ZSC-250-IS

USER MANUAL

MEYERTECH
SECURITY with VISION

ZoneVu

ZSC-250-IS

Site Controller Interface

Issue 01

Contents

CONTENTS 2

INTRODUCTION 3

ZSC-250-IS LAYOUT 4

FEATURES 7

USAGE EXAMPLES 8

RS-485 LINE BIASING & TERMINATION 9

CONFIGURATION 10

ZSC-1000PLUS, ZSC-1000 OR ZSC-500 CONFIGURATION 16

SAFETY PRECAUTIONS 17

SUPPORT 18

MAINTENANCE 18

DISPOSAL 19

WARRANTY 20

Introduction

Thank you for purchasing Meyertech's ZSC-250-IS. Please read this user guide prior to using this product. It will help you to achieve the maximum benefit from the product. The manual covers installation and operation of the ZSC-250-IS.

What is a ZSC-250-IS?

A ZSC-250-IS is part of the ZoneVu CCTV Control family, specifically one controller within the Meyertech Site Controller range.

Meyertech's ZSC-250-IS allows ZSC-500, ZSC-1000 and ZSC-1000plus controlled remote sites to be connected together in a flexible & fault tolerant architecture.

The ZSC-250-IS allows the built-in RS-485 half-duplex capable 'Intersite port' of a ZSC-500, ZSC-1000 or ZSC-1000plus controller to be routed onto many point-to-point remote connections using either RS-485, RS-422 or RS-232 formats.

Additional flexibility is afforded by the allowance for ZSC-250-IS units to be connected together where two or more sites are sharing a remote link.

KEY FEATURES

- 19" Rack Mounted
- Compatible with the ZoneVu product range
- Allows a more flexible topology for inter-connection of remote sites
- Supports RS-485, RS-422 and RS-232 connections to remote sites
- Isolates communication faults on remote connections for added resilience
- Allows remote site connections over medium to high latency links (e.g. WAN / Internet)
- 16-bit embedded processing power
- Diagnostic LEDs
- Configuration and backup via Meyertech's Mpower software

The features described in this manual refer to:

Version 1.31.0.2 of the ZSC-250-IS firmware

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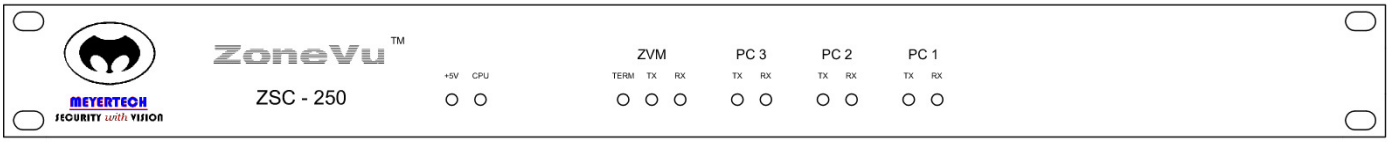
ZSC-250-IS LAYOUT



Front Panel Indicators

- **+5V**
  Indicates that power is present

- **CPU**
  Indicates the current state of the processor. Steady flashing indicates all is well. If, on power up, the CPU led flashes with a combination of long and short pulses then the processor has detected a memory problem and Meyertech technical support should be contacted.

- **ZVM – TERM**
  Indicates the status of the internal RS422 termination resistor. This is configurable.

- **ZVM – TX**
  Indicates communications being transmitted by the ZSC-250-IS on the ZoneVu (ZVM) port.

- **ZVM - RX**
  Indicates communications being received by the ZSC-250-IS on the ZoneVu (ZVM) port.

- **PC 3 – TX**
  Indicates communications being transmitted by the ZSC-250-IS on Port 3 (PC 3).

- **PC 3 - RX**
  Indicates communications being received by the ZSC-250-IS on Port 3 (PC 3).

- **PC 2 – TX**
  Indicates communications being transmitted by the ZSC-250-IS on Port 2 (PC 2).

- **PC 2 - RX**
  Indicates communications being received by the ZSC-250-IS on Port 2 (PC 2).

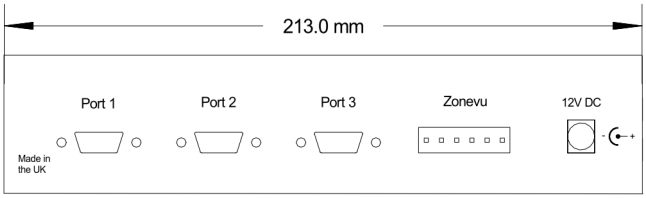
- **PC 1 – TX**
  Indicates communications being transmitted by the ZSC-250-IS on Port 1 (PC 1).

- **PC 1 - RX**
  Indicates communications being received by the ZSC-250-IS on Port 1 (PC 1).

Normal Rx and Tx LED indications

Comms Mode	State	PC 1, 2 and 3 RX	PC1, 2 and 3 TX	ZVM RX	ZVM TX
RS-232	n/a	Flash on receive	Flash on transmit	Flash on receive	Flash on transmit
RS-485	Connected	Rapid flashing	Rapid flashing	Rapid flashing	Rapid flashing (duplex) Off (Rx Only)
	Disconnected	Off	Slow flashing	Off	Slow flashing (duplex) Off (Rx Only)
RS-422	n/a	Flash on receive	Flash on transmit	Flash on receive	Flash on transmit

Rear Panel Connectors



- **12V DC**
  For use with the supplied mains power adapter.

- **ZoneVu (ZVM)**
  6-way two-part screw terminal connector. RS422 / RS485 / RS232 communications to other ZSC units.

- **Port 1 (PC 1)**
  9-way D-type female connector. RS422 / RS485 / RS232 communications to other ZSC units.

