



Thorsten Reibel, Juergen Schilder, Ilija Zivadinovic – Global Application and Solution Team

November 2016

ABB GPG Building Automation Logic Controller ABA/S 1.2.1

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Agenda

- Logic Controller ABA/S 1.2.1
 - Introduction
 - Planning
 - Installation
 - Commissioning



ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Agenda

- Logic Controller ABA/S 1.2.1
 - Introduction
 - Planning
 - Installation
 - Commissioning



ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction

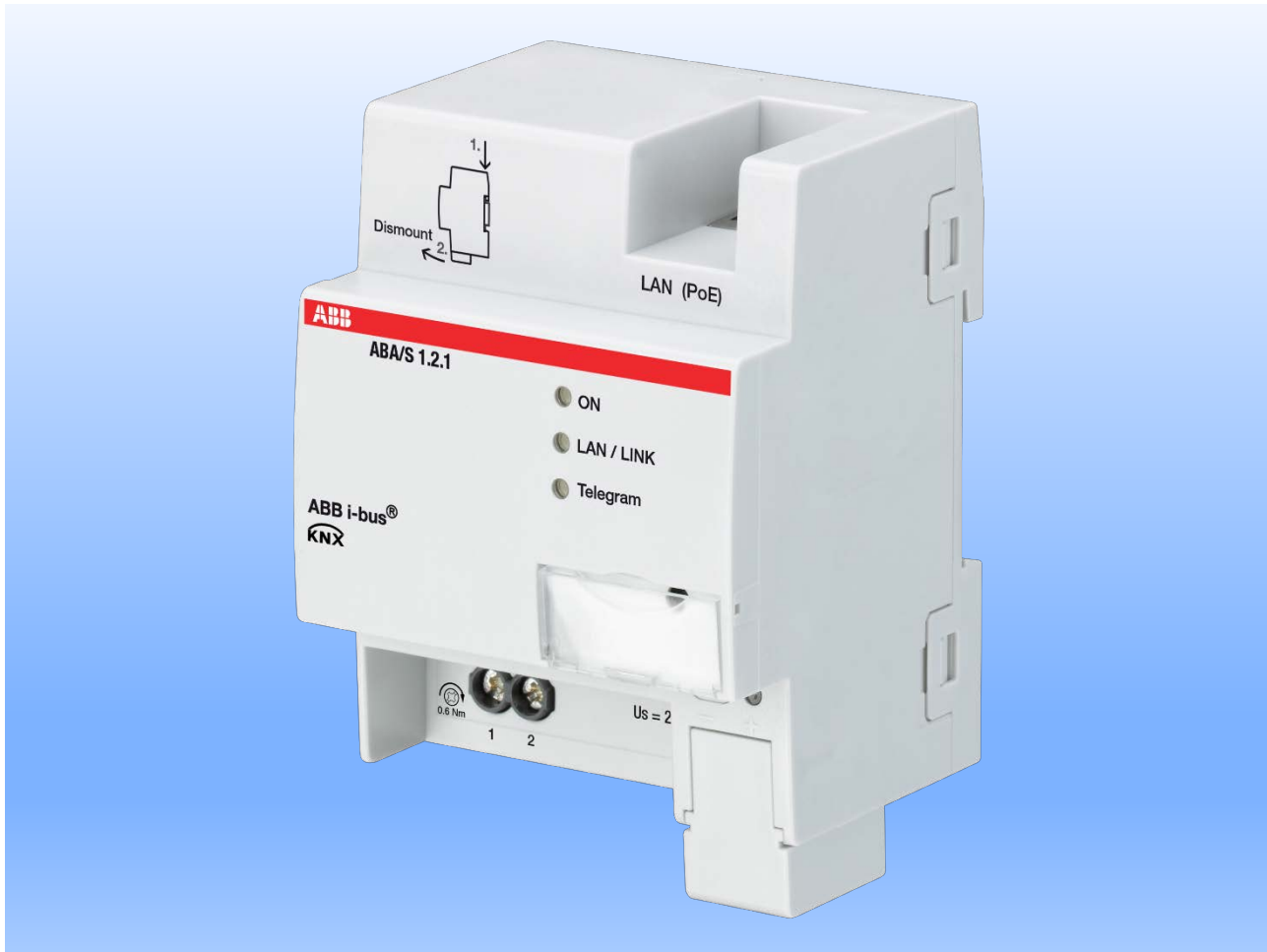
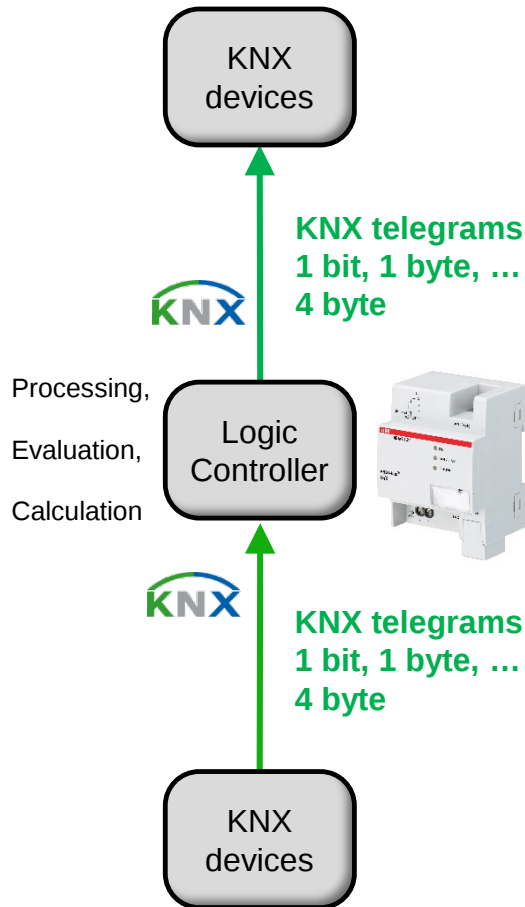


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction



What is a Logic Controller ?

- A Logic Controller provides numerous functions like logic, timer, mathematical functions, PID controller and more as a superior intelligence to implement powerful solutions with sensors and actuators in KNX building automation

Why do we need a Logic Controller ?

- The functional requirements are growing continuously in intelligent buildings, not always feasible with the existing KNX devices, but can be covered by the Logic Controller efficiently

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction



What is the Logic Controller made for ?

- With the huge number of individual functional blocks within the Logic Controller almost any kind of application in a KNX project can be empowered or even put into practice at all, e.g.
 - Lighting – with time and logic
 - HVAC – with controller
 - Security – with additional alarming
- Special functions like value comparison or mathematical functions needed multiple times in a project with demand for a economical implementation in terms of hardware, commissioning and maintenance

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction

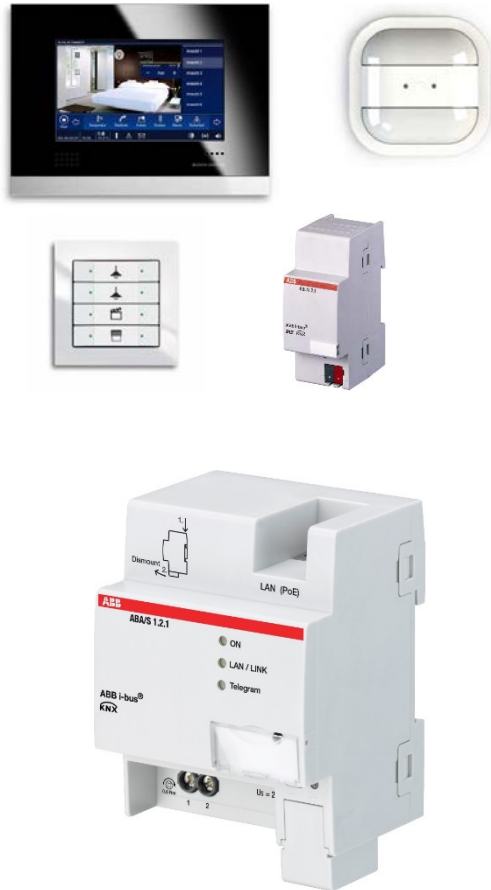


Is the Logic Controller needed in every project ?

- KNX devices used in projects offer nowadays powerful applications with parameters for many functions
- Nevertheless it is often necessary to achieve functionality which requires additional intelligence
- Here the Logic Controller comes into play

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction



Is the Logic Controller the only device for the functionality mentioned ?

- There are a few KNX devices on the market with similar (not the same !) functions. For instance ABB's components like presence detector or selected dimmers offer additional independent functions like logic. It is a case by case decision what to use.
 - Compared with other components the Logic Controller offers
 - Graphical environment
 - More and all kind of functions
 - A dedicated product for the task
- ... so in many cases the right choice

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Introduction



Is it necessary to install the Logic Controller from the beginning of a project ?

- As long as the functionality of the installed devices is sufficient no need to install it immediately
- The Logic Controller needs bus connection and power supply only, so it is easy to install later
- Often it is recommended to include a logic controller from the beginning to be quickly prepared for expected functional extensions

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology - Hardware

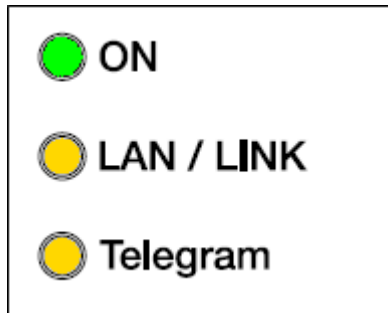


Logic Controller ABA/S 1.2.1

- Modular installation device (MDRC)
- Width: 4 MW
- Power supply:
 - 24 V DC or PoE (LAN connection)
- Bus connection terminal behind cover
- LAN connection
 - PoE (Power supply), WebUI, Download Application, Monitor
- LEDs (ON, LAN/Link, KNX telegram)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology - Hardware



LED's

▪ ON

- Flashes slowly while the system is booting or Logic engine stopped
- Lit up continuously when the system has been initialized permanently
- Flashes rapidly when an error has occurred in the logic processing or the logic processing was stopped

▪ LAN/LINK

- Lit up continuously when the auxiliary voltage is present and the router is connected to an IP network
- Flashes with data traffic via LAN

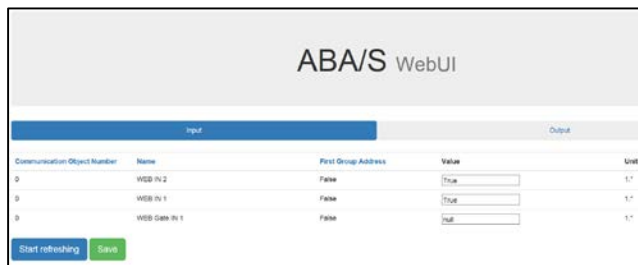
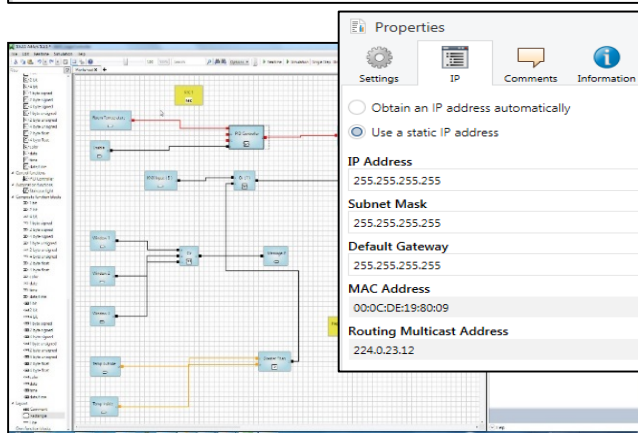
▪ Telegram

- When booting is complete, lit up continuously when the auxiliary voltage is present and the router is connected to KNX
- Flashes with data traffic via KNX/TP

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology - Software

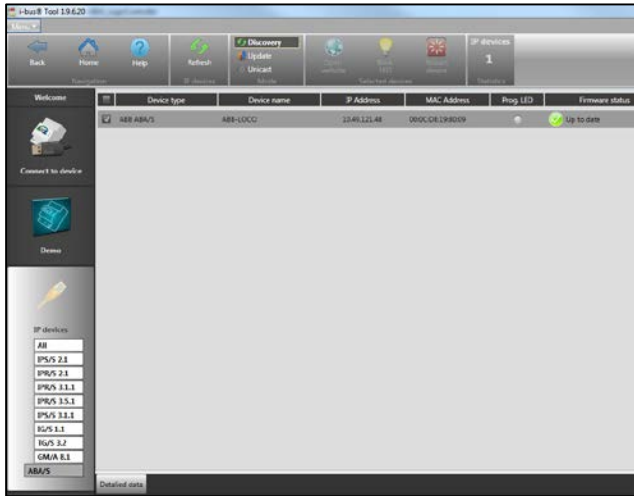
Number	Name	Object Function	Description	Group Address	Length
502	Device clock	Request object			1 bit
503	Device clock	Date			3 bytes
504	Device clock	Time			3 bytes
505	Device clock	Date/Time			8 bytes



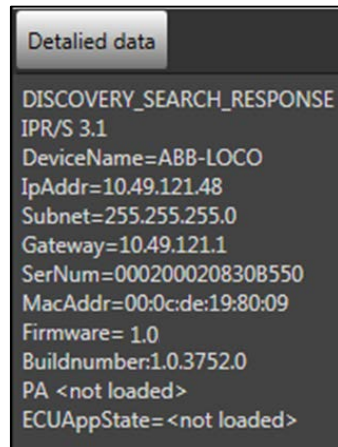
- Application for ETS4 and ETS5 (not ETS3 any more !)
- Application fully integrated in ETS, no separate software required
- User friendly graphical environment in ETS
- Optional: Accessing selected functions via Web UI, only web browser needed, covering partly typical i-bus tool functionality (Simulation and testing)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology - Software



