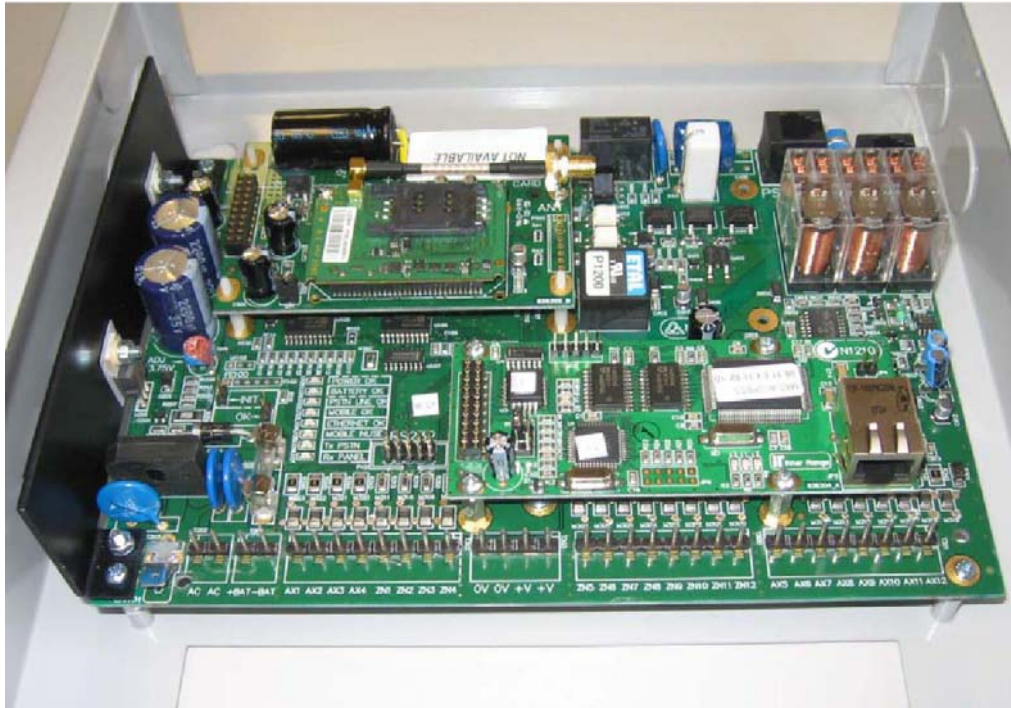


Fratch Multipath-IP STU

P/Nos: Single SIM: 998304OPT/998304TEL
Dual SIM: 998307OPT/998307TEL
Dual SIM + Eth: 998315OPT/998315TEL

Installer Manual



This document contains a product overview, specifications and hardware installation information. The commissioning procedure is found in the:

Installation Guide: Ethernet and the
Installation Guide: GPRS that are also included in the box.

PLEASE READ THE PRE-INSTALLATION STEPS IN THE INSTALLATION GUIDES (ETHERNET AND GPRS) BEFORE GOING ON SITE TO INSTALL THE MULTIPATH-IP STU.

IMPORTANT NOTES

1. The SIM supplied by the Central Monitoring Station for use with the Multipath-IP STU will only work in the Multipath-IP STU. It will not work in any other device, such as a mobile phone. Attempting to use this SIM card in a mobile phone can result in the SIM becoming locked. A locked SIM will not work in any device, even the Multipath-IP STU. If the SIM becomes locked, charges for an enabled SIM still apply, even though the SIM has not been used.
2. In the same way that new mobile phones are not always compatible with an old SIM card, the modem used in this product may not be compatible with older SIM cards.

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Safety Warnings

Only Qualified service personnel should install the Multipath-IP STU.

- 1) Position the GSM antenna so that humans or animals cannot approach closer than 10 cm during normal operation and so that it is protected from lightning. Do not locate the GSM antenna within 1 metre of any other electronic equipment.
- 2) Do not use the Multipath-IP STU in any environment where RF emissions may cause a hazard, such as re-fuelling points, blasting areas, airports, aircraft, medical facilities etc. The unit may present a hazard to medical electronic devices such as pacemakers and hearing aids. If in doubt seek advice.
- 3) Take care not to short the battery (not supplied) as it can deliver large currents that could create serious burns or a fire hazard. Take care not to short BAT+ to the Black Heat sink, which is grounded.
- 4) The Multipath-IP STU should be mounted on a flat vertical fire resistant surface. Cable entry hole diameters should be kept to a minimum. Plastic "D" bungs should be fitted to any unused cable entry holes in the lid.
- 5) The plug pack provided must be plugged into a switched GPO (General Purpose Outlet). i.e. A mains outlet socket with a switch to isolate power. Only use the supplied plug-pack. The "tinned" Leads should be re-terminated with "un-tinned" leads to conform to AS3260.