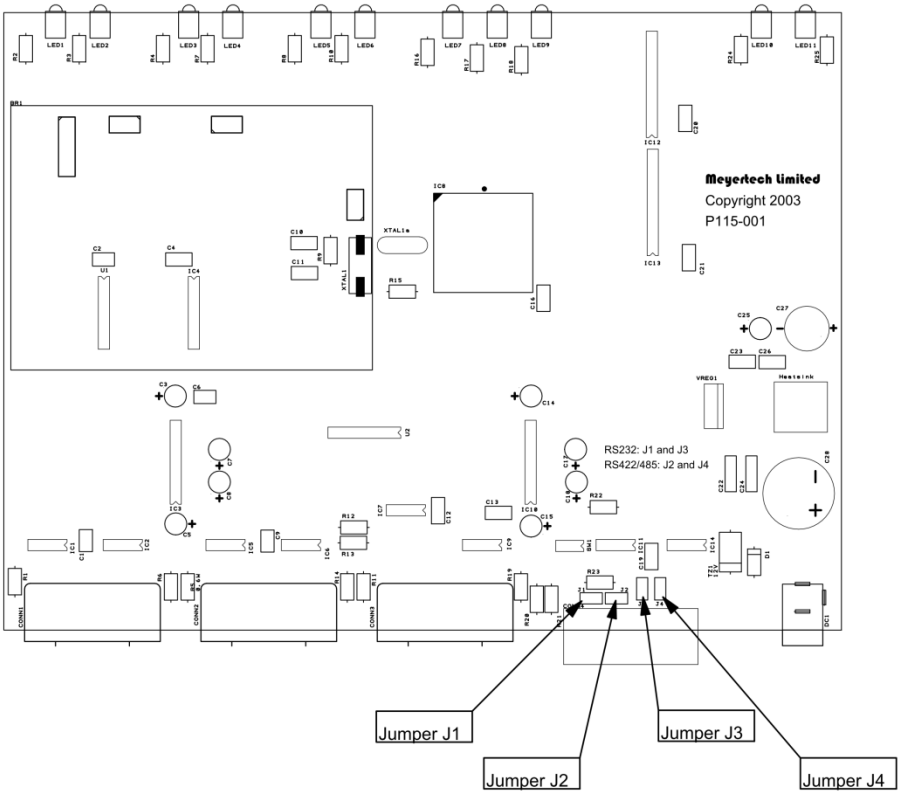
- **Port 2 (PC 2)**
  9-way D-type female connector. RS422 / RS485 / RS232 communications to other ZSC units.

- **Port 3 (PC 3)**
  9-way D-type female connector. RS422 / RS485 / RS232 communications to other ZSC units.

  Also used for direct configuration from Mpower.

Circuit Board Layout

To use RS232 mode on the ZoneVu (ZVM) port, a change to the factory set jumper configuration is required in addition to the configuration. After isolating the power & removing the lid, carefully remove the links from jumpers 2 and 4 with reference to the diagram below. Re-fit the links on jumpers 1 and 3.



ZSC-250-IS rear view connectors

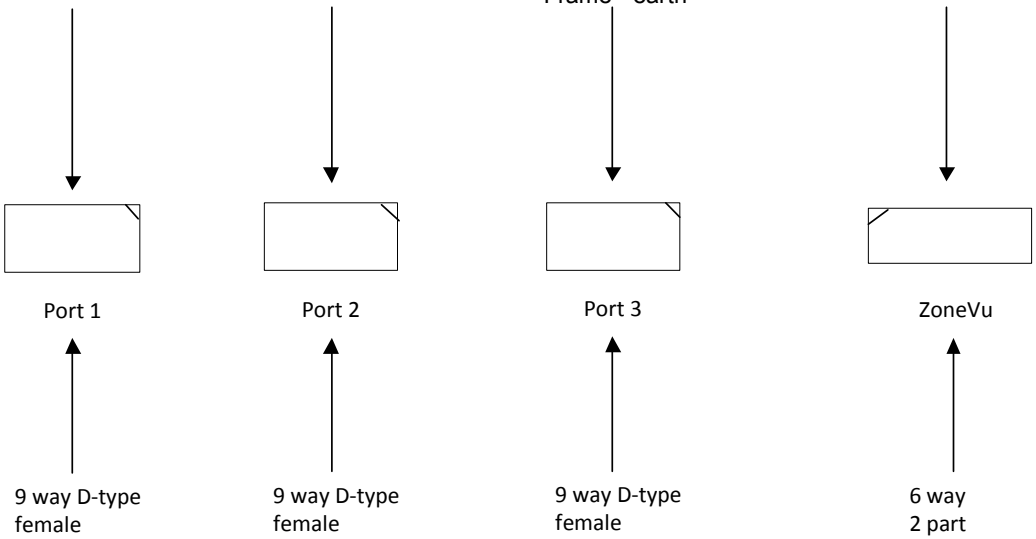
Note: 6 way 2 part connector is numbered from left to right

Port 1 (PC 1)
2 - RS232 Rx
3 - RS232 Tx
5 - Gnd
6 - RS485 Rx/Tx -
7 - RS485 Rx/Tx +
8 - RS422 Tx -
9 - RS422 Tx+
Frame - earth

Port 2 (PC 2)
2 - RS232 Rx
3 - RS232 Tx
5 - Gnd
6 - RS485 Rx/Tx -
7 - RS485 Rx/Tx +
8 - RS422 Tx -
9 - RS422 Tx+
Frame - earth

Port 3 (PC 3)
2 - RS232 Rx
3 - RS232 Tx
4 - MPower
5 - Gnd
6 - RS485 Rx/Tx -
7 - RS485 Rx/Tx +
8 - RS422 Tx -
9 - RS422 Tx+
Frame - earth

ZoneVu (ZVM)
1 - RS485 Rx/Tx-
2 - RS485 Rx/Tx+ or RS232 Rx
3 - Gnd
4 - RS422 Tx- or RS232 Tx
5 - RS422 Tx+
6 - earth



Issue	Change	Date
01	first release	16-01-12

Description

ZSC-250-IS connection pin-out

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M24 1UN
Tel: +44 (0)161 643 7956

Drwg. No. CD-ZSC-250-IS-A-01

ZSC-250-IS

Features

General

The ZSC-250-IS extends the built-in capability of the intersite bus on ZSC-500, ZSC-1000 & ZSC-1000plus controllers giving it the flexibility to cope with RS422 and RS232 data links in addition to it's native RS-485 format. It allows point to point connections to remote sites as well as supporting the standard intersite bus connection that is native to ZSC-500, ZSC-1000 & ZSC-1000plus controllers.

