

Z-2400-SERIES

Wireless Data Links Using ZIGBEE®
For MicroScan Protocols



Z1363



Installation Guide

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Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independent fail-safe back-up system must always be implemented.

Z-2400-SERIES

Wireless Data Link Modules for MicroScan

Description

The Z-2400 series of units support the communication of data signals via a wireless network. The Base is the master unit and coordinates all network traffic. The Remote allows a 2100-XX station or Shimaden Controller to be accessed via the network. The Sleeper provides a two universal input unit that wakes up at a selected interval, and sends its values through to the Base.



Ordering Information:

- **Z-2400-RB**
Base and Remote, as selected by DIP switch
- **Z-2400-TCP**
Ethernet Base Only
- **Z-2400-Sleeper**
2 x Universal Input Sleeper, battery or plug pack powered.

Z-2400-RB as a Base:

Connect via RS485 or RS422 on an existing data loop.
Connect via RS485 or RS422 on a new data loop.
Connect via RS232 direct to a computer.

The Base is the master for the ZigBee mesh. There can only be one Base module per ZigBee network; which can consist of up to 32 Remotes and/or 32 Sleepers.
(See page 11 for using more than one Base module)

Z-2400-TCP (Base Only)

This is a Base module only that connects to a computer via Ethernet.

System Limits

Max 32 Remotes and/or 32 Sleepers per Base.

Specifications

Voltage	9~36Vdc
Operating temp.	-40~+85°C
RF data rate	250Kb/s
RF frequency	2405~2485MHz
RF channels	16
Spreading method	Direct sequence
Modulation	O-QPSK
Nodes	64 nodes per mesh (1 Base, 32 Remotes and 32 Sleepers)
Tx range	~100m (line of sight)
Tx power	+4.5dBm in boost mode
Rx sensitivity	-100dBm in boost mode
Protocols	ASCII. Std MicroScan Stations, Shimaden Controllers 2300-XX Stations
Serial port (Z-2400-RB)	RS232, RS422, RS485 (only 1 of which can be used at a time)
Ethernet port (Z-2400-TCP)	Lantronix XPort®
Analogue Inputs (Z-2400-Sleeper)	RTD (Pt100, Pt1000), Thermocouple (B, E, J, K, N, R, S, T), mA, V, & mV.
Data rate	9600 (MicroScan), 19200, 57600 or 115200 baud
Parity bit	Even or None (MicroScan)
Connection Indication	Toggleing LEDs
Multiple Mesh use	Mesh ID 0~255
Default Mesh ID	1 (1, 2, 3, 4, 5, 6, 7, 8)

Z-2400-RB as a Remote:

Connects to RS422 stations.
Connects to RS485 stations.

Remotes cannot be mixed with 2100-XX stations and 2300-XX stations on the same Base. If this is required, one Base & Remote network must be used for 2100-XX stations; and another Base & Remote with different Mesh ID for the 2300-XX stations.

Z-2400-Sleeper

The Sleeper is a battery powered module, ideally suited for mobile monitoring applications. Can also be used with a power plug pack.



Physical Layout Z-2400-RB

Dimensions 101 x 24 x 120mm (H x W x D).
 Mounting 35mm DIN rail.
 LED indicators PWR - Power status.
 STACK - Mesh network stack activity.
 NTWRK STATUS - See *Diagnostic LEDs* Tables for more information.
 Aerial Not shown in diagram - Screw in to attach.
 (Additional High Gain Antennas Available).
 Serial ports RS232/422/485 via plug in terminal blocks.
 RESET Restarts the Base.

Terminal Connections

Power Supply 9~36Vdc

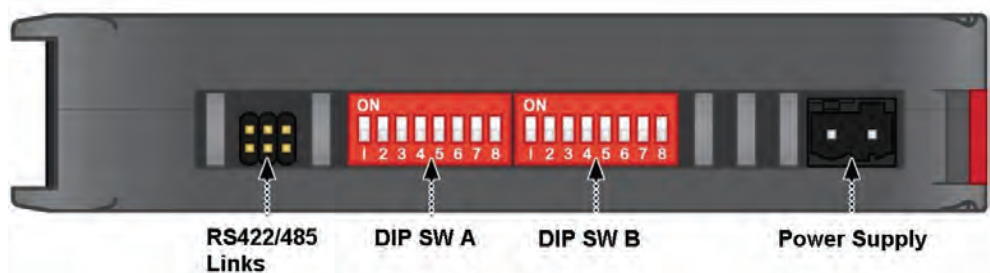
RS232 (Base only)

RD Red
 TD Black
 GND Yellow

Connect Base to computer using supplied cable.

RS422/485 (Base or Remote)

71 RX+
 70 RX-
 73 TX+
 72 TX-
 74 GND (ON RS232 Terminal block).
 These are the standard 2100-XX 422/485 comms terminal numbers.



RS422/RS485 Links

- ⇒ The links are located on the unit, alongside the DIP switches.
- ⇒ For RS485 operation, the links are placed in left hand position.
- ⇒ For RS422 operation, the links are placed in right hand position.



