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10/2008
networks under control
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Visualization

Automation

Gateways

Connectivity

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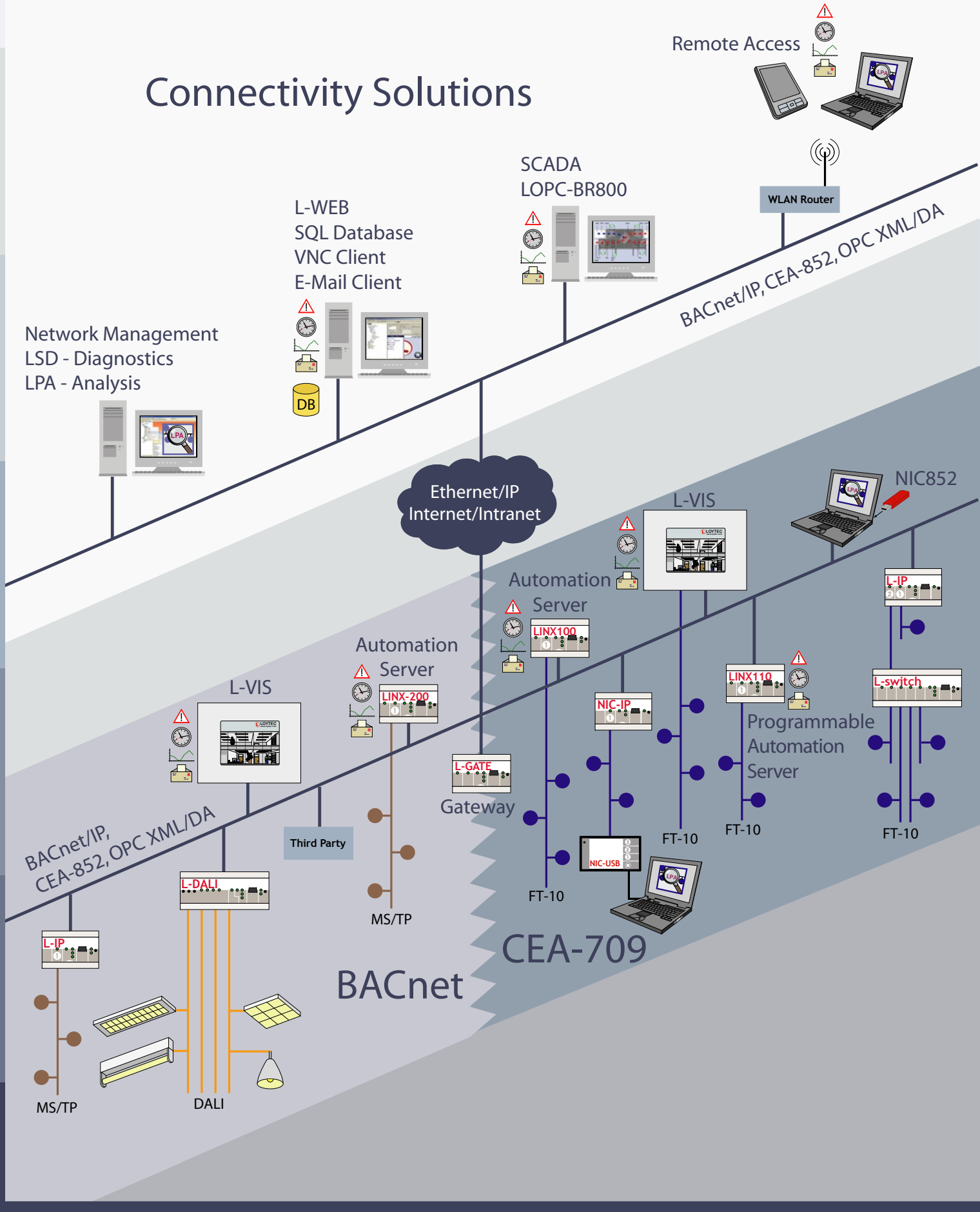
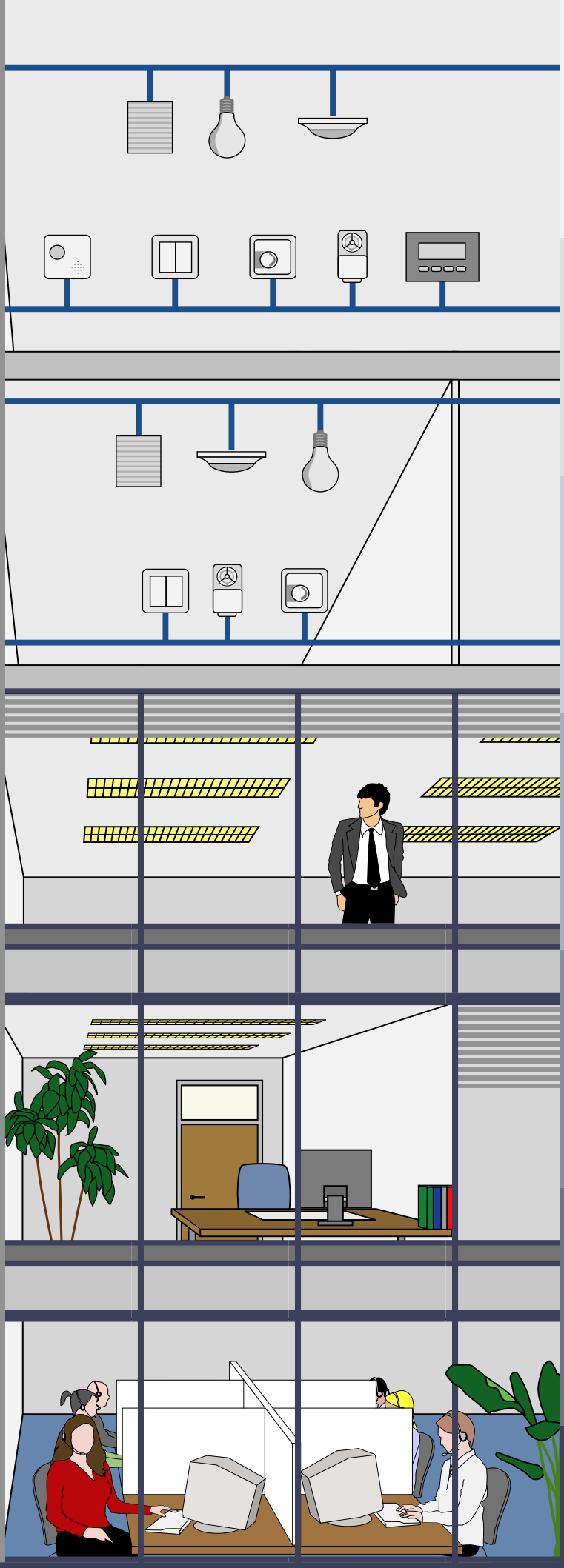
Connectivity Solutions



networks under control

Visualization
Automation
Remote Access
Data Storage
Notification
Diagnostics
Analysis



Visualization
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Gateways
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LOYTEC

Dear valued Customer,

More than ever, the building automation industry is forced to provide highly efficient solutions for saving energy and protecting our environment. Energy efficient solutions, integrating innovative technology for remote facility management are demanded. Synergies created through connected, interdisciplinary applications using standardized communication protocols are indispensable for building novel solutions. Device networking by means of flat networks from the field level to the management level is getting essential for system maintenance and securing investments.

LOYTEC's core business is to provide innovative solutions for device networking in buildings and connected real estate by using the open protocols CEA-709, EN14908 (LonMark® System), and ISO 16484-5 (BACnet®). Connectivity to building management systems is achieved through IP networks and IP-based protocols like CEA-852, BACnet/IP, and OPC XML-DA.

Our portfolio of embedded automation servers, visualization products, connectivity products, gateways, and software tools fits together seamlessly. Reliability, performance and ease of use are the fundamental design goals. Integrated diagnostic features help to get an overview of the network's health condition and save time and money during system maintenance.

Using the new and innovative AST Concept, LOYTEC implements distributed automation functions like Alarming, Scheduling, and Trending in a communication technology independent way. LOYTEC's approach is driven by the market demand for dependable, open systems, which must be easy to install, configure, maintain, and operate. AST seamlessly integrates into multivendor LonMark and BACnet Systems, guaranteeing openness and vendor independence. Supported by the L-VIS Control and Touch panel, the L-INX Automation Server family of products as well as the infrastructure device L-GATE, AST functions are made available in a building network wherever they are needed. The distributed architecture significantly increases system availability. Single failures only effect limited areas of the entire system – the unaffected areas keep working normally.

With the LINX Automation Servers LINX-100 and LINX-200, LOYTEC introduces a brand new family of products, which perfectly fit the needs of the connected real estate market. These small and powerful devices implement state-of-the-art connectivity functions for integrating LonMark or BACnet systems, featuring a complete set of AST functions and providing data access through WEB Services (OPC XML-DA) to connect SCADA or ERP systems.

Together with the LINX Automation Server, LOYTEC introduces the L-WEB graphical user interface software. Running on Windows PCs and Windows Mobile devices, L-WEB uses standard WEB technologies to visualize and control data in dynamic pages provided by one or multiple LINX-100 or LINX-200 Automation Servers. L-WEB pages can simply be created using the L-VIS configuration tool without any know-how in HTML, Java, etc. and are stored on the distributed LINX Automation Server as XML files.

Through the strategic cooperation with Newron System, LOYTEC can offer the largest and most innovative software family of products for commissioning and maintaining CEA-709 systems on the market. The combination of Newron System software and LOYTEC infrastructure products allows a fast, easy, and cost-effective integration process. The aim of this cooperation is to offer the perfect choice of innovative products for building automation network management and network infrastructure solutions to minimize installation costs and maximize customer benefits.

We at LOYTEC always listen to the market to understand our customer needs and expectations. We will continue working hard on expanding our portfolio of powerful, innovative solutions for future applications.

Yours sincerely

Hans-Jörg Schweinzer
President

Content

October 2008, Document No. 04007405

✓ CEA-709
✓ BACnet

System Description - Alarming, Scheduling, Trending

Overview

Alarming, Scheduling, and Trending (AST) functions are significant for Building Automation applications. LOYTEC's approach is driven by the market demand for dependable open systems that must be easy to install, configure, maintain, and operate. AST integrates seamlessly into multi-vendor LonMark and BACnet Systems, guaranteeing openness and vendor independence.

Supported by the L-VIS Control and Touch panel and the L-INX Automation Server family of products as well as the infrastructure device L-GATE, AST functions are made available in a building network wherever they are needed. The distributed architecture significantly increases system availability. Single failures only effect limited areas of the entire system – the unaffected areas keep working normally.

Alarming

Alarming includes alarm servers and clients. An alarm client retrieves the alarm list from the alarm server and acknowledges active alarms.

In LonMark Systems, alarming is implemented in the node object. Alarms are notified through Network Variable of type SNVT_Alarm2. L-VIS, L-INX, and L-GATE products can handle this alarm notification and acknowledge the alarm.

In BACnet Systems, alarming is implemented using the intrinsic reporting feature.

In addition to the mechanisms provided by LonMark and BACnet Systems, the L-VIS, L-INX, and L-GATE products can send out alarm notifications by e-mail. The L-VIS and L-INX products support local alarming by setting up local alarm conditions.

Scheduling

The powerful scheduling service provides the same look and feel for the user independent from whether a BACnet or LonMark System is used.

In LonMark Systems, Network Variables and even Configuration Properties can be scheduled. Based on the LonMark scheduler profile, local schedules and remote schedules located on 3rd-party devices can be accessed by the L-VIS, L-INX, or L-GATE products over the network. Using e.g. the L-VIS, a remote schedule on a third party device can easily be accessed and changed via the L-VIS GUI.

In BACnet Systems, the L-VIS, L-INX, and L-GATE devices behave like any other BACnet device implementing the standard BACnet scheduling service.

Schedules can be configured on L-VIS, L-INX, and L-GATE devices using XML files.

Trending

L-VIS, L-INX, and L-GATE products support local trending of data points. When used in LonMark Systems, any Network Variable can be trended. Through the L-GATE e.g., Network Variables on the CEA-709 side can be trended in a BACnet trend log object to be easily accessed by a BACnet building workstation.

Trend logs can be uploaded in CSV format via FTP from remote L-VIS, L-INX, and L-GATE devices. In addition, the LINX-100 and LINX-200 products provide trend logs via a WEB services interface.

✓ CEA-709
✓ BACnet

System Description - Alarming, Scheduling, Trending

Configuration and Integration

Powerful tools for configuration at device level are supplied with L-VIS, L-INX, and L-GATE. In addition, the L-GATE and the L-INX support AST configuration through the built-in web server. Key element in all tools is the datapoint manager that implements novel mechanisms to manage, create and access the datapoints used on the device.

For integration into LonMark Systems, the datapoint manager can scan either an LNS® database or a physical CEA-709 network to provide a list of all nodes and their Network Variables (NVs) and Configuration Properties (CPs). By selecting the NVs or CPs that should be used, the datapoint manager will automatically create the necessary datapoints on the L-VIS, L-INX, or L-GATE device. When used in an LNS® environment it even creates the necessary bindings automatically.

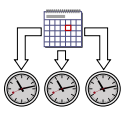
Both static and dynamic Standard Network Variables (SNVTs) can easily be created. In addition, the creation of external Network Variables without binding is supported. This allows using the L-VIS, L-INX, and L-GATE products both in LNS®-based and non-LNS® networks. Besides SNVTs, User Defined Network Variables (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. The L-VIS, L-INX, and L-GATE configuration tools support reading UNVTs from a device resource file and accessing Configuration Properties via LonMark file transfer.

Together with NLFacilities, the AST implementation delivers its full strength and power for LonMark systems. AST being fully supported within the NLFacilities Modeler and Designer enables the user to build, configure and download distributed automation functions. The combination of AST with NLFacilities results in extremely short integration times, reusability of pre-made and pre-tested system setups, and convenience when it comes to system wide changes of a pre-defined setup.

For integration into BACnet Systems, the datapoint manager provides means to either scan a BACnet network or to import an EDE file in order to choose the corresponding BACnet objects where Client-Server mappings can be created automatically. Further, BACnet Server Objects can be created manually on the device.

CEA-709 BACnet

The protocol independent AST approach shows its full power when it comes to CEA-709 / BACnet integration. With the implementation on the L-Gate, AST functions can be mapped automatically between BACnet and CEA-709 networks. This is especially true for scheduling which is fully transparent between a LonMark scheduler and a BACnet scheduler if they are mapped with L-Gate. A BACnet scheduler can transparently schedule network variables in a LonMark system and vice versa. Integration of AST functions between LonMark systems and BACnet has never been easier.



System-wide changes

Changing schedules in a system is the daily business of the building manager. Most of such changes are system-wide, affecting multiple schedules at a time (e.g. make the following day a holiday).

The AST concept guarantees that such changes are automatically distributed and updated between the affected devices. This results in consistent settings in the affected devices. There is no need to touch every single device separately.