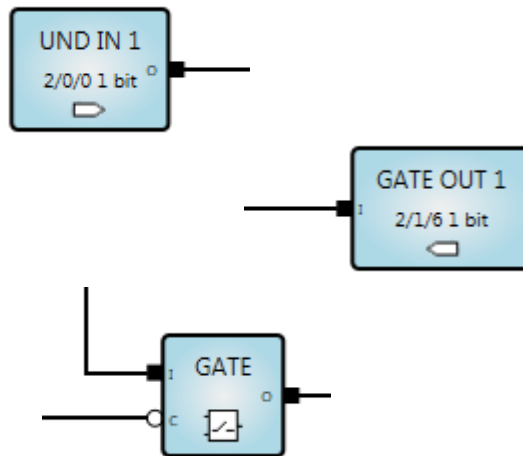
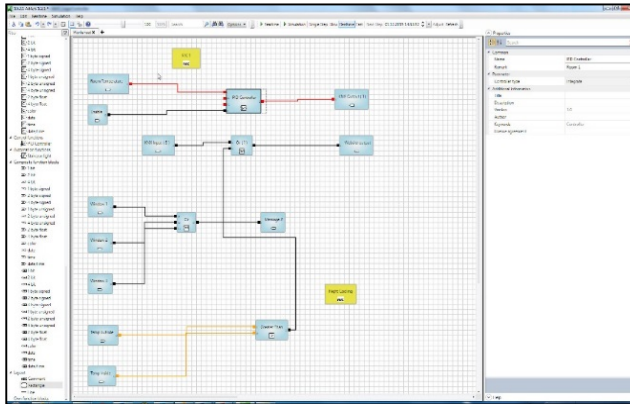
- **Integration in the i-bus® Tool**
- Detection of connected Logic Controller with display of data
 - Device Name, Firmware
 - IP Data: IP address, MAC address
- Firmware update possible



- Operation and test via ETS Plug in and Web UI

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology - Software



Description	Maximum Number
Functional Elements	3000
KNX In/Outputs	500
Group Addresses	2000
Web UI In/Outputs	60

- Functional Element: Any type which is available
- KNX IN/Outputs → Group Objects
- Group Addresses: each address counts, also identical
- Web UI: Input and indication of values via Web browser

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology – Software ETS

The screenshot displays the ABB ETS software interface. On the left, the 'Project Root' tree shows a hierarchy: Buildings > Dynamic Folders > Trades > Topology > Dynamic Folders > 4 New area > 4.4 New line > 4.4.222 ABA/S 1.2.1. The main table lists objects with columns: Number, Name, Group Address, Object Function, Length, and Data Type. The table contains four rows of 'Device clock' objects. An orange box highlights the first two rows (502 and 503). An orange arrow points from the text 'Standard group object to request and receive date and time from a time master, for synchronization of internal clock' to this box. Another orange box highlights the 'Properties' panel on the right, specifically the 'IP' tab and the 'Obtain an IP address automatically' option. An orange arrow points from the text 'Option to achieve IP address, automatically or fixed' to this box.

Number	Name	Group Address	Object Function	Length	Data Type
502	Device clock	2/3/0	Request object	1 bit	trigger
503	Device clock	2/2/0	Date	3 bytes	date
504	Device clock	2/2/1	Time	3 bytes	time of day
505	Device clock		Date/Time	8 bytes	date time

Properties panel (IP tab):

- ☐ Obtain an IP address automatically
- ☒ Use a static IP address
- IP Address: 255.255.255.255
- Subnet Mask: 255.255.255.255
- Default Gateway: 255.255.255.255
- MAC Address: 00:0C:DE:19:80:09
- Routing Multicast Address: 224.0.23.12

Standard group object to request and receive date and time from a time master, for synchronization of internal clock

Option to achieve IP address, automatically or fixed

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology – Software ETS

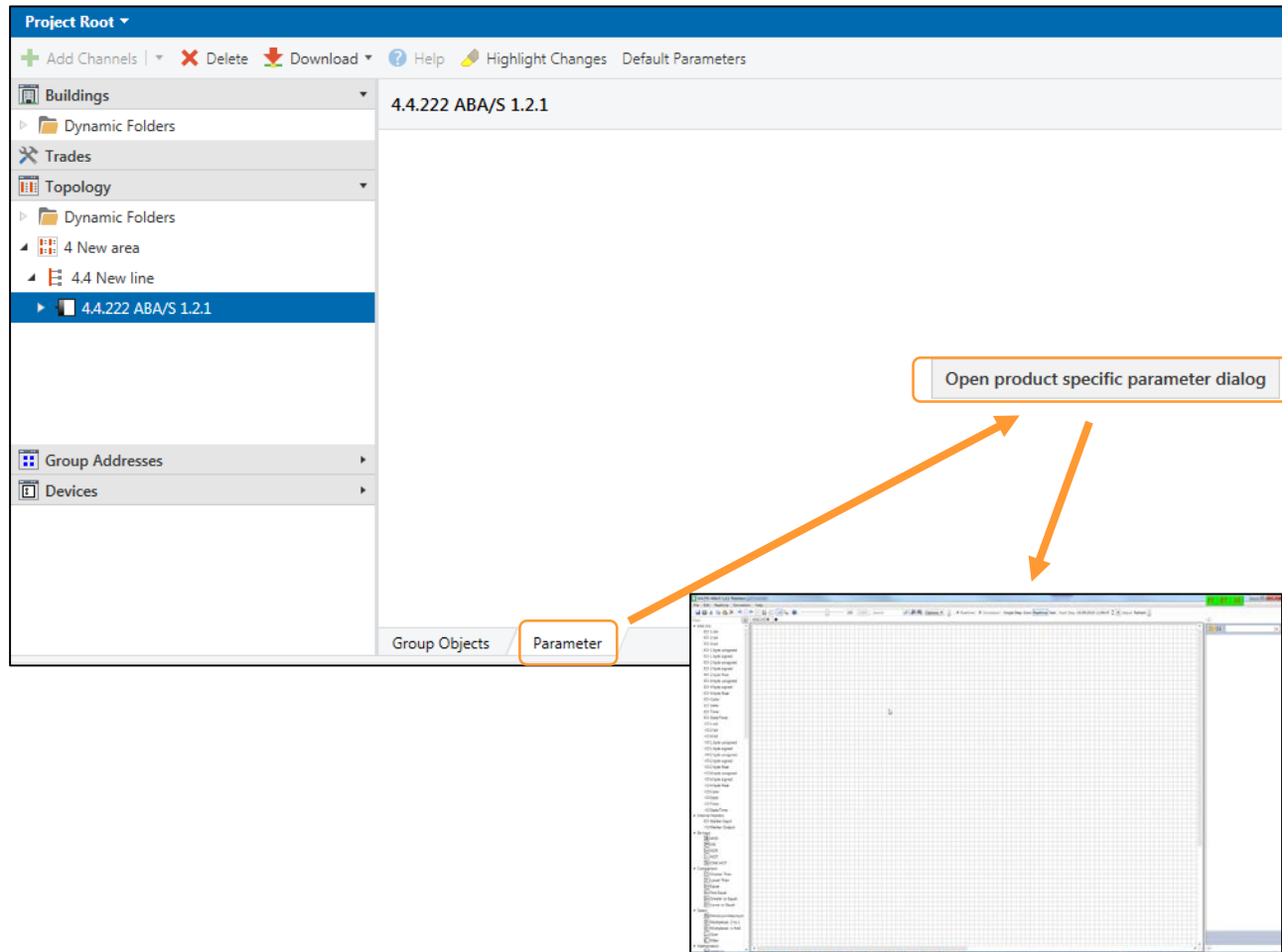


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology – Software ETS

The screenshot displays the ETS software interface for the ABB i-bus KNX Logic Controller ABA/S 1.2.1. The interface includes a menu bar (File, Edit, Realtime, Simulation, Help), a toolbar, and a status bar. The main workspace is a grid where logic elements are placed and connected. On the left, a 'Filter' pane lists various input and output types (e.g., 1 bit, 2 bit, 4 bit, 1 byte unsigned, 2 byte signed, 4 byte float, Color, Date, Time, Date/Time). The central workspace contains a logic diagram with the following elements and connections:

- Input:** Two 'UND IN' blocks (2/0/0 1 bit) are connected to an 'AND' block (2/0/0 1 bit).
- Function Element:** The 'AND' block is connected to a 'GATE' block (2/0/2 1 bit).
- Output:** The 'GATE' block is connected to a 'FILTER' block (2/1/5 1 bit), which is then connected to a 'GATE OUT 1' block (2/1/0 1 bit).
- Comments:** A 'Send always' comment is placed above the 'UND OUT 1' block, and a 'Release with '0'' comment is placed below the 'GATE' block.

Annotations with orange dashed arrows point to the following components:

- Menu and Functions:** Points to the top menu bar.
- Worksheet:** Points to the main workspace grid.
- Simulation:** Points to the 'Simulation' button in the toolbar.
- Properties (Parameter) of a Block:** Points to the 'Properties' pane on the right, which shows details for the selected 'GATE' block, including Name, Remark, Parameter, and Additional information.
- Help for selected element and online manual:** Points to the 'Help' button in the bottom right corner.
- In/Outputs, Function Elements positioned via drag and drop:** Points to the 'Filter' pane on the left.
- Grid:** Points to the grid lines in the main workspace.

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering power voltage failure min 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Graphical User Interface

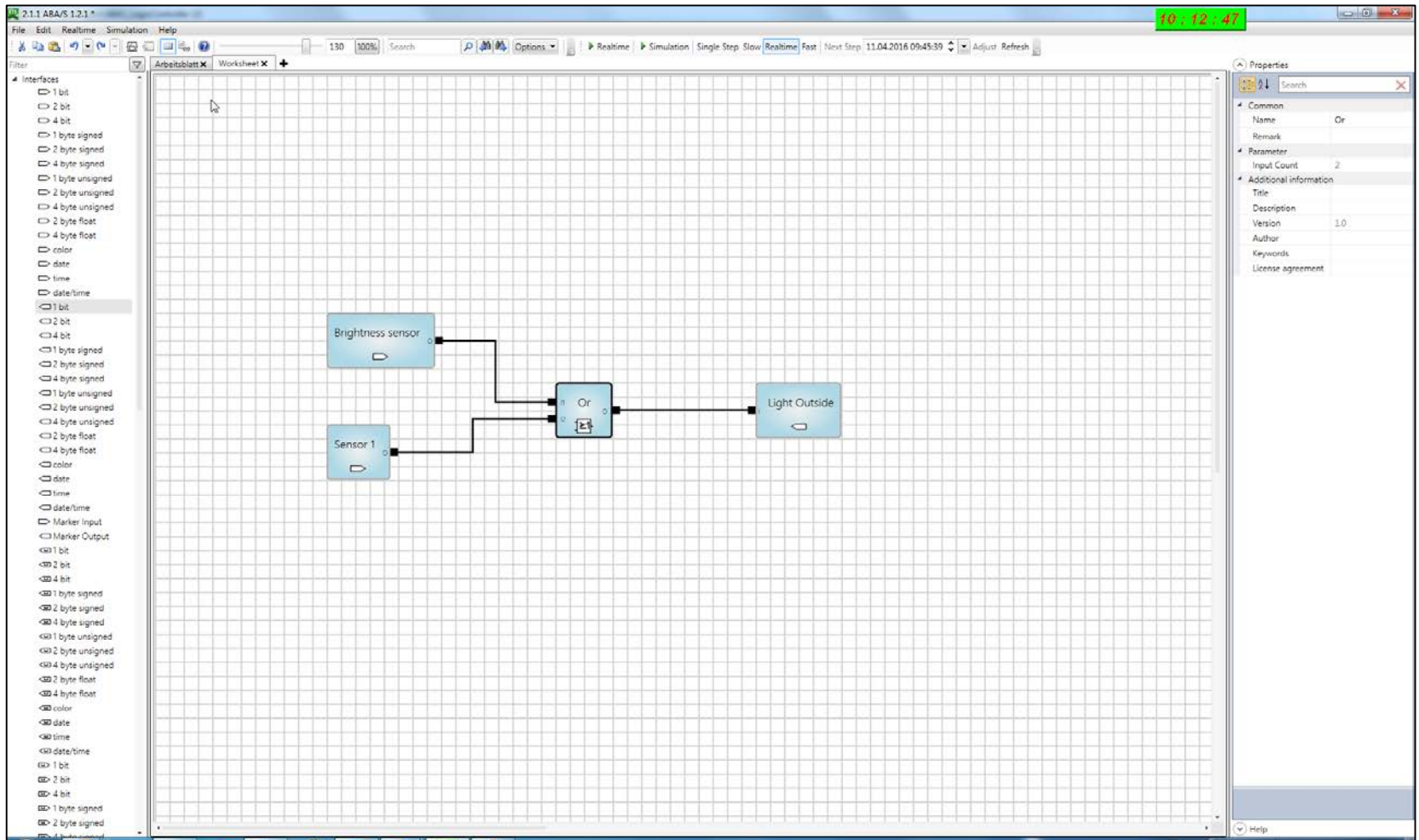


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering power voltage failure min 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Function Elements