RS485



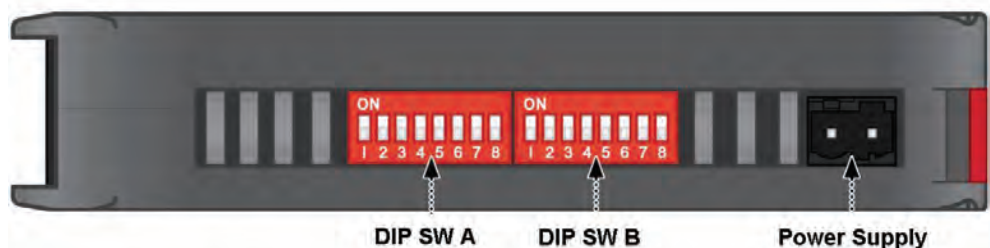
RS422



Physical Layout Z-2400-TCP

Dimensions 101 x 24 x 120mm (H x W x D).
 Mounting 35mm DIN rail.
 LED indicators PWR - Power status.
 STACK - Mesh network stack activity.
 NTWRK STATUS - See *Diagnostic LEDs* Tables for more information.
 Aerial Not shown in diagram - screw in to attach.
 (Additional High Gain Antennas Available).
 Ethernet Port Lantronix XPort®.
 RESET Restarts the Base.
 Factory set IP **192.168.1.100**, port 10001.
 Enable Packing ON, Inactivity timeout 15 seconds.

Note: Do not use two or more MicroScan systems to talk to an Ethernet Base. It is designed to be used with only ONE MicroScan.



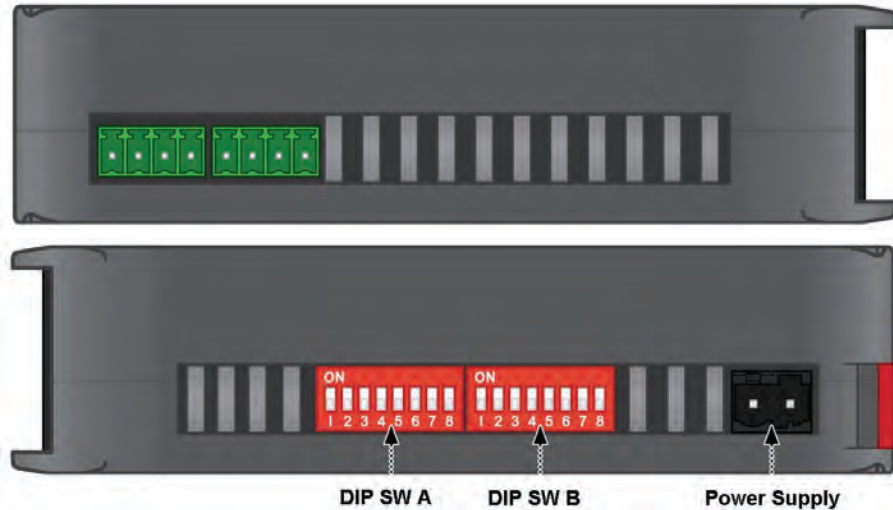
Connections

Power Supply 9~36Vdc
 Ethernet Port Connect to switch or hub via standard Ethernet cable.



Physical Layout Z-2400-Sleeper

- Dimensions 101 x 36 x 120mm (H x W x D).
- Mounting 35mm DIN rail.
- LED indicators NTWRK STATUS - See *Diagnostic LEDs* Tables for more information.
- Aerial Not shown in diagram - screw in to attach.
(Additional High Gain Antennas Available).
- Analogue Inputs (x2) - RTD(Pt100, Pt1000), Thermocouple (B,E, J, K, N, R, S, T), mA, V, & mV.
- RESET Restarts the Sleeper.
- IP PROG USB input to program Analogue inputs via XU-USB Programming Kit (Version 1.30 or greater).
- Power Supply 9~36Vdc.



Diagnostic LEDs

PWR	ON indicates power supplied connected
STACK	Flashes to indicate ZigBee communications active
NTWRK STATUS 1, 2	See below table

	Node is not running		Address is out of range
	BASE node is booting		REMOTE node is booting
	BASE node is forming network		REMOTE node is searching network
	BASE: Address table is full REMOTE: No network detected		BASE: Network is formed REMOTE: Network joined - ready to transmit

OFF ON FLASHING TOGGLING

Base Network Status	
1 = Flashing, 2= OFF	Base starting up
1, 2 Toggle	Mesh formed ready to connect
Remote Network Status	
2 = Flashing, 1=OFF	Remote starting up
1, 2 Toggle	Remote Connected to Mesh
1, 2 Flash at same time	Remote NOT connected (Base not running, or no signal getting through or wrong Mesh ID set).
Sleeper Network Status	
2 = ON, 1=OFF	Sleeper starting up
1, 2 Toggle	Sleeper Connected to Mesh (only toggles for 5 seconds when first switched on)
1, 2 Flash at same time	Sleeper NOT connected (Base not running, or no signal getting through or wrong Mesh ID set).


Base, Remote & Sleeper Dip Switch Positions - Dip Switch A

Dip Switch A Summary Address Node Table + Baud Rate

Switch	Meaning
1	Address 1
2	Address 2
3	Address 4
4	Address 8
5	Address 16
6	Address 32
7	Baud Rate
8	Baud Rate

} *Base & Remote Only*

Baud Rate Selection Table


DIP Switch A Baud Rate Base & Remote Only		A 
7	8	
OFF	OFF	9600 *
ON	OFF	57600
OFF	ON	19200
ON	ON	115200

* *MicroScan Position*

Base, Remote & Sleeper Node Address Settings & Table

Each ZigBee Base + Remote is given a Node address as set by DIP Switch A. This allows the software to identify each device. No two devices should have the same address.

Each Sleeper should also have its own address, as this is a separate node table, Sleepers can be addressed 1~32 and Remotes can also use address 1~32 on the same Base.