The ZSC-250-IS provides intelligent routing of commands between sites. A programmable routing table allows it to minimise traffic on each port by forwarding data only where necessary. The routing also filters out data corruption which, coupled with the optical isolation between ports, provides excellent isolation of communication line faults preventing a faulty remote site affecting a larger system.

The ZSC-250-IS is programmed using Meyertech's Mpower configuration tool either on a direct serial connection or remotely across the intersite network. Each port is programmable for RS232, RS485 or RS422 (link selection also required on ZoneVu / ZVM port), and baud rates can be chosen independently. The routing table is also programmed through Mpower to determine the layout of sites on the system.

Connection capabilities

At it's simplest, the ZSC-250-IS can be used as a straight forward bridge between the built in intersite bus of a ZSC-1000plus controller and up to 3 remote ZSC-1000plus controllers. It's capabilities however go far beyond this in building larger and more complex networks. The table below shows what can be connected on each port, and which communication modes (i.e. RS-422 / RS485 / RS-232) are supported for each.

ZSC-250-IS		ZSC-250-IS	ZSC-1000plus, ZSC-1000 or ZSC-500		
		Any port	Intersite Bus[1]	Intersite Point-to-Point[2]	PC1 / PC2 port[3]
ZoneVu (ZVM) Port	RS-422	✓	×	×	×
	RS-485	×	✓	×	×
	RS-232[4]	✓	×	×	✓
Port 1, 2 or 3 (PC1, 2 or 3)	RS-422	✓	×	×	×
	RS-485	×	×	✓	×
	RS-232	✓	×	×	✓

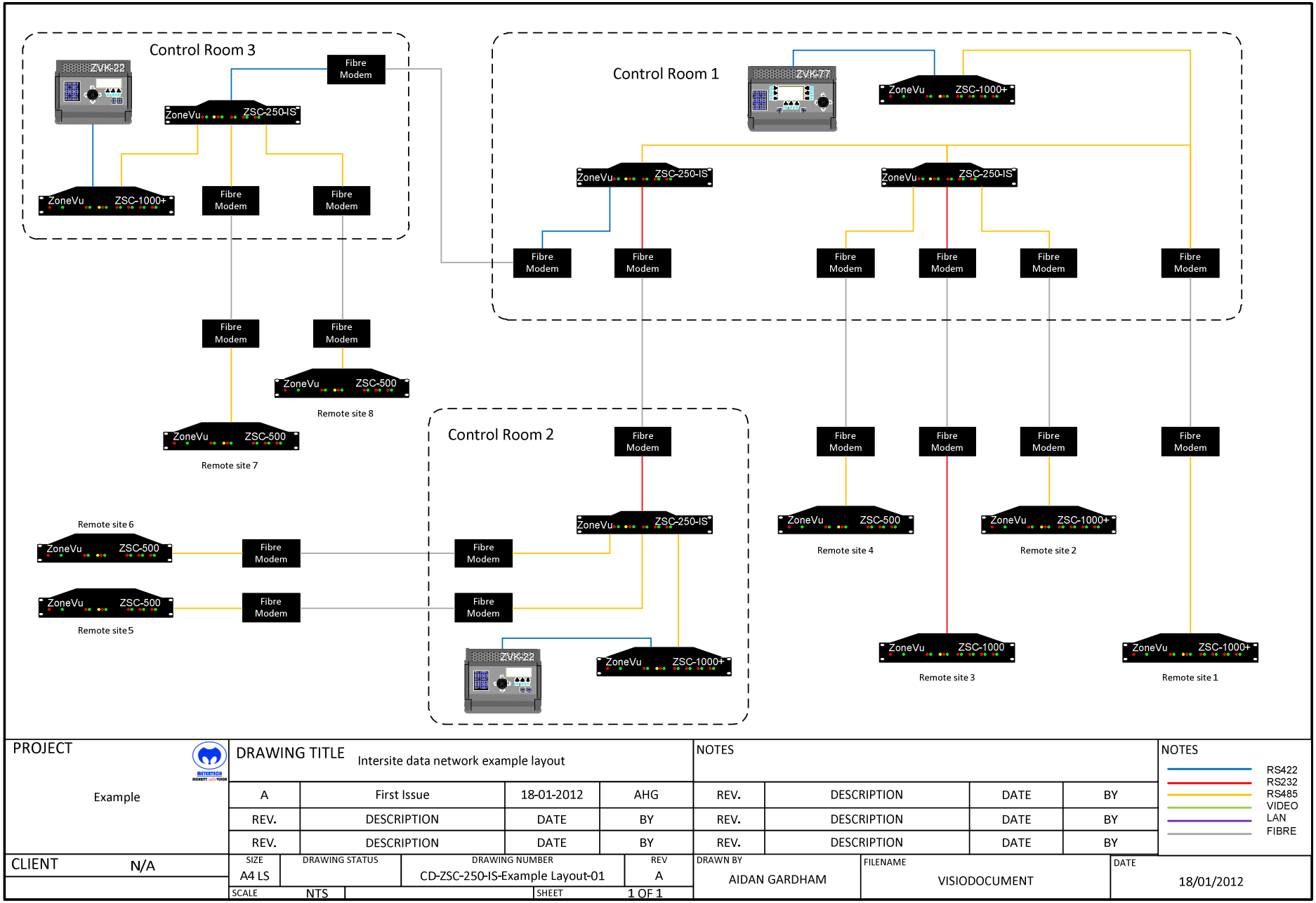
[1] Intersite In or Out connector in standard bus mode of operation (default)

[2] Intersite In or Out connector in point-to-point mode of operation. Requires firmware version 3.33.1.0 or later

[3] Requires firmware version 3.31.0.0 or later for PC1 port use and also recommended for PC2 port use

[4] Requires change to jumper settings on circuit board. Refer to section ***Circuit board layout.***

Usage Examples



RS-485 Line Biasing & Termination

Correct biasing and termination is an essential part of any RS-485 transmission line, and care must be taken by the installer to ensure a single line bias is fitted to each RS-485 line, with ideally a termination fitted to the device at each end of the line.

No biasing is required in RS-422 or RS-232 modes.

To help with these requirements the ZSC-250-IS has been designed with different biasing & termination capabilities according to the differing functions of it's various ports.

