LOYTEC

Products
2010

buildings under control™

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity
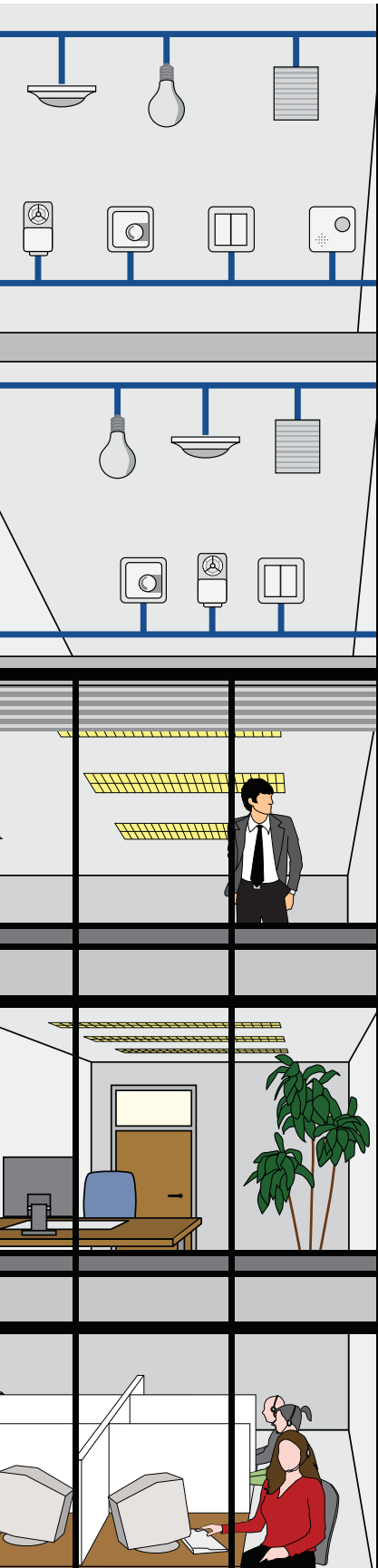
SW Tools

Dear valued customer,

More than ever, buildings demand highly efficient automation solutions. Most often the term "efficiency" refers to efficient energy use. What this means is that building automation ensures minimizing energy consumption while keeping or even increasing comfort at the same time in accordance with applicable standards.

LOYTEC is a provider of innovative product solutions for networked building automation systems and distributed property management. Our integrated product solutions provide the basis for building energy-efficient automation systems.

But for us, the term "efficiency" means much more.

LOYTEC products provide "efficiency" during planning and system integration by exclusively using open communication standards.

"Efficiency" is also important during maintenance and troubleshooting. Therefore, all LOYTEC products with an Ethernet connection provide a Web interface for device configuration. Valuable diagnostic information about the health status of the device itself and its network connections including all data points are provided. "Efficiency" is highly desirable in case of device replacement. Device configuration and firmware are stored automatically in a central database and can be downloaded into a new replacement device easily.

We write the case for "efficiency" in the room with the introduction of the new L-ROC room controllers, which provide energy-efficient room management. L-ROC supports flexible room axis management architecture with an integrated L-WEB user interface. L-ROC comprises lighting, heating, cooling, ventilation, sunblinds, and intrusion detection services in the room. L-ROC communicates via BACnet®/IP, LonMark® IP-852, and OPC XML-DA simultaneously.

Highly "efficient" also includes the production of our devices. LOYTEC operates a modern electronic production line and we manufacture all LOYTEC products in-house. This creates flexible and short lead times, which guarantees the highest possible quality. "Efficiency" also means developing and producing advanced, high-performance hardware platforms for our products, in order to keep the operational energy consumption of the device itself at a bare minimum.

Functional "efficiency" also radiates from our new enclosure for DIN rail mounting. These enclosures are extremely robust and offer more space for new features at virtually the same dimensions of the previous design.

Inspire yourself by the many innovations in this catalog. They allow you to design efficient automation system solutions for intelligent buildings.

Yours sincerely

Hans-Jörg Schweinzer

President

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LOYTEC Product Solutions

Building automation today is characterized by the integration of multiple systems and use of resulting synergies.

The ability to maximize energy efficiency while maximizing comfort and flexibility is paramount for today's buildings. Transparency in energy consumption and costs is required to immediately detect any weaknesses and to actively develop improvement processes.

LOYTEC sets the target to transform these requirements in best possible product solutions. The result is an innovative product portfolio with consistent and coordinated products. At the same time LOYTEC exclusively uses open communication protocols. Here communication via Ethernet/IP channels is an essential feature, which is also the market's requirement for continuous use of IP communication channels such as the Intranet or Internet.

LOYTEC uses primarily the two international communications standards ISO 16484-5 (BACnet®) and ISO/IEC 14908-1 (also known as CEA-709, used in LONMARK® Systems) for its products. These two standards are the primary focus in the product portfolio and various products are available in versions for use in BACnet® networks or LONMARK® Systems. Both protocol standards can be smoothly integrated by the use of the CEA-709/BACnet® Gateway LGATE-900. L-INX Automation Server integrates both communication systems as the same in LOYTEC's L-WEB System.

LOYTEC provides a range of high-performance router products for BACnet® networks and LONMARK® Systems to build flat network architectures. The router function is either available with a separate device (L-IP and L-Switch) or as an independent feature of a L-INX Automation Server.

Alarming, scheduling and trending (AST™) are standard features of the products L-INX, L-ROC, L-VIS, L-DALI, and L-GATE. The AST™ functions can be distributed in the field and are ready where they are needed in building automation.

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Graphical user interfaces for operator functions and monitoring are provided by the L-VIS Touch Panels or LWEB-800 Visualization in combination with L-INX Automation Servers and L-ROC Room Controllers.

There are L-INX Automation Servers available which support free programming according to IEC 61131-3 and become powerful controllers to suit control tasks for primary plants. They integrate the field level via BACnet® MS/TP or LonMark® TP/FT-10 channels, M-Bus and Modbus. Data from the field level is provided to an IP network via BACnet®/IP, LonMark® IP-852, Modbus TCP or OPC XML-DA. L-IOB I/O modules can be connected to the L-INX Automation Servers via LIOB Connect. L-INX integrates smoothly into the L-WEB System via Web services.

A full line of L-INX Automation Servers is available with differing levels of features to fit specific tasks from programming to visualization.

The L-ROC Room Controller provides the basis for a revolutionary room automation system based on IP, which smoothly integrates in native BACnet®/IP networks and LonMark® Systems at the controller level. The L-STUDIO software allows creating and adjusting flexible room applications for L-ROC Room Controller on demand with very little effort.

An integral part of the L-ROC solution is a Web based room operation via LWEB-800 Dashboards (Virtual room unit on PC desktop) and the automatic generation of graphic projects for local room operation via L-VIS Touch Panels.

A good overview on the LOYTEC product portfolio is given on the following pages.

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Automation Server

Touch Panels

DALI Lighting Control

Connectivity

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LOYTEC

L-WEB System

Network Management
LPA - Analysis
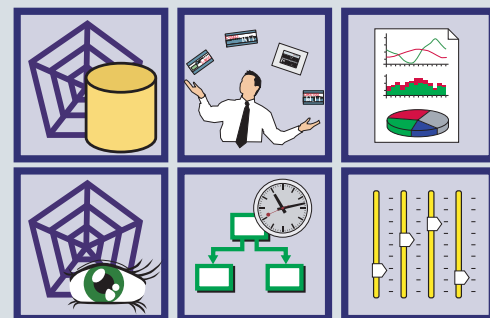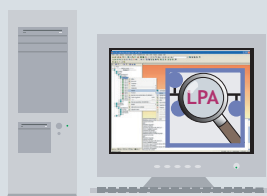
BACnet/IP, LONMARK IP-852, OPC XML-DA

**Ethernet
Internet/In**

BACnet

LVIS-ME215

LINX-200

L-INX

LINX-220

L-INX

L-IOB

LGATE-900

L-GATE

Gateway

M-Bus

Modbus

BACnet/IP, IP-852, OPC XML-DA

LINX-210

L-INX

LIP-ME201

LDALI-ME204

L-DALI

L-IP

Member of

⚙ **BACnet**®

Interest Group Europe

MS/TP

LVIS-ME200

MS/TP

DALI

MS/TP

MS/TP

LINX-150

L-INX

MS/TP

Modbus

M-Bus

АРКТИКА – официальный дистрибьютор ⓁLOYTEC

Product Overview

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

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SCADA
LOPC-BR800

Remote Access

WLAN Router

BACnet/IP, LONMARK IP-852, OPC XML-DA

t/IP
tranet

CEA-709

NIC852

LVIS-3E115

BACnet/IP, IP-852, OPC XML-DA

LINX-120

L-INX   L-IOB
❶❷❸❹

LIP-3333ECTB

L-IP
❹❸❷❶

LINX-100

L-INX
❷❶

LDALI-3E104

L-DALI

LINX-110

L-INX
❷❶

M-Bus   M-Bus

Modbus   Modbus

LS-33300CB

TP/FT-10

DALI

L-switch
❸❷❶

LONMARK PARTNER

TP/FT-10

LVIS-3E100

TP/FT-10

NIC-USB
❸
❷
❶
⊗

LPA

LONMARK GERMANY

L-IOB

TP/FT-10

TP/FT-10

TP/FT-10

L-WEB System

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L-WEB System
Overview

L-WEB is a powerful system for running distributed systems in building automation. Maximum flexibility and scalability is achieved through a combination of several software components that together form the L-WEB System. Individual software components for specific tasks are available in the L-WEB System to different users. Multiple users can simultaneously use the system functions on different PCs.

Users in Focus

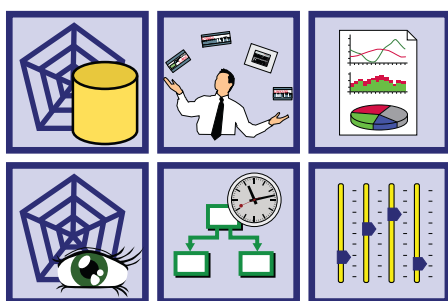Each user has different requirements for the systems in building automation. The range goes from a user who wants to operate his room from the PC desktop (room automation) to the operator who is responsible for the maintenance of the mechanical systems (building automation). Or, the facility manager who needs the consumption prepared in easily understandable reports. The L-WEB System provides a solution specific to each user.

IP Communication via Web Services

L-WEB components communicate with each other and with distributed automation devices in the field via IP channels using Web services (SOAP/XML). The LOYTEC automation devices such as the L-INX Automation Server, the L-ROC Room Controller, the LDALI-3E10x Light Controller, and the L-VIS Touch Panels support access through Web services to automation functions such as alarming, scheduling and trending (AST™ functions) running on the devices.

LWEB-801 Server

The LWEB-801 Server is the heart of the L-WEB System. It synchronizes and stores all relevant data from the distributed L-INX Automation Servers, the L-ROC Room Controllers, the LDALI-3E10x Light Controllers, and the L-VIS Touch Panels into a SQL database. All AST™ logging and individual device configuration parameters are stored in the SQL database.

All the other L-WEB client software components are applications that utilize the data of LWEB-801 Server.

LWEB-800 Operator Functions and Monitoring

Customized graphic pages with dynamic content appear with LWEB-800 on Windows PCs and Windows Mobile devices. Graphic pages are created with no requirement for knowledge of any Web-based language within the L-VIS Configuration Tool. Animation of the graphic elements is done via changes of values on assigned data points. Data points used on graphical pages can come from one or more L-INX Automation Servers or L-ROC Room Controllers. Created trend logs are directly viewed from each controller. If an LWEB-801 Server is available the LWEB-800 application automatically loads the long-term data stored in the LWEB-801 SQL database when necessary.
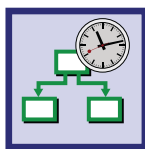
LWEB-820 Master Schedule Configurator

Schedulers run locally on the automation devices in the field. LWEB-820 offers the unique opportunity to structure the distributed schedulers hierarchically and to operate through an easy to use graphical interface on a Windows PC. Several LWEB-820 clients can be in the system at the same time.

L-WEB System
Overview
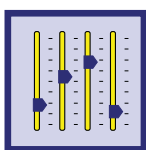
LWEB-821 Master Parameter Editor

Changing operating parameters on distributed L-INX, L-ROC, L-VIS, L-DALI, and L-GATE devices is done with LWEB-821. Operating parameters of several devices can be displayed in a structured way, grouped and changed with LWEB-821. Changes are directly loaded into the respective devices and stored on LWEB-801 Server.

LWEB-822 Master Device Manager

The Master Device Manager LWEB-822 does an automatic backup of the device configuration from L-INX, L-ROC, L-VIS, L-DALI, L-GATE, and L-IP devices. The backup configuration of all devices is stored in the LWEB-801 SQL database. Should a device need to be replaced or exchanged LWEB-822 has full device replacement and restoration capability. Also, global firmware update capability is included.

LWEB-830 Dream Report

Pictures speak louder than words. According to this principle LWEB-830 produces significant pictures in the form of reports. Energy consumption reports from trend and event logs stored in the LWEB-801 SQL database can be automatically created at regular intervals in PDF format, published on a Web server or sent by e-mail to any user.

LWEB-800 Visualization | LWEB-801 Server | LWEB-820 Master Schedule Configurator | LWEB-821 Master Parameter Editor | LWEB-822 Master Device Manager | LWEB-830 Dream Report

IP Connection

Internet / Intranet Router / Firewall

BACnet/IP, LONMARK IP-852, OPC XML-DA

L-ROC L-IOB

L-DALI

L-GATE L-INX L-INX L-IOB L-IOB

L-WEB System

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LWEB-800
Distributed Visualization

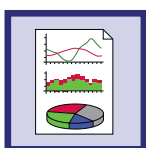LWEB-800 Visualization is the graphical user interface in the L-WEB System and provides monitoring and operator functions via Web technologies in building automation. LWEB-800 displays customized graphic pages with dynamic content on Windows PCs or Windows Mobile devices. The graphical projects are hosted by distributed L-INX Automation Server with integrated OPC XML-DA server or L-ROC Room Controllers.

LWEB-800 downloads the graphical projects from the L-INX Automation Server or L-ROC Room Controllers and stores them on a PC or Windows Mobile device until changes are identified on L-INX or L-ROC. Only changed projects need to be reloaded. In normal operation communication between LWEB-800 and the Automation Servers and Room Controllers is limited to the data points that are automatically updated. This allows for quick navigation between pages even within a slow communication environment. Beside the presentation of data points LWEB-800 also gives access to distributed alarms, schedulers, and trend data. Integration to local PC's with adjustable dwell time for occupancy detection is also available.

Display Diversity

A L-INX Automation Server or L-ROC Room Controller can host multiple LWEB-800 projects. Each of these projects can have any resolution to display them perfectly on a PC monitor or the display of a Windows Mobile device. Multiple Windows PCs or Windows Mobile devices can access a L-INX Automation Server or Room Controller at the same time. Widgets or dashboards can be created and placed on the PC desktop. Virtual room units can be designed appealingly in terms of style and usability to give access to room functions.

"Design Mode" shows graphical projects frameless with transparent background. This way any 2D shape can be implemented to create desktop widgets.

The "Kiosk Mode" shows LWEB-800 application in full screen. Access to the computer desktop or installed software is restricted through access protection.

An LWEB-800 project can be resized freely or by given scale factors to the display.

Network Connections

LWEB-800 Visualization uses Web services (OPC XML-DA) to communicate with the distributed L-INX Automation Servers and L-ROC Room Controllers. The use of Web services allows an easy handling and a smooth communication via the intranet or internet - even across firewalls. All project data and processes are administrated by the L-INX Automation Servers or L-ROC Room Controllers. LWEB-800 is exclusively used for monitoring and operation.

LWEB-800 is not limited to a point-to-point connection with an automation device. Data from decentralized L-INX Automation Servers or L-ROC Room Controllers can be processed in an LWEB-800 project.

LWEB-800 projects can be distributed on multiple L-INX Automation Servers or L-ROC Room Controllers, and links between the projects can be created to allow the user a continuous flow of information.
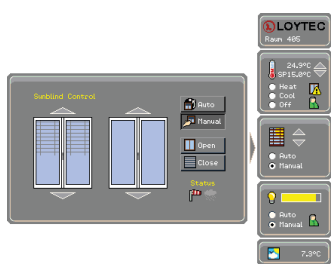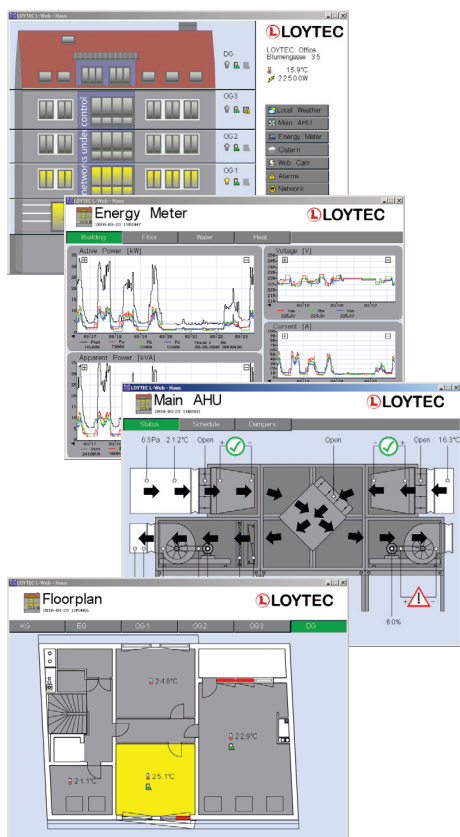
LWEB-800
Distributed Visualization

Features:

- Displays customized graphic pages with dynamic content from L-INX Automation Servers
- Displays customized graphic pages with dynamic content from L-ROC Room Controllers
- Uses Web services (OPC XML-DA) for communication
- Gives access to automation functions such as Alarming, Scheduling and Trending (AST)
- Allows links between distributed LWEB-800 projects for a continuous operation
- Design of graphical projects with the L-VIS Configuration Tool
- Supports different graphical resolutions
- Customizable page layouts in Standard, Design or Kiosk Mode.
- Automatic updates (Internet connection required)
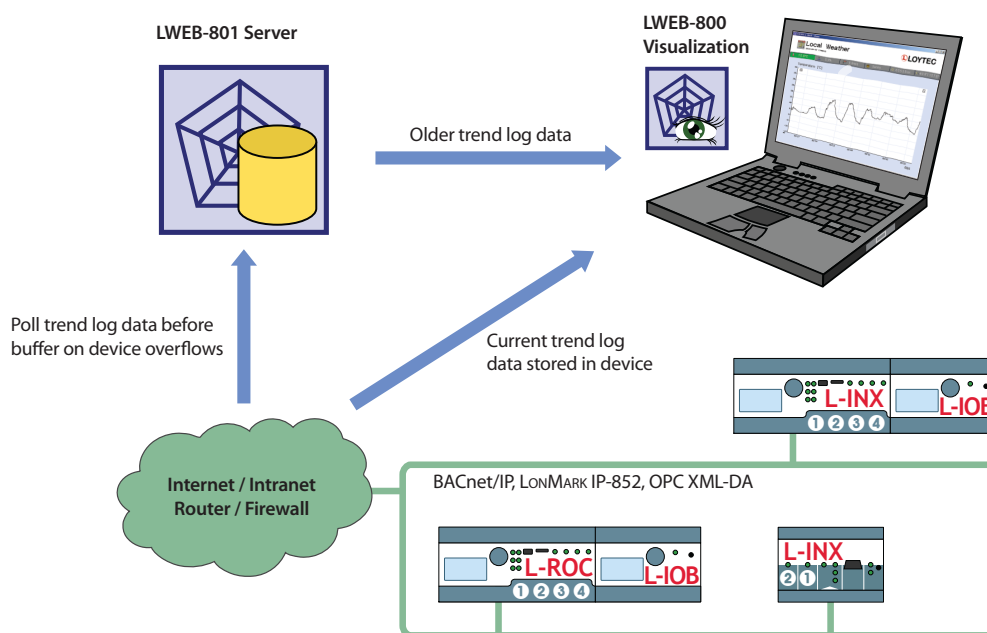
Specifications	
For use with	LINX-100, LINX-101, LINX-120, LINX-121, LINX-200, LINX-201, LINX-220, LINX-221, LROC-100, LROC-150
Software	.NET Application (Microsoft .NET Framework)
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2, Windows Mobile for Pocket PC
Configuration tools	LINX-100/200 Configurator and L-VIS/L-WEB Configurator

Order number	Configuration
LWEB-800	Graphical User Interface

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools
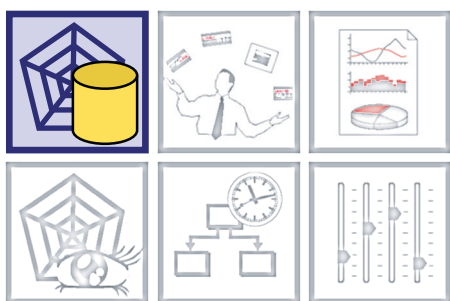
LWEB-801
Server

The LWEB-801 Server provides the heart of the L-WEB System architecture. It synchronizes and stores all relevant data from the distributed L-INX Automation Servers, the L-ROC Room Controllers, the LDALI-3E10x Controllers, LGATE-900 (CEA-709/BACnet Gateway), and the L-VIS Touch Panels into a SQL database.

LWEB-801 Server supports the following databases:

- SQLite (comes with LWEB-801)
- Microsoft SQL Server
- MySQL

Trend and Alarm Log

Depending on the type of device LWEB-801 receives data from the automation devices either via a direct IP connection or via e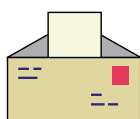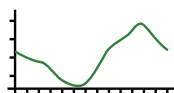-mail as a CSV attachment. The data is automatically stored in the SQL database and thus available as raw data for analysis and processing with other applications such as LWEB-830 Dream Report (see page 17).

LWEB-800 Visualization can access the stored data and display it on the graphical interface.

Scheduler and Calendar Parameter

LWEB-801 Server stores and manages scheduler and calendar parameters. In combination with the LWEB-820 Master Schedule Configurator (see page 14) distributed schedulers will be grouped and hierarchically structured. In this case a direct IP connection to the schedulers on distributed devices is required.

User Administration

The LWEB-801 Server manages users and access rights in the L-WEB System.

Device Management

LWEB-801 saves all device configurations of assigned devices and makes this information available to other L-WEB software components. This allows for example to centrally manage and organize firmware updates and changes of device parameters on the LWEB-801 Server.

Licensing

In the basic version five devices can be connected. For more devices, additional licenses are available.

Features:

- SQL database server
- Stores the entire device configuration
- Stores trend and alarm logs
- Stores calendar and scheduler parameter
- Manages users and access rights
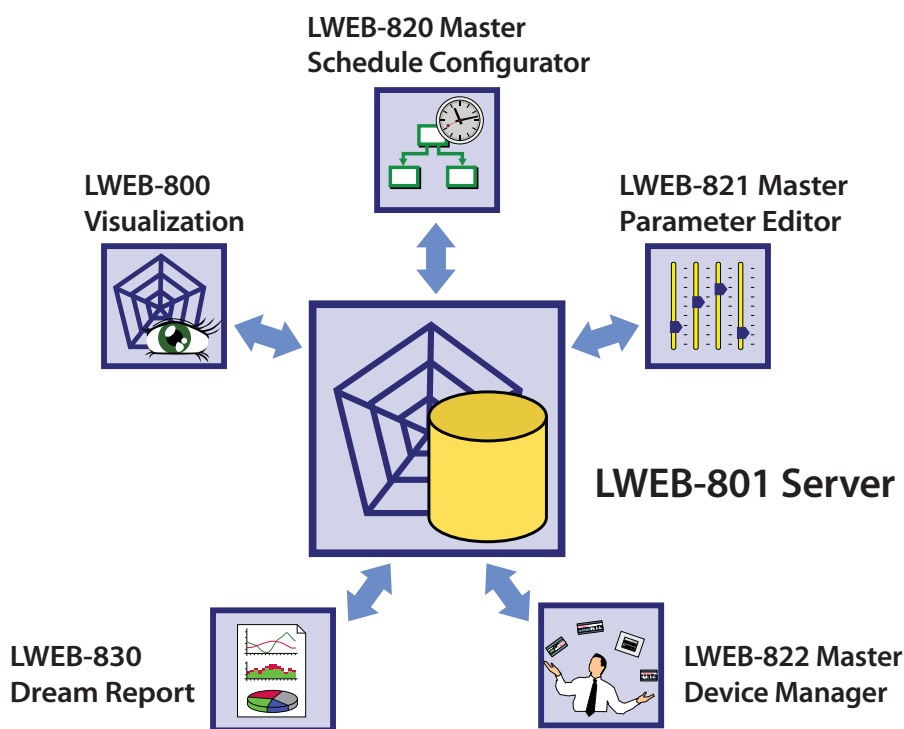
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LWEB-801
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**LWEB-820 Master
Schedule Configurator**

**LWEB-800
Visualization**

**LWEB-821 Master
Parameter Editor**

LWEB-801 Server

**LWEB-830
Dream Report**

**LWEB-822 Master
Device Manager**

Specifications	
For use with	L-INX Automation Server, L-ROC Room Controller, L-VIS Touch Panel, L-GATE Gateway, L-DALI Controller
Supported databases	SQLite, MySQL, Microsoft SQL Server
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LWEB-801	Server for 5 LOYTEC devices
LWEB-801-LIC5	Server license for 5 additional LOYTEC devices
LWEB-801-LIC10	Server license for 10 additional LOYTEC devices
LWEB-801-LIC25	Server license for 25 additional LOYTEC devices
LWEB-801-LIC50	Server license for 50 additional LOYTEC devices
LWEB-801-LIC100	Server license for 100 additional LOYTEC devices

L-WEB System

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LWEB-820
Master Schedule Configurator

The LWEB-820 Master Schedule Configurator is used to structure schedulers hierarchically on an efficient configuration interface.

As a client application of the LWEB-801 Server (see page 12) LWEB-820 Master Schedule Configurator provides central control and management of multiple scheduler applications on one or multiple distributed devices. LWEB-820 is designed as a user interface for non-technical users which is similar to calendar functions of common office applications. Several LWEB-820 clients can access a project on the LWEB-801 Server at the same time (multi-user).

Schedulers and calendars are combined at different levels of hierarchy. Entries on the highest hierarchical level have an impact on all schedulers. Entries on a lower hierarchical level affect only the schedulers below that level. Local changes on the device are identified and can either be accepted or rejected.

Calendar and scheduler parameters are stored on the central LWEB-801 Server and automatically synchronized to the connected automation devices.

Licensing

The basic version has a license for two users. Additional licenses for more than two users are available.

Features:

- Hierarchical organization of calendar and scheduler parameters
- Serves distributed schedule and calendar parameters across multiple devices
- User-friendly user interface similar to common office applications
- Information on local parameter adjustments on the device
- Synchronizing or discarding local changes
- Assigning access rights
- Multi-user

LWEB-820 Master
Schedule Configurator

IP Connection

LWEB-801 Server

Internet / Intranet
Router / Firewall

BACnet/IP, LonMark IP-852, OPC XML-DA

L-ROC L-IOB

L-INX

L-GATE

L-INX

L-INX L-IOB L-IOB

Specifications	
For use with	L-INX Automation Server, L-ROC Room Controller, L-VIS Touch Panel, L-GATE Gateway, L-DALI Controller
Pre-condition	LWEB-801 Server
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LWEB-820	Hierarchical structuring and changing of schedule parameter and calendar, license for 2 users
LWEB-820-LIC5	License for 5 additional, individual users

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LWEB-821
Master Parameter Editor

LWEB-821 Master Parameter Editor

↕ IP Connection

LWEB-801 Server

Internet / Intranet Router / Firewall

BACnet/IP, LonMark IP-852, OPC XML-DA

L-ROC L-IOB ① ② ③ ④

L-DALI

L-GATE L-INX ② ① L-INX L-IOB L-IOB ① ② ③ ④

As a client application of the LWEB-801 Server (see page 12) LWEB-821 Master Parameter Configurator provides efficient parameterization of L-INX, L-ROC, L-VIS, L-DALI, and L-GATE devices. LWEB-821 accesses device parameters stored in the LWEB-801 SQL database and presents them in a configurable user interface in a structured way. Parameters can be grouped and changed simultaneously across multiple devices. Parameter settings can be easily transferred from one device to other devices. Multiple LWEB-821 users with access authorization can access the LWEB-801 Server simultaneously – even from remote.

