Security Communication Solutions International Pty Ltd.

DTU4G/IP

Installation Manual

April 2018
Revision 1.2

Your connection to the DirectWireless™ Private Alarm Transmission Network

GUARDCELL
direct WIRELESS™

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'yes' OPTUS

Introduction

Dear installer, thank you for choosing the DTU4G/IP and DirectWireless™ service, Australia's only private alarm transmission network. The DTU4G/IP is a wireless alarm communicator that can connect an alarm panel to the DirectWireless™ Network providing a wireless 4G with 3G fall-back connection and an Ethernet path utilising the end-users' internet connection.

The DTU4G/IP is designed to interface with new and existing alarm installations and provide multiple supervised alarm communication paths to the monitoring station.

Please read this installation guide carefully prior to attending the end-users' premises.

Features

- Telstra 4G/3G or Optus 4G/3G;
- NBN Ready;
- Dual SIM capability for greater network reliability;
- Plug & Play alarm panel connection;
- Over-the-Air Panel Download capable on selected panels;
- SCSI Management Portal capable;
- Ademco High Speed format capable;
- LCD display for signal strength and operational information;
- AC & DC power input and back up battery charger output;
- Supervision of AC power and low battery;
- Ethernet Interface and Serial Interface;
- On-board Tamper Alarm and Alarm Panel CPU Clock Monitor;
- Two Isolated Alarm Inputs;
- Two Dry-Contact Alarm Inputs;
- Three General Purpose Relay Outputs;
- Antenna diversity for optimum coverage;
- Designed to meet AS2201.5-1992 Class 2, 3 and 4 alarm transmission systems;
- Proudly designed in Australia.

Disclaimer

The manufacturer or their agents take no responsibility for any damage, financial loss, improper installation, deliberate misuse, careless handling or injury caused to any equipment, property or persons resulting from the use of this equipment whatsoever. The user assumes all responsibility and liability in the use of SCSI products and services. While every effort has been made to ensure this manual is accurate, the manufacturer assumes no responsibility or liability for errors or omissions. Due to ongoing product development, this manual is subject to change without notice.

Connection to the DirectWireless™ Network

The DTU4G/IP is suitable for connection to the DirectWireless™ Network only.
Please check with your monitoring station prior to installation to ensure the DirectWireless™ SIM cards have been activated.

DirectWireless™ SIM cards

DirectWireless™ SIM cards will not work with any product other than the DTU4G/IP. Attempting to use these SIM cards in an unauthorised device such as a mobile phone will result in the SIM cards becoming locked and they will need to be returned to the SCSI Service Centre to be unlocked. Do not enter PIN numbers in an attempt unlock SIM cards.

DTU4G/IP Warranty

SCSI thoroughly tests every DTU4G/IP prior to being dispatched for installation. The only part of the system that has not been tested prior to dispatch are the SIM cards. They can only be tested once the SIM cards have been activated.

SCSI guarantees this product for 3 years from the date of purchase. If a unit is found defective within the warranty period, it should be returned to the Distributor or Monitoring Station from whom it was purchased. The unit will be repaired or replaced at no charge. The warranty is limited to replacement cost of the unit. No warranty is expressed or implied on equipment used with the unit or labour involved.

Warranty Conditions

The warranty covers defects in materials and workmanship. The warranty is invalidated by misuse or neglect by the customer and defects caused by improper installation or operating practices. Damage such as that caused by lightning or inadequate return packaging will also void the warranty. In no event shall SCSI be liable for any consequential damage.

Technical Support

SCSI provides a dedicated DirectWireless™ service centre for both network and product support. Technical support is available Monday through Friday 8:30am to 5:00pm Australian Eastern Standard Time, excluding public holidays.

Product information can also be accessed on the SCSI website at any time.

Supplied Accessories

The DTU4G/IP kit includes the following components:

- Installation manual;
- DTU4G/IP module;
- 610M to modular adaptor;
- 6P4C modular cable for alarm panel connection, 2m in length;
- 4G/3G 3dBi antenna x2;
- Antenna fly-leads, 300mm in length x2;
- DirectWireless™ 4G/3G SIM cards x2;
- Cat5 cable for General Purpose Input/Output (GPIO), 45cm in length x2;
- 2 & 3 pin Phoenix connectors (DC & AC Power Input);
- Velcro strips for mounting the DTU4G/IP.

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Antennae Location & Installation

Warning: The DTU4G/IP must be installed in accordance with the directions given in this installation manual by suitably qualified service personnel.

Warning: The antennae will emit Radio Frequency radiation in the same way as that of a mobile phone and must be located at least 20cm away from personnel.

Two 3db gain omni-directional 600-2700MHz band antennae with SMA connectors are provided with every DTU4G/IP. Each is 21cm long and can be mounted indoors on a suitable surface in a vertical position on the top of the alarm panel cabinet enclosure. Both antennae, Main & Diversity, must be fitted for optimum signal strength and performance.

Make two suitable holes, (typically 8mm diameter) in the top of the box in which the DTU4G/IP is fitted. Prevent swarf from entering the enclosure as it could cause internal short circuits. Remove any burrs from the holes, pass the RF coax cables through it and place the antennae in position and secure them with the nuts provided. The antennae should be mounted on a metal bracket or the metal work of the panel to provide a ground plane for the antenna.