✓ CEA-709
✓ BACnet

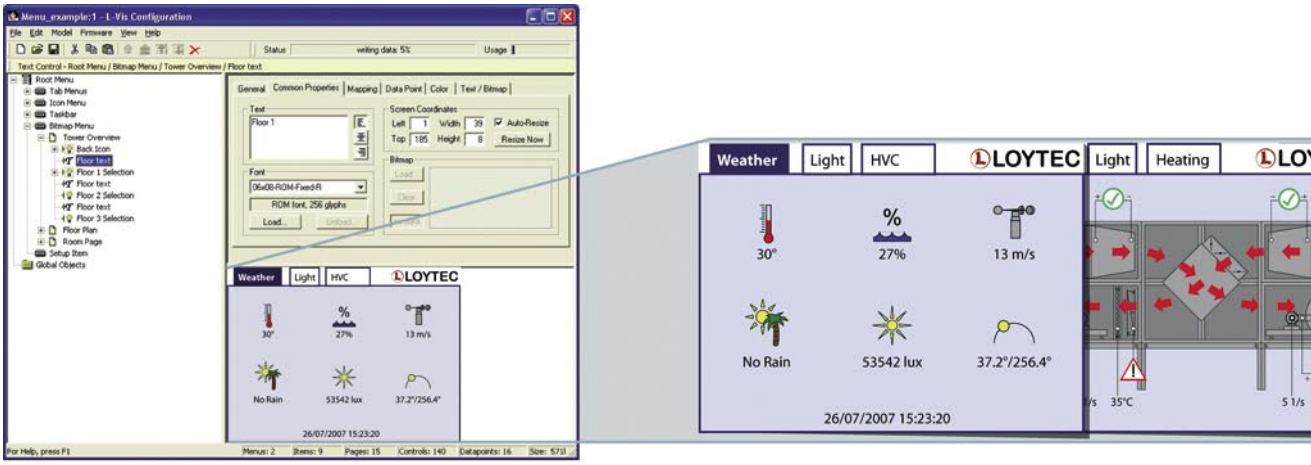
L-VIS - Visualization

L-VIS is an extremely flexible graphical user interface with an unprecedented range of functions. Any information from a CEA-709 or BACnet network can be displayed or controlled via the high-resolution touch display (5,7", 320x240 pixels, 256 colors/VGA Palette), surrounded by a brushed aluminum frame with an anodized finish. The graphical interface can easily be adapted by using customized images or graphics in common file formats such as JPG, BMP, TIF, and even animated GIF. Any information can be displayed in various ways. Dynamic information is shown in the form of numeric values, changing icons, bar graphs or text.

The graphical interface can easily be designed for intuitive navigation. To navigate through the content of the L-VIS, two options are available: menus and icons. A menu is automatically created by setting up the structure and hierarchy of the content. To customize the menu, fonts and colors can be changed. Additionally, a bitmap can be assigned to every menu item.

Thinking of an application for L-VIS, e.g. a conference room in an office building comes to mind. L-VIS takes perfect care of managing the conference room by adjusting set points, selecting light scenarios, or moving sun blinds. And there are a lot more applications in single buildings or distributed real estates where L-VIS fits in perfectly. L-VIS can be installed as a control panel in a control cabinet supervising HVAC systems locally. Installed in the entrance area of any kind of building, L-VIS provides access to applications for service or security personnel. In schools and shops, L-VIS can be used to provide local access to the network. Installed in a hotel room and integrated in the hotel management system, L-VIS could display the user interface in the language of the booked-in guest.

The L-VIS configuration tool supplied with the unit guarantees straightforward configuration. An object-oriented configuration of the graphical interface and pre-defined functions simplify creating easy-to-use menu layouts and graphical pages. The copy-and-paste function allows reusing already created elements and the WYSIWYG preview helps reducing engineering efforts. With the UCS-16 character set of the Unicode standard (ISO-10646), any language, including Chinese, Japanese, and Korean (CJK) is supported.



networks under control

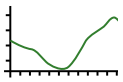
✓ CEA-709
✓ BACnet

Control is just a touch away!™

Alarming

Scheduling

Trending



Calculation

Notification

L-VIS supports automation functions such as scheduling, alarming, and trending. This includes a local scheduling service as well as the possibility to configure several local and remote 24-hour schedulers through display elements. Thus, L-VIS has the capacity to run local AST services or to interact with other L-VIS devices to change scheduling parameters from a central location. Additionaly, scheduling parameters can be configured from remote by the L- VIS configuration tool or by downloading an XML file onto the device. Furthermore, scheduling parameters can be changed from building management systems through Web services by involving other LOYTEC products like the L-INX Automation Server.

L-VIS provides functionality to generate, deliver, acknowledge, and display alarm conditions.

The trending capability includes trend graphs, a data log of values and time stamps. Logged information is available through CSV file export for third party applications.

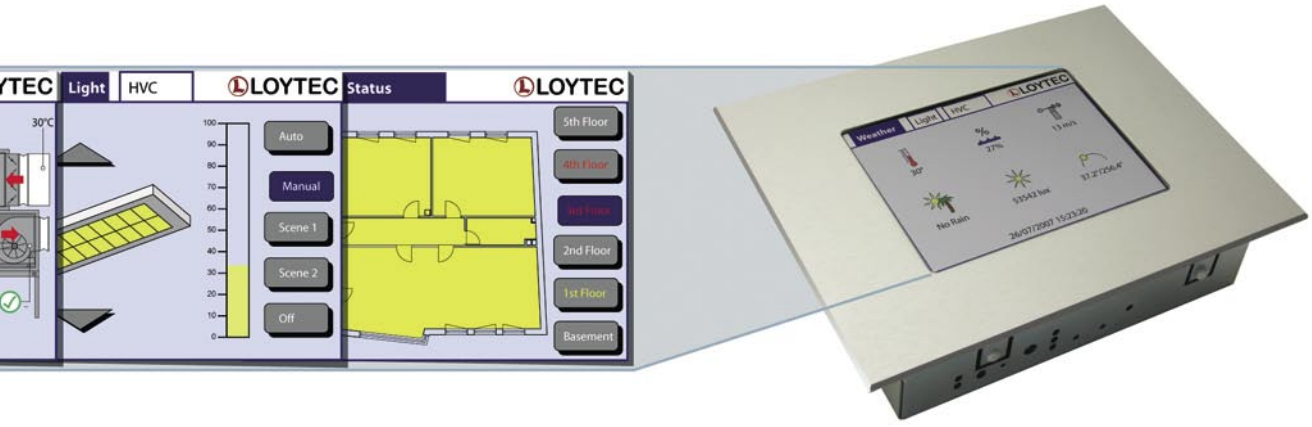
L-VIS supports mathematical operations via calculating mathematical expressions from a number of inputs and assigning results to one or more outputs. The expression is configurable by the user and allows the use of all common mathematical operations and functions as well as boolean expressions.

L-VIS features event-driven e-mail notifications via pre-defined actions. This way, the user is promptly informed about problems like e.g. a specific status or an exceeded high-limit.

See data sheets on www.loytec.com for additional details

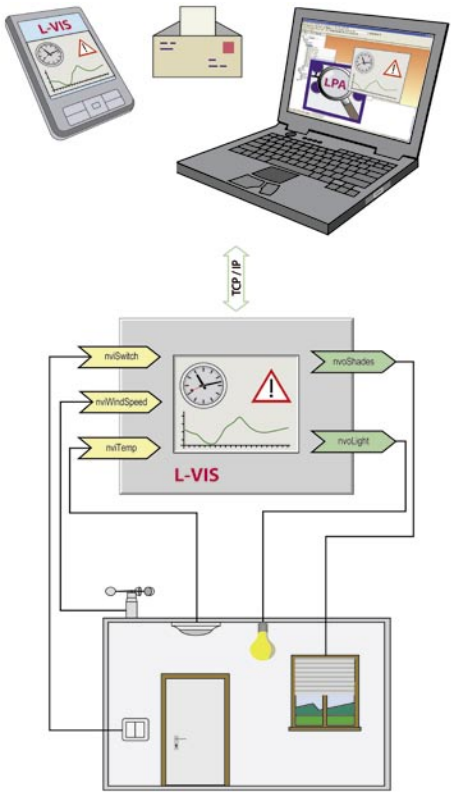
Common features:

- High resolution 320x240 color LC touch display (5,7") with backlight, 256 colors (VGA)
- Brushed aluminium frame with an anodized finish
- Flush-mounting in combination with wall mounting box (included)
- Clear and user friendly navigation menus
- Basic management functions such as scheduling, alarming, and trending
- Access control with PIN code
- External temperature sensor (optional) and input for external light switch
- Simple graphical programming with configuration tool (supplied with the unit)
- WYSIWYG preview on PC screen
- 24 V DC / 24 V AC supply voltage
- Dimensions: W=210mm, H=165mm, D=60mm



✓ CEA-709
BACnet

L-VIS - Visualization LVIS-3E100



LVIS-3E100 is fully compliant with the CEA-709, CEA-852 and EN14908 standards and supports communication either on a TP/FT-10 or an IP-852 (Ethernet /IP) channel. LVIS-3E100 can handle up to 1.000 input or output network variables (NVs) and up to 512 destination addresses. Both static and dynamic Standard Network Variables (SNVTs) as well as User Defined Network Variables (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. The configuration tool allows reading UNVTs from a device resource file and accessing Configuration Properties via LonMark file transfer.

When running LVIS-3E100 as a node on a TP/FT-10 channel, remote network interface functionality is available. This allows managing the TP/FT-10 channel via the Ethernet/IP-Port from remote. In addition, it is possible to remotely analyze the TP/FT-10 channel using LOYTECs protocol analyzer LPA.

The L-VIS configuration tool supplied with the unit can run as a stand-alone tool or as an LNS® plug-in, compatible with LNS® 3.0 and LNS® TE applications like NL220, ALEX, and LonMaker®.

LVIS-3E100 may be configured in several different ways:

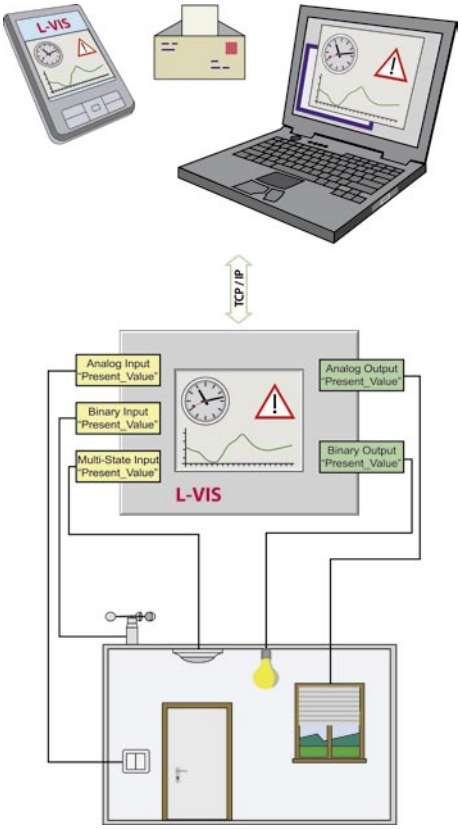
- Through LNS® (L-VIS configuration tool runs as LNS® plug-in)
- Via a TCP/IP connection (using FTP)
- Via a CEA-709 connection (FT-10 or IP852)

LVIS-3E100	
Order Number	**Description**
LVIS-3E100 	• Fully compliant with CEA-709, CEA-852, and EN14908 • Supports TP/FT-10 or CEA-852 Ethernet (IP-852) channels • Simple, graphical programming with LNS® Plug-In or stand-alone LVIS configuration tool • Support of dynamically created network variables or static network variables • Supports User Defined NVs (UNVTs) as well as Configuration Properties (SCPTs, UCPTs) • Up to 1.000 input or output network variables can be processed • Up to 512 destination addresses can be used • Supports trending, scheduling, and alarming locally • Provides Remote Network Interface functionality (RNI) with 2 MNI devices • Easy installation, DHCP • 2 ports: 1 x TP/FT-10 1 x Ethernet Port (IP-852) (user selectable)
L-TEMP 	• External temperature sensor, • Max. cable length: 20m • Accuracy: ± 0,5K from -10°C to +85°C • 71x71x26 (W x H x D in mm)

CEA-709

✓ BACnet

L-VIS - Visualization LVIS-ME200



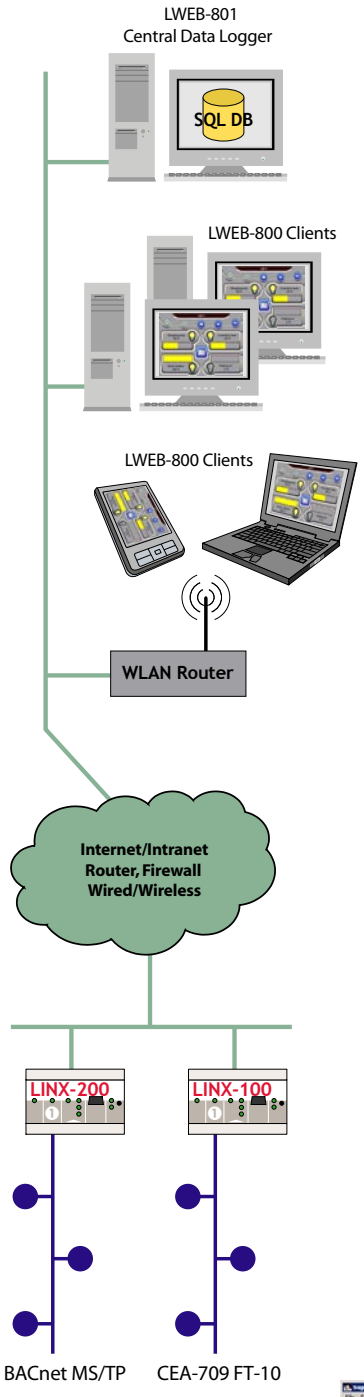
LVIS-ME200 is fully compliant with the ANSI/ASHRAE-135-2004 and ISO 16484-5 standards and supports communication either on a BACnet MS/TP or BACnet/IP (Ethernet/IP) channel. Up to 500 BACnet server objects as well as scheduling, alarming and trending objects can be used to display or control any information on the network. LVIS-ME200 represents an advanced application controller (B-AAC) and supports BACnet client functions like WriteProperty, ReadProperty and COV Subscription.

LVIS-ME200 is supplied with the L-VIS configuration tool. The configuration of the device is made via an Ethernet/IP connection using FTP.

LVIS-ME200	
Order Number	**Description**
LVIS-ME200 	• Fully compliant with ANSI/ASHRAE –135-2004 and ISO 16484-5 • BACnet client functions (WriteProperty, ReadProperty, COV Subscription) • Supports BACnet/IP or MS/TP • B-AAC (and in addition COV, Trending) • up to 500 BACnet server objects • Supports trending, scheduling, and alarming locally and by referring to remote BACnet trendlog, schedule, and notification objects • BACnet client configuration with PC configuration tool (scan and EDE import) • Easy installation, DHCP • 2 ports: 1 x BACnet MS/TP 1 x Ethernet Port (BACnet/IP) (user selectable)
L-TEMP 	• External temperature sensor, • Max. cable length: 20m • Accuracy: ± 0,5K from -10°C to +85°C • 71x71x26 (W x H x D in mm)

✓ CEA-709
✓ BACnet

L-WEB - Distributed Visualization



L-WEB uses standard WEB technologies to visualize and control data provided by one or multiple LINX-100 or LINX-200 Automation Servers on a Windows PC or mobile devices like PDA's or Smart Phones running Windows Mobile .

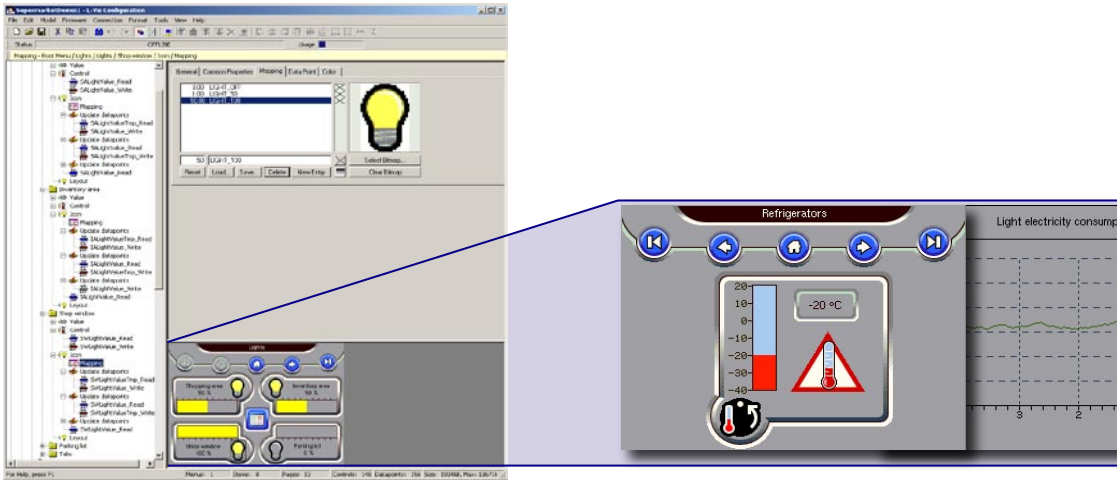
L-WEB uses WEB services (OPC XML-DA) to communicate between L-WEB and remote LINX-10x or LINX-200 Automation Servers which makes it extremely firewall friendly and easy to setup.

