

## L5300 LinkRack

## L5301 Remote LinkRack

### DESCRIPTION

The L5300 LinkStation is a high speed intelligent microprocessor device used for industrial process control applications. It is a housing that contains the processor and power supply and is the heart of a *LINK* control system network. The L5301 looks identical to the L5300, but is designed to be a remotely mounted input-output rack in a distributed *LINK* control system.

Using the Windows based graphical software package Drive System Designer (DSD) and appropriate LinkCards, you can configure the L5300 for line sequencing, process control functions— such as draw and loadcell control— and direct control of all motor drive controllers connected to the same *LINK* control network. The L5301 has limited memory and processing capabilities compared to the L5300 and is to be used primarily as remote digital and analog I/O for the *LINK* system.

NOTE. You must use DSD or ConfigEd version 5 or greater to configure the L5300 and the L5301. The units are *not* compatible with earlier versions.

The LinkRacks have four slots for adding various LinkCards. An L5311, RTN LinkCard is required with each unit to communicate with the standard acrylic fiber *LINK* network. Other LinkCards include analog and digital I/O, DeviceNet, glass RTN, and more. Detailed information on these LinkCards may be found in individual datasheets. A LinkCard may be fitted in any slot; the site mapping is done in software by the user. EMI shields in the form of blank LinkCards fill the remaining unused slots (see the FRONT VIEW drawing on page 4). Note: The L5301 supports only RTN, digital and analog LinkCards.

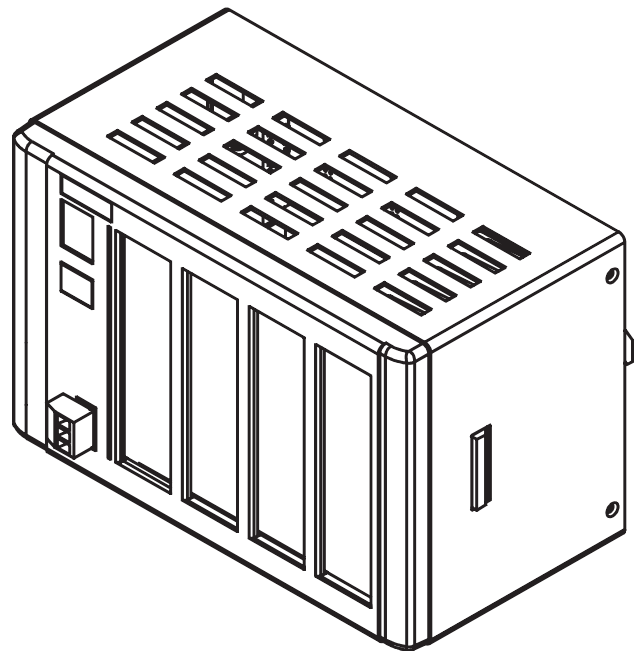


Figure 1 - The LinkRack



### WARNING!

This equipment accepts supply power that can be a shock hazard and can cause injury or death. *Never* install or wire any electrical equipment without first isolating all incoming and outgoing power supplies.

## INSTALLATION

### Mounting

The L5300/L5301 is intended to be a din rail mounted device. Holding the LinkRack with both hands, tilted upwards, engage the two rear panel hooks to the top edge of the din rail. Swivel downwards until the clip snaps into the bottom edge of the rail. To remove, insert a slotted screwdriver into the clip at the bottom of the LinkRack and pry upwards. This releases the bottom edge of the unit; then tilt upwards and away from the panel. Ensure that the din rail is securely fastened to the panel. For fastening directly to a panel, use the panel mounting kit supplied. Mount the two brackets to the rear panel of the LinkRack, in vertical orientation, using the four screws supplied. Then mount the assembly to your panel, referencing figure 2 for mounting dimensions.

NOTE. Be certain that the L5300/L5301 is properly ventilated to ensure that it does not exceed its temperature rating, listed in the *Technical Specifications* section.

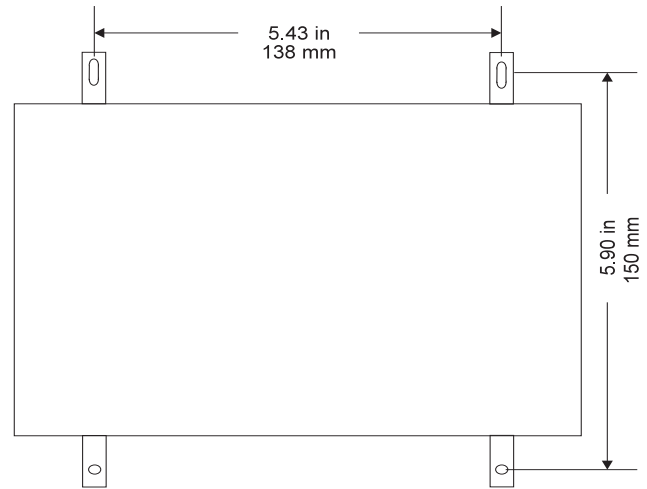


Figure 2 - LinkRack Panel Mounting Detail

### Wiring

The L5300/L5301 accepts an 85 to 265 VAC, 50/60 Hz supply. It is designed for a standard three-wire AC supply connection (LINE, NEUTRAL and GROUND). The terminal block will accept wire sizes of 14 to 18 AWG.

NOTE. The installation of this equipment must comply with all applicable national and local electrical codes.

The fiber optic terminals on the L5311 acrylic RTN LinkCard accept *only* Thomas and Betts (T&B) connectors. If replacing older model *LINK* components, you will not need to re-terminate existing cable since the unit's fiber optic terminals are identical to those on first generation *LINK* products. Otherwise, 1000 micron diameter polypropylene fiber optic cable is recommended. You do not need special cutting and polishing tools to terminate this cable to T&B connectors.

You can connect the unit to a *LINK* fiber optic network as a simple, tapped or redundant ring. Refer to the *LINK Overview Manual* (HA350678) for a discussion of *LINK* network topologies. Each transmitter has an adjustable transmission range (see the table in Figure 3).

#### Caution

Do not operate the unit without the LinkRack cover. It is a functional element of the LinkRack without which the module will not operate satisfactorily.