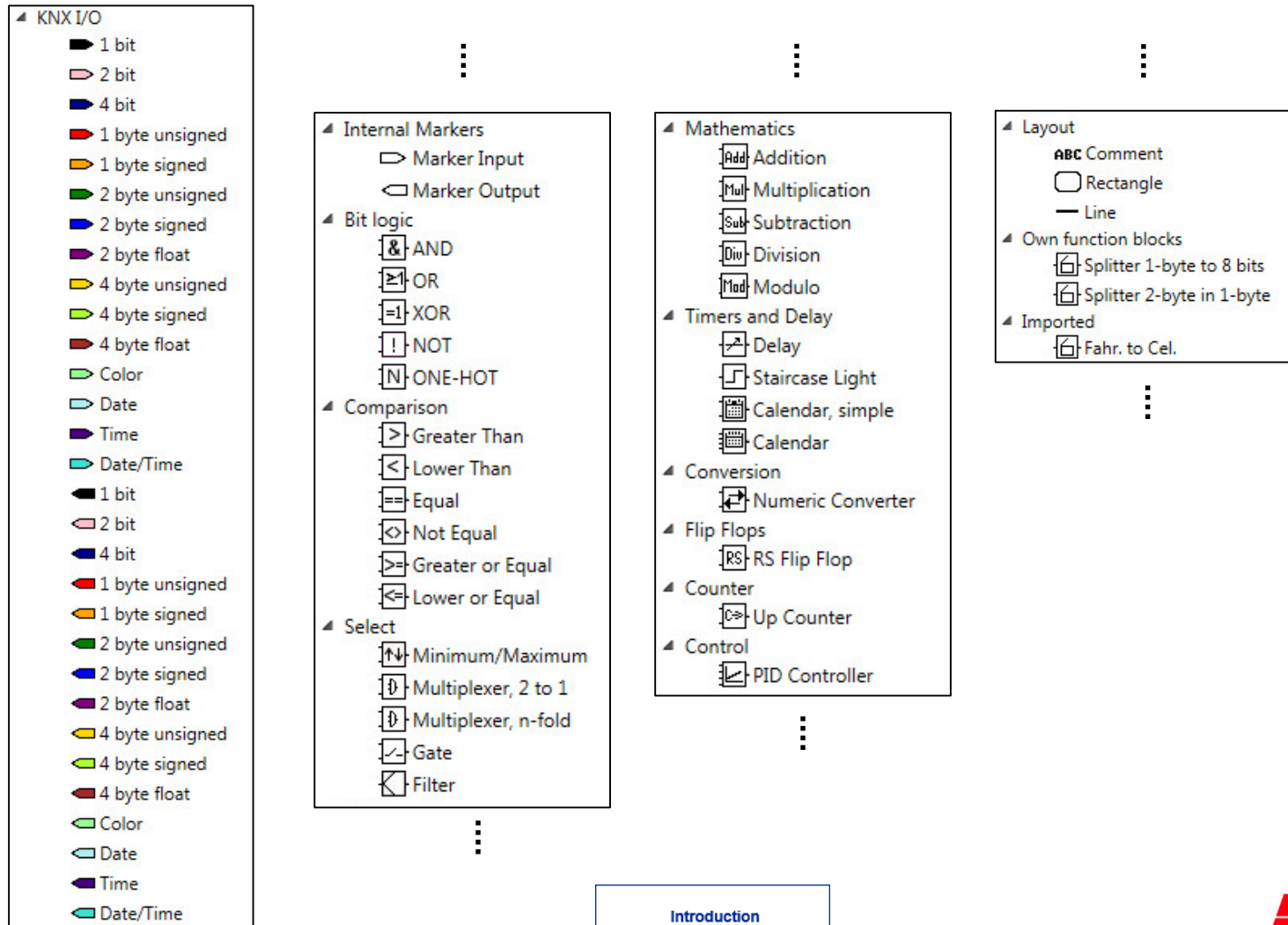


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering power voltage failure min 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Function Block

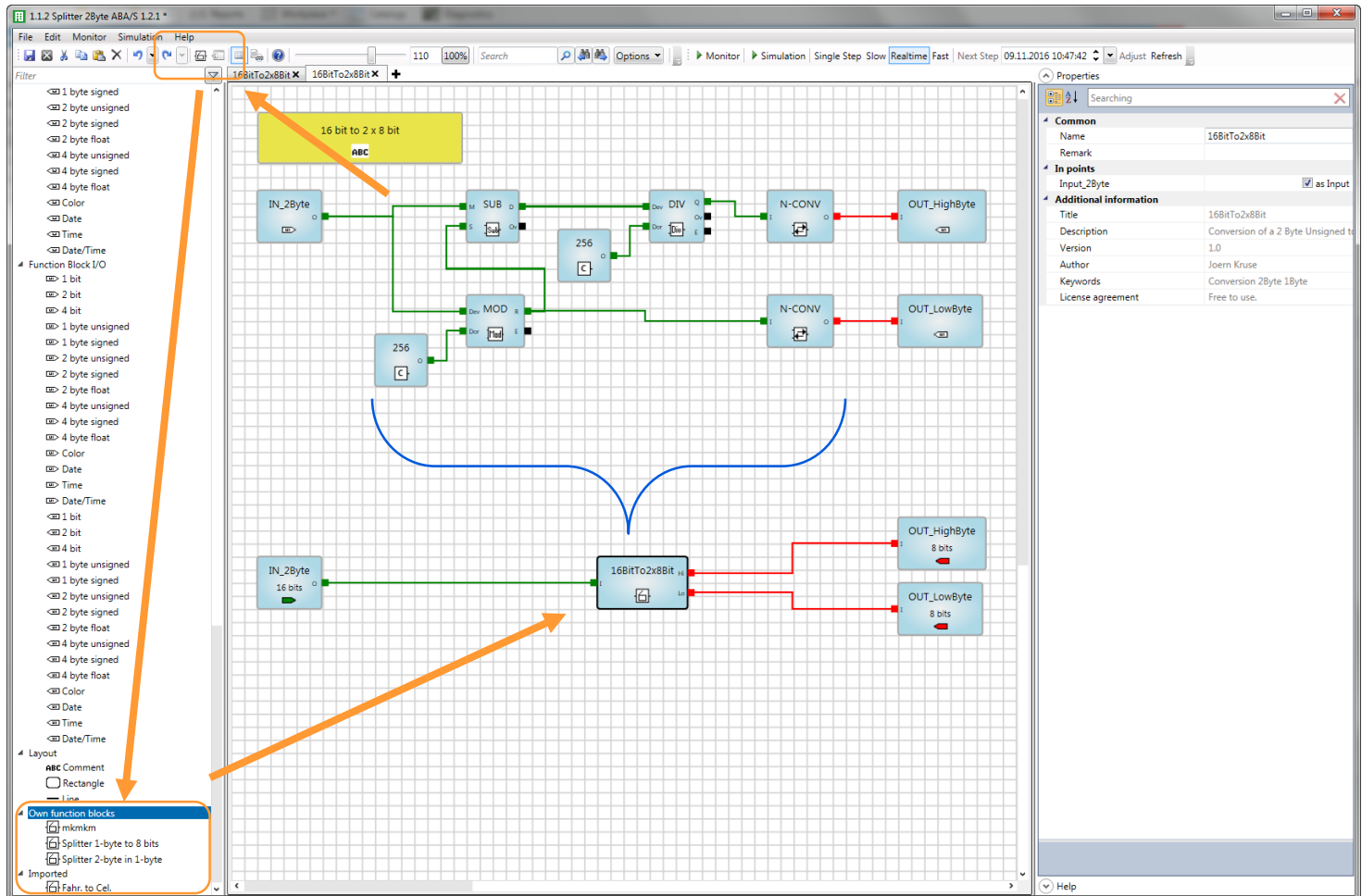


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering power voltage failure min 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Simulation

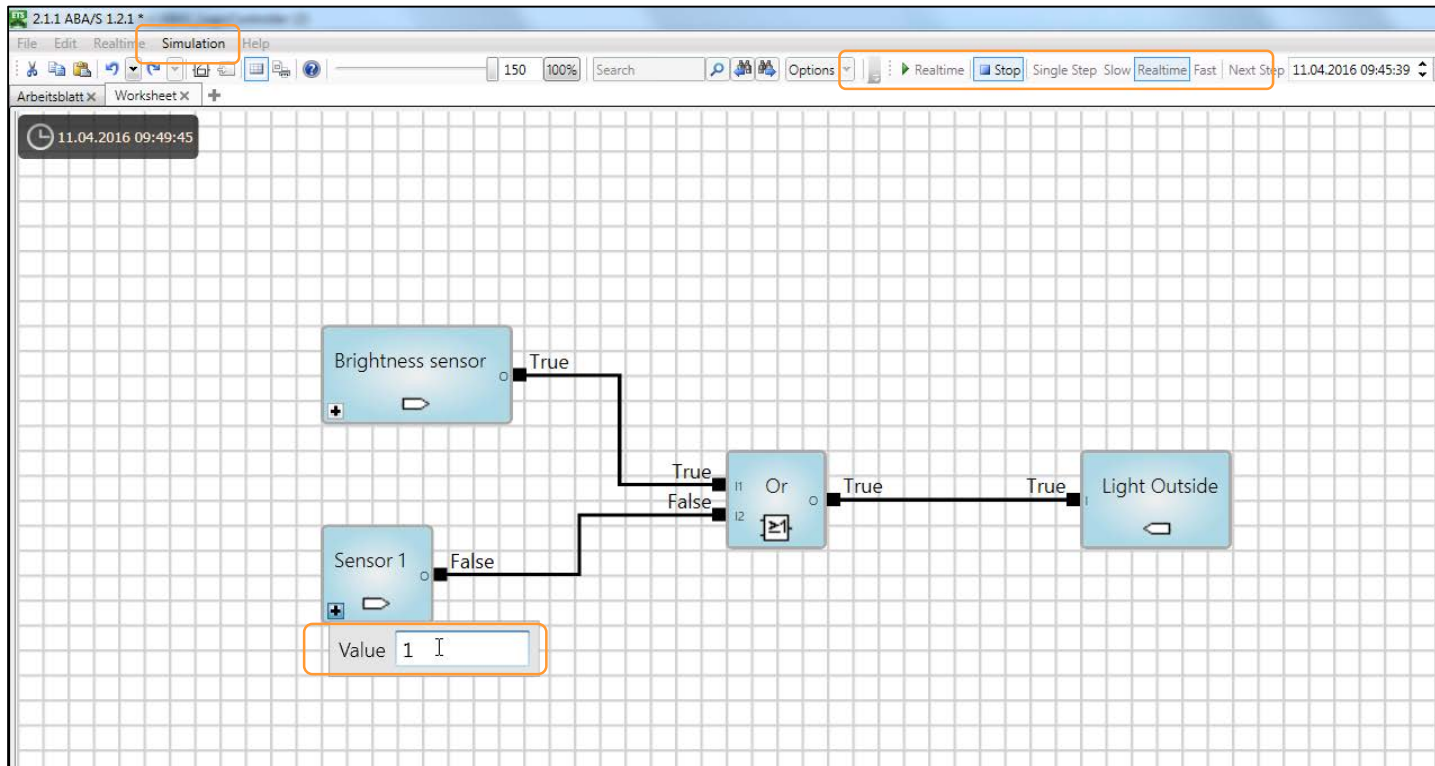


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering power voltage failure min 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 WebUI

ABA/S WebUI

Input

Output

Communication Object Number	Name	First Group Address ▼	Value	Unit
0	WEB Gate IN 1	False	null	1."
0	WEB IN 1	False	True	1."
0	WEB IN 2	False	False x	1."

Live update stopped until save changes

Stop refreshing

Save

- 60 In- or Outputs accessible via WebUI for operation or overwriting of values, e.g. change of a comparison value or change of parameter of a PID controller
- Please note: Not comparable with a visualisation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Features



- Graphical User Interface →
Transparent and user friendly
- Various function elements →
for all requirements
- Definition of composite function blocks →
own KnowHow, can be used multiple
- Offline simulation and online monitoring →
safe commissioning and operation
- LAN and WebUser Interface →
Access by customer, fast download
- Buffering supply voltage failure min. 20 s →
safe operation

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Features



Logic Controller | Help

[Home](#)

Persisting values

Power failure

If the power (24 V DC or PoE) fails, certain values are saved. The device has an internal power backup of about 20 to 60 seconds (depending on processing power).

As soon as the device detects a power failure, it saves the values and restores them when the power is back on.

If there is a brief drop in voltage where the power backup is sufficient to keep the device working, the saved information is discarded on voltage recovery.

To see which data are saved, please refer to the descriptions for the relevant [Function Elements](#).

Bus voltage failure

If the bus voltage fails but the power is still on, all information is retained.

On bus voltage recovery, no telegrams are sent. The KNX inputs react as per their parameters.

ETS download

After an ETS download, all internal information is saved and restored. This also applies to internally calculated values (e.g. staircase lighting time and the integral value of the PID controller).

The KNX inputs react as per their parameters.

If an element was removed from the previous parameterization, its internal value is discarded.

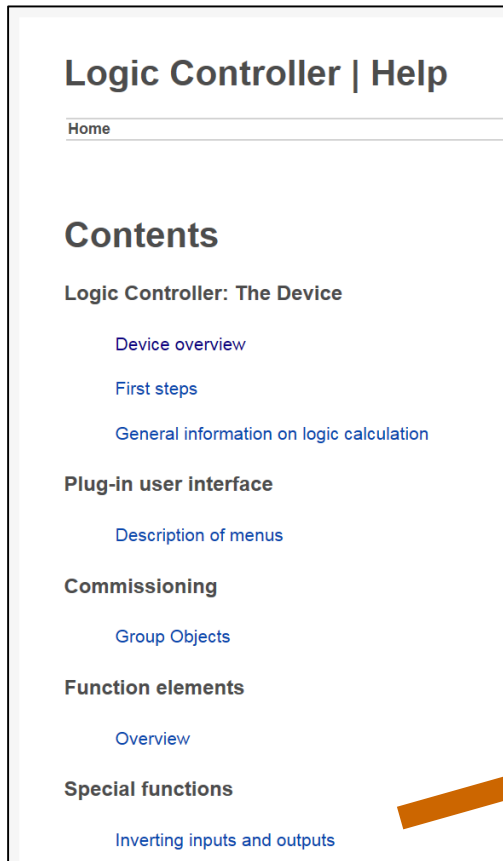
If an element was added, its internal value will be set to the default (usually 0).

