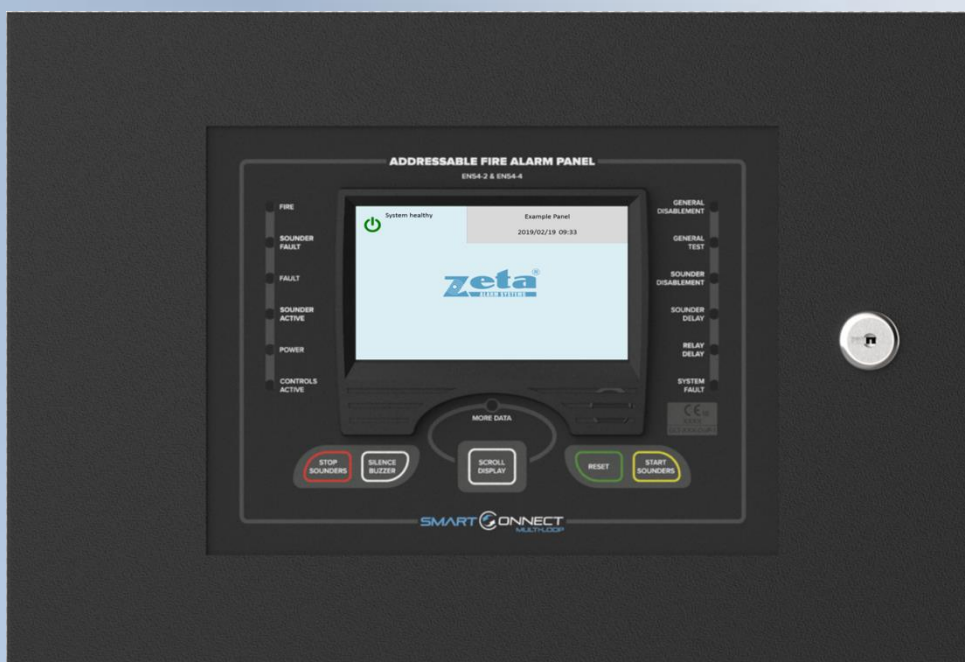# SMART CONNECT

# MULTI-LOOP REPEATER

## Installation Manual

# Contents

# Introduction

## About the Smart Connect Multi-loop Repeater

The Zeta Smart Connect Multi-loop Repeater Panel can be used to monitor, operate and program Smart Connect Multi-loop fire alarm control panels (FACPs) from anywhere within the networked system.

The Repeater features a 4.3" colour touch screen display that provides easy-to understand system messages. The Repeater is ergonomically designed with a LED, button and menu setup that perfectly replicates a Smart Connect Multi-loop Control Panel. This will make the Repeater feel familiar to use for those who are trained/experienced in using the Smart Connect system.

It can operate as part of a networked system of up to 64 panel's peer-to-peer, with powerful programming options that allow configurable control over whether messages from specific panels are transmitted around the network or remain local.

The 32-bit microcontroller (MCU) at the heart of panel rapidly processes logical decisions based on the status of the smoke detection and other initiating devices to control the system outputs. The Windows based software configuration tool Smart Connect is used to configure the system's operation based on the customer specified operating requirements, and reduce commissioning/installation times.

The Smart system continuously checks all software and hardware for proper operation. It checks all control panel electronic hardware, system memory components, and the system program. A hardware watchdog circuit is provided to ensure that System programs are functioning properly. If a problem develops with the program or processor, the watchdog circuit places the System into a system fault condition and tries to reset it.

The Smart Connect Multi-loop Repeater enclosure can be surface or flush mounted.