DIP Switch A Address						A 
1	2	3	4	5	6	Node
OFF	OFF	OFF	OFF	OFF	OFF	0
ON	OFF	OFF	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	OFF	OFF	2
ON	ON	OFF	OFF	OFF	OFF	3
OFF	OFF	ON	OFF	OFF	OFF	4
ON	OFF	ON	OFF	OFF	OFF	5
OFF	ON	ON	OFF	OFF	OFF	6
ON	ON	ON	OFF	OFF	OFF	7
OFF	OFF	OFF	ON	OFF	OFF	8
ON	OFF	OFF	ON	OFF	OFF	9
OFF	ON	OFF	ON	OFF	OFF	10
ON	ON	OFF	ON	OFF	OFF	11
OFF	OFF	ON	ON	OFF	OFF	12
ON	OFF	ON	ON	OFF	OFF	13
OFF	ON	ON	ON	OFF	OFF	14
ON	ON	ON	ON	OFF	OFF	15
OFF	OFF	OFF	OFF	ON	OFF	16
ON	OFF	OFF	OFF	ON	OFF	17
OFF	ON	OFF	OFF	ON	OFF	18
ON	ON	OFF	OFF	ON	OFF	19
OFF	OFF	ON	OFF	ON	OFF	20
ON	OFF	ON	OFF	ON	OFF	21
OFF	ON	ON	OFF	ON	OFF	22
ON	ON	ON	OFF	ON	OFF	23
OFF	OFF	OFF	ON	ON	OFF	24
ON	OFF	OFF	ON	ON	OFF	25
OFF	ON	OFF	ON	ON	OFF	26
ON	ON	OFF	ON	ON	OFF	27
OFF	OFF	ON	ON	ON	OFF	28
ON	OFF	ON	ON	ON	OFF	29
OFF	ON	ON	ON	ON	OFF	30
ON	ON	ON	ON	ON	OFF	31
OFF	OFF	OFF	OFF	OFF	ON	32

(Base only)

Note: The Remote and Sleeper will not function if the address is set to zero.




Base, Remote & Sleeper Dip Switch Positions - Dip Switch B

Dip Switch B Summary *Base/Remote Function Selection.*



Switch	Meaning	OFF	ON
1	Parity Selection	None *	Even
2	Protocol Selection	ASCII 2100/2400 Stations & Shimaden	2300 Stations (MODBUS)
3	Base/Remote Selection	Base	Remote
4	Transparent	Non Transparent	Transparent
5	Connections	Sleepers Only	All Types
6	RS485 Termination	N/C *	ON
7	RS485 Bias Gnd	N/C *	ON
8	RS485 Bias Vcc	N/C *	ON

DIP switch 4 OFF for use with MicroScan.
When using Sleepers only, set both Dip Switch 2 and 5 OFF.
Do **not** use Switch 3 (Remote ON) for Z-2400-TCP.

DIP Switch B Settings for Base Operation

Base with Sleepers only (Small System) <ul style="list-style-type: none"> All DIP switches OFF. 	B 
Base with Sleepers + Remotes connected to 2100-XX Stations and/or Shimaden Controllers. <ul style="list-style-type: none"> DIP switch 5 ON, Remainder OFF. 	B 
Base with Remotes connected to 2300-XX Stations (and Sleepers if required). <ul style="list-style-type: none"> DIP switches 2 & 5 ON, Remainder OFF. 	B 

DIP Switch B Settings for Remote Operation

Remote with 2100-XX stations, Shimaden Controllers. <ul style="list-style-type: none"> DIP Switch 3 ON, Remainder OFF 	B 
Remote with 2300-XX stations. <ul style="list-style-type: none"> DIP Switches 2 & 3 ON, Remainder OFF. 	B 

DIP Switch B Settings for Sleeper

Switch	Meaning
1	Sleep Time 1 Minute
2	Sleep Time 2 Minutes
3	Sleep Time 5 Minutes
4	Sleep Time 15 Minutes
5	Sleep Time 30 Minutes
6	Sleep Time 60 Minutes
7	Blank
8	Battery Power (Turns Sleeper ON)

Example: Setting the Z-2400-RB for Base Operation

Choose Node Address, eg. 1, for the Base (normally 1 or 0)	DIP switch A, 1 set to ON.
Set Baud rate at 9600	DIP switch A, 7 & 8 are both set to OFF
Set Parity to None	DIP switch B, 1 set to OFF
Set Protocol to ASCII	DIP switch B, 2 set to OFF
Set unit to Base Operation	DIP switch B, 3 set to OFF
Set Transparency to Non Transparent	DIP switch B, 4 set to OFF
Set Base Operation Type, eg All Types	DIP switch B, 5 set to ON
Set RS485 Termination, RS485 Bias Gnd & RS485 Bias Vcc	DIP switch A, 6, 7 & 8 are all set to OFF

Z-2400-RB Base Data Connections

Connecting Base on an existing RS485 data loop

2100-IS RS485 Data Loop	Base	Signal Name
70	70	RX-
71	71	RX+
74	74	GND

Connecting Base on an existing RS422 data loop

2100-IS RS422 Data Loop	Base	Signal Name
70	70	RX-
71	71	RX+
72	72	TX-
73	73	TX+
74	74	GND

Connecting Base to computer via RS232

Computer		
DB9 Serial	RS232 Cable	Base RS232 Port

Z-2400-TCP Base Data Connections

Connect the Ethernet cable to the ETHNET port on the front of the unit, and connect to the switch or hub. The IP address is factory set at 192.168.1.100. Use the Device Installer or Web Interface to change the IP Address of the unit.

