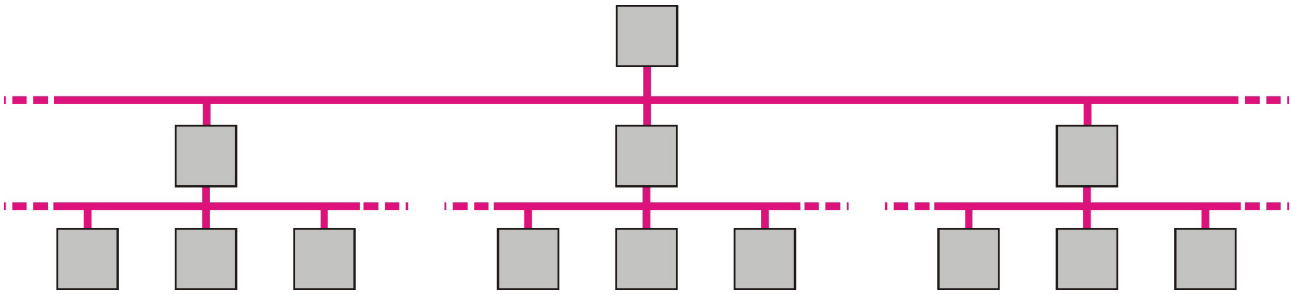
Introduction

The Multilayer Model

North Building Technologies Ltd. bases all of it products on a multilayer model, which allows the products to be connected together in a logical way. The model divides different areas of function within a building, and links them with a network. Each functional area is again divided into areas, which are again linked with a network. This dividing and linking provides a scalable model, which can extend upwards to include international networks such as the Internet, and downwards to small networks for linking sensors together.



The lowest network layer in the multilayer model is used to connect local controllers via a network to a resource controller. The local controllers connect to sensors and actuators in the field, and perform a local control task, such as local temperature control, or local alarm monitoring.

ZIP

A ZIP system consists of a network called ZIPNet, and a range of local controllers, called ZIP Modules. Sitting above the ZIPNet is the ZipMaster, a controller that communicates with the ZIP Modules and performs higher-level tasks, such as passing information from one module to another.
ZIP is a data acquisition system. The individual ZIP Modules connect to sensors and actuators, and provide local control. The ZipMaster adds extra functionality, such as alarm generation or the transfer of values to other systems.
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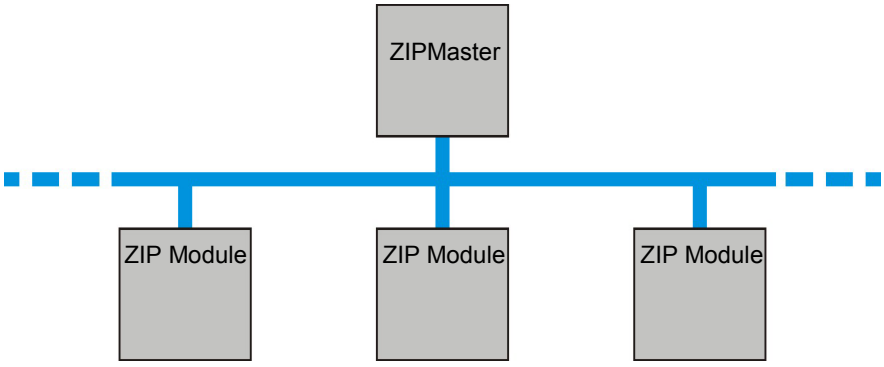
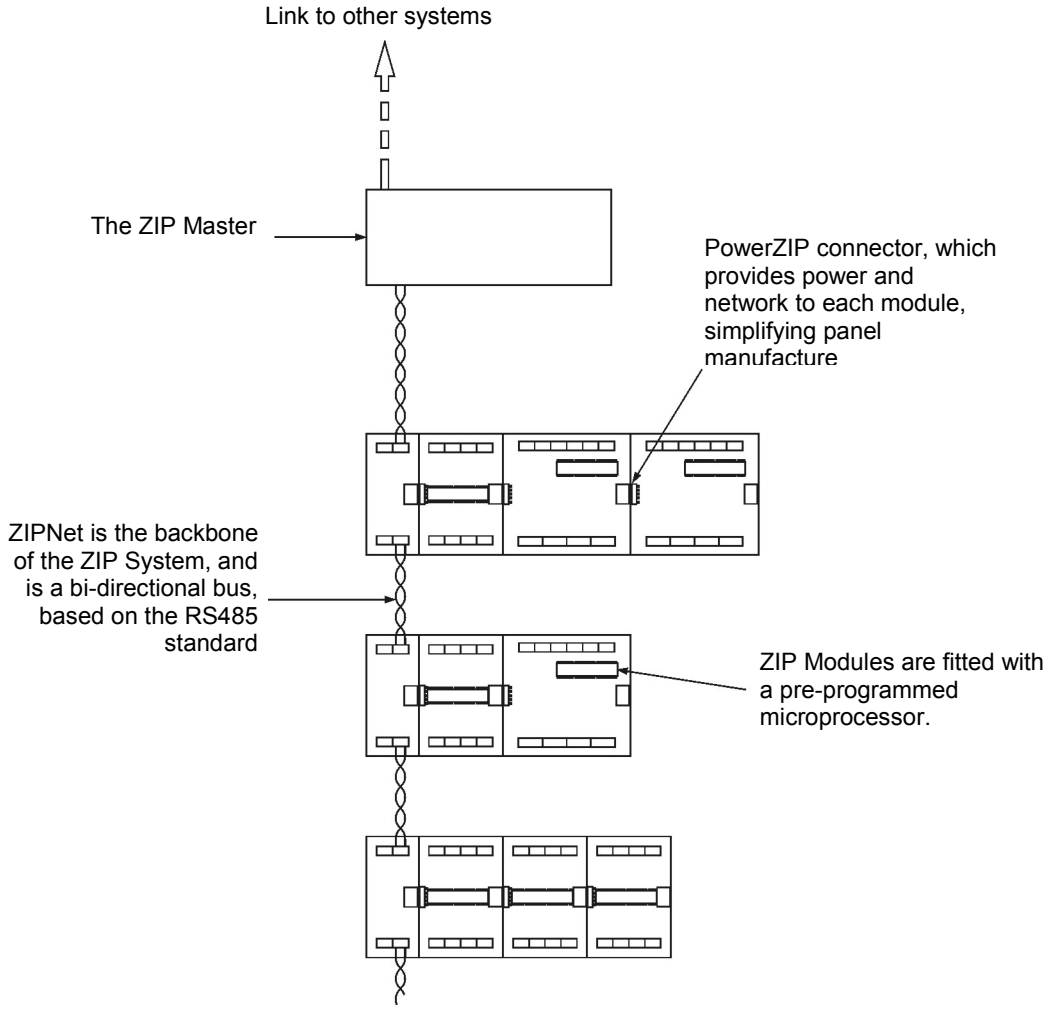