Pages can simply be created by using the L-VIS configuration tool without any know-how in HTML, Java, etc. Dynamic information is shown in the form of numeric values, text, changing icons, bar graphs, trend logs, alarm and event lists, or schedule controls.

The graphical interface can easily be designed for intuitive navigation. To navigate through the content of the pages, two options are available: menus and icons. A menu is automatically created by setting up the structure and hierarchy of the content. To customize the menu, fonts and colors can be changed. Additionally, a bitmap can be assigned to every menu item. By using icons e.g. tabs can be created to navigate between the pages.

The object-oriented configuration of the graphical interface and predefined functions simplify creating easy-to-use menu layouts and graphical pages. The copy-and-paste function allows reusing already created elements and the WYSIWYG preview helps reducing engineering efforts. With the UCS-16 character set of the Unicode standard (ISO-10646), any language, including Chinese, Japanese, and Korean (CJK) is supported. Since the L-WEB configuration tool is based on the L-VIS configuration tool, pages can easily be reused for both products. For further details about the L-VIS configuration tool, please refer to the L-VIS description.

The complete set of automation functions of the LINX-100 or LINX-200 Automation Server is fully supported by L-WEB. The automation services are residing in the embedded and distributed LINX-100 or LINX-200 Automation Servers to build up a dependable system with L-WEB only



L-WEB - Data Logging

accessing these services. Furthermore, any kind of calculations, data point connections, etc. are implemented on the embedded Automation Server, which makes the application on the Automation Server completely independent from the connection to the L-WEB application.

L-WEB can simultaneously access data points from multiple LINX-100 or LINX-200 Automation Servers within one page independently of the original data points residing in a LonMark or BACnet system.

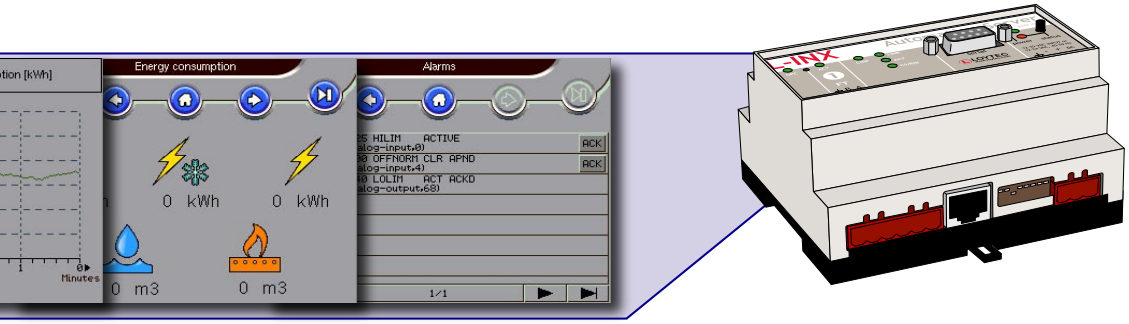
L-WEB can store historical data gathered from the LINX-100 or LINX-200 Automation Server automatically in a database on the PC running the L-WEB application or on a remote PC. Thus, e.g. long term trends can easily be viewed via L-WEB by automatically referring to the historical data in the data base and processed by ERP systems.

See the data sheets on www.loytec.com for additional details.

Features:

- Shows active pages hosted by LINX-100 and LINX-200 Automation Server
- Uses WEB Services to transfer data
- Easy creation of pages through WYSIWYG configuration tool
- Supports various graphical resolutions
- Runs on Windows 2000/XP®/2003/Vista
- Runs on Windows Mobile

L-WEB	
Order Number	**Description**
LWEB-800	• Distributed Visualization • Support for Windows and Windows Mobile • Click-Once technology for application development
LWEB-801	• Data Logger • Stores historical data in a data base • Can access data from 3rd party devices through OPC XML/DA • Supports the following databases: SQLite, SQL Express, MySQL, OLE database



✓ CEA-709
BACnet

LINX-100/-101 Automation Server Embedded Visualization

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Alarming

Scheduling

Trending

Calculation

y=f(x)

Notification

LINX-100/-101 supports automation functions such as scheduling, alarming, and trending accessible via the Web UI using a standard web browser or via L-WEB. Schedulers can be configured from remote using the configuration tool, the web interface or by downloading an XML file onto the device. Alarming includes functionality to generate, deliver, acknowledge, and display alarm conditions. The trending capability includes trend graphs, a data log of values and time stamps. Logged information is available through CSV file export for third party applications. In addition, LINX-100/-101 supports event-driven e-mail notifications.

LINX-100/-101 features an embedded OPC-Server according to the OPC XML/DA standard. It implements access to a user defined set of data objects through the use of Web services and seamlessly integrates into systems connected via the Intranet/Internet. LOYTEC offers an OPC-bridge (OPC-BR800) allowing access for OPC-Clients supporting OPC COM/DCOM only.

LINX-100/-101 can host customized pages with dynamic content to be accessed by the L-WEB application through Windows PCs and Windows Mobile handhelds. Such pages are designed with the L-VIS configuration tool supplied with the unit.

LINX-100 can be connected either to a LonMark IP-852 or a TP/FT-10 channel (configurable). In addition, it implements a full featured Remote Network Interface function. LINX-101 offers the same feature set as LINX-100 except for a full featured IP-852/TP-FT10 router instead of the Remote Network Interface function.

Both static and dynamic Standard Network Variables (SNVTs) as well as User Defined Network Variables (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. The configuration tool allows reading UNVTs from a device resource file and accessing Configuration Properties via LonMark file transfer.

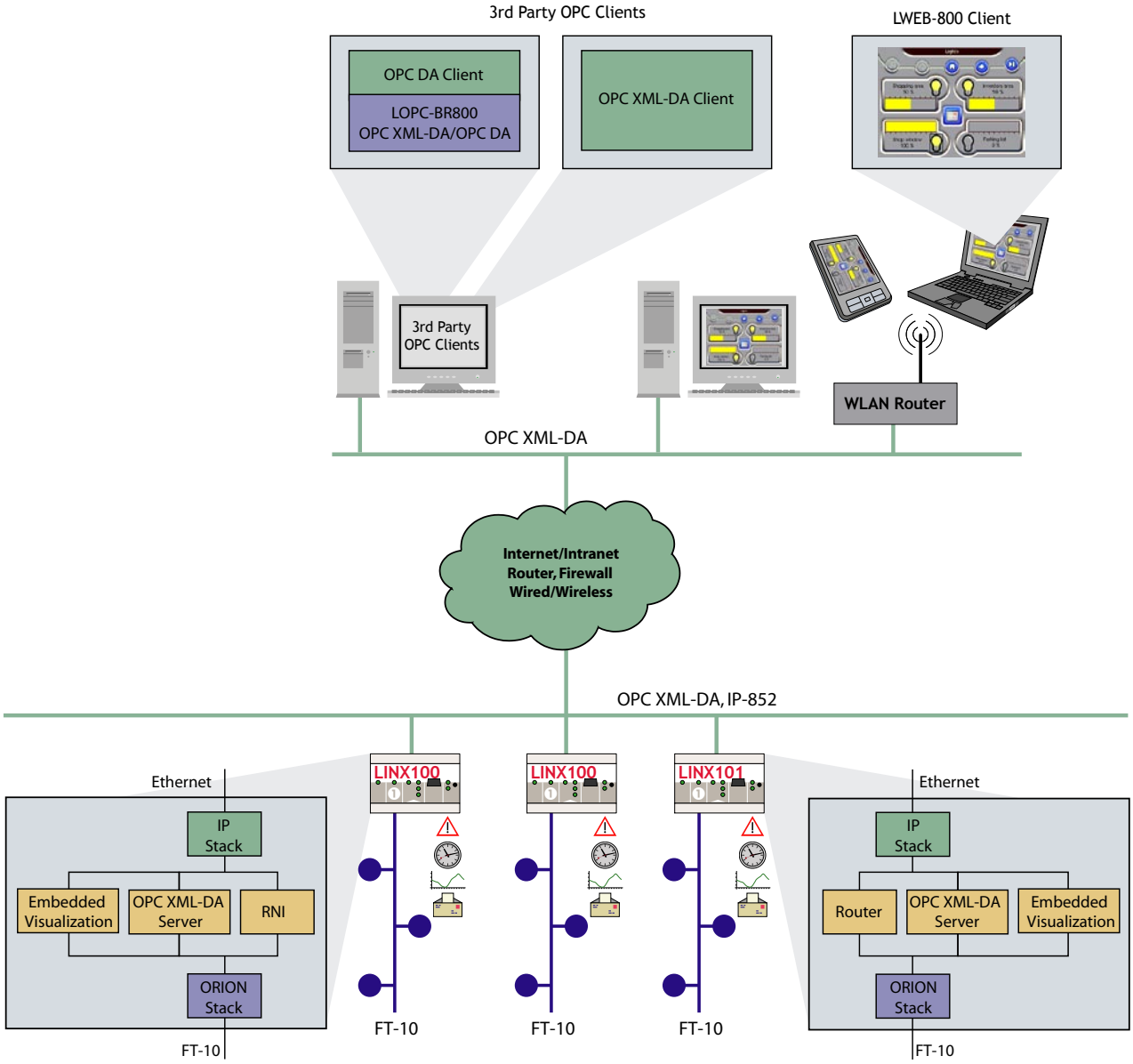
See the data sheets on www.loytec.com for additional details.

Common features:

- Hosts customized pages with dynamic content
- Supports trending, scheduling, and alarming locally
- Alarm notification via e-mail
- Embedded OPC XML/DA server fully compliant with the OPC XML/DA standard
- Supports up to 1000 OPC data points
- Fully compliant with CEA-709, CEA-852 and EN14908
- Provides access to CEA-709 data points using OPC Web services / .NET
- Supports dynamic and static NVs
- Supports User Defined NVs (UNVTs) as well as Configuration Properties (SCPTs, UCPTs)
- Supports one M-Bus or one RS-485 MODBUS Master interface (optional, from Q1/2009)
- Data point configuration through LNS® or stand-alone "1-button configuration" tool
- Remote LPA support with LPA-IP
- Built-in Web server for device configuration
- SNTP support for time synchronization
- Built-in communication test
- Status and activity LEDs (CEA-709 / CEA-852 / OPC)
- Network statistics information accessible through OPC data points
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

* Softing OPC Toolbox inside

LINX-100/-101 Automation Server Embedded Visualization



L-INX	
Order Number	**Description**
LINX-100	• L-INX Automation Server (CEA-709) • Supports either one IP-852 channel or one Remote Network Interface (RNI) with 2 MNI devices • 2 ports: 1 x TP/FT-10 1 x Ethernet Port (IP-852) (user selectable) • 105 x 86 x 60 (L x W x H in mm)
LINX-101	• L-INX Automation Server (CEA-709) • Built-In CEA-709/IP Router • CEA-852 Channel management with built-in Configuration Server • Auto-NAT roaming • 2 ports: 1 x TP/FT-10 1 x Ethernet Port (IP-852) • 105 x 86 x 60 (L x W x H in mm)
LOPC-BR800	• OPC-Bridge for LINX-10x and LINX-200 Automation Server • OPC XML/DA Client to LINX-10x and LINX-200 Automation Server • OPC COM/DCOM (OPC DA 2.0.5) Server to Third Party OPC Client (e.g. SCADA)

CEA-709

✓ BACnet

LINX-200/201 Automation Server Embedded Visualization

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Alarming

Scheduling

Trending

Calculation

y=f(x)

Notification

LINX-200/201 supports automation functions such as scheduling, alarming, and trending accessible via the Web UI using a standard web browser or via L-WEB. Schedulers can be configured from remote using the configuration tool, the web interface or by downloading an XML file onto the device. Alarming includes functionality to generate, deliver, acknowledge, and display alarm conditions. The trending capability includes trend graphs, a data log of values and time stamps. Logged information is available through CSV file export for third party applications. In addition LINX-200 supports event-driven e-mail notifications.

LINX-200/-201 features an embedded OPC-Server according to the OPC XML/DA standard. LINX-200 implements access to a user defined set of data objects through the use of Web services and seamlessly integrates into systems connected via the Intranet/ Internet. LOYTEC offers an OPC-bridge (OPC-BR800) allowing access also for OPC-Clients supporting OPC COM/DCOM only.

LINX-200/-201 can host customized pages with dynamic content to be accessed by the L-WEB application through Windows PCs and Windows Mobile handhelds. Such pages are designed with the L-VIS configuration tool supplied with the unit.

LINX-200 can be connected either to a BACnet MS/TP or a BACnet/IP channel (configurable). LINX-201 offers the same feature set as LINX-200 and in addition a full featured BACnet/IP to MS/TP router.

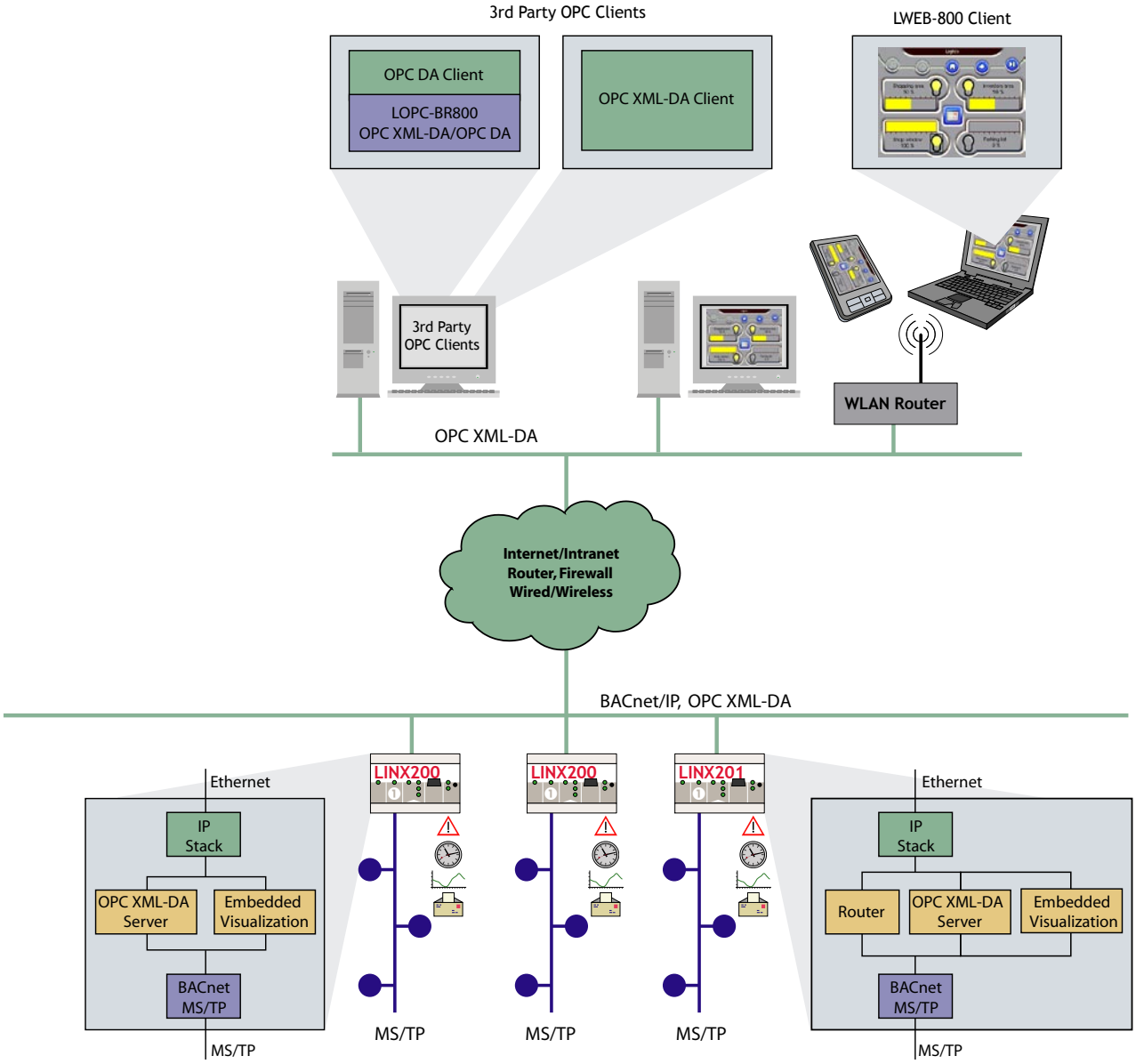
See the data sheets on www.loytec.com for additional details.