Unloading

Unloading the device via ETS removes all internal information and stops the application (Logic Controller).

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Marketing Material



- Online Manual on ABB homepage and via link in ETS application

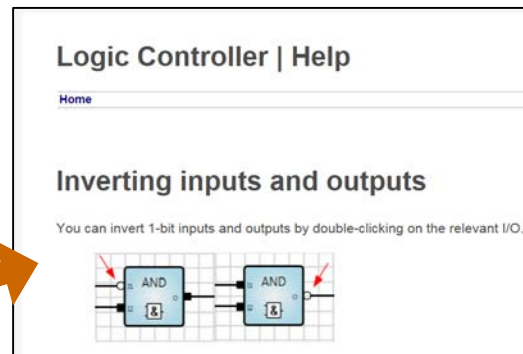


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Marketing Material

ABB

Smart Home and Intelligent Building Control
ABB i-bus® KNX

Product



Product: ABA/S1.2.1
Logic Controller

Provides extensive logic functions. The logic editor is integrated into the ETS. Up to 3000 logic gates are possible. Simulation for testing. User-defined function blocks can be created and saved. Requires 24 V DC auxiliary voltage or PoE alternatively.

Type	Detail	Order Code	EAN	MW
ABA/S1.2.1		2CDG 110 192 R0011		4

Documentation

- Product Manual (Online) (German)
- Product Manual (Online) (English)
- Product Manual (Online) (French)
- Technical Data (.PDF) (German)
- Technical Data (.PDF) (English)
- Installation and Operating Instructions (.PDF)
- Photo, high resolution (.JPG)
- Photo, low resolution (.JPG)

Related Products

NT/S24.800

[back](#) last updated: 2016-11-03, 20:19:45

Further data and files on ABB homepage:

- Application Software ETS4 and ETS5
- Technical Data
- Installation and Operating Instructions
- Specification Text
- Product Manual (online)
- Presentation Slides
- CE Declaration of Conformity
- ...

... coming soon

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Market Introduction

- Market Launch: Week 46/2016

Ident No.	Type	Status
2CDG 110 192 R0011	ABA/S 1.2.1 Logic Controller, MDRC	New



ABA/S 1.2.1 Logic Controller

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Complete Range for Logic Control



Logic Module LM/S 1.1	Application Unit Logic ABL/S 2.1	Application Unit Time ABZ/S 2.1	Logic Controller
149,50 €	599,00 €	438,50 €	699,00 €

Important: Logic Controller ABA/S 1.2.1 does not replace any existing device handling logic, time functions or other superior intelligent functions !

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Agenda

- Logic Controller ABA/S 1.2.1
 - Introduction
 - Planning
 - Installation
 - Commissioning



ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Planning

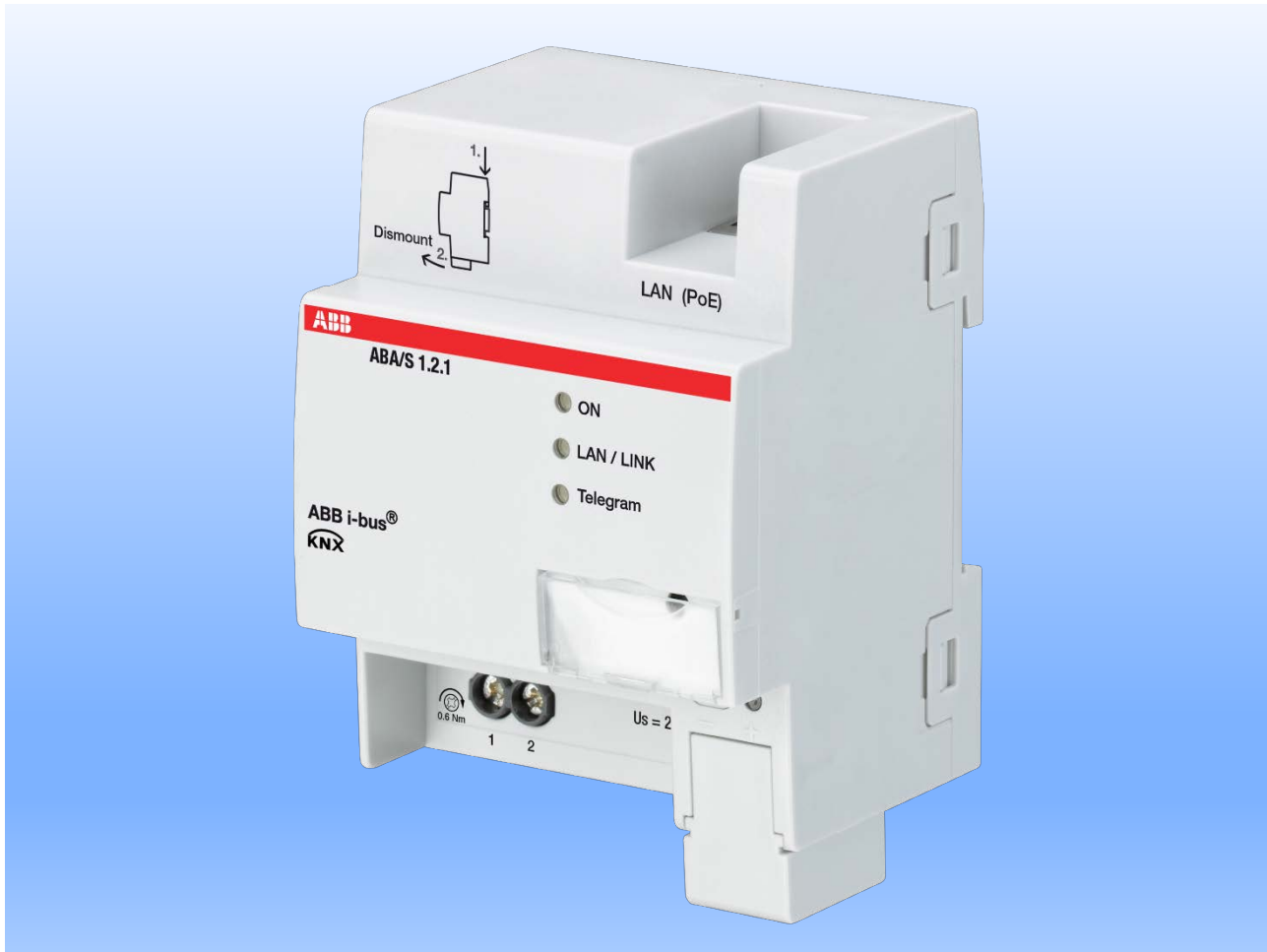


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Planning

- The applicable standards, directives, regulations and specifications of the local country have to be observed when planning and setting up electrical installations
- KNX International Standard
 - ISO/IEC 14543 and EN 50090
- PoE (IEEE 802.3 af class 1)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Hardware

Technical data (extract)

Auxiliary voltage (required)	24 V DC (-15% / +20%) or PoE (IEEE 802.3 af class 1) 3.0 W max.
Power loss	3.0 W max.
Current consumption Auxiliary voltage	60 mA typical 120 mA peak current
Current consumption KNX	< 10 mA
Connection terminals	
Auxiliary voltage	Screw terminals 0.2...2.5 mm ² fine stranded, 0.2...4 mm ² single core
Tightening torque	Max. 0.6 Nm
KNX connection	Bus connection terminal
LAN connection	10/100 BaseT, IEEE 802.3 via RJ45 plug
Temperature range in operation (T _u)	- 5 °C ... + 45 °C
Storage	- 25 °C ... + 55 °C
Transport	- 25 °C ... + 70 °C
Atmospheric pressure	Atmosphere up to 2,000 m
Maximum air humidity	95 %, no condensation allowed
Protection degree	IP 20 according to DIN EN 60 529
Protection class	II according to DIN EN 61 140
Overvoltage category	III according to DIN EN 60 664-1
Pollution degree	2 according to DIN EN 60 664-1

- From the installation point of view the Logic Controller is easy to plan
- No classical in/outputs to be observed
- Power supply 24 V DC or PoE
- Space in DB (4MW)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Software

Description	Maximum Number
Logic Elements	3000
KNX In/Outputs	500
Group Addresses	2000
Web UI In/Outputs	60

- Is a ABA/S necessary or possible to use other solutions like ABL/S 2.1 ?
- Planning concerning software and capacity
 - Which functions ?
 - Directly available or to be created ?
 - How many ?
- Often one device is sufficient due to the big number of functions per device
- In case of known comprehensive functionality (quantity) more than one ABA/S might be required

ABB i-bus[®] KNX Logic Controller ABA/S 1.2.1 Software

Description	Maximum Number
Logic Elements	3000
KNX In/Outputs	500
Group Addresses	2000
Web UI In/Outputs	60

- Decentralized installation to reduce bus traffic can be considered
- Practically the number of In/Outputs could be the limit (500 KNX IO's)
- In case of expected but in the planning phase not yet known functionality a Logic Controller should be budgeted already
- Please note: Commissioning can take some time, to be considered (Costs and time)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Software



- Summary for Planner:

The Logic Controller ABA/S 1.2.1 is with its extraordinary capability for almost every functional requirement the right choice.

Simple installation, clear and user friendly commissioning with graphical environment in the ETS, a dedicated hardware for the task it was made for with direct connection to KNX TP in the line ensures a successful implementation and a well running solution.

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Agenda

- Logic Controller ABA/S 1.2.1
 - Introduction
 - Planning
 - Installation
 - Commissioning



ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Installation

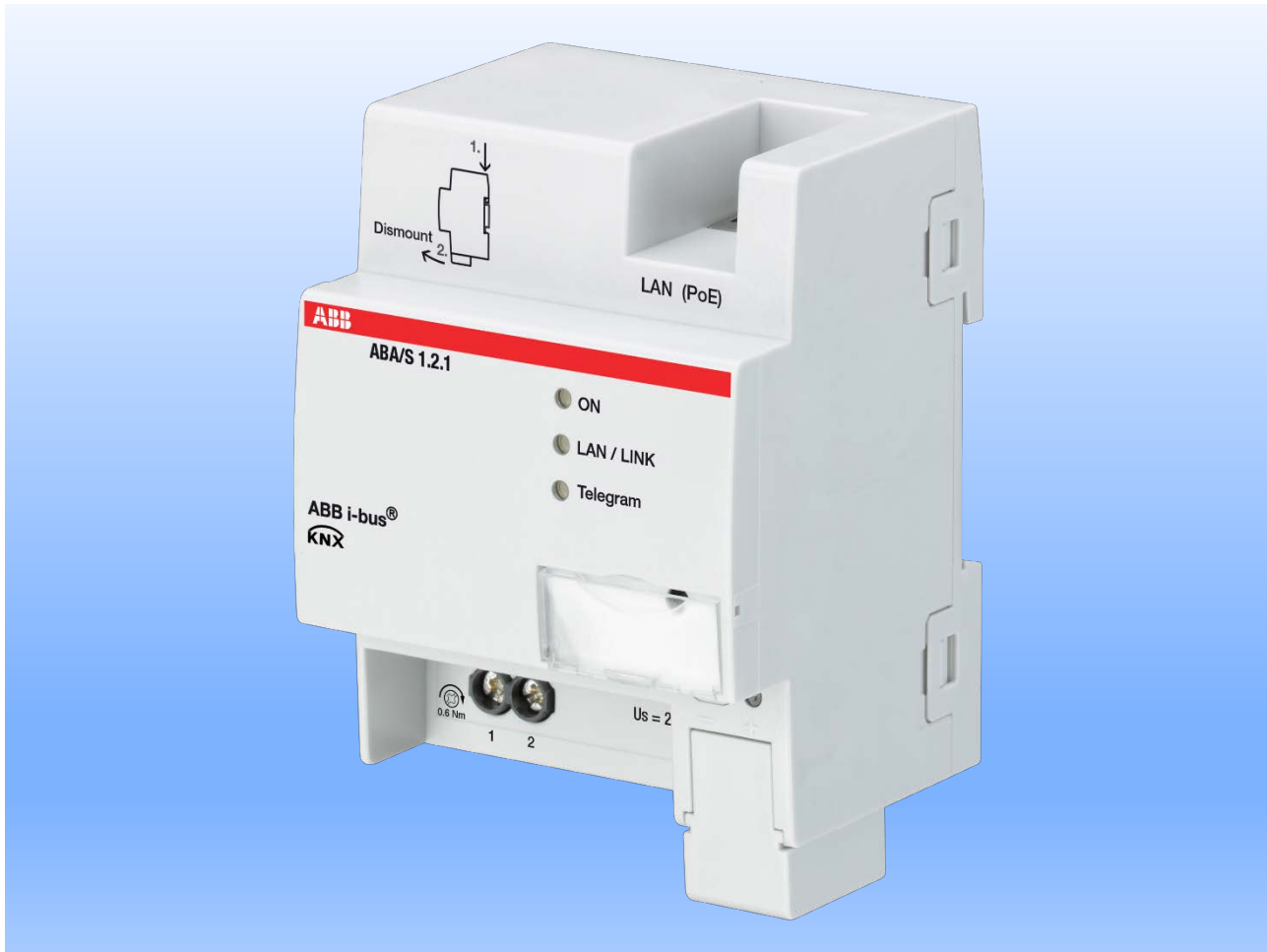


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Installation



Montage- und Betriebsanleitung
Installation and Operating Instructions
Mode d'emploi
Instrucciones de montaje de servicio
Istruzioni per l'uso
Montage- en bedieningshandleiding
Instrukcja montażu i eksploatacji
Руководство по монтажу и эксплуатации
安装和操作手册

ABA/S 1.2.1

DE Logic Controller
EN Logic Controller
FR Contrôleur logique
ES Controlador lógico
IT Controllore logico
NL Logica Controller
PL sterownik logiczny
RU Логический контроллер
CN 逻辑控制器