Route the RF cables away from any other wiring within the box to reduce the likelihood of interference. Carefully connect the RF cables to the SMA connector from the DTU4G/IP.

If adequate signal is not available at the alarm panel location, the antenna must be located in a remote location away from the alarm panel. The antenna should be mounted 0.5 to 1 metre clear of metal structures other than the required ground plane.

DTU4G/IP Signal Strength

Adequate signal strength must be achieved for the DTU4G/IP to have consistent and stable communications on the 4G/3G networks. A minimum CSQ of 12 is recommended.

Once the DTU4G/IP has established a data session, a CSQ reading will be displayed on the 7-segment display. The signal strength will be between 1 and 31, with 31 being the optimum signal.

A high gain 7db omni-directional 600-2700MHz band antenna with SMA connector can be obtained from SCSI if adequate signal cannot be achieved with the standard antenna. The antenna can be mounted externally where environmental factors cause interference or a degraded signal, or to get line of site to a tower. Antenna extension cables can be provided by SCSI. If the DTU4G/IP is displaying very low signal strength (CSQ less than 3), contact SCSI to diagnose the problem.

Tip: Powering DTU4G/IP on a battery prior to final installation will allow you to verify signal strength at the proposed location (The DTU4G/IP will update signal display at 2 minute intervals after successful network login).

Test Procedure

If the DTU4G/IP is in service, the Monitoring Station must be notified whenever you are working on the alarm system. You must follow these instructions when there is a need to make a change to the alarm system.

1. Call the Monitoring Station and request the alarm system & DTU4G/IP be put in 'Test Mode';
2. If undertaking work other than programming changes, turn off the power to the alarm system. (Switch off the mains and disconnect the back-up battery);
3. Make the desired changes to the alarm system;
4. If power was removed in step 2, re-connect the battery and switch on the mains to re-apply power to the alarm system and the DTU4G/IP;
5. Test the system;
6. Request the Monitoring Station take the alarm system and DTU4G/IP out of 'Test Mode'.

Status Indicators

See diagram in centre fold.

Alarm Dialler Configuration

If the alarm panel 6P4C modular Dialler Socket conforms to industry standards (pins 2 & 3 line-in and pins 1 & 4 line-out), connect the supplied 2 metre 6P4C modular line cord between the alarm panel and the alarm panel socket on the DTU4G/IP. If the alarm panel has a different pin configuration, for example Tecom or Concept, use the original alarm panel lead and connect it to the supplied 610M to modular socket adaptor and connect the adapter to the lead provided by SCSI. The connection between the alarm panel and DTU4G/IP is supervised and an alarm will be generated if the alarm line cord is cut or unplugged. Both Line-In and Line-Out must have continuity for this supervision to work. See diagram in centre fold for alarm panel dialler connections.

Warning: The alarm panel connected to the The DTU4G/IP cannot not have any connection to a telephone line.

Programming Alarm Dialler

The alarm panel must be set to Ademco CID format and tone dialling (DTMF) to communicate with the DTU4G/IP. Always check that account number and dialler receiver numbers have been configured correctly. Use maximum dial attempts and turn off dial tone detect.
The DTU now supports Ademco High Speed format. The alarm panel needs to be set for Ademco High speed format without checksum. The account number in the alarm panel must match the account number of the DTU.
When the DTU4G/IP is communicating on the wireless or Ethernet path, the account number programmed on the SIM card is used as the client account number.

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DISPLAY (LOGIN)

SIM1	SIM2	
40	50	= MODEM TO POWER OFF
41	51	= MODEM POWER UP
42	52	= ENABLE PIN TO UNLOCK SIM
43	53	= NETWORK REGISTRATION
44	54	= NETWORK DATA DOMAIN ATTACH
45	55	= PHONE BOOK READ
46	56	= CHECK APN & ACTIVATE CONTEXT
47	57	= START UDP CLIENT
48	58	= DWRX LOGIN SEQUENCE

DISPLAY (ERRORS)

SIM1	SIM2	
4C	5C	= PIN ERROR OR NO SIM CARD
4d	5d	= REGISTRATION DENIED
4E	5E	= CONTEXT ACTIVATION ERROR OR NO APN
4F	5F	= REGISTRATION DENIED

DISPLAY (COMMS)

0H = PANEL OFF HOOK

0I > 3I = SIGNAL STRENGTH & QUALITY (CSQ)

DIVERSI

AC1: 12V-18VAC IN
AC2: 12V-18VAC IN
Protective Earth

DC+: 12-24VDC SUPPLY or +12V BATT IN
DC-: 0VDC SUPPLY or 0V BATT IN

PIN1: RX1 (WHITE)
PIN2: GND (BLACK)
PIN3: GND (RED)
PIN4: TX1 (GREEN)
PIN5: OPTO2 (YELLOW)
PIN6: OPTO2 (BLUE)

PIN5:LINE OUT (YELLOW)
PIN4:LINE IN (GREEN)
PIN3:LINE IN (RED)
PIN2:LINE OUT (BLACK)