Port 1, Port 2 and Port 3

These ports are fitted with a strong internal biasing circuit with a permanent termination.
This means that no further biasing is required, although it may be desirable to fit a termination on the opposite end of the transmission line where a significant distance is covered.

Where connecting to a fibre modem or other media converter such as radio, microwave or Ethernet, it is important that the media converter should **not** have a strong bias enabled. Weak biasing is acceptable if permanently fitted.

It should be noted that media converters mark the end of the RS485 line, and the remote end should be treated separately and biased & terminated accordingly.

When connecting Ports 1 to 3 directly to the intersite port of a ZSC-1000plus or similar controller, no additional biasing will be required. Termination may be fitted if the connection covers a significant distance.

ZoneVu Port

To allow many ZSC-250-IS to be connected together on a bus, they are supplied without any built in biasing on the ZoneVu port and switchable termination. The termination may be enabled through programming if it is at the end of a long transmission line. Biasing however must be fitted to one other device on the RS-485 line, normally the ZSC-1000plus or similar controller. Please see the ZSC-1000plus installation manual for details of the biasing & termination plug fitting for the Intersite Out port.

Configuration

The ZSC-250-IS has non-volatile memory built in for all it's configuration parameters. During commissioning it will be necessary to access this configuration to define, as a minimum, the usage of each port and the location of each site number in the system.

Configuration is done using Meyertech's Mpower software. A direct serial connection into the unit is normal for first time configuration. Once operational, further configuration can be carried out remotely through a connection to any site controller on the system.

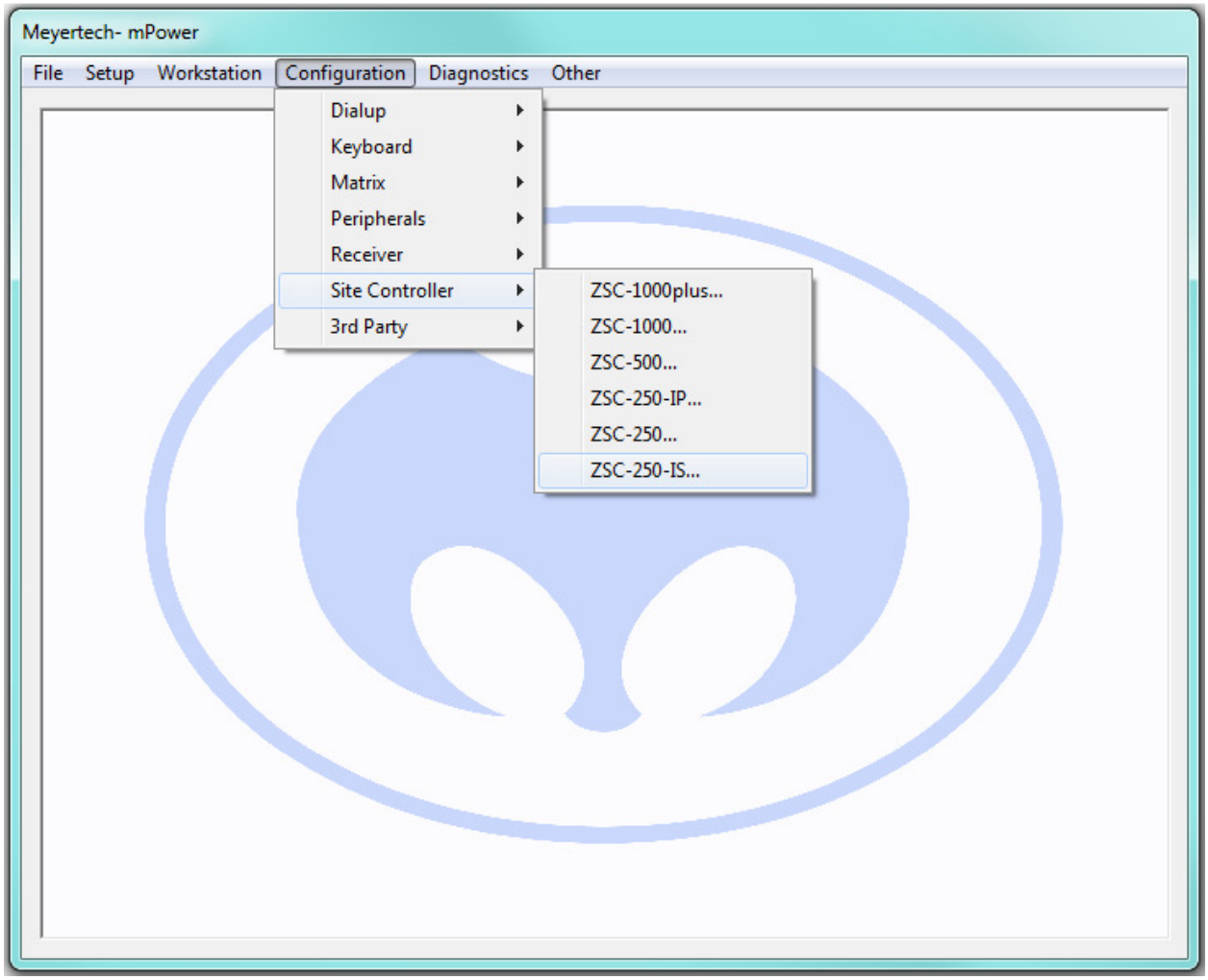
Direct Connection

To ensure the configuration can always be accessed regardless of current setup, Port 3 has a dedicated trigger on Pin 4 which returns that port to a fixed RS-232 configuration to allow access from Mpower.
Connect this pin directly to Pin 5 (Ground) to ensure it is setup for a direct connection to Mpower.
This is normally done within the connector housing of a programming lead such that when the lead is connected to port 3 the ZSC-250-IS immediately detects it. The CPU LED will start to flash more rapidly to indicate this.

