONITORING, ETC. THIS OPERATION IS ACCEPTABLE PROVIDED THE INPUTS ARE TRIGGERED FROM A COMMON POWER SOURCE.

### 3.2 CONNECTION USING 'DIAL CAPTURE'

In this operation, DigiAir 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, DigiAir will capture the message and forward it via Gemini to the ARC. The Digi-Modem must have an ARC telephone number and account number programmed for Dial Capture to work. Check your control panel configuration for any other settings that may apply. If you want to monitor the Dial Capture connection, connect an output configured as PSTN line fault on your panel to one of the DigiAir inputs and designate that input as Dial Capture fail at your ARC. Connection for Dial Capture is shown in figure 4.

Figure 4 - Dial Capture Connection



FOR MORE INFORMATION ON COMPATIBLE CONTROL EQUIPMENT PLEASE REFER TO TABLE ON PAGE 2.

A MIXTURE OF DIAL CAPTURE AND INPUT (PIN) TRIGGERING IS NOT RECOMMENDED WITHOUT CONSULTING CSL TECHNICAL SUPPORT.

### 3.3 CONNECTION USING RS-485 (DIGIAIR UDL ONLY)

In this operation, DigiAir is triggered by a compatible panel using a RS-485 connection.

The RS-485 connection is capable of accepting alarm information as well as providing Remote Servicing & Diagnostics (RSD) functionality. Figure 5 below shows wiring to a Honeywell panel via input 7 & 8 on the DigiAir, connected to Data A and Data B on the control panel. Once connected please contact CSL Technical Support who will assist you in enabling the RS-485 port.

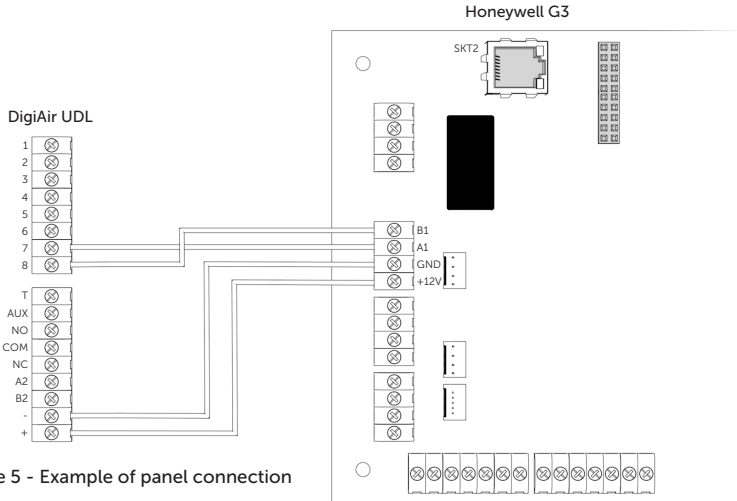


Figure 5 - Example of panel connection

### 3.4 AUX OUTPUT (DIGIAIR UDL ONLY)

DigiAir features a switch negative (0v) auxiliary output which provides up to 100mA when enabled/active. The output can also be inverted. Please contact CSL Technical Support to configure this function, if required.

The aux output can be configured to report:

- Comms successful
- Comms failure
- Radio path fault
- AVI (also requires one or more inputs being selected to AVI)
- Jamming detection

### 3.5 CONNECTING THE OUTPUT (DIGIAIR UDL ONLY)

DigiAir features a volt free changeover output to indicate fault conditions. When installing to PD6662:2017 this output should be wired to the control equipment to indicate path and comms faults.

### 3.6 POWER-UP

On first power-up, the 3 DigiAir LEDs will switch on for 3 seconds (not the Yellow Service LED or Blue Ready LED). The unit will establish a connection with, and register on, the radio network. During this time the Yellow Service LED will flash regularly. Once completed, the Yellow Service LED will flash once every 3 seconds and the Green Signal LED will show the radio signal strength if available. See figure 2 on page 3 for LED Indications.

The DigiAir is supplied with 'factory default' settings. This is indicated by the Red Fault LED flashing regularly. The first call the DigiAir will make will be to the Gemini Platform at which point it will automatically download its operational settings, e.g. its chip number - please allow up to 5 minutes for download. This process may also be completed manually (if required) by ensuring the Green Signal LED is on or flashing then pressing and holding the TEST button for 8 seconds.

PLEASE CONTACT CSL TECHNICAL SUPPORT IF A CHANGE IS REQUIRED TO THE DEFAULT FUNCTION OF THIS OUTPUT.

### 3.7 LEARNING FOR PIN TRIGGERING APPLICATIONS

For applications using Input 'pin triggering', DigiAir needs to identify the normal state of the inputs. To complete this, ensure the control panel is in the normal mode, i.e. no alarm conditions are outstanding. Then press the LEARN button (for 5 seconds) until the Green Signal LED and the Yellow Communications LED flash alternately. A power-up sequence will follow. At any time you may repeat this sequence.

## 4. TESTING DIGIAIR

DigiAir can be tested by:

1. Pressing the TEST button – this sends a test message to the ARC.
2. Triggering an input – this sends the relevant signal to the ARC.
3. Activate a 'Dial Capture' sequence – this sends the relevant signal to the ARC in the format that the control equipment is using.