MAI

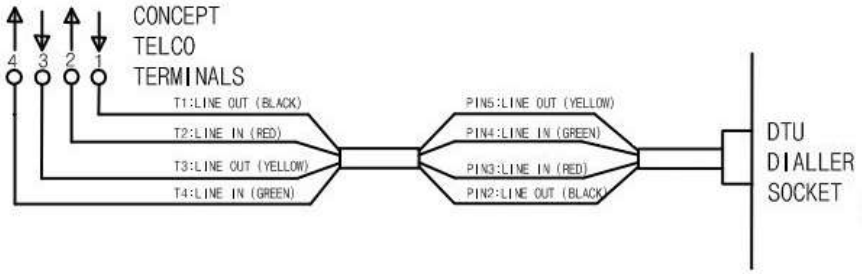
NOTE1: OPTO=OPTICALLLY ISOLATE
DRY=DRY-CONTACT GENERA
TAMPER=TAMPER INPUT CL
RELAY=GENERAL PURPOSE
CLKIN=DIALLER CPU MONI

NOTE2: FOR BEST POSSIBLE SIGNA
DO NOT OVERTIGHTEN CONNECTION TO

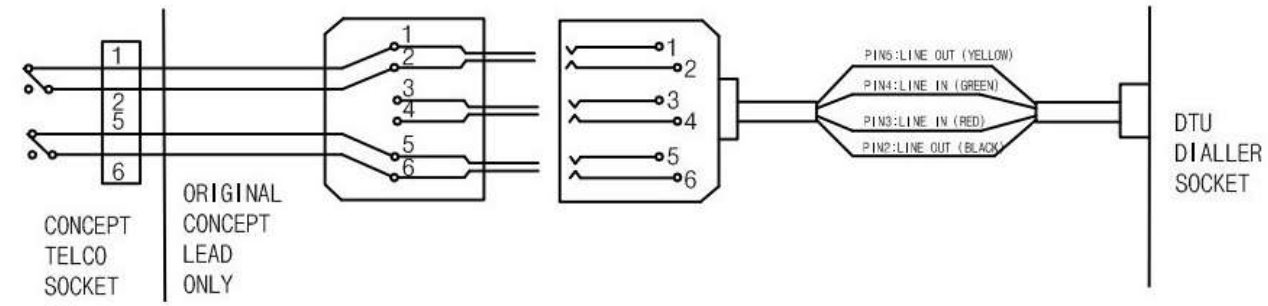
NOTE3: MINIMUM PANEL PROGRAMMI
A. DIALLER ENABLED / B. CONTACT
D. ACCOUNT NUMBER PROGRAMMED / E.
F. ACCOUNT NUMBER IN PANEL