Parameters for temperature control, lighting control or sunblind controls can be stored on the LWEB-801 Server in a database and presented in a structured way via LWEB-821. Running periods of blinds across many rooms can be adjusted easily and the parameters are written reliably into the corresponding automation devices. A large set of freely adjustable parameters depending on space layout conditions or functions is possible.

Features:

- Efficient parameterization of operation parameters on L-INX, L-ROC, L-VIS, L-DALI, and L-GATE devices
- Structured presentation of the operating parameters
- Free combination of parameters
- Simultaneous adjustment of multiple parameters
- Transfer of parameter settings from one to other devices
- Storage of parameter settings in the LWEB-801 SQL database
- Authentication with username and password
- Assigning access rights
- Multi-user

Specifications	
For use with	L-INX Automation Server, L-ROC Room Controller, L-VIS Touch Panel, L-DALI Controller, L-GATE
Pre-condition	LWEB-801 Server
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LWEB-821	Efficient parameterization of L-INX and L-ROC devices, license for 2 users
LWEB-821-LIC5	License for 5 additional, individual users

L-WEB System

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LWEB-822
Master Device Manager

As a client application of the LWEB-801 Server (see page 12) LWEB-822 Master Device Manager provides functionality to store and manage configuration files of L-INX, L-ROC, L-VIS, L-IP, L-GATE, and L-DALI devices centrally on the LWEB-801 Server. This includes the application program of programmable devices. Grouping options dependent on space layout conditions or functions provide the necessary overview. A backup feature ensures a regular backup of all relevant device configurations in the SQL database of LWEB-801 Server. In the event of a device exchange LWEB-822 restores the firmware and the device configuration.
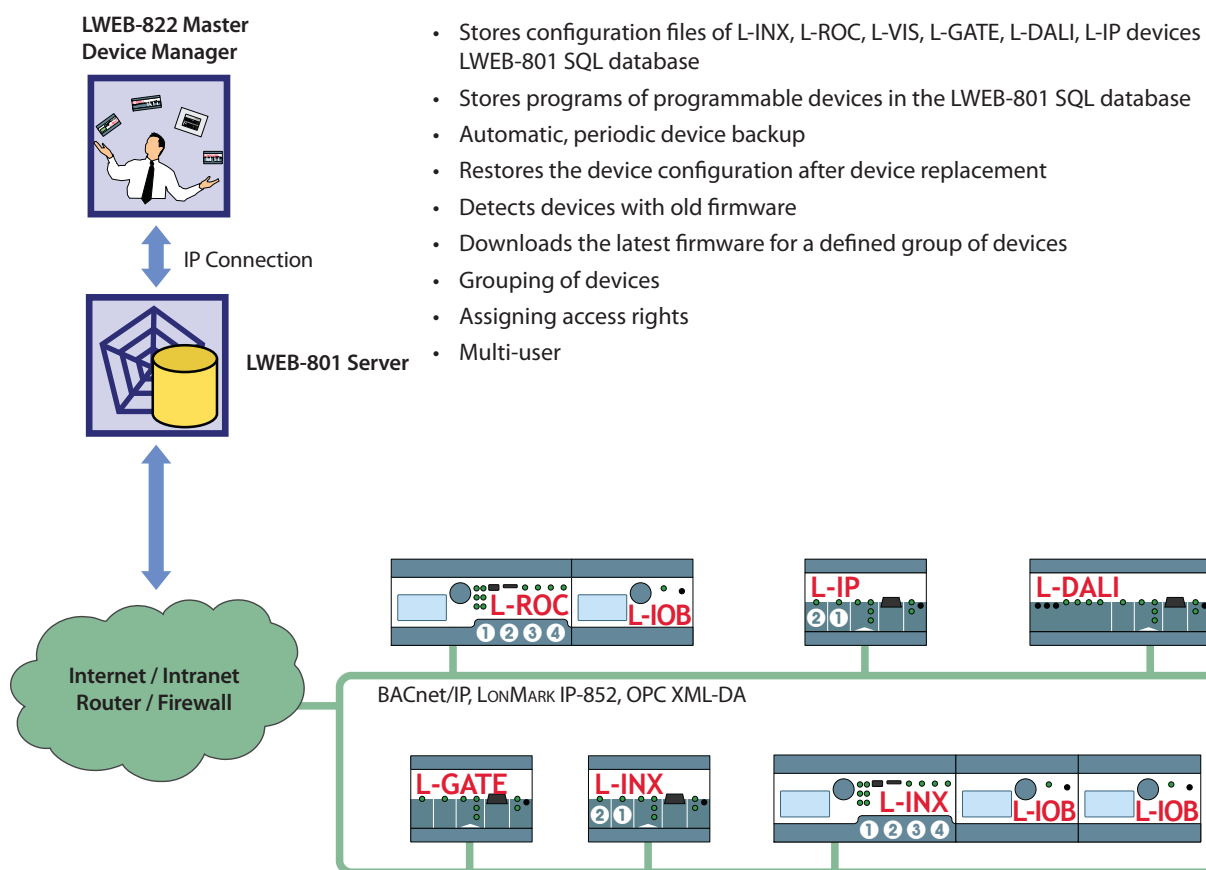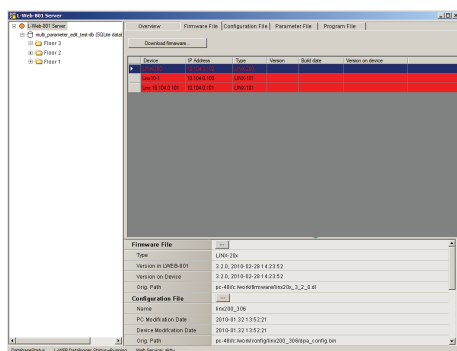
To ease the system maintenance LWEB-822 lists all devices where the firmware is not up to date. An update of the firmware can be performed for individual devices or groups of devices. Multiple LWEB-822 users with access authorization can access the LWEB-801 Server simultaneously - even from remote.

Licensing

Every LWEB-801 Server license already includes an LWEB-822 license for two users. Additional licenses for more than two users are available.

Features:

- Stores configuration files of L-INX, L-ROC, L-VIS, L-GATE, L-DALI, L-IP devices in the LWEB-801 SQL database
- Stores programs of programmable devices in the LWEB-801 SQL database
- Automatic, periodic device backup
- Restores the device configuration after device replacement
- Detects devices with old firmware
- Downloads the latest firmware for a defined group of devices
- Grouping of devices
- Assigning access rights
- Multi-user

LWEB-822 Master Device Manager

IP Connection

LWEB-801 Server

Internet / Intranet Router / Firewall

L-ROC   L-IOB

L-IP

L-DALI

BACnet/IP, LONMARK IP-852, OPC XML-DA

L-GATE   L-INX   L-INX   L-IOB   L-IOB

Specifications	
For use with	L-INX Automation Server, L-ROC Room Controller, L-IP Router, L-GATE Gateway, L-DALI Controller, L-VIS
Pre-condition	LWEB-801 Server
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LWEB-822	Central storage of configuration data and applications on LWEB-801 Server, update management, licence for 2 users included in LWEB-801
LWEB-822-LIC5	License for 5 additional, individual users

АРКТИКА – официальный дистрибьютор

LOYTEC

LWEB-830
Dream Report

LWEB-830 Dream Report is a reporting software used for evaluation and treatment of long-term trend and event logs that are held by one or multiple existing LWEB-801 Servers.

Report templates can be easily created or modified by the user. No programming skills are required. Information can be linked in any order by mathematical operations. Data can be presented in numerical series, tables, or graphically (trend, bar and pie graphs). The inclusion of illustrations or graphics helps to make the reports meaningful. Reports can be generated at any time on user request or automatically based on defined dates or periods (daily, weekly, monthly, etc.).
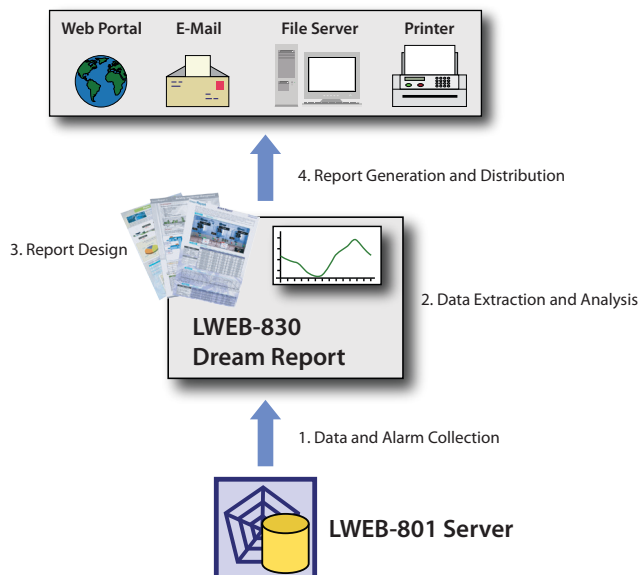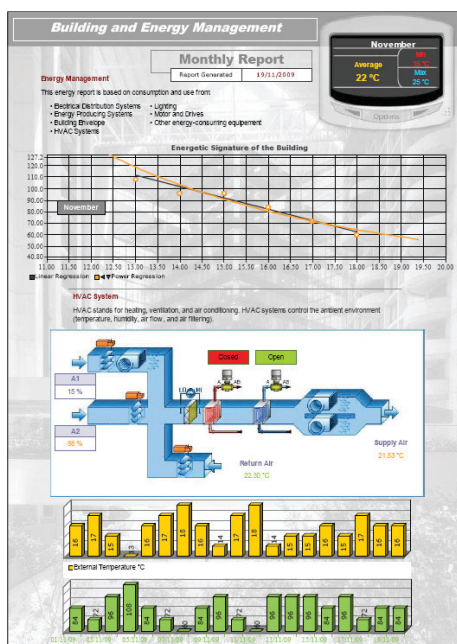
Reports designed with LWEB-830 Dream Report are made available as PDF via a Web portal, sent by e-mail automatically, stored on a server or simply printed on a printer. The access to the reports can be restricted to authorized users.

Licensing

Various licenses are available, which differ in the number of processed data points.

Features:

- Meaningful reports
- Easy design of report templates
- Report output as PDF file or print
- Forwarding via e-mail
- Placing on Web portal or stored on file server
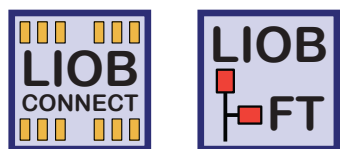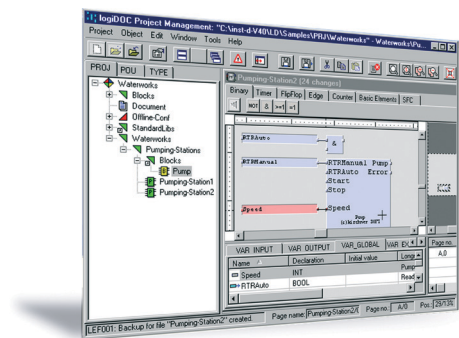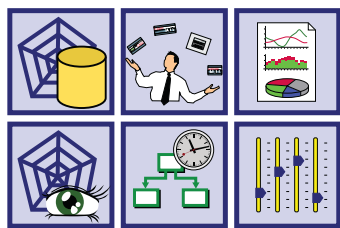- Assignment of access rights

| Web Portal | E-Mail | File Server | Printer |

4. Report Generation and Distribution

3. Report Design

LWEB-830 Dream Report

2. Data Extraction and Analysis

1. Data and Alarm Collection

LWEB-801 Server

Specifications	
For use with	L-INX Automation Server, L-ROC Room Controller, L-VIS Touch Panel, L-GATE Gateway, L-DALI Controller
Pre-condition	LWEB-801 Server
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LWEB-830-DR250	Reporting software for processing real-time data (up to 250 data points) from the LWEB-801 Server
LWEB-830-DR2000	Reporting software for processing real-time data (up to 2 000 data points) from the LWEB-801 Server
LWEB-830-DR10000	Reporting software for processing real-time data (up to 10 000 data points) from the LWEB-801 Server
LWEB-830-DR50000	Reporting software for processing real-time data (up to 50 000 data points) from the LWEB-801 Server

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

| BACnet | ✓ | Modbus | ✓ |
| CEA-709 | ✓ | M-Bus | ✓ |

LINX-150 Automation Server
BACnet & CEA-709 Controller

L-INX Automation Servers LINX-150 and LINX-151 are automation stations with expansion options to couple L-IOB I/O modules via LOYTEC LIOB Connect and LIOB FT. The powerful Automation Servers provide connectivity features to integrate into CEA-709 (LONMARK Systems) and BACnet networks. The LINX-150 has a built-in Remote Network Interface (RNI) to get access to the TP/FT-10 channel from the Ethernet/IP side. The LINX-151 features two integrated Routers. One IP-852 Router with comprehensive L-IP functionality plus one BACnet/IP Router with BBMD and slave proxy functionality.

The Automation Servers feature two 100Base-T Ethernet ports with an integrated Ethernet switch. Multiple L-INX Automation Server can be attached in series to an Ethernet ring. If the Ethernet ring is connected to an Ethernet switch which supports the Spanning Tree Protocol, a reliable communication system is established.

The combination of free programmability (IEC 61131-3), an integrated OPC server, customized visualization with LWEB-800 (Graphical User Interface), gateway functions, alarming, scheduling, trending and e-mail notification opens multiple uses for building automation in distributed property and buildings of any size. The application range extends from the control, regulation and supervision of building services to energy management.

Controller

The L-INX Automation Server can be used as a controller for various applications due to its built-in PLC functionality. Several IEC 61131-3 programs can run in parallel with different cycle times. IEC 61131-3 applications can be changed during operation and are loaded into the device without interrupting the currently running program. An online test via Ethernet (TCP/IP) or TP/FT-10, and offline simulation help create the application and support troubleshooting.

L-IOB I/O Modules can be directly coupled to a L-INX Automation Server through the LIOB Connect functionality. LIOB FT Modules connect remote I/O through the LIOB FT channel (LONMARK TP/FT-10 channel). All L-IOB I/O modules are automatically identified and coupled to the L-INX Automation Servers (Plug and Play). Thus the I/O data points are available for use with the L-INX Automation Server application. The data points are available for operation via the Web front end. All configurations of the L-IOB modules are stored by the L-INX Automation Server and loaded into the L-IOB device. A replacement of I/O modules is done with a few simple steps without configuration tools.

Both L-INX Automation Servers and L-IOB modules contain a 128x64 display with backlight. The display shows device and data point information. A jog dial is used for local operation by displaying detailed information on the display and for operation and override of data points. Any L-IOB module connected to the L-INX Automation Server can be accessed by the L-INX for manual operation.

Manual operation via remote access using VNC (Virtual Network Computing) is available. Every LINX-150 and LINX-151 Automation Server together with its connected I/Os can be operated remotely from mobile devices or a PC via VNC, even if the devices themselves are not physically accessible.

Integration Platform

LINX-150 Automation Servers can be either connected through their Ethernet/IP ports to LONMARK IP-852 and BACnet/IP simultaneously or to TP/FT-10 and BACnet MS/TP channels respectively. LINX-151 with a built-in IP-852 Router and BACnet/IP Router can communicate on all channel types at the same time.

Static and dynamic NVs for CEA-709 are available. In addition to SNVTs also User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. In case of BACnet the L-INX Automation Server complies with the B-BC (BACnet Building Controller) profile. Communication takes place both via BACnet Server Objects as well as Client Mappings. The integration of Modbus (RTU and TCP) and M-Bus is provided by the L-INX Automation Servers as well. The L-MBUS level converter is needed to connect an M-Bus channel. The built-in OPC server (OPC XML-DA) allows

АРКТИКА – официальный дистрибьютор   LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

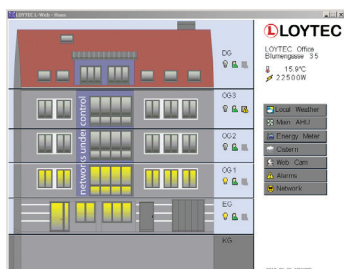BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

LINX-150 Automation Server
BACnet & CEA-709 Controller

client applications to access predefined OPC data points via Web services. For OPC DA clients based on Microsoft's COM/DCOM technology (OPC DA 2.0.5) the bridge software LOPC-800 is available. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.
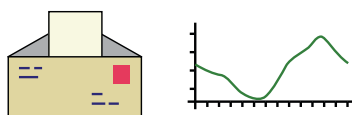
OPC Server

All technology data points used by the L-INX Automation Server - whether SNVTs, UNVTs or Configuration Properties from the CEA-709 network, BACnet Server Objects and Client Mappings, data points from Modbus or M-Bus, or I/O values of connected L-IOB I/Os - can be automatically mapped to OPC data points. The L-INX Automation Server provides OPC data points fully technologically independent via its OPC XML-DA Server to higher-level systems such as the L-WEB System or a SCADA system of a third-party supplier.

Operator Functions and Monitoring

Customized graphic pages with dynamic content are hosted by the L-INX Automation Servers and appear via Web services with LWEB-800 Visualization (free available .NET application, see page 10) on Windows PCs and Windows Mobile devices. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. Links between individual graphic pages allow a user-driven navigation. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.

The use of Web services for data communication allows an easy integration into any IT infrastructure. Data points from different L-INX Automation Servers can be processed in one graphic page. Also links between graphic pages from different L-INX Automation Servers are possible. This allows the design of a distributed visualization to operate and monitor the connected systems. Information from the different communications environments are made visible and operable in a uniform way to the user.

Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. Of course trend data are also available to other BACnet devices or a BACnet Building Workstation. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the LWEB-800 Visualization or the integrated Web server. There is the possibility of remote access to other LOYTEC devices, which also host schedulers. BACnet Schedule Objects on remote BACnet devices can be accessed as well as BACnet clients can access the schedulers on the LINX-150 and LINX-151. Centralized management of schedulers on one or multiple distributed L-INX Automation Servera is done with the LWEB-820 Master Schedule Configurator (see page 14).
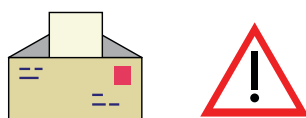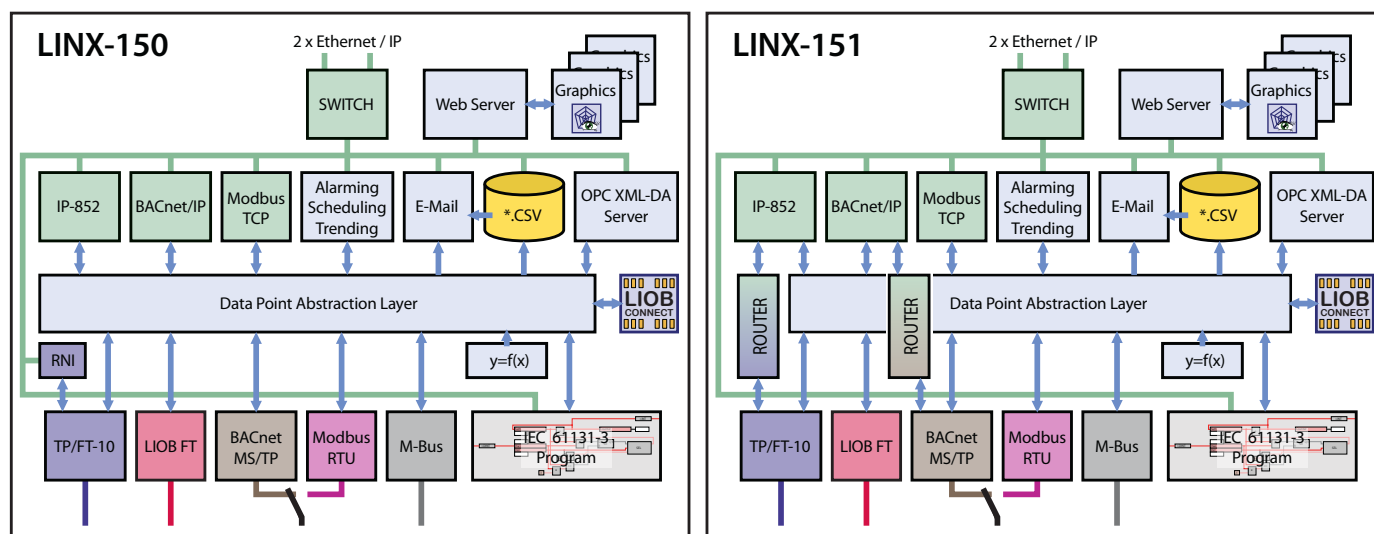
Alarming

The L-INX Automation Servers support alarming according to the LONMARK profile definition and BACnet Intrinsic Alarming via BACnet Notification Class Objects concurrently. Alarms are available on the LWEB-800 Visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

LINX-150 Automation Server
BACnet & CEA-709 Controller

LINX-150 / **LINX-151** block diagrams

Features:

- IEC 61131-3 programmable with L-LOGICAD
- Physical inputs and outputs with L-IOB I/O Modules (LIOB Connect & LIOB FT)
- 128x64 display with backlight
- Local and remote access to information about device status and data points
- Manual operation using the jog dial or VNC client
- Memory expansion with microSD card
- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Managing of customized graphical pages
- Monitoring and control through LWEB-800 Visualization
- Built-in OPC XML-DA Server
- Data point access via Web services
- Access to network statistics
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- BACnet Client Configuration with configuration tool (Scan and EDE import)
- B-BC (BACnet Building Controller) functionality
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LonMark Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of CEA-709 dynamically created network variables or static network variables
- Support of CEA-709 user-defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs)
- CEA-709 Remote Network Interface (RNI) with 2 MNI devices (LINX-150 only)
- Integrated BACnet/IP to BACnet MS/TP Router (LINX-151 only)
- Integrated IP-852 to TP/FT-10 Router (LINX-151 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Configurable via Ethernet/IP, USB, or TP/FT-10

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

LINX-150 Automation Server
BACnet & CEA-709 Controller

Specifications			
Dimensions (mm)	159 x 100 x 75 (L x W x H)		
Power supply	24 VDC / 24 VAC ±10 %, typ. 2.5 W		
Interfaces	2 x Ethernet (100Base-T) OPC XML-DA, BACnet/IP, LonMark IP-852, Modbus TCP (Master or Slave), HTTP, FTP	1 x TP/FT-10 (LonMark System) 1 x LIOB FT 1 x BACnet MS/TP or Modbus RTU (Master or Slave) 1 x M-Bus (Master EN 13757-3) 1 x LIOB Connect 2 x USB-A, 1 x USB-B (PC)	
L-IOB I/O Modules	Up to 8 LIOB Connect I/O Modules plus Up to 8 LIOB FT I/O Modules		
Remote Network Interface (RNI)	1 RNI with 2 MNI devices (LINX-150 only)		
BACnet/IP Router	1 (LINX-151 only)		
CEA-709 Router	1 (LINX-151 only)		
Program Cycle Time	Down to 10 ms		
Programming, Tools	L-LOGICAD Software (IEC 61131-3), L-INX Configurator		

Resource limits			
IEC 61131-3 Variables	1 000	LonMark Calendar	1 (25 Calendar Templates)
OPC XML-DA data points	5 000	LonMark Scheduler	100
BACnet Server Objects	1 000 (Analog, Binary, Multi-State)	LonMark Alarm Server	1
BACnet Client Mappings	1 000	CEA-709 trend logs	100
BACnet Calendar Objects	25	E-mail templates	100
BACnet Scheduler Objects	100 (64 data points per object)	Math objects	100
BACnet Notification Class Objects	32	Alarm logs	10
BACnet Trend Log Objects	100 (390 000 logs, ≈ 6 MB)	M-Bus data points	1 000
CEA-709 Network Variables (NVs)	1 000	Modbus data points	2 000
CEA-709 Alias NVs	1 000	Data point connections	2 000
CEA-709 External NVs (Polling)	1 000	Number of LWEB-800 clients	15 (simultaneously)
CEA-709 Address Table Entries	512 („legacy mode": 15)		

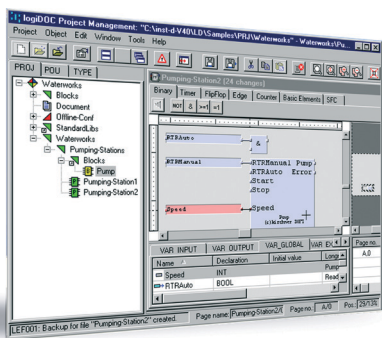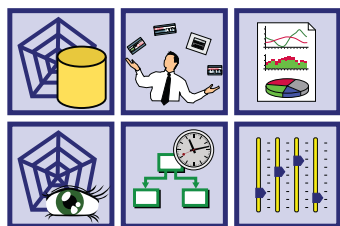| Order number	Configuration	Page
LINX-150	BACnet & CEA-709 Automation Server with LIOB Connect and built-in Remote Network Interface (RNI)	18
LINX-151	BACnet & CEA-709 Automation Server with LIOB Connect and built-in BACnet/IP & IP-852 Router	18
LINX-START-150	Starter Kit: LINX-150, LIOB-101, LIOB-102 and L-LOGICAD License	18
LIOB-A2	L-IOB Adapter 2 to split the line of modules on the DIN rail for space and power considerations	47
LIOB-100	LIOB Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (4 x Triac, 5 x Relay 6 A)	47
LIOB-101	LIOB Connect I/O Module: 8 UI, 16 DI	47
LIOB-102	LIOB Connect I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-103	LIOB Connect I/O Module: 6 UI, 6 AO, 5 DO (Relay 16 A)	47
LIOB-131	LIOB Connect DALI Controller, 1 x DALI channel, integrated DALI power supply	47
LIOB-150	LIOB FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Triac, 4 x Relay 6 A)	47
LIOB-151	LIOB FT I/O Module: 8 UI, 12 DI	47
LIOB-152	LIOB FT I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-153	LIOB FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)	47
LPOW-2415A	LIOB Connect power supply, 24 VDC, 15 W	51
LPOW-2415B	Power supply with external power connector 24 VDC, 15 W	51
LOPC-BR800	OPC Bridge (PC software) to connect OPC DA clients (COM/DCOM) with L-INX Automation Servers	80
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

АРКТИКА – официальный дистрибьютор   LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet Modbus ✓
CEA-709 ✓ M-Bus ✓

LINX-120 Automation Server
CEA-709 Controller

L-INX Automation Servers LINX-120 and LINX-121 are automation stations with expansion options to couple L-IOB I/O modules via LOYTEC LIOB Connect. The powerful Automation Servers provide connectivity features to integrate into LONMARK Systems. For CEA-709 systems the L-INX Automation Server either has a built-in Remote Network Interface (LINX-120) or an integrated IP-852 Router with comprehensive L-IP functionality (LINX-121).

The Automation Servers feature two 100Base-T Ethernet ports with an integrated Ethernet switch. Multiple L-INX Automation Server can be attached in series to an Ethernet ring. If the Ethernet ring is connected to an Ethernet switch which supports the Spanning Tree Protocol, a reliable communication system is established.

The combination of free programmability (IEC 61131-3), an integrated OPC server, customized visualization with LWEB-800 (Graphical User Interface), gateway functions, alarming, scheduling, trending and e-mail notification opens multiple uses for building automation in distributed property and buildings of any size. The application range extends from the control, regulation and supervision of building services to energy management.

Controller

The L-INX Automation Server can be used as a controller for various applications due to its built-in PLC functionality. Several IEC 61131-3 programs can be run in parallel with different cycle times. IEC 61131-3 applications can be changed during operation and are loaded into the device without interrupting the currently running program. An online test via Ethernet (TCP/IP) or TP/FT-10, and offline simulation help create the application and support troubleshooting.

