Description

The ZoneLink³.S® MDT Controller offers flexibility and connectivity combined with built-in ZPA functionality. Conventional conveyor types such as Belt-Driven Live Roller (BDLR), Lineshaft, VFD-driven and most AC Motor Pneumatic conveyors can now be controlled with the same ZPA logic and control as Holjeron's Microroller® controls. Key features include:

- 8 built-in MDT Modes
- 4 Release Modes
- 4 Lift Modes
- RJ-11 quick connect sensor inputs with Autosensing Sink/Source
- Auxiliary Inputs and Outputs included
- Snap-in mounting plate for easy installation
- Fully compatible with all ZoneLink® Microroller® systems
- **NO PLC REQUIRED**

Additional models in the ZoneLink³ family of 4 Zone controllers include standard ZPA modules and DeviceNet modules with an integral RS-232 Serial Port.

AVAILABLE EXCLUSIVELY THROUGH...

The MAC Distributor Network
www.mdnworldwide.com

Specifications

Part Numbers	ZL3.S-MDT423	Merge, Divert, Transfer Module
Electrical Power	Termination	Plug-In Spring Clamp Terminal
	Number	2 -2 pin (pass-through 10 Amps Max)
	Voltage Range	24 VDC (+/- 10%)
	Current Consumption	120mA plus Outputs and Sensors
Outputs	Type	NPN
	Number	4 Pairs
	Termination	On the 6-pin Molex Connector
	Maximum Current 'RUN'	500mA – see Note 1
	Maximum Current 'DIR'	250mA
ZoneLink Ports	Type	ZoneLink3.S
	Number	Three (3)
	Termination	RJ-45
	Voltage Range	24 VDC onboard
Sensor Inputs	Type	NPN/PNP Autosensing
	Number	Four (4)
	Termination	RJ-11
	Voltage Range	10-30VDC
	Maximum Sensor Current	50mA
	Sourcing Sensor Current	11 mA Max (Input pulled to 24V)
	Sinking Sensor Current	4.3mA Max (Input pulled to 0V)
Auxiliary Inputs	Type	NPN
	Number	3
	Termination	Plug-in Terminal
	Voltage Range	10 to 28 VDC
	Maximum Current	5 mA
Auxiliary Outputs	Type	NPN
	Number	2
	Termination	Plug-in Terminal
	Voltage Range	10-28 VDC
	Maximum Current	25 mA
Environmental	Temperature Storage	-30° to 70° C (-22° to 158° F)
	Operating	0° to 60° C (32° to 140° F)
	Humidity	5-95% RH, non-condensing
	Vibration	2G at 10 to 500 Hz
	Shock	10G
Physical	Dimensions	8.2" W x 2.5" H x 1.4" D approx.
	Weight	8 oz
	Indication Power LEDs	Green
	Output LEDs	4 Green
	Sensor LEDs	4 Amber

Note 1: The combined current on the Outputs between 24 VDC and Common may not exceed 1 Amp.

Holjeron
smart. moves.

Dimensions and Layout
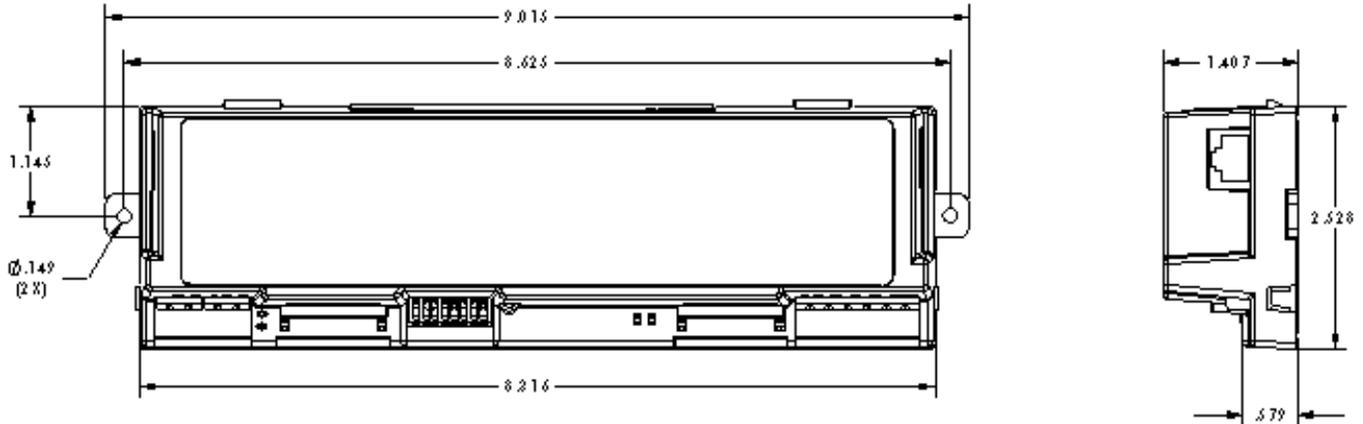
Configuration

There are individual wiring and setup diagrams for each operating mode at the end of this document.