NOTE 4: DO NOT ATTEMPT TO UTIL
IF POWERING DTU WITH AC INPUT USE
IF POWERING DTU WITH DC INPUT CON

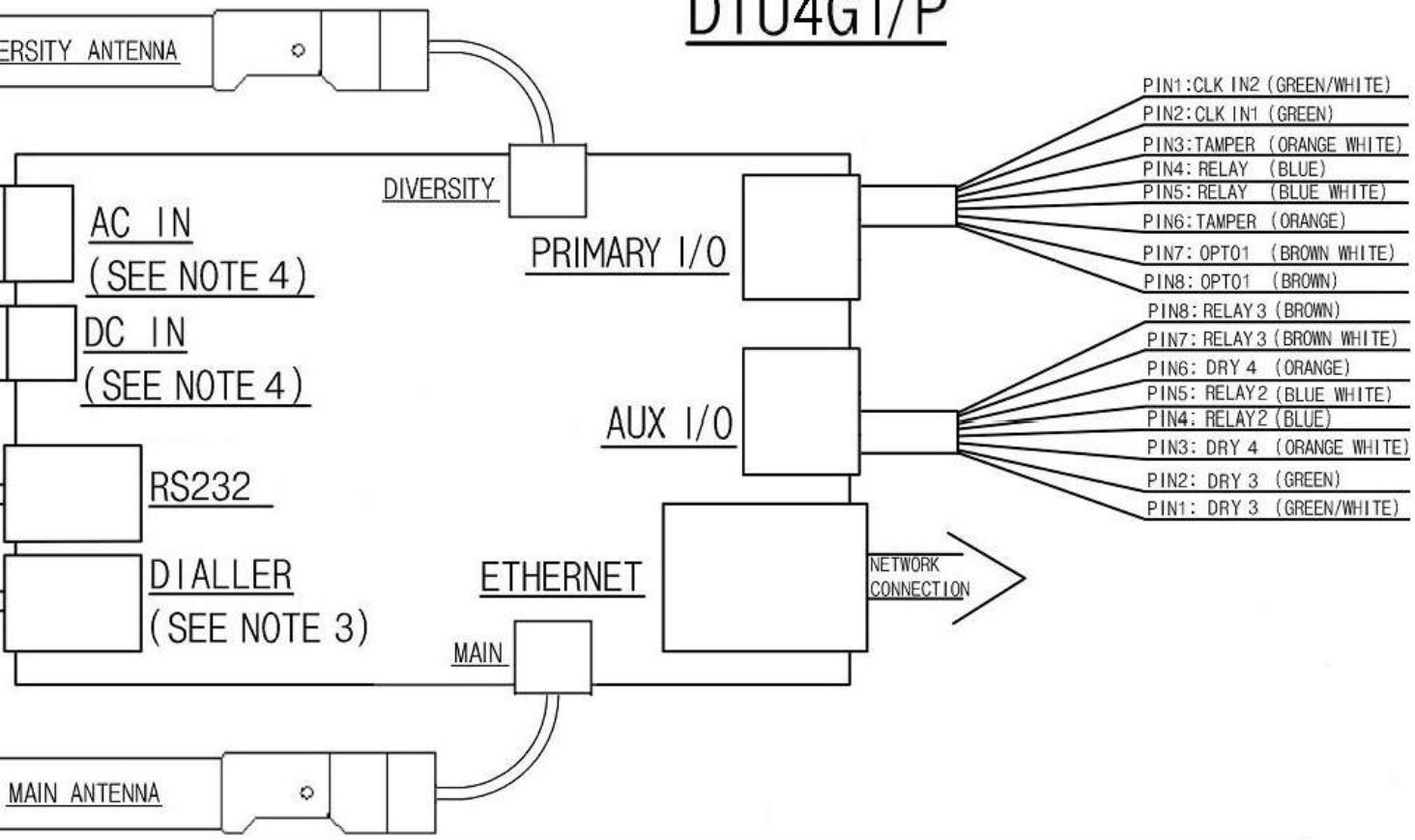
CONCEPT DIALLER CONNECTION #1



CONCEPT DIALLER CONNECTION #2



DTU4G I/P



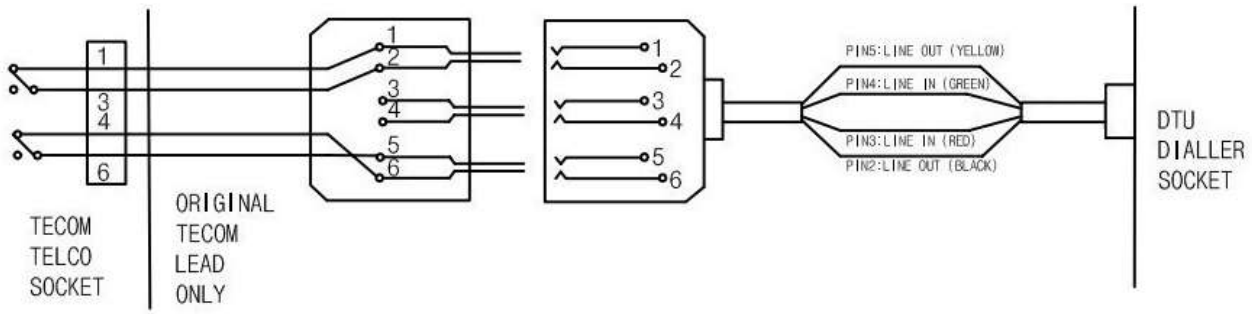
LATED GENERAL PURPOSE INPUT TRIGGERED BY AC OR DC (5>30v)
NERAL PURPOSE INPUT CLOSE LOOP TO TRIGGER
CLOSED LOOP TO SEAL (NO EOL REQUIRED)
SE RELAY OUTPUT (SELECTABLE NO OR NC) ALSO USED TO TRIGGER PANEL INPUT TO INITIATE DAILY TEST
ONITOR (CONNECT GREEN TO DI OF LAN & WHITE/GREEN TO OV SYSTEM MUST BE EARTHED)

GNAL STRENGTH KEEP ANTENNA CLEAR OF ANY METAL OBJECTS OR OTHER ANTENNAS.
TO DTU

AMMING REQUIREMENTS TO ESTABLISH DIALLER COMMS VIA DTU ARE (GENERALLY) AS FOLLOWS
CT ID FORMAT OR ADEMCO HIGH SPEED WITHOUT CHECKSUM SELECTED / C. TONE DIALLING (DTMF) ONLY SELECTED
/ E. PRIMARY & SECONDARY PHONE NUMBERS PROGRAMMED /
EL MUST MATCH DTU ACCOUNT NUMBER FOR ADEMCO HIGH SPEED FORMAT

UTILIZE PANEL AC SUPPLY OR BATTERY TO POWER DTU.
USE SEPARATE 12-18VAC PLUG PACK & BATTERY (12V/7AH)
CONNECT DC INPUT TO PANEL AUXILARY DC RAIL ONLY