## Overall Features

- 4.3" colour touch screen display.
- 8032 Event Log.
- Up to 64 panel peer-to-peer network.
- 13 status LED indicators.
- 5 function button controls.
- Fully functioning Repeater provides the ability to program a networked Smart Connect Multi-loop control panel from the front screen.
- Accommodates wiring lengths up to 1000 metres from the control panel for added design and install flexibility.
- Network can we wired in either a bus or a ring topology if a redundant path is required.
- 8 password protected access accounts available (1 admin level, 7 user level).
- Uncluttered and intuitive interface allows alarms, supervisory, and trouble events to be easily viewed.
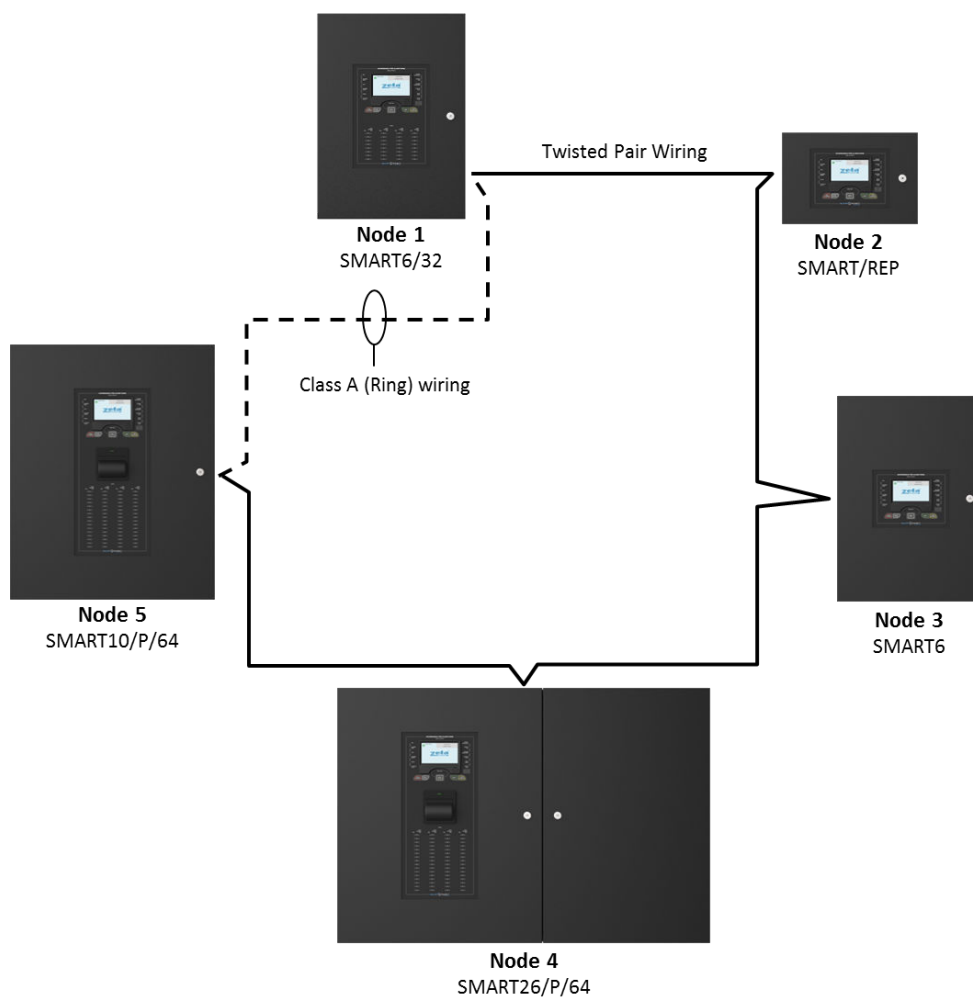
# Document Conventions

## Circuits and Zones

Circuit = this refers to an actual electrical interface, initiating (detection), indicating (signal), or relay.

Zone = this is a logical concept for a fire alarm protected area, and will consist of at least one circuit.
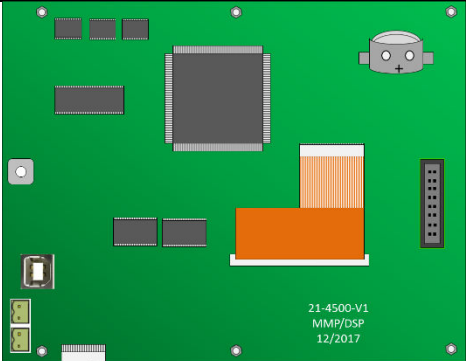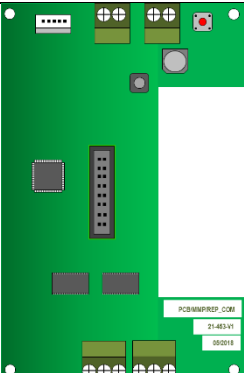
The terms zone and circuit are used interchangeably throughout this manual.

On the Smart Connect Multi-loop systems, circuits can be either conventional or addressable inputs or outputs. Both hardwired conventional inputs and outputs, and addressable inputs and outputs may be grouped together to form logical zones.

Typical Smart Network Fire Alarm Wiring



**Node 1**
SMART6/32

Twisted Pair Wiring

**Node 2**
SMART/REP

Class A (Ring) wiring

**Node 5**
SMART10/P/64

**Node 3**
SMART6

**Node 4**
SMART26/P/64

# System Components

| | | |
|---|---|---|
|  | Display PCB (MMP/DSP) | • 4.3" colour touch screen display<br>• 32-bit microcontroller (MCU)<br>• USB connection to PC software<br>• 2 key switch inputs |
|  | Termination PCB (MMP/REP_COM) | • CPU reset button<br>• RS485 IN & OUT terminals<br>• 28VDC IN & OUT terminals |