L-INX Automation Servers provide LIOB Connect functionality to connect physical data points. L-IOB I/O modules are automatically identified and coupled to the L-INX Automation Servers (Plug and Play). Thus the I/O data points are available for use with the L-INX Automation Server application. The data points are available for operation via the Web front end. All configurations of the L-IOB modules are stored by the L-INX Automation Server and reloaded to the L-IOB device if required. Any replacement of I/O modules is done with a few simple steps without configuration effort.

The L-INX Automation Servers and the L-IOB modules contain a 128x64 display with backlight. The display shows device and data point information. A jog dial is used for local operation by displaying detailed information on the display and for operation and override of data points. Any L-IOB modules connected to the L-INX Automation Server can be accessed by the L-INX for manual operation.

Manual operation via remote access using VNC (Virtual Network Computing) is available. Every LINX-120 and LINX-121 Automation Server together with its connected I/Os can be operated remotely from mobile devices or a PC via VNC, even if the devices themselves are not physically accessible.

Integration Platform

LINX-120 Automation Servers for LONMARK Systems can be connected either to an Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel. LINX-121 with a built-in IP-852 Router can communicate on both channel type at the same time.
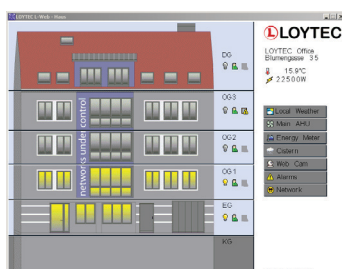
Static and dynamic NVs form the interface. In addition to SNVTs also User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. Also integration of Modbus (RTU and TCP) and M-Bus is provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel. The built-in OPC server (OPC XML-DA) allows client applications to access predefined OPC data points via Web services. For OPC DA clients based on Microsoft's COM/DCOM technology (OPC DA 2.0.5) the bridge software LOPC-800 is available. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functional-

АРКТИКА – официальный дистрибьютор LOYTEC

LINX-120 Automation Server
CEA-709 Controller

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

ity enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.
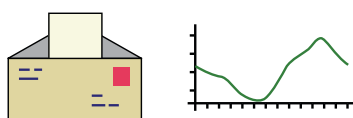
OPC Server

All technology data points used by the L-INX Automation Server - whether SN-VTs, UNVTs or Configuration Properties from the CEA-709 network, data points from Modbus or M-Bus, or I/O values of connected L-IOB I/Os - can be automatically mapped to OPC data points. The L-INX Automation Server provides OPC data points fully technologically independent via its OPC XML-DA Server to higher-level systems such as the L-WEB System or a SCADA system of a third-party supplier.

Operator Functions and Monitoring

Customized graphic pages with dynamic content are hosted by the L-INX Automation Servers and appear via Web services with LWEB-800 Visualization (free available .NET application, see page 10) on Windows PCs and Windows Mobile devices. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. Links between individual graphic pages allow a user-driven navigation. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.

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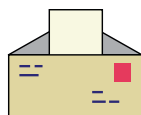
Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the LWEB-800 Visualization or the integrated Web server. There is the possibility of remote access to other LOYTEC devices, which also host schedulers. Centralized management of schedulers on one or multiple distributed L-INX Automation Server is done with the LWEB-820 Master Schedule Configurator (see page 14).

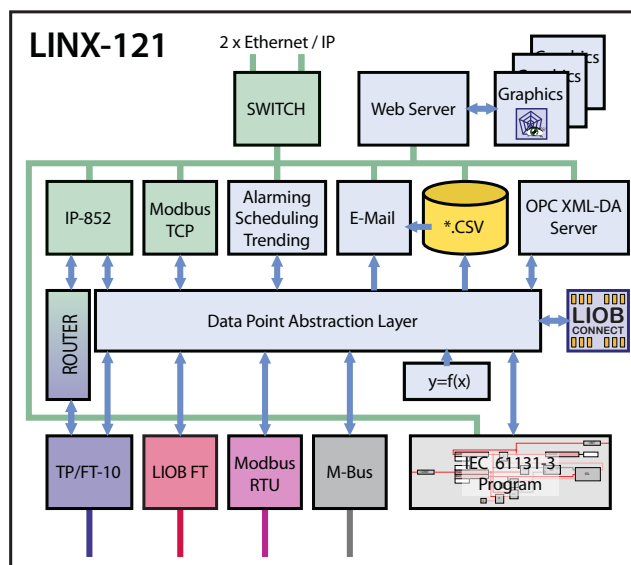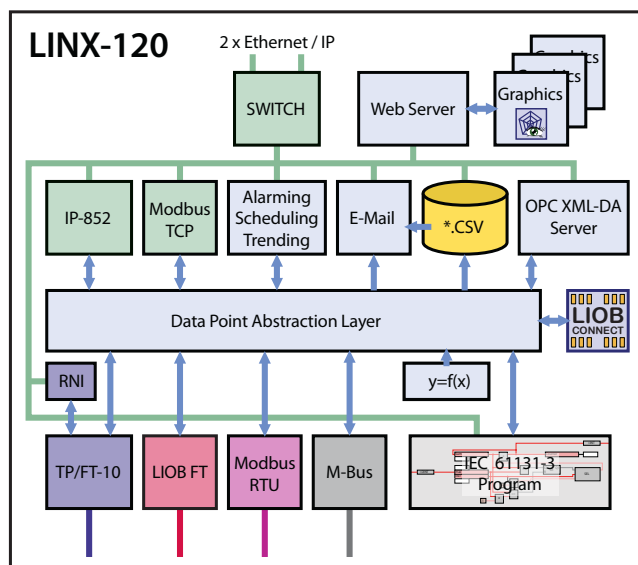### Alarming

The L-INX Automation Servers supports alarming according to the LONMARK profile definition. Alarms are available on the LWEB-800 Visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓
CEA-709 ✓   M-Bus ✓

LINX-120 Automation Server
CEA-709 Controller

LINX-120

2 x Ethernet / IP

SWITCH | Web Server | Graphics

IP-852 | Modbus TCP | Alarming Scheduling Trending | E-Mail | *.CSV | OPC XML-DA Server

Data Point Abstraction Layer | LIOB CONNECT

RNI | y=f(x)

TP/FT-10 | LIOB FT | Modbus RTU | M-Bus | IEC 61131-3 Program

LINX-121

2 x Ethernet / IP

SWITCH | Web Server | Graphics

IP-852 | Modbus TCP | Alarming Scheduling Trending | E-Mail | *.CSV | OPC XML-DA Server

ROUTER | Data Point Abstraction Layer | LIOB CONNECT

y=f(x)

TP/FT-10 | LIOB FT | Modbus RTU | M-Bus | IEC 61131-3 Program

Features:

- IEC 61131-3 programmable with L-LOGICAD
- Physical inputs and outputs with stackable L-IOB I/O Modules
- 128x64 display with backlight
- Local and remote access to information about device status and data points
- Manual operation using the jog dial or VNC client
- Memory expansion with microSD card
- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Managing of customized graphical pages
- Monitoring and control through LWEB-800 Visualization
- Built-in OPC XML-DA Server
- Data point access via Web services
- Access to network statistics
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of dynamically created network variables or static network variables
- Support of user defined NVs (UNVTs) and configuration properties (SCPTs, UCPTs)
- Remote Network Interface (RNI) with 2 MNI devices (LINX-120 only)
- Integrated IP-852 to TP/FT-10 Router (LINX-121 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Configurable via Ethernet/IP, USB, or TP/FT-10

АРКТИКА – официальный дистрибьютор   LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓   # LINX-120 Automation Server
CEA-709 ✓   M-Bus ✓   ## CEA-709 Controller
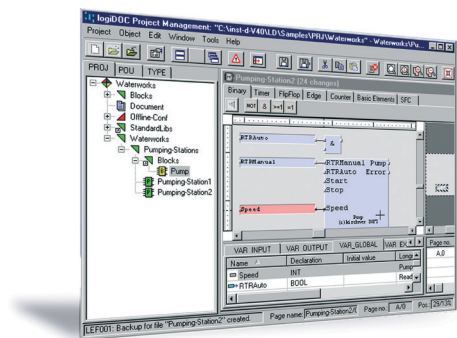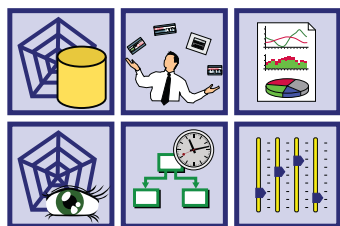
Specifications	
Dimensions (mm)	159 x 100 x 75 (L x W x H)
Power supply	24 VDC / 24 VAC ±10 %, typ. 2.5 W

Interfaces	2 x Ethernet (100Base-T)
	  OPC XML-DA,
	  LONMARK IP-852,
	  Modbus TCP (Master or Slave),
	  HTTP, FTP
	1 x TP/FT-10 (LONMARK System)
	1 x LIOB FT
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x LIOB Connect
	2 x USB-A, 1 x USB-B (PC)

L-IOB I/O Modules	Up to 8 Modules via LIOB Connect
Remote Network Interface (RNI)	1 RNI with 2 MNI devices (LINX-120 only)
CEA-709 Router	1 (LINX-121 only)
Program Cycle Time	Down to 10 ms
Programming, Tools	L-LOGICAD Software (IEC 61131-3), L-INX Configurator

Resource limits			
IEC 61131-3 Variables	1 000	Trend logs	100
OPC XML-DA data points	5 000	E-mail templates	100
Network Variables (NVs)	1 000	Math objects	100
Alias NVs	1 000	Alarm logs	10
External NVs (Polling)	1 000	M-Bus data points	1 000
Address Table Entries	512 („legacy mode": 15)	Modbus data points	2 000
LONMARK Calendar	1 (25 Calendar Templates)	Data point connections	2 000
LONMARK Scheduler	100	Number of LWEB-800 Clients	15 (simultaneously)
LONMARK Alarm Server	1		

Order number	Configuration	Page
LINX-120	CEA-709 Automation Server with LIOB Connect and built-in Remote Network Interface (RNI)	22
LINX-121	CEA-709 Automation Server with LIOB Connect and built-in IP-852 Router	22
LINX-START-120	Starter Kit: LINX-120, LIOB-101, LIOB-102 and L-LOGICAD License	22
LIOB-A2	L-IOB Adapter 2 to split the line of modules on the DIN rail for space and power considerations	47
LIOB-100	LIOB Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (4 x Triac, 5 x Relay 6 A)	47
LIOB-101	LIOB Connect I/O Module: 8 UI, 16 DI	47
LIOB-102	LIOB Connect I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-103	LIOB Connect I/O Module: 6 UI, 6 AO, 5 DO (Relay 16 A)	47
LIOB-131	LIOB Connect DALI Controller, 1 x DALI channel, integrated DALI power supply	47
LIOB-150	LIOB FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Triac, 4 x Relay 6 A)	47
LIOB-151	LIOB FT I/O Module: 8 UI, 12 DI	47
LIOB-152	LIOB FT I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-153	LIOB FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)	47
LPOW-2415A	LIOB Connect power supply, 24 VDC, 15 W	51
LPOW-2415B	Power supply with external power connector 24 VDC, 15 W	51
LOPC-BR800	OPC Bridge (PC software) to connect OPC DA clients (COM/DCOM) with L-INX Automation Servers	80
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓

LINX-220 Automation Server
BACnet Controller

L-INX Automation Servers LINX-220 and LINX-221 are automation stations with expansion options to couple L-IOB I/O modules via LOYTEC LIOB Connect. The powerful Automation Servers provide connectivity features to integrate into BACnet networks where the L-INX Automation Servers represent BACnet Building Controllers (B-BC). The LINX-221 adds a built-in BACnet/IP Router with BBMD and slave proxy functionality.

The Automation Servers feature two 100Base-T Ethernet ports with an integrated Ethernet switch. Multiple L-INX Automation Server can be attached in series to an Ethernet ring. If the Ethernet ring is connected to an Ethernet switch which supports the Spanning Tree Protocol, a reliable communication system is established.

The combination of free programmability (IEC 61131-3), an integrated OPC server, customized visualization with LWEB-800 (Graphical User Interface), gateway functions, alarming, scheduling, trending and e-mail notification provides multiple uses for building automation in distributed property and buildings of any size. The application range extends from the control, regulation and supervision of building services to energy management.

Controller

The L-INX Automation Server can be used as a controller for various applications due to its built-in PLC functionality. Several IEC 61131-3 programs can be run in parallel with different cycle times. IEC 61131-3 applications can be changed during operation and are loaded into the device without interrupting the currently running program. An online test via Ethernet (TCP/IP) or TP/FT-10 and offline simulation help create the application and support troubleshooting.

L-INX Automation Servers provide LIOB Connect functionality to connect physical data points. L-IOB I/O modules are automatically identified and coupled to the L-INX Servers (Plug and Play). Thus the I/O data points are available for use with the L-INX Automation Server application. The data points are available for operation via the Web front end. All configurations of the L-IOB modules are stored by the L-INX server and reloaded to the L-IOB device if required. Any replacement of I/O modules is done with a few simple steps without configuration effort.

Both the L-INX Automation Servers and the L-IOB modules contain a 128x64 display with backlight. The display shows device and data point information. A jog dial is used for local operation by displaying detailed information on the display and for operation and override of data points. Any L-IOB modules connected to the L-INX Automation Server can be accessed by the L-INX for manual operation.

Manual operation via remote access using VNC (Virtual Network Computing) is available. Every LINX-220 and LINX-221 Automation Server together with its connected I/Os can be operated remotely from mobile devices or a PC via VNC, even if the devices themselves are not physically accessible.

Integration Platform

LINX-220 and LINX-221 Automation Servers for BACnet networks can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel. LINX-221 with a built-in BACnet/IP Router can communicate on both channel types at the same time.

The L-INX Automation Server complies with the B-BC (BACnet Building Controller) profile. Communication takes place both via BACnet server objects as well as client mappings. Also integration of Modbus (RTU and TCP) and M-Bus is provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel. The built-in OPC server (OPC XML-DA) allows client applications to access predefined OPC data points via Web services. For OPC DA clients based on Microsoft's COM/DCOM technology (OPC DA 2.0.5) the bridge software LOPC-800 is available. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gate-

LINX-220 Automation Server
BACnet Controller

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

way functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.

OPC Server

All technology data points used by the L-INX Automation Server, BACnet Server Objects, Client Mappings, data points from Modbus or M-Bus, or I/O values of connected L-IOB I/Os can be automatically mapped to OPC data points. The L-INX Automation Server provides multiple protocol points also as OPC data points via its OPC XML-DA Server to higher-level systems such as the L-WEB System or a SCADA system of a third-party supplier. This provides a technology independent data solution.

Operator Functions and Monitoring

Customized graphic pages with dynamic content are hosted by the L-INX Automation Servers and appear via Web services with LWEB-800 Visualization (free available .NET application, see page 10) on Windows PCs and Windows Mobile devices. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. Links between individual graphic pages allow a user-driven navigation. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.

The use of Web services for data communication allows an easy integration into any IT infrastructure. Data points from different L-INX Automation Servers can be processed in one graphic page. Also links between graphic pages from different L-INX Automation Servers is possible. This allows the design of a distributed visualization to operate and monitor the connected systems. Information from the different communications environments are made visible and operable in a uniform way to the user.

### Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. Of course trend data are also available to other BACnet devices or a BACnet Building Workstation. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the LWEB-800 Visualization or the integrated Web server. LINX-220 and LINX-221 can access BACnet schedule objects on remote BACnet devices via client mappings. Conversely BACnet clients can access the schedules on LINX-220 and LINX-221. Centralized management of schedulers on one or multiple distributed L-INX Automation Servers is done with the LWEB-820 Master Schedule Configurator (see page 14).
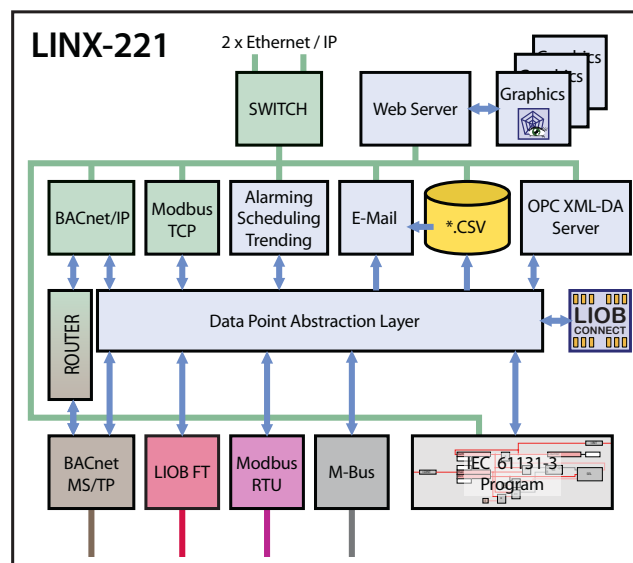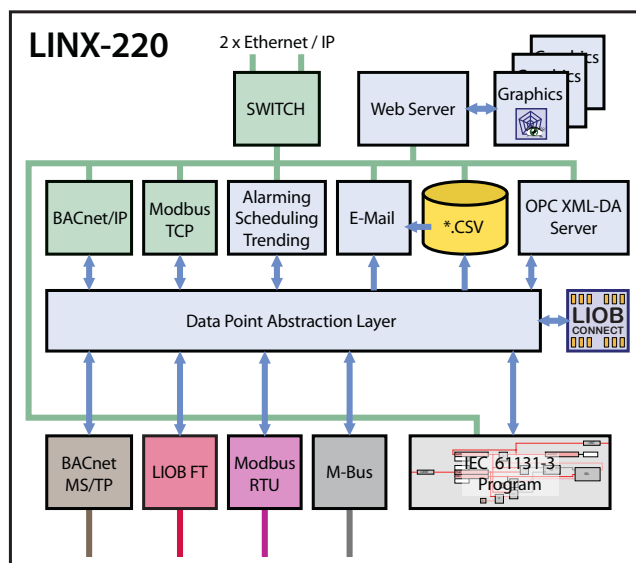
Alarming

The L-INX Automation Servers support BACnet Intrinsic Alarming and provide alarm messages via BACnet Notification Class Objects. Alarms are available on the LWEB-800 visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools
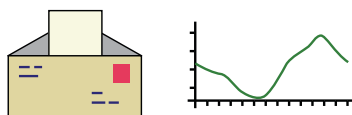
BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓

LINX-220 Automation Server
BACnet Controller

Features:

- IEC 61131-3 programmable with L-LOGICAD
- Physical inputs and outputs with stackable L-IOB I/O Modules
- 128x64 display with backlight
- Local and remote access to information about device status and data points
- Manual operation using the jog dial or VNC client
- Memory expansion with microSD card
- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Managing of customized graphical pages
- Monitoring and control through LWEB-800 Visualization
- Built-in OPC XML-DA Server
- Data point access via Web services
- Access to network statistics
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- BACnet Client Configuration with configuration tool (Scan and EDE import)
- B-BC (BACnet Buildung Controller) functionality
- Integrated BACnet/IP to BACnet MS/TP Router (LINX-221 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Configurable via Ethernet/IP or USB

АРКТИКА – официальный дистрибьютор LOYTEC

BACnet	✓	Modbus	✓
CEA-709		M-Bus	✓

LINX-220 Automation Server
## BACnet Controller

Specifications	
Dimensions (mm)	159 x 100 x 75 (L x W x H)
Power supply	24 VDC / 24 VAC ±10 %, typ. 2.5 W

Interfaces	2 x Ethernet (100Base-T)
	    OPC XML-DA,
	    BACnet/IP,
	    Modbus TCP (Master or Slave),
	    HTTP, FTP
	1 x BACnet MS/TP
	1 x LIOB FT
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x LIOB Connect
	2 x USB-A, 1 x USB-B (PC)

L-IOB I/O Modules	Up to 8 Modules via LIOB Connect
BACnet/IP Router	1 (LINX-221 only)
Program Cycle Time	Down to 10 ms
Programming, Tools	L-LOGICAD Software (IEC 61131-3), L-INX Configurator

Resource limits			
IEC 61131-3 vVariables	1 000	E-mail templates	100
OPC XML-DA data points	5 000	Math objects	100
BACnet Server Objects	1 000 (Analog, Binary, Multi-State)	Alarm logs	10
BACnet Client Mappings	1 000	M-Bus data points	1 000
BACnet Calendar Objects	25	Modbus data points	2 000
BACnet Scheduler Objects	100 (64 data points per object)	Data point connections	2 000
BACnet Notification Class Objects	32	Number of LWEB-800 clients	15 (simultaneously)
BACnet Trend Log Objects	100 (390 000 logs, ≈ 6 MB)		

Order number	Configuration	Page
LINX-220	BACnet Automation Server with LIOB Connect	26
LINX-221	BACnet Automation Server with LIOB Connect and built-in BACnet/IP Router	26
LINX-START-220	Starter Kit: LINX-220, LIOB-101, LIOB-102 and L-LOGICAD license	26
LIOB-A2	L-IOB Adapter 2 to split the line of modules on the DIN rail for space and power considerations	47
LIOB-100	LIOB Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (4 x Triac, 5 x Relay 6 A)	47
LIOB-101	LIOB Connect I/O Module: 8 UI, 16 DI	47
LIOB-102	LIOB Connect I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-103	LIOB Connect I/O Module: 6 UI, 6 AO, 5 DO (Relay 16 A)	47
LIOB-131	LIOB Connect DALI Controller, 1 x DALI channel, integrated DALI power supply	47
LIOB-150	LIOB FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Triac, 4 x Relay 6 A)	47
LIOB-151	LIOB FT I/O Module: 8 UI, 12 DI	47
LIOB-152	LIOB FT I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-153	LIOB FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)	47
LPOW-2415A	LIOB Connect power supply, 24 VDC, 15 W	51
LPOW-2415B	Power supply with external power connector 24 VDC, 15 W	51
LOPC-BR800	OPC Bridge (PC software) to connect OPC DA clients (COM/DCOM) with L-INX Automation Servers	80
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet

CEA-709 ✓

Modbus ✓

M-Bus ✓

LINX-100 Automation Server
CEA-709 Visualization
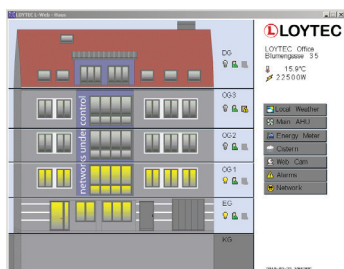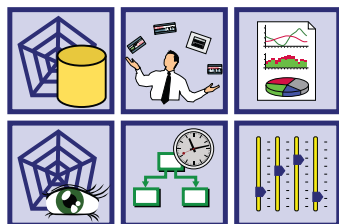
LINX-100 and LINX-101 Automation Servers host customized graphic pages, which appear via Web services with LWEB-800 Visualization. The powerful Automation Servers provide connectivity features to integrate into LONMARK Systems. For CEA-709 systems the L-INX Automation Server either has a built-in Remote Network Interface (LINX-100) or an integrated IP-852 Router with comprehensive L-IP functionality (LINX-101).

In combination with an integrated OPC server, gateway functions, alarming, scheduling, trending and e-mail notification LINX-100 and LINX-101 offer the ideal solution for a distributed visualization in distributed property and buildings of any size.

Operator Functions and Monitoring

Customized graphic pages with dynamic content are hosted by the L-INX Automation Servers and appear via Web services with LWEB-800 Visualization (free available .NET application, see page 10) on Windows PCs and Windows Mobile devices. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. Links between individual graphic pages allow a user-driven navigation. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.

The use of Web services for data communication allows an easy integration into any IT infrastructure. Data points from different L-INX Automation Servers can be processed in one graphic page. Also links between graphic pages from different L-INX Automation Servers are possible. This allows the design of a distributed visualization to operate and monitor the connected systems. Information from the different communications environments are made visible and operable in a uniform way to the user.
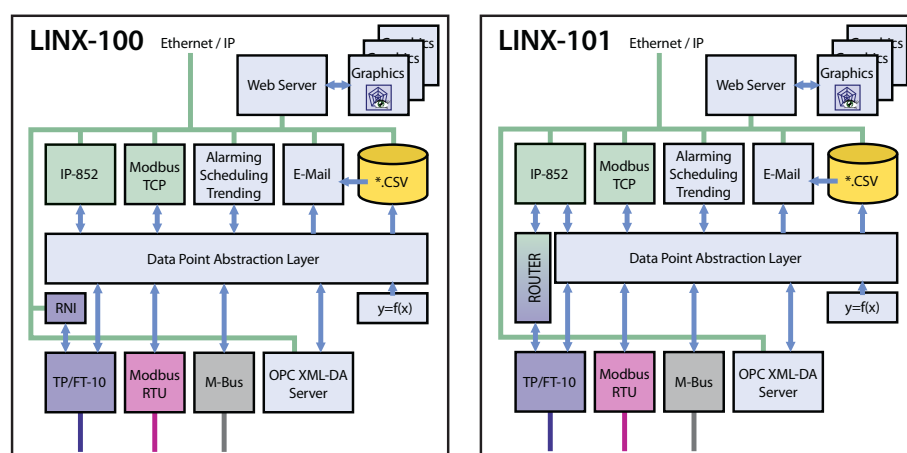
Integration Platform

LINX-100 and LINX-101 Automation Servers for LONMARK Systems can be connected either to a Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel. The LINX-101 with a built-in IP-852 Router can communicate on both channel types at the same time.

Static and dynamic NVs form the interface. In addition to SNVTs, User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. Integration of Modbus (RTU and TCP) and M-Bus is provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel. The built-in OPC server (OPC XML-DA) allows client applications to access predefined OPC data points via Web services. For OPC DA clients based on Microsoft's COM/DCOM technology (OPC DA 2.0.5) the bridge software LOPC-800 is available. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.
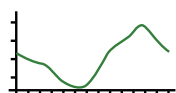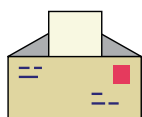
АРКТИКА – официальный дистрибьютор

LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓
CEA-709 ✓ M-Bus ✓

LINX-100 Automation Server
CEA-709 Visualization

OPC Server

All technology data points used by the L-INX Automation Server, SNVTs, UNVTs or Configuration Properties from the CEA-709 network, data points from Modbus or M-Bus, can be automatically mapped to OPC data points. The L-INX Automation Server provides multiple protocol points also as OPC data points via its OPC XML-DA Server to higher-level systems such as the L-WEB System or a SCADA system of a third-party supplier. This provides a technology independent data solution.
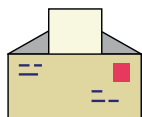
Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the LWEB-800 Visualization or the integrated Web server. Remote access to other LOYTEC devices and their schedulers is also available. Centralized management of schedulers on one or multiple distributed L-INX Automation Server is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

The L-INX Automation Servers supports alarming according to the LONMARK profile definition. Alarms are available on the LWEB-800 Visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

Local Calculations

Simple automation tasks can be performed by LINX-100 and LINX-101 Automation Servers. Standard mathematical calculations and functions as well as logical operations (boolean algebra) allow a flexible formulation of applications. For more complex tasks registers can be created and used in addition to technology data points (e.g. CEA-709 NVs).

