

LONWORKS COMMISSIONING INTERFACE



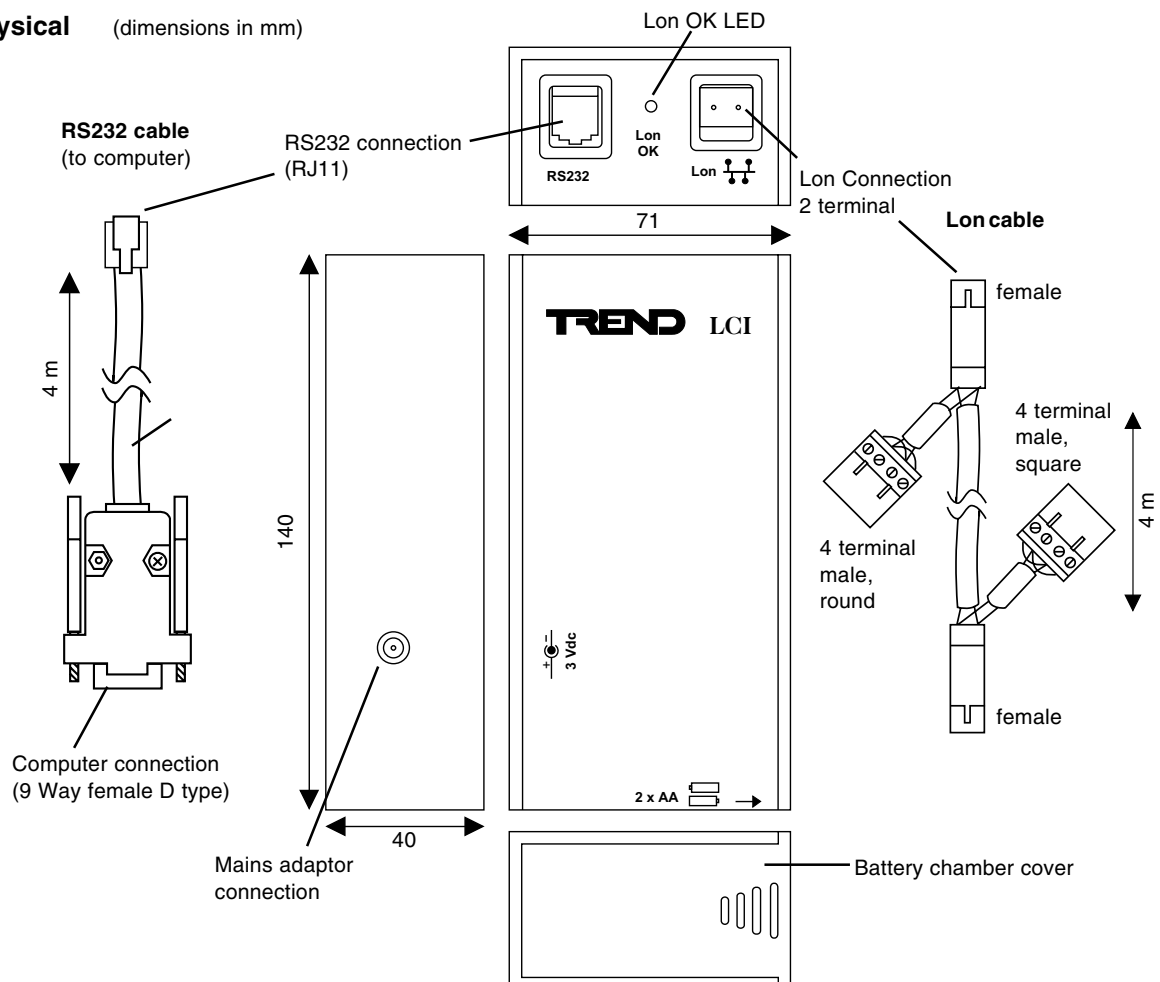
Description

The LCI, 'Lon Com Interface', is a portable LonWorks communications node enabling connection from a PC to the LonWorks bus. It is ideally suited for use with a hand-held computers for commissioning Trend LonWorks products. It is battery powered but may be powered from a mains adaptor if required. It may be soft-configured by text comms, but its default settings enable it to communicate with most Trend LonWorks systems directly 'out of the box'.