Z-2400-RB Remote Data Connections

Setting the Z-2400-RB Remote Operation (Z-2400-RB ONLY)

Choose a node address for the Remote (normally 2 or above).

All Remotes, Set DIP switch B, 3 ON.

Stations connected are 2100-XX or 2400-XX, Dip Switch B 2 OFF.

Connecting Remote to RS422 stations (Note TX to RX pin swapping)

RS422 Station	Remote	Signal Name
72 (TX-)	70	RX-
73 (TX+)	71	RX+
70 (RX-)	72	TX-
71 (RX+)	73	TX+
74	74	GND

Connecting Remote to RS485 stations

RS485 Station	Remote	Signal Name
70	70	RX-
71	71	RX+
74	74	GND

Connecting Remote to RS485 Shimaden Controllers

Shimaden Controller	Remote	Signal Name
-	70	RX-
+	71	RX+
SG	74	GND

Connecting Remote 2300-XX stations

2300-XX Station	Remote	Signal Name
70	70	RX-
71	71	RX+
74	74	GND

NOTE: You cannot mix Remotes using 2300-XX stations and Remotes using 2100-XX or 2400-XX stations on the same Base.

Z-2400-Sleeper Analogue Input Connections

Choose a node address for the Sleeper - 1~32 (can be same node number as base or remote).

Choose a sleep time for the Sleeper (1, 2, 5, 15, 30 or 60 minutes).

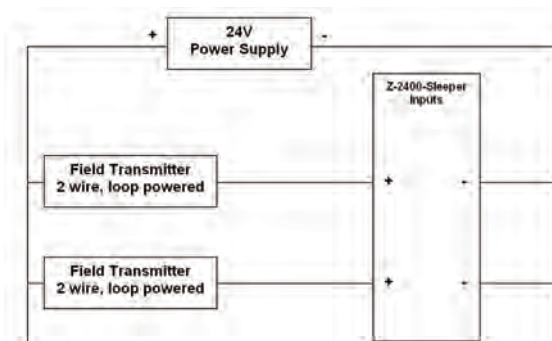
Connect the Sleeper to a PC using the XU-USB Programming Kit. Use the XU Setup software to select each Sleeper input channel separately and program the inputs required (DIP switch B, 8 must be set to ON while connected).

Connect analogue input wires into the input terminals of Sleeper (refer to following diagrams).

Set DIP switch B, 8 to ON to power up Sleeper unit. Check the Sleeper has made a connection (LEDs 1 & 2 should toggle for 5 seconds once a stable connection is made).

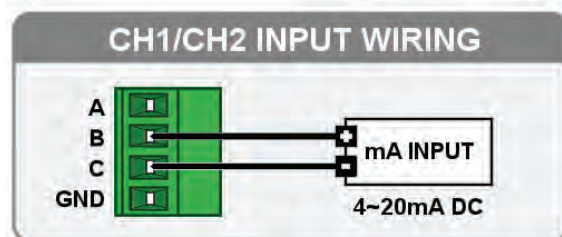
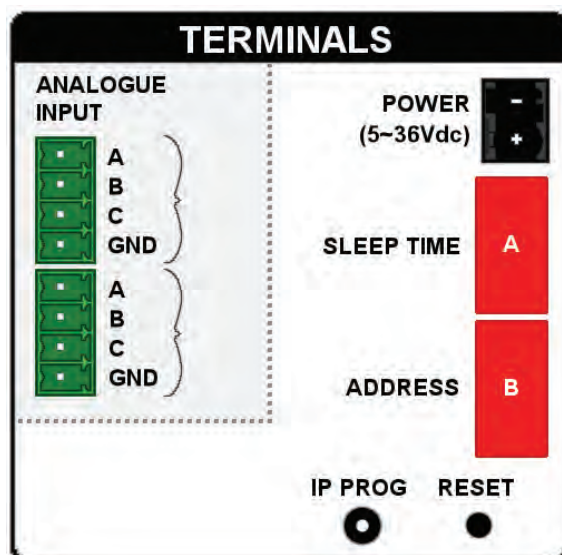
Note:

1. The two analogue inputs are not isolated from each other, and care must be taken when connecting signals that are not isolated from each other or ground.
2. Both analogue signals can share a common as per this example 4~20mA hookup:
3. If permanently powering the Z-2400-Sleeper, use only an isolated power supply eg isolated from ground and other devices. Do not use this power supply to power external devices. If only a common power supply is available, use the PSW-2 isolating power supply to power the Sleeper only to maintain isolation.