DIP Switch Settings

Switch	Function	OFF	ON
1			
2	Operating Mode	See Operating Mode Table	
3			
4	Release Mode	See Release Mode Table	
5			
6	Lift Mode	See Lift Mode Table	
7			
8	Sensor Type	Normally Open	Normally Closed

The ON position is away from the module edge

Operating Mode Table

Operating Mode	SW 1	SW 2	SW 3
Simple Merge	OFF	OFF	OFF
Right-Angle Transfer (lift on infeed)	ON	OFF	OFF
Right-Angle Merge	OFF	ON	OFF
Bilateral Transfer In	ON	ON	OFF
Simple Divert	OFF	OFF	ON
Right-Angle Transfer (lift on outfeed)	ON	OFF	ON
Right-Angle Divert	OFF	ON	ON
Bilateral Transfer Out	ON	ON	ON

Release Mode Table

Release Mode	SW 4	SW 5
Priority to Primary Infeed or Outlet	OFF	OFF
Priority to Secondary Infeed or Outlet	ON	OFF
Priority Alternates between Primary and Secondary In and Out	OFF	ON
Aux Input 3 Selects Inlet/Outlet	ON	ON

Lift Mode Table

Release Mode	SW 6	SW 7
Single acting w/ limit switch or sensor	OFF	OFF
Single acting w/ timer	ON	OFF
Double acting w/ limit switch or sensor	OFF	ON
Double acting w/ timer	ON	ON

⚠️ **GENERIC OUTPUTS USED WITH VARIABLE FREQUENCY DRIVES (VFD).**

The Holjeron 4 Zone Controllers use current sinking (NPN) outputs on the Generic Output connector. On loss of 24VDC power to the 4 Zone Controller, some VFDs may interpret the signal from the Generic Outputs as a 'RUN' command. Un-expected operation may result. Care should be taken to insure that system power and control wiring protects against any unintended or unexpected operation.

⚠️ **EMERGENCY STOPS AND SAFETY RELAYS**

It is generally considered good safety practice to have E-stop and/or safety relays/controllers installed in any conveyor system, especially one with multiple control system voltages. Many state and local regulations/codes require them. Please consult qualified personnel who plan and design safety equipment for machines and systems and are familiar with the regulations governing safety in the workplace and accident prevention.

## ZoneLink³.S®

The ZoneLink³.S® connections are RJ-45 jacks with pin assignments as defined in the diagram below. ZoneLink3.S® is designed to use standard Ethernet patch cables (Category 5, 5e or 6).

All ZoneLink³.S ports are bidirectional to upstream (merge) and downstream (divert) applications. The Port connections are defined by the Operating Mode and is detailed in the descriptions for each mode.

The default sensor and output connections are numbered 1 through 4 starting at the left side of the module.

ZoneLink³.S® Block Diagram

RJ-45 ZoneLink³.S® Port Connector
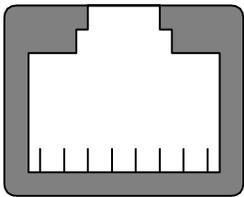
8 7 6 5 4 3 2 1

RJ-45 ZoneLink³.S® Port Pin Assignments

Pin	Function	Upstream	Downstream
1	SENDING	Input	Output
2	READY	Output	Input
3	DIRECTION	Input	Output
4	RUN	Input	Output
5	FAULT	Output	Input
6	BYPASS	Input	Output
7	.S	Bi-directional	
8	COMMON	Pass-Through	
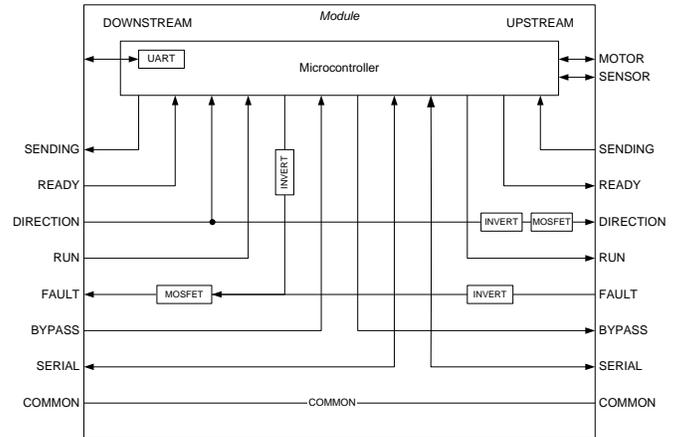
Connector Wiring Diagrams