Features

- Portable battery powered node.
- Eliminates need for CNC/LINC pair.
- Battery or mains powered.
- 'Out of box' operation.
- Automatic low power mode
- LonMark compliant

Physical (dimensions in mm)



FUNCTIONALITY

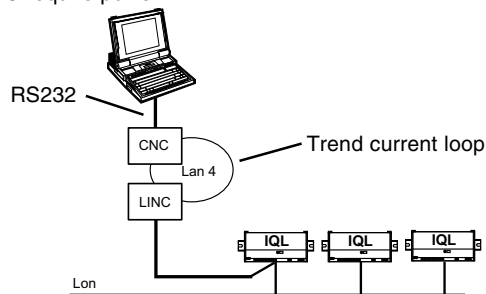
The LCI, 'Lon Com Interface', is an RS232 to LonWorks bus (Lon) interface. It is designed to be used as a portable interface for use with hand-held computers for commissioning Trend LonWorks products. The unit will work 'out of the box' in most situations, however it is configurable by text comms if required.

SYSTEM

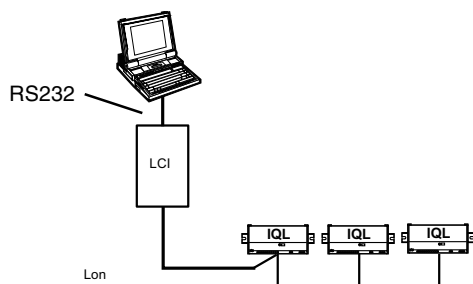
Full system details are covered by Trend LonWorks Products Engineering Manual TE200292.

Toolkit

The traditional toolkit for commissioning systems of Trend LonWorks products comprises a LINC, CNC, and a Laptop PC (installed with WupDn and IqlTool for example). Both LINC and CNC require power.



The LCI provides a direct RS232 to Lon interface without the need for an intervening Trend current loop stage. The combination of a LCI with a battery powered computer eliminates the need for any local power.



Note that the LNC2/LONFTT provides a similar solution for desktop PCs. It is a PCI bus card that fits inside the PC.

Installation on Lon

The LCI will self-install on the LonWorks bus in a similar way to other Trend LonWorks products. It will form a virtual Lan along with other Trend LonWorks products (other LCIs, IQLs and LONCs) of the same Lan number, and if it has the lowest outstation address in the Lan, it will assume the role of proxy INC.

Note that the standard rules for installation of Trend LonWorks products on a LonWorks Management Tool (LMT) apply to the LCI. In particular if the LCI is used on a system that is installed on an LMT, it must itself be installed, and de-installed after it is removed.

FIRMWARE

Configuration

The LCI has no hardware configuration or configuration mode, but can be configured using text communications.

Addresses

The local supervisor can configure the LCI by using **address 10 Lan zero** (reserved as local address for direct connected devices). It may also use **address zero Lan zero** although this may be interpreted by some software tools as global messages.

The default address on the network is **address 119 Lan 1** which is outside the range of addresses automatically allocated to IQLs so is unlikely to be used elsewhere on the system. This address and Lan number may be changed by text communications. This address cannot be used for text communications with the LCI

Note that if more than one LCI is used on the same system, the addresses will have to be changed to avoid clashing.

Address Module

The LCI has an address module which can be accessed by text comms from RS232 port only. The text comms request R(*) gives the following response:

R(N=1, L=119, D="LCI", s="124356", A= 0, R= 0, E= 0, T= 0, l= 0, n=119, u=254, d= 1, m= 64, w= 1, t= 0, r= 750, i= 75, a= 2, b= 146, e="00:A0:55:58:10:00", C="LCI" v3.00 dd-mm-yy", g= 0, o= 0, z= 0, v= 0, p= 0)

L - Outstation address (read/write). The device address on the Trend network set by default to 119. Can be set in range 1, 4 to 9, 11 to 119, and must be unique on its own virtual Lan.

N - Own Lan (read/write). The Lan number of the virtual Lan of Trend Lon products (e.g. LCI, IQL, LONC) to which the LCI belongs; set by default to 1. Can be set in range 1, 4 to 9, 11 to 119, and must be unique on the internetwork.