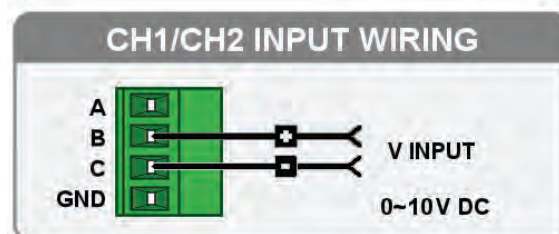
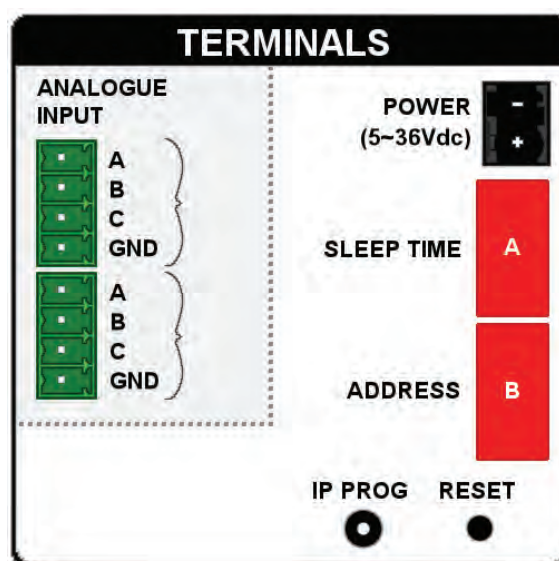
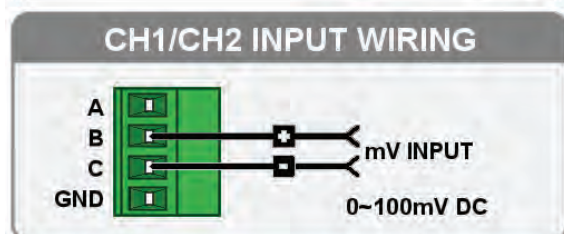
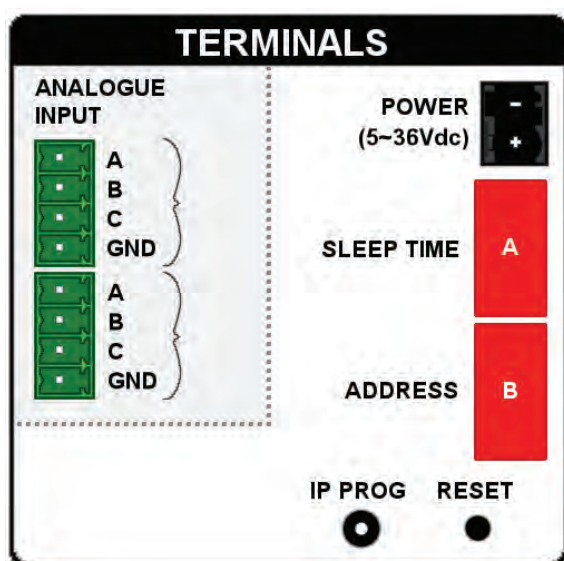
Connecting Current Signals to a Sleeper

Input	Sleeper	Current Input Specifications: <ul style="list-style-type: none"> • USB Programmable Zero 0~±99% of the Span • USB Programmable Span 1µAdc~24mAdc • Standard range = 4~20mA • Minimum Recommended Span 0~1mA (gives 1000 steps on output) • Input Resistance 10Ω • Maximum Over-range 50mAdc Continuous • Linearity and Repeatability <±0.02% FSO Typical
	A	
+	B	
-	C	
	GND	



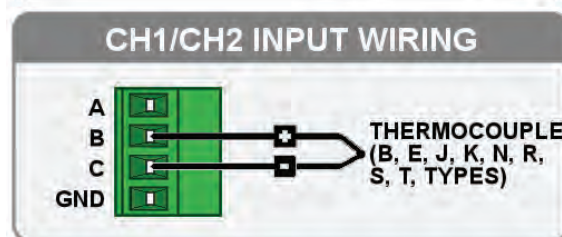
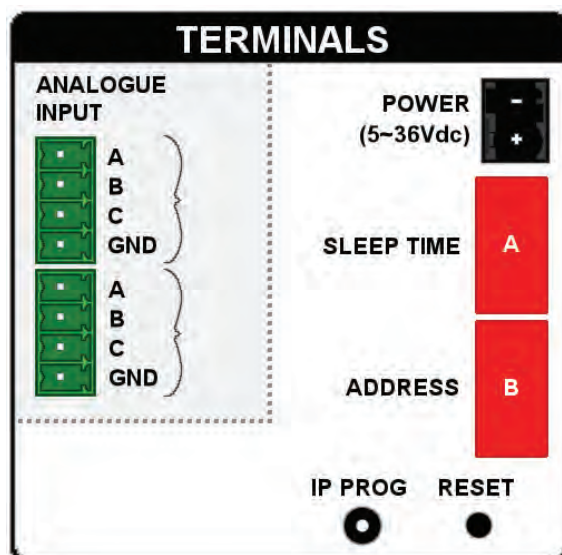
Connecting Voltage Signals to a Sleeper

Input	Sleeper	Voltage Input Specifications: <ul style="list-style-type: none"> • USB Programmable Zero 0~±99% of the Span • USB Programmable Span ±100mVdc to ±10Vdc and Bipolar • Minimum Input Resistance 300kΩ • mV Maximum Over-range 3Vdc Continuous • V Maximum Over-range 60Vdc Continuous • Linearity and Repeatability <±0.02% FSO Typical • WARNING: Do NOT apply a V input greater than 3V to mV terminals!
	A	
+	B	
-	C	
	GND	