ABB i-bus® KNX
2CDG941180P0001



Logic Controller | Help

Home

Contents

Logic Controller: The Device

Device overview

First steps

General information on logic calculation

Plug-in user interface

Description of menus

Commissioning

Group Objects

Function elements

Overview

Special functions

Inverting inputs and outputs

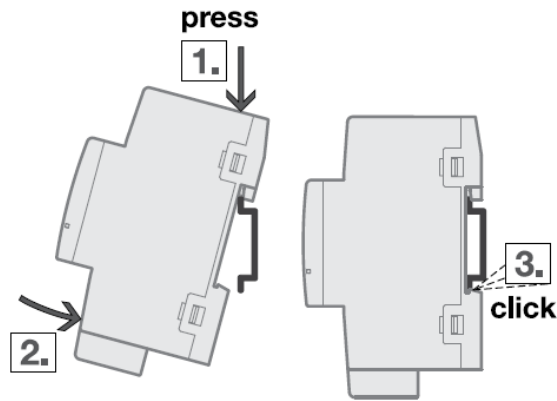
- Warning! Hazardous voltage! Installation by person with electro technical expertise only
- The appropriate standards, directives, regulations and specifications must be observed when planning and setting up electrical installations
- The device must not be operated outside the specified technical data
- A detailed description of Installation and commissioning can be found in the technical documentation and Installation and Operating Instructions of the device

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Installation



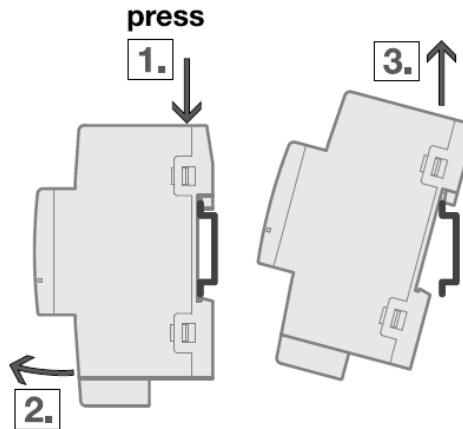
- The device is suitable for installation in distribution units or small housings on a 35 mm mounting rail according to EN60715 (any position)
- Accessibility of the device for the purpose of operation, testing, visual inspection, maintenance and repair must be ensured
- Power supply 24 V DC via screw terminals
- The connection to the KNX is implemented using the supplied bus connection terminal
- The connection to the IP network is established using an RJ 45 plug

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Installation



- Thanks to the new way to snap KNX devices from ABB on the rail in a distribution board especially dismounting is very simple without screwdriver and thus user friendly

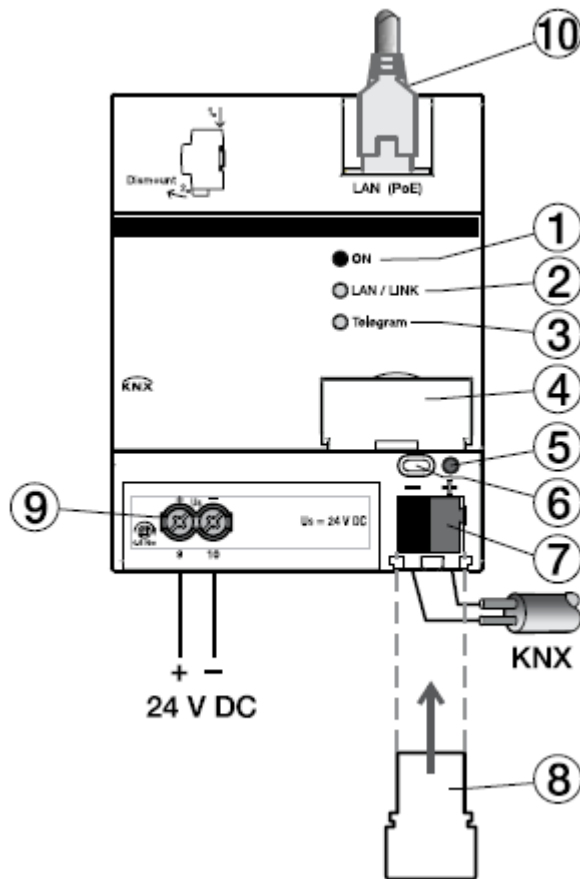
- Snap onto mounting rail



- Remove from mounting rail

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Connections

Connection diagram



No.	
1	LED ON
2	LED LAN / LINK
3	LED Telegram
4	Label carrier
5	Programming LED
6	Programming button
7	Bus connection terminal
8	Cover for bus connection terminal
9	Supply 24 V DC
10	LAN Connection

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Display/Operating elements

LED	Function	Description
ON (green)	ON	System has been initialized permanently
	Flashing slowly	System is booting
	Flashing quickly	Error has occurred in the logic processing or the logic processing was stopped
LAN / LINK (yellow)	ON	Auxiliary voltage is present and device is connected to an IP network
	Flashing	Data traffic via LAN
Telegram (yellow)	ON	Booting complete, auxiliary voltage present and device is connected to KNX
	Flashing	Data traffic via KNX/TP
Programming button	Press	Assignment of the individual address
Programming LED (red)	ON	The LED comes on when the Programming button is pressed, in order to assign a individual address

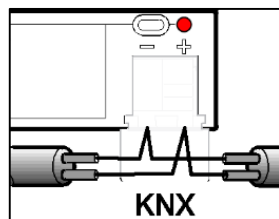


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Installation steps

- De-energize the electrical plant and prevent unintentional reclosing of the electrical plant
- Snap device onto mounting rail
- Connect the cables for
 - Operating voltage (if no supply via LAN with PoE)
 - KNX
 - LAN connection (if necessary → power supply via PoE, Web UI, i-bus® tool, Online monitoring, Application download)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Installation steps

- Switch on operating voltage and KNX
→ Start up of the device
 - Start up process runs and finally (after < 1 min) all LED's are on or flash in case of traffic (KNX or IP). See slide 'Installation – Display/Operating elements'
- Logic Controller is ready for operation and commissioning with i-bus tool and ETS

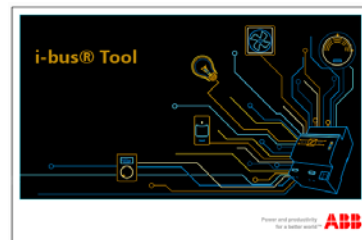
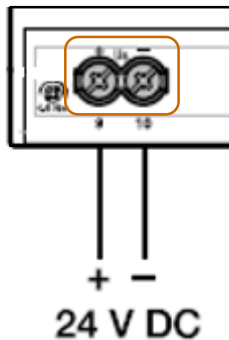
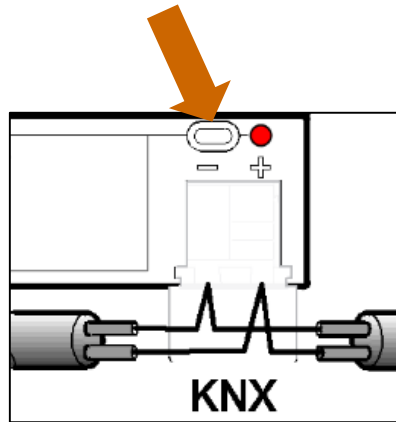


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Testing and troubleshooting



Test KNX

(Condition: supply voltage / PoE OK)

- Press “Programming button”
→ Programming LED lights red
KNX is OK, press again to switch off the LED

→ Programming LED does not light:
KNX failure

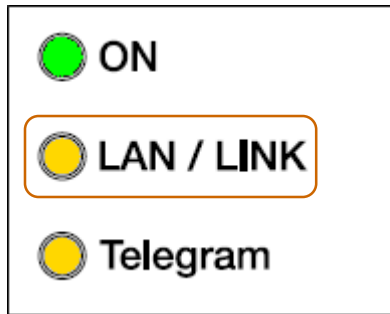
Check whether KNX is available (e.g. using a digital meter and measure the bus voltage between the red and black core, 21-30 V DC)

Test supply voltage 24 V DC

- Use a digital meter and measure the voltage between terminal 1 and 2

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Testing and troubleshooting



Test IP Network

- LED LAN/LINK
 - ON (yellow), network connected, no traffic
 - Flash (yellow), network connected, IP traffic
 - OFF, no network connected

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Agenda

- Logic Controller ABA/S 1.2.1
 - Introduction
 - Planning
 - Installation
 - Commissioning



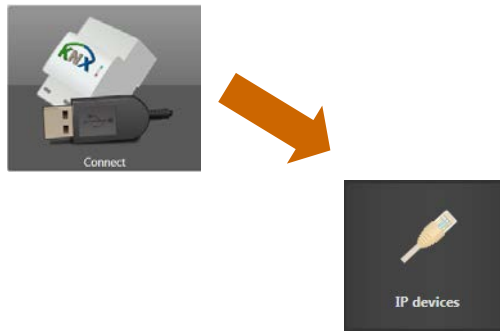
ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Commissioning



ABB i-bus® KNX Logic Controller ABA/S 1.2.1

i-bus® Tool



- For Firmware update or if IP data (e.g. IP address for Web UI access) is needed
- PC with i-bus® tool has to be linked via IP connection of ABA/S
- After Start of i-bus® tool click on → 'Connect' and → 'IP devices'
- All supported ABB IP devices will be displayed

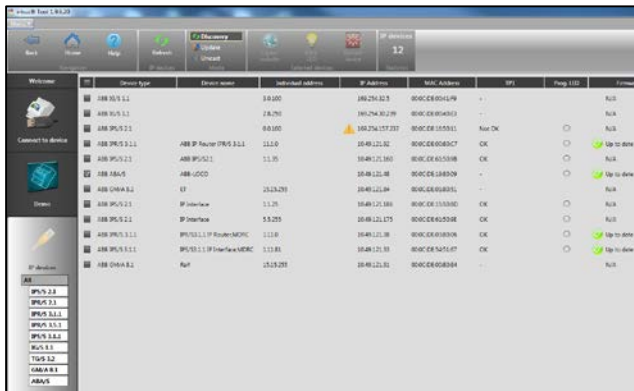
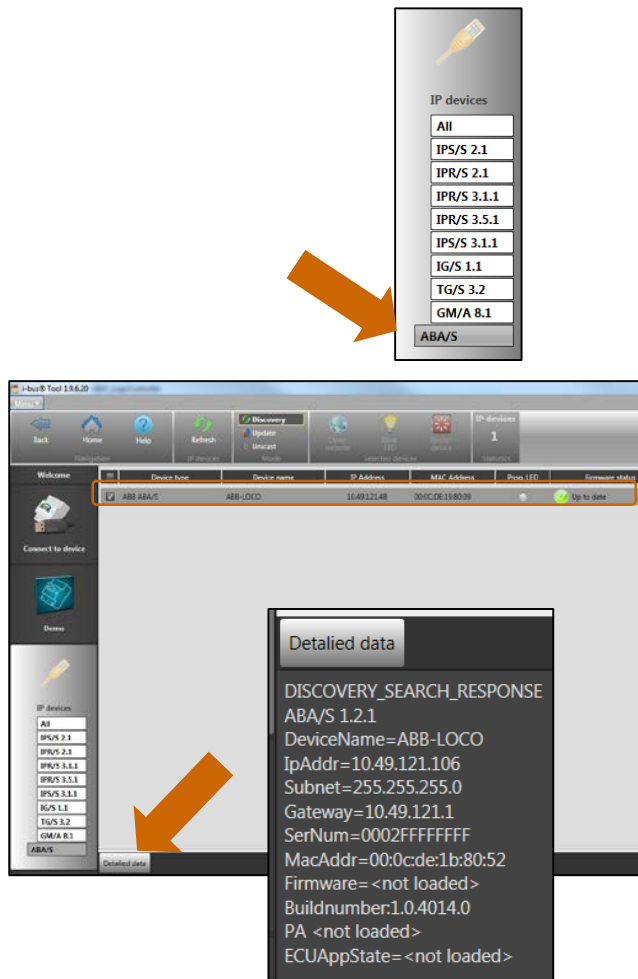


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

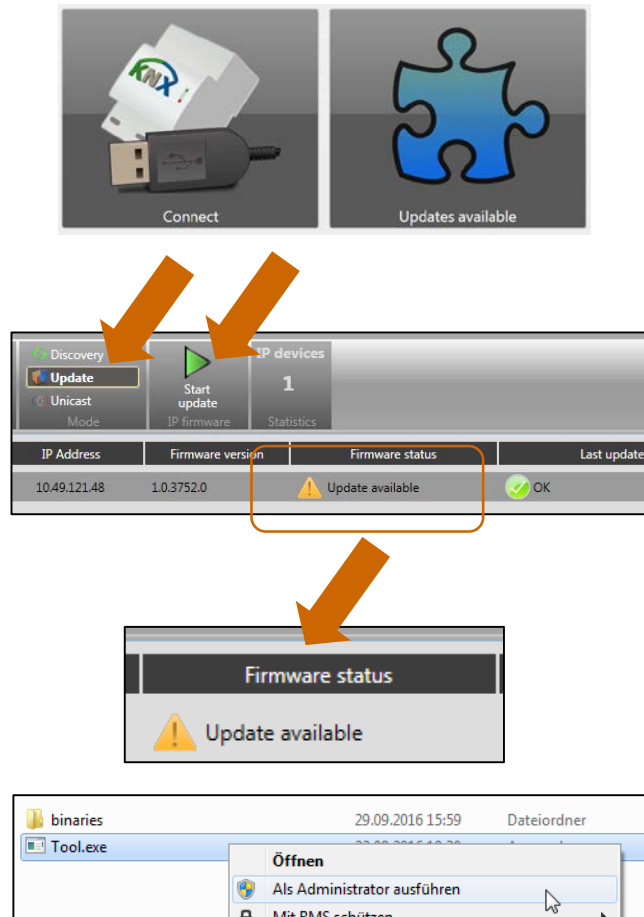
i-bus® Tool



- By selecting on the left side 'ABA/S' only this device will be shown with
 - Name, Firmware (Status and version)
 - IP Data: IP address, MAC address
- Button 'Detailed data' gives more related information