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓
CEA-709 ✓ M-Bus   ✓

LINX-100 Automation Server
CEA-709 Visualization

Features:

- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Managing of customized graphical pages
- Monitoring and control through LWEB-800 Visualization
- Built-in OPC XML-DA Server
- Data point access via Web services
- Access to network statistics
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of dynamically created network variables or static network variables
- Support of user defined NVs (UNVTs) and configuration properties (SCPTs, UCPTs)
- Remote Network Interface (RNI) with 2 MNI devices (LINX-100 only)
- Integrated IP-852 to TP/FT-10 Router (LINX-101 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Configurable via Ethernet/IP, EIA-232 (RS-232), or TP/FT-10

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W

Interfaces	1 x Ethernet (100Base-T)
	    OPC XML-DA,
	    LONMARK IP-852,
	    Modbus TCP (Master or Slave),
	    HTTP, FTP
	1 x TP/FT-10 (LONMARK System)
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x EIA-232 (RS-232)

Remote Network Interface (RNI)	1 RNI with 2 MNI devices (LINX-100 only)
CEA-709 Router	1 (LINX-101 only)
Tools	L-INX Configurator

| Resource limits			
OPC XML-DA data points	2 000	Trend logs	100
Network Variables (NVs)	1 000	E-mail templates	100
Alias NVs	1 000	Math objects	100
External NVs (Polling)	1 000	Alarm logs	10
Address Table Entries	512 („legacy mode": 15)	M-Bus data points	1 000
LONMARK Calendar	1 (25 calendar templates)	Modbus data points	2 000
LONMARK Scheduler	100	Data point connections	1 000
LONMARK Alarm Server	1	Number of LWEB-800 Clients	15 (simultaneously)

Order number	Configuration	Page
LINX-100	CEA-709 Automation Server, supports LWEB-800 Visualization, built-in Remote Network Interface (RNI)	30
LINX-101	CEA-709 Automation Server, supports LWEB-800 Visualization, built-in IP-852 Router	30
LOPC-BR800	OPC Bridge (PC-Software) to connect OPC DA Clients (COM/DCOM) with L-INX Automation Servers	80
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓
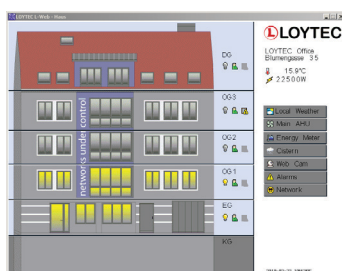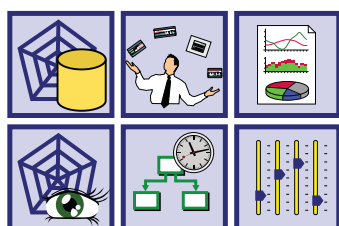
LINX-200 Automation Server
BACnet Visualization

LINX-200 and LINX-201 Automation Servers host customized graphic pages, which appear via Web services with LWEB-800 Visualization. The powerful Automation Servers provide connectivity features to integrate into BACnet networks, where the L-INX Automation Servers represent BACnet Building Controllers (B-BC). In contrast to the LINX-200 has the LINX-201 a built-in BACnet/IP Router with BBMD and slave proxy functionality.

In combination with an integrated OPC server, gateway functions, alarming, scheduling, trending and e-mail notification LINX-200 and LINX-201 offer the ideal solution for a distributed visualization in distributed property and buildings of any size.

Operator Functions and Monitoring

Customized graphic pages with dynamic content are hosted by the L-INX Automation Servers and appear via Web services with LWEB-800 Visualization (free available .NET application, see page 10) on Windows PCs and Windows Mobile devices. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. Links between individual graphic pages allow a user-driven navigation. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.

The use of Web services for data communication allows an easy integration into any IT infrastructure. Data points from different L-INX Automation Servers can be processed in one graphic page. Also links between graphic pages from different L-INX Automation Servers is possible. This allows the design of a distributed visualization to operate and monitor the connected systems. Information from the different communications environments are made visible and operable in a uniform way to the user.

Integration Platform

LINX-200 and LINX-201 Automation Server for BACnet networks can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel. The LINX-201 with a built-in BACnet/IP Router can communicate on both channel types at the same time.
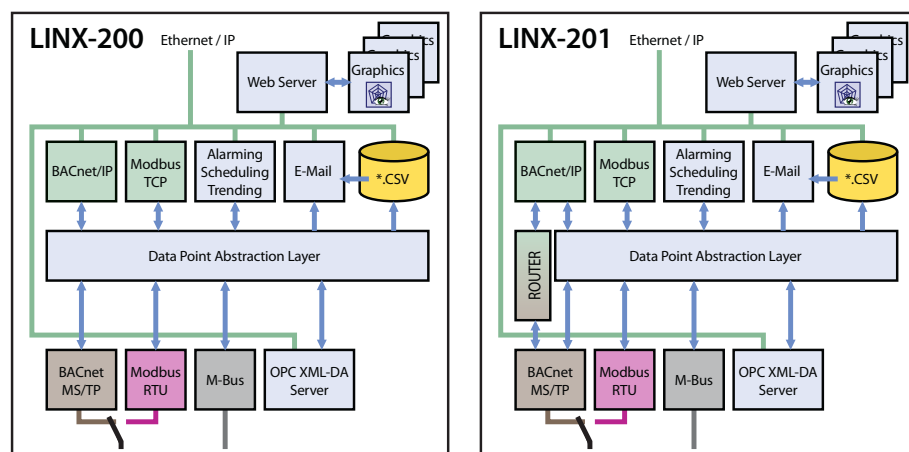
The L-INX Automation Server complies with the BACnet Building Controller (B-BC) profile. Communication takes place both via BACnet server objects as well as client mappings. Also integration of Modbus (RTU and TCP) and M-Bus is provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel. The built-in OPC server (OPC XML-DA) allows client applications to access predefined OPC data points via Web services. For OPC DA clients based on Microsoft's COM/DCOM technology (OPC DA 2.0.5) the bridge software LOPC-800 is available. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓

LINX-200 Automation Server
BACnet Visualization

OPC Server

All technology data points used by the L-INX Automation Server, BACnet Server Objects, Client Mappings, data points from Modbus or M-Bus can be automatically mapped to OPC data points. The L-INX Automation Server provides multiple protocol points also as OPC data points via its OPC XML-DA Server to higher-level systems such as the L-WEB System or a SCADA system of a third-party supplier. This provides a technology independent data solution.

Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. Of course trend data are also available to other BACnet devices or a BACnet Building Workstation. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.
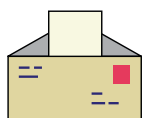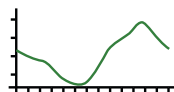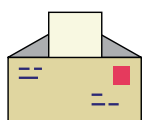
Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the LWEB-800 Visualization or the integrated Web server. LINX-200 and LINX-201 can access BACnet schedule objects on remote BACnet devices via client mappings. Conversely BACnet Clients can access the schedules on LINX-200 and LINX-201. Centralized management of schedulers on one or multiple distributed L-INX Automation Server is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

The L-INX Automation Servers support BACnet Intrinsic Alarming and provide alarm messages via BACnet Notification Class Objects. Alarms are available on the LWEB-800 visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

Local Calculations

Simple automation tasks can be performed by LINX-200 and LINX-201 Automation Servers. Standard mathematical calculations and functions as well as logical operations (Boolean algebra) allow a flexible formulation of applications. For more complex tasks registers can be created and used in addition to technology data points (e.g. BACnet Objects).

BACnet	✓	Modbus	✓
CEA-709		M-Bus	✓

LINX-200 Automation Server
BACnet Visualization

Features:

- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Managing of customized graphical pages
- Monitoring and control through LWEB-800 Visualization
- Built-in OPC XML-DA Server
- Data point access via Web services
- Access to network statistics
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- BACnet Client Configuration with configuration tool (scan and EDE import)
- B-BC (BACnet Building Controller) functionality
- Integrated BACnet/IP to BACnet MS/TP Router (LINX-201 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Configurable via Ethernet/IP or EIA-232 (RS-232)

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W

Interfaces	1 x Ethernet (100Base-T)
	    OPC XML-DA,
	    BACnet/IP,
	    Modbus TCP (Master or Slave),
	    HTTP, FTP
	1 x BACnet MS/TP
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x EIA-232 (RS-232)

BACnet/IP Router	1 (LINX-201 only)
Tools	L-INX Configurator

Resource limits			
OPC XML-DA data points	2 000	E-mail templates	100
BACnet Server Objects	750 (Analog, Binary, Multi-State)	Math objects	100
BACnet Client Mappings	750	Alarm logs	10
BACnet Calendar Objects	25	M-Bus data points	1 000
BACnet Scheduler Objects	100 (64 data points per object)	Modbus data points	2 000
BACnet Notification Class Objects	32	Data point connections	1 000
BACnet Trend Log Objects	100 (390 000 logs, ≈ 6 MB)	Number of LWEB-800 clients	15 (simultaneously)

Order number	Configuration	Page
LINX-200	BACnet Automation Server, supports LWEB-800 Visualization	33
LINX-201	BACnet Automation Server, supports LWEB-800 Visualization, built-in BACnet/IP Router	33
LOPC-BR800	OPC Bridge (PC software) to connect OPC DA Clients (COM/DCOM) with L-INX Automation Servers	80
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓
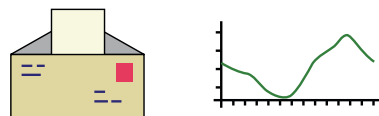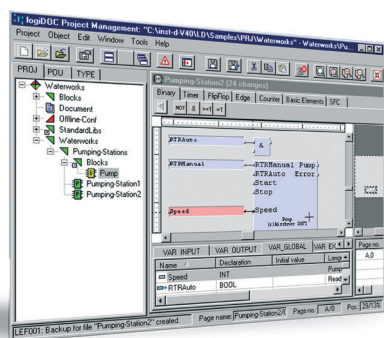CEA-709 ✓   M-Bus ✓

LINX-110 Automation Server
CEA-709 - IEC 61131-3 Programmable

L-INX Automation Servers LINX-110 and LINX-111 are controllers for automation tasks in LONMARK Systems. The powerful Automation Servers provide connectivity features to integrate LONMARK Systems. For CEA-709 systems the L-INX Automation Server either has a built-in Remote Network Interface (LINX-110) or an integrated IP-852 Router with comprehensive L-IP functionality (LINX-111).

The combination of free programmability (IEC 61131-3), gateway functions, alarming, scheduling, trending and e-mail notification provides multiple uses in building automation.
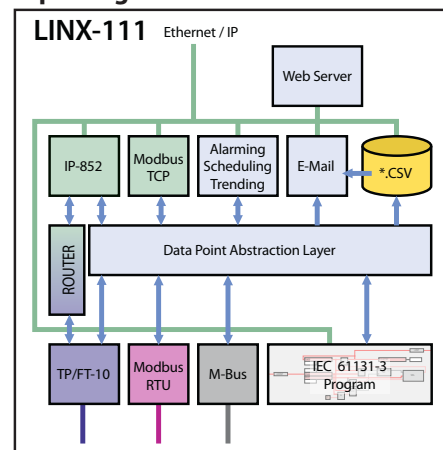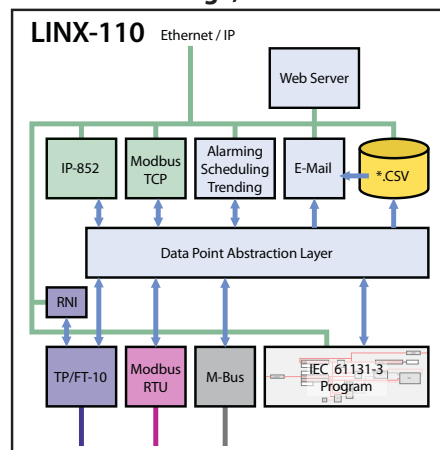
Controller

The L-INX Automation Server can be used as a controller for various applications due to its built-in PLC functionality. Several IEC 61131-3 programs can be run in parallel with different cycle times. IEC 61131-3 applications can be changed during operation and are loaded into the device without interrupting the currently running program. An online test via Ethernet (TCP/IP) or TP/FT-10 and offline simulation help create the application and support troubleshooting.

Integration Platform

LINX-110 and LINX-111 Automation Server for LONMARK Systems can be connected either to an Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel. LINX-111 with a built-in IP-852 Router can communicate on both channel types at the same time. Static and dynamic NVs form the interface. In addition to SNVTs also User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported. Also integration of Modbus (RTU and TCP) and M-Bus are provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel.

All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.

Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.
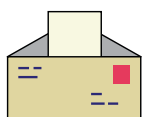
АРКТИКА – официальный дистрибьютор   LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus ✓
CEA-709 ✓ M-Bus ✓

LINX-110 Automation Server
CEA-709 - IEC 61131-3 Programmable

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the integrated Web server. There is the possibility of remote access to other LOYTEC devices, which also host schedulers. Centralized management of schedulers on one or multiple distributed L-INX Automation Servers is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

The L-INX Automation Servers supports alarming according to the LONMARK profile definition. Alarms are available via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

Features:

- IEC 61131-3 programmable with L-LOGICAD
- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of dynamically created network variables or static network variables
- Support of user defined NVs (UNVTs) and configuration properties (SCPTs, UCPTs)
- Remote Network Interface (RNI) with 2 MNI devices (LINX-110 only)
- Integrated IP-852 to TP/FT-10 Router (LINX-111 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Access to network statistics
- Configurable via Ethernet/IP, EIA-232 (RS-232), or TP/FT-10

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet Modbus ✓
CEA-709 ✓ M-Bus ✓

LINX-110 Automation Server
CEA-709 - IEC 61131-3 Programmable

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W

Interfaces	1 x Ethernet (100Base-T)
	    LonMark IP-852,
	    Modbus TCP (Master or Slave),
	    HTTP, FTP
	1 x TP/FT-10 (LonMark System)
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x EIA-232 (RS-232)

Remote Network Interface (RNI)	1 RNI with 2 MNI devices (LINX-110 only)
CEA-709 Router	1 (LINX-111 only)
Program Cycle Time	Down to 10 ms
Programmierung, Tools	L-LOGICAD Software (IEC 61131-3), L-INX Configurator

Resource limits			
IEC 61131-3 Variables	1 000	Trend logs	100
Network Variables (NVs)	1 000	E-mail templates	100
Alias NVs	1 000	Math objects	100
External NVs (Polling)	1 000	Alarm logs	10
Address Table Entries	512 („legacy mode": 15)	M-Bus data points	1 000
LonMark Calendar	1 (25 Calendar Templates)	Modbus data points	2 000
LonMark Scheduler	100	Data point connections	1 000
LonMark Alarm Server	1		

Order number	Configuration	Page
LINX-110	CEA-709 Automation Server, IEC 61131-3 programmable, built-in Remote Network Interface (RNI)	36
LINX-111	CEA-709 Automation Server, IEC 61131-3 programmable, built-in IP-852 Router	36
LINX-START-LC2	Starter-kit: LINX-100, LINX-110 and L-LOGICAD license	36
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

АРКТИКА – официальный дистрибьютор LOYTEC

BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓

LINX-210 Automation Server
BACnet - IEC 61131-3 Programmable
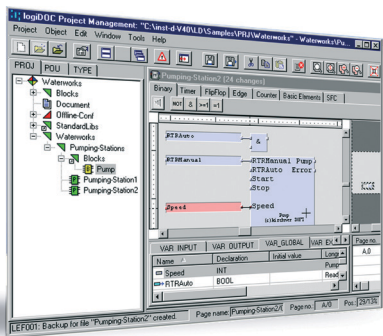
L-INX Automation Servers LINX-210 and LINX-211 are controllers for automation tasks in BACnet networks. The powerful Automation Servers provide connectivity features to integrate into BACnet networks, where the L-INX Automation Servers represent BACnet Building Controllers (B-BC). The LINX-211 adds a built-in BACnet/IP Router with BBMD and slave proxy functionality.

The combination of free programmability (IEC 61131-3), gateway functions, alarming, scheduling, trending and e-mail notification provides multiple uses in building automation.
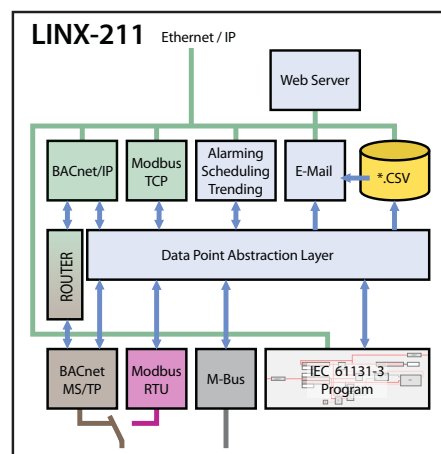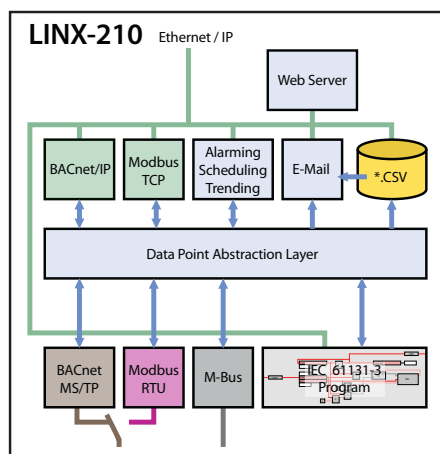
Controller

The L-INX Automation Server can be used as a controller for various applications due to its built-in PLC functionality. Several IEC 61131-3 programs can be run in parallel with different cycle times. IEC 61131-3 applications can be changed during operation and are loaded into the device without interrupting the currently running program. An online test via Ethernet (TCP/IP) or TP/FT-10 and offline simulation help create the application and support troubleshooting.
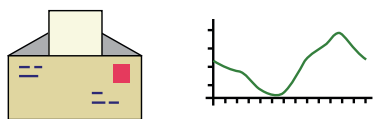
Integration Platform

LINX-210 and LINX-211 Automation Server for BACnet networks can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel. LINX-211 with a built-in BACnet/IP Router can communicate on both channel type at the same time. The L-INX Automation Server complies with the B-BC (BACnet Building Controller) profile. Communication takes place both via BACnet server objects as well as client mappings. Also integration of Modbus (RTU and TCP) and M-Bus are provided by the L-INX Automation Server. The L-MBUS level converter is needed to connect an M-Bus channel.

All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser. The integrated gateway functionality enables data exchange between all communication technologies available on the device. This makes the L-INX Automation Servers a high performance integration platform.

Local Data Storage, Data Provision and Reporting

L-INX Automation Servers can store trend and event logs locally and provide the logged data to the L-WEB System via Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment from the Automation Servers. Of course trend data are also available to other BACnet devices or a BACnet Building Workstation. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity
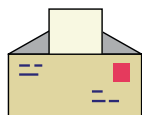
SW Tools

BACnet ✓   Modbus ✓
CEA-709   M-Bus ✓

LINX-210 Automation Server
BACnet - IEC 61131-3 Programmable

Scheduler

Schedulers and calendars located on the L-INX Automation Server are configured with the L-INX Configurator and parameterized via the integrated Web server. LINX-210 and LINX-211 can access BACnet schedule objects on remote BACnet devices via client mappings. Conversely BACnet Clients can access the schedules on LINX-210 and LINX-211. Centralized management of schedulers on one or multiple distributed L-INX Automation Server is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

The L-INX Automation Servers support BACnet Intrinsic Alarming and provide alarm messages via BACnet Notification Class Objects. Alarms are available on the LWEB-800 visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

Features:

- IEC 61131-3 programmable with L-LOGICAD
- Alarming, Scheduling, and Trending (AST™)
- Event-driven e-mail notification
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- BACnet Client Configuration with configuration tool (scan and EDE import)
- B-BC (BACnet Building Controller) functionality
- Integrated BACnet/IP to BACnet MS/TP Router (LINX-211 only)
- M-Bus Master according to EN 13757-3
- Connection of M-Bus devices via optional M-Bus Converter (e.g. L-MBUS80)
- Modbus TCP and Modbus RTU (Master or Slave)
- Integrated Web server for the device configuration and for monitoring of data points
- Access to network statistics
- Configurable via Ethernet/IP or EIA-232 (RS-232)

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet ✓ Modbus ✓
CEA-709 M-Bus ✓

LINX-210 Automation Server
BACnet - IEC 61131-3 Programmable

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W

Interfaces	1 x Ethernet (100Base-T)
	    BACnet/IP,
	    Modbus TCP (Master or Slave),
	    HTTP, FTP
	1 x BACnet MS/TP
	1 x Modbus RTU (Master or Slave)
	1 x M-Bus (Master EN 13757-3)
	1 x EIA-232 (RS-232)

BACnet/IP Router	1 (LINX-211 only)
Program Cycle Time	Down to 10 ms
Programmierung, Tools	L-LOGICAD Software (IEC 61131-3), L-INX Configurator

Resource limits			
IEC 61131-3 Variables	1 000	E-mail templates	100
BACnet Server Objects	750 (Analog, Binary, Multi-State)	Math objects	100
BACnet Client Mappings	750	Alarm logs	10
BACnet Calendar Objects	25	M-Bus data points	1 000
BACnet Scheduler Objects	100 (64 data points per object)	Modbus data points	2 000
BACnet Notification Class Objects	32	Data point connections	1 000
BACnet Trend Log Objects	100 (390 000 logs, ≈ 6 MB)	Number of LWEB-800 Clients	15 (simultaneously)

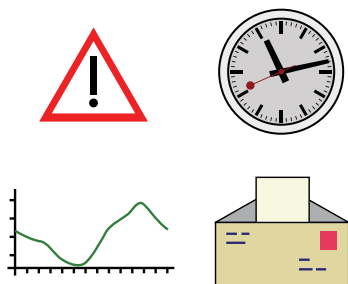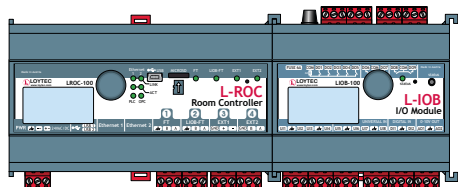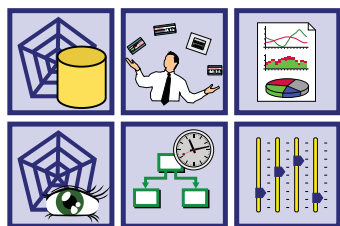| Order number	Configuration	Page
LINX-210	BACnet Automation Server, IEC 61131-3 programmable	39
LINX-211	BACnet Automation Server, IEC 61131-3 programmable, built-in BACnet/IP router	39
LINX-START-BC2	Starter Kit: LINX-200, LINX-210 and L-LOGICAD license	39
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

L-ROC
Room Controller
available in 2011

The L-ROC Room Controller provides the basis for a revolutionary room automation system based on IP, which seamlessly integrates with native BACnet/IP networks and LONMARK Systems at the controller level. Together with the L-STUDIO software flexible room solutions can be created with little effort and changed on demand. An integral part of the L-ROC System is a Web based room operation via an LWEB-800 dashboard and the automatic generation of graphics for L-VIS Touch Panel for local operation. For CEA-709 room control units, CEA-709 multi-sensors and other CEA-709 devices can be connected via the LONMARK TP/FT-10 channel on the L-ROC controller. Local inputs and outputs are provided via L-IOB I/O modules.

Flexible Axes Concept for Room Automation

A window axis is the base unit of configuration in the L-ROC System. The L-ROC Room Controller provides a set of functions for every window axis including:

- lighting control including constant light controller
- sun blind control with angle adjustment
- temperature control for heating, cooling, and ventilation
- occupancy detection
- window monitoring

Each LROC-100 Room Controller can handle up to four window axes. Up to 200 window axes can be managed by creating a network of many L-ROC devices. For integrating more than 200 window axes in a project an L-ROC Floor Manager must be used. More than 200 window axes on a floor can be integrated by the L-ROC Aisle Manager and the L-ROC Floor Manager.

The Aisle and Floor Managers can maintain central functions such as corridor, staircase, and bathroom lighting, or even ventilation. The Floor Manager provides data exchange between the floors and allows specialized functions for individual floors.

Rooms can be formed in any order within 200 window axes by placing, moving or removing partition walls. At the same time logical connections between the L-ROC Room Controller will be automatically configured in the L-ROC System. All graphical user interfaces and network connections are automatically generated and adapted respectively.

AST™ for Every Window Axis

LROC-100 provides a set of functions for Alarming, Scheduling, and Trending (AST™) for every window axis. Each window axis can be operated entirely independent. The AST™ functions are fully available to higher-level systems via BACnet/IP and Web services (L-WEB System). Distributed schedulers can be efficiently managed and changed with the LWEB-820 Master Schedule Configurator.

IP-based Room Communication

L-ROC Room Controllers are interconnected in a 100Base-T Ethernet network. Each L-ROC device is equipped with two Ethernet ports including a built-in Ethernet switch. This allows connecting up to 25 L-ROC devices serial in an Ethernet ring. The Ethernet ring is connected with each end to an Ethernet switch supporting STP (Spanning Tree Protocol). This ensures a reliable communication and system stability as well as reduced wiring efforts at the same time.

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

L-ROC
Room Controller
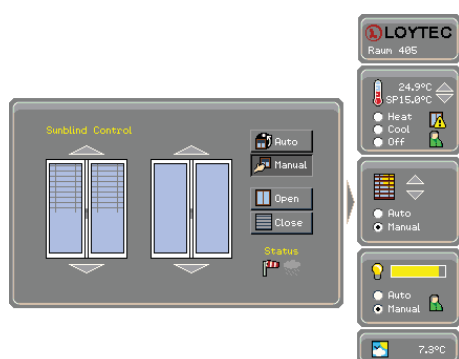
Integrated L-WEB Room Operation

LROC-100 devices provide graphical user interfaces for room operation directly and without additional Web server via an IP connection to the user. Graphic projects are distributed among the L-ROC Room Controllers and can be accessed by LWEB-800 from any PC workstation.

Connection to Higher-Level Systems

Higher-level systems can seamlessly integrate L-ROC Room Controllers via BACnet/IP, LONMARK IP-852 or Web services (OPC XML-DA).

All these protocols are simultaneously available. It is possible to integrate the L-ROC Room Controller in a BACnet Operator Workstation and at the same time L-ROC will communicate with other CEA-709 devices on the IP-852 channel. Moreover, a higher-level SCADA or ERP System (Facility Management) gets information directly from the L-ROC Room Controller by using Web services based on OPC XML-DA.

The L-WEB System uses Web services to communicate with the L-ROC System. All device and operating parameters of every single L-ROC Room Controller are automatically synchronized with the LWEB-801 SQL database by the LWEB-822 Master Device Manager. The parameters are available to all L-WEB client applications.

Connection of Local I/O

The L-ROC Room Controller is equipped with LIOB Connect. So up to 8 L-IOB I/O Modules can be connected to L-ROC without any wiring. These I/O modules will be automatically detected and configured (Plug'n'Play) after attaching to the L-ROC Room Controller. All I/O can be used by the L-ROC application. Moreover the L-IOB I/Os can be controlled by a standard Web browser via the Web interface of L-ROC. All configuration of the L-IOB modules are stored on the L-ROC and loaded on demand into the L-IOB I/O modules. Exchanging I/O modules is done without any configuration effort in a couple of steps on the fly.

Manual Operation on L-ROC

Both the L-ROC Room Controller as well as the L-IOB modules contain a 128x64 display with backlight. A jog dial is used for local operation by displaying detailed information on the display and for operation and override of data points. Any L-IOB modules connected to the L-ROC Room Controller can be accessed by the L-ROC for manual operation.

Manual operation via remote access using VNC (Virtual Network Computing) is available. Every L-ROC controller together with its connected I/Os can be operated remotely from mobile devices or a PC via VNC, even if the devices themselves are not physically accessible.

Device replacement in Simple Terms

The L-ROC system provides internal functions for easily exchanging modules. L-IOB modules can be replaced by a new, identical module any time on the fly. All operating parameter of the L-IOB modules are hosted by the L-ROC and automatically written in the L-IOB replacement. No further steps are necessary.

A replacement of an L-ROC device is managed with the Master Device Manager LWEB-822. All parameters such as configuration and communication parameters, operational parameters, application, and firmware of every single L-ROC device are stored in the LWEB-801 SQL database. This data is used by the LWEB-822 to replace devices with a mouse click. There are no additional tools required. A device configuration for a new device can also be directly accessed on the LCD display of the L-ROC, without using any PC application.

L–WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools
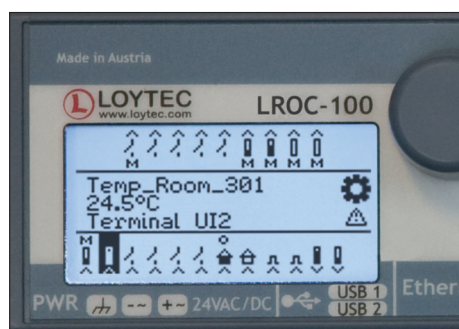
BACnet ✓   Modbus ✓
CEA-709 ✓   M-Bus ✓

L-ROC
Room Controller

L-STUDIO

L-STUDIO is the world's first IEC 61499 based room automation system. Any room function can be realized with L-STUDIO in a distributed system of L-ROC devices. This new approach in automation is called "cloud control".