Features:

- Hosts customized pages with dynamic content
- Supports trending, scheduling, and alarming locally and by referring to remote BACnet trendlog, schedule, and notification objects
- Alarm notification via e-mail
- Embedded OPC XML/DA server fully compliant with the OPC XML/DA standard
- Supports up to 1000 OPC data points
- Fully compliant with ANSI/ASHRAE –135-2004 and ISO 16484-5
- Provides access to BACnet objects using OPC Web services / .NET
- Supports BACnet client functions (WriteProperty, ReadProperty, COV Subscription)
- Supports BACnet/IP and MS/TP
- Supports B-AAC (and in addition COV, Trending)
- Data point configuration through stand-alone tool
- BACnet configuration throug PC configuration tool (scan and EDE import)
- BACnet object configuration from XML file
- Built-In Web server for device configuration
- SNTP support for time synchronization
- Built-in communication test
- Supports one M-Bus or one RS-485 MODBUS Master interface (optional, from Q1/2009)
- Status and activity LEDs (BACnet MS/TP / BACnet/IP / OPC)
- Easy installation, DHCP
- 100baseT connection
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

* Softing OPC Toolbox inside

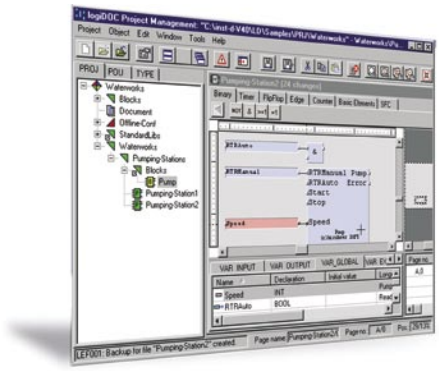
LINX-200/201 Automation Server Embedded Visualization



L-INX	
Order Number	**Description**
LINX-200	• L-INX Automation Server (BACnet) • 2 ports: 1 x BACnet MS/TP 1 x Ethernet Port (BACnet/IP) (user selectable) • 105 x 86 x 60 (L x W x H in mm)
LINX-201	• L-INX Automation Server (BACnet) • Built-In BACnet/IP to MS/TP Router • 2 ports: 1 x BACnet MS/TP 1 x Ethernet Port (BACnet/IP) • 105 x 86 x 60 (L x W x H in mm)
LOPC-BR800	• OPC-Bridge for LINX-10x and LINX-200 Automation Server • OPC XML/DA Client to LINX-100 and LINX-200 Automation Server • OPC COM/DCOM (OPC DA 2.0.5) Server to Third Party OPC Client (e.g. SCADA)

✓ CEA-709
BACnet

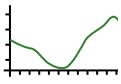
LINX-110/-111 Automation Server 61131 Programmable



Alarming

Scheduling

Trending



Notification

The LINX-110/-111 Automation Server is a CEA-709 compliant programmable device incorporating a set of automation functions and IEC61131-3 function block programming using the logi.CAD programming tool suite.

The device can be connected to a LonMark IP-852 or TP/FT-10 channel. A Remote Network Interface function is supported providing the LOYTEC NIC709-IP feature set with 2 MNI devices.

Multiple IEC61131-3 programs can be executed in parallel with different cycle times down to 1ms. The logi.CAD programming tool allows online testing of the IEC61131-3 application over the CEA-709 and the Ethernet/IP network. New 61131 applications can be downloaded onto the device without interrrupting the current program execution.

Which NVs are mapped to the IEC61131 application program can be configured by the Configuration Utility shipped with the device. It operates either as an LNS® plug-in or in stand-alone mode. The NVs can be bound in the CEA-709 network or operated as "external NVs" (polled).

Each LINX-110/-111 can handle up to 1000 network variables. Several devices can be installed in a network at the same time.

Both static and dynamic Standard Network Variables (SNVTs) as well as User Defined Network Variables (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. The configuration tool allows reading UNVTs from a device resource file and accessing Configuration Properties via LonMark file transfer.

LINX-110/-111 supports automation functions such as scheduling and alarming accessible via the Web UI using a standard web browser. Schedulers can be configured from remote using the configuration tool, the web interface or by downloading an XML file onto the device. Alarming includes functionality to generate, deliver, acknowledge, and display alarms. The trending capability includes a data log of values and time stamps. Logged information is available through CSV file export for third party applications.

The LINX-110/-110 Automation Server features event-driven e-mail notifications. This way, the user is promptly informed about alarm conditions like e.g. a specific status or an exceeded high-limit.

LINX-110 can be connected either to a LonMark IP-852 or a TP/FT-10 channel (configurable). In addition, it implements a full featured Remote Network Interface function. LINX-111 offers the same feature set as LINX-100 except for a full featured IP-852/TP-FT10 router instead of the Remote Network Interface function.

See the data sheets on www.loytec.com for additional details.

✓ CEA-709
BACnet

LINX-110/-111 Automation Server 61131 Programmable

Features:

- Programmable device via IEC61131-3 function block programming
- Online testing using IEC61131 programming tool logi.CAD
- Traceability of IEC61131 variables via the logi.CAD programming tool
- Programm download without interruption of the currently executed application programm
- Programm download in the field with the L852 download tool and the LINX-110/-110 configuration tool
- Supports scheduling, alarming and trending
- Supports network variable type conversion
- Fully compliant with CEA-709, CEA-852 and EN14908
- Support of dynamically created network variables or static network variables
- Support of User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs)
- Supports one TP/FT-10 or IP-852 channel (configurable)
- Event-driven e-mail notification
- Supports up to 1000 CEA-709 network variables
- Supports up to 1000 address table entries
- RTC support
- Channel Monitor Object accessible through NVs
- Built-in Web server for device configuration and datapoint monitoring
- Remote Network Interface with 2 MNI devices available
- Network diagnostic LEDs
- CEA-709 status and activity LED
- Ethernet link and activity LED
- IEC61131 status LED
- 100baseT connection
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

L-INX	
Order Number	Description
LINX-110	• L-INX Automation Server (CEA-709) • Supports either one IP-852 channel or one Remote Network Interface (RNI) with 2 MNI devices • 2 ports: 1 x TP/FT-10 1 x Ethernet Port (user selectable) • 105 x 86 x 60 (L x W x H in mm)
LINX-111	• L-INX Automation Server (CEA-709) • Built-In CEA-709/IP Router • CEA-852 Channel management with built-in Configuration Server • Auto-NAT roaming • 2 ports: 1 x TP/FT-10 1 x Ethernet Port • 105 x 86 x 60 (L x W x H in mm)
L-LOGICAD	• 61131 Programming Tool

✓ CEA-709
✓ BACnet

L-GATE - CEA-709 / BACnet Gateway

LGATE-900 is a CEA-709 / BACnet gateway which allows seamless integration of systems using both communication standards by mapping CEA-709 network variables (NVs) to standard BACnet server objects. LGATE-900 is fully compliant with the standards CEA-709, CEA-852, and EN14908 as well as ASHRAE 135-2004 and ISO 16484-5. Analog, binary, and multistate BACnet objects (input/output) are mapped to NVs based on the CEN/TS 15231:2005 standard. BACnet properties are automatically configured with default values from the SNVT self-description. Scalar NVs are mapped to one BACnet object each. Structured NVs are mapped to several BACnet object, one for each member (members can be selected individually). Each LGATE-900 can handle up to 750 BACnet Objects. Several devices can be installed in a network at the same time.

The configuration is done with an easy-to-use LNS® plug-in or stand-alone configuration tool. The connected networks can be scanned for network variables or BACnet objects. Installed as a plug-in, the configuration tool allows browsing the LNS® database. From the BACnet side, EDE-File import is supported.

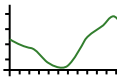
Alarming

Both static and dynamic Standard Network Variables (SNVTs) as well as User Defined Network Variables (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. The configuration tool allows reading UNVTs from a device resource file and accessing Configuration Properties via LonMark file transfer. NVs can be bound or used as "external data points"(polled), which are configured with address information via the configuration tool. On the CEA-709 side, the LGATE-900 supports either LonMark IP-852 or TP/FT-10.

Scheduling

The BACnet server objects are accessible from the BACnet network where BACnet/IP or BACnet MS/TP is supported. In addition, LGATE-900 also includes client functions. For each server object a "client mapping" can be defined.

Trending



LGATE-900 supports management functions such as scheduling, alarming, and trending via corresponding BACnet objects. Scheduling parameters can be configured from remote using the configuration tool, the web interface or by downloading an XML file onto the device. Alarming includes functionality to generate, deliver, acknowledge, and display alarm conditions via the Web UI. The trending capability includes a data log of values and time stamps. Logged information is available through CSV file export for third party applications.

Notification

LGATE-900 features event-driven e-mail notification. This way, the user is promptly informed about alarm conditions like e.g. a specific status or an exceeded high-limit.

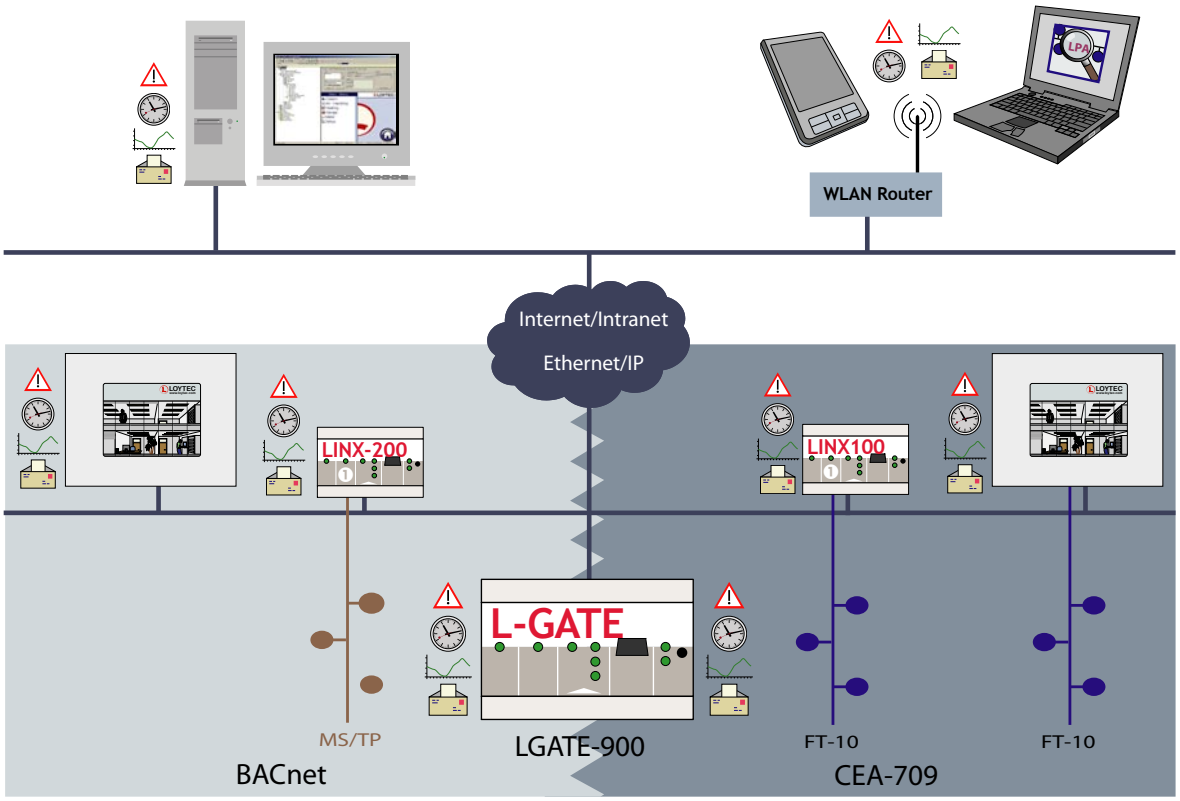
See the data sheets on www.loytec.com for additional details.

✓ CEA-709
✓ BACnet

L-GATE - CEA-709 / BACnet Gateway

Features:

- Fully compliant with CEA-709, CEA-852 and EN14908
- Fully compliant with ANSI/ASHRAE 135-2004 and ISO 16484-5
- Maps CEA-709 network variables to BACnet server objects based on CEN/TS 15231:2005
- Support of dynamically created network variables or static network variables
- Supports User Defined NVs (UNVTs) as well as Configuration Properties (SCPTs, UCPTs)
- Initializes BACnet properties from SNVT description
- Supports BACnet client mappings (WriteProperty, ReadProperty, COV Subscription)
- Supports trending, scheduling, and alarming locally and by referring to remote BACnet trendlog, schedule, and notification objects
- Event-driven e-mail notification
- Supports one TP/FT-10 or CEA-852 channel (configurable)
- Supports one BACnet MS/TP or BACnet/IP channel (configurable)
- Supports B-AAC (and in addition COV, Trending)
- Supports up to 750 BACnet objects plus trendlog, schedule, and notification objects
- BACnet object configuration via LNS® "1-button configuration" tool or fom XML file
- Built-in Web server for device configuration
- Network diagnostic LEDs
- 100baseT connection
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

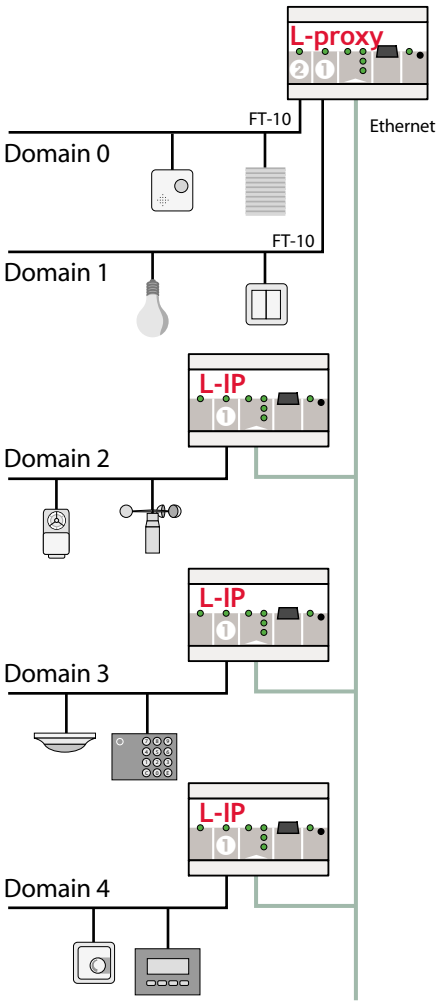


L-GATE		
Order Number	Description	
LGATE-900	3 ports:	1 x TP/FT-10, 1 x BACnet MS/TP 1 x Ethernet (IP-852, BACnet/IP)
	105 x 86 x 60 (L x W x H in mm)	

L-Proxy - CEA-709 Multiport Gateway

L-Proxy is a gateway node for CEA-709 networks that operates on network variables. This gateway allows exchanging data packets across domain boundaries. L-Proxy represents up to 5 independent network nodes (1 on each TP/FT-10 channel and up to 3 on the IP-852 channel). Input and output network variables can be created dynamically on each of the L-Proxy nodes using standard network management tools. The nodes can be configured to either reside in different domains (and therefore in different LNS® databases) or in the same domain.