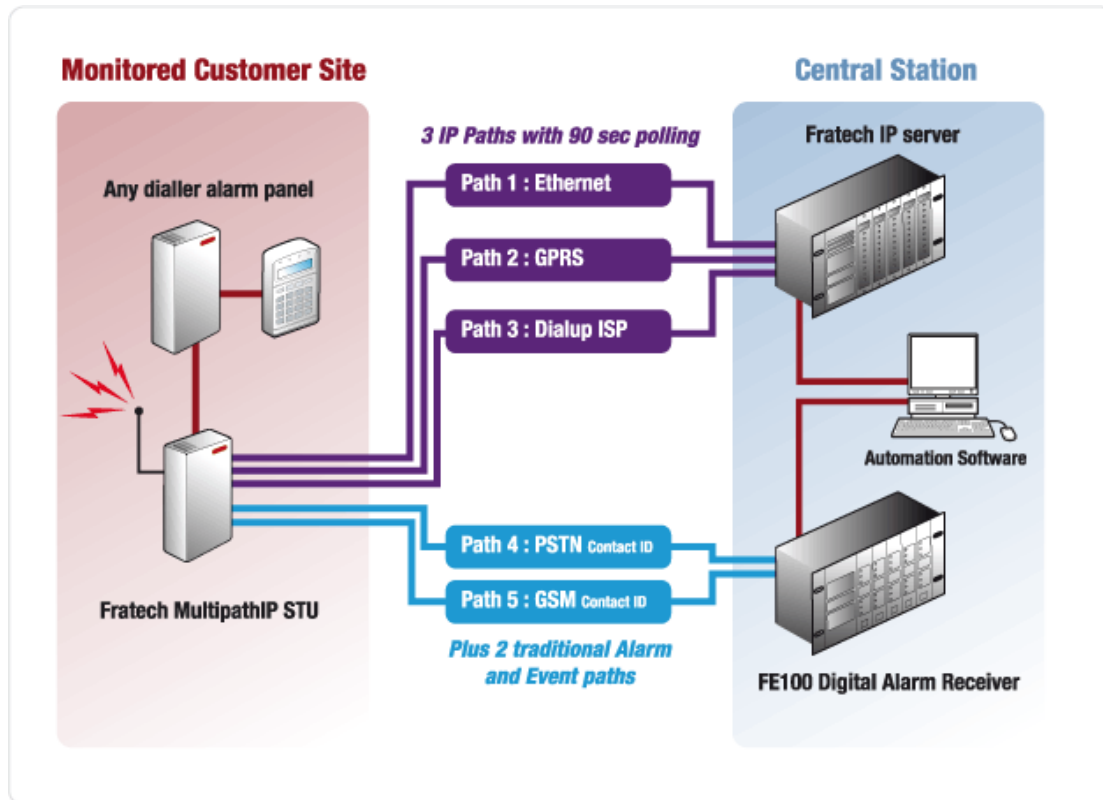


Disclaimer:

1. The manufacturer and/or it's agents take no responsibility for any damage, financial loss or injury caused to any equipment, property or persons resulting from the correct or incorrect use of the system or it's peripherals. The purchaser assumes all responsibility in the use of the system and it's peripherals.
2. While every effort has been made to ensure the accuracy of this manual, the manufacturer assumes no responsibility or liability for any errors or omissions. Due to ongoing development, this manual is subject to change without notice.

Overview

The Multipath-IP is an alarm communications system that can be fitted to any Contact ID (CID) enabled alarm panel. Multipath-IP provides polled, redundant alarm communications providing the highest levels of alarm monitoring security.



The Multipath-IP STU can provide the following polled communication paths:

- Ethernet (primary)
- GPRS1 (primary)
- GPRS2 (secondary)
- Dialup ISP (tertiary)

The Multipath-IP STU also has the following backup paths for alarms and events only:

- PSTN (alarm and events only)
- GSM (alarm and events only)

Note that the particular paths available will depend on the plan that is chosen and only four paths can be utilized in any plan. Dialup ISP is provided via an end user's own dialup ISP account

Polled IP Paths

Ethernet, GPRS1, GPRS2 and Dialup ISP are polled Internet Protocol (IP) paths. This polling tests the integrity of the transmission path between the Multipath-IP STU and the Central Monitoring Station. The type of plan chosen determines the polling rate.