In a cloud of L-ROC devices arbitrary functions can be mapped automatically. The object-oriented design method allows the efficient reuse previously implemented functions. In the L-STUDIO graphical development environment the window axis objects can be built with little effort. Additionally, common areas can be created and interconnected as floors. Complete building control configuration is the result. The entire building application is then automatically distributed to the L-ROC controllers and each individual configuration is loaded into the devices.

After initial configuration, adjustments or new functions can be added to the window axis object. These new functions can be applied individually or to all window axis objects very easily. Comprehensive debugging and watch functions allow for complete building troubleshooting of plant operation. An extensive library of functions if provided for sun blind control, heating, cooling, and security. With the integrated graphical configuration tool graphics can be created for L-VIS Touch Panels or L-WEB applications.

Features:

- Room Controller for up to four window axes
- Integrated AST™ functions for every window axis
- Flexible management for room axes built-in
- Freely programmable with L-STUDIO
- Integrated L-WEB Room Control
- Integrates smoothly in the L-WEB System
- BACnet/IP compliant with B-BC (BACnet Buildung Controller) functionality
- Connection of any CEA-709 device via TP/FT-10 channel
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Remote Network Interface (RNI) with 2 MNI devices
- Built-in OPC XML-DA Server
- Networking via Ethernet/IP
- Integrated 100Base-T Ethernet switch
- Integrated Web server for the device configuration and for monitoring of data points
- 128x64 display with backlight
- Manual operation using the jog dial or VNC client
- Supports L-IOB I/O s via LIOB Connect
- Configurable via Ethernet/IP or USB

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet ✓ Modbus ✓
CEA-709 ✓ M-Bus ✓

L-ROC
Room Controller

L-ROC System Overview

LWEB-801 Server
LWEB-822 Device Manager
LWEB-830 Reporting
LWEB-820 Schedule Config
LWEB-821 Parameter Editor
LWEB-800 Visualization
L-STUDIO

BACnet/IP, LONMARK IP-852, OPC XML-DA

PROXY

Tenant 1

Tenant 2

LWEB-800 Office PC
LWEB-800 Office PC

Aisle/Floor/Building Manager

BACnet/IP, LONMARK IP-852, OPC XML-DA

Axis Manager
Axis Manager

TP/FT-10
TP/FT-10

L–WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓ Modbus ✓
CEA-709 ✓ M-Bus ✓

L-ROC
Room Controller

Specifications		
Dimensions (mm)	159 x 100 x 75 (L x W x H)	
Power supply	24 VDC / 24 VAC ±10 %, typ. 3 W	
Type	LROC-100	LROC-150

Interfaces	2 x Ethernet (100Base-T)
	    WEB Services (OPC XML-DA),
	    BACnet/IP,
	    LonMark IP-852,
	    HTTP, FTP
	1 x TP/FT-10 (LonMark System)
	1 x LIOB Connect
	1 x L-IOB-FT Connect
	2 x USB-A, 1 x USB-B (PC)
		2 x Ethernet (100Base-T)
		    WEB Services (OPC XML-DA),
		    BACnet/IP,
		    LonMark IP-852,
		    Modbus TCP,
		    HTTP, FTP
		1 x TP/FT-10 (LonMark System)
		1 x LIOB Connect
		1 x L-IOB-FT Connect
		1 x Modbus RTU
		1 x M-Bus
		2 x USB-A, 1 x USB-B (PC)

L-IOB I/O Module	Up to 8 modules	
Program Cycle Time	Event-driven	
Programmierung, Tools	L-STUDIO	

Resource limits			
OPC XML-DA data points	2 000	Trend logs	100
Network Variables (NVs)	1 000	E-mail templates	100
Alias NVs	1 000	Math objects	100
External NVs (Polling)	1 000	BACnet Server Objects	1 000
Address Table Entries	512 („legacy mode": 15)	BACnet Client Mappings	1 000
LonMark Calendar	1 (25 Calendar Templates)	BACnet Calendar Objects	25
LonMark Scheduler	100	BACnet Scheduler Objects	100
LonMark Alarm Server	1	BACnet Notification Class Objects	32
Alarm logs	10	BACnet Trend Log Objects	100
Number of LWEB-800 Clients	15 (simultaneously)		

Order number	Configuration	Page
LROC-100	Room Controller with LIOB Connect (Axis Management)	42
LROC-150	Room Controller with LIOB Connect (Aisle, Floor, Building or Campus Management)	42
LROC-START-100	Starter Kit: LROC-100, LIOB-100, L-STUDIO	42
L-STUDIO	L-ROC Programming and Configuration Tool	42
LIOB-A2	L-IOB Adapter 2 to split the line of modules on the DIN rail for space and power considerations	47
LIOB-100	LIOB Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (4 x Triac, 5 x Relay 6 A)	47
LIOB-101	LIOB Connect I/O Module: 8 UI, 16 DI	47
LIOB-102	LIOB Connect I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-103	LIOB Connect I/O Module: 6 UI, 6 AO, 5 DO (Relay 16 A)	47
LIOB-131	LIOB Connect DALI Controller, 1 x DALI channel, integrated DALI power supply	47
LIOB-150	LIOB FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Triac, 4 x Relay 6 A)	47
LIOB-151	LIOB FT I/O Module: 8 UI, 12 DI	47
LIOB-152	LIOB FT I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-153	LIOB FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)	47
LPOW-2415A	LIOB Connect power supply, 24 VDC, 15 W	51
LPOW-2415B	Power supply with external power connector 24 VDC, 15 W	51
L-MBUS20	M-Bus level converter for 20 M-Bus devices	52
L-MBUS80	M-Bus level converter for 80 M-Bus devices	52
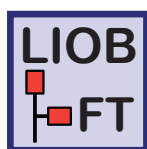
L-IOB
I/O Module

L-IOB I/O Modules provide expansion to LOYTEC devices (L-INX Automation Server and L-ROC Room Controller) using LIOB Connect or LIOB FT with physical inputs and outputs.

The L-IOB Modules contain a 128x64 display with backlight. The display shows device and data point information. A jog dial is used for local operation by displaying detailed information on the display and for operation and override of data points.

The Configuration of the L-IOB Modules happens with the L-INX Configuration Tool.

L-IOB Modules provide removable, vibration-proofed terminal screws with a clamping yoke connection in a 5.08 mm raster for wiring. These terminals can accommodate diameters from 0.2–2.5 mm²(26–12 AWG).

LIOB Connect I/O Modules

The L-IOB Modules have gold-plated LIOB Connect connectors to string multiple LIOB Connect I/O Modules together. LIOB Connect ensures the communication between the L-IOB Modules and the connected L-INX Automation Servers or the L-ROC Room Controllers as well as the supply voltage for the I/O modules.

L-IOB I/O Modules are automatically identified and coupled once connected via LIOB Connect (Plug and Play). Any replacement of I/O modules is done with a few simple steps without configuration effort. LIOB Connect I/O Modules can be installed remotely (e.g. next row in a cabinet) by using the L-IOB Adapter LIOB-A2. The total length of LIOB Connect I/O Modules cannot exceed 50 m. Up to 8 LIOB Connect I/O modules can be connected to an L-INX Automation Server or an L-ROC Room Controller.
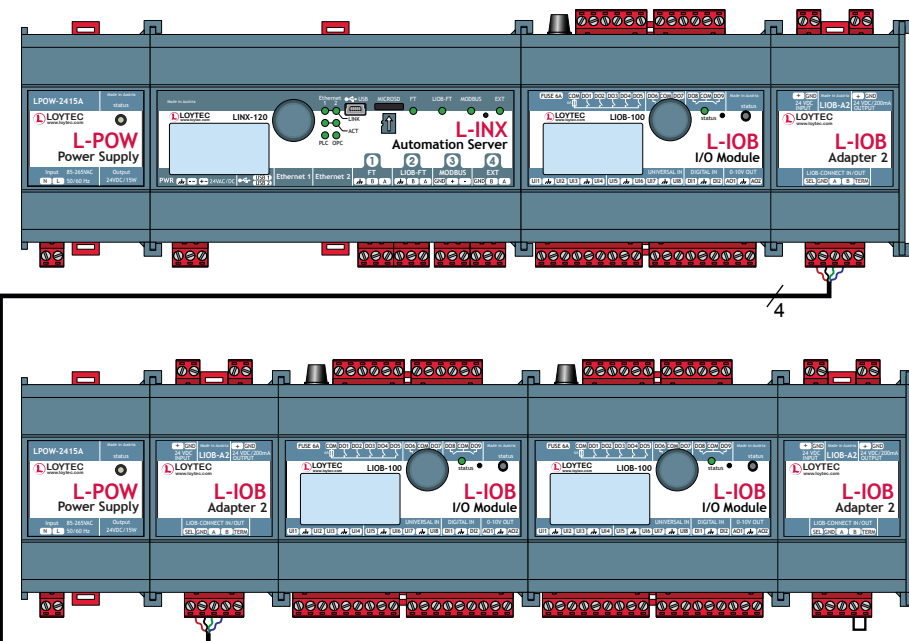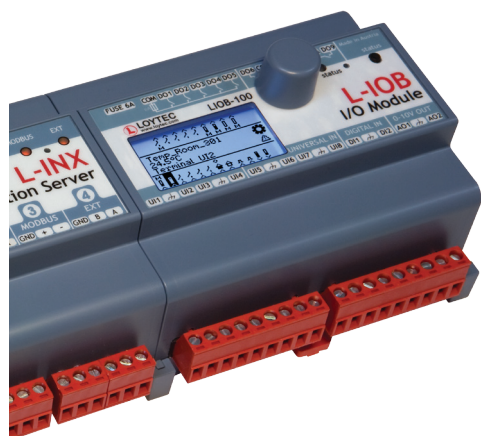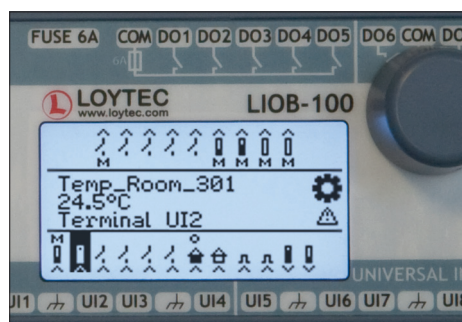
Features:

- Stackable I/O Modules supporting LIOB Connect
- 128x64 display with backlight
- Local access to information about device status and data points
- Manual operation using the jog dial
- Configuration through L-IOB configuration tool
- Works with L-INX and L-ROC devices via LIOB Connect
- Simple device replacement without software tool

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus
CEA-709   M-Bus

L-IOB
I/O Module

LIOB FT I/O Modules

L-IOB I/O Modules providing LIOB FT capability are connected through a twisted-pair cable to the L-INX Automation Server or L-ROC Controller. The LIOB FT connection corresponds to the LONMARK TP/FT-10 channel specification.

Up to 8 LIOB FT I/O Modules can be connected to an L-INX Automation Server or an L-ROC Room Controller. These I/O Modules have to be powered through an external power supply (e.g. L-POW).

After wiring of the LIOB FT I/O Modules, the station addresses have to be set up via the jog dial. Each module is properly recognized and integrated. Any replacement of I/O modules is done with the same process.

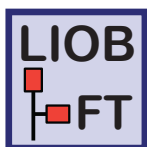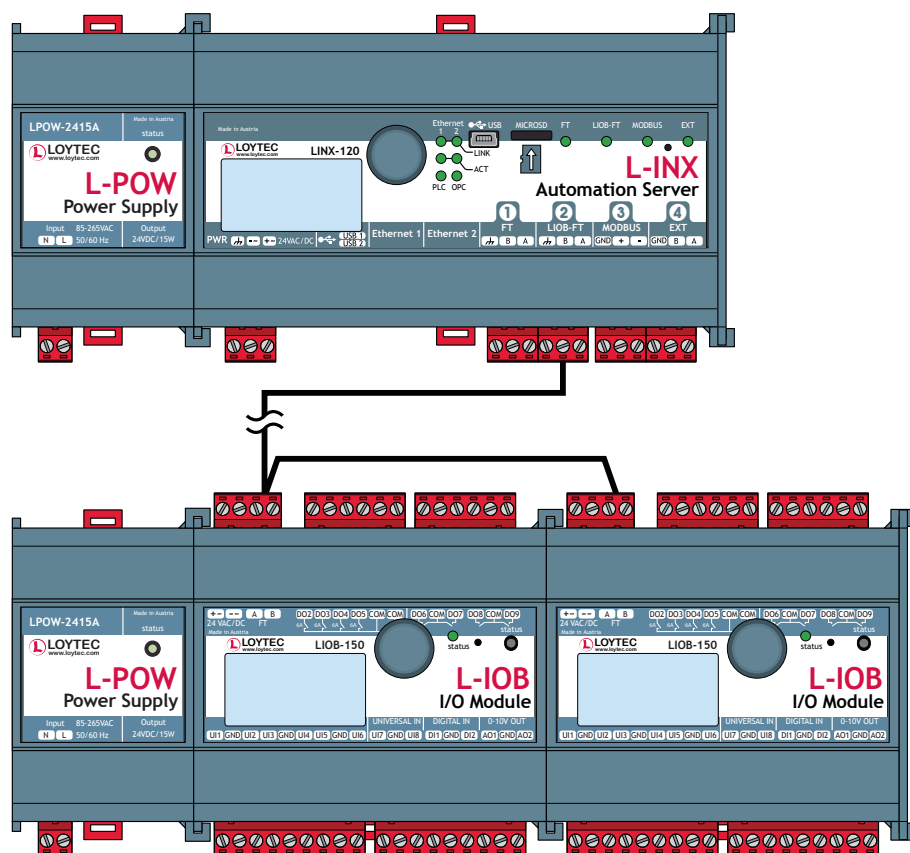**Features:**

- Stackable I/O Modules supporting LIOB FT
- 128x64 display with backlight
- Local access to information about device status and data points
- Manual operation using the jog dial
- Configuration through L-IOB configuration tool
- Works with L-INX and L-ROC devices via LIOB FT
- Simple device replacement without software tool

АРКТИКА – официальный дистрибьютор LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus
CEA-709   M-Bus

L-IOB
I/O Module

Input and Output specifications of L-IOB I/O Modules

UI - Universal Input

UIs are universal inputs for four different input types. Configuration is made via the L-IOB Configuration Software.

Corresponding to class 1 with 1 % accuracy and have an input voltage range of 0 to 30 V.

Types of input:

- Binary Input (Digital Input)
    Input Impedance: 10 kΩ
    Sampling Rate: 10 ms
- Voltage Metering 0-10 V
    Input Impedance: 10 kΩ
    Sampling Rate: 1 s
- Current Loop 4-20 mA
    Input Impedance: 249 Ω
    Sampling Rate: 1 s
- Resistance Measurement
    Input Impedance: 10 kΩ
    Sampling Rate: 1 s

Resistors in the range of 1 kΩ to 100 kΩ can be measured. Already predefined sensor characteristics for known sensors e.g. Pt1000 and NTC10K temperature sensors are available. New characteristics can be defined or adjusted with the configuration tool.

DI - Digital Input, Counter Input (S0-Pulse)

DIs are fast binary inputs, which can also be used as counter inputs (S0).

Corresponding to class 1 with 1 % accuracy and have an input voltage range of 0 to 30 V.

Input Impedance: 10 kΩ
Sampling Rate: 10 ms
S0-Pulse: positive switching

AO - Analog Output

Resolution: 10 bit
Signal Range: 0…10 V, optional 0…12 V
Current: max. 10 mA (short circuit proofed)
Input Impedance: min. 1.2 kΩ for linear output

DO - Digital Output

- **Relay Output**

    Switching capacity: 6 A, 250 VAC resp. 30 VDC
                          16 A, 250 VAC resp. 30 VDC

- **TRIAC Output**

    Switching capacity: 1 A, 24 to 230 VAC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus
CEA-709   M-Bus

L-IOB
I/O Module

Specifications LIOB Connect

Dimensions (mm)	107 x 100 x 75 (L x W x H)			
Power supply	24 VDC, provided by L-INX, L-ROC, or L-POW through LIOB Connect			
Installation	Attachable or connected with a 4-wire cable, max. 50 m			
Interface	1 x LIOB Connect			
Types	LIOB-100	LIOB-101	LIOB-102	LIOB-103
Power Consumption	1.7 W 2.6 W (all relays on)	1.7 W	1.7 W 2.7 W (all relays on)	1.7 W 2.5 W (all relays on)
Universal Input (UI)	8	8	6	6
Digital Input (DI)	2	16	-	-
Analog Output (AO)	2	-	6	6
Digital Output (DO)	9 (5 x Relay, 4 x Triac)	-	8 (8 x Relay)	5 (5 x Relay)
Digital Output Specification	Relay: 6 A Triac: 1 A @ 24–230 VAC		Relay: 6 A	Relay: 16 A

Resource limits

L-IOB I/O Modules per controller	Max. 4 (8 with external power supply e.g. LPOW-2415A)

Specifications LIOB FT

Dimensions (mm)	107 x 100 x 75 (L x W x H)			
Power supply	24 VDC / 24 VAC ±10 %			
Installation	Connected with a twisted-pair cable (according to LonMark TP/FT-10 channel)			
Interface	1 x LIOB FT			
Types	LIOB-150	LIOB-151	LIOB-152	LIOB-153
Power Consumption	1.7 W 2.6 W (all relays on)	1.7 W	1.7 W 2.7 W (all relays on)	1.7 W 2.5 W (all relays on)
Universal Input (UI)	8	8	6	6
Digital Input (DI)	2	12	-	-
Analog Output (AO)	2	-	6	6
Digital Output (DO)	8 (4 x Relay, 4 x Triac)	-	8 (8 x Relay)	5 (4 x Relay 16 A, 1 x Relay 6 A)
Digital Output Specification	Relay: 6 A Triac: 1 A @ 24–230 VAC		Relay: 6 A	Relay: 16 A and 6 A

Resource limits

L-IOB I/O Modules per controller	Max. 8 with external power supply, e.g. LPOW-2415A or LPOW-2415B

| Order number	Configuration	Page
LIOB-A2	L-IOB Adapter 2 to split the line of modules on the DIN rail for space and power considerations	47
LIOB-100	LIOB Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (4 x Triac, 5 x Relay 6 A)	47
LIOB-101	LIOB Connect I/O Module: 8 UI, 16 DI	47
LIOB-102	LIOB Connect I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-103	LIOB Connect I/O Module: 6 UI, 6 AO, 5 DO (Relay 16 A)	47
LIOB-131	LIOB Connect DALI Controller, 1 x DALI channel, integrated DALI power supply	47
LIOB-150	LIOB FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Triac, 4 x Relay 6 A)	47
LIOB-151	LIOB FT I/O Module: 8 UI, 12 DI	47
LIOB-152	LIOB FT I/O Module: 6 UI, 6 AO, 8 DO (Relay 6 A)	47
LIOB-153	LIOB FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)	47
LPOW-2415A	LIOB Connect power supply, 24 VDC, 15 W	51
LPOW-2415B	Power Supply with external power connector 24 VDC, 15 W	51
L-TEMP2	External temperature sensor (NTC10K) for use with L-IOB Universal Inputs	

АРКТИКА – официальный дистрибьютор   LOYTEC

L-POW Power Supply
Power Supply

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

LPOW-2415A

LPOW-2415A is used to supply power to LOYTEC devices with the LOYTEC LIOB Connect side outlet such as the L-INX Automation Servers LINX-120, LINX-121, LINX-150, LINX-151, LINX-220, and LINX-221 as well as the Room Controllers LROC-100 and LROC-150. The LPOW-2415A power supply can also supply L-IOB I/O Modules which are installed remotely from the L-INX Automation Servers or L-ROC Room Controllers.
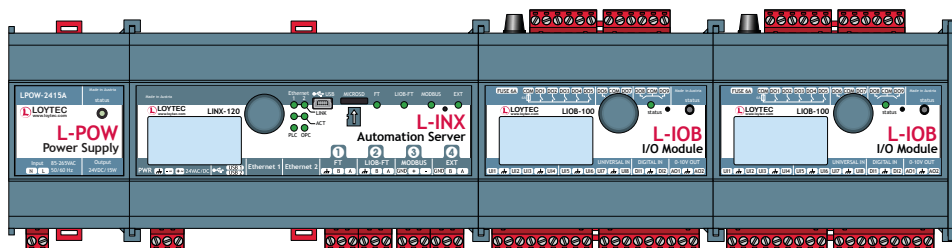
LPOW-2415B

The power supply LPOW-2415B provides 24 VDC via a plug-in screw terminal. It is used to supply power to LOYTEC devices with a separate power terminal of 24 VDC.
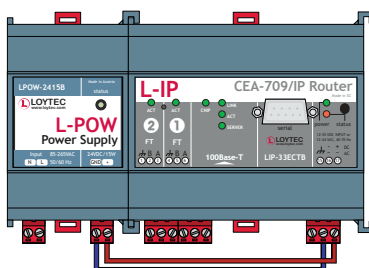
As a switching power supply with an efficiency of about 80 % the L-POW series are highly efficient. With an input range of 85–265 VAC (50–60 Hz) they can be used worldwide.

Specifications LPOW-2415A	
Dimensions (mm)	55 x 100 x 60 (L x W x H)
For use with	LINX-120, LINX-121, LINX-150, LINX-151, LINX-220, LINX-221, L-IOB, L-ROC
Input voltage	85-265 VAC 50-60 Hz
Supply voltage	24 VDC 15 W via LIOB Connect
For use with	L-INX Automation Server, L-ROC Room Controller, L-IOB I/O Modules (LIOB Connect and LIOB FT I/O Module)

Specifications LPOW-2415B	
Dimensions (mm)	55 x 100 x 60 (L x W x H)
For use with	Power supply for devices with 24 VDC and a maximum of 15 W (625 mA)
Input voltage	85-265 VAC 50-60 Hz
Supply voltage	24 VDC 15 W via screw terminal
For use with	LOYTEC devices, except of LIOB Connect I/O Modules

Order number	Configuration
LPOW-2515A	LIOB Connect power supply, 24 VDC, 15 W
LPOW-2415B	Power Supply with external power connector 24 VDC, 15 W

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus
CEA-709   M-Bus   ✓

L-MBUS Converter
M-Bus Level Converter

The L-MBUS level converters are used to connect an M-Bus network to a L-INX Automation Server. Up to 20 or 80 M-Bus devices can be connected via L-MBUS20 and L-MBUS80.

RS-232 Connection

The RS-232 port is for connecting to the CEA-709 Automation Servers LINX-100, LINX-101, LINX-110 and LINX-111 or BACnet Automation Servers LINX-200, LINX-201, LINX-210 and LINX-211. The interface is galvanically isolated.

TTL Connection

The TTL port is used to connect to the LINX-120/121, LINX-220/221 Automation Servers, and also to the LROC-150 Room Controller. The interface is galvanically isolated.

D-SUB 9
Modem Conversion Cable, F/F
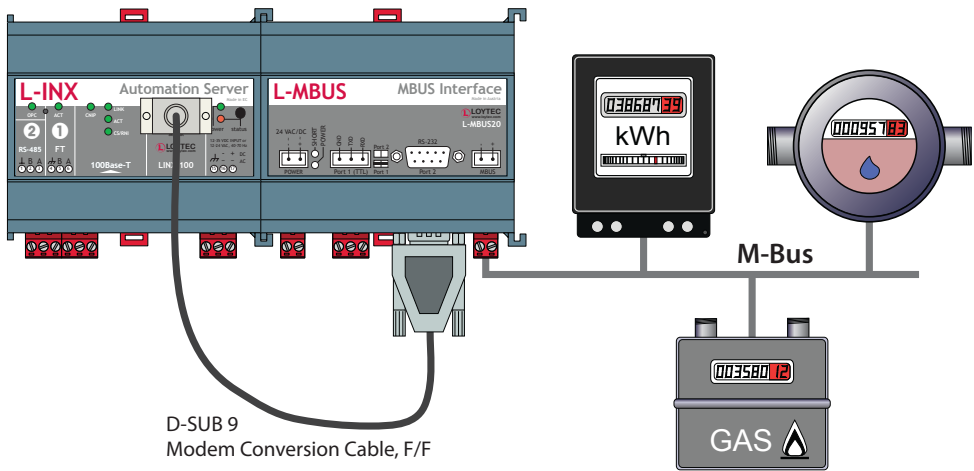
M-Bus

Specifications		
Dimensions (mm)	107 x 100 x 60 (L x W x H)	
Power supply	24 VDC / 24 VAC ±10 %	
Types	L-MBUS20	L-MBUS80
Power consumption	9.6 W	14.4 W
Baud rate	300 to 9600 Baud	300 to 9600 Baud
Interface	EIA-232 (RS-232)	EIA-232 (RS-232)
For use with	L-INX Automation Server, LROC-150 Room Controller	
Limits		
M-Bus devices	Up to 20	Up to 80

Order number	Configuration
L-MBUS20	M-Bus level converter for 20 M-Bus devices
L-MBUS80	M-Bus level converter for 80 M-Bus devices

L-VIS Touch Panel
Room Edition (CEA-709)

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools
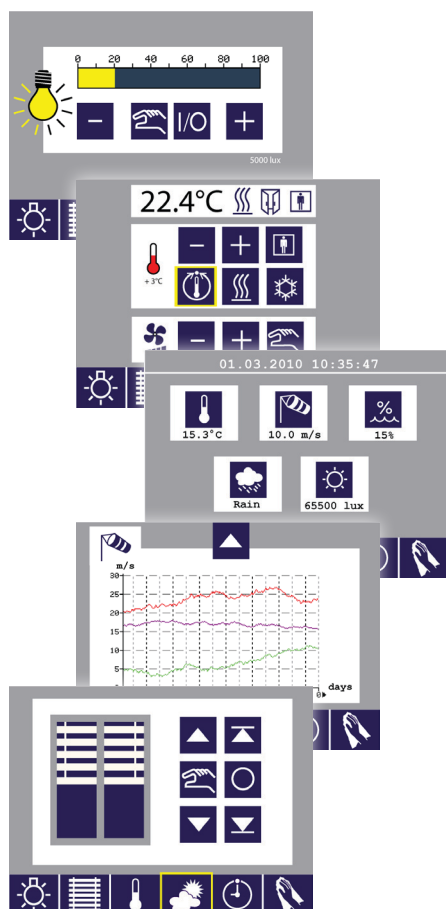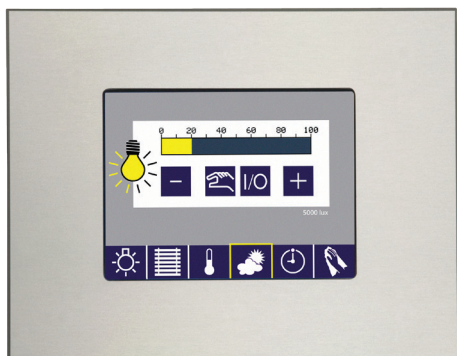
The LVIS-100-RE Room Edition is the ideal solution for room operation of CEA-709-based room control systems (LᴏɴMᴀʀᴋ Systems) via touch panel. All control functions are processed by the room control system and controlled via the L-VIS Room Edition. The LVIS-100-RE contains a predefined, static network variable interface, which can not be changed.

Predefined Graphical Pages for Room Operation

Predefined graphic pages are supplied for the Room Edition of the L-VIS Touch Panel to make a quick implementation of room control functions. The pages include functions for up to two lighting circuits, two sun blinds, and HVAC operation for the room. Also possible is display of weather data provided by an available weather station in the LᴏɴMᴀʀᴋ System. Pages are also created to display local trend logs of the sun protection and the room temperatures.

The Room Edition L-VIS provides schedulers which can be parameterized via the CEA-709 network or the display of the touch panel.

The graphic project hosted by the Room Edition L-VIS may be edited with the L-VIS Configurator, depending on the requirements.