# Panel Installation and Dimensions
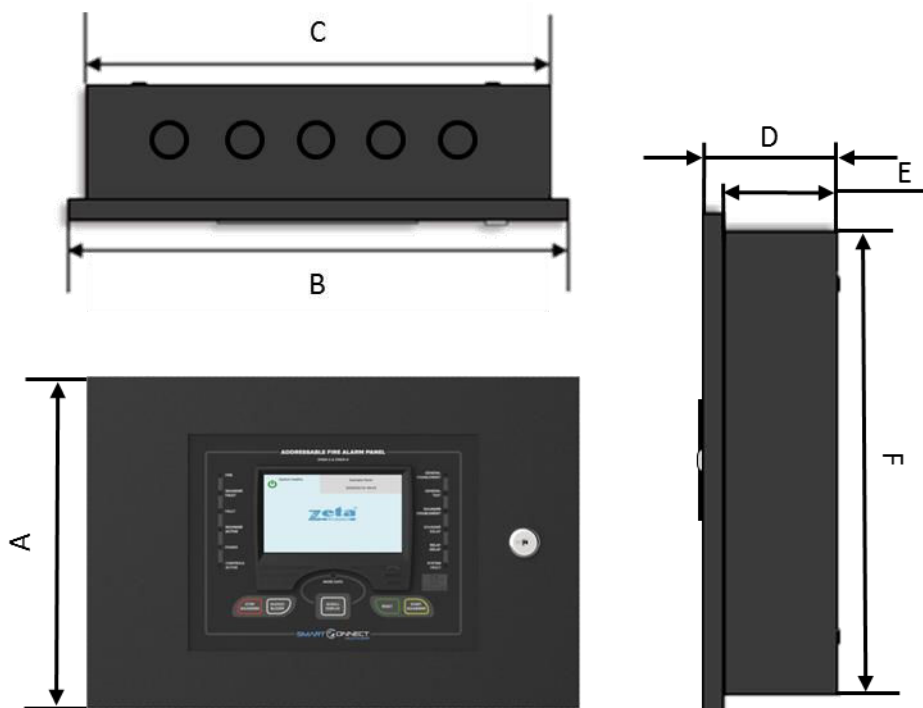
## Enclosure Dimensions

See table 1 for full dimensions.



Table 1

| Panel | A | B | C | D | E | F | Top Knock outs | Side Knock outs | Bottom Knock outs | Max Battery Size |
|---|---|---|---|---|---|---|---|---|---|---|
| SMART/REP | 230mm | 340mm | 307mm | 96mm | 70mm | 200mm | 5 | 0 | 0 | N/A |

## Panel Construction Details

All components are manufactured from Zintec.

All parts 0.9 mm.

The paint colour for the main box and door is RAL9005 Black Leatherette.
The internals are RAL9005 Black Leatherette.

The repeater enclosure can be semi flushed into a wall or surface mounted.

## Locating the Fire Alarm Control Panel

The control panel should be installed per BS5839-1:2017 recommendations: -

The panel should be close to the main entrance of the building, so that it can be viewed by any fire-fighting personnel entering the building.

- It should be fitted to a sturdy wall that will not flex unnecessarily.
- It should ideally be mounted at eye level, for it to be viewed without need of a ladder.
- It should be installed in a dry, weatherproof place, preferably NOT in direct sunlight.
- It should be easily accessible, so that the responsible person can perform their regular fire alarm checks.

The panel must be in a clean, dry position, which is not subject to excessive shock or vibration and at least 2 meters away from pager systems or any other radio transmitting equipment. The operating temperature range is -5°C (23°F) to 40°C (104°F); maximum humidity is 95%. The panel will withstand vibrations between 5 & 150 Hz.

## Mounting the Enclosure

Fix the enclosure to the wall using all the mounting points provided:
SMART/REP: 3 x Mounting Points. See Fig 1
Check the build and condition of the wall to decide a suitable screw fixing. The mounting holes are designed for No 8 roundhead or countersunk woodscrews (or similar). Remove any debris from the enclosure. Take care not to damage the panel during installation.