A poll involves a test information packet being sent from a Multipath-IP STU to a Multipath-IP server in the Central Monitoring Station. The server in the Central Monitoring Station subsequently sends an acknowledgement back to the Multipath-IP STU. If the primary transmission path is faulty or unavailable, then the Multipath-IP STU will continue polling on the alternate secondary IP path. Once the connection is re-established on the primary path, communications will continue for several minutes on both paths. This is to ensure that the primary path is reliable and then communications on the secondary path will be stopped. Similarly if both the primary and secondary IP paths fail then

polling will commence on the tertiary IP path. Polling will be ceased on the tertiary path once communications have been re-established on the primary or secondary paths.

Traditional Alarm and Event Paths

If all available IP paths fail, then depending on the plan selected, a PSTN or GSM path may be used for transmission of Contact ID or IRFast data to an alternate Receiver.

Types of Plans

There are two main types of plans available on Multipath-IP.

1. Ethernet Plans - these can utilise the Ethernet, GPRS1, GPRS2, Dialup ISP and PSTN paths
2. GPRS Plans - these can utilise the GPRS1, GPRS2, Dialup ISP, PSTN and GSM paths

Multipath-IP provides polled monitoring that tests the integrity of the connection from the Multipath-IP STU through to the Central Monitoring Station. The plan chosen determines the poll rate, with polling ranging from 10 seconds through to 180 seconds.

If the primary IP path has failed, then depending on the plan selected, an alternate IP path can be used, thereby preserving the polling integrity.

Fratech Multipath-IP is encrypted with 128-bit AES encryption, which means that alarms and polls are treated as high security over any IP communication path.

If no IP path is available then PSTN or GSM can be used to transmit Contact ID or IRFast data to a traditional Receiver.

Standard Monitoring Plans

Plan	Ethernet Polling	GPRS Polling
Ethernet - C4R3	40	90
Ethernet - C3R2	90	180
GPRS - C3R3	-	90

The Standard Multipath-IP plans are aligned with the Alarm Transmission system supervision timing requirements in the Standards Australia, Alarm transmission system standard AS/NZS 2201.5—200X. Please note the supervision timing is only one of the requirements of the standard. Please consult the standard for further details.

Customized Monitoring Plans

Individual Central Stations can configure their own monitoring plans, so please consult your central station for specific plan details.

Installation

To install the Multipath-IP STU, refer to the following documents that were included with your Multipath-IP STU:

- 638307ETH: Installation Guide: Ethernet
- 638307GPRS: Installation Guide: GPRS
- Hardware installation: See Appendix 1 to 3 of this guide.

Indicator Lamps

The meaning of each indicator lamp is described below.

Lamp Name	Lamp ON	Lamp OFF	Lamp FLASHING
POWER OK	AC power OK	<i>Invalid State</i>	No AC power, running on battery
BATTERY OK	Battery voltage OK	<i>Invalid State</i>	Battery voltage is low / no battery is connected
PSTN LINE OK	PSTN on-hook; line voltage OK	<i>Invalid State</i>	PSTN on-hook line voltage is not OK
MOBILE OK	GSM modem is registered. <i>See note 1.</i>	GSM modem is not ready. If it remains off, then GSM modem is faulty.	GSM modem is working, but not yet registered. <i>See note 2.</i>
ETHERNET OK	Communicating to Multipath-IP Server via Ethernet	IP address problem, no IP address assigned by DHCP server	IP address OK but not yet communicating with server.
MOBILE IN USE	Communicating to Multipath-IP Server via GPRS	Not communicating on GPRS	Problem Communicating to Multipath-IP Server via GPRS
Tx PSTN	PSTN dialler is off-hook	PSTN dialler is on-hook	Multipath-IP STU, external phones or alarm panel using the PSTN line.
Rx PANEL	Alarm Panel is off-hook	Alarm Panel is on-hook	Receiving data from the connected alarm panel.
Ethernet Board (RED LED)	Ethernet Communications available	<i>Invalid State</i>	No communications via Ethernet. (e.g. No network carrier detect)

Notes:

1. When the Multipath-IP STU has registered with the network; the MOBILE OK lamp will pulse off between 1 and 5 times, every 10 seconds. The number of pulses represents the signal strength, 1 pulse is the lowest, and 5 pulses are the highest.
2. If the MOBILE OK lamp flashes for 2 seconds, then remains off for 2 seconds, repeatedly, this indicates a SIM card problem. Either the SIM card is not inserted or requires a pin number or is faulty. Slow flashing indicates GSM modem is being initialized; fast flashing continuously indicates that there is not enough signal.