Page Configuration with a Software Tool

Immediately after switching on the Room Edition L-VIS the graphic project supplied with the unit can be adjusted via the display of the touch panel according to the room conditions. The adjustments happen without the use of a software tool.

Static Network Interface

LVIS-100-RE provides a static NV interface for easy integration into a LᴏɴMᴀʀᴋ System. The Room Edition L-VIS is compatible with a variety of existing room controllers from different manufacturers. If more flexibility is demanded by the application, it is recommended to utilize the LVIS-3E100 Touch Panel.

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   Modbus
CEA-709 ✓   M-Bus

L-VIS Touch Panel
Room Edition (CEA-709)

Features:

- TFT touch display (320x240) with dimmable backlight
- Anodized aluminium front frame
- Flush-mounting in combination with the mounting frame LVIS-FRAME1
- External temperature sensor L-TEMP1 (optional) and input for external light switch
- Fixed NV interface for an easy handling
- Integrated graphic pages for room operation
- Graphic pages may be configured with the L-VIS Configuration Tool
- Remote Network Interface (RNI) with 2 MNI devices
- Integrated VNC Server
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)

Specifications	
Screen Size	5.7" (14.5 mm)
Type	LVIS-100-RE
Dimensions (mm)	210 x 164 x 63 (L x W x H)
Dimensions cut-out (mm)	180 x 150 x 57 (L x W x H)
Display resolution	320 x 240, 256 colors
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, HTTP, FTP 1 x TP/FT-10 2 x Digital Input 1 x Temperature Sensor Input
Remote Network Interface (RNI)	1 RNI with 2 MNI devices
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W, backlight on: 8 W
Operating conditions	+10 °C to 40 °C, 10-90 % RH @ 50 °C, non condensing
Degree of protection	Front: IP54 / back: IP10
Tools	L-VIS/L-WEB Configurator
Resource limits	
VNC clients	16
Network Variables (NVs)	Fixed NV interface
Alias NVs	512
Address Table Entries	15 (Legacy Mode)
LONMARK Calendar	1 (25 Calendar Templates)
LONMARK Scheduler	10
LONMARK Alarm Server	1
E-mail templates	100
Math objects	100
Alarm logs	10
Data point connections	1 000

Order number	Configuration
LVIS-100-RE	CEA-709 Touch Panel "Room Edition" with 5.7" display and built-in Remote Network Interface (RNI)
LVIS-FRAME1	Mounting frame for 5.7" Touch Panels
L-TEMP1	External temperature sensor

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet   Modbus
CEA-709 ✓   M-Bus

L-VIS Touch Panel
CEA-709 Visualization

L-VIS Touch Panels are ideally suited for visualization and operation of various applications in building automation. L-VIS Touch Panels visualize building systems, can be used as room units, or make a good choice in conference rooms and reception areas.

L-VIS impresses with its timeless design, harmonic integration into modern and historical architecture as well as it's extremely user friendly concept. The shallow installation depth and low thermal power loss allow mounting in almost any location.

For the operation and monitoring of information in LONMARK Systems three types of L-VIS Touch Panels are available:

LVIS-3E100	5.7"	Touch Display	320 x 240	256 colors
LVIS-3E112	12.1"	Touch Display	800 x 600	65 536 colors
LVIS-3E115	15"	Touch Display	1024 x 768	65 536 colors

Operator Functions and Monitoring by Touch

LONMARK Systems can be controlled via customized graphic pages with dynamic content and animations by a touch of a finger. Navigation takes place either via a control menu, individual links between graphic pages or through touch gestures. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.
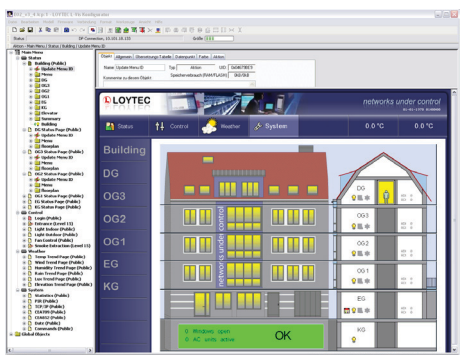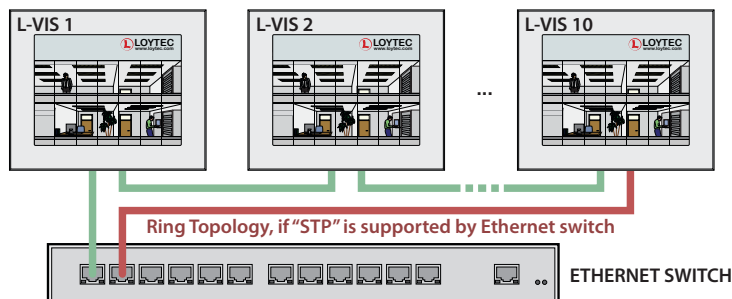
The L-VIS Configurator supplied with the unit guarantees straight-forward configuration of all the L-VIS models. An object-oriented configuration of the graphical interface and predefined functions simplify creating easy to use menu layouts and graphical pages. The copy and paste function allows reusing already created elements and the WYSIWYG preview helps reducing engineering efforts. German, English, French and Japanese versions of the L-VIS Configuration Tool are available.

The configuration can be downloaded into and uploaded from the L-VIS. The L-VIS can be configured through LNS® (LNS® plug-in), via FTP, or a CEA-709 connection (TP/FT-10 or IP-852 channel).

Network Connection

L-VIS Touch Panels for LONMARK Systems can be connected either to an Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel.

LVIS-3E112 and LVIS-3E115 feature two 100Base-T Ethernet ports with an integrated Ethernet switch. Multiple LVIS-3E112 and LVIS-3E115 can be attached in series to an Ethernet ring. If the Ethernet ring is connected to an Ethernet switch which supports the Spanning Tree Protocol, a reliable communication system is established.

Ring Topology, if "STP" is supported by Ethernet switch

ETHERNET SWITCH

АРКТИКА – официальный дистрибьютор   LOYTEC

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity
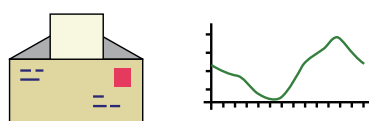
SW Tools

L-VIS Touch Panel
CEA-709 Visualization
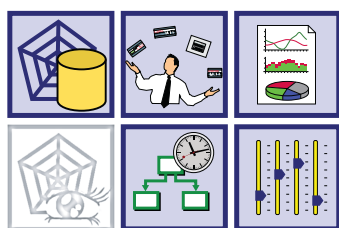
An integrated Remote Network Interface (RNI) provides remote access for service and maintenance purposes over an IP connection. This allows for example to configure network nodes on the TP/FT-10 channel or to analyze the traffic with the LOYTEC Protocol Analyzer LPA (see page 79). Static and dynamic network variables can be created as needed. In addition to SNVTs also User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported.

A built-in VNC Server (Virtual Network Computing) provides remote access via an IP connection. The screen content of the L-VIS can be displayed on a PC or mobile devices using the VNC protocol. Since VNC is platform-independent, VNC viewers for several operating systems are available.

All Touch Panels feature an integrated Web server. All data points on the L-VIS Touch Panel are available in a tree structure to be displayed or set using a standard Web browser.

Local Data Storage, Data Provision and Reporting

L-VIS Touch Panels can store trend and event logs locally. Logged data can be presented on the display as trend graphs or in tables. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment. For long-term data storage the LWEB-801 Server (see page 12) with SQL database connection is available. The LWEB-801 Server can also process e-mails sent by the L-VIS Touch Panels with the trend and event log data attached in CSV format. LWEB-801 Server stores the information in the SQL database. LWEB-830 Dream Report (see page 17) is provided optionally for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-VIS Touch Panels are configured with the L-VIS Configuration Tool and parameterized through the display or the built-in Web interface. There is the possibility of remote access to other LOYTEC devices, which also host schedulers. Centralized management of schedulers on one or multiple distributed L-VIS Touch Panels is done with the LWEB-820 Master Schedule Configurator (see page 14).
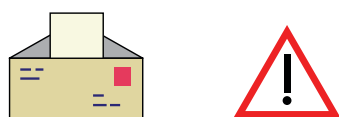
Alarming

The L-VIS Touch Panels support alarming according to the LONMARK profile definition. Alarms are available on the display and via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-VIS Touch Panels or forwarded event-driven to any e-mail recipients.
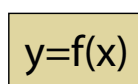
Local Calculations

Simple automation tasks can be performed by the L-VIS Touch Panels. Standard mathematical calculations and functions as well as logical operations (boolean algebra) allow a flexible formulation of applications. For more complex tasks registers can be created and used in addition to technology data points (e.g. CEA-709 NVs).

Features:

- High resolution TFT touch display with dimmable backlight
- Anodized aluminium front frame
- Flush-mounting in combination with the mounting frame
- External temperature sensor L-TEMP1 (optional) and input for external light switch
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Design of graphical projects via L-VIS Configuration Tool (useable with and without LNS®)
- Integrated Web server for the device configuration and for monitoring of data points

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet CEA-709 ✓   Modbus M-Bus

L-VIS Touch Panel
CEA-709 Visualization

Specifications			
Screen Size	5.7" (14.5 mm)	12.1" (30.7 mm)	15" (38.1 mm)
Type	LVIS-3E100	LVIS-3E112	LVIS-3E115
Dimensions (mm)	210 x 164 x 63 (L x W x H)	329 x 268.3 x 65 (L x W x H)	394 x 318 x 65 (L x W x H)
Dimensions cut-out (mm)	180 x 150 x 57 (L x W x H)	300 x 250 x 61 (L x W x H)	355 x 295 x 61 (L x W x H)
Display resolution	320 x 240, 256 colors	800 x 600, 65 536 colors	1024 x 768, 65 536 colors
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, HTTP, FTP 1 x TP/FT-10 2 x Digital Input 1 x Temperature Sensor Input	2 x Ethernet (100Base-T), Switch LONMARK IP-852, HTTP, FTP 1 x TP/FT-10 2 x Digital Input 1 x Temperature Sensor Input 1 x EIA-485 (RS-485) 2 x USB-A, 1 x USB-B (PC) Speaker, Audio Output	2 x Ethernet (100Base-T), Switch LONMARK IP-852, HTTP, FTP 1 x TP/FT-10 2 x Digital Input 1 x Temperature Sensor Input 1 x EIA-485 (RS-485) 2 x USB-A, 1 x USB-B (PC) Speaker, Audio Output
Remote Network Interface (RNI)	1 RNI with 2 MNI devices	1 RNI with 2 MNI devices	1 RNI with 2 MNI devices
Power supply	12-35 VDC / 12-24 VAC ±10 % typ. 3 W, Backlight on: 8 W	24 VDC ±10 % or 90-265 VAC 2 ½ W, Backlight on: 13 W	24 VDC ±10 % or 90-265 VAC 2 ½ W, Backlight on: 16 W
Operating conditions	+10 °C bis 40 °C, 10-90 % RH @ 50 °C, non condensing		
Degree of Protection	Front: IP54 / Back: IP10		
Tools	L-VIS/L-WEB Configurator		
Resource limits			
VNC Clients	16	16	16
Network Variables (NVs)	1 000	1 000	1 000
Alias NVs	1 000	1 000	1 000
LONMARK Calendar	1 (25 Calendar Templates)	1 (25 Calendar Templates)	1 (25 Calendar Templates)
LONMARK Scheduler	99	99	99
LONMARK Alarm Server	1	1	1
E-mail templates	100	100	100
Math objects	100	100	100
Alarm logs	10	10	10
Data point connections	1 000	1 000	1 000

Order number	Configuration
LVIS-3E100	CEA-709 Touch Panel with 5.7" display and built-in Remote Network Interface (RNI)
LVIS-3E112	CEA-709 Touch Panel with 12.1" display and built-in Remote Network Interface (RNI)
LVIS-3E115	CEA-709 Touch Panel with 15" display and built-in Remote Network Interface (RNI)
LVIS-FRAME1	Mounting frame for 5.7" Touch Panels
LVIS-FRAME12	Mounting frame for 12.1" Touch Panels
LVIS-FRAME15	Mounting frame for 15" Touch Panels
L-TEMP1	External temperature sensor

BACnet ✓   Modbus
CEA-709   M-Bus

L-VIS Touch Panel
BACnet Visualization

L-VIS Touch Panels are ideally suited for visualization and operation of various applications in building automation. L-VIS Touch Panels visualize building systems, can be used as room units, or make a good choice in conference rooms and reception areas.

L-VIS impresses with its timeless design, harmonic integration into modern and historical architecture as well as it's extremely user friendly concept. The shallow installation depth and low thermal power loss allow mounting on almost any location.

For the operation and monitoring of information from BACnet networks three types of L-VIS Touch Panels are available:

LVIS-ME200	5.7"	Touch Display	320 x 240	256 colors
LVIS-ME212	12.1"	Touch Display	800 x 600	65 536 colors
LVIS-ME215	15"	Touch Display	1024 x 768	65 536 colors

Operator Functions and Monitoring by Touch

BACnet networks can be controlled via customized graphic pages with dynamic content and animations by a touch of a finger. Navigation takes place either via a control menu, individual links between graphic pages or through touch gestures. The use of popular graphic formats (PNG, JPG, BMP, TIFF, GIF animated) facilitate the design of graphic pages. With the UCS-16 character set of the Unicode Standard (ISO 10646) any language including Chinese, Japanese, and Korean (CJK) is supported.
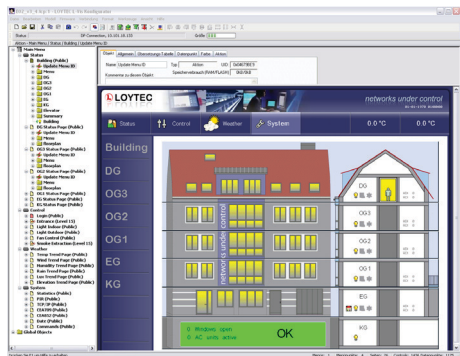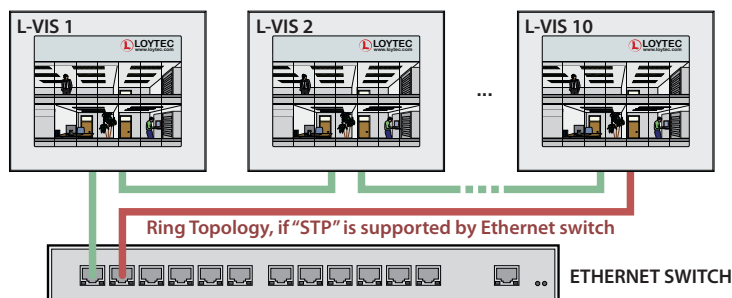
The L-VIS Configurator supplied with the unit guarantees straight-forward configuration of all the L-VIS models. An object-oriented configuration of the graphical interface and predefined functions simplify creating easy to use menu layouts and graphical pages. The copy and paste function allows reusing already created elements and the WYSIWYG preview helps reducing engineering efforts. German, English, French and Japanese versions of the L-VIS Configuration Tool are available.

The configuration can be downloaded into and uploaded from the L-VIS via FTP.

Network connection

L-VIS Touch Panels for BACnet networks can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel. Communication takes place both via BACnet server objects as well as client mappings. The L-VIS Touch Panels are compliant with the B-BC (BACnet Building Controller) profile.

LVIS-ME212 and LVIS-ME215 feature two 100Base-T Ethernet ports with an integrated Ethernet switch. Multiple LVIS-ME212 and LVIS-ME215 can be attached in series to an Ethernet ring. If the Ethernet ring is connected to an Ethernet switch which supports the Spanning Tree Protocol, a reliable communication system is established.

Ring Topology, if "STP" is supported by Ethernet switch

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

L-VIS Touch Panel
BACnet Visualization

A built-in VNC Server (Virtual Network Computing) provides remote access via an IP connection. The screen content of the L-VIS can be displayed on a PC or mobile devices using the VNC protocol. Since VNC is platform-independent, VNC viewers for several operating systems are available.

All Touch Panels feature an integrated Web server. All data points on the L-VIS Touch Panel are available in a tree structure to be displayed or set using a standard Web browser.

Local Data Storage, Data Provision and Reporting

L-VIS Touch Panels can store trend and event logs locally. Logged data can be presented on the display as trend graphs or in tables. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment. Trend data is also available to other BACnet devices or a BACnet Building Workstation. The LWEB-801 Server (see page 12)

with SQL database connection is available to store long-term data. The LWEB-801 Server can also process e-mails with the trend and event log data as a CSV attachment from all L-VIS Touch Panels and store them in the SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-VIS Touch Panels are configured with the L-VIS Configuration Tool and parameterized via the display or the built-in Web frontend. The L-VIS devices can access BACnet schedule objects on remote BACnet devices via client mappings. Conversely BACnet clients can access the schedules on the L-VIS devices. Centralized management of schedulers on one or multiple distributed L-VIS Touch Panels is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

The L-VIS Touch Panels support BACnet Intrinsic Alarming and provide alarm messages via BACnet Notification Class Objects. Alarms are available on the display and via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-VIS Touch Panels or forwarded event-driven to any e-mail recipients via e-mail.

Local Calculations

Simple automation tasks can be performed by the L-VIS Touch Panels. Standard mathematical calculations and functions as well as logical operations (boolean algebra) allow a flexible formulation of applications. For more complex tasks registers can be created and used besides technology data points (e.g. BACnet Object Values).

Features:

- High resolution TFT touch display with dimmable backlight
- Anodized aluminium front frame
- Flush-mounting in combination with the mounting frame
- External temperature sensor L-TEMP1 (optional) and input for external light switch
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- B-BC (BACnet Building Controller) functionality
- Design of graphical projects via L-VIS Configuration Tool
- Integrated Web server for the device configuration and for monitoring of data points

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus
CEA-709   M-Bus

L-VIS Touch Panel
BACnet Visualization

Specifications			
Screen Size	5.7" (14.5 mm)	12.1" (30.7 mm)	15" (38.1 mm)
Type	LVIS-ME200	LVIS-ME212	LVIS-ME215
Dimensions (mm)	210 x 164 x 63 (L x W x H)	329 x 268.3 x 65 (L x W x H)	394 x 318 x 65 (L x W x H)
Dimensions cut-out (mm)	180 x 150 x 57 (L x W x H)	300 x 250 x 61 (L x W x H)	355 x 295 x 61 (L x W x H)
Display resolution	320 x 240, 256 colors	800 x 600, 65 536 colors	1024 x 768, 65 536 colors
Interfaces	1 x Ethernet (100Base-T) BACnet/IP, HTTP, FTP 1 x BACnet MS/TP 2 x Digital Input 1 x Temperature Sensor Input	2 x Ethernet (100Base-T), Switch BACnet/IP, HTTP, FTP 1 x BACnet MS/TP 2 x Digital Input 1 x Temperature Sensor Input 1 x EIA-485 (RS-485) 2 x USB-A, 1 x USB-B (PC) Speaker, Audio Output	2 x Ethernet (100Base-T), Switch BACnet/IP, HTTP, FTP 1 x BACnet MS/TP 2 x Digital Input 1 x Temperature Sensor Input 1 x EIA-485 (RS-485) 2 x USB-A, 1 x USB-B (PC) Speaker, Audio Output
Power supply	12-35 VDC / 12-24 VAC ±10 % typ. 3 W, Backlight on: 8 W	24 VDC ±10 % or 90-265 VAC 2 ½ W, Backlight on: 13 W	24 VDC ±10 % or 90-265 VAC 2 ½ W, Backlight on: 16 W
Operating conditions	+10 °C bis 40 °C, 10-90 % RH @ 50 °C, non condensing		
Degree of Protection	Front: IP54 / Back: IP10		
Tools	L-VIS/L-WEB Configurator		
Resource limits			
VNC Clients	16	16	16
BACnet Server Objects	750 (Analog, Binary, Multi-State)	750 (Analog, Binary, Multi-State)	750 (Analog, Binary, Multi-State)
BACnet Client Mappings	750	750	750
BACnet Calendar Objects	25	25	25
BACnet Scheduler Objects	100 (64 data points per object)	100 (64 data points per object)	100 (64 data points per object)
BACnet Notification Class Objects	32	32	32
BACnet Trend Log Objects	100 (390 000 logs, ≈ 6 MB)	100 (390 000 logs, ≈ 6 MB)	100 (390 000 logs, ≈ 6 MB)
E-mail templates	100	100	100
Math objects	100	100	100
Alarm logs	10	10	10
Data point connections	1 000	1 000	1 000

Order number	Configuration
LVIS-ME200	BACnet Touch Panel with 5.7" display
LVIS-ME212	BACnet Touch Panel with 12.1" display
LVIS-ME215	BACnet Touch Panel with 15" display
LVIS-FRAME1	Mounting frame for 5.7" Touch Panels
LVIS-FRAME12	Mounting frame for 12.1" Touch Panels
LVIS-FRAME15	Mounting frame for 15" Touch Panels
L-TEMP1	External temperature sensor

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet
CEA-709 ✓
DALI ✓

L-DALI
CEA-709/DALI Controller
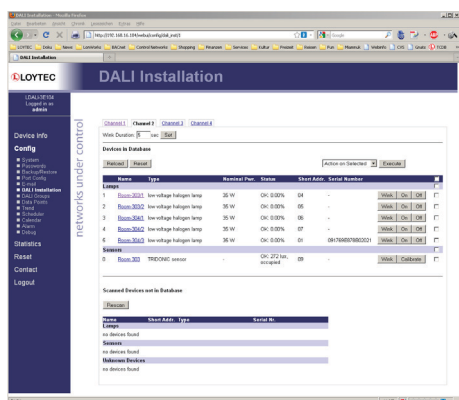
L-DALI controllers are multifunctional devices combining constant light control, sunblind control and gateway functions between LonMark and DALI (Digital Addressable Lighting Interface) systems. With alarming, scheduling, trending and e-mail notification (AST™) the L-DALI Controller is a perfect solution for DALI lighting systems and for a smooth DALI integration into LonMark Systems.

Constant Light Control with built-in Sunblind Control

The integrated Constant Light Controller (LonMark Functional Profile #3050) handles DALI devices and CEA-709 nodes in the same way. Optionally, the integrated Sunblind Controller (LonMark Functional Profile #6111) can interact with the Constant Light Controller to assure maximum comfort and energy efficiency. Sunblind actuators are also integrated as CEA-709 nodes.

An effective sun and anti-glare protection can be reached through active slat control and slat adjustment according to the sun position. Energy efficiency is ensured by linking room occupancy with the light control and sun protection. If a room is unoccupied the L-DALI Controller opens or closes the sunblinds depending on the thermal requirements. This allows use of the sun for heating in winter. In summer, the heat from the sun is reduced by the closed blinds to reduce the cooling load.

In addition to the constant light and sunblind control, any mathematical calculation and function as well as logical operation (boolean algebra) can be created on the device and process all available data points.

Advanced DALI Functions

L-DALI supports selected DALI presence detectors and light sensors with DALI ballasts. A list of currently supported devices can be found at www.loytec.com.

Fluorescent lamps must be operated about 100 hours with 100 % brightness before they may be dimmed. This burn-in process is monitored by L-DALI for each lamp. After 100 hours burn-in time the lamps constant light control is enabled.

In emergency lighting systems, L-DALI can be used for testing the system. The results can be logged .

For maximum transparency in the lighting system L-DALI can record the operating hours of each lamp and also the projected energy consumption.

Defective DALI ballasts can easily be replaced directly through buttons on the L-DALI controller or via the Web interface. No software tool is necessary.

Smooth DALI integration in LonMark Systems

The L-DALI Controller maps information from the DALI network to network variables (NVs) to control DALI ballasts or to display operating states. L-DALI represents a DALI-Master in the DALI network which can interact with selected DALI multi-sensors in Multi-Master mode.

BACnet   DALI ✓
CEA-709 ✓

L-WEB System
Automation Server
Touch Panels
DALI Lighting Control
Connectivity
SW Tools

L-DALI
CEA-709/DALI Controller

Network Connection

The L-DALI lineup for LONMARK Systems features 1, 2, or 4 independent DALI channels. Up to 64 DALI-based luminaries per DALI channel can be controlled individually or via 16 groups. All luminaries are monitored for lamp or ballast defect.

L-DALI Controller for LONMARK Systems can be connected either to an Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel. The provided static NV interface includes the following profiles:

- Lamp Actuator #3040
- Light Sensor #1010
- Occupancy Sensor #1060
- Constant Light Controller #3050
- Sunblind Controller #6111

The device configuration is either done with the L-DALI Configuration Tool (Used as stand-alone tool or as LNS® plug-in) or via the integrated Web server. All data points are available in a tree structure on the integrated Web server to be displayed or set using a standard Web browser.
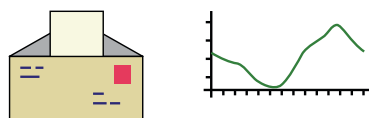
Local Data Storage, Data Provision and Reporting

L-DALI Controllers can store trend and event logs locally. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment. For long-term data storage the LWEB-801 Server (see page 12) with SQL database connection is available. The LWEB-801 Server can also process e-mails sent by the L-DALI Controllers with the trend and event log data attached in CSV format. LWEB-801 Server stores the information in the SQL database. LWEB-830 Dream Report (see page 17) is provided optionally for analyzing and presenting the data.

Scheduler

Schedulers and calendars located on the L-DALI Controllers are configured with the L-DALI Configuration Tool and parameterized via the integrated Web server. Remote access to other LOYTEC devices, which also host schedulers is possible. Centralized management of schedulers on one or multiple distributed L-DALI Controllers is done with the LWEB-820 Master Schedule Configurator (see page 14).
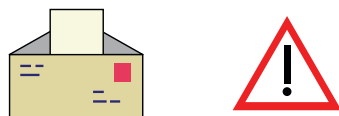
Alarming

The L-DALI Controllers support alarming functionality according to the LONMARK profile definition. Alarms are available on the LWEB-800 Visualization or via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-DALI Controller or forwarded event-driven to any e-mail recipients via e-mail.

DALI Power Supply

An external DALI power supply is needed to power up the DALI network. Power supplies are available for single channel or up to four channel DALI networks.