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

i-bus® Tool



- Firmware update: In case of new firmware version an update is feasible with i-bus® Tool
- Update Information and option to download in i-bus® Tool
- The firmware update can be triggered → update → Start update
- For firmware update Logic Controller has to be linked via LAN connection

Note: In case of firmware update i-bus tool has to be started as administrator

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Device technology – Software ETS

The screenshot displays the ETS software interface for the ABB i-bus KNX Logic Controller ABA/S 1.2.1. The interface includes a menu bar (File, Edit, Realtime, Simulation, Help), a toolbar, and a status bar. The main workspace is a grid where logic elements are placed and connected. On the left, a 'Filter' pane lists various input and output types (e.g., 1 bit, 2 bit, 4 bit, 1 byte unsigned, 2 byte float, 4 byte signed, 4 byte float, Color, Date, Time, Date/Time). The central workspace contains a logic diagram with the following elements and connections:

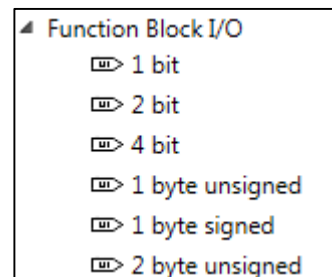
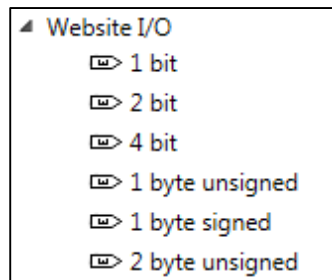
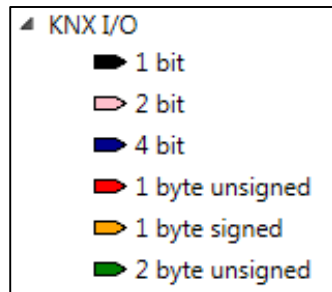
- UND IN 1** and **UND IN 2** (2/0/0 1 bit) are connected to an **AND** function element (2/0/0 1 bit).
- The **AND** element is connected to **UND OUT 1** (2/1/5 1 bit), which has a 'Send always' comment.
- GATE IN 1** (2/0/2 1 bit) is connected to a **GATE** function element (2/0/2 1 bit).
- The **GATE** element is connected to a **FILTER** function element (2/1/5 1 bit) with a 'Filter 0' comment.
- The **FILTER** element is connected to **GATE OUT 1** (2/1/5 1 bit).
- A **Release with '0'** function element (2/0/2 1 bit) is also connected to the **GATE** element.

On the right, the 'Properties' pane shows the configuration for the selected 'GATE' block, including fields for Name, Remark, Parameter, and Additional information. At the bottom right, a 'Help' button is visible. The interface is annotated with several labels and arrows:

- Menu and Functions**: Points to the top menu bar.
- Worksheet**: Points to the main workspace grid.
- Simulation**: Points to the status bar simulation controls.
- Function Element**: Points to the 'AND' block.
- Comment**: Points to the 'Send always' text.
- Input**: Points to the 'GATE IN 1' block.
- Output**: Points to the 'GATE OUT 1' block.
- Properties (Parameter) of a Block**: Points to the 'Properties' pane.
- Help for selected element and online manual**: Points to the 'Help' button.
- In/Outputs, Function Elements positioned via drag and drop**: Points to the 'Filter' pane.
- Grid**: Points to the workspace grid.

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

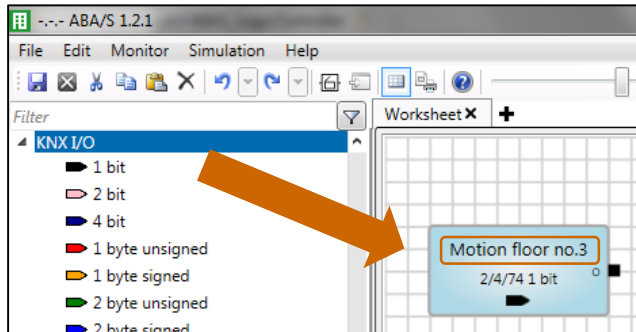
Overview Inputs and Outputs



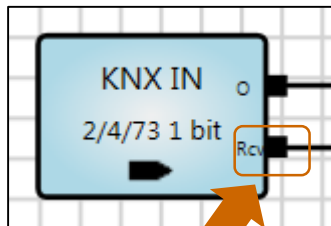
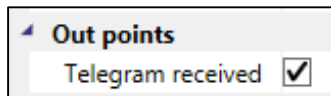
- Inputs/Outputs are available as
 - KNX in/outputs
 - WebUI in/outputs
 - Function block in/outputs
 - 1 bit, 2 bit, 4 bit, 1 byte, 2 byte and 4 byte, 3 byte (Date, Time, Color) 8 byte (Date and Time)

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Inputs



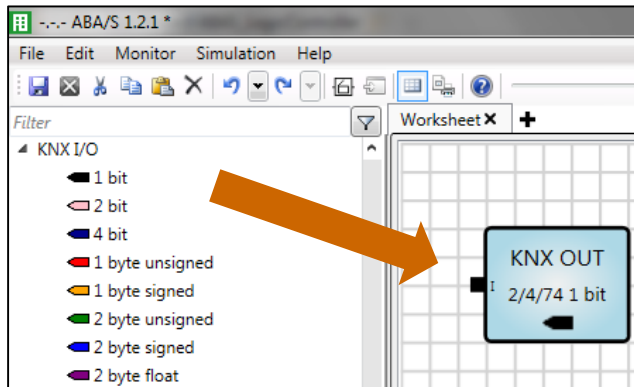
Number	Group Address	Name	Object Function	Length
1	2/4/74	Motion floor no.3		1 bit



- Inputs
 - Elements with Icon  (colored) represent an input
 - Telegram with the assigned group address will be received and processed according to further connected functional elements
- Inputs can be parametrized with additional status output, confirming that the incoming telegram has been received. An impulse value 1 (200ms) → 0 will be sent
- Inputs should be named !

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Outputs



- Outputs

- Elements with Icon  (colored) represent an output
- Telegram with the assigned group address will be sent out resulting in any function in the KNX installation
- Outputs should be named !

Common	
Name	KNX OUT
Remark	
Parameter	
Sending behavior	Send on change
Cyclic sending	☐
Additional information	
Title	
Description	
Version	1.0
Author	
Keywords	
License agreement	
Data Types	
Data SubType	
Group Addresses	
New group address	2/4/74

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

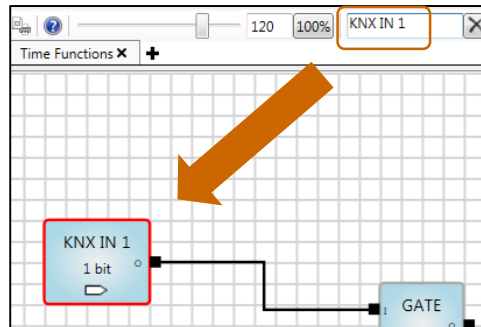
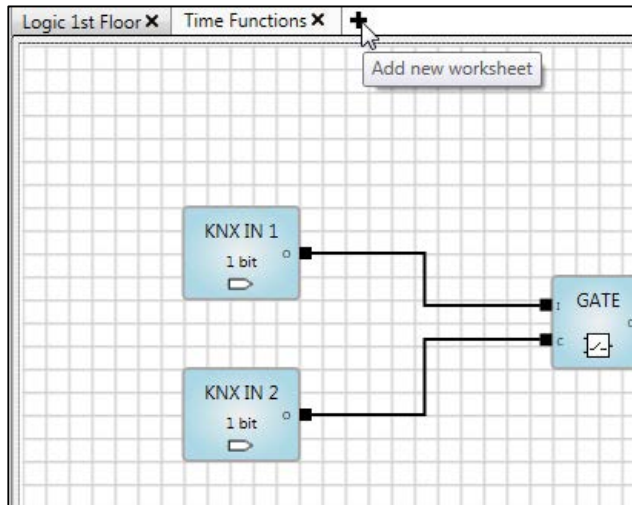
Outputs

Sending behavior	Send on change ▼
Cyclic sending	Send on change
Cyclic time	Send always

Parameter	
Sending behavior	Send on change ▼
Cyclic sending	☒
Cyclic time	00:0030

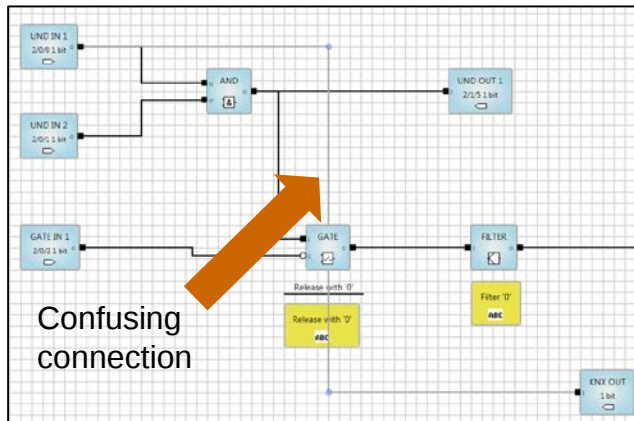
- Sending Behavior
 - Sending on change:
Telegram value has to be different compared with the former status to be sent
 - Send always:
After each cycle/calculation output sends a telegram, even if no change of the former value occurred
- Output telegrams can be sent cyclically, e.g. monitoring of telegram for safety reasons

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Worksheet



- Worksheet is the area to place and connect In/Outputs and functional elements
- Worksheets can be named
- Many Worksheets can be created
- Grid for more precise positioning of the elements
- Slider to zoom the worksheet between 20 % and 150 %
- Search button to find an element or comment with red border of the found element

ABB i-bus® KNX Logic Controller ABA/S 1.2.1 Marker



- Connection of marker allow to link pins of different elements when no connection is possible any more
 - Within the same worksheet if due to optical reasons (overview) a direct connection is not useful
 - Connection between elements in different worksheets

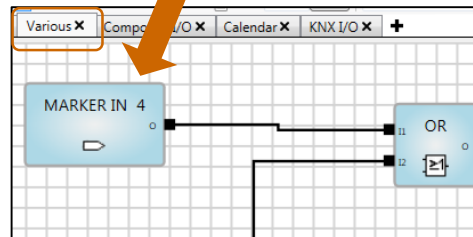
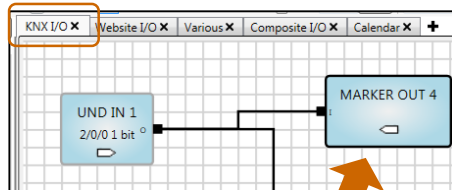
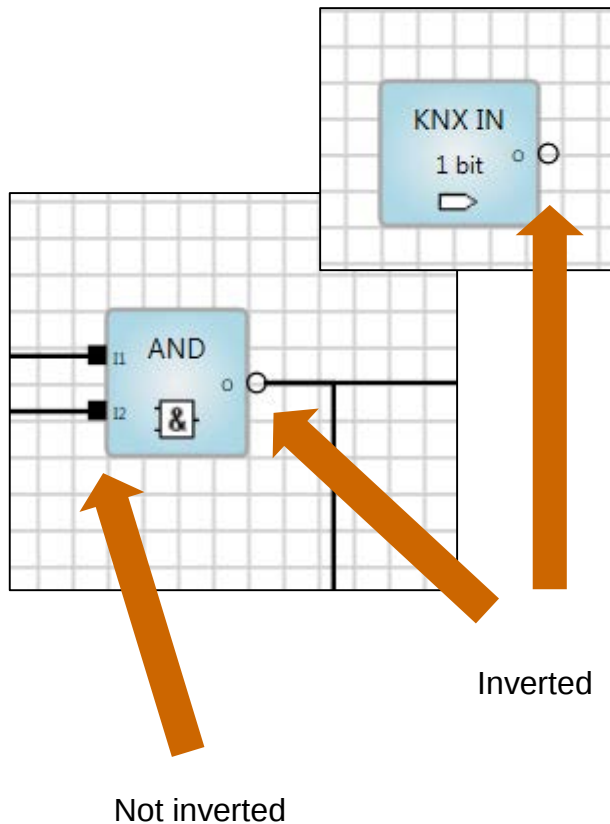


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

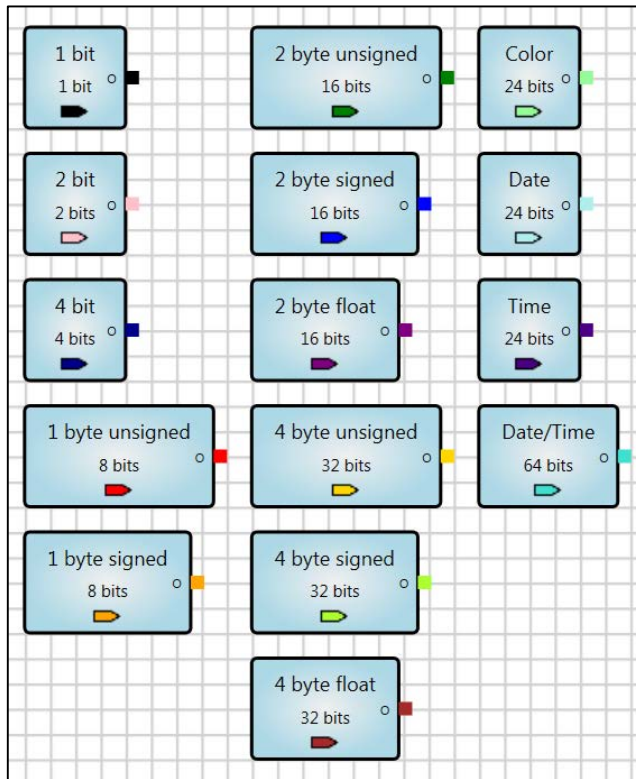
Inverting



- Pins of binary signals can be inverted by double click on it
- '0' → '1' '1' → '0'
- Inverted Pin shown as empty circle