See the data sheets on www.loytec.com for additional details.



Features:

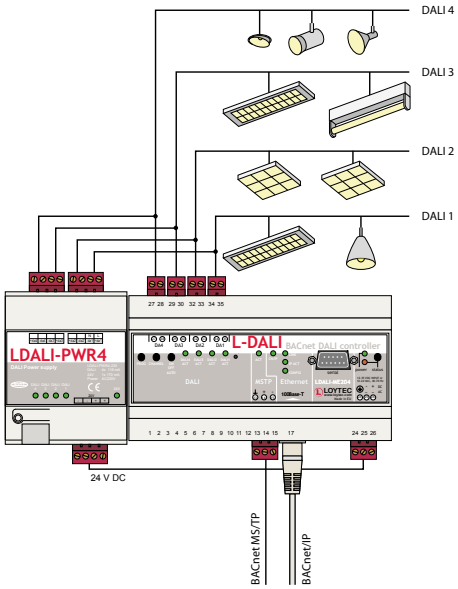
- Supports binding of network variables across domain boundaries
- Supports up to 512 network variables per port
- Supports up to 512 alias-network variables per port
- Supports up to 512 address table entries per port
- Support of dynamically created network variables or static network variables
- Supports User Defined NVs (UNVTs) as well as Configuration Properties (SCPTs, UCPTs)
- Configuration using standard network management tools
- Conversion between different scalar SNVT types
- Configuration with LNS® Plug-In supplied with the unit
- Compatibel with LNS® 3.0 and LNS® TE applications, e.g. NL220, ALEX, LonMaker®
- Supports remote firmware update and configuration over each network interface
- Supports the following channels: TP/FT-10, CEA-852 (Ethernet/IP)
- 100baseT connection
- 12-35V DC / 12-24V AC supply voltage
- 105 x 86 x 60 (L x W x H in mm) i.e. 6 TE
- DIN-rail mountable

L-Proxy			
Order Number	Description		
LP-33E100	3 ports:	2 x TP/FT-10	1 x Ethernet Port (IP-852)
	105 x 86 x 60 (L x W x H in mm)		

CEA-709

✓ BACnet

L-DALI - BACnet/DALI Gateway



The L-DALI gateway enables Light Control through a BACnet interface. DALI (Digital Adressable Lighting Interface) is part of the IEC 60929 standard. It is used to dimm and switch luminaires from most of the leading European manufacturers. DALI also supports devices like multisensors (e.g. for brightness, movement, temperature, etc.) and intelligent switches. L-DALI provides 4 independent DALI channels and can control up to 64 DALI-based luminaires per DALI channel. An external bus power supply like the LDALI-PWR4-230 is required.

All luminaires are monitored for defective lamps. L-DALI can provide this information to the Building Management System (BMS) through its BACnet interface. On the BACnet side, L-DALI supports BACnet/IP and BACnet MS/TP.

The complete L-DALI configuration can be performed through the built-in Web server. Thus, the commissioning and maintainance of the DALI system can be done using a standard Web browser on a PC.

See the data sheets on www.loytec.com for additional details.

Features:

- Control DALI capable ballasts via BACnet interface
- BACnet MS/TP and BACnet/IP (software selectable)
- BACnet Application Specific Controller (B-ASC) from Vers. 1.0
- 4 DALI channels, up to 256 DALI devices
- Configuration via Web interface
- Control of up to 64 DALI devices per DALI channel via BACnet analog output objects
- Control of up to 16 DALI groups per DALI channel via BACnet analog output objects
- Supports scene control via BACnet multi-state output objects: Support for 16 groups and one broadcast scene per DALI channel
- Detects lamp and ballast failures on DALI luminaires and signals failures via BACnet alarm
- Simple replacement of (broken) DALI devices (no configuration tool required)
- Update firmware via serial interface and Ethernet/IP
- 100baseT connection
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

L-DALI	
Order Number	**Description**
LDALI-ME204	5 ports: 4 x DALI 1 x Ethernet (BACnet/IP) oder 1 x BACnet MS/TP 157 x 86 x 60 (L x W x H in mm)
LDALI-PWR4-230	• DALI Power Supply (One LDALI-PWR4-230 is required per LDALI-ME204) • Input: AC 230 V (+/- 10%) 50 Hz • Output: 1 x 24 V DC (+/- 10%), max. 170 mA (Power Supply for LDALI-ME204) • Output: 4 x 16 V DC, max. 120 mA DALI Bus Power Supply • 72 x 86 x 58 (L x W x H in mm)
LDALI-PWR1-230	• DALI Power Supply (Four LDALI-PWR1-230 are required per LDALI-ME204) • Input: AC 230 V (+/- 5%) 50 Hz • Output: 1 x 16 V DC, max. 240 mA DALI Bus Power Supply • 36 x 89.5 x 56.8 (L x W x H in mm)

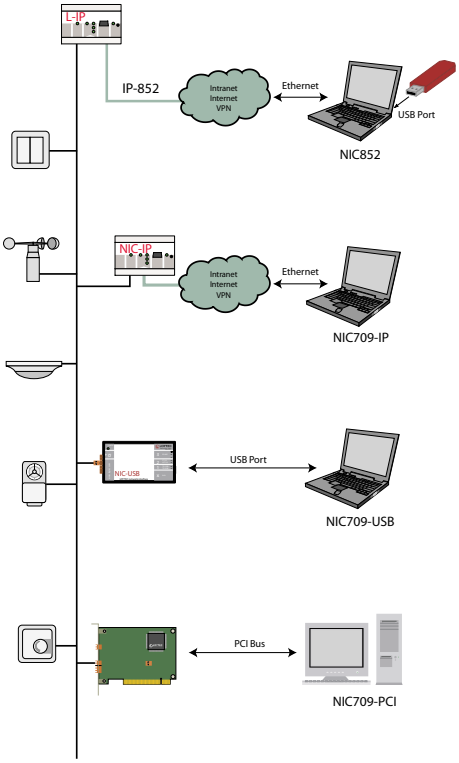
✓ CEA-709

BACnet

NIC - High Speed CEA-709 / CEA-852 Network Interfaces

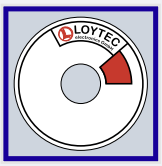
LOYTEC NICs are the most universal network interfaces for CEA-709 and CEA-852 (Ethernet) channels. Based on the revolutionary ORION and L-Chip technologies, they offer high packet update rates and low response times. All NICs are fully compatible with products like NL220, ALEX, LNS® 3.x and LNS® TE applications, LonMaker®, NodeUtil32, NLUtil, OPC servers, and with high performance ORION applications. The multiplexed network interface (MNI) support allows starting multiple MIP applications in parallel to an LPA, LSD Tool, NL220, or LonMaker® on a single network interface.

See the data sheets on www.loytec.com for additional details.



Features:

- Network Interface for CEA-709 and CEA-852 (IP-852) network channels
- Available for USB, PCI bus, and Ethernet port
- Create up to 8 network nodes with a single network interface (MNI devices)
- Use the LPA, LSD Tool , your ORION applications, MIP applications, and LNS® (VNI) applications on a single network interface at the same time
- Compatible with BMS e.g. Honeywell EBI, TAC VISTA, etc.
- Compatible with LNS® applications in high performance VNI™ mode e.g. NL220, NLFacilities, NLOPC-VNI, ALEX, NetWorker, LonMaker® etc.
- Compatible with MIP applications (LDV interface) e.g. NodeUtil32 ,NLUtil , NLOPC-MIP, Honeywell CARE 5/7, etc.
- Compatible with high performance ORION applications (ORION API)
- NIC-852 is fully compatible with L-IP and i.LON® 600 Internet routers
- Use legacy MIP applications together with the IP-852 (Ethernet) channel
- Software selectable transceivers on NIC709-USB100 and NIC709-PCI100: FT-10/LP-10, RS-485, and TP/XF-1250/2500
- Runs on Windows 2000/XP®/2003/Vista (NIC709-USB100, NIC709-PCI100, NIC709-IP1E100, NIC709-IP3E100, NIC-852)
- Runs on Linux 2.6 (NIC709-PCI100).

NIC	
Order Number	**Description**
NIC852 	• USB key connects to the USB port of a PC • Supports IP-852 • Uses Ethernet port of PC to connect to IP-852 channel • LNS, MIP, and ORION applications directly access the IP-852/Ethernet channel • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc.
NIC852-SW 	• Software license • Software activated for a Windows PC, no USB key required • Supports IP-852 • Uses Ethernet port of PC to connect to IP-852 channel • LNS, MIP, and ORION applications directly access the IP-852/Ethernet channel • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc.

✓ CEA-709
BACnet

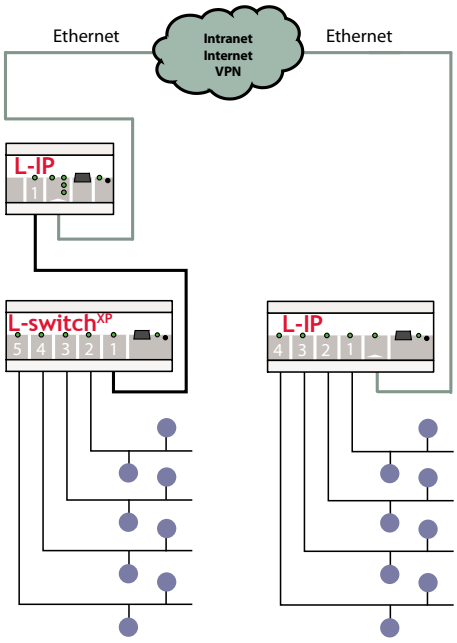
NIC - High Speed CEA-709 / CEA-852 Network Interfaces

NIC	
Order Number	Description
NIC709-PCI100 	• Connects to the PCI bus of a PC (3,3V or 5,0V) • Supports TP/FT-10, TP/XF-1250, RS-485 • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc.
NIC709-USB100 	• Connects to the USB port of a PC • Supports TP/FT-10, TP/XF-1250, RS-485 • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc.
NIC709-IP1E100 	• Remote network interface • Supports TP/XF-1250 • Can be used in Intranets and for Internet remote access • Easy installation, Auto-NAT, DHCP • Remote LPA support with LPA-IP • MD5 authentication • Status and activity LEDs • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc. • 12-35 V DC / 12-24 V AC supply voltage • DIN-rail mountable
NIC709-IP3E100 	• Remote network interface • Supports TP/FT-10 • Can be used in Intranets and for Internet remote access • Easy installation, Auto-NAT, DHCP • Remote LPA support with LPA-IP • MD5 authentication • Status and activity LEDs • Compatible with e.g. Honeywell CARE 5/7, TAC VISTA, etc. • 12-35 V DC / 12-24 V AC supply voltage • DIN-rail mountable
LVIS-3E100 	• Control and Display Panel for CEA-709 networks • Includes remote network interface (NIC709-IP3E100 functionality with 2 MNI devices) • See page 10 for details on LVIS-3E100
LINX-100 / LINX-110 	• Automation Server • Includes remote network interface (NIC709-IP3E100 functionality with 2 MNI devices) • See page 14 for details on LINX-100 • See page 18 for details on LINX-110

L-IP - CEA-709/IP Router

The L-IP connects CEA-709 channels (e.g. TP/FT-10 or TP/XF-1250) through IP networks. It routes CEA-709 packets back and forth through an IP based network, such as a LAN (Ethernet), an Intranet, or even the Internet. The L-IP connects to the IP network via a 100baseT Ethernet channel. In order to provide the optimal router configuration, the L-IP is available in 4 different versions providing either 4 x TP/FT-10, 2 x TP/FT-10, 1 x TP/FT10, or 1 x TP/XF-1250. Every L-IP supports the operating modes "Smart Switch Mode" and "Configured Router Mode".

See the data sheets on www.loytec.com for additional details.



Features:

- Routes packets between CEA-709 and IP networks (Ethernet)
- Fully compliant with CEA-852 and EN14908 standards
- Configured Router Mode
- Smart Switch Mode
- Support for operation behind NAT-Routers and firewalls
- Easy installation, Auto-NAT, roaming, DHCP
- Built-in CEA-852 configuration server for up to 256 members
- Remote LPA support with LPA-IP
- Configuration via built-in Web server or serial port
- MD5 authentication
- SNTP support for time synchronization
- Built-in enhanced communication test
- Supports firmware update through serial port, Ethernet, and CEA-709 channel
- Network diagnostic LEDs
- CEA-709 status and activity LED
- Ethernet link and activity LED
- CEA-852 status and operating mode LED
- Remote monitoring of the supply voltage and device temperature
- 100baseT connection
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

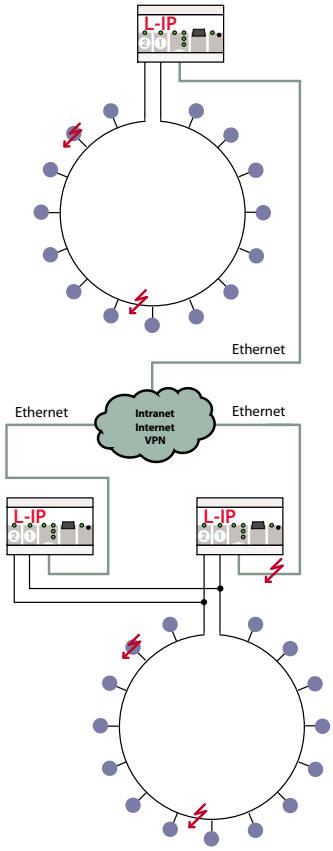
L-IP			
Order Number	Description		
LIP-3ECTB	2 ports:	1 x TP/FT-10	1 x Ethernet Port (IP-852)
	105 x 86 x 60 (L x W x H in mm)		
LIP-1ECTB	2 ports:	1 x TP/XF-1250	1 x Ethernet Port (IP-852)
	105 x 86 x 60 (L x W x H in mm)		
LIP-33ECTB	3 ports:	2 x TP/FT-10	1 x Ethernet Port (IP-852)
	105 x 86 x 60 (L x W x H in mm)		
LIP-3333ECTB	5 ports:	4 x TP/FT-10	1 x Ethernet Port (IP-852)
	157 x 86 x 60 (L x W x H in mm)		

L-IP Redundant - CEA-709/IP Router

The L-IP Redundant is based on the standard L-IP router and adds functionality, which allows to build a redundant network infrastructure. The L-IP Redundant can be used as a single device to achieve redundancy on the CEA-709 (TP/FT-10) channel by building a ring structure.

Full redundancy on both the IP channel and the CEA-709 channel as well as device redundany can be achieved using two devices in parallel (Twin Mode). In addition, the L-IP Redundant monitors the nodes on the TP/FT-10 channel and creates an alarm in case of a failure. An integrated broken cable detection algorithm helps to locate the point of failure immediately. The L-IP Redundant only supports the "Configured Router Mode".

See the data sheets on www.loytec.com for additional details.



Added features compared to the standard L-IP:

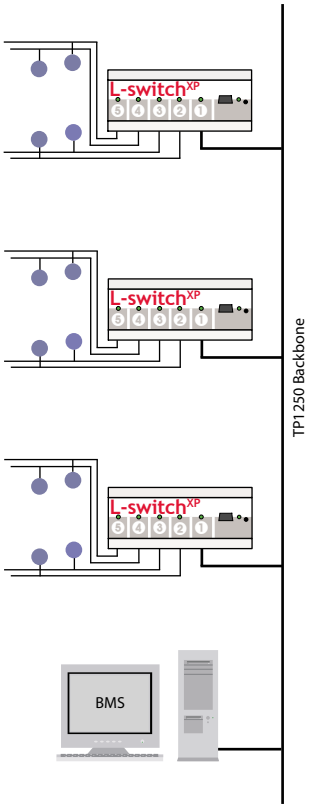
- Detection of broken cable (TP/FT-10 channel)
- Indicates where cable is broken
- Full redundancy with two L-IP Redundant devices in Twin Mode (IP-Cannel and TP/FT-10 channel)
- Device redundancy by mutual monitoring of L-IP Redundant devices in Twin Mode
- Communication on the TP/FT-10 channel is guaranteed in case of a single cable break
- Nodes on the TP/FT-10 channel can be monitored
- Messages and alarms are presented via LonMark SNVTs
- Supports Configured Router Mode only
- Monitors network health (bandwidth utilization, error rate, etc.)