#### Caution

Do not operate the unit without the EMI shields (blank LinkCards) fitted in unused slots.

Switch Position	1000 micron plastic cable
center (low)	0 to 20m (0 to 66ft)
left (medium)	20 to 40m (66 to 132ft)
right (high)	40 to 60m (132 to 196ft)

Figure 3 - Fiber Optic Transmission Range Settings

## SETUP & TROUBLESHOOTING

Apply power once you have fully wired the unit. If the unit has a configuration pre-installed in its memory, the *LINK* network is established and all *LINK* devices on the network are functional, the seven-segment green LED status display should read "7".

If the display does not power up, you may connect the serial port on a personal computer running DSD or ConfigEd version 5 or higher, to the module's RTNX port located on the face of the unit. Poll the module with the GET INFO function to identify the state. Or, check the status display on the face of the unit. Each number or letter indicates a different error. Use the table below to identify the error and correct the problem.

NOTE. All *LINK2* modules operate in either a "boot" or a "run" state. The decimal point in the status display differentiates between the two. If the decimal is on, then the module is in boot mode; if off, it is in run mode. A blinking status number— shown below with an asterisk (\*)— indicates that the module is not running its configuration.

### Status Display codes

#### BOOT CODES

Code	Status	Meaning/Action
1. *	Halted	DSD/ConfigEd requested boot mode or rear cover is off. Replace rear cover or restart the module.
2. *	No Config	Flash memory is empty, or persistents were invalid. Reinstall the configuration.
5. *	Self-Test-Failure	One or more self tests failed. Contact Customer Service.

#### RUN CODES

Code	Status	Meaning/Action
0 *	Initializing	Configuration is decompressed from flash into ram.
1 *	Halted	DSD/ConfigEd requested halt. Use ConfigEd to restart module.
2 *	No Config	Persistents were invalid. Reinstall the configuration.
3 *	L-Error	Low-level error. See <i>LINK Overview Manual</i> section 8.3.3.
4 *	H-Error	High-level error. Indicates a problem with a function block. Contact customer service.
6 *	Shutdown	A function block (likely <i>SYSTEM CONTROL</i> ) forced a shutdown.
7	OK	Module is running and the fiber optic network is OK locally.
8	Network Warning	Brief loss of received <i>LINK</i> signal, or a long-term loss in topologies where the signal is redundant or optional. Network is intact but may require service.
9	Net Fail	Long-term loss of a fiber optic signal which is required by the configured topology.
A *	Checking Net	Module is starting-up and attempting to send a message to itself. If it persists, the ring is physically broken.
b *	Peer Halted	Module is starting-up and was able to send a message to itself. It waits here for all other modules to do the same.
C *	Dup. Address	While "Peer Halted", the module found duplicates of its configured address in other module(s). Use DSD/ConfigEd to install configurations with unique addresses.

## TECHNICAL SPECIFICATION

### Electrical

Supply type	3 wire, single phase, type TN only
Voltage	85-265 VAC, 48-62 Hz; Overvoltage category 3
Rating	35 VA (300 mA at 115 VAC, 150 mA at 230 VAC)
Backplane Rating	2500 mA maximum at 5 VDC, available for LinkCards
Leakage Current	0.38 mA
Power Terminals	14-18 AWG (Copper only) wire size to plug-in screw terminal block. Terminal torque 5 to 7 in-lbs.
Fiber Optic Terminals	Up to 196 ft. (60 m.) maximum transmission distance, 1000 micron polypropylene cable with 2 mm acrylic jacket

### Mechanical

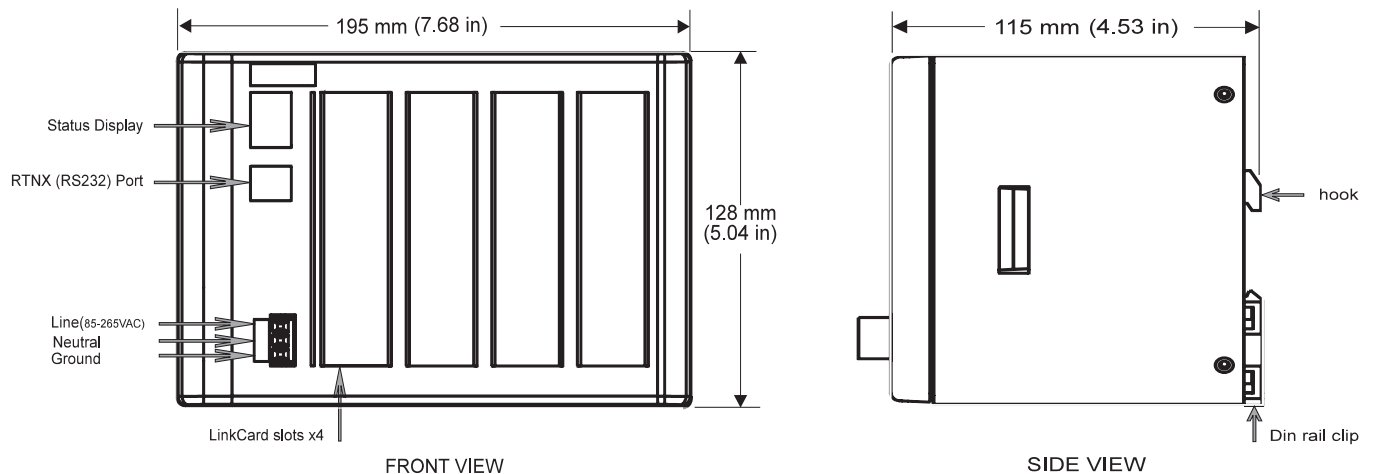
Weight	4.2 lbs. (1.9 Kgs.)
Overall Dimensions	5.04 H x 7.68 W x 4.53 D inches (128 H x 195 W x 115 D mm)

### Display

Status	7 segment green LED status. See STATUS DISPLAY CODES for details
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### Environmental

Operating Temperature	0 to 50°C (32 to 122°F) Meets or exceeds Class 3K3
Storage Temperature	-10 to 70°C (14 to 158°F)
Power Dissipation	3 Watts without LinkCards
Humidity	85% relative humidity, dry, non-condensing environment
Ratings	IPO0 Touchsafe. Intended for mounting inside an enclosure.