RJ-11 Sensor Jack Connectors - 4 each

123456
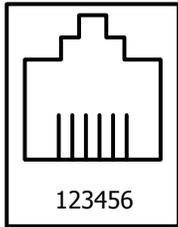
Pin	Signal
1	N/C
2	Ground
3	N/C
4	Sensor Input
5	24 VDC
6	N/C

Power Connectors (Pass Through) – 2 each

1 2   1 2

Pin	Signal
1	24 VDC
2	Common

2 – 2 position 5.08mm Pluggable Terminal Block

Auxiliary I/O Connector

6 5 4 3 2 1

Pin	Signal
6	Output 2
5	Output 1
4	Input 3
3	Input 2
2	Input 1
1	Common

6 position 5.08mm Pluggable Terminal Block

Lever Actuated Terminal Block – 2-pin Power and 6-pin Auxiliary I/O 5.08mm Pluggable Terminal Blocks

Operating the lever-actuated terminal blocks is very easy. Simply insert up to 14 gauge wire and lower the lever until it snaps. To release the wire, raise the lever.
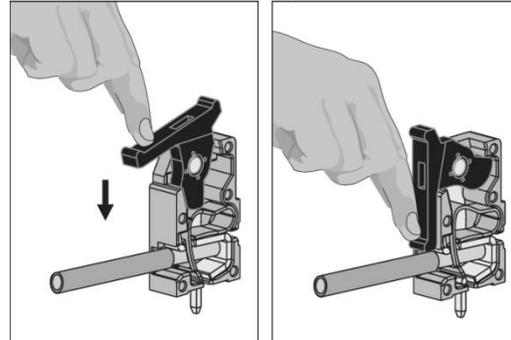
Generic Output Connector – 4 Sets
6-pin Molex
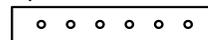
6 5 4 3 2 1

Pin	Signal	ZL3 Cable Wire Color
6	Common	Blue
5	Sensor*	Black
4	Fault Input	White
3	Direction	Green
2	Run (On)	Red
1	24 VDC+	Brown

*Sensor signal pass-through from Driver Card. This sensor in-put is logically OR'd with the corresponding RJ-11 sensor input.

Note: For remote valves, a 2-pin Molex connector will plug into the pins 1 and 2 of the 6-pin connector for 24VDC and ON signal. 6-pin cables are available in 1, 3, 5 and 7 meter lengths.
6 position plug-in connector is Molex Part #51004-0600
2 position plug-in connector is Molex Part #51004-0200

Generic Output Cable Part Numbers:
ZL3-CBL001 – I meter
ZL3-CBL003 – 3 meter
ZL3-CBL005 – 5 meter
ZL3-CBL007 – 7 meter

Timers

ZoneLink® ZPA modules are equipped with a set of timers that can be used to tailor functionality in certain applications. Listed below are the timers functional descriptions, default values, ranges, and .S attribute numbers:

Timer	Description	Timer Default	Timer Range	.S Attribute#
Release Delay Timer	When a product is accumulated, the release timer delays how long a product is held before it is released downstream. This is used to ensure gaps in the product.	25	0-255	36
Gap Timer	When running, attempts to maintain a gap between units.	3	1-255	34
Transfer Timer	Once a product is released and cleared the upstream sensor, the transfer timer is used to ensure a product reaches the downstream sensor. If the Transfer Timer expires, the accumulation logic is reset.	40	1-255	33
Sleep Timer	Once a product clears the downstream sensor, and there are no other packages being released into the zone, the zone will run for the length of the sleep timer before turning off.	20	0-255	35
Jam Timer	If a zone is running to transfer product, and the downstream sensor remains blocked for the length of the Jam Timer, then the module will stop the zone and indicate a fault. The zone can not run again until the sensor that is jammed has been cleared.	80	1-255	32
Inlet Position Timer	Used in applications where the MDT zone sensor is not placed at the end of the zone. When the MDT zone sensor is first blocked, the Inlet Position Timer will start and the MDT zone will continue running until the Inlet Position Timer has expired. Can be used to fine tune the position of transferring into the MDT zone.	0	0-255	37
Outlet Position Timer	Used in applications where the MDT zone sensor is not placed at the front of the zone. When the MDT zone sensor is first unblocked, the Outlet Position Timer will start and the MDT zone will continue running until the Outlet Position Timer has expired. Can be used to fine tune the position of transferring out of the MDT zone.	0	0-255	38
Lift Timer	Used in applications where the transfer zone lift does not use sensors for up and down position of transfer. Once the timer has elapsed, then the transfer zone will run.	23	1-255	39