Troubleshooting

To troubleshoot installation issues, refer to the documents "Installation Guide: Ethernet" (part number 638307ETH) and "Installation Guide: GPRS" (part number 638307GPRS) that were included in your Multipath-IP.

Defaulting the Multipath-IP STU

The Multipath IP STU is defaulted to the correct mode of operation in the factory.

The following procedure is only used if:

- A problem has occurred during installation or enrollment that requires the unit to be defaulted again.
 - Monitoring is being transferred to a different Central Monitoring Station.
 - The Multipath-IP STU has been upgraded from an earlier firmware version.
 - If you are unsure that the unit is “factory fresh”.
- 1) Whilst shorting the “INIT” pins, power up the unit. When powered up, after a couple of seconds release the short and ONLY the POWER OK lamp should turn on. (If any other lamps are illuminated, the default process was unsuccessful.)
 - 2) Now momentarily short the INIT pins repeatedly, until the “MOBILE INUSE” lamp is illuminated. This is the 6th lamp from the top and selects the “Multipath IP STU” default. (If any other lamps are illuminated the default process was unsuccessful.)
 - 3) Now initiate the default by momentarily shorting the “OK” pins. During the default, the BATTERY OK, MOBILE OK, MOBILE INUSE and Rx PANEL lamps will illuminate, after which the Multipath-IP STU will resume its normal operation.

Note: This guide assumes that the “Multipath-IP” default has been done. Defaulting to any other option (including “MOBILE OK”) instead of “MOBILE IN USE” will cause the Multipath-IP STU to fail to enrol with the Multipath-IP Server.

Appendix 1 – Specifications & Parts List

Specifications

Dimensions:	380mm x 190mm x 70mm
Shipping Weight:	4Kg (540mm x 210mm x 90mm)
Cabinet type:	Metal Box
Maximum Ambient:	50 degrees C
Power Source:	16V 1.5Amps AC via supplied plug-pack.
Total available current:	800mA @ 12 Volts (Ext load plus battery charging)
Max Ancillary current:	400mA continuous
Recommended battery:	12 Volt SLA (gel) type, 7 amp-hour.
Typical Backup time:	Up to 48 hours (7 amp-hour battery) 24 hours
Minimum operating voltage:	11.0 Volts
Low battery sense voltage (typical):	11.5 Volts
Minimum PSTN line voltage:	18 volts (on hook)
Battery fuse:	2 Amps
Supply currents @ 12volts:	140mA (idle)+40mA (PSTN on line)+90mA/+160mA (PANEL on line/PANEL Linked) +200mA to +600mA (GSM on line)
Zone inputs:	Note: Zone 1 used for PABX connection monitoring. Zone 11 used for Panel Watchdog. Zone 12 used for Cabinet Tamper monitoring (short = alarm, open = sealed). Zones 1 & 11 Require EOL Resistors. Zones 2 to 10 -Not Used. NOTE THAT ZONES MUST BE CONNECTED TO DRY CONTACTS -NO VOLTAGE SHOULD BE APPLIED
General Auxiliary outputs:	12 @ 100mA max each, open collector. (Total auxiliary current must be less than 350mA) DO NOT EXCEED 100mA. MIN COIL RESISTANCE IS 140 OHMS.
Fail auxiliary output:	Aux 1 open collector (fail = open circuit)
Test auxiliary output:	Aux 2 open collector (test = open circuit)
Indicator lamps:	8
Alarm format:	Contact ID or IRfast
PSTN port surge voltage:	5 kV 10/700uS
PSTN Earthing:	Yes, through supplied plug-pack.
Max PABX Line voltage:	35 Volts
Max PABX current:	35mA
PABX Output Level:	-15dBm
Max RF Power:	2 Watt (Power class 4, 91/263/EEC directive))

- All figures quoted are typical. Manufacturer reserves the right to alter at any time.
- Note that +V on the Multipath-IP STU is internally connected to the battery via the battery fuse.
- Over-current on +V will cause the battery fuse to blow, and therefore no battery will be available for the Multipath-IP STU.
- External loads should be wired via a separate fuse.