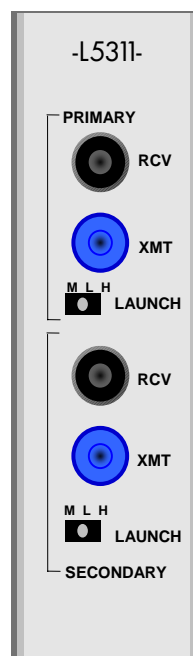


## L5311 RTN (*acrylic*) LinkCard

### GENERAL DESCRIPTION

The RTN (Real Time Network) LinkCard is the interface between a Link component and the fiber optic network. Plugged into a LinkRack or LinkStation, it communicates with other modules on the Link network via 1000 micron acrylic fiber optic cable. The L5311 has two sets of transmitters and receivers to support Primary and Secondary fiber optic channels. Refer to the Link Overview Manual HA350678 for detailed information on network topology. Transmission intensity may be selected LOW, MEDIUM or HIGH by toggle switches, depending on the distance to the next Link node. Terminations are standard T&B connectors, red for transmit and black for receive.

**NOTE:** An unused receiver of the secondary channel should be plugged with an opaque plug, supplied with the unit. Failure to do so may result in spurious network faults due to the leakage of ambient light into that receiver.



### TECHNICAL SPECIFICATIONS

#### Environmental

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% R.H. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside an enclosure

#### Supply

Supply Voltage	5VDC, supplied by backplane
Current Consumption	75 mA
Power Dissipation	0.6 Watts

#### Fiber Optic Channels

Transmission Distance	Selected by individual toggle switches for Primary and Secondary fiber optic channels
LOW (center position)	up to 66 feet (20 meters)
MEDIUM (left position)	66 to 132 feet ( 20 to 40 meters)
HIGH (right position)	132 to 198 feet ( 40 to 60 meters)

#### Physical

Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.3 lbs (0.14 kg)

## L5312 Firewire *LinkCard*

### GENERAL DESCRIPTION

The Firewire LinkCard is the interface between a Link component and the firewire network. Plugged into a LinkRack or LinkStation, it communicates with other modules on the firewire network via standard 1394 firewire cables. The L5312 has three ports, which can be used in any combination. Refer to the 890 Reference manual, for detailed information.



### TECHNICAL SPECIFICATIONS

Environmental		Firewire Ports	
Operating temperature	0°C to 50°C (32 to 122°F)	Port type	1394a, 6-pin cable interface
Storage temperature	-10 °C to +70 °C (14 to 158°F)	Number of ports	3
Humidity	85% R.H. in a dry, non-condensing environment	Maximum baud rate	400Mhz
Enclosure Rating	Touchsafe IP20. To be mounted inside an enclosure	Transmission Distance	up to 4.5 meters (15 Ft.)
Main Supply		Physical	
Supply Voltage	5VDC, supplied by backplane	Height	120mm (4.72 in)
Current Consumption	350 mA	Width	32mm (1.25 in)
Power Dissipation	2 Watts	Depth	90mm (3.54in)
		Weight	0.3 lbs (0.14 kg)
Network physical Layer Supply			
Supply voltage	12-24V, supplied over Firewire cable		
Power consumption	<0.5 Watts		

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## L5312 Module Status LED

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This LED provides device status. It indicates whether or not the device is powered and operating properly. Table 1 defines the different states of the Module Status LED.

<b>LED State</b>	<b>Status</b>	<b>Reason</b>
<b>Off</b>	Disabled	<ul style="list-style-type: none"><li>• No power applied to the device</li><li>• Host Link2 module is not running its configuration</li><li>• Hardware Fault</li><li>• Not Programmed in Link Configuration</li></ul>
<b>Green</b>	Device Operational	<ul style="list-style-type: none"><li>• The device is operating in a normal condition</li></ul>

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## L5312 Network Status LED

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This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different states of the Network Status LED.

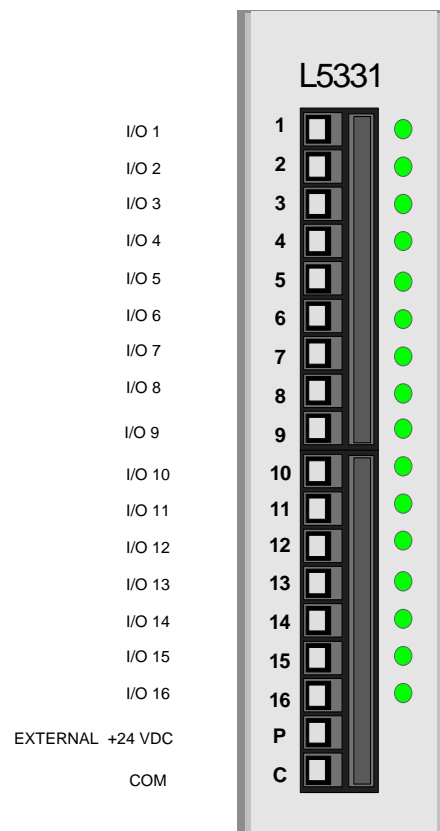
<b>LED State</b>	<b>Status</b>	<b>Reason</b>
<b>Off</b>	Disabled	<ul style="list-style-type: none"><li>• No power applied to the device</li><li>• Host Link2 module is not running its configuration</li><li>• Hardware Fault</li><li>• Not Programmed in Link Configuration</li></ul>
<b>Flashing Red</b>	No bus power	<ul style="list-style-type: none"><li>• No power on the AC890 Firewire bus</li><li>• Firewire cable not connected to the L5312</li></ul>
<b>Amber</b>	Initializing	<ul style="list-style-type: none"><li>• Waiting for the Link2 host to configure the L5312 with a node address and serial number</li><li>• The serial number in the Link2 host is missing (equal to 0)</li></ul>
<b>Flashing Green</b>	Only node	<ul style="list-style-type: none"><li>• Bus power is on, but the L5312 does not detect any other Link or AC890 nodes</li></ul>
<b>Green</b>	OK	<ul style="list-style-type: none"><li>• Bus is running with multiple nodes detected</li></ul>

## L5331 Digital LinkCard

### GENERAL DESCRIPTION

The L5331 Digital LinkCard is an I/O card that plugs into a slot on an L5300 LinkRack or L5391 LinkStation. It provides an efficient means to interface discrete logic signals with the LINK fiberoptic network. Typical uses would include exchanging machine logic states with the main PLC, accepting pushbutton, selector switch and limit switch information and driving PLC input modules, relay coils and high efficiency DC solenoids.