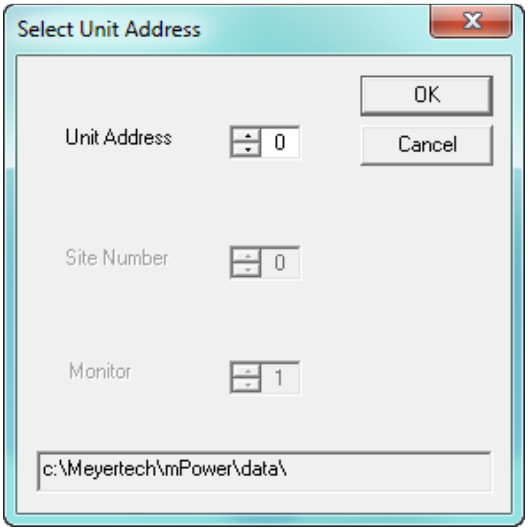
Note: If you are running the ZSC-250-IS with default port settings (i.e. 9600 baud, RS232) this is not required and you may access the configuration from port 1, 2 or 3.

Connecting with Mpower

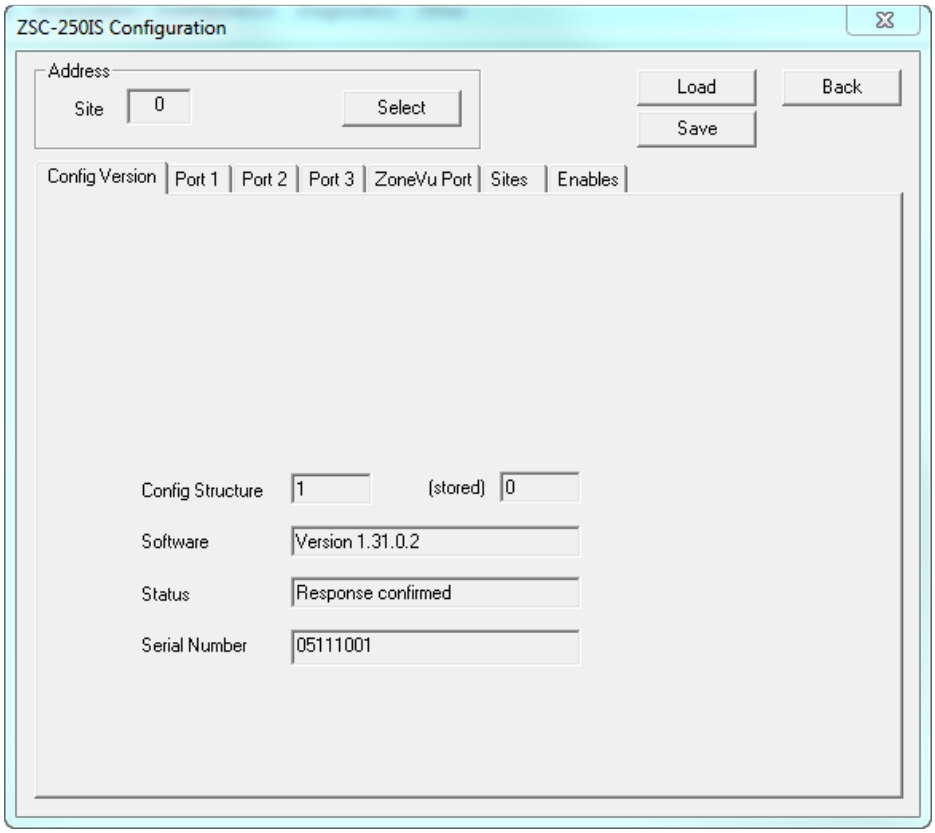
For details on how to install and setup Mpower for your serial port please refer to the Mpower user manual.
To connect to the ZSC-250-IS, select it from the Configuration menu as shown.



If using a direct serial connection, select a unit address of 0, otherwise enter the site number that has been assigned to the ZSC-250-IS you wish to configure.



Config Version



The config version tab displays important information about the ZSC-250-IS unit to which Mpower is connected.

Status

On successful connection, *Response confirmed* will be displayed. If there is no response, a second attempt can be made using the *Select* button.

Serial Number

It is recommended that the serial number displayed is always checked against the equipment to ensure connection has been made to the correct unit.

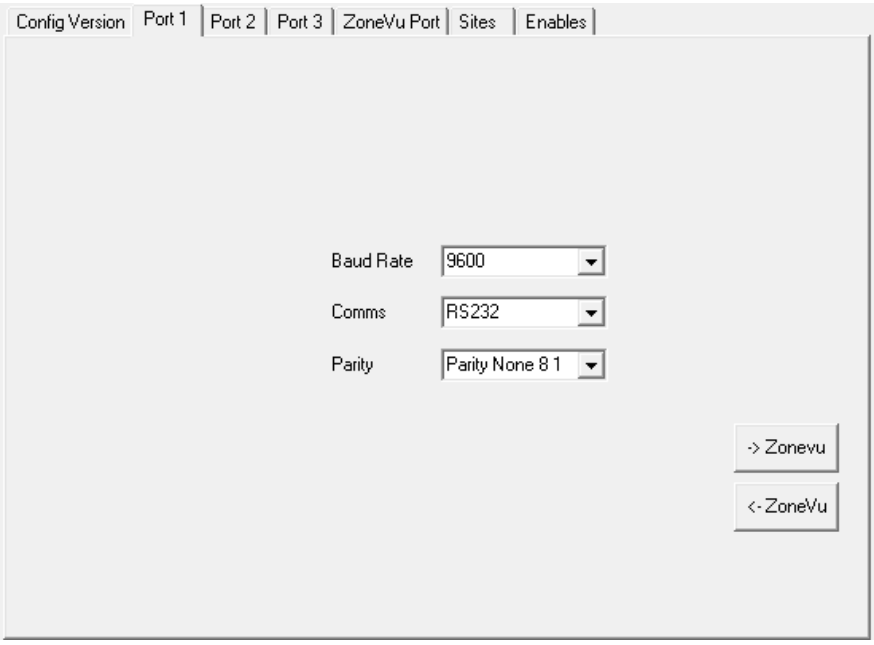
Software

The software version is read from the connected unit. This may be requested by Meyertech technical support staff when dealing with queries.

Config Structure & (stored)

The config structure is related to the software version and read from the unit. The (stored) value shows the corresponding level of a saved configuration file, if loaded.

Port 1, Port 2 and Port 3



Baud Rate

Defines the baud rate at which the port communicates. All equipment on this port must be configured for the same baud rate.

Valid baud rates on all ports are 1200, 2400, 4800, 9600, 19200 and 38400. Port 3 supports additional baud rates of 57600 and 128000

Default = 9600

Comms

Defines the physical communications standard, RS422 (full duplex), RS485 (half duplex) or RS232. Please note that there are no simplex options. Refer to Connection capabilities section for valid options.