TECOM DIALLER CONNECTION

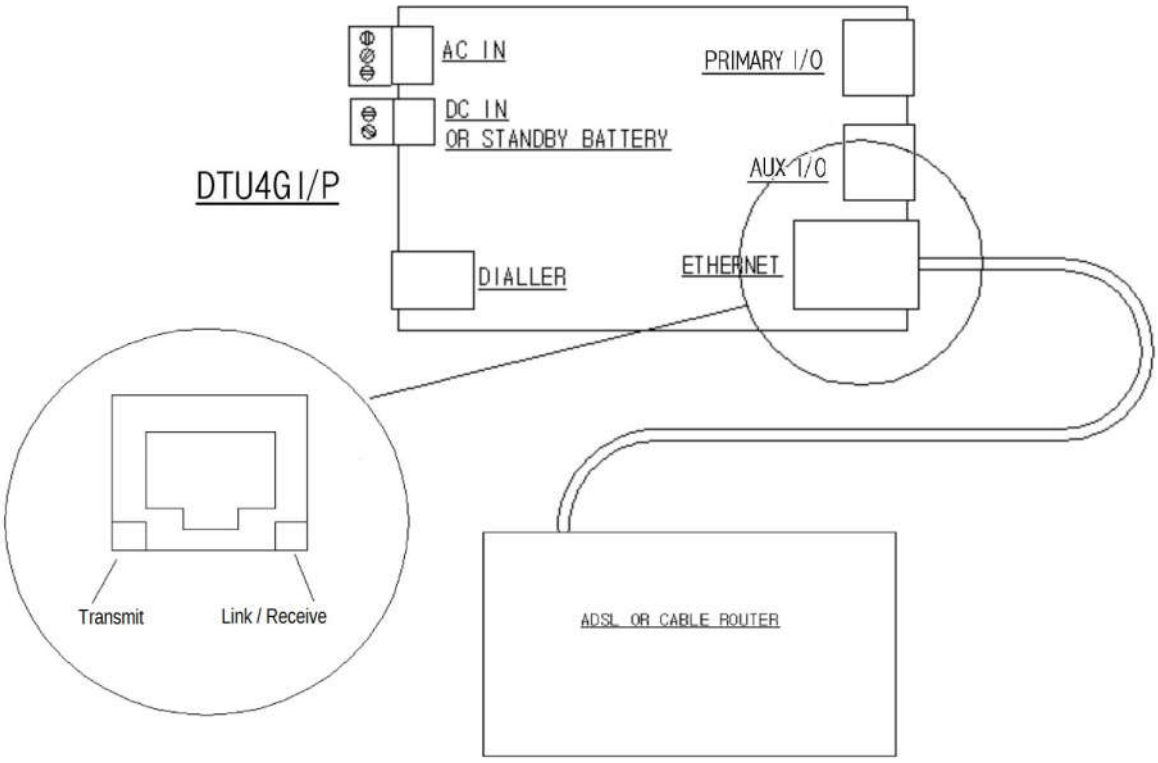


Ethernet / IP Path

The Ethernet port on the DTU4G/IP can be connected to any ADSL or cable router with access to the internet. This gives the DTU4G/IP a communications path to the DirectWireless™ Secure Internet Gateway and access to the DirectWireless™ Network.

If the network is DHCP enabled, the DTU4G/IP can be connected using a standard CAT5 or CAT6 patch cable between a port on the router or switch and the Ethernet port on the DTU4G/IP.

If a static IP range is used on the network, SCSI can configure the Ethernet interface on the DTU4G/IP to a suitable IP address as allocated by the customer. This may require a configuration change on the router to add the IP address and the MAC address information for the DTU4G/IP to associate it with the IP address. Ethernet link light should illuminate to indicate connectivity when plugged in.



Power Supply Connections

There are two options for powering the DTU4G/IP, it can either be connected to the DC Auxiliary Output on the alarm panel (DC 12–24 volts) or connected to a suitable AC plug-pack (AC 12-18 volts) with battery back up. In both cases Protective Earth (PE) should be connected.

Note: The power supply must have sufficient capacity to cope with the maximum current requirement for the DTU4G/IP Lite; up to 500mA for a 12VDC or AC powered DTU4G/IP.

Note: As a precaution, the installation should be checked under full alarm conditions i.e. siren(s) sounding, strobe(s), dialler, etc both with and without mains power (using the backup battery) and still meet the requirements detailed above at all times.

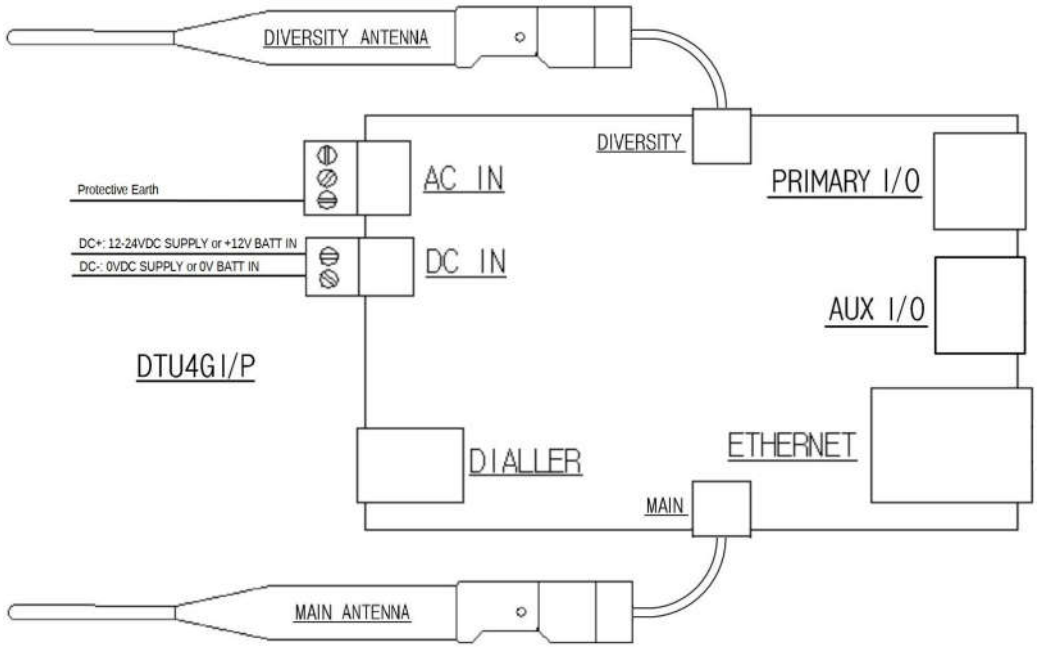
DC Powered:

The power supply to the alarm panel must be totally powered down (switch off mains and disconnect the alarm panels back up battery) before making this connection.