The Digital LinkCard has 16 I/O points, each of which can be configured as either an input or an output. The L5331 operates on 24VDC active high logic, the power to be externally sourced, both for inputs and outputs. Each I/O point has visual confirmation in the form of an LED that illuminates when in the active state. The input and output circuits are isolated from the backplane circuitry, but not from one another. Terminals 1 and 2 can be software configured to receive a high frequency quadrature signal, such as an encoder waveform. Terminations are in the form of pluggable screw type terminal blocks. Terminal designations are shown in the figure.



### FUNCTION BLOCK

The L5331 is a function block which can be used within a LinkRack L5300 or LinkStation L5391 configuration. It is accessible using the Windows™ based graphical configuration package, ConfigEd 5 or higher, by opening an L5300 or L5391 file. Clicking on **Block/LinkCard/L5331 Digital** makes the L5331 block appear. Double-click on it to set the "Site" information. This refers to the slot number in the L5300 or L5391 where the Digital LinkCard is inserted. Choose from J1 (leftmost) to J4 (rightmost). Detailed description of the function block may be obtained from the on-lineHelp menu in ConfigEd.



# L5331 Digital LinkCard

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## TECHNICAL SPECIFICATIONS

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### Environmental

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% R.H. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside an enclosure

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### Supply

Supply Voltage	5 VDC, supplied by backplane
Current Consumption	225 mA Typical
Power Dissipation	1.5 W or 100mW per energized input 100mW per energized output if load impedance > 1 Kohm, 150mW per energized output if load < 100mA

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Inputs	(Terminals 1 -16)
Range	0 to +24 VDC, Protected for +30VDC
Impedance	6.6 Kohms
Threshold	True state > 15 VDC, False state < 5 VDC
Speed	> 150 Hz square wave input
Filtering	1 to 30,000 ms (software configurable)

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### High Frequency Inputs (Terminals 1 and 2)

Voltage Range	0 to +15 VDC, Protected for +30VDC
Threshold	True state > 4.5 VDC, False state < 1.5 VDC
Frequency Range	

	5V	12V	15V
Quadrature signal	300 KHz	150 KHz	125 KHz
Pulse train	300 KHz	300 KHz	250 KHz

Direction Sensing	(1) Quadrature signals: By phase difference detection between the two waveforms on terminals 1 and 2; OR (2) Pulse train on terminal 1 and a direction indication bit on terminal 2. (0=forward, 1=reverse)
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### Outputs

Range	Depends on external sourcing supply
Current	100 mA continuous, per output 200 mA for 5 min., one output at a time Short circuit proof according to IEC 1131-2
Voltage Drop	1.5 VDC maximum

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### External 24VDC Sourcing Supply

Voltage Range	15 to 24VDC nominal
Tolerance	± 10%
Current	4 mA typical per energized input 4 mA typical per energized output + all output loading

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### Physical

Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.2 kg (0.45 lbs)

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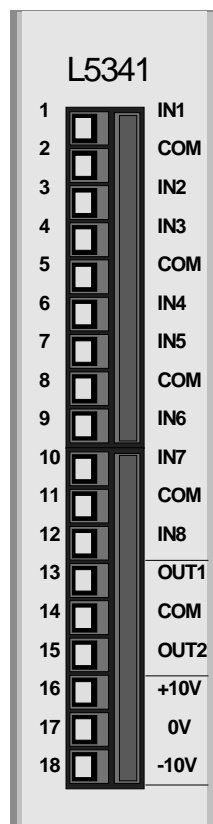


## L5341 Analog LinkCard

### GENERAL DESCRIPTION

The L5341 is an intelligent analog I/O card that plugs into a slot on an L5300 LinkRack or L5391 LinkStation. It contains a microcontroller, high resolution bipolar 10V analog inputs and outputs, an isolated power supply and signal isolation.

The Analog LinkCard has 8 inputs and 2 outputs, each being bipolar and capable of 14 bit (13 plus sign) resolution. In addition, it provides internally generated isolated +10 VDC and -10 VDC supplies which may be used to excite potentiometers, loadcells, dancers and other transducers. The input and output circuits are isolated from the backplane circuitry, but not from one another, or from the  $\pm 10V$  excitation supplies. Terminations are in the form of pluggable screw type terminal blocks. Terminal designations are shown in the figure.



### FUNCTION BLOCK

The L5341 is a function block which can be used within a LinkRack L5300 or LinkStation L5391 configuration. It is accessible using the Windows™ based graphical configuration package, ConfigEd 5, by opening an L5300 or L5391 file. Clicking on **Block/CX/L5341 Analog** makes the L5341 block appear. Double-click on it to set the “Site” information. This refers to the slot number in the L5300 or L5391 where the Analog LinkCard is inserted. Choose from J1 (leftmost) to J4 (rightmost). To set sample rates on any of the inputs, double-click on the appropriate field and type in the desired value in milliseconds. The default is 250 ms, with typical



## L5341 Analog LinkCard

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recommended values being 40-80 ms for loadcells and 60-100 ms for dancers. Any input channel may be disabled by entering "0" for its sample rate.