D - Identifier (read/write). The identification label of the LCI; set by default to "LCI". May be up to 15 characters long.

s - Serial Number (read only). Serial number of unit.

l - LonWorks Managed (read only). If set to zero, LCI has not been installed on a Lon Management Tool; if set to one it has been installed.

n - LonWorks Node (read only). Node address of LCI on Lon; defaults to LCI outstation address (originally 119).

u - LonWorks Subnet (read only). Subnet address of LCI on Lon; defaults to 255 minus LCI Lan number (originally 255-1=254)

d - Domain Index (read only). LonWorks domain table being used (0 or 1). (Defaults to 1.)

m - LonWorks Message Code (read/write). Message code for messages on Lon; must be same for all Trend messages (default=64).

w - LonWorks Domain Wide (read only). If set to one messages sent to whole Lon domain; if set to zero messages are restricted to subnet (default=one).

t - LonWorks Transceiver (read/write). This defaults to zero (FTT). It is intended to be used if a version of LCI with alternative LonWorks interfaces is developed. It should not be changed.

r - LonWorks retry time (read/write). Time (mS) between message retransmission on Lon following non-acknowledgement (default=750).

i - interpacket delay (read/write). Time (mS) between frames of data in a multi-frame message on Lon (default=75).

a - LonWorks service class (read/write). Defines quality of message service on Lon in terms of whether messages are repeated and whether acknowledgements are expected (defaults to 2 - expect acknowledgement and repeat if not acknowledged up to three times).

b - LonWorks buffer size (read/write). The size of message frames sent on Lon (default=146).

e - LonWorks Neuron ID (read only). A unique number which identifies the neuron chip in the LCI.

C - Version string (read only). Defines the firmware and its version.

z - Reset Node Flag (read/write). This flag is used to reset the LCI. Setting it to one will cause the LCI to reset.

v - Native Messaging (read/write). This flag enables the LCI to send and receive LonWorks message frames via the RS232 interface in an encoded format. If set to zero this feature is disabled, if set to one this feature is enabled (default is zero, disabled). See below for details.

p - Send Service PIN (read/write). Setting this to one causes the LCI to send a service PIN message (default=zero). It will then reset **p** back to zero.

Note that the meaning and use of parameters (l, n, u, d, m, t, r, i, a, b) is fully explained in the Trend LonWorks Products Engineering Manual TE200292.

FUNCTIONALITY (continued)

LonWorks Native Messaging

This function allows LonWorks messages to be delivered to the RS232 port in encoded form. It is invoked by setting parameter **R(v)** to one by text comms. This requires special applications to be run in the PC connected to the port. The messages are sent via the RS232 port to Address 0 on Lan 0. This feature is for future development and will enable the development of IQL strategy download tools.

Service Pin Message

The LCI does not have a service pin button like other Trend LonWorks products, but it can be made to generate a service pin message by setting parameter **R(p)** to one by text comms. The service PIN message contains the unique neuron ID. It will send this message to the Lon (not to its RS232 port). The use of the Service Pin message is explained Trend LonWorks Products Engineering Manual TE200292.

Note that the LCI will send all service pin messages it receives from the Lon to its RS232 port (similar to the LINC feature of sending all service pin messages to its alarm target address).

Baud Rate

The RS232 port baud rate is 19k2

Alarms

The Trend LonWorks Products Engineering Manual fully describes alarms. The IQL generates network alarms to its RS232 port as follows :

"Local Lan reported by xxx-

LON LAN Broken NKBK" - a break in Lan communications

LON LAN Changed NKCH" - a node has gone from or been added to the Lan

LON LAN OK NKOK" - Lan communications are restored

DUPLICATE ADDRESS NKDA" - The IQL's address is duplicated on the Lan (generated during network build if self-installed or when virtual Lan is mapped if installed in LMT)

BATTERY LOW UNKN" - Unit using battery supply has detected low power

(The following alarms are only generated if the LCI has become proxy INC on its virtual Lan)

LON lwrk Broken NKBK" - a break in intntwk. communications

LON lwrk Changed NKCH" - a node has gone from or been added to the internetwork

LON lwrk OK NKOK" - interntwk. communications are restored

DUPLICATE LAN NKDA" - The IQL's Lan number is duplicated on the internetwork (generated during internetwork build if self-installed, or when internetwork is mapped if installed in LMT)

Compatibility

The LCI will identify itself as a CNC to w comms.