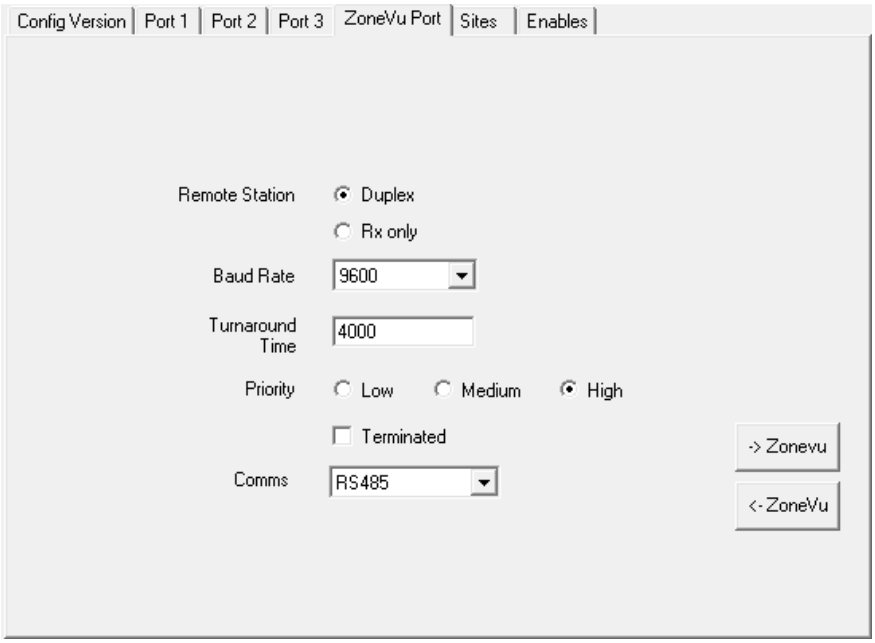
Default = RS232

Parity

Defines the data format. All equipment on a port must use the same format.

Default = Parity None 8 1

ZoneVu Port



Remote Station

Applies only to RS485 mode, i.e. when connected to an intersite bus. Rx only mode can be used to restrict the direction of traffic on the ZoneVu port to receive only.

Default = Duplex

Baud Rate

Defines the baud rate at which the port communicates. All equipment on this port must be configured for the same baud rate.

Valid baud rates are 1200, 2400, 4800, 9600, 19200, 38400, 57600 and 128000

Default = 9600

Turnaround Time

Applies only to RS485 mode. Allows the delay time between receiving & replying to be tailored to the requirements of the communication medium. Times are in microsecond.

Default = 4000 microseconds

Priority

Applies only to RS485 mode, i.e. when connected to an intersite bus. Medium and Low priorities take up less bandwidth on the bus. Use when only occasional data needs to be transmitted.

Default = High

Terminated

Enable this option to switch a 120ohm line termination into the receiver circuit. See section ***RS-485 Line Biasing & Termination*** for details.

Default = Off

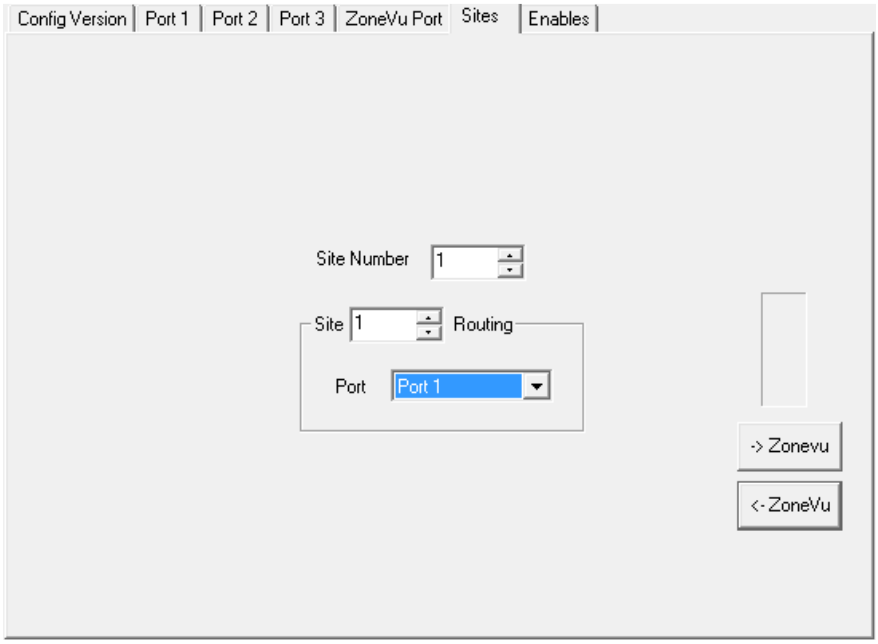
Comms

Defines the physical communications standard, RS422 (full duplex), RS485 (half duplex) or RS232.
Please note that there are no simplex options. Refer to ***Connection capabilities*** section for valid options.

Note : RS232 mode requires changes to jumpers on the circuit board. Refer to section ***Circuit Board Layout*** for details.

Default = RS422

Sites



Site Number

Assigns a spare site number on the system to the ZSC-250-IS. This is used for remote configuration purposes.