### TECHNICAL SPECIFICATIONS

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#### Environmental

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% R.H. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside an enclosure

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#### Supply

Supply Voltage	5 VDC, supplied by backplane
Current Consumption	600 mA Typical 620 mA Maximum
Power Dissipation	4.4 W Maximum

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#### Inputs

Range	-10 VDC to +10 VDC Protected for ±15 VDC
Impedance	100 Kohms
Resolution	14 bits (13 bits plus sign) or 0.012%
Absolute Accuracy	0.25%
Scan Time	1 ms to 250 ms (software configurable)

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#### Outputs

Range	-10 VDC to +10 VDC
Current	10 mA Maximum (short circuit protected) per channel
Resolution	> 13 bits (12 bits plus sign) or 0.015%
Absolute Accuracy	0.25%
Scan Time	1 ms

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#### Reference Supply (Excitation for auxiliary devices)

Voltage	+10 VDC and -10 VDC
Tolerance	± 0.5%
Current	10 mA Maximum (short circuit protected)

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#### Physical

Height	120 mm (4.72 in)
Width	32 mm (1.25 in)
Depth	90 mm (3.54 in)
Weight	0.2 kg (0.45 lbs)

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## L5351 DeviceNet™ LinkCard

### Module Status LED

This bi-color (green - red) LED provides device status. It indicates whether or not the device is powered and operating properly. Table 1 defines the different states of the Module Status LED.

Table 1

Status	LED state	Reason
Power off	<b>Off</b>	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host LINK2 module is not running its configuration</li> </ul>
Device in standby Needs to be commissioned	<b>Flashing green</b>	Device needs commissioning because of missing, incomplete or incorrect configuration
Device operational	<b>Green</b>	The device is operating in a normal condition
Minor fault	<b>Flashing red</b>	Recoverable fault
Unrecoverable fault	<b>Red</b>	Device has identified an unrecoverable fault. May need replacing
Device Self-testing	<b>Flashing Red / Green</b>	Device in self-test mode

### Network Status LED

This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different states of the Network Status LED.

Table 2

Status	LED state	Reason
Power off or not on-line	<b>Off</b>	The device is not on-line. <ul style="list-style-type: none"> <li>the device has not yet completed the Dup_MAC_ID test</li> <li>the device may not have power applied to it. Look at Module Status LED</li> </ul>
On-Line but not connected	<b>Flashing green</b>	The device is on-line, but has no connections in the established state <ul style="list-style-type: none"> <li>Passed the Dup_MAC_ID test, is on-line, but has no established connections</li> <li>For a Group 2 only device: Device is not allocated to a Master</li> </ul>
Link OK, on-line, connected	<b>Green</b>	The device is on-line and has connections in the established state <ul style="list-style-type: none"> <li>For a Group 2 only device: Device is allocated to a Master</li> </ul>
Connection time-out	<b>Flashing red</b>	One or more I/O connections are in the timed-out state
Critical Link failure	<b>Red</b>	Failed communication device. The device has detected an error that has rendered it incapable of communicating on the network. Could be duplicate MAC_ID or Bus-off
Communication faulted Received Identify Comma Fault Request Long protocol	<b>Flashing Red &amp; Green</b>	Specific communication faulted device. The device has detected a network access error and is in the Communication Faulted state. It has subsequently received and accepted an Identify Communication Faulted request - Long protocol message

## L5351 DeviceNet™ LinkCard

### TECHNICAL SPECIFICATIONS

#### Environmental

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% RAH. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside a Eurotherm L53XX series enclosure

#### Supply

Supply Voltage	5VDC, supplied by backplane 11 - 24VDC, supplied by network
Current Consumption	120 mA @ 5VDC, 30 mA @ 24VDC
Power Dissipation	0.8 W

#### DeviceNet

Connection Types	Explicit messaging and polled I/O connections provided via Predefined Master/Slave connection set. Fragmentation supported for both polled I/O and explicit connections
Baud Rate	125K, 250K and 500Kbaud
Data Types	Bits, Unsigned Integers (LINK Ordinals), signed integers (LINK values)
Transport Class Trigger	Server Transport class 2
Indicators supported	Network status bi-color LED, Module status bi-color LED
DeviceNet loading	27 mA
Transfer delay	Typically < 7 ms LINK input to DeviceNet output and vice-versa
Configurability	LinkCard configuration performed using ConfigEd. DeviceNet network and PLC programmed independently
Connector type	5 pin Phoenix Combicon or equivalent. Cable connector part number MSTB 2.5/5-ST-5.08-AU

#### Physical

Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.16 kg (0.35 lbs)

## L5351 DeviceNet™ LinkCard

### GENERAL DESCRIPTION

DeviceNet™ is an open-protocol network standard that provides low cost direct connectivity with DeviceNet™ compatible components. The L5351 DeviceNet™ LinkCard is part of the *LINK2* family and provides a gateway between a *LINK* control system and DeviceNet™, when installed in a LinkStation or LinkRack. At present, the L5351 will operate as a Group 2 only server and must be controlled by a DeviceNet™ master (client), such as a scanner in a PLC.

Terminals are in the form of a pluggable screw connector. Terminal designations are color-coded for DeviceNet™ and are shown in the figure.



### FUNCTION BLOCKS

The L5351 is a function block which can be used within a LinkRack L5300 or LinkStation L5392 configuration. It is accessible using the Windows™ based graphical configuration package, ConfigEd 5, by opening an L5300 or L5391 file. Clicking on **Block/LinkCard/L5351 DeviceNet** makes the L5351 block appear. Double-click on it to set the Mac ID, Baud rate and “Site” information. This refers to the slot number in the L5300 or L5391 where the DeviceNet LinkCard is inserted. Choose from J1 (leftmost) to J4 (rightmost). To send or receive bits, use a **DNet Bit Register** block; for values use the **DNet SInt Register** block; and for integers or ordinals, use the **DNet UInt Register** block. After creating the required registers, they should be mapped in the **L5351 DeviceNet** block, which acts as assembly instance (#1). For details, refer to the on-line function block descriptions and specifications under the **Help** menu in ConfigEd.

**Module Status LED**

This bi-color (green - red) LED provides device status. It indicates whether or not the device is powered and operating properly. Table 1 defines the different states of the Module Status LED.