⚠ **ATTENTION:** DO NOT DRILL ANY ENTRY HOLES INTO THE PCB SECTIONS OF THE ENCLOSURE

## Mounting Hole Dimensions

Fig 1
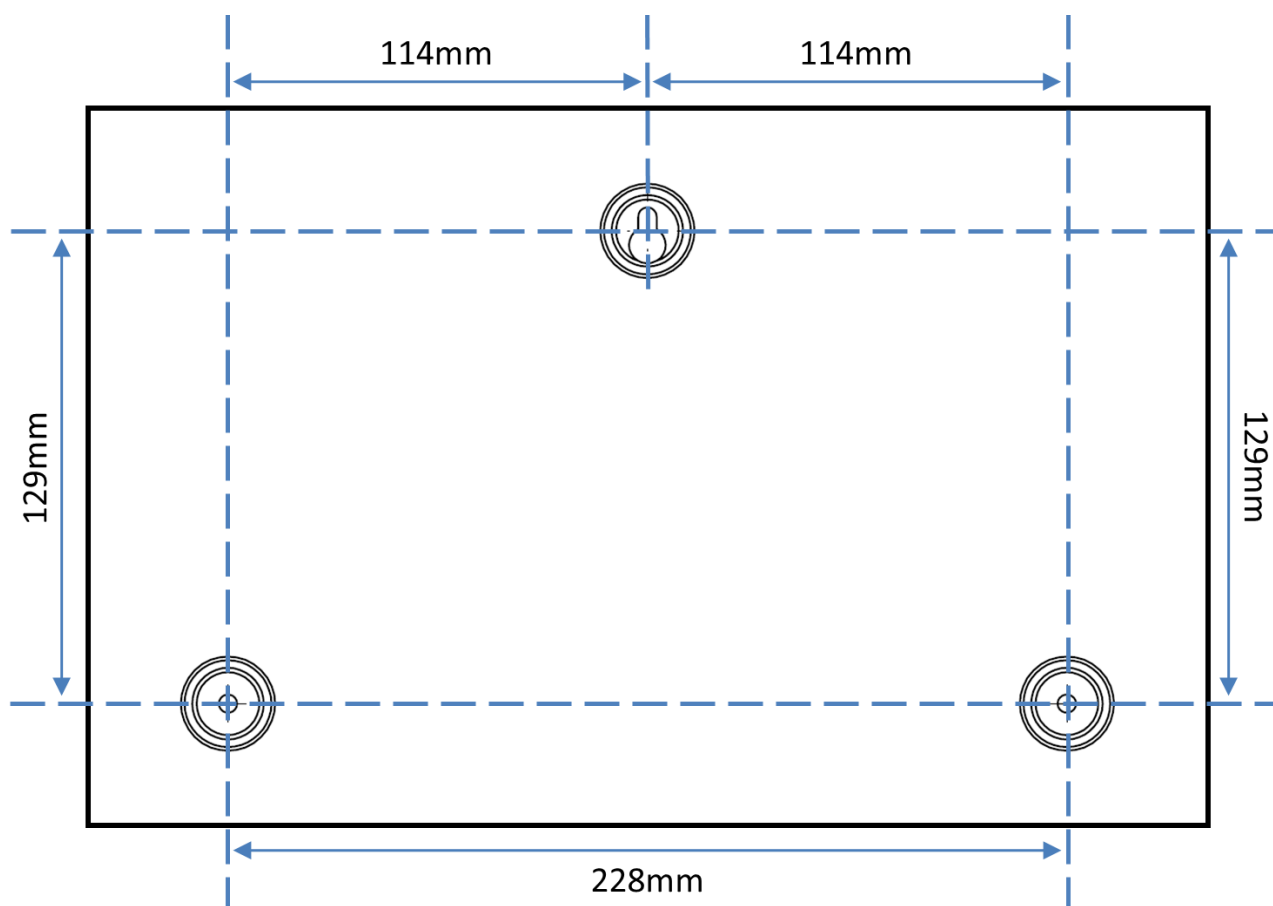


## Planning Cable Entry

The Knock-out cable entries can be easily removed by tapping with a suitable screwdriver or chisel from outside the enclosure back box. Alternatively, the entry can be drilled out, using a 20mm hole cutter. Care should be taken if using a drill. Consider removing the PCBs to prevent damaging them.
The repeater comes with 5 cable entry holes. If another entry hole is required, it is strongly recommended that the panel door is removed to avoid accidental damage. Also, the PCB's should be removed and stored in a safe place. This would also help while fixing the back box to the wall.

⚠️ **ATTENTION:** DO NOT DRILL ANY ENTRY HOLES INTO THE DOOR SECTION OF THE ENCLOSURE.

## Cable Grounding

The Repeater has no internal earth bars. It is recommended that network wiring is connected to ground at a Smart Connect control panel (only one side of the network wiring should be grounded).

## DC Power Wiring

The SMART/REP needs to be powered by a 28VDC external EN54 approved power supply. The cables used for this must be fire rated.

### Recommendations
The DC supply to the Repeater should be fixed wiring, using Fire resisting 3-core cable (Between 1 mm² and 2.5mm²), or equivalent. The AC supply to the PSU should be fed from an isolating double (or single) pole switch fused spur, and fused at 5A. This should be secure from unauthorized operation and be marked 'FIRE ALARM: DO NOT SWITCH OFF'. The supply must be exclusive to the repeater.

### Connecting the DC Power
The incoming DC power cable should be kept separate from the RS485 network cables to help minimise interference.

⚠️ **ATTENTION:** MAKE SURE ANY SPARE ENTRY HOLES THAT HAVE BEEN OPENED, BUT NOT USED ARE COVERED WITH SUITABLE GROMMETS OR BLANKING SCREWS.

It is advisable to apply power to the repeater before connecting any network cables, to check for correct operation, and to familiarise yourself with the repeater panels' controls.