It is compatible with the following firmware versions: LINC v 3.2 (v3.2.4 recommended), LONC v5.1, all IQLs (v2 recommended).

HARDWARE

Box

The LCI has a pocket size plastic box with a battery chamber.

Battery

The LCI can be powered by batteries. The box incorporates a battery chamber with a slide cover. The 2 off AA batteries are contained in a battery holder. High efficiency alkaline batteries should be used (e.g. Duracell). They will support a day's use on site (about 8 hours), but they will last for about 6 years with the LCI in low power mode. The battery low alarm condition is detected by an external reset to the LCI processor, indicative of low power.

Low Power Mode

When the LCI is powered from batteries it will automatically switch into low power mode when the attached PC de-asserts its hand-shaking signals; this could be due to disconnection or closure of the application. This will increase battery life as stated above.

Mains Adaptor

The LCI has a 2.1 mm mains adaptor connector with centre common, outside positive. The supply should be 3 Vdc, 300 mA regulated (e.g. Friwo MIDI 124S UK, RS number 293-2369)

Lon OK LED

This green LED will flash every 24 s while the local virtual Lan is being built, after which it stays on indicating that the LCI has successfully communicated with at least one other Trend Device on the Lon. If off it indicates no power or low power mode (could be due to RS232 cable error or application not running - see above).

Cables

The unit is supplied with a 4m RS232 cable (RJ11 to 9 way female D type). A shorter 36 cm cable can be purchase separately (EJ104170)

The unit is supplied with a 4m Lon cable. This cable facilitates connection to IQLs (which have a two terminal male two part connector), LINC's, LONC's, and to LONROUTERS. (Older/24VAC versions of IQL10 to IQL13 only have a single part Lon connector.) The cable has a short spur at each end, one with square connectors for newer IQLs, LINC's and LONC's, and one with round connectors for LONROUTERS.

DISPOSAL

COSHH ASSESSMENT FOR DISPOSAL OF NODE. No parts affected.

RECYCLING.

All plastic and metal parts are recyclable. The printed circuit board may be sent to any PCB recovery contractor to recover some of the components for any metals such as gold and silver.

INSTALLATION

Ensure batteries installed, or mains adapter correctly plugged in.

Connect RS232 to computer.

Ensure appropriate application installed in computer (e.g. WupDn, IqlTool).

Select Lon device where connection is to be made (e.g. IQL, LINC, LONC, LONROUTER)

If device has appropriate two part connector (i.e LONROUTER, LINC, LONC, IQL except IQL10 to IQL13 /24V versions)

unplug Lon bus from LonWorks device

plug adapter cable into LCI and Lon device (the LONROUTER is normally left disconnected)

plug Lon bus to LCI cable spur to communicate with system

If device hasn't appropriate two part connector (e.g. IQL10 to IQL13 /24V versions)