Table 1

Status	LED state	Reason
Power off	<b>Off</b>	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host LINK2 module is not running its configuration</li> </ul>
Device in standby Needs to be or in process of being commissioned	<b>Flashing green</b>	Device is being commissioned or Device needs commissioning because of missing, incomplete or incorrect configuration
Device operational	<b>Green</b>	The device is operating in a normal condition
Configuration fault	<b>Red</b>	LINK2 configuration calls for too many reader/writer blocks.
Device Self-testing	<b>Flashing Red / Green</b>	Device in self-test mode
Device Self-test failure	<b>Flashing Red</b>	Device self test failure – may need replacing, try power down up sequence

**Network Status LED**

This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different states of the Network Status LED.

Table 2

Status	LED state	Reason
Power off or not on-line	<b>Off</b>	The device is not on-line. <ul style="list-style-type: none"> <li>the device has no Profibus Master</li> <li>the device may not have power applied to it. Look at Module Status LED</li> </ul>
On-Line	<b>Flashing green</b>	The device is on-line <ul style="list-style-type: none"> <li>Profibus Master cycling through its configuration steps</li> </ul>
Link OK, on-line, connected	<b>Green</b>	The device is on-line and has connections in the established state <ul style="list-style-type: none"> <li>Owned by, communicating with, correct configuration between L5353 and Master</li> </ul>
Connection time-out – lost Master connection	<b>Flashing red</b>	Master connection previously established has been lost and has not been reestablished
Critical Link failure	<b>Red</b>	Link2 configuration does not match that of the Master

**TECHNICAL SPECIFICATIONS**

**Environmental**

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% RH. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside a Eurotherm L53XX series enclosure

**Supply**

Supply Voltage	5VDC, supplied by backplane 5VDC supplied to network (isolated - 20mA maximum)
Current Consumption	250 mA @ 5VDC
Power Dissipation	1.375 W

**Profibus**

Connection Types	Process Data parameters selected by PROFIBUS-DP Master. Demand Data protocol to provide random access to any network parameter.
Baud Rate	Auto-Baud search 9.6/19.2/93.75/187.5/500/1500Kbaud and 12Mbaud
Data Types	Unsigned Integers (LINK Ordinals)
Indicators supported	Network status bi-color LED, Module status bi-color LED
Profibus Loading	25mA
Transfer delay	Typically < 1ms LINK input to PROFibus output and vice-versa
Configurability	LINKCard configuration performed using DSD. PROFibus network and PLC programmed independently
Connector type	6 pin Phoenix Combicon or equivalent.

**Physical**

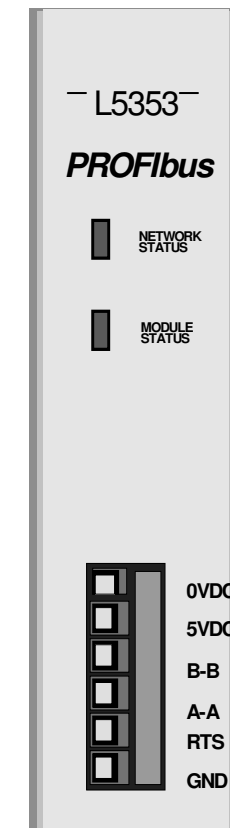
Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.16 kg (0.35 lbs)

## L5353 PROFibus™ LINKCard

### GENERAL DESCRIPTION

PROFibus™ is an open-protocol network standard that provides low cost direct connectivity with PROFibus™ compatible components. The L5353 PROFibus™ LINKCard is part of the LINK2 family and provides a gateway between a LINK control system and PROFibus™, when installed in a LINKStation or LINKRack. At present, the L5353 will operate with and must be controlled by a PROFibus™ master (client), such as a scanner in a PLC.

Terminals are in the form of a pluggable screw connector. Terminal designations are color-coded for PROFibus™ and are shown in the figure.



### FUNCTION BLOCKS

The L5353 is a function block which can be used within a LINKRack L5300 or LINKStation L5392 configuration. It is accessible using the Windows™ based graphical configuration package, DSD, by opening an L5300 or L5392 file. Clicking on **Block/LinkCard/L5353 PROFibus DP** makes the L5353 block appear. Double-click on it to set the "Site" information. This refers to the slot number in the L5300 or L5392 where the PROFibus LINKCard is inserted. Choose from J1 (leftmost) to J4 (rightmost). After creating the required registers, they should be mapped in the **L5353 PROFibus** block, which acts as assembly instance (#1). For details, refer to the on-line function block descriptions and specifications under the **Help** menu in DSD.



## L5352 ETHERNET *Link Card*

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### GENERAL DESCRIPTION

ETHERNET is an open-protocol network standard that provides direct connectivity with a ETHERNET master device. The L5352 ETHERNET LINK Card is part of the *LINK2* family and provides a gateway between a *LINK* control system and ETHERNET™, when installed in a LINK Station or LINK Rack. The L5352 operates with and must be controlled by an ETHERNET master (server), such as a scanner in a PLC or a PC with SCADA system software.

Terminal is in the form of RJ 45 connector.



### FUNCTION BLOCKS

The L5352 function block can be used within a LINK Rack L5300 or LINK Station L5392 configuration. It is accessible using the Windows™ based graphical configuration package, DSD with Class revision 1059 or higher, by opening an L5300 or L5392 file. Clicking on **Block/LinkCard/L5352 ETHERNET** makes the L5352 block appear. Double-click on it to set the “Site” information. This refers to the slot number in the L5300 or L5392 where the ETHERNET LINK Card is inserted. Choose from J2 (leftmost) to J4 (rightmost). The required registers, they are be mapped in the **L5352 ETHERNET** control block. For details, refer to the on-line function block descriptions and specifications under the **Help** menu in DSD.



## L5352 ETHERNET *Link Card*

### MODULE STATUS LED

This bi-color (green - red) LED provides device status. It indicates whether or not the device is powered and operating properly.

Table 1 defines the different states of the Module Status LED.