If a knockout is removed, fill the hole with a suitable cable gland. If any knockout is removed, but subsequently not used, it should be covered up.
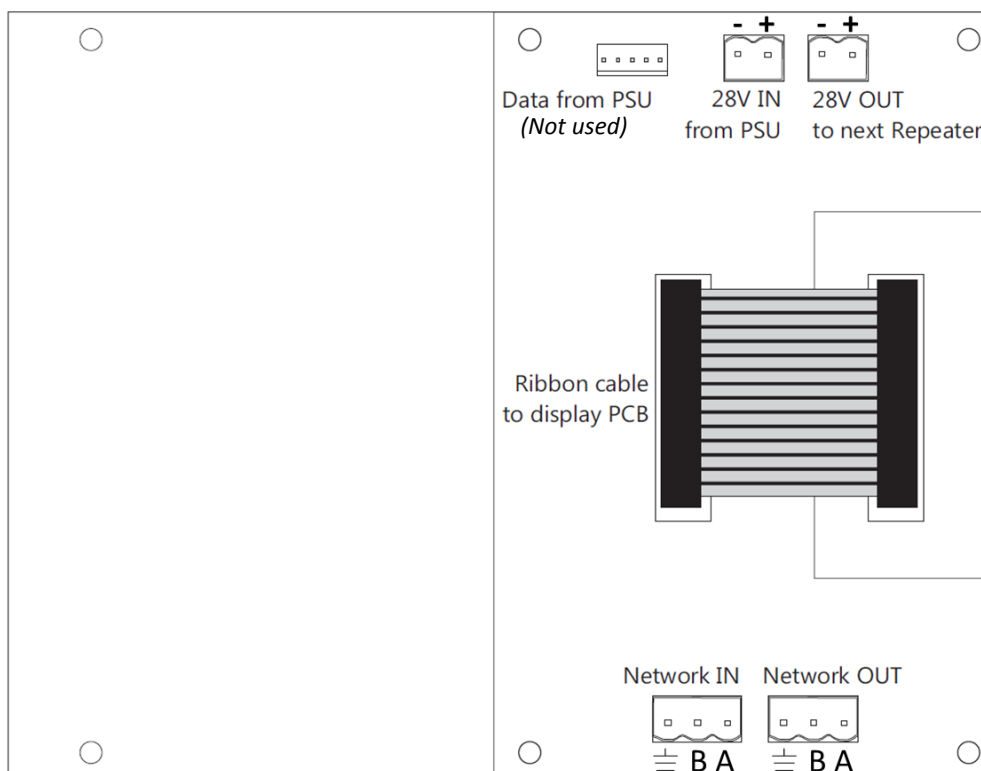
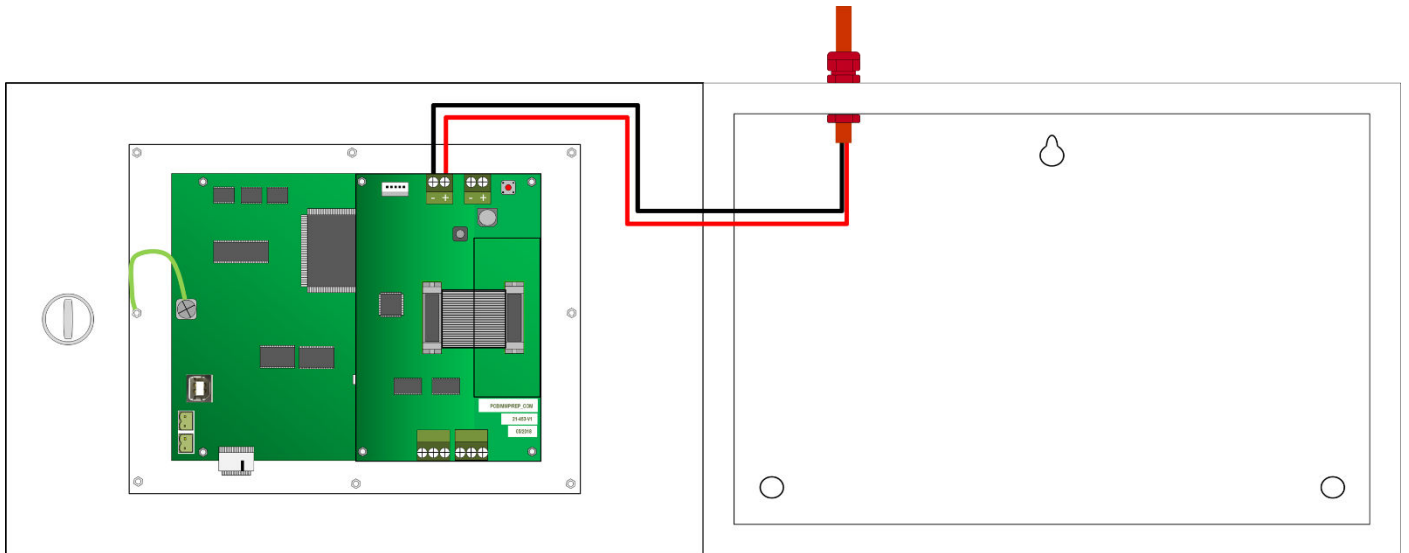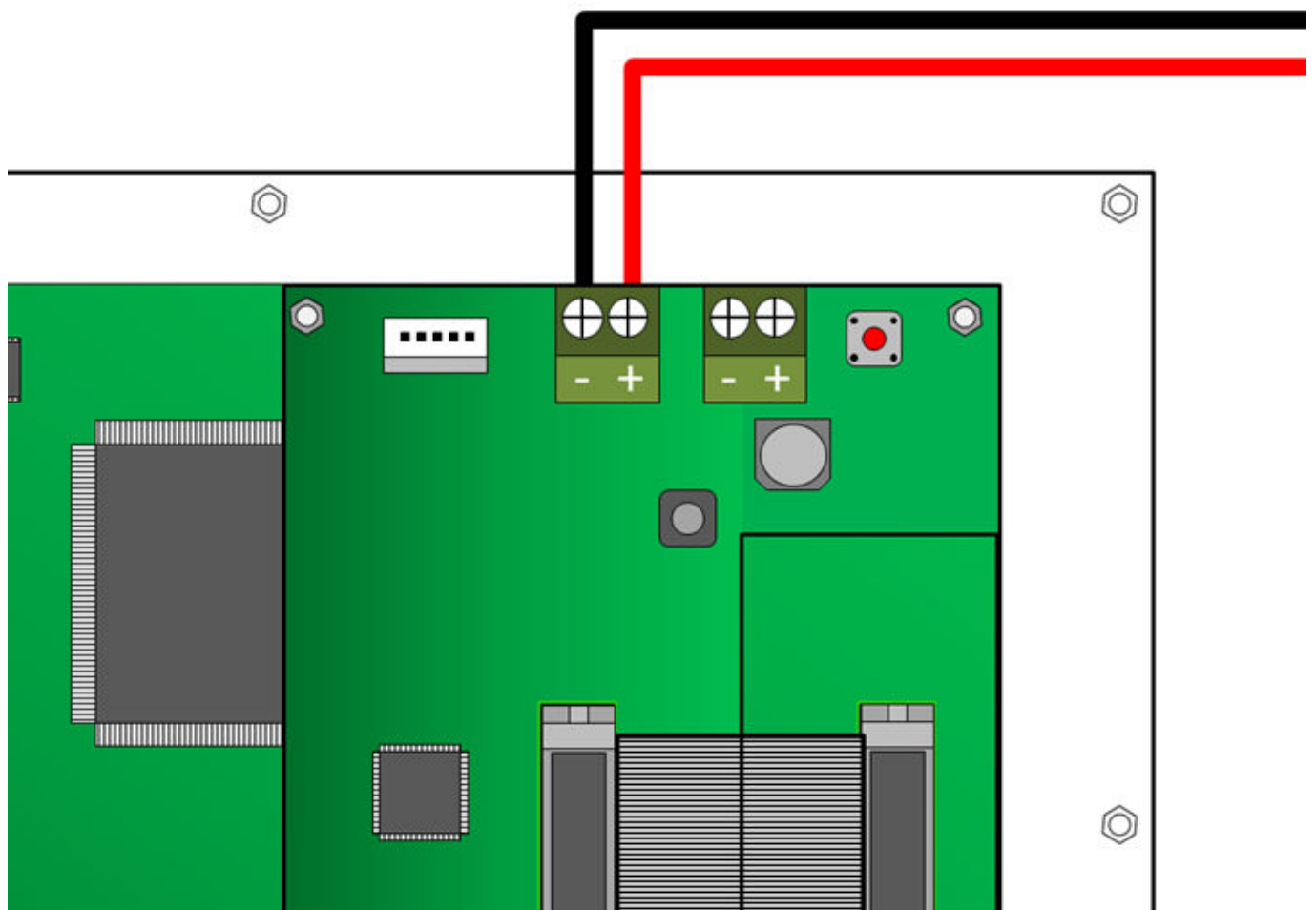Figure 2: Termination PCB Layout