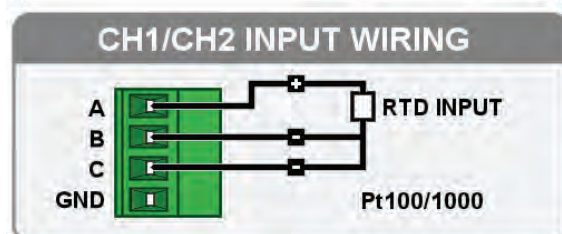
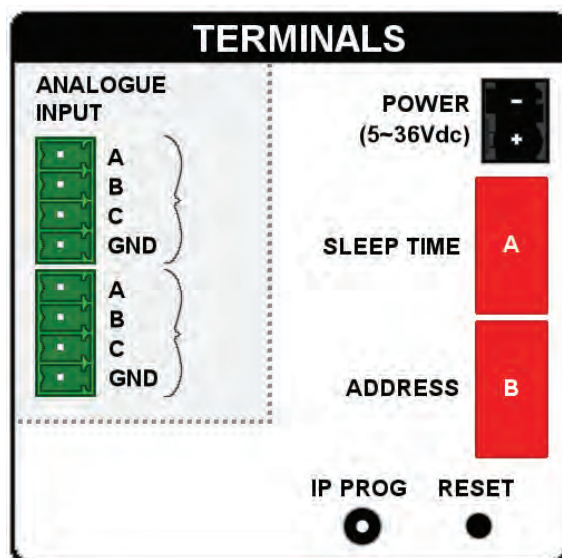
Connecting Thermocouples to a Sleeper

Input	Sleeper	Thermocouple (T/C) Input Specifications: <ul style="list-style-type: none"> • Thermocouple Types B, E, J, K, N, R, S, T • USB Programmable Zero 0~±99% of the Span • USB Programmable Span Within Thermocouple Type limits • Input Impedance 1MΩ Minimum • T/C Lead Resistance 100Ω Maximum • Cold Junction Comp. -20~90°C • Accuracy E, J, K, N, T <±1°C • B, R, S <±2°C • Temperature Drift E, J, K, N, T <±0.05°C • B, R, S <±0.2°C • CJC Error <±1°C • Sensor Break Output Drive Funct High Upscale • Funct Low Downscale
	A	
+	B	
-	C	
	GND	



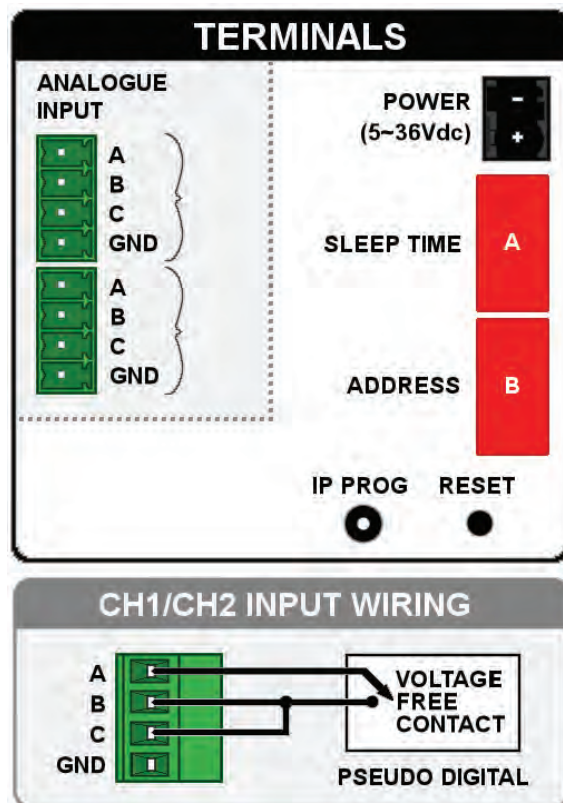
Connecting RTDs to a Sleeper

Input	Sleeper	RTD Specifications: <ul style="list-style-type: none"> • RTD Input Pt100 or Pt1000 DIN 3-wire Type. (2-wire can be used with offset calibration) • Sensor Current 0.15mA Nominal • Lead Wire Resistance Pt100: 10Ω/wire Maximum • Pt1000: 5Ω/wire Maximum • 0.02% FSO Offset Error per Ω of Lead Resistance • USB Programmable Zero 0~±99% of the Span • USB Programmable Span -200~850°C • Sensor Break Output Drive Funct High Upscale • Funct Low Downscale • Linearity (Pt100) 0.02% FSO for Span Inputs ≤200°C. 0.1% FSO for Span Inputs ≤850°C • Linearity (Pt1000) 0.02% FSO for Span Inputs ≤200°C. 0.2% FSO for Span Inputs ≤520°C • Other Available RTD Types JIS and CN10
+	A	
-	B	
-	C	
	GND	



Connecting Pseudo Digital to a Sleeper

Input	Sleeper	Pseudo Digital Specifications: <ul style="list-style-type: none"> Used to detect an on-off state input via an analogue input.
+	A	
-	B	
-	C	
	GND	



Changing the Z-2400-Sleeper Battery

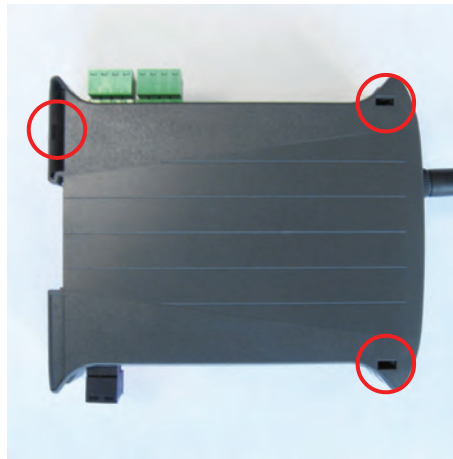
- Power off the Sleeper by putting the 8th bit of the second 8-bit Dip Switch B to the "OFF" position.