L-IP Redundant			
Order Number	Description		
LIP-33ECRB	3 ports:	2 x TP/FT-10	1 x Ethernet Port (IP-852)
	105 x 86 x 60 (L x W x H in mm)		

L-Switch^{XP} - CEA-709 Router

The L-Switch^{XP} is the solution for interconnecting multiple CEA-709 channels. It provides up to five ports and routes packets between these ports. In spite of its small size, the L-Switch^{XP} router delivers first class performance and flexibility in use. In order to provide the optimal router configuration, the L-Switch^{XP} comes with 2 to 5 ports as well as the two operating modes "Smart Switch Mode" and "Configured Router Mode".

See the data sheets on www.loytec.com for additional details.



Features:

- For physical separation and logical connection of up to 5 CEA-709 network segments
- Can be used as configured router
- Can be used as learning switch or repeater*
- Plug & Play installation*
- Forwards packets of up to 256 bytes length
- Supports up to four domains*
- Forwarding decision based on subnet/node and group addresses*
- Short propagation delay between ports
- Processes up to 3500 packets/s
- Supports firmware update and external configuration through each network interface
- Diagnostic LEDs for each channel showing network activity, overload, and error conditions
- Network diagnostic functions and L-Switch^{XP} management via LSD-Tool from remote
- Supply voltage and CPU temperature monitor
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

* Smart Switch Mode only

L-Switch^{XP}			
Order Number	Description		
LS-33CB	2 ports:	2 x TP/FT-10	
	105 x 86 x 60 (L x W x H in mm)		
LS-13CB	2 ports:	1 x TP/XF-1250	1 x TP/FT-10
	105 x 86 x 60 (L x W x H in mm)		
LS-11CB	2 ports:	2 x TP/XF-1250	
	105 x 86 x 60 (L x W x H in mm)		

✓ CEA-709
BACnet

L-Switch^{XP} - CEA-709 Router

L-Switch^{XP}			
Order Number	Description		
LS-33300CB	3 ports:	3 x TP/FT-10	
	157 x 86 x 60 (L x W x H in mm)		
LS-13300CB	3 ports:	1 x TP/XF-1250	2 x TP/FT-10
	157 x 86 x 60 (L x W x H in mm)		
LS-13333CB	5 ports:	1 x TP/XF-1250	4 x TP/FT-10
	157 x 86 x 60 (L x W x H in mm)		
LS-11333CB	5 ports:	2 x TP/XF-1250	3 x TP/FT-10
	157 x 86 x 60 (L x W x H in mm)		

CEA-709

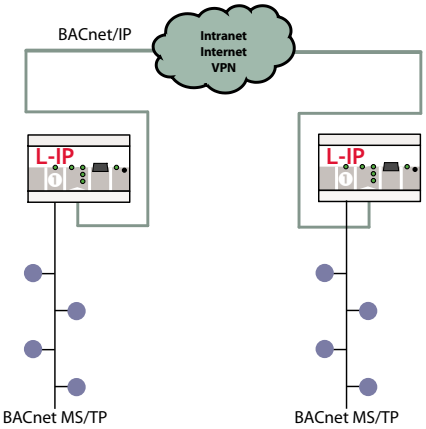
✓ BACnet

L-IP - BACnet/IP Router

The LIP-ME201 BACnet/IP Router connects a BACnet MS/TP channel to a BACnet/IP network. It routes BACnet packets back and forth through an IP based network, such as a LAN (Ethernet), an Intranet, or even the Internet. The LIP-ME201 is compliant with the standards ASHRAE 135-2004 and ISO 16484-5. LIP-ME201 can be configured to act as a BACnet Broadcast Management Device (BBMD).

The L-IP connects to the IP network via a 100baseT Ethernet channel. The complete LIP-ME201 configuration can be performed through the built-in Web server using a standard Web browser.

See the data sheets on www.loytec.com for additional details.



Features:

- Routes packets between BACnet MS/TP and BACnet/IP
- Fully compliant with ASHRAE 135-2004 and ISO 16484-5 standards
- BBMD (BACnet Broadcast Management Device) support
- Foreign device support
- Configuration via built-in Web server or serial port
- Provides statistics information via Web interface
- Supports firmware update through serial port and Ethernet
- BACnet MS/TP diagnostic LED
- Ethernet link and activity LED
- 100baseT connection
- BACnet MS/TP (RS-485) baud rate: 9.600, 19.200, 38.400, 76.800
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

L-IP			
Order Number	Description		
LIP-ME201	2 ports:	1 x BACnet MS/TP (RS-485)	1 x Ethernet Port (BACnet/IP)
	105 x 86 x 60 (L x W x H in mm)		

✓ CEA-709
✓ BACnet

L-Term - Network Terminator

TP/FT-10, TP/LPT-10, TP/XF-1250, and BACnet MS/TP networks need to be terminated using a defined network terminator.

L-Term LT-03 offers one standard network terminator for a TP/FT-10 channel. In addition, LT-03 comes with a network access connector for a simple and reliable connection to the CEA-709 network e.g. for maintaining or analyzing the network locally.

L-Term LT-04 offers one standard network terminator for a RS-485 channel such as BACnet MS/TP, Modbus or TP/RS485 (CEA-709). In addition, LT-04 as well comes with a network access connector.

L-Term LT-13 and LT-33 offer two standard network terminators for CEA-709 networks in a slim housing which makes them a perfect solution for LOYTEC active network infrastructure products (e.g. L-IP, L-Switch, L-Proxy, etc.) at a very competitive price.

See the data sheets on www.loytec.com for additional details.

Features:

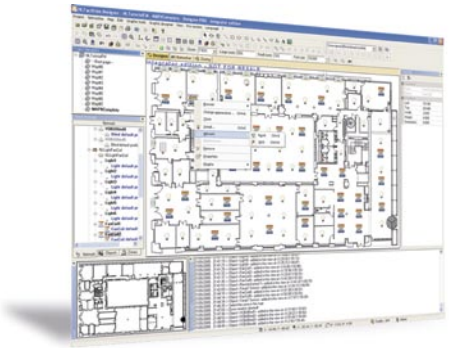
- Screw terminals (0,5 - 2,5 mm²)
- 17 x 90 x 58 (L x W x H in mm) i.e. 1 TE
- DIN-rail

L-TERM			
Order Number	Description		
LT-03	1 port:	1 x TP/FT-10	1 x network access connector
	17 x 90 x 58 (L x W x H in mm)		
LT-04	1 port:	1 x RS485	1 x network access connector
	17 x 90 x 58 (L x W x H in mm)		
LT-13	2 ports:	1 x TP/XF-1250	1 x TP/FT-10 (bus or free topology, can also be used to terminate link power channels)
	17 x 90 x 58 (L x W x H in mm)		
LT-33	2 ports:	2 x TP/FT-10 (bus or free topology, can also be used to terminate link power channels)	
	17 x 90 x 58 (L x W x H in mm)		

✓ CEA-709

BACnet

NLFacilities
Network Management Tool



NLFacilities is a graphical network management tool based on LNS® which helps to decrease integration time significantly wherever the same or a similar application must be installed over and over again (e.g. room applications in office buildings). NLFacilities separates the engineering from the commissioning processes. Interaction rules between CEA-709 nodes and parameters of the nodes (e.g. for different types of zones) are pre-defined by the system integrator and stored in a reusable template database. For every possible node setup, including the interaction rules between the nodes and its parameters, a separate template is created. In a second step, the CEA-709 and CEA-852 nodes are placed on a floor plan according to their physical installation and the integrator is defining a zone of nodes that should work together.

During the commissioning process, NLFacilities compares the constellation of nodes within the different zones to be installed with the templates stored in the database. Once NLFacilities finds a conformance between a zone node setup and a template in the database, it automatically commissions the nodes and performs the bindings. Whenever a zone of nodes gets changed, NLFacilities will automatically repair the necessary bindings and parameters according to a fitting template. Installing room applications has never been easier.

NLFacilities includes a feature called 'SmartBinder' which automatically chooses the appropriate binding service. In addition, it is able to redo existing bindings with a different binding service. For example, a group binding based on 'Acknowledged' services automatically changes to 'Unacknowledged Repeated' service using Broadcast addressing if the maximum number of group bindings is going to be reached. 'SmartBinder' helps to take advantage of the technology to an optimum within the given limits and supports the system integrator by its expertise.

Another helpful feature is 'SmartChannel'. By simply choosing the backbone type plus the network infrastructure from a database, channels are automatically created. 'SmartChannel' simplifies the commissioning of the network infrastructure, supplies the documentation of the components and provides a clear picture of the topology.

Beside fully featured NLFacilities designer suites, two runtime versions of NLFacilities are available for operators. These versions offer three basic functions: network maintenance (i.e. running Plug-Ins, repairing and replacing nodes, etc.), object monitoring, and global operations. The two runtime versions differ in the zoning capability. The runtime version including the zoning capability allows changing zones including the automated reconfiguration of bindings and parameters depending on the new zone layout. This feature is always used in flexible room automation, where floor plans are changed more often and therefore bindings and configurations need to be re-engineered according to the new floor plan.

✓ CEA-709
BACnet

NLFacilities
Network Management Tool

Features NLFacilities designer suite:

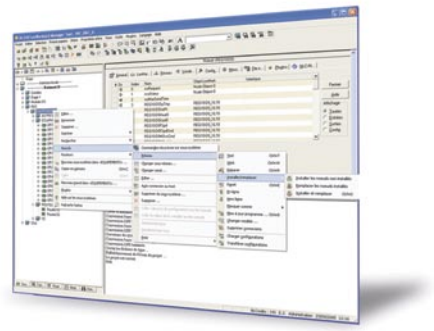
- Graphical network management tool
- Supports LNS® TE (Turbo Edition)
- Separates the engineering from the commissioning process
- Significantly decreases integration time due to reusable zone templates
- Reusing of zone templates on different projects
- Simplified maintenance due to zone concept
- Quick adaptation according to changing requirements
- Import function for floor plans
- Includes object monitoring
- Runtime versions without network management capability are available

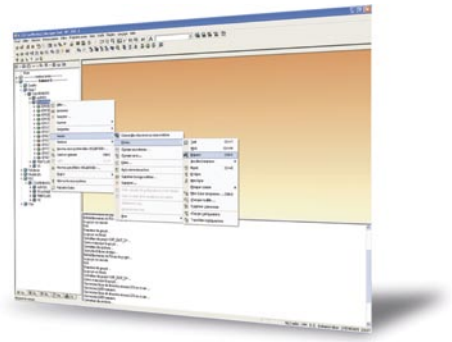
NLFacilities	
Order Number	Description
NLFAC-I	• NLFacilities designer suite • Network management tool and visual office designer • Includes NL220I Network Management Tool • Includes LNS® server • Includes 64 node credits • Single license • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NLFACPRO-I	• NLFacilities professional designer suite • Network management tool and visual office designer • Includes NL220I Network Management Tool • Includes LNS® server • Includes 64 node credits • Single license • PRO license includes NLCSV LNS® Plug-In Toolset and NLUTIL Network Utility • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NLFAC-R-250	Runtime version without Zoning for networks with up to 250 network nodes
NLFAC-R-500	Runtime version without Zoning for networks from 251 to 500 network nodes
NLFAC-R-UL	Runtime version without Zoning for networks with an unlimited number of network nodes
NLFAC-R-250-Z	Runtime version including Zoning for networks with up to 250 network nodes
NLFAC-R-500-Z	Runtime version including Zoning for networks from 251 to 500 network nodes
NLFAC-R-UL-Z	Runtime version including Zoning for networks with an unlimited number of network nodes
NLCREDIT	• Credit fee per commissioned node (includes LNS® credit fee)

✓ CEA-709

BACnet

NL220 - Network Management Tool





NL220 is a network installation and maintenance tool for CEA-709 and CEA-852 networks. It was the very first LNS® based tool introduced to the system integration market in 1995. It creates an LNS® database compatible with any other network management software supporting LNS®. NL220 supports even the most advanced LNS® feature. It is also compatible with any LNS® Plug-In.

NL220 is intuitive. As a non-graphical tool it is fast and provides advanced functions to speed up integration and decrease repetitive work. No synchronization with an LNS® database is required. A licence is protected by a USB or parallel port dongle. The dongle itself is registerd to one PC/Notebook where full functionality is given. Using the dongle on another PC/Notebook allows to run NL220 with limited functions without the capability to commission a node.

The tool is available as an installation or maintenance version. NL220 Installation allows the integrator to perform bindings, set addresses to nodes, define channels, etc. It also includes an LNS® server license. NL220 Maintenance is intended for service and maintenance work and does not include an LNS® server license.

NL220 is also available as a Professional version, NL220 Pro. This version includes NL220 Installation and NLCSV, a complete toolset of LNS® Plug-Ins to automate actions for building up an LNS® database from a CSV file.

NL220 includes a feature called 'SmartChannel'. By simply choosing the backbone type plus the network infrastructure from a database, channels are automatically created. 'SmartChannel' simplifies the commissioning of the network infrastructure, supplies the documentation of the components and provides a clear picture of the topology.

Features:

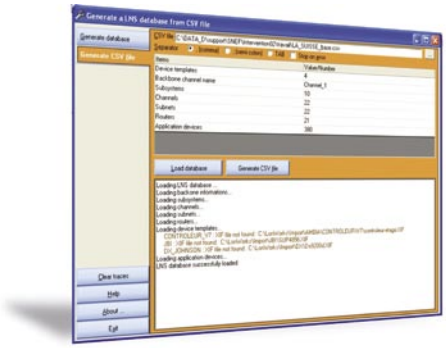
- Network management tool for CEA-709 and CEA-852 networks
- Supports LNS® TE (Turbo Edition)
- Navigation by tree structure
- Compatible with any LNS® Plug-Ins
- Unique and vital functions like filters, recursive commands, search function, advanced impressions, etc.

SW Tools

NL220	
Order Number	Description
NL220I	• NL220 Installation Network Management Tool • Includes LNS® server and 64 node credits • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NL220M	• NL220 Maintenance Network Management Tool • LNS® server not included • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NL220 PRO	• Bundle of NL220I and NLCSV • Includes LNS® server and 64 node credits
LNS Server	• LNS® Server Licence
NLCREDIT	• Credit fee per commissioned node (includes LNS® credit fee)

✓ CEA-709
BACnet

NLCSV - LNS Plug-In Tool Set



NLCSV is a collection of LNS® Plug-Ins for easy integration and automation of network management functions. It is the perfect complement to NL220 that already implements advanced functions such as automatic download of Configuration Properties and application programs. NLCSV applies rules from an external CSV file to automate integration.