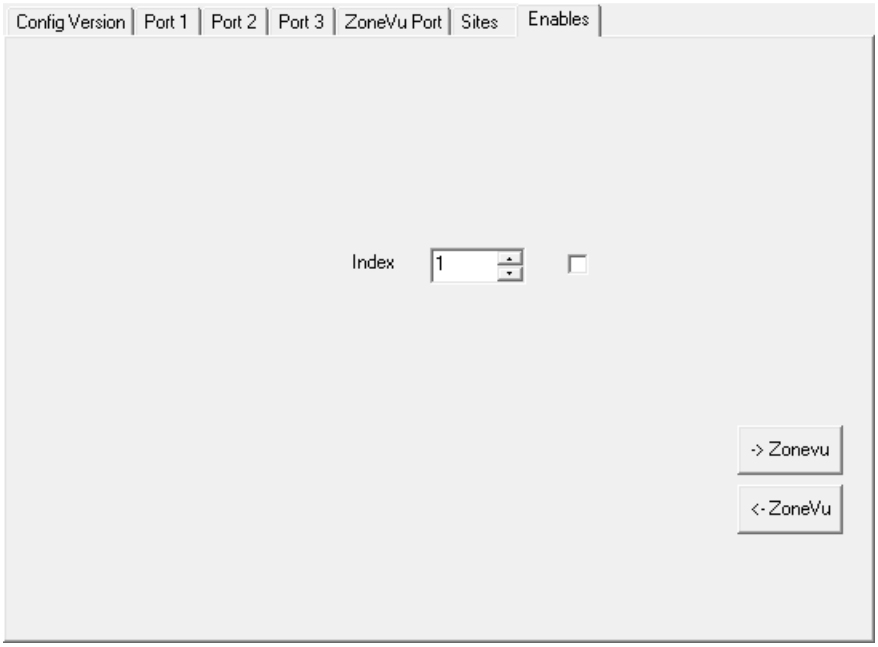
Default = 1

Site [n] Routing

For each site 1 to 255 a port can be selected : Port 1, Port 2, Port 3, Intersite (ZoneVu) or None.
This defines which port the ZSC-250-IS will use to route messages to each site controller in the system. Sites that are routed through further ZSC-250-IS units and therefore not directly connected to a port should be configured as though directly connected.

Default = No Port

Enables

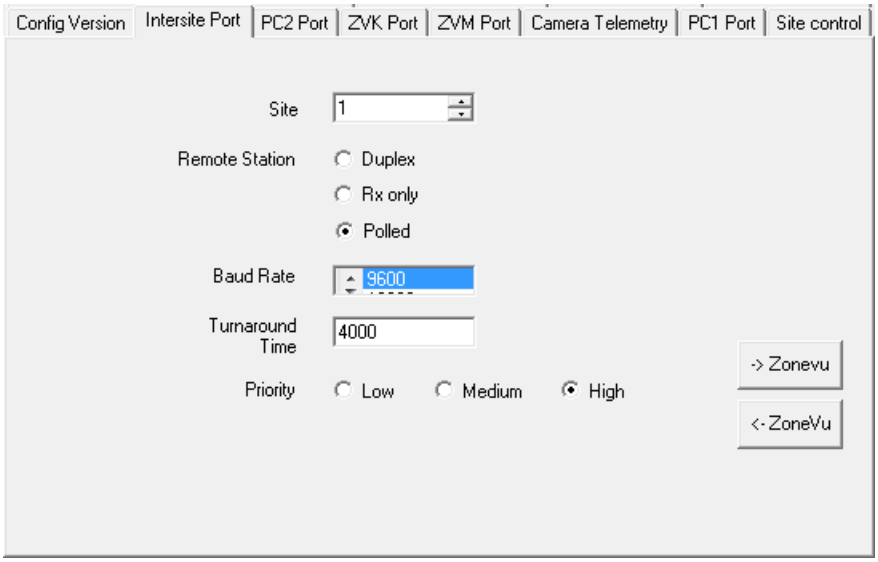


This section is for future use.

ZSC-1000plus, ZSC-1000 or ZSC-500 Configuration

Intersite port

When connecting a ZSC-250-IS to the intersite port of a ZSC-1000plus or similar controller, there are two different modes of operation possible, referred to in the section ***Connection capabilities*** as 'Intersite Bus' and 'Intersite Point-to-Point'. Each requires a different configuration on the ZSC-1000plus or similar controller.



Remote Station = Polled

This setting must be used on the ZSC-1000plus when connected to Port 1, 2 or 3 of the ZSC-250-IS in RS-485 mode. In this case the ZSC-250-IS automatically uses 'Intersite Point-to-Point' mode, where it will poll the ZSC-1000plus.

Remote Station = Duplex or **Rx Only**

These settings must be used on the controller when connected to the ZoneVu port of the ZSC-250-IS in RS-485 mode. In this case the ZSC-250-IS uses 'Intersite Bus' mode.

Safety Precautions

1. Carefully read this Product Manual prior to commencing installation and configuration.
2. Before working on this product power it down and remove the power leads. Removing panel's modules or PCB's may cause damage to the product and present an electric shock and fire hazard.
3. To reduce the risk of electric shock and fire hazard do not operate this product with panels or covers removed.
4. Do not install or operate the product near water.
5. Do not install or operate this equipment outdoors.
6. If work is carried out on the product with panels and covers removed ensure full electrostatic handling procedures are adhered to.
7. Louvers and openings are provided in the product enclosures for ventilation purposes to protect it from overheating. Under no circumstances block or cover these openings.
8. Ensure the product is operated in a suitably temperature controlled environment within the specification limits.
9. Do not operate the product in humidity greater than 90%.
10. Do not drop objects of any kind through the product louvers and openings. This may cause electric shock and fire hazard and product malfunction.
11. Avoid liquid spillages on the product. This may cause electric shock and fire hazard as well as product malfunction.
12. Never attempt to service this product yourself. This product contains no serviceable parts Refer all servicing requirements to the Meyertech Service Centre or appointed Meyertech Service Agent
13. Do not operate this product if
    - 13.1. Any product power leads are damaged.
    - 13.2. If the product has been exposed to rain.
    - 13.3. If the product has been dropped or the enclosure has been damaged.
    - 13.4. If liquid has been spilt on the product.
    - 13.5. If the appliance has malfunctioned or is not operating to its functional specification.
    - 13.6. If the products cooling fans fail to operate.
14. This product must only be operated with the power supply provided or if supplied without a power supply, by the type of power source indicated in the specification.
15. Follow all warnings and instructions marked on the product and in this manual.
16. To clean the enclosure of the product use a cloth. Do not use liquid solvent-based cleaners.

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Meyertech Limited is a member of the CCTV User Group.

Support

At Meyertech our staff understand quality support is important to you, vital in fact, which is why we place such a high precedence on providing it.

For all matters relating to support go to our website to find the information your require visit http://www.meyertech.co.uk/support.html

Maintenance

The ZSC-250-IS requires no Planned Preventive Maintenance periods (PPM's) as it is mainly solid state in design.