Notes

1. Upon commissioning, the system should be tested according to AS2201.5 (Intruder Alarm Systems - Alarm Transmission Systems) Clause 2.5. (PDF document available from: <http://www.saiglobal.com/shop/Script/search.asp>)
2. When an external alarm panel is connected via a PABX connection, a separate tamper circuit wired to the Multipath-IP STU, Zone 1 shall be installed alongside the PABX connection cable, with the monitoring resistor (end-of-line resistor) located inside the alarm system cabinet. See details and wiring diagram on page 12.



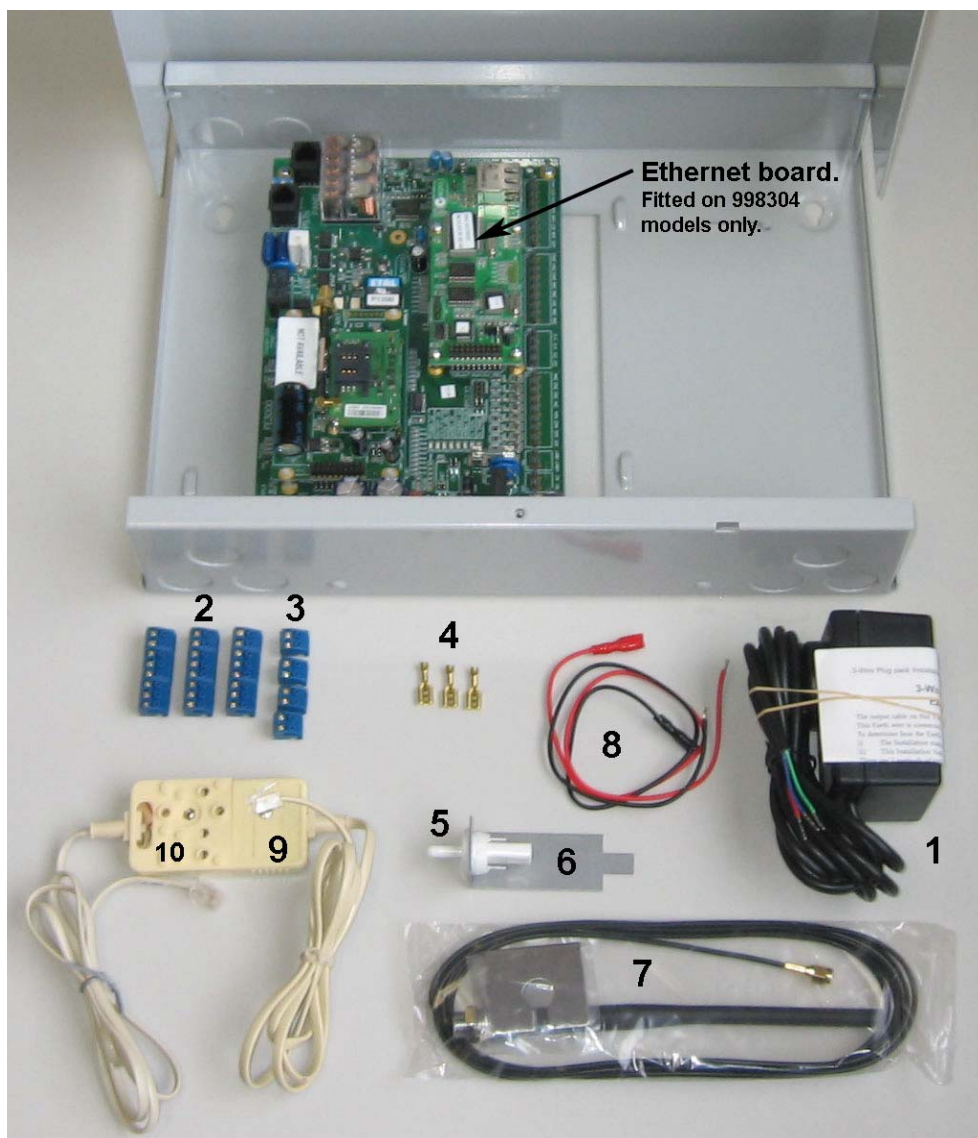
Parts List

Metal Equipment Enclosure containing:

- Multipath-IP STU PCB. (With Ethernet Card if a 998304 model)
- Multipath-IP Install Manual (this document)
- Multipath-IP Installation Guide – GPRS
- Multipath-IP Installation Guide – Ethernet
- Multipath-IP Plan Activation Form (2 Pages)
- Multipath-IP GPRS SIM card(s)

Installation Kit containing:

- FE3000 Plug Pack with earth lead. (1)
- 3 x 8 Way plug-on screw terminals. (2)
- 4 x 2 Way plug-on screw terminals. (3)
- 3 x 6.3mm "Quick Connect" connectors for Tamper switch. (4)
- Tamper switch and Tamper switch bracket, (5 & 6)
- GSM Antenna with 2.5 metre lead & Bracket. (7)
- Battery Leads 40cm. (8)
- LINE Lead to connect to PSTN telephone line. (Mode 3) (9)
- PANEL Lead to connect to alarm panel. (10)



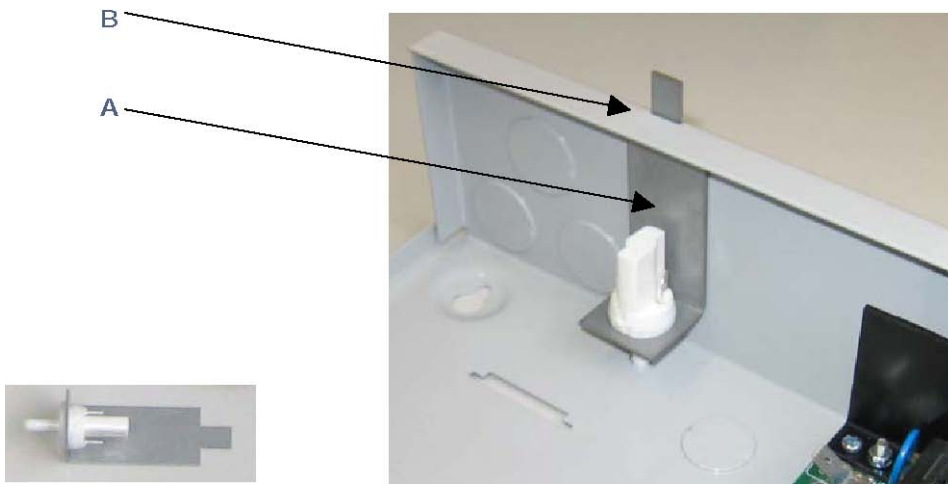
Appendix 2 – Hardware Installation

Pre-installation checks

- A GPO (mains outlet) is required to be located such that the plug pack lead will comfortably reach the AC terminals on the Multipath-IP STU.
- A PSTN line connection is required to be located within reach of the PSTN cable.
- The antenna can be positioned such that good signal strength is achievable.
- The antenna wiring is long enough to reach the intended antenna location (2.5 metres).
- An Ethernet connection is available if a plan that includes the Ethernet path is being utilized.

Mounting the Multipath-IP STU

- Fit the Tamper switch to the tamper bracket.
- Slide the tamper bracket (A) through the slot (B) in the Multipath-IP STU chassis, before placing the chassis on the mounting surface.
- Mount the Multipath-IP STU cabinet on a solid surface, and fix securely.



Mounting the antenna

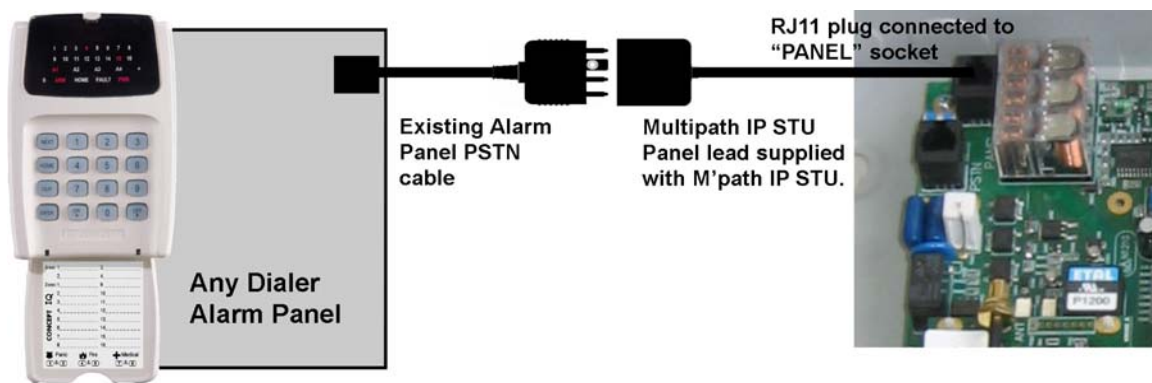
- Having verified good signal strength and found the most suitable position for the antenna, use the antenna mounting bracket and screws to secure the antenna to an appropriate surface.
- Position the GSM antenna so that humans or animals cannot approach closer than 10 cm during normal operation and so that it is protected from lightning. Do not locate GSM antenna within 1 metre of any other electronic equipment or near metallic objects.
- Route the antenna cable so that all bends are smooth and there are no kinks in the cable.
- Ensure that moisture cannot run down the antenna into the Multipath-IP STU enclosure, as this may result in shorting of components and damage to the Multipath-IP STU.