**TABLE 1**

Status	LED state	Reason
Power off Disabled	<b>Off</b>	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host LINK2 module is not running its configuration</li> <li>Not configured in current configuration</li> </ul>
Device in Standby Not Connected	<b>Flashing green</b>	<ul style="list-style-type: none"> <li>Device needs commissioning due to missing, incomplete or incorrect configuration</li> </ul>
Device operational	<b>Green</b>	<ul style="list-style-type: none"> <li>The device is operating in a normal condition</li> </ul>
Configuration fault	<b>Red</b>	<ul style="list-style-type: none"> <li>After configuration attempt – Module hardware failure</li> </ul>
Alive announcement	<b>Blink Red</b>	<ul style="list-style-type: none"> <li>Initiating communications with the network</li> </ul>
Configuration Error	<b>Flashing Red</b>	<ul style="list-style-type: none"> <li>Wrong Communication option selected</li> </ul>

### NETWORK STATUS LED

This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different

states of the Network Status LED.

**TABLE 2**

Status	LED state	Reason
Power off or not on-line Disabled	<b>Off</b>	<p>The device is not on-line.</p> <ul style="list-style-type: none"> <li>The device may not have power applied to it. Look at Rack Status LED</li> <li>The device is not configured in Link</li> </ul>
On-Line – Not owned	<b>Flashing green</b>	<p>The device is on-line without communications</p> <ul style="list-style-type: none"> <li>The device has no ETHERNET Master</li> <li>No connection (no master)</li> <li>Check cable connections</li> <li>Data size between Master and Slave not correct</li> </ul>
Link OK, on-line, connected	<b>Green</b>	<p>The device is on-line and has connections in the established state</p> <ul style="list-style-type: none"> <li>Owned by, communicating with, correct configuration between L5352 and Master</li> </ul>

# L5352 ETHERNET *Link Card*

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## TECHNICAL SPECIFICATIONS

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### Environmental

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% RH. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside a Ssd L53XX series enclosure

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### Supply

Supply Voltage	5VDC, supplied by backplane 5VDC supplied to network (isolated - 20mA maximum)
Current Consumption	500 mA @ 5VDC
Power Dissipation	2.5 W

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### ETHERNET

Connection Types	Process Data parameters selected by ETHERNET Master.
Baud Rate	10/100 M Baud
Data Types	Unsigned Integers (LINK Ordinals)
Indicators supported	Network status bi-color LED, Module status bi-color LED
Configurability	LINK Card configuration performed using DSD. ETHERNET network and PLC programmed independently
Connector type	RJ 45

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### Physical

Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.16 kg (0.35 lbs)

**→ Parker**

## L5355 MODBUS PLUS™ *Link Card*

### GENERAL DESCRIPTION

MODBUS PLUS is an open data communications network that provides a basis for the exchange of information among products on the factory floor. The L5355 MODBUS PLUS *LINK* Card is part of the *LINK2* family and provides a gateway between a *LINK* control system and MODBUS PLUS™, when installed in a *LINK* Station or *LINK* Rack. The L5355 is a slave device and must be controlled by an MODBUS PLUS master, such as a PLC or a PC with SCADA system software. Terminal connections are in the form of a 9-pin D-SUB connector.



### FUNCTION BLOCKS

The L5355 function block can be used within a *LINK* Rack L5300 or *LINK* Station L5392 configuration. It is accessible using the Windows™ based graphical configuration package, DSD with Class revision 1059 or higher, by opening an L5300 or L5392 file. Clicking on **Block/LinkCard/L5355 MODBUS PLUS** makes the L5355 block appear. Double-click on it to set the “Site” information. This refers to the slot number in the L5300 or L5392 where the MODBUS PLUS LINK Card is inserted. Choose from J2 (leftmost) to J4 (rightmost). After creating the required registers, they are mapped in the **L5355 MODBUS PLUS** control block. For details, refer to the on-line function block descriptions and specifications under the **Help** menu in DSD.

## Module Status LED

This bi-color (green - red) LED provides device status. It indicates whether or not the device is powered and operating properly. Table 1 defines the different states of the Module Status LED.

Table 1

<b>LED State</b>	<b>Status</b>	<b>Reason</b>
Off	Disabled	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host <i>LINK2</i> module is not running its configuration</li> <li>Hardware Fault</li> <li>Not Programmed in Link Configuration</li> </ul>
Red	Hardware fault	<ul style="list-style-type: none"> <li>After configuration attempt the module faults</li> </ul>
Flashing Red	Configuration Error	<ul style="list-style-type: none"> <li>Wrong Communication Option Selected</li> <li>Configuration not completed</li> </ul>
Blink Red	Alive Announcement	<ul style="list-style-type: none"> <li>Initiating Communications with the network</li> </ul>
Flashing Green	Device in standby or Card Initializing	<ul style="list-style-type: none"> <li>Device needs commissioning due to missing, incomplete or incorrect configuration</li> </ul>
Green	Device operational	<ul style="list-style-type: none"> <li>The device is operating in a normal condition</li> </ul>

## L5355 Network Status LED

This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different states of the Network Status LED.

Table 2

<b>LED State</b>	<b>Status</b>	<b>Reason</b>
Off	Power off	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host <i>LINK2</i> module is not running its configuration</li> <li>Hardware Fault</li> </ul>
Flashing Red	Initializing	<ul style="list-style-type: none"> <li>Card is initializing</li> </ul>
Red	Monitor Link	<ul style="list-style-type: none"> <li>Listen only mode</li> </ul>
Flashing Orange	No Token	<ul style="list-style-type: none"> <li>No communications from the Master device, with the network complete</li> </ul>
Solid Orange	Only Station	<ul style="list-style-type: none"> <li>Only device on the network</li> <li>Open cable</li> </ul>
Flashing Green	Dup Station	<ul style="list-style-type: none"> <li>Duplicate node on the Modbus Plus network</li> </ul>
Green	Normal Link	<ul style="list-style-type: none"> <li>The device is operating in a normal condition</li> </ul>

## **L5355 MODBUS PLUS *Link Card***

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### **TECHNICAL SPECIFICATIONS**

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#### **Environmental**

Operating temperature	0°C to 50°C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% RH. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside a Eurotherm L53XX series enclosure

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#### **Supply**

Supply Voltage	5VDC, supplied by backplane
Current Consumption	310 mA @ 5VDC
Power Dissipation	1.6 W

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#### **MODBUS PLUS**

Connection Types	Process Data parameters selected by MODBUS PLUS Master.
Baud Rate	1 M Baud
Data Types	Unsigned Integers (LINK Ordinals) 256 words input and 256 words output.
Indicators supported	Network status bi-color LED, Module status bi-color LED
Configurability	LINK Card configuration performed using DSD. MODBUS PLUS network and PLC programmed independently
Connector type	D-SUB (9 pin)

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#### **Physical**

Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.16 kg (0.35 lbs)





Module Status LED

This bi-color (green - red) LED provides device status. It indicates whether or not the device is powered and operating properly. Table 1 defines the different states of the Module Status LED.