Connect the positive terminal from the DC Auxiliary output on the alarm panel to the (DC+) terminal on the DC input of the DTU4G/IP and the negative terminal from the DC Auxiliary output on the alarm panel to the (DC-) terminal on the DC input of the DTU4G/IP with the supplied 2 pin green Phoenix style connector.

Connect the Protective Earth terminal of the alarm panel to the Ground terminal on AC input of the DTU4G/IP with the supplied 3 pin green Phoenix style connector.

Warning: Do not connect the DTU4G/IP to the Alarm Panel battery output!



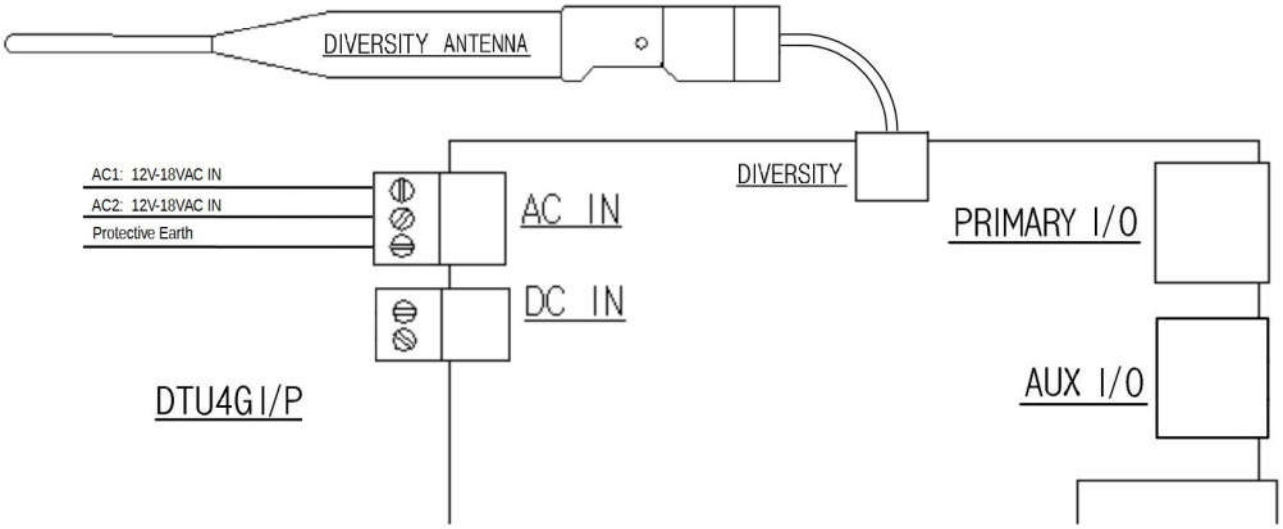
AC Powered with Battery back-up

Note: The DTU4G/IP must only be operated with an approved plug pack with a protective earth.

The DTU4G/IP should first be connected to the battery and then to the 12-18VAC plug pack. Connect the (+) terminal of the battery to the terminal labelled (DC+) on the DTU4G/IP and the (–) terminal of the battery to the terminal labelled (DC-) on the DTU4G/IP.

Connect the active wire from the AC plug pack to one of the AC inputs of the DTU4G/IP, the neutral wire from the plug pack to the other AC input of the DTU4G/IP and the Earth wire of the plug pack to Protective Earth terminal of the DTU4G/IP. It is recommended that only a fully charged 12VDC 7AH battery be used.

When AC power is used to power the DTU4G/IP, the battery connected to the back up battery terminals of the DTU4G/IP will be charged with a current of up to 150mA.

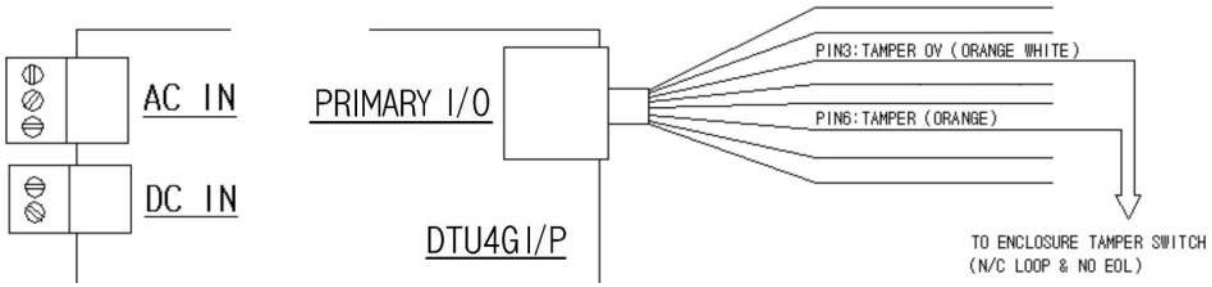


Note: If the DTU4G/IP is powered from the DC auxiliary output of the alarm panel, the alarm panel supervises its own AC and Battery fails. If the DTU4G/IP is powered from a AC plug pack and dedicated back up battery, it monitors its own AC and Battery Fail notifications.