Figure 3: 28V DC wiring



Figure 4: 28V DC terminal wiring



⚠ **ATTENTION:** CHECK POLARITY IS CORRECT BEFORE TURNING THE POWER ON.

## Initial Power Up

It is recommended to initially power up the repeater with no networked panels connected to confirm that the base panel is functioning as expected. To do this:-

1. Check that the DC cable is connected correctly.
2. Close the panel door
3. Turn on the DC power. The following will be observed:-
    a. Power, Fault and System Fault LEDs will light for around 6 seconds
    b. Fault and System Fault LEDs will turn off. Power LED will blink a few times
    c. LCD will show touch for calibration. Press the screen within 3 seconds to perform a screen calibration. (The screen is calibrated at the factory, so this step is not usually required)
    d. The LCD shows the Zeta logo for a few seconds, while it checks to see what modules are fitted. (Note: the usual "System Healthy" banner is not shown during the module check.)
    e. Leave the panel soak for 100 seconds.
    f. If no faults were reported then the panel has passed its power on test. It can now be turned off and the network cables can be fitted.
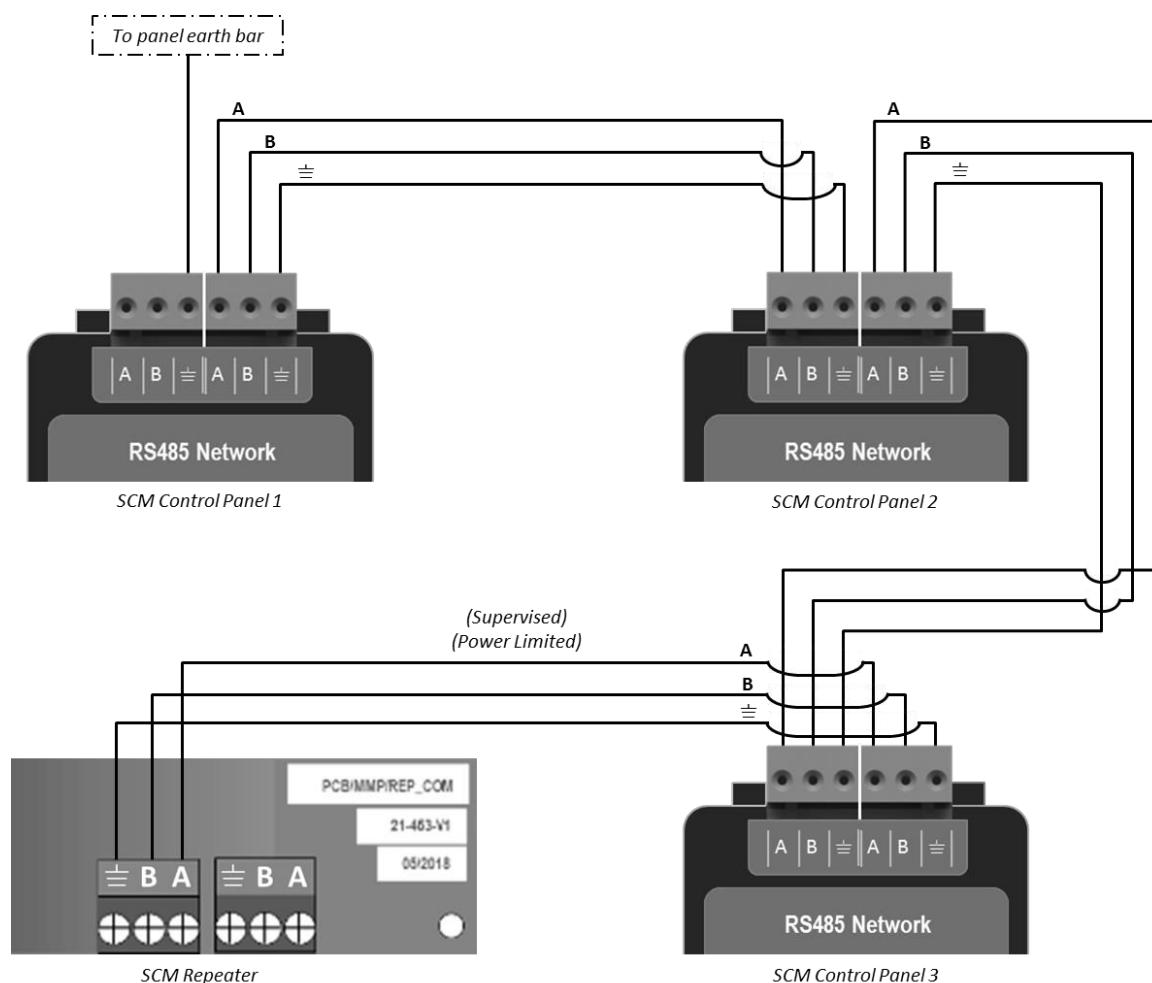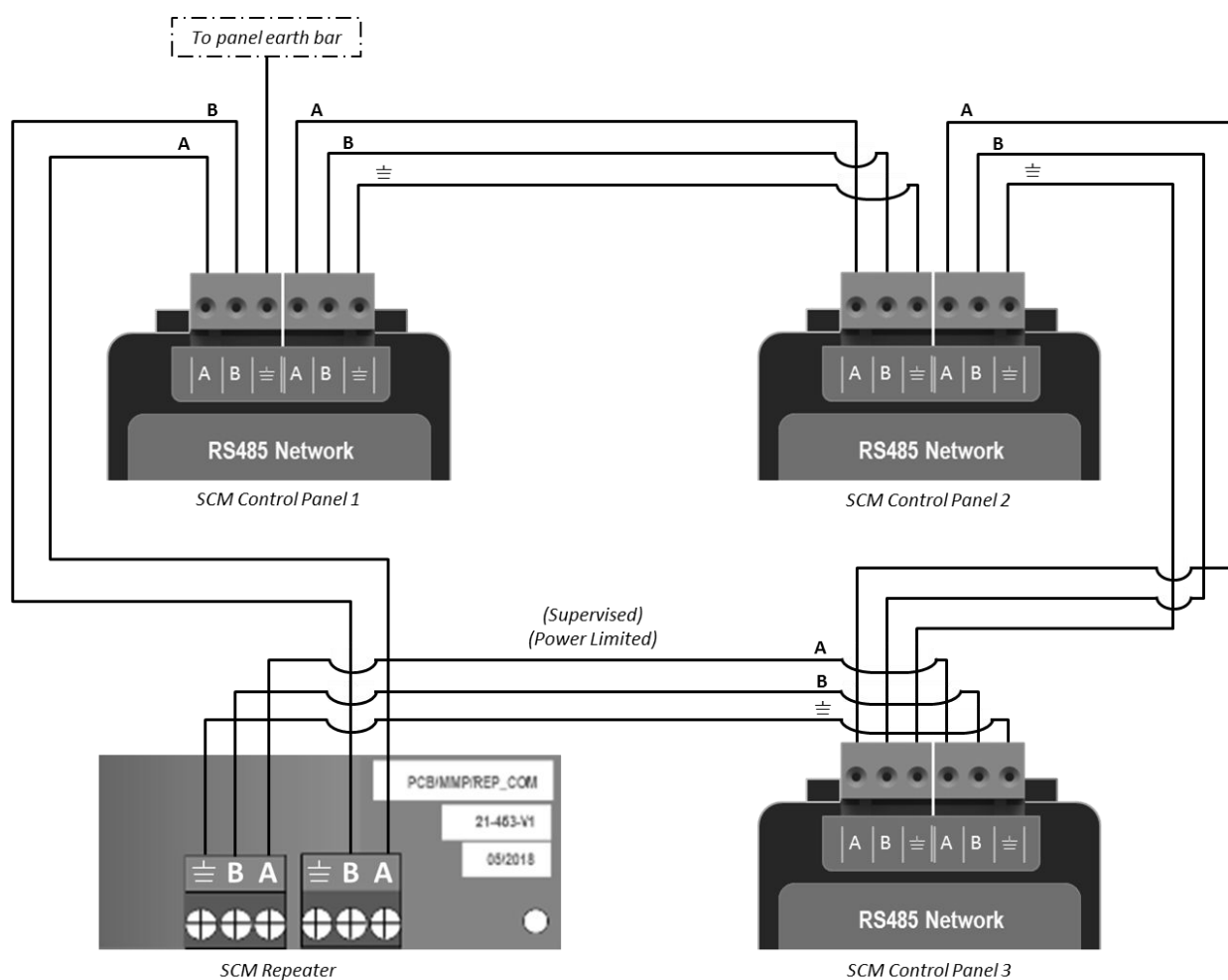
# Field Wiring