ZIP Terms

Each ZIPNet requires a ZIPMaster, which talks to each of the modules in turn, and passes information upwards from the modules to the building control network, and downwards from the building control network to the modules. It can also pass information from one module to another. One ZIPMaster can control up to 16 ZIP Modules beneath it.
The ZIPNet links the master to each of the modules. The ZIPNet is a bi-directional bus, based on the RS485 communications standard. This allows a total bus length of 1000m. Operating at 19200 baud, up to 400 messages can be transmitted over the ZIPNet every second.
Each ZIP Module has a pre-programmed microprocessor that performs a local control task, including signal conditioning, counting, and data-conversion. Different types of module are available to perform different tasks. Each module establishes a link with the master, over which they pass change-of-state information.
Some types of ZIP Module have a ZIPNet connector onboard, which allows them to be connected directly to ZIPNet. These modules are generally distributed around an area within a building, and utilise the 1000m capabilities of the ZIPNet.
Other types of ZIP Module are designed for inclusion within control-panels, and have a PowerZIP connector. A ZIP NetCard is used to connect the PowerZIP modules to the ZIPNet. Each NetCard can connect up to 4 PowerZIP Modules to the ZIPNet.

Diagram of a ZIP system



Example ZIP Components

NetCard

The ZIP NetCard is used to connect PowerZIP-compatible modules to the ZIPNet. Each ZIP NetCard can provide power and network connections for up to 4 ZIP Modules.
See *'ZIP NetCard Engineering Guide'* for more details

M7001A Module

The M7001A Module has 8 switch-compatible digital-inputs. It connects to the ZIPNet via a ZIP NetCard. Each digital input is available as an individual state, and is capable of 30Hz signal counting.
See *'ZIP Module M7001A Engineering Guide'* for more details

M7002A Module

The M7002A Module has 6 switch-compatible digital inputs and 4 relay digital outputs. It connects to the ZIPNet via a ZIP NetCard. Each digital input is available as an individual state, and is capable of 30Hz signal counting. Each digital output controls a relay that can switch up to 10A at 240VAC, or 10A at up to 28VDC.
See *'ZIP Module M7002A Engineering Guide'* for more details

M7003A Module

The M7003A Module has 4 switch-compatible digital inputs and 4 analogue inputs. It connects to the ZIPNet via a ZIP NetCard. Each digital input is available as an individual state, and is capable of 30Hz signal counting. Each Analogue input can be configured to read between 0-20mA, 0-5VDC or 0-10VDC. The module processes the data from each analogue input through a 12-Bit analogue to digital converter.
See *'ZIP Module M7003A Engineering Guide'* for more details

M7011B Module

The M7011B Module has 3 switch-compatible digital inputs and 2 "10K3A" compatible thermistor inputs. Coupled with the 3 relay outputs, the module has been purposely designed as a domestic boiler controller. It connects to the ZIPNet via a ZIP NetCard. Each digital output controls a relay that can switch up to 10A at 240VAC, or 10A at up to 28VDC. The module processes the data from each analogue input through a 12-Bit analogue to digital converter.
See *'ZIP Module M7011B Engineering Guide'* for more details

M7012A Module

The M7012A Module has 3 switch-compatible digital inputs and 2 Analogue inputs. Each digital input is available as an individual state, and is capable of 30Hz signal counting. Each Analogue input can be configured to read between 0-20mA, 0-5VDC, 0-10VDC or 10K3A Thermistor. It also has 2 relay outputs and 2 Analogue Outputs. Each digital output controls a relay that can switch up to 10A at 240VAC, or 10A at up to 28VDC. Each analogue output gives out a voltage between 0 – 10 VDC.

It connects to the ZIPNet via a ZIP NetCard. The module processes the data from each analogue input through a 12-Bit analogue to digital converter.
See *'ZIP Module M7012A Engineering Guide'* for more details