Plug-Ins:

NLGenerateFromCSV

- Interfaces with any LNS® network management tool
- Creates an LNS® database including subsystems, nodes, device template, channels, routers, subnet, etc
- LNS® database update: inserts subsystems, nodes, etc. into an existing database

NLBindingFromCSV

- Interfaces with any LNS® network management tool
- Creates or removes a collection of bindings from a CSV file including transaction parameters

NLCommissionFromCSV

- Interfaces with NL220 network management tool
- Install, repair, replace nodes and routers according to the CSV file

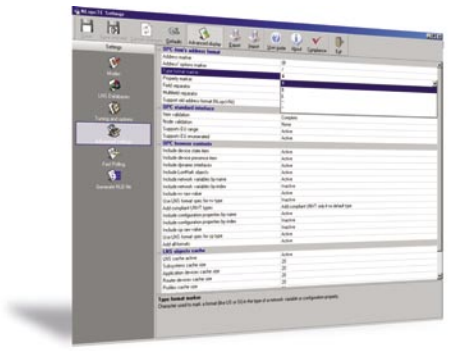
NLConfigurationFromCSV

- Interfaces with NL220 network management tool
- Export / apply Configuration Properties included in a CSV file
- Filters, NV values, enumeration are available

NLCSV	
Order Number	Description
NLCSV	• All Plug-Ins for NL220 network management tool • License protection: USB or parallel port dongle

✓ CEA-709
BACnet

NLOPC - PC-based OPC-Server



NLOPC is a PC-based OPC server compliant with any LNS® database created with any LNS® management tool. NLOPC is using Monitor Sets of LNS® and can read several values simultaneously on one request. This is a unique performance feature and ensures an increased monitoring performance. NLOPC drastically cuts monitoring initialization time and avoids collapse of monitoring in case of defective devices or a failing network.

NLOPC is an « OPC Foundation » certified product. It's engine has successfully passed all DA 1, 2, 3, and XML server access tests. This certification guarantees it's functioning with all supervisors. Using LNS® it guarantees the compatibility of the server with all CEA-709 and CEA-852 products. NLOPC is interoperable with all OPC clients meeting the OPC 2.0 and 3.0 (COM/DCOM) standard.

NLOPC provides enhanced functions for integration. It includes a simulation mode and a trace level that allows the monitoring to be tuned as well as working offline. It can handle several LNS® databases simultaneously and it offers options to modify the behaviour of OPC tags (heartbeat, addressing, frequency).

Features:

- Certified OPC server
- Fully compliant with the OPC 2.0 and 3.0
- Directly interfaces with SNVT master list and catalog file
- Automatic format of any SNVT/UNVT
- Direct access to structured network variable fields
- Heart beat: setup a rate of automatic network variable updates
- Trace mode that displays messages for CEA-709, OPC and system messages
- Simulation mode for data points
- Automatic export of the database in a CSV file to be imported in a SCADA system
- Decrease SCADA initialisation time and increase SCADA refresh rate
- OPC item browsing
- User can define the tree and change the enumeration of any SNVT
- Runs several OPC servers in the same machine using several LNS® databases

NLOPC	
Order Number	Description
NLOPC TE	• PC-based OPC server (OPC 2.0 and 3.0 standard) • Based on LNS® TE (LNS® Server is not included) • Access to one LNS® database • Limited to 32.000 OPC data points • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
LNS Server	• LNS® Server License
NLOPC-TE-DB	• Interfacing with additional LNS® databases (optional) - One NLOPC TE license is needed

✓ CEA-709
BACnet

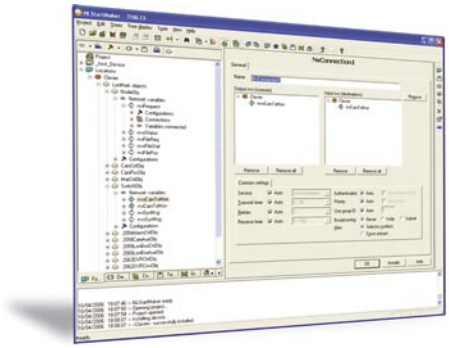
NLOPC - PC-based OPC-Server

NLOPC	
Order Number	Description
NLOPC TE-600	• Same features as NLOPC TE • Limited to 600 OPC data points on one LNS® database
NLOPC TE-100	• Same features as NLOPC TE • Limited to 100 OPC data points on one LNS® database
NLOPCPRO TE	• PC-based OPC server (OPC 2.0 and 3.0 standard) NLOPC TE • Based on LNS® TE (LNS® Server is not included) • Access to 1 LNS® database • PRO license includes NL220 in maintenance version NL220M without LNS® server • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NLOPC MIP	• PC-based OPC server (OPC 2.0 and 3.0 standard) • OPC server for non-LNS® applications with Microprocessor Interface Program (MIP), LNS® is not need • Interfacing with one network interface card • Limited to 32.000 OPC data points • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle
NLOPC-MIP-DB	• Interfacing with 2 to 5 network interface cards - One NLOPC MIP license is needed
NLOPC MIP-600	• Same features as NLOPC MIP • Limited to 600 OPC data points on one network interface card
NLOPC MIP-100	• Same features as NLOPC MIP • Limited to 100 OPC data points on one network interface card
NLOPCPRO MIP	• PC-based OPC server (OPC 2.0 and 3.0 standard) NLOPC MIP • OPC server for non-LNS® applications with Microprocessor Interface Program (MIP) • Interfacing with one network interface card • PRO license includes NL220 in maintenance version NL220M without LNS® server • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle

✓ CEA-709

BACnet

NLStart
Network Management Tool Bundle



NLStart is a solution for small CEA-709 networks with up to 64 nodes per network. As a software bundle it consists of a network management tool (NLStartMaker), an OPC-Server (NLStartOPC) and a diagnostic tool (NLStartUtil). An LNS® Server is not needed. NLStart utilizes an SQL database using ADO (ActiveX Data Objects) to access the database. All NLStart software tools can access the SQL database simultaneously. Since NLStart is not using LNS®, no additional license fee is charged for commissioning a CEA-709 node.

Features:

NLStartMaker

- Network Management Tool for up to 64 CEA-709 nodes per network
- Uses an SQL-Server with ADO (ActiveX Data Objects)
- LNS-Server is not required
- Handles CEA-709 nodes with dynamic network variables
- Advanced visualization of group address and members, alias used, etc.
- Teststing and browsing of CEA-709 nodes, functional blocks, network variables and Configuration Properties

NLStartUtil

- Checks for each CEA-709 node whether it is installed or not
- Shows advanced node statistic of each device
- Gives information about the communication quality during and after the commissioning
- Reads and interprets all memory structures of CEA-709
- SNVT and UNVT browser

NLStartOPC

- PC-based OPC server (OPC 2.0 standard)
- Can work simultaneously with NLStartMaker
- OPC server to remote OPC clients using DCOM
- Monitors any CEA-709 node
- Supports any SNVT, UNVT, SCPT or UCPT
- Accesses any individual field for structured types
- Does not poll uninstalled devices
- Independant thread that checks the network and improves network transactions

NLStart	
Order Number	Description
NLStart	• Solution for small CEA-709 networks with up to 64 nodes per network • Includes network management tool (NLStartMaker), OPC-Server (NLStartOPC) and diagnostic Tool (NLStartUtil) • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle

✓ CEA-709
BACnet

NLPreCom
Pre-Commissioning Tool

NLPreCom is a highly recommended tool for evaluating the network before the commissioning phase. It is used to verify the wiring of the network, the network topology consistency and the connection of the nodes. This tool is dedicated to technicians on job site who need to prepare the commissioning phase. Reporting functions help the technician to keep the overview at any time in the pre-commissioning phase.

NLPreCom goes without technical terminology and can be easily handled by non-experts due to its elementally designed user interface.

The pre-commissioning tool uses "test cases" designed by the system integrator for every device type. The entire testing and configuration actions are part of the cases. NLPreCom basically covers four procedures:

1) It scans the network for active nodes

2) It checks the network health by stressing the nodes, calculating errors, and proposing simple actions in case of found problems

3) It allows downloading a application and configuration to a node as well as sending commands and reading status or value information

4) It allows generating a detailed report

NLPreCom also includes a function to dramatically reduce commissioning time: PointAndName. By reading the node ID with a barcode reader, LNS® based commissioning of nodes can be performed.

Features:

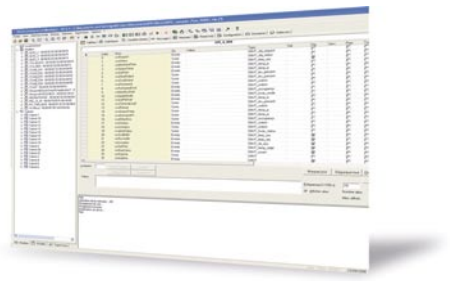
- Evaluating the network before the commissioning phase
- Does not use technical terminology
- Scans the network for active nodes
- Stressing nodes for network evaluation
- Propose actions in case of found problems
- Application and configuration download
- Easy commissioning via bar code reader
- Detailed reports

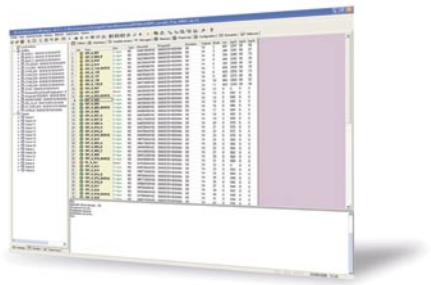
NLPreCom	
Order Number	Description
NLPreCom-SED	• Pre-commissioning tool • Based on LNS® TE (LNS® Server is not included) • Runs on Windows NT®/2000/XP® • License is linked to one PC/Notebook • License protection: USB or parallel port dongle

✓ CEA-709

BACnet

NLUTIL - Network Utility





NLUTIL is a utility software for CEA-709 and CEA-852 networks. This tool is dedicated to testing channels and nodes. It perfectly complements the LPA Protocol Analyzer. A network can either be scanned or imported from an LNS® database.

NLUTIL works on device templates corresponding to the Program ID avoiding multiple requests on the network. It provides the ability to create a device template from the network or from a XIF, it browses and formats any value of any variable, accesses structured NVs, provides advanced tests on a node and shows internal error statistic reports.

NLUTIL allows maintenance functions on nodes such as wink, test, reset, etc. It also gives access to internal node tables like domain, address, variable, configuration, etc.

Features:

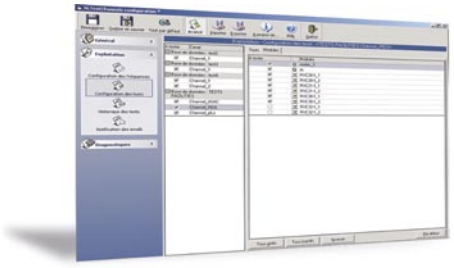
- Imports data from an LNS® database or scans the network
- Offers a cyclic test on all communication channel equipment
- Displays node statistics
- Dynamic browser
- Displays used and available aliases
- Accepts routing class modifications
- Visualisation of tables and counters of a node
- Generates a node report with Node ID and PID plus the internal counters and statistics (XML or CSV format).
- Numerous complementary functions such as multi-download, explicit message dispatching, communication timer tuning, recursive commands, etc.

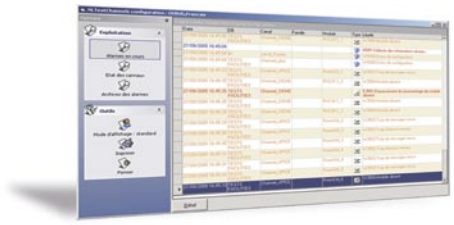
SW Tools

NLUTIL	
Order Number	Description
NLUTIL-HAR	• NLUTIL Network Utility • Runs on Windows NT®/2000/XP® • License protection: USB or parallel port dongle

✓ CEA-709
BACnet

NLTestChannel - Diagnostic Tool





NLTestChannel TE is a background application that continuously checks the quality of the network and proposes actions on how to repair detected errors.

NLTestChannel constantly runs and analyzes the network health indicators and deduces the system's quality and critical levels. The expert system offers a flaw summary on a large amount of data. It recommends possible solutions for solving network problems. The system's rules are derived from over 10 years experience in real networking.

NLTestChannel does not give raw, technological data. Rather, it proposes repair actions. First off, NLTestChannel suggests simple actions with no technical explanations. Secondly, the expert can find the technical detail in the analyses and launch complementary tests to focus on the diagnosis. Data is sorted by physical wiring but also by product family. The alarms are presented on-screen or sent via e-mail to addressees configurable by product family. All network anomalies as well as actions are archived.

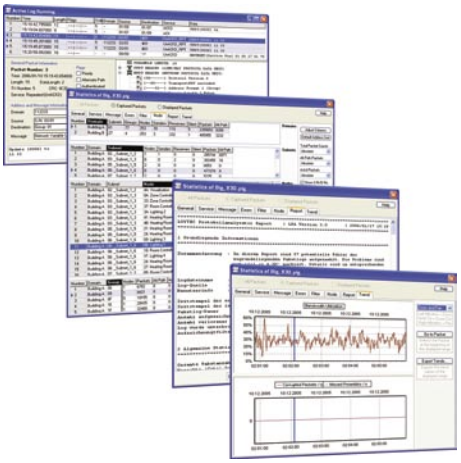
Features:

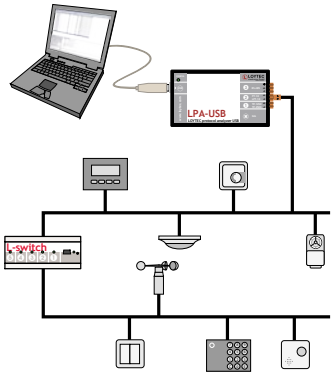
- Constantly running and analyzing the network health indicators
- Deduces the system's quality and critical levels
- Data is sorted by physical wiring but also by product family
- Recommends possible solutions for solving network problems
- Network alarms are presented on-screen or sent via e-mail

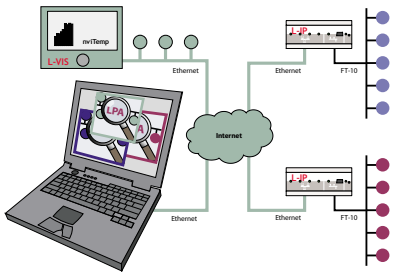
SW Tools

NLTestChanel	
Order Number	Description
NLTestChannel-SED	• Unlimited channels • Runs on Windows NT®/2000/XP® • License is linked to one PC/Notebook • License protection: USB or parallel port dongle
NLTestChannel-MOV	• Unlimited channels • Runs on Windows NT®/2000/XP® • Stand-alone license independent of a PC/Notebook • License protection: USB or parallel port dongle

LPA - Protocol Analyzer







The LOYTEC Protocol Analyzer (LPA) listens on CEA-709 or CEA-852 networks and displays all recorded packets on a PC screen. Thanks to its long-time recording capability even intermittent faults can be detected and recorded. The interpretation of LNS® databases allows displaying meaningful node and network variable names. Together with L-IP Internet Routers, NIC709-IPxE100 network interfaces, the LVIS-3E100 Control and Display Panel (hardware version with RNI), and the LINX-100/ LINX-111 Automation Server, the LPA software can record packets even from remote network channels.

With a single mouse-click, the built-in report function creates a report (text file) about the health condition of the investigated channel and gives hints and tips on how to solve problems on this channel.

The intuitive and easy-to-use LPA-SW software runs on all LOYTEC NIC709 interfaces. The LPA-IP-SW runs on the NIC-852 network interfaces. Each LPA-SW or LPA-IP-SW license must be registered for one LOYTEC NIC.

See the data sheets on www.loytec.com for additional details.