АРКТИКА – официальный дистрибьютор LOYTEC

L-DALI
CEA-709/DALI Controller

Features:

- DALI Light Controller featuring 1, 2, or 4 DALI channels
- Gateway functions for DALI integration in LONMARK Systems
- Supports up to 64 DALI devices and 16 DALI groups per DALI channel
- Integrated Web server for the device configuration and for monitoring of data points
- Test and assignment of the DALI devices via the Web interface
- Replacement of DALI devices without additional software tools
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Integrated Sunblind Control
- Supports periodic testing of emergency lights
- Supports lamp burn-in mode
- Integrated DALI Protocol Analyzer

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet   DALI ✓
CEA-709 ✓

L-DALI
CEA-709/DALI Controller

DALI 4

DALI 3

DALI 2

DALI 1

230 VAC

LDALI-PWR4
DALI Power supply

L-DALI CEA-709 DALI controller
DALI Multi-Master
LDALI-3E104

via TP/FT-10
or IP-852

TP/FT-10   IP-852

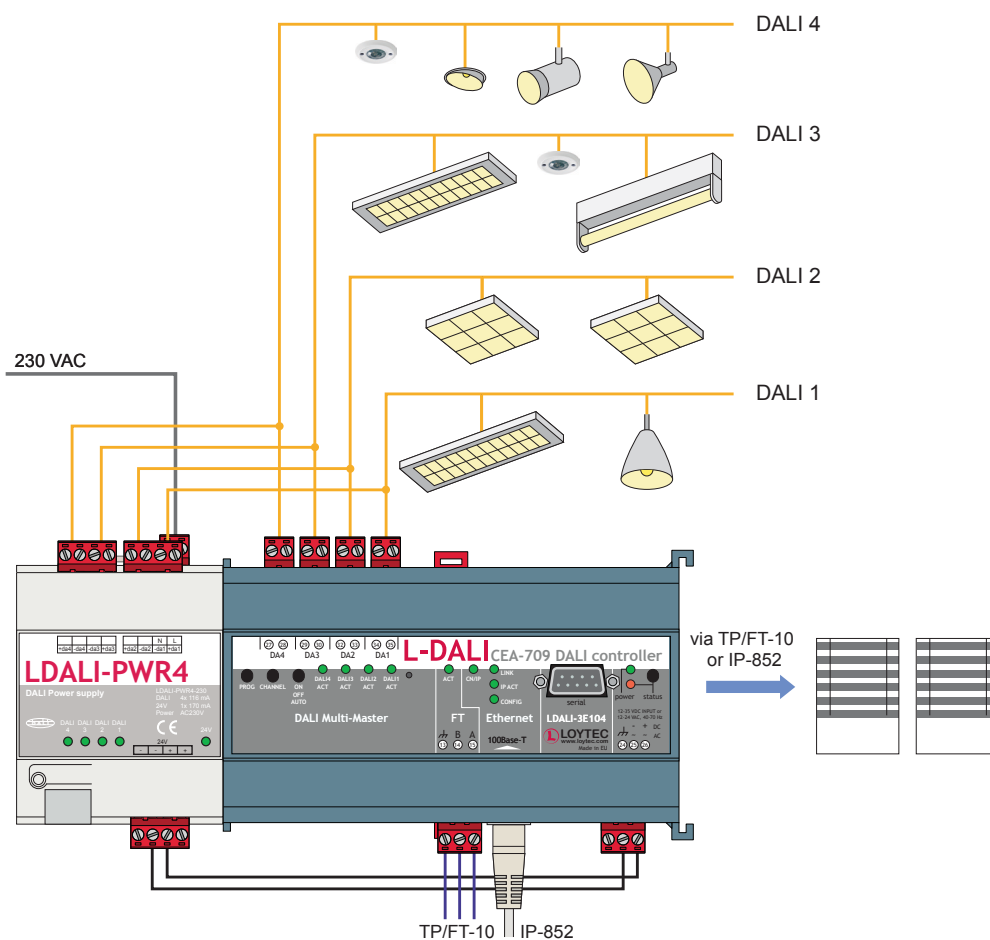| Specifications			
Dimensions (mm)	159 x 100 x 60 (L x W x H)		
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 2 W		
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, HTTP, FTP, OPC XML-DA 1 x TP/FT-10 (LONMARK System)		
Types	LDALI-3E101	LDALI-3E102	LDALI-3E104
DALI channel	1	2	4
LONMARK Functional Profiles	Lamp Actuator #3040, Light Sensor #1010, Occupancy Sensor #1060, Constant Light Controller #3050 Sunblind Controller #6111		
Tools	L-DALI Configuration Tool, Configuration via Web interface with Browser		

Resource limits			
DALI devices per DALI channel	64	Scene Control	16 groups per DALI channel
DALI groups per DALI channel	16	Broadcast Scene	1 per DALI channel

| Order number	Configuration
LDALI-3E101	CEA-709 DALI Controller for 1 DALI channel
LDALI-3E102	CEA-709 DALI Controller for 2 DALI channels
LDALI-3E104	CEA-709 DALI Controller for 4 DALI channels
LDALI-PWR1-230	DALI power supply, 220-240 V, 50/60 Hz, Output: 1 x 16 VDC ±5 %, 230 mA (DALI bus)
LDALI-PWR4-230	DALI power supply, 230 V ±10 %, 50 Hz, Output: 4 x 16 VDC ±5 %, 116 mA (DALI bus), 1 x 24 VDC ±10 %, 170 mA (power supply for L-DALI Controller)

АРКТИКА – официальный дистрибьютор   LOYTEC

L-DALI
BACnet/DALI Controller
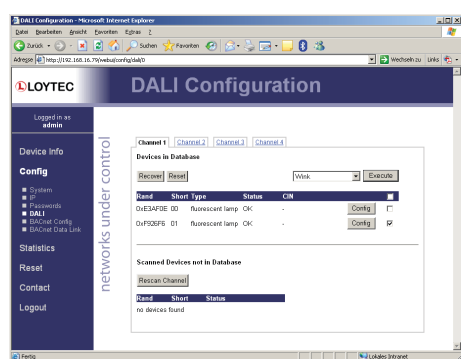
The DALI Controller LDALI-ME204 integrates up to 256 DALI luminaries into a BACnet system. LDALI-ME204 can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel.

DALI Functions and Commissioning

LDALI-ME204 can integrate 4 independent DALI channels. Up to 64 DALI-based luminaries per DALI channel can be controlled individually or via 16 groups. All luminaries are monitored for lamp or ballast defect.

The commissioning and parameterization of the DALI connections are made through the built-in Web interface. There is no other software tool needed.

Luminaries may be switched on or off or be dimmed via the built-in Web interface.

A built-in DALI protocol analyzer for troubleshooting in the DALI system is also available through the Web interface.

BACnet/DALI Gateway

A BACnet Analog Output Object is provided for every connected DALI devices or for every DALI group. Connected luminaries can be controlled via those objects completely transparent from a BACnet network. Lamps and ballasts are detected and status is presented as BACnet status flags.

Simple Ballast Replacement

Defective DALI ballasts can easily be replaced directly through buttons on the L-DALI controller or through the Web interface. There is no other software tool needed.

DALI Power Supply

An external DALI power supply is needed to power up the DALI network. Power supplies are available for single channel or up to four channel networks.

Features:

- Gateway funktions for DALI integration in BACnet networks
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports BACnet MS/TP or BACnet/IP
- Supports 4 DALI channels with up to 256 DALI devices
- Supports up to 64 DALI devices and 16 DALI groups per DALI channel
- BACnet Analog Output Object for every DALI devices or DALI group.
- Integrated DALI Protocol Analyzer
- Integrated Web server for the device configuration and for monitoring of data points

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   DALI ✓
CEA-709

L-DALI
BACnet/DALI Controller

DALI 4

DALI 3

DALI 2

DALI 1

Specifications	
Dimensions (mm)	159 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 2 W
Interfaces	1 x Ethernet (100Base-T) BACnet/IP, HTTP, FTP 1 x BACnet MS/TP
DALI channels	4
Tools	Configuration via Web interface with Browser

Resource limits			
DALI devices per DALI channel	64	Scene Control	16 groups per DALI channel
DALI groups per DALI channel	16	Broadcast Scene	1 per DALI channel

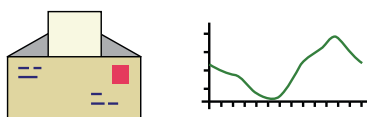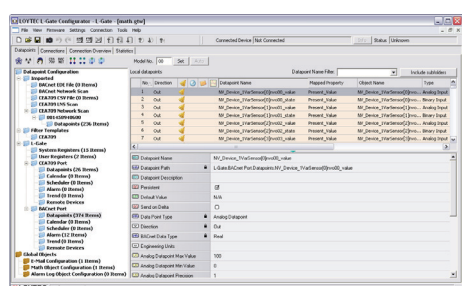| Order number	Configuration
LDALI-ME204	BACnet DALI controller for 4 DALI channels
LDALI-PWR1-230	DALI power supply, 220-240 V, 50/60 Hz, Output: 1 x 16 VDC ±5 %, 230 mA (DALI bus)
LDALI-PWR4-230	DALI power supply, 230 V ±10 %, 50 Hz, Output: 4 x 16 VDC ±5 %, 116 mA (DALI bus), 1 x 24 VDC ±10 %, 170 mA (power supply for L-DALI Controller)

BACnet ✓   Modbus
CEA-709 ✓   EIA-485

L-GATE
CEA-709/BACnet Gateway

LGATE-900 allows a smooth integration of LONMARK Systems and BACnet networks. Network variables are mapped to binary, analog, or multi-state objects (input, output, value) according to the CEN/TS 15231:2005 standard. BACnet objects can be manually mapped to NVs. In addition to analog, binary and multi-state objects LGATE-900 supports alarming, scheduling and trending.

Engineering

The configuration is done with the easy to use L-GATE Configurator. The software can run as a stand-alone tool or as a LNS® plug-in. The L-GATE Configurator allows creation of network variables and BACnet objects automatically by scanning an accessible LONMARK System and a BACnet network. Running as a LNS® plug-in, the L-GATE Configurator has direct access to the LNS® database. EDE files can be imported for the BACnet configuration.

The configuration is done very easily if an LNS® database is available. Based on a selection of network variables from the LNS® database, BACnet server objects are created automatically and connected to the network variables. The binding of the network variables in the LONMARK System can be executed optionally with the download of the configuration in the LGATE-900. This way information from a LONMARK System is available via BACnet Server Objects in the shortest possible time.

Conversely, client mappings can be placed on LGATE-900 and mapped to network variables, which in turn are integrated in the LONMARK System.

Network Communication

LGATE-900 can communicate in LONMARK Systems either on an Ethernet/IP channel (LONMARK IP-852) or a TP/FT-10 channel. Static and dynamic NVs form the interface. In addition to SNVTs also User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported.

In BACnet networks LGATE-900 can be connected either to an Ethernet/IP channel (BACnet/IP) or a BACnet MS/TP channel. Communication takes place both via BACnet server objects or client mappings. LGATE-900 complies with the B-BC (BACnet Building Controller) profile.

Local Data Storage, Data Provision and Reporting

LGATE-900 can store trend and event logs locally and provide the logged data to the L-WEB System using Web services. In addition, trend and event logs can be read via FTP as CSV files or sent as an e-mail attachment. Trend data from LONMARK Systems and BACnet networks are also available to other BACnet devices or a BACnet Building Workstation. LWEB-801 Server is a powerful solution to store long-term data in a SQL database. For use with LWEB-801 LOYTEC provides LWEB-830 Dream Report (see page 17) as an option for analyzing and presenting the data.

Comprehensive Scheduling in LONMARK Systems and BACnet Networks

Schedulers and calendars located on the LGATE-900 are configured with the configuration tool and parameterized in the integrated Web server. In LONMARK Systems remote access to other LOYTEC devices and their schedulers is also available. At the same time BACnet schedule objects on remote BACnet devices are connected via client mappings. Conversely BACnet Clients can access the schedules on LGATE-900.
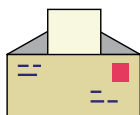
L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

L-GATE
CEA-709/BACnet Gateway

LGATE-900 allows mapping LONMARK Scheduler to BACnet Scheduler. For example, a LONMARK Scheduler can be mapped to a BACnet Scheduler in the L-GATE which in turn can be adjusted by a BACnet Operating Workstation. Or, a L-VIS Touch Panel in the LONMARK System can adjust a schedule that is attached to a BACnet network.

Centralized management of schedulers on one or multiple distributed LGATE-900 is done with the LWEB-820 Master Schedule Configurator (see page 14).

Alarming

LGATE-900 supports BACnet Intrinsic Alarming and provides alarm messages via BACnet Notification Class Objects. On the CEA-709 side alarming according to the LONMARK profile definition is supported. Alarms are available via the integrated Web server. Alarm logs are stored on the device and synchronized to an available LWEB-801 Server. Alarm logs can be read via FTP from the L-INX Automation Server or forwarded event-driven to any e-mail recipients via e-mail.

Local Calculations

$y=f(x)$

Simple automation tasks can be performed by LGATE-900. Standard mathematical calculations and functions as well as logical operations (boolean algebra) allow a flexible formulation of applications.

BACnet   **CEA-709**

LVIS-ME215
LIP-ME201
L-IP ①

Internet / Intranet
Router / Firewall

LIP-33ECTB
L-IP ②①

LVIS-3E115

Ethernet, BACnet/IP

Ethernet, IP-852

LINX-200
L-INX ①

LINX-220
L-INX ①②③④   L-IOB

LGATE-900
L-GATE

LINX-100
L-INX ②①

LINX-120
L-INX ①②③④   L-IOB

BACnet MS/TP   TP/FT-10

BACnet MS/TP
BACnet MS/TP
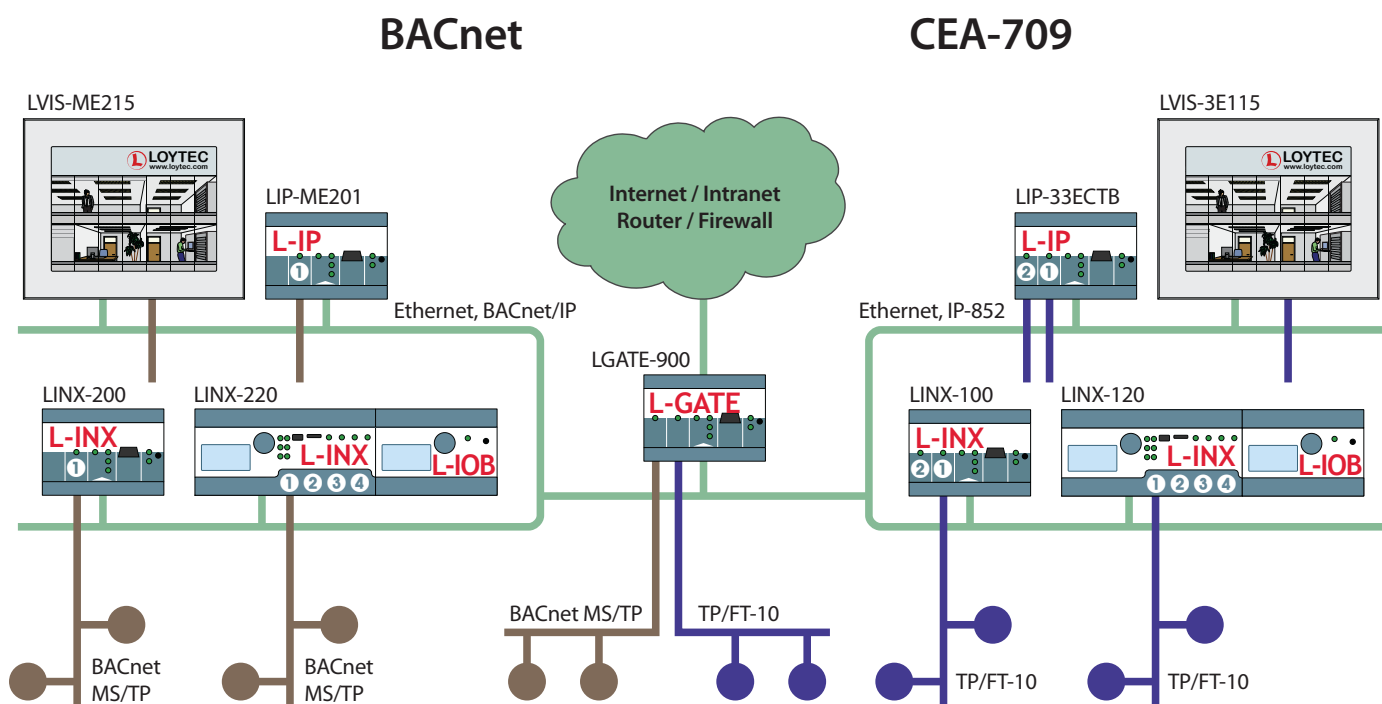
TP/FT-10
TP/FT-10

BACnet	✓	Modbus
CEA-709	✓	EIA-485

L-GATE
CEA-709/BACnet Gateway

Features:

- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Compliant with ANSI/ASHRAE-135-2008 and ISO 16484-5 standard
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of dynamically created network variables or static network variables
- Support of user defined NVs (UNVTs) and configuration properties (SCPTs, UCPTs)
- Supports BACnet MS/TP or BACnet/IP
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- B-BC (BACnet Building Controller) functionality
- Integrated Web server for the device configuration and for monitoring of data points

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, BACnet/IP, HTTP, FTP 1 x TP/FT-10 (LONMARK System) 1 x BACnet MS/TP
Tools	L-GATE Configurator

Resource limits			
CEA-709 Network Variables NVs	1 000	BACnet Server Objects	750 (Analog, Binary, Multi-State)
CEA.-709 Alias NVs	1 000	BACnet Client Mappings	750
CEA-709 External NVs (Polling)	1 000	BACnet Calendar Objects	25
CEA-709 Address Table Entries	512 („legacy mode": 15)	BACnet Scheduler Objects	100 (64 data points per object)
CEA-709 LONMARK Calendar	1 (25 Calendar Templates)	BACnet Notification Class Objects	32
CEA-709 LONMARK Scheduler	100	BACnet Trend Log Objects	100 (130 000 logs, ≈ 2 MB)
CEA-709 LONMARK Alarm Server	1	Math objects	100
CEA-709 Trend Logs	100	Alarm logs	10
E-mail templates	100	Data point connections	1 000

Order number	Configuration
LGATE-900	CEA-709 / BACnet Gateway

BACnet   Modbus

CEA-709 ✓   EIA-485

L-Proxy
CEA-709 Multiport Gateway

The L-Proxy Multiport Gateway exchanges data packets across domain boundaries in LONMARK Systems. Network variables or configuration properties are used to transfer data. L-Proxy represents up to 5 independent network nodes (one on each TP/FT-10 channel and up to three on the IP-852 channel). Every L-Proxy node can be configured in different domains and therefore in different LNS® databases. Individually created input and output network variables or configuration properties on every L-Proxy node are connected internally between the L-Proxy nodes with a configuration tool supplied with the unit.
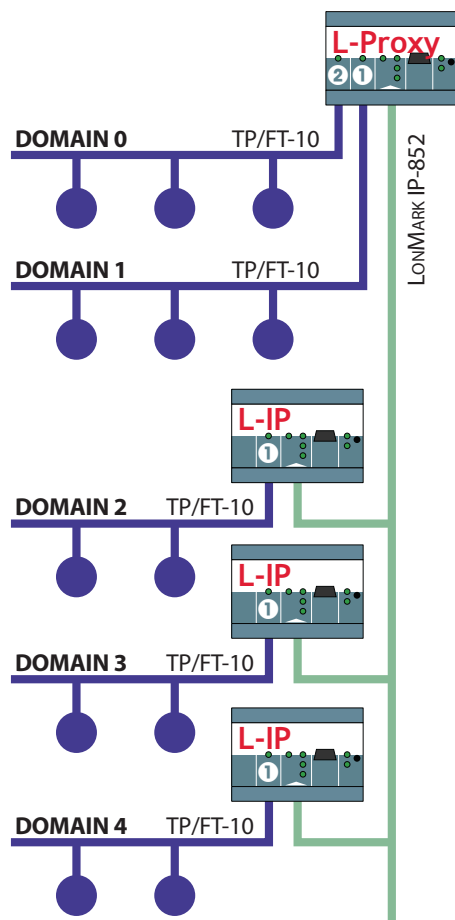
L-Proxy is the perfect solution for data exchange between independent LONMARK Systems. Whether different phases of construction, different systems or expanded networks with multiple LNS® databases - L-Proxy connects. L-Proxy ensures that data from a weather station network are made available to disparate networks, saving on redundant nodes for common information.

Network Communication

L-Proxy can be connected to a Ethernet/IP channel (LONMARK IP-852) and to TP/FT-10 channels. Static and dynamic NVs form the interface. In addition to SNVTs, User Defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs) are supported.

Features:

- Data Exchange across multiple domains
- Extends the address tables of Neuron® Chip based nodes
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports TP/FT-10 or IP-852 (Ethernet/IP)
- Support of dynamically created network variables or static network variables
- Support of user defined NVs (UNVTs) and configuration properties (SCPTs, UCPTs)
- Represents up to 5 independent network nodes
- Configuration Tool useable with and without LNS®

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, HTTP, FTP 2 x TP/FT-10 (LONMARK System)
Tools	L-Proxy Configurator

Resource limits			
Network Variables NVs	512 per L-Proxy Node	External NVs (Polling)	512 per L-Proxy node
Alias NVs	512 per L-Proxy Node	Address Table Entries	512 („legacy mode": 15) per L-Proxy node

Order number	Configuration
LP-33E100	CEA-709 Multiport Gateway

АРКТИКА – официальный дистрибьютор   LOYTEC

L-IP
CEA-709/IP-852 Router
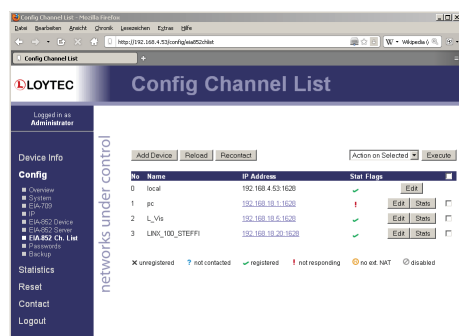
The L-IP Router connects 2-wire channels (TP/FT-10 or TP/XF-1250) with the Ethernet/IP channel (IP-852) in LONMARK Systems. L-IP routes CEA-709 packets through an IP based network such as a LAN (Ethernet), an Intranet, or even the Internet. The L-IP connects to the IP network via a 100Base-T Ethernet port.

In order to provide optimal router configurations, 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".

The L-IP also supports troubleshooting and analyzing in a LONMARK System. Every L-IP allows the LOYTEC Protocol Analyzer to connect to the 2-wire channels (TP/FT-10 or TP/XF-1250) over the Ethernet/IP channel even from remote. This allows a quick analysis of the data communication and saves time-consuming troubleshooting.

The integrated CEA-852 Configuration Server can manage up to 100 IP-852 devices. The configuration is done through the built-in Web interface.

Features:

- Routes packets between TP/FT-10 or TP/XF-1250 channels and Ethernet/IP (IP-852)
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LONMARK Systems)
- Supports Configured Router Mode
- Supports Smart Switch Mode and Repeater Mode
- Built-in CEA-852 configuration server for up to 100 members
- Support for operation behind NAT-Routers and firewalls
- Easy installation, Auto-NAT, roaming, DHCP
- Remote LPA support with LPA-IP
- Integrated Web server for the device and IP-852 configuration
- Built-in enhanced communication test for IP-852
- Network diagnostic LEDs

Specifications				
Type	LIP-3ECTB	LIP-1ECTB	LIP-33ECTB	LIP-3333ECTB
Dimensions (mm)	107 x 100 x 60 (L x W x H)			159 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W			
Interfaces	1 x Ethernet (100Base-T) LONMARK IP-852, HTTP, FTP			
	1 x TP/FT-10	1 x TP/XF-1250	2 x TP/FT-10	4 x TP/FT-10
Tools	Configuration via Web browser or Console (EIA-232)			
Resource limits				
Configuration Server	CEA-852 configuration server for up to 100 members on the IP channel			

Order number	Configuration
LIP-3ECTB	CEA-709/IP-852 Router, 1 x TP/FT-10, 1 x Ethernet Port (IP-852)
LIP-1ECTB	CEA-709/IP-852 Router, 1 x TP/XF-1250, 1 x Ethernet Port (IP-852)
LIP-33ECTB	CEA-709/IP-852 Router, 2 x TP/FT-10, 1 x Ethernet Port (IP-852)
LIP-3333ECTB	CEA-709/IP-852 Router, 4 x TP/FT-10, 1 x Ethernet Port (IP-852)

BACnet   Modbus
CEA-709 ✓   EIA-485

L-IP Redundant
CEA-709/IP-852 Router

The L-IP Router Redundant connects 2-wire channels (TP/FT-10 or TP/XF-1250) with the Ethernet/IP channel (IP-852) in LonMark Systems and allows building a redundant network infrastructure. An integrated algorithm detects and "heals" a broken cable on the TP/FT-10 channel and helps to find the point of failure immediately. In addition, the L-IP Redundant monitors the nodes on the TP/FT-10 channel and creates an alarm in case of a failure. For this reason, L-IP Router Redundant can only by used as a Configured Router.

The integrated CEA-852 Configuration Server can manage up to 100 IP-852 devices. The configuration is done through the built-in Web interface.

Full redundancy on both the IP channel and the CEA-709 channel including device redundancy can be achieved using two devices in parallel (Twin Mode).

Alarms reporting a broken cable, node failures, high communication loads, etc. are provided via different paths. The L-IP Router Redundant supports alarming according to the LonMark profile definition. Similarly, alarm conditions are provided via network variables. Alarm messages are displayed immediately via the built-in Web interface and the LNS® plug-in. Alarm conditions can be forwarded via e-mail in combination with an L-INX Automation Server, an L-VIS Touch Panel or the LGATE-900 Gateway, to inform about a node failure or a broken cable.

Features:

- Routes packets between a TP/FT-10 channel and Ethernet/IP (IP-852)
- Compliant with CEA-709, CEA-852, ISO/IEC 14908 standard (LonMark Systems)
- Detection of broken cable (TP/FT-10 channel)
- Full redundancy with two L-IP Redundant devices in Twin Mode (IP channel 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
- Notification via SNVTs and LonMark alarming via Node Object
- Monitors network health (bandwidth utilization, error rate, etc.)
- Supports Configured Router Mode only
- Built-in CEA-852 configuration server for up to 100 members
- Support for operation behind NAT-Routers and firewalls
- Easy installation, Auto-NAT, roaming, DHCP
- Remote LPA support with LPA-IP
- Integrated Web server for the device and IP-852 configuration
- Built-in enhanced communication test
- Network diagnostic LEDs
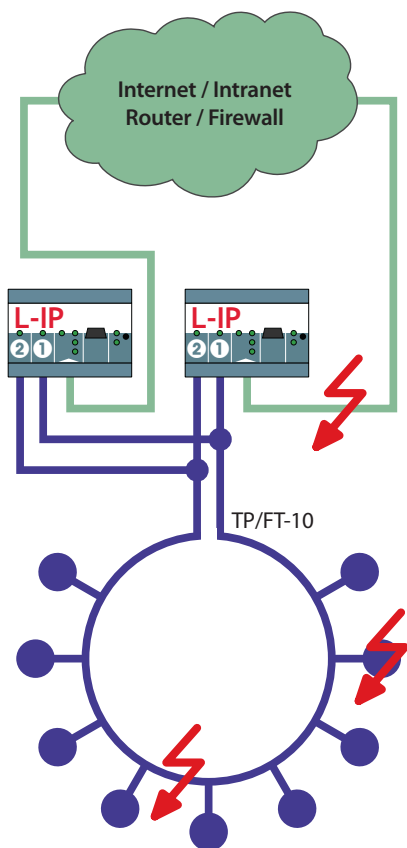
Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W
Interfaces	1 x Ethernet (100Base-T) LonMark IP-852, HTTP, FTP 2 x TP/FT-10
Tools	L-IP Redundant Configurator
Resource limits	
Configuration Server	CEA-852 configuration server for up to 100 members on the IP channel

Order number	Configuration
LIP-33ECRB	CEA-709/IP-852 Router with built-in redundancy, 2 x TP/FT-10, 1 x Ethernet Port (IP-852)

АРКТИКА – официальный дистрибьютор   LOYTEC

BACnet ✓   Modbus
CEA-709   EIA-485

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 135-2008 and ISO 16484-5. LIP-ME201 can be configured to act as a BACnet Broadcast Management Device (BBMD). The L-IP also provides Foreign Device support. For MS/TP slave devices, the router acts as a Slave Proxy.

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

Features:

- Routes packets between BACnet MS/TP an BACnet/IP
- Compliant with ASHRAE 135-2008 and ISO 16484-5 standards
- BBMD (BACnet Broadcast Management Device) support
- Foreign device support
- Slave Proxy for up to 32 MS/TP Slave devices
- Configuration via built-in Web server or serial port
- Provides statistics information via Web interface
- BACnet MS/TP diagnostic LED
- Ethernet link and activity LED

Specifications	
Dimensions (mm)	107 x 100 x 60 (L x W x H)
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W
Interfaces	1 x Ethernet (100Base-T) BACnet/IP, HTTP, FTP 1 x BACnet MS/TP
Tools	Configuration via Web browser or Console (EIA-232)

Order number	Configuration
LIP-ME201	BACnet/IP Router, 1 x BACnet MS/TP (EIA-485), 1 x Ethernet Port (BACnet/IP)

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet
CEA-709 ✓

Modbus
EIA-485

L-Switch^{XP}
CEA-709 Router

The L-Switch^{XP} is the solution for interconnecting multiple 2-wire channels (TP/FT-10 or TP/XF-1250 channels) in LONMARK Systems. It provides up to five ports and routes packets between these ports. 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".