Table 1

Status	LED state	Reason
Power off	<b>Off</b>	<ul style="list-style-type: none"> <li>No power applied to the device</li> <li>Host LINK2 module is not running its configuration</li> <li>Invalid parameters e.g. Mac ID set to 0</li> </ul>
Device in standby Needs to be or in process of being commissioned	<b>Flashing Green</b>	<ul style="list-style-type: none"> <li>Device is being commissioned or Device needs commissioning because of missing, incomplete or incorrect configuration</li> </ul>
Device operational	<b>Green</b>	<ul style="list-style-type: none"> <li>The device is operating in a normal condition</li> </ul>
Configuration fault	<b>Red</b>	<ul style="list-style-type: none"> <li>After configuration attempt – Module hardware failure</li> </ul>
Device Self-testing	<b>Flashing Red / Green</b>	<ul style="list-style-type: none"> <li>Self test mode</li> </ul>
Device Self-test failure	<b>Flashing Red</b>	<ul style="list-style-type: none"> <li>Device self test failure – may need replacing, try power down/up sequence</li> </ul>

Network Status LED

This bi-color (green - red) LED indicates the status of the communications link. Table 2 defines the different states of the Network Status LED.

Table 2

Status	LED state	Reason
Power off or not on-line	<b>Off</b>	<ul style="list-style-type: none"> <li>The device is not online.</li> <li>the device has no ControlNet master</li> <li>the device may not have power applied to it. Look at Rack Status LED</li> </ul>
On-Line – Not owned	<b>Flashing Green</b>	<ul style="list-style-type: none"> <li>The device is online with ControlNet master but master is not enabled</li> <li>no connection (not owned) forced listen mode</li> </ul>
Link OK, on-line, connected	<b>Green</b>	<ul style="list-style-type: none"> <li>The device is online and has connections in the established state</li> <li>Owned by, communicating with, correct configuration between L5354 and Master</li> </ul>
Checking for Cable	<b>Flashing Red</b>	<ul style="list-style-type: none"> <li>Cable improperly terminated or connected</li> </ul>
Alive Announcement	<b>Red</b>	<ul style="list-style-type: none"> <li>LinkCard is powered on but in state of waiting for network messages</li> <li>Network not communicating with the LinkCard</li> </ul>
Listen Only	<b>Orange</b>	<ul style="list-style-type: none"> <li>Module forced into listen only mode</li> </ul>
Listen Only	<b>Flashing Orange</b>	<ul style="list-style-type: none"> <li>Duplicate MAC address</li> <li>Module forced into listen only mode</li> </ul>

TECHNICAL SPECIFICATIONS

Environmental	
Operating temperature	0 °C to 50 °C (32 to 122°F)
Storage temperature	-10 °C to +70 °C (14 to 158°F)
Humidity	85% RH. in a dry, non-condensing environment
Enclosure Rating	Touchsafe IP20. To be mounted inside a SSD L53XX series enclosure
Supply	
Supply Voltage	5VDC, supplied by backplane 5VDC supplied to network (isolated - 20mA maximum)
Current Consumption	350 mA @ 5VDC
Power Dissipation	1.75 W
ControlNet	
Connection Types	Polled I/O connections provided via Predefined Master/Slave connection set. Fragmentation supported for polled I/O.
Baud Rate	5 M Baud
Data Types	Unsigned Integers (LINK Ordinals)
Indicators supported	Network status bi-color LED, Module status bi-color LED
ControlNet Loading	-
Transfer delay	Typically < 10 ms LINK input to ControlNet output and vice-versa
Configurability	LINKCard configuration performed using DSD. ControlNet network and PLC programmed independently
Connector type	dual BNC – coaxial connectors.
Physical	
Height	120mm (4.72 in)
Width	32mm (1.25 in)
Depth	90mm (3.54in)
Weight	0.16 kg (0.35 lbs)

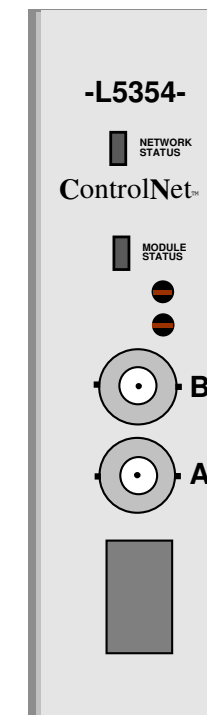


## L5354 ControlNet™ LINKCard

### GENERAL DESCRIPTION

ControlNet™ is an open-protocol network standard that provides direct connectivity with a ControlNet™ master device. The L5354 ControlNet™ LINKCard is part of the LINK2 family and provides a gateway between a LINK control system and ControlNet™, when installed in a LINK Station or LINK Rack. At present, the L5354 will operate with and must be controlled by a ControlNet™ master (server), such as a scanner in a PLC.

Terminals are in the form of 2 coaxial BNC.



### FUNCTION BLOCKS

The L5354 is a function block, which can be used within a LINK Rack L5300 or LINK Station L5392 configuration. It is accessible using the Windows™ based graphical configuration package, DSD, by opening an L5300 or L5392 file. Clicking on **Block/LinkCard/L5354 ControlNet** makes the L5354 block appear. Double-click on it to set the "Site" information. This refers to the slot number in the L5300 or L5392 where the ControlNet LINKCard is inserted. Choose from J2 (leftmost) to J4 (rightmost). After creating the required registers, they should be mapped in the **L5354 ControlNet** block, which acts as assembly instance (#1). For details, refer to the on-line function block descriptions and specifications under the **Help** menu in DSD.