Serial Configuration

Serial configuration of a ZoneLink® ZPA Module requires connection to a ZoneLink®.S Controller capable of configuring ZoneLink®.S products, or using one of the ZoneLink®.S configuration tools available from Holjeron. Consult the documentation for the specific tool being used.

Product Information (Required in all products)

ID	Description	R/W	Default/Notes
0	Product ID	R	84
1-9	Reserved		
10	Product Code	R	ZL3.S-MDT423
11	Software Version	R	215.4.4

Control Properties

ID	Description	R/W	Default/Notes
30	Direction of Flow	R/W	Left to Right *Do NOT Change
44	PWM Mode	R/W	0 = Off
45	Release Mode	R	Primary Infeed/Out
46	Lift Mode	R	SA w/ Sensor

Timers

ID	Description	R/W	Default/Notes
32	Jam Timer	W	80/.1sec units
33	Transfer Timer	W	40/.1sec units
34	Gap Timer	W	3/10ms units
35	Sleep Timer	W	20/.1sec units
36	Release Timer	W	25/10ms units
37	Inlet Position Timer	R/W	0/.1sec units
38	Outlet Position Timer	R/W	0/.1sec units
39	Lift Timer	R/W	23/10ms units

⚠ EMERGENCY STOPS AND SAFETY RELAYS

It is generally considered good safety practice to have E-stop and/or safety relays/controllers installed in any conveyor system, especially one with multiple control system voltages. Many state and local regulations/codes require them. Please consult qualified personnel who plan and design safety equipment for machines and systems and are familiar with the regulations governing safety in the workplace and accident prevention.

Warranty/Remedy

Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequences incidental, or punitive damages attributable to negligence or strict liability, all by way of example.

While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.

Complementary Products

Holjeron manufactures a complete line of smart conveyor control equipment. To complete your system, have you considered:

Stack Light Controllers for DeviceNet

Light Stacks for DeviceNet

Operator Panels for DeviceNet, Multiple function

Push Button Controllers for DeviceNet, Multiple I/O

Low Profile I/O for DeviceNet, Multiple I/O

Motor Starter Controllers for DeviceNet

ZoneLink.S® ZPA Module for 22W and 35W Microrollers® w/

ZoneLink.S® Driver Module for 22W and 35W Microrollers

ZoneLink3.S™ 4 Zone ZPA Controllers

About Holjeron

Our products are all designed and produced by us

If you need this modified or that to be changed, it can be done. We give you the technology that best suits your needs. We understand Common Industrial Protocols (CIP) such as DeviceNet and Ethernet/IP, as well as CANOpen and Smart Distributed System (SDS.) Our engineers can supply the distributed I/O solutions that meet your specific needs.

We push intelligence to the process

Holjeron's smart quick-connect products can reduce wiring and give you diagnostics designed for your material handling system.

Our products are designed with you system in mind. Using industry standards, we explore new ways to make things work in industrial automation. We apply the requisite technology to deliver the solution your system needs.

Want to kick around options?

Call us. Where else are you going to find people who love talking about this stuff? And who know enough to be helpful? The number to connect you to someone who understands your business – **800.691.8302**

Memberships

www.odva.org

ODVA is an international association comprised of members from the world's leading automation companies. Collectively, ODVA and its members support network technologies based on the Common Industrial Protocol (CIP™).

www.mhia.org

Member companies are given a greater voice in shaping the destiny of the industry both nationally and internationally. MHIA sponsors trade events, to both showcase the products and services of its member companies and to provide material handling educational opportunities.

Contact us

Holjeron
9524 SW Tualatin-Sherwood Road
Tualatin, Oregon 97062
Phone   800.691.8302
Fax   503.582.9166
www.holjeron.com