Features:

- For physical separation and logical connection of up to five CEA-709 network segments
- Compliant with CEA-709 and ISO/IEC 14908 standard (LONMARK Systems)
- 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
- Diagnostic LEDs for each channel
- CEA-709 status and activity LED
- Shapes for LonMaker® Network Management Tool available

* Smart Switch Mode only

Specifications							
Type	LS-33CB	LS-13CB	LS-11CB	LS-33300CB	LS-13300CB	LS-13333CB	LS-11333CB
Dimensions (mm)	107 x 100 x 60 (L x W x H)			159 x 100 x 60 (L x W x H)			
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W						
Interfaces	2 x TP/FT-10	1 x TP/XF-1250 1 x TP/FT-10	2 x TP/XF-1250	3 x TP/FT-10	1 x TP/XF-1250 2 x TP/FT-10	1 x TP/XF-1250 4 x TP/FT-10	2 x TP/XF-1250 3 x TP/FT-10
Tools	Configuration via Console (EIA-232)						

Order number	Configuration
LS-33CB	CEA-709 Router, 2 x TP/FT-10
LS-13CB	CEA-709 Router, 1 x TP/XF-1250, 1 x TP/FT-10
LS-11CB	CEA-709 Router, 2 x TP/XF-1250
LS-33300CB	CEA-709 Router, 3 x TP/FT-10
LS-13300CB	CEA-709 Router, 1 x TP/XF-1250, 2 x TP/FT-10
LS-13333CB	CEA-709 Router, 1 x TP/XF-1250, 4 x TP/FT-10
LS-11333CB	CEA-709 Router, 2 x TP/XF-1250, 3 x TP/FT-10

АРКТИКА – официальный дистрибьютор LOYTEC

BACnet   Modbus
CEA-709 ✓   EIA-485

NIC Network Interface
CEA-709 / CEA-852
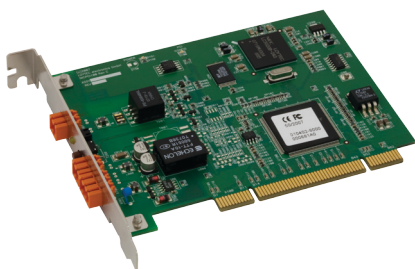
LOYTEC NICs are the most universal network interfaces for CEA-709 and IP-852 (Ethernet/IP) channels. Based on LOYTEC Core Technologies, they offer high packet update rates and short response times. All NICs are fully compatible with products like NL220, ALEX, LonMaker®, and other LNS® 3.x and LNS® TE applications. The NICs are also compatible with NodeUtil32, NLUtil, OPC servers, and high performance ORION applications. The multiplexed network interface (MNI) support allows starting multiple LNS® or MIP applications to run in parallel with an LPA on a single network interface.

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, 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
- Runs on Windows XP®/Server 2003/Vista, Windows 7/Server 2008 (check manual for compatibility with old Network Interfaces)
- Runs on Linux 2.6 (NIC709-PCI100)

NIC Network Interface
CEA-709 / CEA-852

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

Specifications NIC709-PCI100, NIC709-USB100		
Type	NIC709-PCI100	NIC709-USB100
Dimensions (mm)	PCI-Karte 145 x 120 x 20 (L x W x H)	120 x 70 x 23 (L x W x H)
Power supply	Via PC, internal PCI-Bus (3.3 V or 5.0 V)	Via USB
Interfaces	1 x TP/FT-10 1 x TP/XF-1250 1 x EIA-485 (RS-485)	
Tools	LOYTEC Network Interface NIC Software	
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2	
	Linux 2.6	
Resource limits		
MNI devices	8 (Multiplexed Network Interfaces)	

Specifications NIC709-IP3E100, NIC709-IP1E100		
Dimensions (mm)	107 x 100 x 60 (L x W x H)	
Power supply	12-35 VDC / 12-24 VAC ±10 %, typ. 3 W	
Type	NIC709-IP3E100	NIC709-IP1E100
Interfaces	1 x Ethernet (100Base-T)	
	1 x TP/FT-10	1 x TP/XF-1250
Tools	LOYTEC Network Interface NIC Software	
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2	
Resource limits		
MNI devices	8 (Multiplexed Network Interfaces)	

Order number	Configuration
NIC852	Floating license via USB hardlock key, uses Ethernet port of PC to connect to a LonMark IP-852 channel
NIC852-SW	Software License, Software activation with costs for one PC, uses Ethernet port of PC to connect to a LonMark IP-852 channel
NIC709-PCI100	Connects to the PCI bus of a PC (3.3 V or 5.0 V), supports LonMark TP/FT-10, TP/XF-1250, and TP/RS-485 channels
NIC709-USB100	USB-Interface, connects to the USB port of a PC, supports LonMark TP/FT-10, TP/XF-1250, and TP/RS-485 channels
NIC709-IP3E100	Remote network interface (RNI), PC connection via Ethernet/IP, Supports a LonMark TP/FT-10 channel
NIC709-IP1E100	Remote network interface (RNI), PC connection via Ethernet/IP, Supports a LonMark TP/XF-1250 channel

АРКТИКА – официальный дистрибьютор   LOYTEC

L-Term Terminator
CEA-709 Network

LOYTEC offers several network terminators in DIN rail housing for the LonMark TP/FT-10 and TP/XF-1250 channels.

L-Term LT-03 offers one standard network terminator for a TP/FT-10 or TP/LPT-10 channel supporting bus and free topology. In addition, LT-03 comes with a network access connector (RJ45) for a simple and reliable connection to the CEA-709 network e.g. for maintenance or analyzing the network locally.

L-Term LT-33 offers two standard network terminators for TP/FT-10 or TP/LPT-10 channels in bus and free topology. LT-33 is the perfect solution for LOYTECs network infrastructure products (e.g. L-IP, L-Switch, L-Proxy etc.).

L-Term LT-13 combines a terminator for a TP/FT-10 or TP/LPT-10 channel in bus or free topology with a terminator for a TP/XF-1250 channel. LT-13 is the perfect solution to be used together with the LS-13CB, LS-13300CB, or the LS-13333CB L-Switch.

Specifications	
Dimensions (mm)	18 x 90 x 58 (L x W x H)
Applications	Termination of a LonMark TP/FT-10 or TP/XF-1250 channels
For use with	LonMark TP/FT-10 channels in bus topology LonMark TP/FT-10 channels in free topology LonMark TP/XF-1250 channels in bus topology

Order number	Configuration
LT-03	Network Terminator, 1 x TP/FT-10 or TP/LPT-10 (bus or free topology), 1 x Network Access Connector RJ45
LT-13	Network Terminator, 1 x TP/FT-10 or TP/LPT-10 (bus or free topology), 1 x TP/XF-1250 (bus topology only)
LT-33	Network Terminator, 2 x TP/FT-10 or TP/LPT-10 (bus or free topology)

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

BACnet ✓   Modbus ✓
CEA-709 ✓   EIA-485 ✓

L-Term Terminator
BACnet, Modbus, EIA-485 Bus

LOYTEC offers network terminators for EIA-485 channels such as BACnet MS/TP, Modbus or TP/RS485 (CEA-709) in DIN rail housings.

L-Term LT-04 is a terminator for EIA-485 channels. In addition, LT-04 comes with a network access connector (RJ45) for a simple and reliable connection to the network e.g. for maintenance or analyzing the network locally.

The LT-B4 is a bus terminator for an EIA-485 channel with biasing circuit (failsafe biasing). This biasing circuit draws the level of the bus during standby mode (idle) to a safe value (logic "1"). The LT-B4 needs a power supply of 24 VAC or 24 VDC.

Specifications		
Dimensions (mm)	18 x 90 x 58 (L x W x H)	
Type	LT-04	LT-B4
Power supply	-	24 VDC or 24 VAC ±10 %
Termination Impedance (Z)	120 Ω	
For use with	BACnet MS/TP, Modbus RTU, Modbus ASCII via EIA-485 (RS-485) , or LonMark TP/RS485 channel Bus topology, two terminators needed to terminate a bus	

Order number	Configuration
LT-04	1 x EIA-485 (bus topology) 1 x Network Access Connector RJ45
LT-B4	1 x EIA-485 (bus topology) with biasing circuit (failsave biasing)

BACnet   OPC

CEA-709 ✓

LPA
LOYTEC CEA-709 Protocol Analyzer

The LOYTEC Protocol Analyzer (LPA) for LONMARK Systems listens on CEA-709 or CEA-852 networks and displays all recorded packets on a PC screen. With the long 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 all LOYTEC devices featuring a Remote Network Interface (RNI), the LPA-IP software can record packets even from remote twisted-pair 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.

Features:

- Online CEA-709.1 packet monitoring in LONMARK Systems
- 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, LVIS-3E112, LVIS-3E115, LINX-100, LINX-110, LINX-120, LROC-100, LROC-150

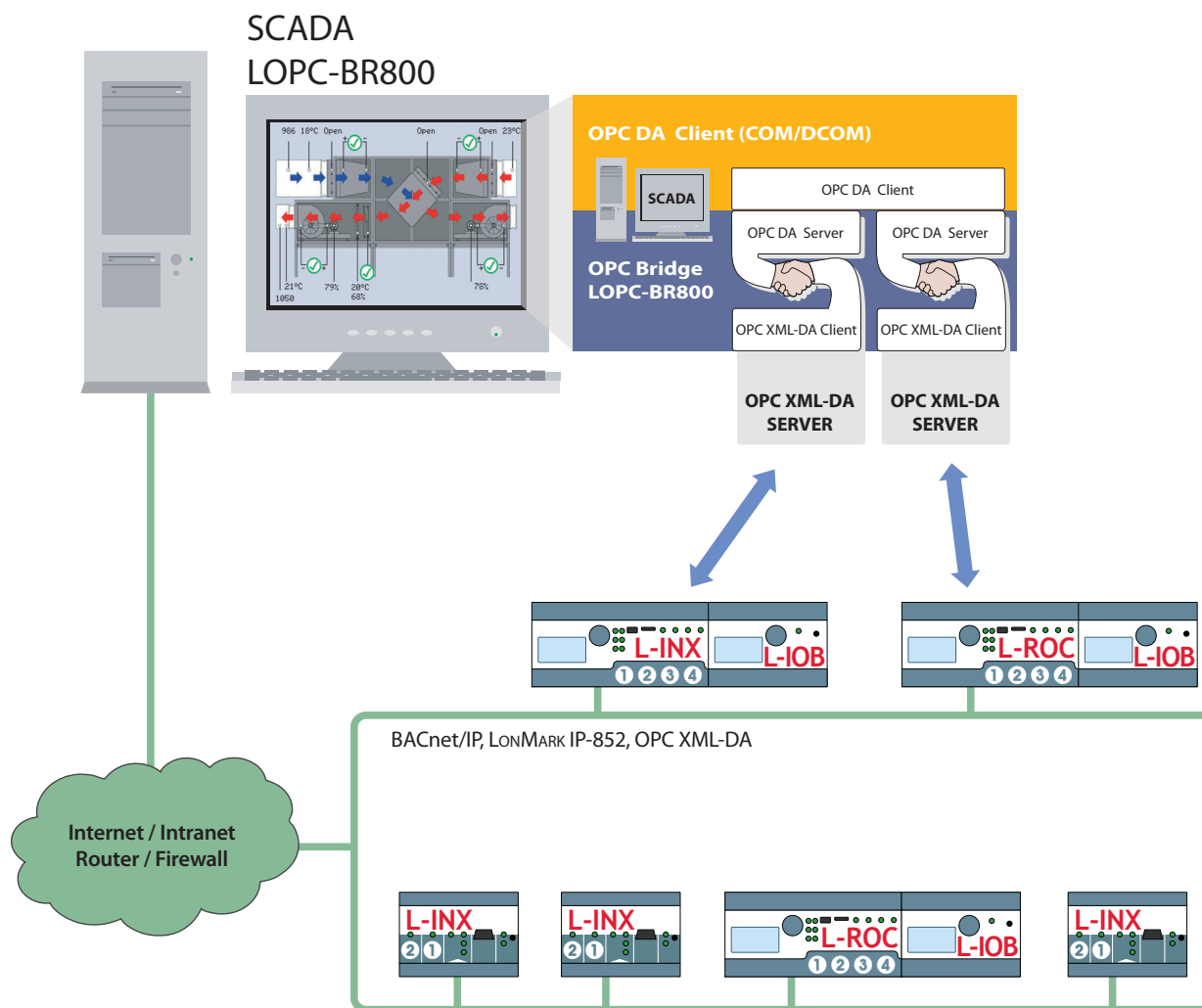| Specifications	
LPA-SW for use with	NIC-PCI100, NIC709-USB100, NIC-IP3E100, NIC-IP1E100
LPA-IP-SW for use with	NIC852, NIC852-SW
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
LPA-SET-USB	Set contains: Network Interface NIC709-USB100 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-USB100
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
LPA-SW	Protocol Analyzer Software for CEA-709 Networks, Network Interface NIC709 not included, must be ordered separately
LPA-IP-SW	Protocol Analyzer Software for IP-852 channels, supports remote LPA, NIC852 not included, must be ordered separately

L-WEB System
Automation Server
Touch Panels
DALI Lighting Control
Connectivity
SW Tools

L-OPC
OPC Bridge

The LOPC-BR800 Bridge Software allows OPC DA client applications based on Microsoft's COM/DCOM technology to access multiple distributed L-INX Automation Servers and L-ROC Room Controllers via OPC XML-DA. LOPC-BR800 represents every single L-INX Automation Server or L-ROC Room Controller as an independent OPC DA (COM/DCOM) server. The Bridge Software runs on the same PC as the OPC client application of a higher-level system such as a SCADA system of a third-party supplier.

SCADA
LOPC-BR800

OPC DA Client (COM/DCOM)

SCADA

OPC DA Client

OPC DA Server   OPC DA Server

OPC Bridge
LOPC-BR800

OPC XML-DA Client   OPC XML-DA Client

OPC XML-DA SERVER   OPC XML-DA SERVER

L-INX   L-IOB   L-ROC   L-IOB
①②③④   ①②③④

BACnet/IP, LONMARK IP-852, OPC XML-DA

Internet / Intranet
Router / Firewall

L-INX   L-INX   L-ROC   L-IOB   L-INX
②①   ②①   ①②③④   ②①

| Specifications	
For use with	LINX-100, LINX-101, LINX-200, LINX-201, LINX-120, LINX-121, LINX-220, LINX-221, LROC-100, LROC-150
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2
OPC DA Version (COM/DCOM)	Compatible from OPC DA 2.05

Order number	Configuration
LOPC-BR800	OPC-Bridge to connect OPC DA Clients (COM/DCOM) to OPC XML-DA Servers (L-INX and L-ROC)

BACnet   OPC

CEA-709 ✓

NL220
Network Management Software
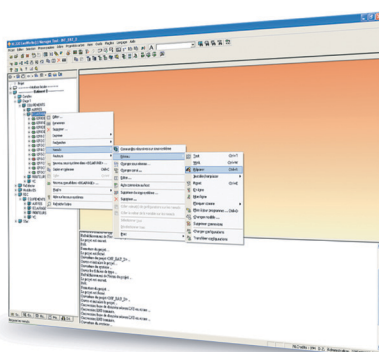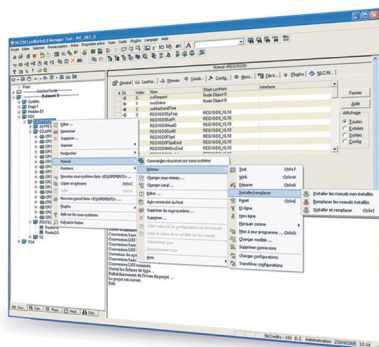
NL220 is a network installation and maintenance tool for CEA-709 and CEA-852 networks. It was the very first LNS® based tool introduced to the system integration market in 1995. It creates an LNS® database compatible with any other network management software supporting LNS®. NL220 supports even the 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. All information are available in a tree structure. No synchronization with an LNS® database is required.

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 CSV files.

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.
- Runs with all LOYTEC NIC Network Interface Cards
- "Smart Channel" eases the design of an intelligent Network infrastructure with LOYTEC components

Specifications	
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2
LNS® Server	Includes LNS® TE (Turbo Edition) Server
Node Credits	Includes 64 node credits

| Order number	Configuration
NL220I	NL220 Installation, Network Management Tool, includes an LNS® Server and 64 node credits
NL220M	NL220 Maintenance, Network Management Tool, an LNS® Server not included
NL220 PRO	Bundle of NL220I and NLCSV, includes an LNS® Server and 64 node credits
LNS Server	LNS® Server License
NLCREDIT	Credit fee per commissioned node (includes LNS® credit fee)
NLCSV	Plug-ins for NL220 Network Management Tool including NLGenerateFromCSV, NLBindingFromCSV, NLCommissionFromCSV, NLConfigurationFromCSV

BACnet   OPC

CEA-709 ✓

NLFacilities
Network Management Software
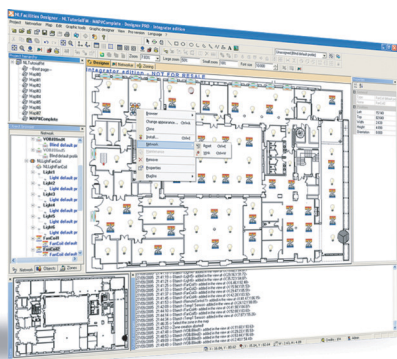
NLFacilities is a graphical network management tool based on LNS® which helps to decrease integration time significantly wherever the same or a similar application must be installed over and over again (e.g. room applications in office buildings). NLFacilities separates the engineering from the commissioning processes. Interaction rules between CEA-709 nodes and parameters of the nodes (e.g. for different types of zones) are predefined 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 template. Installing room applications has never been easier.

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.

Features:

- 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
- Runs with all LOYTEC NIC Network Interface Cards

Specifications	
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2
LNS® Server	Includes LNS® TE (Turbo Edition) Server
Node Credits	Includes 64 node credits

| Order number	Configuration
NLFAC-I	NLFacilities Designer Suite, includes NL220I Network Management Tool, LNS® Server and 64 node credits
NLFACPRO-I	NLFacilities Professional Designer Suite, includes NLFAC-I plus NLCSV LNS® plug-ins and NLUTIL Network Utility
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)

BACnet
CEA-709 ✓
OPC ✓

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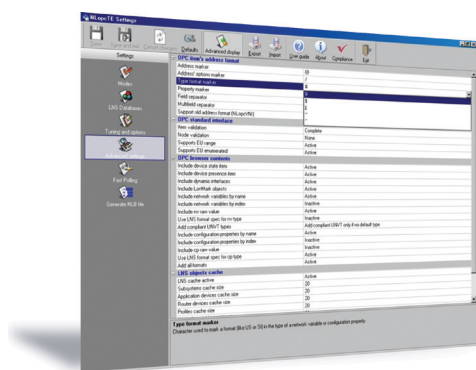
LOPC is a PC-based OPC server compliant with any LNS® database created with any LNS® management tool. NLOPC is using Monitor Sets of LNS® and can read several values simultaneously on one request. This is a unique performance feature and ensures an increased monitoring performance. NLOPC drastically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

NLOPC 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).

The variant NLOPC MIP doesn't need LNS® and enables direct access on a CEA-709 network via a MIP interface for an OPC client application.

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
- Runs with all LOYTEC NIC Network Interface Cards

Specifications	
Operating system	Windows 7, Windows Vista, Windows XP, Windows Server 2003/2008 R2

Order number	Configuration
NLOPC TE	PC-based OPC server (OPC 2.0 and 3.0 standard), Based on LNS® TE (LNS® Server is not included)
LNS Server	LNS® Server License
NLOPC-TE-DB	Interfacing with additional LNS® databases (optional) - One NLOPC TE license is needed
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), Based on LNS® TE (LNS® Server is not included), includes NL220 in maintenance version NL220M
NLOPC MIP	PC-based OPC-Server (OPC 2.0 and OPC 3.0 standard), OPC server for non-LNS® applications with Microprocessor Interface Program (MIP), LNS® is not need
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 OPC 3.0 standard), OPC server for non-LNS® applications with Microprocessor Interface Program (MIP), LNS® is not need, includes NL220 in maintenance version NL220M

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

Connectivity

SW Tools

Technology Reference List

CEA-709, ISO/IEC 14908 – LONMARK System

Order number	Configuration	Page
LWEB-800	Graphical User Interface, distributed visualization on Windows PC or Windows Mobile devices	10
LWEB-801	LWEB-801 Server	12
LWEB-820	Master Schedule Configurator Hierarchical structuring and changing of schedule parameter and calendar	14
LWEB-821	Master Parameter Editor Efficient parameterization of L-INX and L-ROC devices	15
LWEB-822	Master Device Manager Central storage of configuration data and applications on LWEB-801 Server, update management	16
LWEB-830	LWEB-830 Dream Report	17
LINX-150	BACnet & CEA-709 Automation Server with LIOB Connect and built-in Remote Network Interface (RNI)	18
LINX-151	BACnet & CEA-709 Automation Server with LIOB Connect and built-in BACnet/IP & IP-852 Router	18
LINX-START-150	Starter Kit: LINX-150, LIOB-101, LIOB-102 and L-LOGICAD License	18
LINX-120	CEA-709 Automation Server with LIOB Connect and built-in Remote Network Interface (RNI)	22
LINX-121	CEA-709 Automation Server with LIOB Connect and built-in IP-852 Router	22
LINX-START-120	Starter Kit: LINX-120, LIOB-101, LIOB-102 and L-LOGICAD License	22
LINX-100	CEA-709 Automation Server, supports LWEB-800 Visualization, built-in Remote Network Interface (RNI)	30
LINX-101	CEA-709 Automation Server, supports LWEB-800 Visualization, built-in IP-852 Router	30
LINX-110	CEA-709 Automation Server, IEC 61131-3 programmable, built-in Remote Network Interface (RNI)	36
LINX-111	CEA-709 Automation Server, IEC 61131-3 programmable, built-in IP-852 Router	36
LINX-START-LC2	Starter Kit: LINX-100, LINX-110 and L-LOGICAD License	36
LROC-100	Room Controller with LIOB Connect (Axis Management), B-BC	42
LROC-150	Room Controller with LIOB Connect (Aisle, Floor, Building or Campus Management), B-BC	42
LROC-START-100	Starter Kit: LROC-100, LIOB-100, L-STUDIO	42
L-STUDIO	L-ROC Programming and Configuration Tool	42
LVIS-100-RE	CEA-709 Touch Panel "Room Edition" with 5.7" display and built-in Remote Network Interface (RNI)	53
LVIS-3E100	CEA-709 Touch Panel with 5.7" display and built-in Remote Network Interface (RNI)	55
LVIS-3E112	CEA-709 Touch Panel with 12.1" display and built-in Remote Network Interface (RNI)	55
LVIS-3E115	CEA-709 Touch Panel with 15" display and built-in Remote Network Interface (RNI)	55
LDALI-3E101	CEA-709 DALI Controller for 1 DALI channel	61
LDALI-3E102	CEA-709 DALI Controller for 2 DALI channels	61
LDALI-3E104	CEA-709 DALI Controller for 4 DALI channels	61
LGATE-900	CEA-709 / BACnet Gateway	67
LP-33E100	L-Proxy CEA-709 Multiport Gateway	70
LIP-3ECTB	CEA-709/IP-852 Router, 1 x TP/FT-10, 1 x Ethernet Port (IP-852)	71
LIP-1ECTB	CEA-709/IP-852 Router, 1 x TP/XF-1250, 1 x Ethernet Port (IP-852)	71
LIP-33ECTB	CEA-709/IP-852 Router, 2 x TP/FT-10, 1 x Ethernet Port (IP-852)	71
LIP-3333ECTB	CEA-709/IP-852 Router, 4 x TP/FT-10, 1 x Ethernet Port (IP-852)	71
LIP-33ECRB	CEA-709/IP-852 Router with built-in redundancy, 2 x TP/FT-10, 1 x Ethernet Port (IP-852)	72
LS-33CB	L-Switch CEA-709 Router, 2 x TP/FT-10	74
LS-13CB	L-Switch CEA-709 Router, 1 x TP/XF-1250, 1 x TP/FT-10	74
LS-11CB	L-Switch CEA-709 Router, 2 x TP/XF-1250	74
LS-33300CB	L-Switch CEA-709 Router, 3 x TP/FT-10	74
LS-13300CB	L-Switch CEA-709 Router, 1 x TP/XF-1250, 2 x TP/FT-10	74
LS-13333CB	L-Switch CEA-709 Router, 1 x TP/XF-1250, 4 x TP/FT-10	74
LS-11333CB	L-Switch CEA-709 Router, 2 x TP/XF-1250, 3 x TP/FT-10	74

Technology Reference List

CEA-709, ISO/IEC 14908 – LONMARK System, continued

Order number	Configuration	Page
NIC852	Floating license via USB hardlock key, uses Ethernet port of PC to connect to a LONMARK IP-852 channel	75
NIC852-SW	Software License, Software activation with costs for one PC, uses Ethernet port of PC to connect to a LONMARK IP-852 channel	75
NIC709-PCI100	Connects to the PCI bus of a PC (3.3 V or 5.0 V), Supports the LONMARK TP/FT-10, TP/XF-1250, and TP/RS-485 channels	75
NIC709-USB100	USB-Interface, Connects to the USB port of a PC, Supports the LONMARK TP/FT-10, TP/XF-1250, and TP/RS-485 channels	75
NIC709-IP3E100	Remote network interface (RNI), PC connection via Ethernet/IP, Supports a LONMARK TP/FT-10 channel	75
NIC709-IP1E100	Remote network interface (RNI), PC connection via Ethernet/IP, Supports a LONMARK TP/XF-1250 channel	75
LT-03	Network terminator for 1 x TP/FT-10 or TP/LPT-10 (bus or free topology), 1 x Network Access Connector RJ45	77
LT-13	Network terminator for 1 x TP/FT-10 or TP/LPT-10 (bus or free topology) 1 x TP/XF-1250 (bus topology only)	77
LT-33	Network terminator for 2 x TP/FT-10 or TP/LPT-10 (bus or free topology)	77
LT-04	Network terminator for 1 x EIA-485 (bus topology), 1 x Network Access Connector RJ45	78
LT-B4	Network terminator for 1 x EIA-485 (bus topology) with biasing circuit (failsave biasing)	78
LPA-SET-USB	Set contains: Network Interface NIC709-USB100 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-USB100	79
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	79
LPA-SW	Protocol Analyzer Software for CEA-709 Networks, Network Interface NIC709 not included	79
LPA-IP-SW	Protocol Analyzer Software for IP-852 channels, supports semote LPA, NIC852 not included	79
NL220I	NL220 Installation, Network Management Tool, includes an LNS® Server and 64 node credits	81
NL220M	NL220 Maintenance, Network Management Tool, an LNS® Server not included	81
NL220 PRO	Bundle of NL220I and NLCSV, Includes an LNS® Server and 64 node credits	81
LNS Server	LNS® Server License	81
NLCREDIT	Credit fee per commissioned node (includes LNS® credit fee)	81
NLCSV	Plug-ins for NL220 Network Management Tool including NLGenerateFromCSV, NLBindingFromCSV, NLCommissionFromCSV, NLConfigurationFromCSV	81
NLFAC-I	NLFacilities Designer Suite, includes LNS® Server and 64 node credits	82
NLFACPRO-I	NLFacilities Professional Designer Suite, includes NLFAC-I plus NLCSV LNS® plug-ins and NLUTIL	82
NLOPC TE	PC-based OPC Server (OPC 2.0 and 3.0 standard), Based on LNS® TE (LNS® Server is not included)	83
NLOPCPRO TE	PC-based OPC Server (OPC 2.0 and 3.0 standard), Based on LNS® TE (LNS® Server is not included), includes NL220 in maintenance version NL220M	83
NLOPC MIP	PC-based OPC Server (OPC 2.0 and OPC 3.0 standard), OPC Server for non-LNS® applications with Microprocessor Interface Program (MIP), LNS® is not need	83
NLOPCPRO MIP	PC-based OPC Server (OPC 2.0 and OPC 3.0 standard), OPC Server for non-LNS® applications with Microprocessor Interface Program (MIP), includes NL220 in maintenance version NL220M	83

L-WEB System

Automation Server

Touch Panels

DALI Lighting Control

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ISO 16484-5 – BACnet

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