wire LCI cable to Lon terminals

If system is installed on LMT, install LCI on LMT

Run commissioning application

Check Lon OK LED illuminates

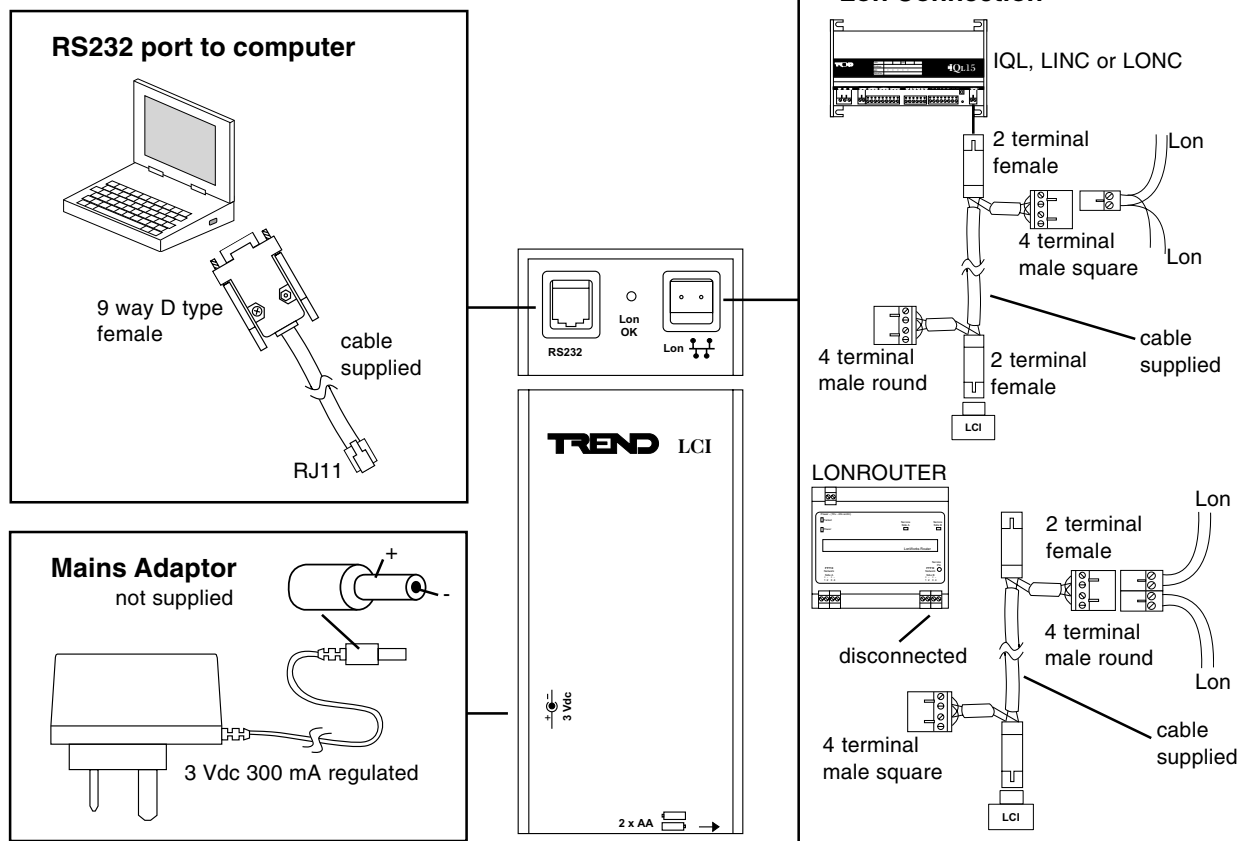
On completion reconnect Lon to LonWorks device (e.g IQL, LINC, LONC, LONROUTER) if appropriate

De-install LCI from LMT if appropriate

Note: If installation on a Lon Management Tool (LMT) is required, the installer must have LonWorks engineering expertise

See LCI Installation Instructions - TG200429

CONNECTIONS



ORDER CODES

LCI LonWorks Commissioning Interface complete with RS232 cable (RJ11 to 9 way female D type) and Lon cable (two terminal female to two terminal female, and 2 short 4 terminal male spurs).

EJ104170 Short RS232 cable (36 cm) with RJ11 to 9 way female D type.

SPECIFICATIONS

Electrical

Batteries	:2 x AA high efficiency alkaline batteries
Mains adapter	:2.1 mm adapter connector, centre common outside positive, 3 Vdc 300 mA regulated
CPU	:3 processor neuron chip
Memory	:64K flash memory, 8K RAM
Lon	:FTT - Free topology, 78 k baud, transformer isolated. Single termination (RC network). Can also use loop powered free topology LPT.
Lon cable	:4m, two terminal female to two terminal female, and 2 short 4 terminal male spurs
RS232 cable	:4m, RJ11 (LCI) to 9way female D type (computer)
RS232 baud rate:	19k2 baud

Mechanical

Dimensions	:140 x 71 x 40 mm
Material	:4mm high impact polystyrene
Weight	:366 g

Environmental

EMC Emission	:EN50081-1
EMC Immunity	:EN50082-1
Safety	:EN61010
Ambient limits	
storage	: -10 °C to 50 °C
operating	: 0 °C to 45 °C
humidity	: 0 to 95 %RH non-condensing
Protection	:IP20
Version	:Firmware version 3 or later

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