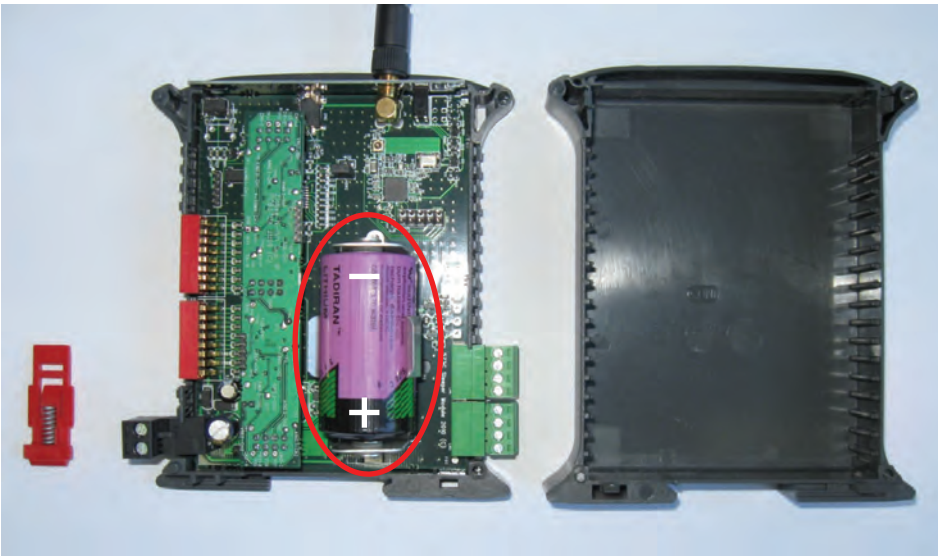
- Remove the DIN rail clip from the rear of the Sleeper by levering the lower end with a screwdriver, while simultaneously sliding the clip towards the centre with your other hand; removal of the red clip does not need a lot of force, the key is to lever the screw driver in carefully. Keep the DIN rail clip in a safe place, and do not lose the spring.



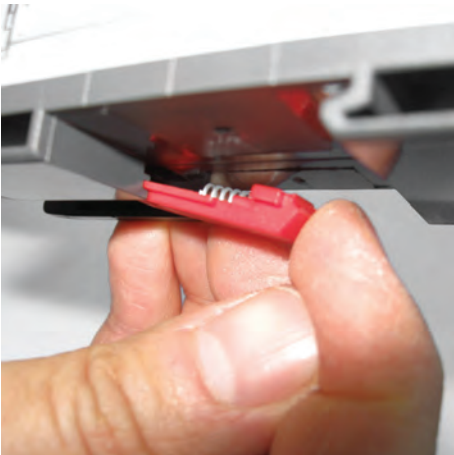
3. Use a small screwdriver to lever up the back and side clips as shown in the images below. Once all four clips have been released, gently ease the two covers apart.



4. Remove the old battery and replace it with a new one, as shown.



5. Carefully align the top and bottom covers, and close the case. The cover will 'snap' on when you apply pressure – no screwdriver leverage is necessary at this stage.
6. Put the DIN rail clip back into place. It helps to do this from below, as pictured, so that the spring does not fall out while the clip is being positioned.



7. Power the Sleeper on again by putting the 8th bit of the second 8-bit Dip Switch B back to the "ON" position.



Using Z-2400 Modules Within MicroScan

Adding a Base to MicroScan

Apply power to the Base and connect to the computer using the RS232 cable or 422/485 data loops (Z-2400-RB), or via Ethernet (Z-2400-TCP). On Setup Tools, click Add New Station. Click Next, select Add a ZigBee Z-2400-XXX Base, click Next. Choose settings that apply to the Base – serial port and node address, or IP address as required. Click Next, Click Next, Click Finish.

Z-2400-TCP Installation - XPort Installer is the software used to setup the XPORT, which is the Ethernet converter on the Z-2400-TCP. This software does not need to be installed on the end users PC; if the Z-2400-TCP is setup before hand. If the Z-2400-TCP is setup on site, the XPORT installer will need to be used onsite.

The XPort Installer software requires the Pre-Installation of Microsoft's .NET 1.1 system.

1. Install Microsoft.NET 1.1 (Microsoft .NET 1.1 can be downloaded free from Microsoft)
2. Install the XPORT Installer.

Note 1: This software is to be installed and/or setup by the Installer with Network IT support staff. **(Please note that Intech will not be able to help with the setup and operation of a TCP/IP network and assigning of IP addresses.)** As part of commissioning, IT support staff should assign a static address to each Z-2400-TCP module. The Z-2400-TCP should be listed as part of the Ethernet system for support by the IT support staff. It is considered good practice to write the assigned IP address/port numbers onto a label and attach to the unit for easy future reference.

Note 2: Installed antivirus software may interfere with the sockets operations. You may need to open the IP address and port numbers for the commands to go through. We have found problems with Nortons system Works 2003, and found it necessary to disable email scanning of messages, as this was blocking the sockets requests. These problems may or may not exist on other antivirus programs.

Note 3. The Z-2400-TCP will support one MicroScan Active only. It is not possible to have multiple Active MicroScan systems permanently communicating to the Z-2400-TCP.

Adding a Station to a Remote.

Setup the ZigBee Base and Remotes as per previous instructions. Make sure Base, Remote and all attached stations are powered up.

Add Base First. Add the attached station using Add New Station, add the station normally, but in Select Serial Port step, choose "Station attached to ZigBee 2400-Remote", the Base will then be queried for a list of attached Remotes, select the correct one and the wizard will attempt to read the station info via the Remote.