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

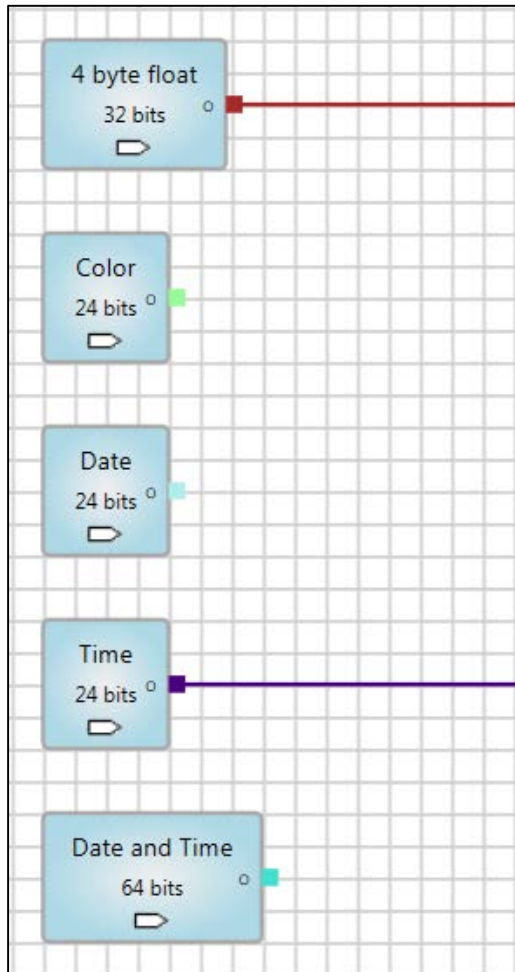
Color of Pin's



- 15 different data types are available to be processed in the Logic Controller ABA/S 1.2.1
- Each datatype has it own color

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

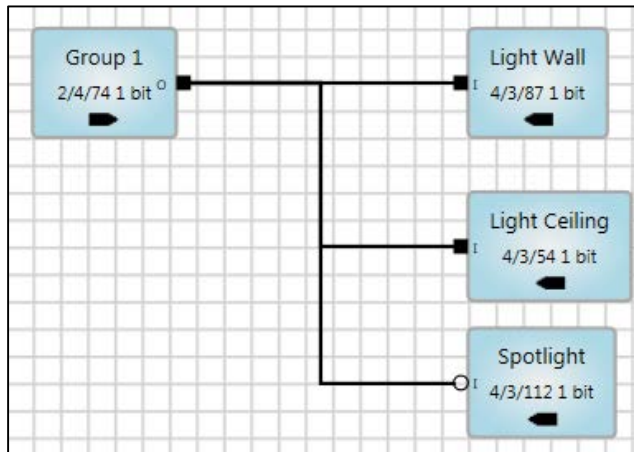
Color of Pin's and Lines



- Even the connecting lines have this color for better distinction

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

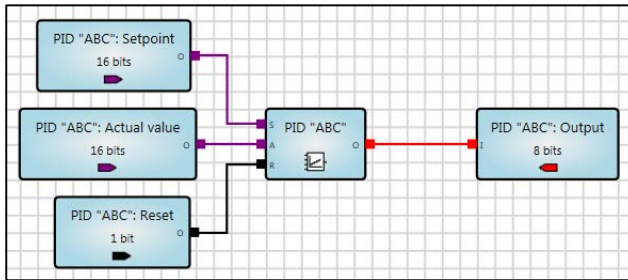
Direct link In-/Output



- Direct connection of In-/outputs is possible, e.g. as telegram multiplier or light groups

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

PID Controller



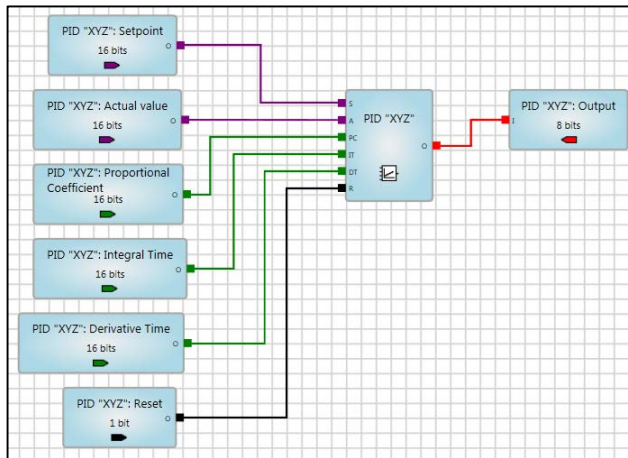
22	PID "ABC": Reset	1 bit
23	PID "ABC": Actual value	2 bytes
24	PID "ABC": Setpoint	2 bytes
25	PID "ABC": Output	1 byte

Common		
Name	PID	
Remark		
Parameter		
Controller Type	PID	
Limit output value, anti-wind-up	☐	
In points		
Derivative Time	☐	1
Integral Time	☐	60
Proportional Coefficient	☐	90

- The Logic Controller offers PID Controller for control functions in a building
- Options:
 - P-Controller (Proportional)
 - PI (Proportional Integral)
 - PD (Proportional Derivative)
 - PID (Proportional Integral Derivative)
- Input S: Set point
Input A: Actual value
Input R: Reset Integral time
Output O: Control value

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

PID Controller



26	PID "XYZ": Setpoint	2 bytes
27	PID "XYZ": Actual value	2 bytes
28	PID "XYZ": Reset	1 bit
29	PID "XYZ": Output	1 byte
30	PID "XYZ": Proportional Coeffi...	2 bytes
31	PID "XYZ": Integral Time	2 bytes
32	PID "XYZ": Derivative Time	2 bytes

Common	
Name	PID
Remark	
Parameter	
Controller Type	PID
Limit output value, anti-wind-up	☐
In points	
Derivative Time	☒
Integral Time	☒
Proportional Coefficient	☒

- The coefficient and times are either adjusted via parameters or changeable via group objects
 - PC: **P**roportional **C**oefficient
 - IT: **I**ntegral **T**ime
 - DT: **D**erivative **T**ime
- All value inputs and output 1 byte or higher

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

PID Controller

Limit output value, anti-wind-up	☒
Lower limit	25
Upper limit	225

- Parameter Limit output (control value) between 0 and 255 to limit the control value
- E.g. to avoid an oscillating system (Upper limit)

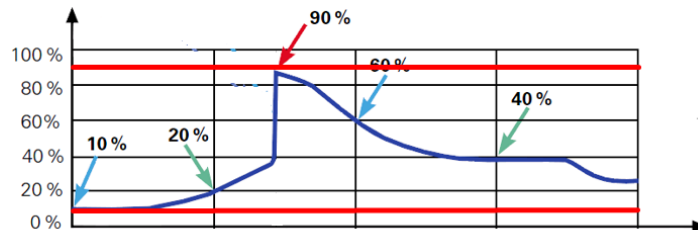


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

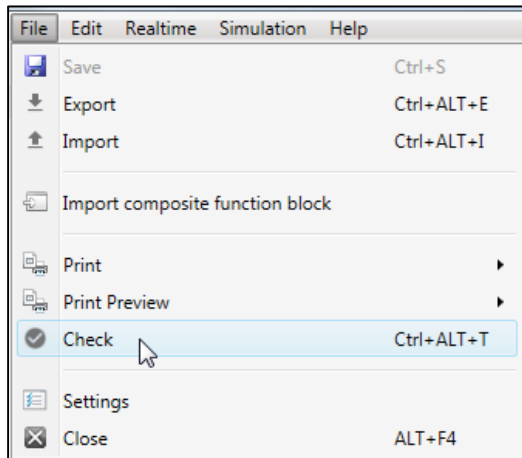
Time and Calendar



- ABA/S offers comprehensive Time and Calendar functions
 - Simple Calendar (CALENDAR_S) to trigger daily events at a certain time or the whole day
 - Calendar (CALENDAR) to trigger events at any time and day

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Check



- The check function allows to monitor the number of used elements, group objects and the amount of data already downloaded to the Logic Controller ABA/S 1.2.1

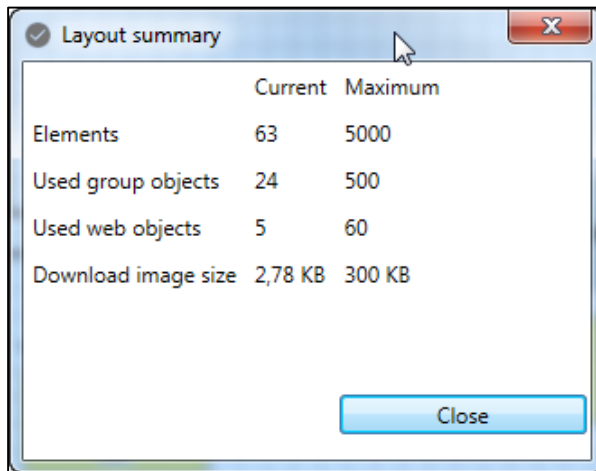
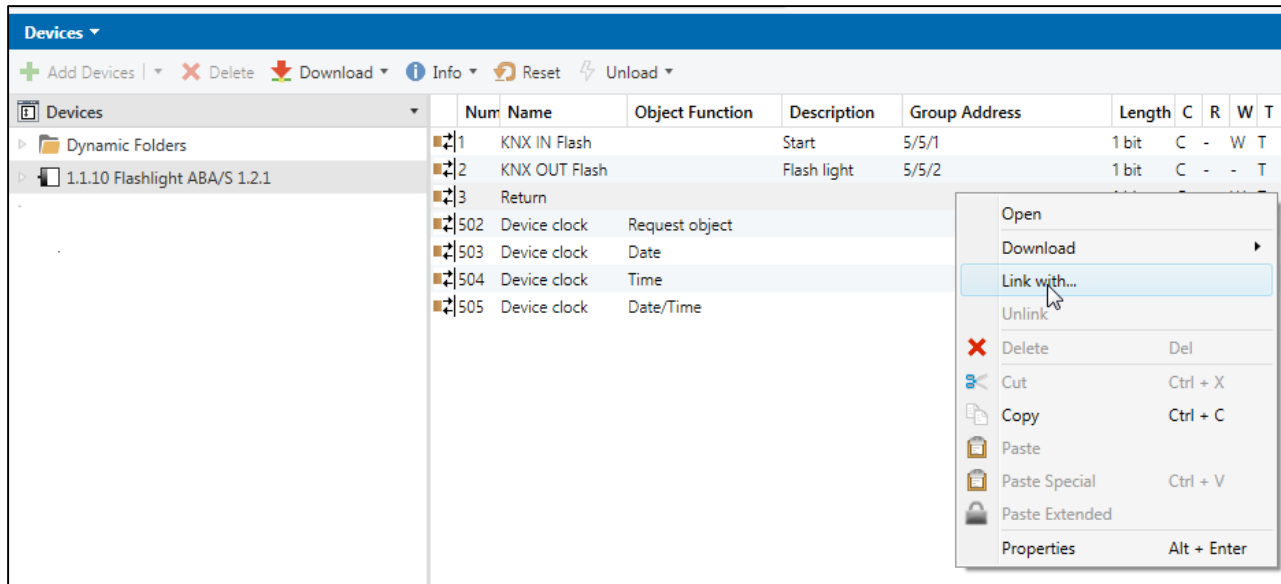


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Assignment of Group Addresses



- Group Addresses to be assigned the classical way in the ETS (not in Plug In like ABL/S 2.1)
- Group addresses will be shown in the Input/Output blocks

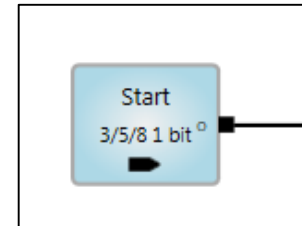
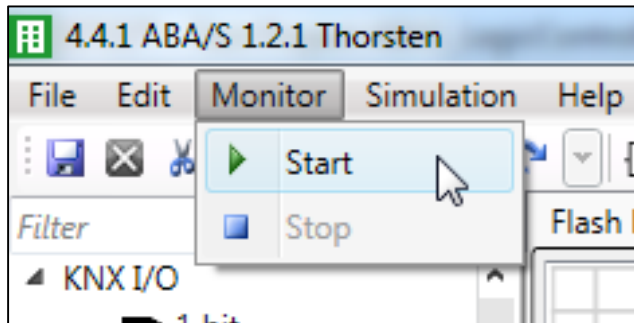


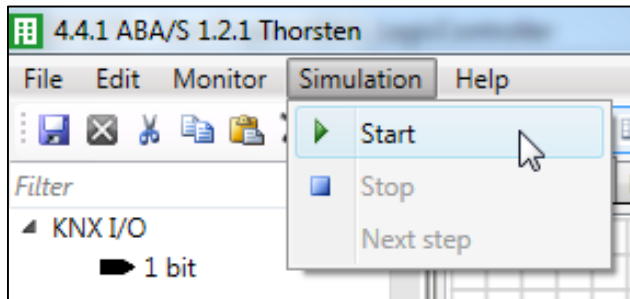
ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Monitoring and Simulation



▪ Monitor

- Online monitoring of status of logic
- Telegrams from other KNX devices to be received
- IP connection required