If the DTU4G/IP is powered from its own AC plug pack and battery, the AC fail notification occurs immediately if AC is no longer detected and the low battery occurs when the battery voltage drops below 11 VDC.

Tamper Input Connection

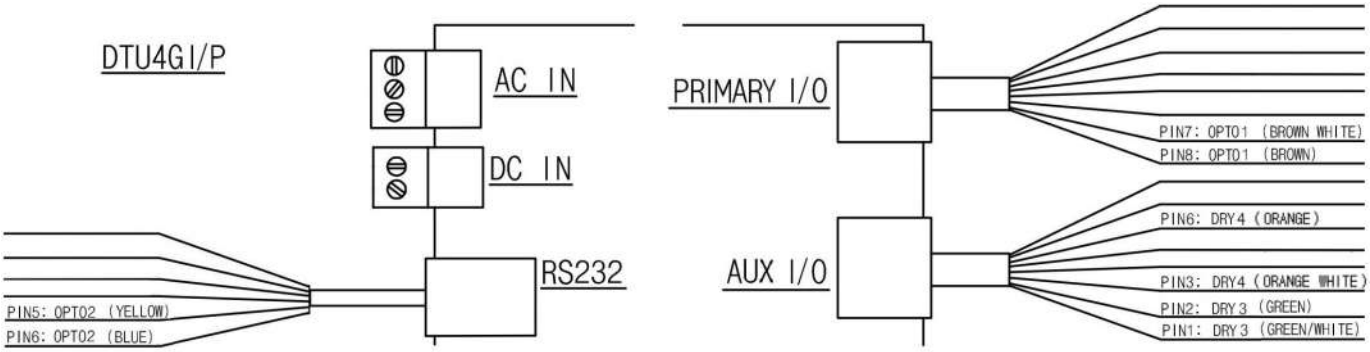
The DTU4G/IP is equipped with an on board Tamper Input that can be enabled by the Monitoring Station. The Tamper Input (pin 3 orange/white & pin 6 orange) is normally closed and does not require an End-of-Line (EOL) resistor. The I/O socket is an RJ45.



Alarm Input Connections

The DTU4G/IP is equipped with two Opto-Isolated Alarm Inputs (1 & 2) & two Dry-Contact Alarm Inputs (3 & 4) that can be enabled by the Monitoring Station. Alarm Input 1 is available on the RJ45 Primary I/O Connector (pin 7 brown/white & pin 8 brown). Alarm Input 2 is available on the 6P6C Serial I/O Connector (pin 5 yellow & pin 6 blue). Alarms Inputs 3 & 4 are available on the RJ45 Auxiliary I/O Connector, Alarm 3 (pin 1 green/white & pin 2 green) & Alarm 4 (pin 3 orange/white & pin 6 orange).

The two Opto-Isolated Alarm Inputs are active when an AC or DC voltage of between 5-24V is present at the inputs. The two Dry-Contact Alarm Inputs are active when connected together ie short circuited.



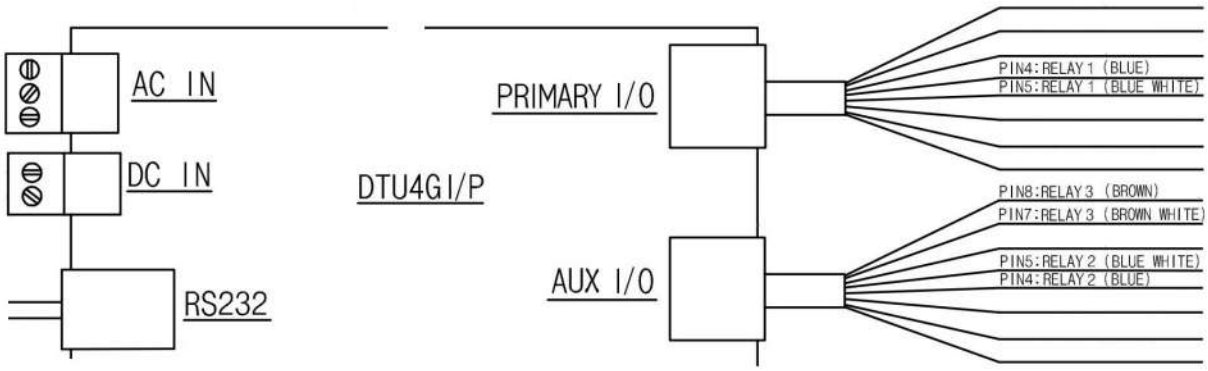
Tip: The Opto-Isolated Alarm Inputs can be wired to a bell or strobe output on the alarm panel as a backup to dialler reporting.

Relay Output Connections

The DTU4G/IP is equipped with three Relay Outputs that can be enabled by the Monitoring Station. Relay Output 1 is available on the RJ45 Primary I/O Connector (pin 4 blue & pin 5 blue/white). Relay Outputs 2 & 3 are available on the RJ45 Auxiliary I/O Connector, Relay Output 2 (pin 4 blue/white & pin 5 blue) & Relay Output 3 (pin 7 brown/white & pin 8 brown).