Connecting a Multipath-IP STU to any Contact ID Alarm Panel

Unplug the alarm panel's PSTN Contact ID dialer lead from its existing Mode3 611 socket (if connected) and connect it to the 610 inline socket on the Multipath-IP STU "PANEL" cable supplied in the Multipath-IP STU accessory pack. Plug the other end of the "PANEL" cable into to the RJ11 socket on the Multipath-IP STU labeled "PANEL".

Programming the dialer alarm panel:

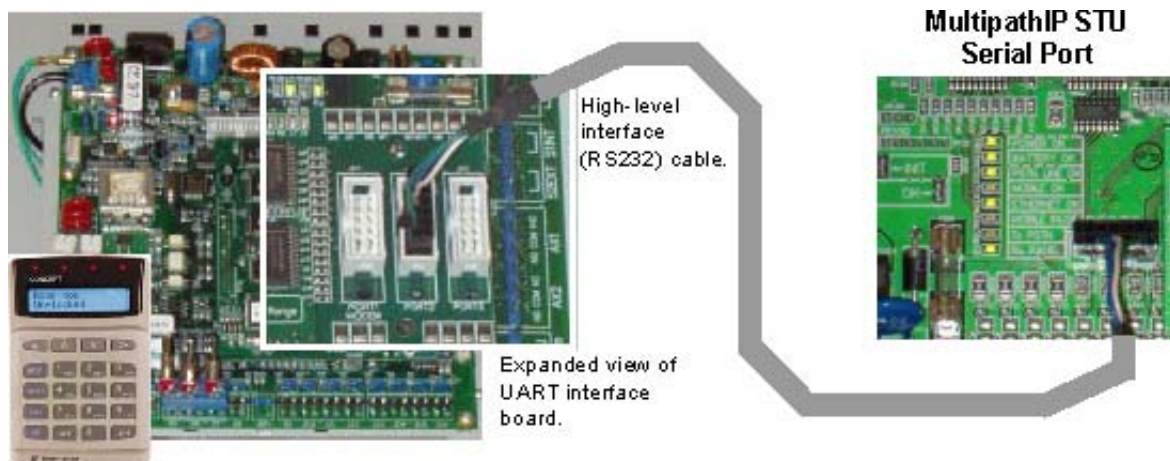
- The alarm panel is required to be programmed to report standard Contact ID only.
- A single digit phone number (e.g. 1) is all that is required to be programmed in the alarm panel's dialer. This saves time when transmitting alarms/events from the alarm panel to the Multipath-IP STU and hence the overall time of reporting alarms/events to the Central Monitoring Station.
- The Multipath-IP STU kisses off alarms/events from the alarm panel, and then sends these to the Central Monitoring Station.
- The client code in the alarm panel will not be transmitted to the monitoring centre, instead the 6 digit client code of the Multipath-IP STU will be used.



Connecting a Multipath-IP STU to a Concept 3000/4000 (Type 2) Alarm Panel

- If the Contact ID reporting format is to be used, a Concept 3000/4000 alarm panel can either be connected via the dialer (in the same way as described above) or via a serial UART port with a high level interface cable (FE3000 GSM Modem Interface cable -IR P/N: 994092).
- If the IRfast reporting format is to be used, a Concept 3000/4000 alarm panel must be connected via a serial UART port with a high-level interface cable. The Concept 3000/4000 alarm panel must have firmware version 5.7 or higher.

When the Concept 3000/4000 Control Module is being connected to the Multipath-IP STU via the serial UART port, the Concept 3000/4000 comms task of "GSM" must used.