▪ Simulation

- Offline simulation
- Inputs of logic to be triggered

▪ → LIVE DEMONSTRATION

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Example: 2-step control Cooling, dynamic Setpoint, variable Hysteresis

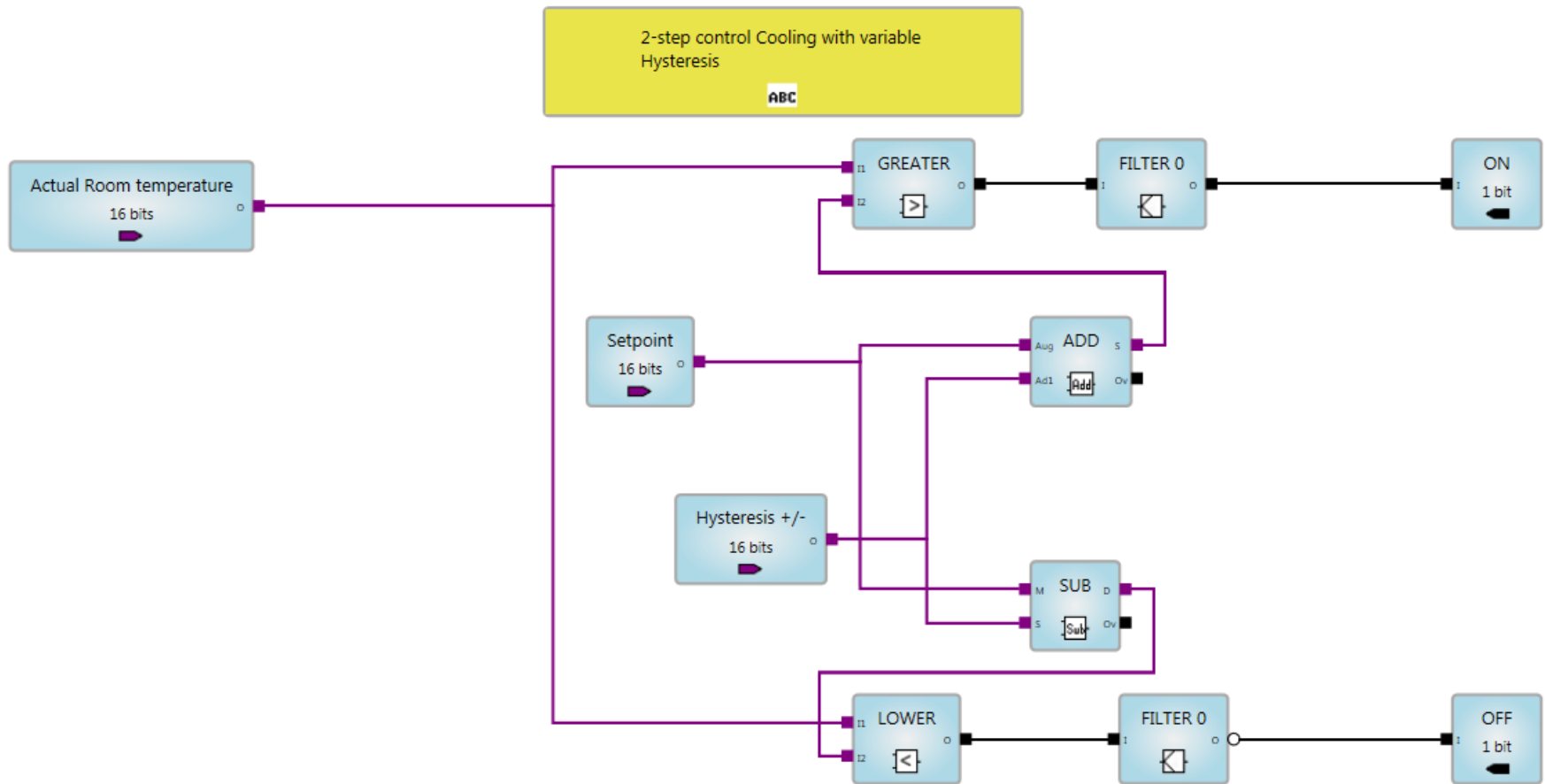
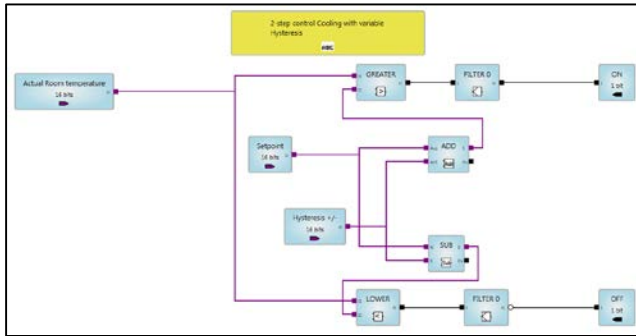


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

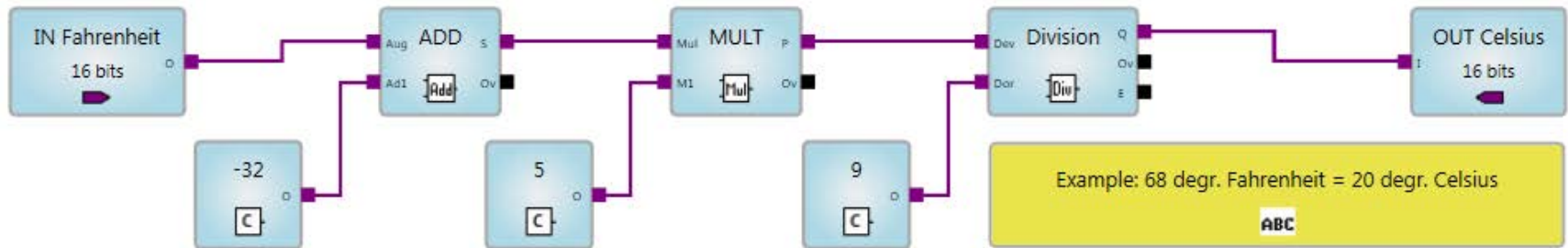
Example: 2-step control Cooling, dynamic Setpoint, variable Hysteresis



- Room temperature above setpoint + hysteresis → Cooling ON
- Room temperature below setpoint – hysteresis → Cooling OFF
- Room temperature within hysteresis zone → no reaction
- Outputs to be programmed with sending behavior 'Send always'

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Example: Conversion Fahrenheit → Celsius



Transformation to
Function block

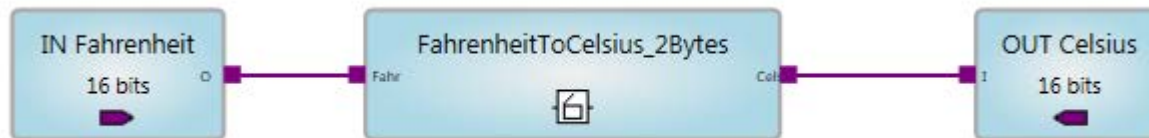
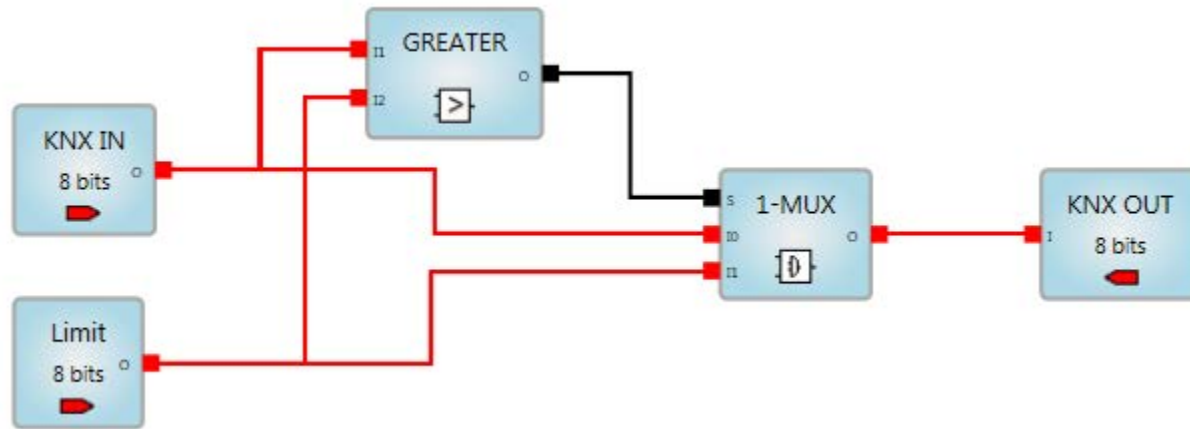


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

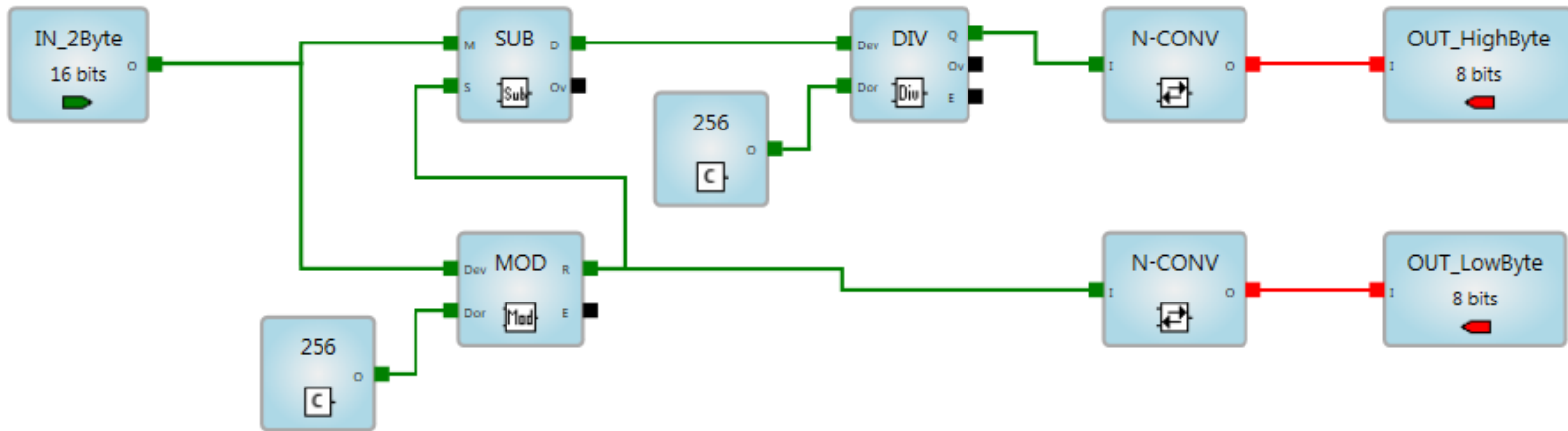
Example: Limitation of Value



As long as the KNX IN value is bigger than the limit the limit value will be sent out, otherwise the original KNX in value.

ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Example: 16 bit to 2 x 8 bit



Transformation to
Function block

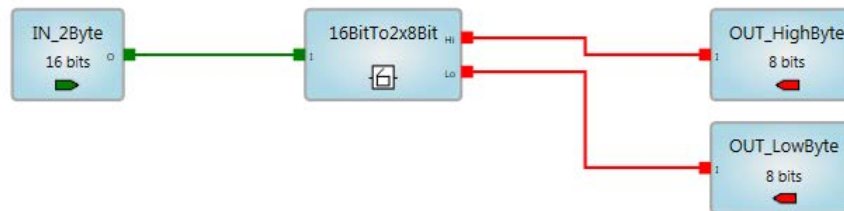
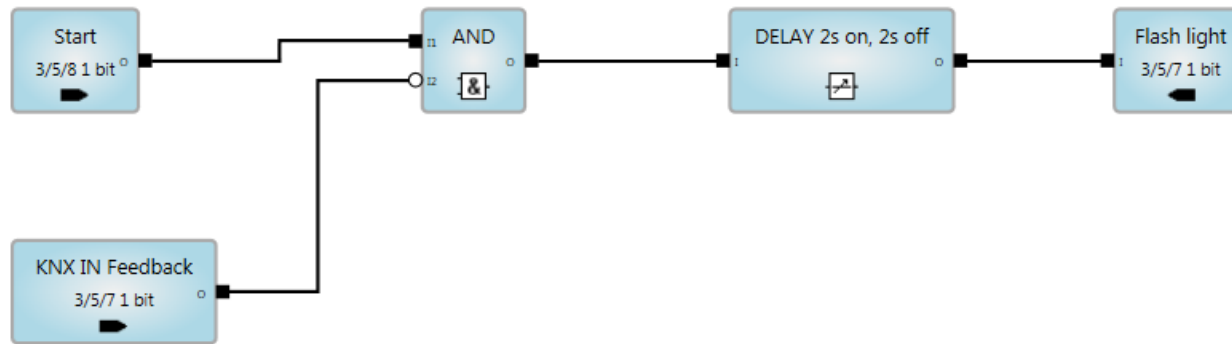


ABB i-bus® KNX Logic Controller ABA/S 1.2.1

Example: Flashlight



Webinar "Logic Controller ABA/S 1.2.1"

Next Webinar



- **Wednesday 14th of December 2016**

- Morning 09:00 am Europe Time (Berlin, UTC + 1h)
- Afternoon 03:00 pm Europe Time (Berlin, UTC + 1h)

- **ABB-free@home[®] wireless***

- 64 wireless and 64 wired devices in one system
- The new System Access Point supports both media wireless and cabled in the one system
- The best radio connection thanks to meshed network

Disclaimer

- The information in this document is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any errors that may appear in this document.
- In no event shall ABB be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall ABB be liable for incidental or consequential damages arising from use of any software or hardware described in this document.
- **© Copyright [2016] ABB. All rights reserved.**

Power and productivity
for a better world™