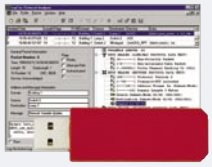
Features:

- On-line CEA-709.1 packet monitoring
- Packet interpretation down to bit-level
- High resolution packet time-stamping
- Advanced, context specific packet filter and converter manipulation
- Conversion of network addresses and variables into symbolic names
- Advanced Transaction Identification
- Integrated Node Statistics for all detected domains, subnets, nodes, and groups
- Extensive packet statistics (short packets, CRC errors, packets/s, etc.)
- Statistic Report function including hints and tips for solving network problems
- Statistic Report Plug-In Interface for localization or customization of the statistic report
- Trend Logging for bandwidth utilization and packet errors
- Storing and exporting packet logs (e.g. to Excel spread-sheets)
- LNS® database interpretation
- Interpretation of SNVTs, network management, and diagnostic messages
- Displays SNVTs in ISO and Imperial US system
- Long-term packet recording capability and error tracking in packets with protocol errors
- LPA Plug-In interface for application specific interpretation of user and application data
- LPA Server function for forwarding received packets to third party applications
- Remote LPA function with LPA-IP and L-IP, NIC709-IP, LVIS-3E100 (incl. RNI), LINX-10x/110

LPA	
Order Number	**Description**
LPA-SET-USB 	• Set of LPA-USB and LPA-IP Protocol Analyzer contains: - Network Interface NIC709-USB and NIC852 - Protocol Analyzer Software LPA-IP-SW for CEA-852 Networks, registered to NIC852 - Protocol Analyzer Software LPA-SW for CEA-709 Networks, registered to NIC709-USB - User Documentation • Supports the LOYTEC Multiplexed Network Interface Technology (MNI) • Runs on Windows 2000/XP®/2003/Vista • Software Protection: Registered to the LOYTEC network interface cards NIC709-xxx and NIC852

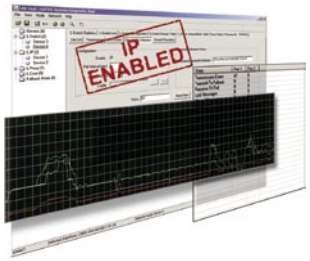
✓ CEA-709
BACnet

LPA - Protocol Analyzer

LPA	
Order Number	**Description**
LPA-IP 	• IP-852 Channel Protocol Analyzer Bundle contains: - Network Interface NIC852 - Protocol Analyzer Software LPA-IP-SW for CEA-852 Networks, registered to NIC852 - User Documentation • USB key connects to the USB port of a PC • Uses Ethernet port of PC to connect to IP-852 channel • Supports the LOYTEC Multiplexed Network Interface Technology (MNI) • Runs on Windows 2000/XP®/2003/Vista • Software Protection: Registered to the LOYTEC network interface card NIC852
LPA-SW 	• Protocol Analyzer Software for CEA-709 Networks • Network Interface (NIC709-x) is not included and must be ordered separately • User Documentation • Supports the LOYTEC Multiplexed Network Interface Technology (MNI) • Runs on Windows 2000/XP®/2003/Vista • Software Protection: Registration to a LOYTEC network interface card (NIC709-xxx or NIC852)

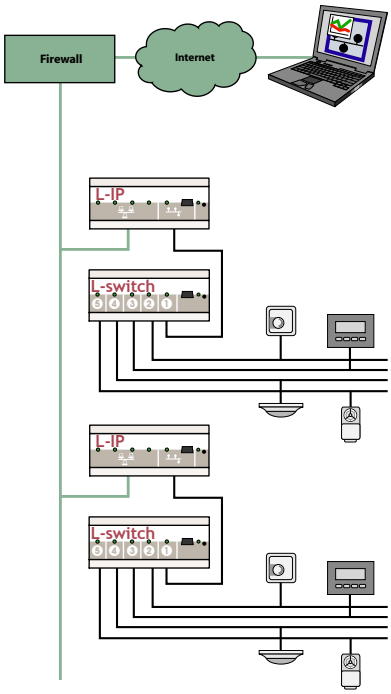
✓ CEA-709
BACnet

LSD - System Diagnostics



The LOYTEC System Diagnostics Tool (LSD Tool) provides a comfortable user interface to access the network statistics information, which is collected by L-Switch^{XP} and L-IP devices. It also allows to remotely configure L-Switch^{XP}, L-IP and L-Proxy devices, run parallel firmware upgrades via the network, and provides advanced features like disabling of ports or configuring the management port on L-Switch^{XP} devices.

See data sheets on www.loytec.com for additional details



Features:

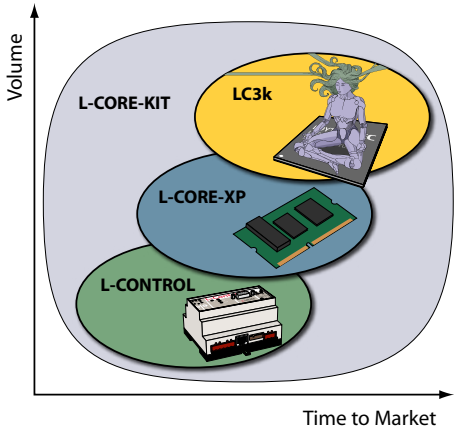
- Network Diagnostics and LOYTEC product management tool
- IP enabled
- Online-monitoring of network bandwidth utilization and CRC errors on channels connected to an L–Switch^{XP} or L-IP
- Life list for network infrastructure products
- Display of L–Switch^{XP}/L–IP statistics information (received packets, transmitted packets, etc.)
- Display of network statistics information (average/peak values of channel bandwidth utilization, CRC errors, IP statistics etc.)
- Save statistics information into log files
- Export statistics data into Excel® spread sheets
- Display network segmentation quality
- Remote L–Switch^{XP}/L–IP/L-Proxy configuration (learning algorithm, backbone mode, backbone ID, IP address, CEA-852 settings)
- Remote configuration of L–Switch^{XP}/L-IP packet forwarding tables (subnet/node table, group table, domain table)
- Parallel, remote L–Switch^{XP} / L–IP/ L–Proxy / ORION node firmware download
- L–Switch^{XP}/L–IP port management
- Requires a LOYTEC network interface e.g. NIC709-USB, NIC709-PCI, NIC-852, NIC709-IP
- Runs in parallel with LPA, LPA-IP, ORION applications, and LNS® or MIP based software

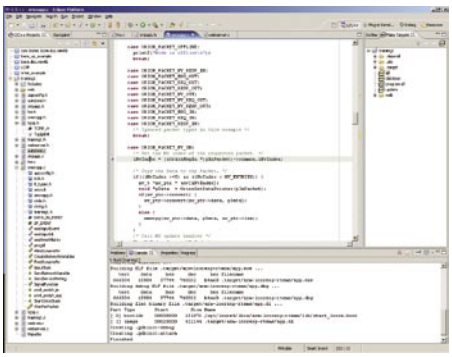
SW Tools

LSD	
Order Number	**Description**
LSD-SW 	• System Diagnostics Tool - Management tool for the network infrastructure • Displays statistics information e.g. packets/s, bandwidth utilization, CRC error rate, for every single channel in the network. • Supports remote network infrastructure management and remote network trouble-shooting from your office • Used in connection with L-Switch, L-IP and L-Proxy devices • Requires a NIC709 or NIC852 network interface • User Documentation • Runs on Windows 2000/XP®/2003/Vista

✓ CEA-709
✓ BACnet

L-CORE - Embedded Controller Technology





The L-CORE technology is LOYTEC's contribution to the emerging embedded market having a need for high-performance embedded platforms in control networks. The ARM7 driven LC3020 based platform incorporating CEA-709 and BACnet networking capabilities, offers a high grade of flexibility and power without bottlenecks between the application and the network. 100base-T Ethernet together with the TCP/IP stack enables IP based protocols like CEA-852, BACnet/IP, KNX/IP, MODbus/IP etc. to be executed. The powerful LC3020 together with the realtime operating system RTEMS and the Eclipse based integrated development environment L-CORE-KIT makes the L-CORE technology an ideal basis for the development of next generation devices like modern controller nodes or gateways. The philosophy behind L-CORE is to provide a solution for designing high performance CEA-709/CEA-852/BACnet nodes at a very affordable cost. This can be achieved by either using the L-COREXP Module L-COREXP-F8R16B16 (SODIMM form factor), the L-Control^{XP} generic controller, or by designing the L-CORE components directly into the target hardware.

The L-CORE technology supports the use of multiple communication protocols (e.g. CEA-709 and BACnet) concurrently on the same device. Applications can be programmed by using the same tool chain (L-CORE-KIT).

See the data sheets on www.loytec.com for additional details.

Embedded Controllers	
Order Number	**Description**
L-COREXP-F8R16B16 	• Embedded Controller Core Module • SO-DIMM form factor (67,6 x 38,1 x 6.6 mm) • LC3020@50MHz, JTAG debug interface • 16 Mbytes SDRAM and 8 Mbytes Flash memory • 2 x CEA-709 interfaces • 1 x 100baseT Ethernet MAC • 1 x BACnet MS/TP interface (UART) • Power-on reset, clock generation • Single 3.3V supply required • ORION Stack runtime license included

✓ CEA-709
✓ BACnet

L-CORE - Embedded Controller Technology

Embedded Controllers	
Order Number	Description
L-CORE-KIT	• Design Kit for L-CORE Embedded Controller technology • RTEMS operating system (source code and binaries) • GNU development environment for LINUX/Windows • Eclipse integrated development environment • Full featured ORION protocol stack library (binaries) • Remote firmware upgrade • GoAhead Web server • Includes L-COREXP-TF evaluation board • Complete documentation • 12 month free updates and releases
LIC-LCORE	• L-CORE runtime license bundles • To be used with custom HW designs based on the L-CORE technology excluding L-COREXP-F8R16B16 modules and L-ControlXP generic controller node
L-CORE-CNIP	• ANSI/CEA-852 library for L-CORE • Includes the configuration client module • Add-on library for L-CORE-KIT • 12 month free updates and releases
LIC-CNIP	• L-CORE-CNIP runtime license • Runtime license for one instance of the L-CORE-CNIP • Includes the configuration client module
L-CORE-KIT-BSD	• Design Kit for BACnet devices (ISO 16484-5) - one seat license • Cimetrics BACstac™ library (binaries) to design BACnet devices • RTEMS operating system (source code and binaries) • GNU development environment for Linux/Windows • Eclipse integrated development environment • Remote firmware upgrade • GoAhead Web server • Includes L-COREXP-TF evaluation board • Complete documentation • 12 month free updates and releases
L-CORE-BSC	• BACnet controller library (binaries) - one seat license • add on to L-CORE-KIT-BSD • 12 month free software updates
L-CORE-BSR	• BACnet router/gateway library (binaries) - one seat license • Add-on to L-CORE-KIT-BSD • Requires L-CORE-BSC • 12 month free software updates

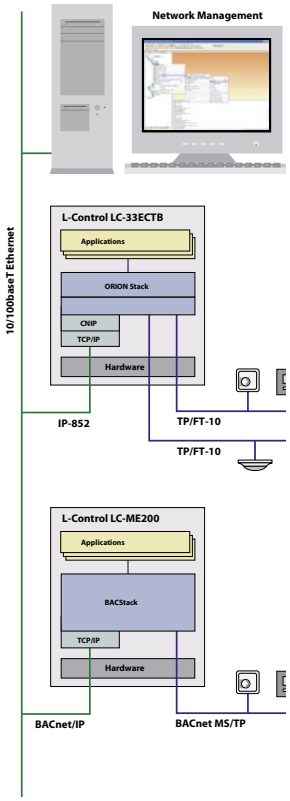
✓ CEA-709
✓ BACnet

L-CORE - Embedded Controller Technology

Embedded Controllers	
Order Number	**Description**
LIC-BS	• BACstac™ runtime license bundle for L-CORE • To be used with custom HW designs based on the L-CORE technology including L-COREXP-F8R16B16 modules and L-ControlXP generic controller node
L-CORE-JTAGB	JTAG Interface for LC3020 (ARM CPU) • Connects to 14 pin JTAG port on target Hardware • Connects to USB for PC connection • Supports Linux and Windows PCs
LC3020B-240 	LC3020 Controller : • ARM7TDMI based controller • 2x CEA-709 network interfaces, 1x 100BaseT Ethernet • 2x Node ID, 1x MAC address • Industrial temperature range -40 to +85C • 240 pin FPBGA package • RoHS compliant • Minimum order quantity: 350 pcs.

✓ CEA-709
✓ BACnet

L-Control^{XP} - Generic Controller Node



The L-Control^{XP} is a generic controller node for high performance controller applications in CEA-709, CEA-852 and BACnet networks. Based on LOYTEC's LC3020 controller chip the L-Control^{XP} generic controller provides one 100base-T Ethernet port and either two TP/FT-10 ports (LC-33ECTB) or one BACnet MS/TP port (LC-ME200). This makes the L-Control^{XP} an ideal device for developing powerful IP controller nodes at a competitive price, supporting Web Server applications and providing connectivity to CEA-709, CEA-852 and BACnet/IP or MS/TP channels.

The L-CORE-KIT integrated development environment based on the Eclipse framework from IBM is used for application programming on the L-Control^{XP}.

See the data sheets on www.loytec.com for additional details.

Common Features:

- Generic controller node for high performance controller applications
- User application development in C and C++ programming language
- GoAhead Web Server
- CPU: LC3020@50 MHz
- Memory: 16 MB SDRAM, 8 MB Flash
- JTAG debug interface
- Supports firmware update through serial port and Ethernet
- Real-Time Operating System (RTEMS)
- Flash File System
- RS-232 serial port (16550 compatible, full handshake)
- 2 digital inputs
- Status and Diagnostic LEDs, Ethernet link and activity LED
- Supply voltage and device temperature monitoring
- Real-time clock with battery backup
- 12-35 V DC / 12-24 V AC supply voltage
- DIN-rail mountable

L-Control Hardware

Order Number	Description
LC-33ECTB	• Generic controller node for high performance CEA-709/CEA-852 based controller applications • Supports firmware update through CEA-709 channel • Supports the ORION Protocol Stack for CEA-709 and CEA-852 channels • Supports multiple parallel transactions, up to 4096 network variables and up to 8192 alias network variables, up to 65535 address table entries, 256 groups per domain, 2 domains and dynamic as well as static network variables • Requires the L-CORE-KIT to write ORION application programs • ORION runtime license included • 3 ports: 2 x TP/FT-10 1 x 100baseT Ethernet • 105 x 86 x 60 (L x W x H in mm)
LC-ME200	• Generic controller node for high performance BACnet/IP and MS/TP based controller applications • Supports BACstac™ for L-CORE • Requires the L-CORE-KIT-BSD to write application programs • 2 ports: 1 x BACnet MS/TP 1 x 100baseT Ethernet • 105 x 86 x 60 (L x W x H in mm)

✓ CEA-709
✓ BACnet

Services, Support & Training

Updates & Releases	
Order Number	**Description**
L-CORE-SS	Automatic updates and releases for 12 month for L-CORE-KIT
L-CORE-CNIP-SS	Automatic updates and releases for 12 month for L-CORE-CNIP
L-CORE-BSD-SS	Automatic updates and releases for 12 month for L-CORE-KIT-BSD
L-CORE-BSC-SS	Automatic updates and releases for 12 month for L-CORE-BSC
L-CORE-BSR-SS	Automatic updates and releases for 12 month for L-CORE-BSR

Training	
Order Number	**Description**
LTRAIN-LCORE	Two days training course held in Vienna, Austria: • L-CORE internals, design-in, tools • Everything for a jumpstart of CEA-709 and CEA-852 networks
LTRAIN-LPA	Two days training course held in Vienna, Austria: • Network intfrastructure design for medium and large networks • Troubleshooting with the LPA protocol analyzer • Presentation of LOYTEC network infrastructure solutions
LTRAIN-LVIS	Two days training course held in Vienna, Austria: • Working with the L-VIS configuration tool • Designing applications for the Control and Display Panel L-VIS and the L-INX Automation Server • Distributed Visualization with L-WEB • Historical data and reporting • Integration in a LonMark System and a BACnet network
LTRAIN-LINX	Two days training course held in Vienna, Austria: • 61131 programming logi.CAD • Configure Alarming, Scheduling, Trending and email notification • Integration in a LonMark System
LTRAIN-LGATE	Two days training course held in Vienna, Austria: • Working with the with the Gateway Configuration Utility • Mapping CEA-709 network variables to BACnet server objects based on CEN/TS 15231:2005 • Configure Alarming, Scheduling, Trending and e-mail notification • Integration in a LonMark System and a BACnet network

LOYTEC

LOYTEC has branch offices and a constantly growing network of distributors on every continent. Visit our Web site or contact our headquarter in Vienna for detailed contact information.

Our home page provides detailed sales information, the latest news on upcoming products, data sheets, manuals, software updates, training schedules, and product ordering information. You can register at the LOYTEC home page to receive valuable information and to subscribe to product change notifications (PCN) tailored to your products.

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Staatliche Auszeichnung

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LonMark Partner

LonMark Germany

Member of BACnet Interest Group Europe