Alarm Panel monitoring options

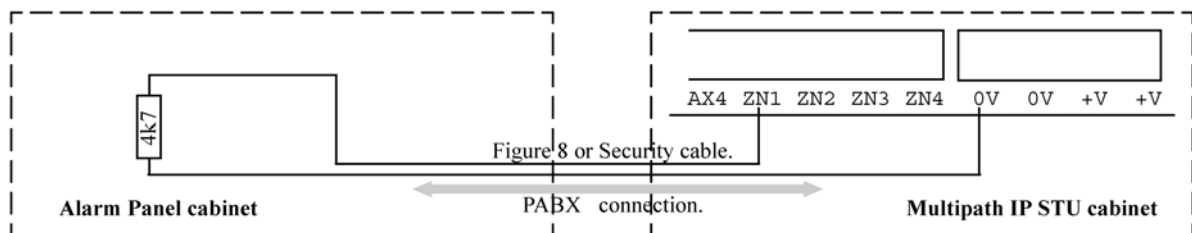
Panel Watchdog:

When using the Panel Watchdog feature, the Multipath-IP STU will monitor the Zone 11 input for a physical transition from Sealed to Alarm every 15 seconds. If the Zone 11 input does not change state within this time the zone will go into alarm and will report Contact ID point 947 to the Central Monitoring Station. (See Appendix 3 – Wiring Diagram)

This feature is not enabled by default. The Central Monitoring Station can set this feature at any time.

PABX Cable Tamper Monitoring:

When an external alarm panel is connected via a PABX connection, install a separate tamper circuit wired to the Multipath-IP STU ZN1. The tamper circuit cable must run alongside the PABX connection cable and the 4K7 Ohm EOL (End-of-line) resistor must be located inside the alarm system cabinet as shown below.



Remote Arming / Disarming via Alarm Panel Keyswitch Zone:

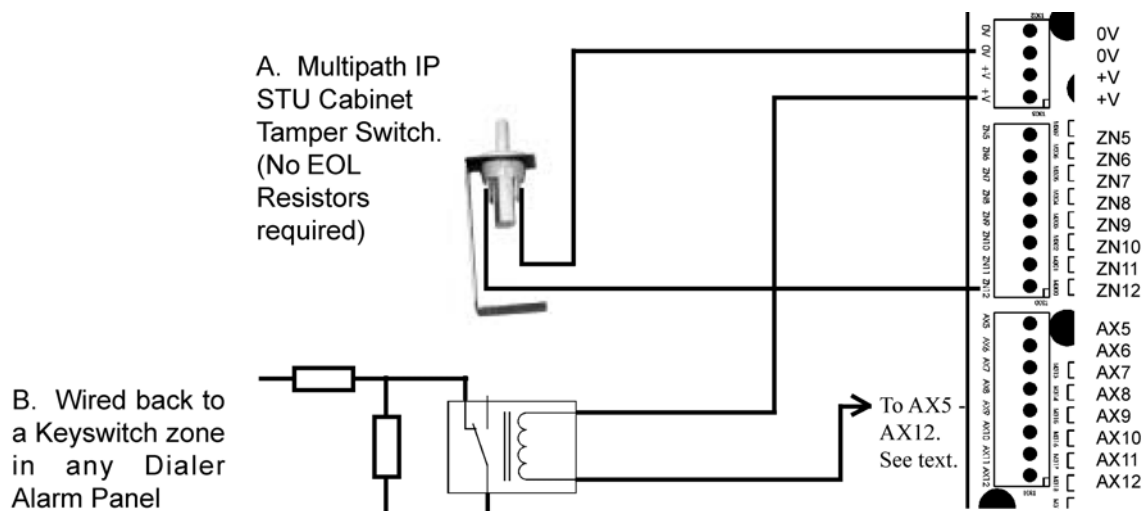
The Multipath-IP STU can provide an output to trigger a momentary or latching keyswitch. This output can be wired to a zone input on the Alarm Panel for remote arming &/or disarming of the alarm panel.

Note:

- Momentary Keyswitch Arming uses AX5 to AX10.
- Latched Keyswitch Arming uses AX11 or AX12.

Note that all Central Monitoring Stations may not offer this facility. Check with the Central Monitoring Station before implementing.

Choose an unused auxiliary output according to the type of keyswitch control required and inform the Central Monitoring Station of the auxiliary number chosen.



Appendix 3 - Wiring Diagram