During a test call the Yellow Communications LED will activate and flash as the signal is being sent. At the end of a transmission the Yellow Communications LED will flash rapidly to indicate it has been successful. In the event the test message cannot be sent the Red Fault LED will switch on for 2 seconds.

PLEASE CONTACT CSL TECHNICAL SUPPORT IF A CHANGE IS REQUIRED FOR THE OUTPUT FORMAT OF PIN TRIGGERING. THE DIGIAIR TEST BUTTON IS ONLY INTENDED TO SHOW CONNECTIVITY FROM THE UNIT TO THE GEMINI PLATFORM AND THE ARC. IT IS STRONGLY RECOMMENDED THAT COMMISSIONING AND SERVICE TESTING SHOULD BE INITIALISED FROM THE CONTROL EQUIPMENT TO ENSURE THE COMPLETE PATH IS FUNCTIONING.

### 4.1 ALARM TRANSMISSION SYSTEM TESTING

If your DualCom is showing a fault or low signal strength, this must be addressed before leaving site.

If you are unsure how to test the device, need any explanation of fault messages or general advice please contact CSL Technical Support. Failure to install the device correctly or test regularly will inhibit its operation and delivery of alarm messages.



## 5. ADVANCED INSTRUCTIONS AND TROUBLESHOOTING

### 5.1 RESET

The RESET button may be pressed at any time to immediately stop an alarm transmission. This will be followed by a complete power-up sequence. Calls that have not been sent before the reset will be stored and sent when the radio path is re-established. Stored calls may be deleted by pressing and holding the TEST button when RESET is pressed. This is indicated by the Green Signal LED and the Yellow Communications LED flashing together a few times. Pressing the RESET button will not clear any saved or downloaded settings.

### 5.2 FAULT LED INDICATION

The Fault LED indicates a problem with DigiAir. To understand the type of fault, press and release the LEARN button and the Fault LED will flash to indicate type of problem.

1 FLASH	= NVM FAULTY OR MISSING.
2 FLASHES	= SUPPLY VOLTAGE IS LOW (BELOW 9VDC).
3 FLASHES	= NO RADIO SIGNAL. THERE IS A RADIO PATH FAULT OR DIGIAIR IS UNABLE TO REGISTER ON THE NETWORK. RELOCATE THE AERIAL OR CONTACT CSL TECHNICAL SUPPORT.

### 5.3 TROUBLESHOOTING

**Q. The Red Fault LED is continuously flashing, what does this mean?**

A. This happens when the unit is first powered and needs to download its configuration file from the Gemini Platform **which can take up to 5 minutes**. You must ensure that the Green Signal LED is either flashing or is on constantly, which indicates the unit is connected to the mobile network.

**Q. The DigiAir repeats the 'power-up' sequence but never completes it.**

A. The power supply has a low output voltage or is unable to supply the current required by the DigiAir when it is activated. Check the power supply with a multimeter. Also, test the DigiAir when powered by a 'known good' 12v battery.

**Q. The Red Fault LED is on, what is the problem?**

A. This indicates the unit cannot operate correctly due to low power or there is a radio fault. Check that the power to DigiAir is between the recommended levels 10-30v DC. If this is correct then the fault will be due to network signal which may be solved by relocating the antenna.

**Q. Triggering via 'Dial Capture' does not seem to work.**

A. Panel may not be compatible or is configured to send a protocol that DigiAir does not recognise. If available check the control equipment programming and select SIA or Contact ID as the signalling format.

**Q. The ARC is not receiving messages.**

A. Where the correct encrypted acknowledgement signal is not received from the receiving equipment, the DigiAir will repeat the call process for a pre-set number of attempts or until the call is successfully passed to the receiving equipment. If the message cannot be successfully passed, then upon request the fault output may be programmed to operate. In this instance, please contact CSL Technical Support.

IF TROUBLESHOOTING FAILS TO RESOLVE YOUR PROBLEM THEN  
PLEASE CALL CSL TECHNICAL SUPPORT.

## 5.4 NETWORK OUTAGE

Mobile providers are regularly upgrading or maintaining their networks which may result in unplanned or planned loss of service. In these situations a loss of connectivity to DualCom device can occur which increases the risk of poll fail messages being delivered to the ARC primarily where the device is working on a single path only or the secondary path is unstable.

Gemini Platform monitoring systems detect issues due to network outages and apply filters prescriptively to hold poll fail messages during these times. This is to minimise disruption to ARC's and Key holders during a known period of network instability.

CSL will typically inform ARC's and Gemini Insight Users that a network outage is planned or in progress. During this time, path fails and alarm messages received by the Gemini Platform will be delivered to ARC's. Poll fails received may be held and cancelled when the network outage is resolved and a restore is received.

## 5.6 OPTIMISATION OF DEVICES

Where devices are not configured or installed as intended, or the recommendations set out in the installation manual have not been followed, CSL reserves the right to withdraw monitoring or downgrade the fault reporting times of the equipment until such time as CSL is notified that actions have been or will be undertaken to ensure that the installation recommendations have been, and will continue to be followed.

## SUPPORT

For more information on DigiAir, DigiAir UDL or other DualCom products please contact CSL Technical Support:

UK Tel:	+44 (0)1895 474 444
Ireland Tel:	1800 855 695
Email:	support@csl-group.com
Hours:	08.30 to 18.00 weekdays, 10.00 to 16.00 Saturday

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