The ZSC-250-IS contains no serviceable parts and should be returned to our Service Centre for repair or replacement under warranty. Any repairs, attempted repairs or replaced components not carried out by the Meyertech Service Centre will void all Meyertech warranties and liabilities.

If your ZSC-250-IS has to be returned to our Service Centre please follow the returns procedure below, otherwise delays may be incurred in returning or replacing the ZSC-250-IS.

Returns Procedure

Prior to returning your ZSC-250-IS.

1. Contact our Service Centre by phone on (+44) 0161 6437956or by email tech-support@meyertech.co.uk for a Goods Return Number.
2. The GRN will be logged by our staff along with the reported problem.
3. Pack the ZSC-250-IS into the original packing it was delivered in. Failure to do so means the unit may incur further damage in transit, which Meyertech cannot be responsible for.
4. Organise delivery of the ZSC-250-IS back to our Service Centre in Scunthorpe. Use a reputable carrier, as again Meyertech cannot accept liability for loss of goods in-transit.
5. On receiving the ZSC-250-IS our staff will, after initial examination advise of the course of action we intend to take.
    a. Repair the ZSC-250-IS under warranty. The ZSC-250-IS will be repaired and returned to you free of charge.
    b. Replace the ZSC-250-IS under warranty. The ZSC-250-IS will be repaired and returned to you free of charge.
    c. Repair the ZSC-250-IS at a quoted cost. An official purchase order to cover the cost and return of the product will be required prior to commencement of repair.
    d. Advise you that the ZSC-250-IS is not repairable. You can then decide to have the product returned to you at the standard delivery charge or we can dispose of the product free of charge.

Disposal

There are no additional requirements beyond safe working practice in the decommissioning of the Meyertech ZSC-250-IS.

However the ZSC-250-IS contains printed circuit boards populated with electronic components. The whole unit must be returned to Meyertech Service Centre for final disposal. Please follow the normal returns procedure.

Warranty

Please refer to Meyertech Limited 'Terms & Conditions of Sale of Goods & Services' for interpretation.

1. If the Buyer establishes to the Seller's reasonable satisfaction that there is a defect in the materials or workmanship of the Goods manufactured, then the Seller shall at its option, at its sole discretion and within a reasonable time,
    a. arrange for the repair or making good such defect or failure in such Goods free of charge to the Buyer (including all costs of transportation of any Goods or materials to and from the Buyer for that purpose),
    b. replace such Goods with Goods which are in all respects in accordance with the Contract, or subject, in every case, to the remaining provisions of this Condition 1 provided that the liability of the Seller under this Condition 1 shall in no event exceed the purchase price of such Goods and performance of anyone of the above options shall constitute an entire discharge of the Seller's liability under this warranty.

2. Condition 1 shall not apply unless the Buyer:

    a. notifies the Seller in writing of the alleged defect within 12 (twelve) months from delivery or such other period or periods as may be agreed in writing between the Seller and the Buyer, and
    b. allows the Seller a reasonable opportunity to inspect the relevant Goods.

3. For the avoidance of doubt, the Seller shall be under no liability under the warranty in Condition 1 above:
    a. where such defects arise from any drawing, design or specification supplied by the Buyer; or
    b. where such defects arise from fair wear and tear, wilful damage, or negligence of a party other than the Seller (or its employees or authorised personnel), abnormal working conditions, failure to follow the Seller's instructions (whether oral or in writing), misuse or alteration or repair of the Goods without the Seller's approval; or
    c. where such defects arise in parts, materials or equipment which have not been manufactured or designed by the Seller but have been purchased at the Buyer's request by the Seller from the Buyer's designer and manufacturer or from some other third party (the **"Third Party Supplier").**
    d. if the total price of the Goods has not been paid by the due date for payment
    e. in respect of any type of defect, damage or wear specifically excluded by the Seller by notice in writing: or
    f. if the Buyer makes any further use of the Goods after giving notice in accordance with Clause 1

4. Any repaired or replaced Goods shall be redelivered to the Buyer free of charge to the original point of delivery but otherwise in accordance with and subject to these Conditions.

5. Alternatively to Condition 1 the Seller shall be entitled at its absolute discretion on return of the defective Goods to the Seller (at the Seller's request) to refund the price of the defective Goods in the event that such price shall already have been paid by the Buyer to the Seller, or, if such price has not been paid, to relieve the Buyer of all obligation to pay the sum by the issue of a credit note in favour of the Buyer in the amount of such price.

6. In respect of all Goods supplied to the Seller by a Third Party Supplier the Seller will on request pass on to the Buyer (in so far as reasonably possible) the benefit of any warranty given to the Seller by such Third Party Supplier and will (on request) supply to the Buyer details of the terms and conditions of such warranty and copies of any relevant product information sheets, technical data sheets or product leaflets issued by such Third Party Supplier and the Buyer shall be solely responsible to the entire exclusion of the Seller for complying with the same.

7. For the purposes of Condition 1 references to Goods shall be deemed to exclude software.

8. The Buyer acknowledges that software in general is not error-free and agrees that the existence of such errors in the Software Programs shall not constitute a breach of this Contract.

9. In the event that the Buyer discovers a material error which results in the Programmed Products not performing substantially in accordance with the Functional Specification, or the Licensed Programs not performing substantially in accordance with the relevant Program Documentation and notifies the Seller of the error within 90 days from the date of the Seller making available the respective software to the Buyer (the **`warranty period"**) the Seller shall at its sole option either refund the price which the Buyer has paid to the Seller (or if such price has not been paid, relieve the Buyer of all obligations to pay the sum) in respect of the respective software or use all reasonable endeavours to correct by patch or new release (at its option) that part of the software which does not so comply provided that such non-compliance has not been caused by any modification, variation or addition to the software not performed by the Seller or caused by its incorrect use, abuse or corruption of the software by use of the software with other software or on equipment with which it is incompatible,

10. To the extent permitted by English law, the Seller disclaims all other warranties, with respect to the software which it provides pursuant to the Contract, either express or implied, including but not limited to any implied warranties of satisfactory quality or fitness for any particular purpose.

11. The Buyer is solely responsible for various scanning the software that it receives from the Seller pursuant to the Contract.

12. The Seller warrants that it will use reasonable skill and care in providing the Services to the buyer