ⓘ **NOTE:** *The terminal blocks are removable to make wiring easier.*

## RS485 Network Wiring Overview

Bus Topology

Ring Topology



> **NOTE:** *It is recommended to install the network in a ring topology for protection against open circuit and short circuit faults.*

## Wiring Recommendations for Network Wiring

The Smart network can support up to 64 panels.

> **RECOMMENDED CABLE:** *Belden or equivalent*

## Network Specifications

| RS485 Network | |
|---|---|
| Maximum Network Size | 64 Nodes |
| Maximum Distance Between Nodes | 1KM (with screened data cable) <br> 100M (using a standard fireproof cable)* |
| Communication Protocol | RS485 |
| Network Wiring Typologies | Bus or Ring |

*BS 5839-1:2017 requires that network cable be standard fire proof cable (enhanced fire proof cable may be required for specified installations).

# Operation

Refer to the *Smart Connect Multi-loop Operation Manual (Doc: GLT-261-7-11)*.

# Fault Finding

Refer to the troubleshooting section in the *Smart Connect Multi-loop Operation Manual (Doc: GLT-261-7-11)*.

# Appendix A: SPECIFICATIONS

| Code | |
|---|---|
| Description | Smart Connect Multi-loop Repeater |
| **Main Supply** | |
| Operating Voltage | 28VDC |
| Quiescent Current | 78mA |
| Maximum Current | 100mA |
| **Network** | |
| Communication Protocol | RS485 |
| Maximum Network Size | 64 Nodes |
| Maximum Distance Between Nodes | 1KM (using 1 screened data cable) 100m (using a standard fireproof cable) |
| Network Wiring Typologies | Bus Ring (recommended) |
| **Software** | |
| Maximum Event Log | 8032 Events |
| Software Programming | Touchscreen LCD |
| **Display** | |
| LCD | 4.3" Resistive touch screen. 480 x 272 pixel resolution |
| LED Indications | 2 Red (1 x Fire, 1 x Sounder Active), 1 Green (Power), 10 Yellow (1 x Relay Delay, 1 x Fault, 1 x Sounder Delay, 1 x Controls Active, 1 x General Disablement, 1 x General Test, 1 x Sounder Fault/Disablement, 1 x Sounder Delay, 1 x System Fault, 1 x More Data). |
| Button Controls | Stop Sounders, Silence Buzzer, Scroll Display, Reset, Start Sounders |
| **Enclosure** | |
| Dimensions H x W x D (mm) | 230mm x 340mm x 96mm |
| Weight | 2.3kg |
| Cable Entries | 5 (Top entries) |
| Terminal Wiring Size | $1mm^2 - 2.5mm^2$ |
| **Environmental** | |
| Operating Temperature | -5°C to 40°C |
| Relative Humidity | 93% Non-condensing |