The Monitoring Station configures the Relay Output to be Normally Open (NO) or Normally Closed (NC).

Tip: The Relay Output can be used for Monitoring Station remote arm via an alarm panel key switch.
Note: Upon initial power up of a newly installed DTU4G/IP, the Relay Output state will be in a Normally Closed state).



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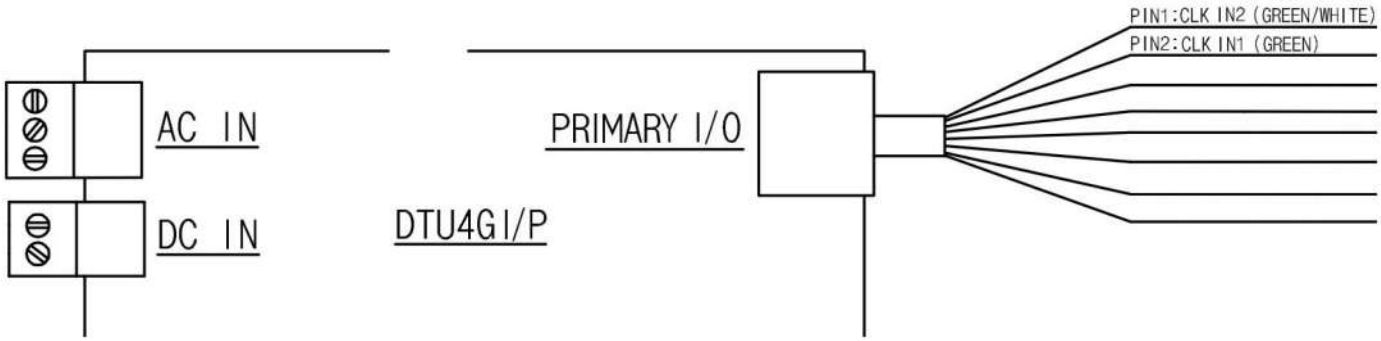
CPU Clock Monitor Input Connection

The DTU4G/IP is equipped with a CPU Clock Monitor Input that can be enabled by the Monitoring Station. The CPU Clock Monitor Input (pin 1 green/white & pin 2 green) is available on the RJ45 Primary I/O connector.

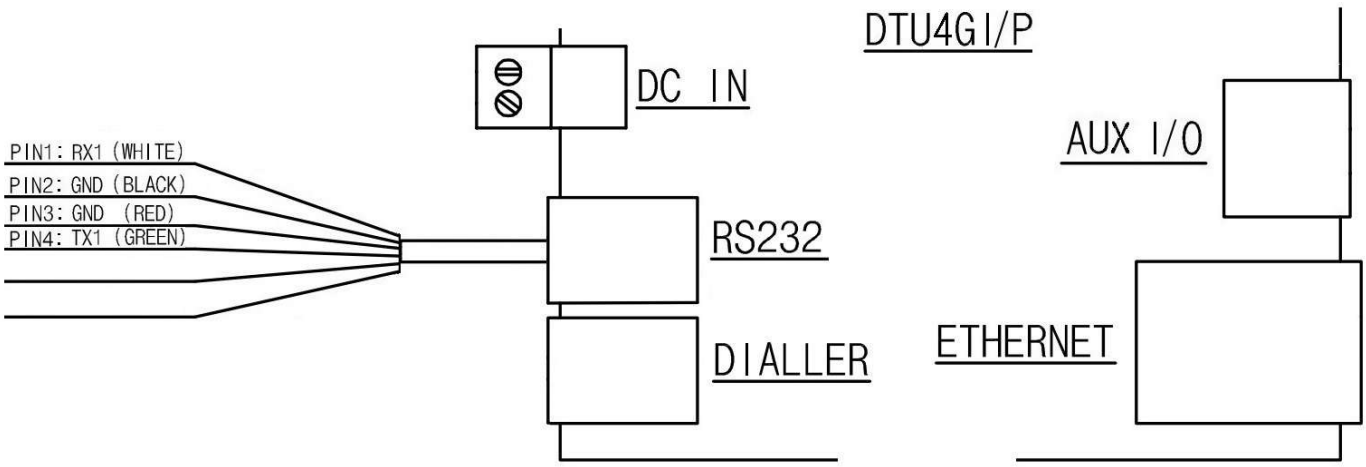
The CPU Clock Monitor Input is intended to monitor the operation of the attached alarm panel using a time varying signal, commonly a clock signal (Keypad data, Clock, D1, Data+, LAN A, etc). The voltage level of the CPU Clock Monitor Input signal can be between 3-24VAC and the frequency can be between 1kHz-100kHz.



Serial Communications Port Connection

The DTU4G/IP is equipped with a Serial Communications Port that can be enabled by the Monitoring Station. The Serial Communications Port Receive Input is available on the 6P6C RS-232 Serial Connector. Connect Pins 1 & 2, Rx & Return (White & Black) to the alarm panel Receive Input. Connect Pins 4 & 3, Tx & Return (Green & Red) to the alarm panel Transmit Output.

The Serial Communications Port is intended to communicate with suitably equipped alarm panels. The port is an RS232 specification port capable of operating at baud rates of between 9,600-115,200 baud, without handshaking, and 8 data bits, no parity bit and 1 stop bit (8N1).



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