To show Base information, click on Program Station Setups, select the Base and click Program Station. Relevant information will be displayed indicating Base connections and Sleeper information. Once a station has been added, it appears on the Station map in Configure Pages and Lines as a normal station – No further settings to lines or tags are required.

Adding Sleepers.

Add Base First. On the Base Station Map, you will see Sleeper 1~32 inputs 1 & 2, drag those over to your lines. Inputs using RTD/TC are auto scaled. Inputs using DC signals are scaled 0~100 %, and therefore will need to be scaled using Input Scaling settings, similar to 2100-A16 inputs. Pseudo Digital input is auto scaled and will read in a PD Input scaled for ON when open circuit, OFF when short circuit (switch on A+B, B-B shorted).

Programing Sleeper Input ranges

Using XU Setup Version 1.30 (or greater), connect the XU-USB to the front IP PROG connection of the Sleeper (ensure Sleeper is powered up), start the XU Setup software and click Connect. The software will read the settings of CH1 display them and show test values. Make changes and click Program to write to the Sleeper, press CH1/CH2 to select the channel to view – Program applied ONLY to the displayed channel.

Note: when connected to XU-USB, the LED 2 flashes once every 3 seconds, and ZigBee communications to the Base **DOES NOT** take place.

To Remove the XU-USB Click Disconnect and remove USB Cable from the Sleeper. The Sleeper will automatically reboot and join the mesh network.

Accessing Speeds

Sleeper Inputs

The Sleeper supplies its values to the Base via timed messages according to the Sleeper update period. No time penalty is involved in reading Sleeper values as MicroScan simply reads the last value read from the Base. If the Sleeper does not update values to the Base, it has a small window displaying when it last supplied the value reading. Once the time between update readings has expired, the Sleeper values will show Error 1.

Stations connected to Remotes

Under ideal conditions, the round trip for a message from Base to Remote to station to Remote back to Base is approx. 400 mSec. Thus we allow for 2 comms messages per second. So to read all 16 channels from an A16 would take 2 seconds. For this reason it is not recommended to use stations on a Remote when guaranteed response from other wired or Ethernet stations is required – the timeout delay while waiting for the Remote will begin to affect the other stations update rates.

The MicroScan driver allows a 2 Minute timeout on non responding stations (due to the long time that the mesh can take to respond). It will keep the last value read (Marked as Suspended). After several retries (adjustable), the station will return Error 1 and be marked as Not Found.

ZigBee Mesh ID

The Mesh ID allows multiple Bases and thus networks to be used when the mesh signals will overlap. You program the Mesh ID of the Base & Remote via MicroScan, and also the Sleepers mesh ID is programmed via the XU Setup software.

The mesh ID is not be confused with the node addresses as set by the DIP switches on the Base/Remotes and Sleepers.

Considerations & Limitations for Z-2400 Network Systems

The ZigBee system does not offer 100% connectivity as losses due to radio signals being used do occur. Due to the mesh network nature connection, the Remotes can connect to the Base via different network paths, i.e. if more than one Remote is used, instead of Remotes connecting directly to the Base, they may connect to other Remotes which then connect to the Base. Thus the network formation is not predictable. If one of the Remotes that happens to be forwarding messages for another Remotes powers down, it may take a minute or two for the remaining Remotes to regain access to the Base.

Stations Not Supported in Z-2400 Network Systems

IN2000-XX stations
RS422 Shimaden Controllers (FP21, SD20, SR25, SR70, SR50)

Troubleshooting for Base & Remotes

1. Check the Base is powered up and PWR LED is lit.
2. Check the Base network status LEDs are toggling 1, 2 then 2, 1.
3. Check the Remote is powered up and PWR led is lit.
4. Check the Remote network status LEDs are toggling 1, 2 then 2, 1. If these LEDs flash 1&2 at the same time it means the Remote cannot connect to the mesh either because: a) The Base module is not powered up. b) The ZigBee signal strength is too weak to connect. c) A wrong mesh ID has been programmed into the units.
5. Use the Program Station Setup dialog within MicroScan to show Base stats. This will show how many Remotes and Sleepers have connected to the Base; and what their node addresses are.
6. Check the Base and Remote have been set to different node addresses (DIP Switch A).
7. After a power cycle of the Base or Remote, the Remote may take up to 1 minute to re establish a mesh connection.

If the Base & Remote powers up at the same time, it may take up to 1 min for the Remote to connect due to the different startup times of the units.

Troubleshooting for Sleeper

If the LEDs toggle on sleeper start-up, the Sleeper has found the base (LEDs flash alternately).

If the base does not show that the Sleeper has been connected, check the sleeper node address is unique and that there is not another sleeper with the same DIP Switch A settings.

If the Sleeper does not toggle on start-up (LEDS flash at the same time);

1. The Sleeper cannot connect due to low signal
2. The incorrect mesh ID has been set on the Sleeper

Press the Reset button on the front of the Sleeper with a screwdriver to make the sleeper start its start-up sequence again.

Antenna Options for Z-2400 Wireless Series

MODEL	DESCRIPTION
ZB-PG24-15	2.4GHz 15dBi Parabolic Grid directional antenna. (mounting brackets & 3m of low loss coax cable included) Designed for outdoor use.
ZB-OD24-8	2.4GHz 8dBi Omni Directional antenna. (mounting brackets & 3m of low loss coax cable included) Can be used either outdoor or indoor.
ZB-OD24-5	2.4GHz 5.5dBi Rubber Duck antenna Designed for indoor use.

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