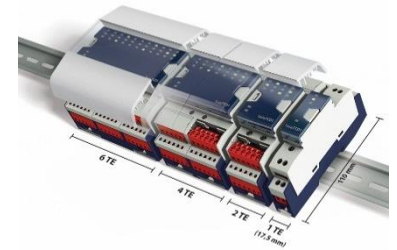




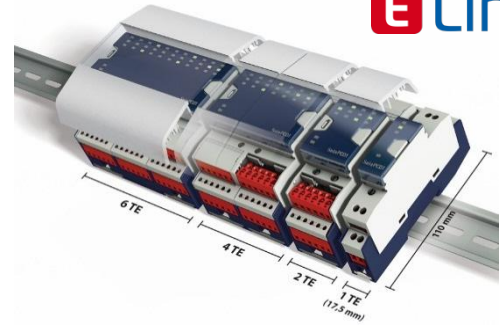
# Programmable E-Line Quick Start & Information

Product Management (DK/OG), 04.11.2015



**sbc**   
SAIA BURGESS CONTROLS

# E-Line Family overview



## PLC

- Battery less operation (non-volatile memory, RTC with super cap)
- 2 slots for PCD2.Xxxx modules
- 2x RS-485 interface
- 1 slot for flash card

## Programmable RIOs

- Autonomous operation
- Dedicated IO mix

## RIOs

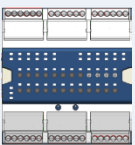
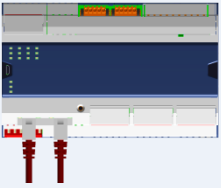
- Manual operating level for each output
- Access manual operating level from remote

## System accessories

- Power Supply
- RF-modem
- Power Quality Analyser

Ethernet

RS-485

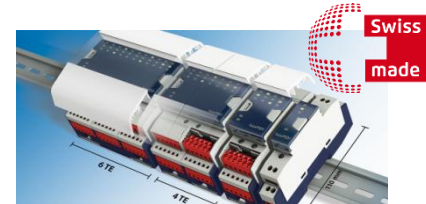


# Saia PCD1 E-Line for room automation

## Room automation with E-Line Serie

### Features:

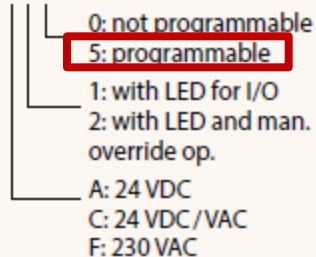
- Installation-friendly design for electro cabinets (DIN 43880)
- free programmable
- autonomous operation
- 24 V AC / DC
- 2 terminals per analog input
- Status display for DI / DO
- without battery



### Product number key (ASN key)

#### Example:

PCD1.Gxxxx-C15

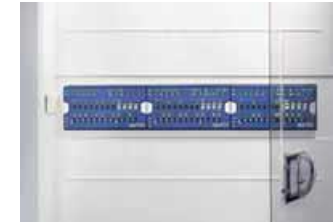
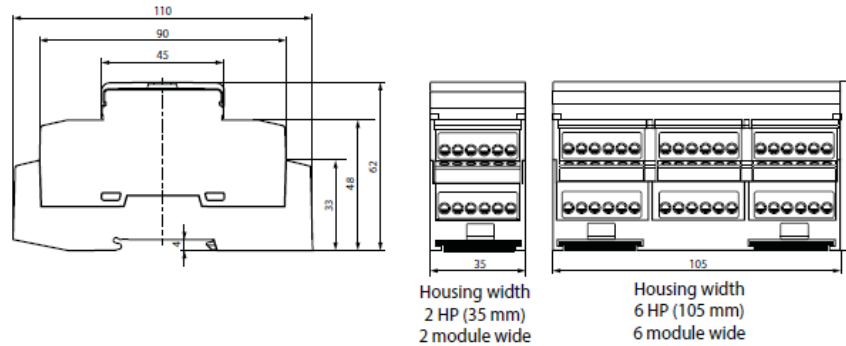


### Restrictions:

- without automation server
- reduced instruction set
- reduced media

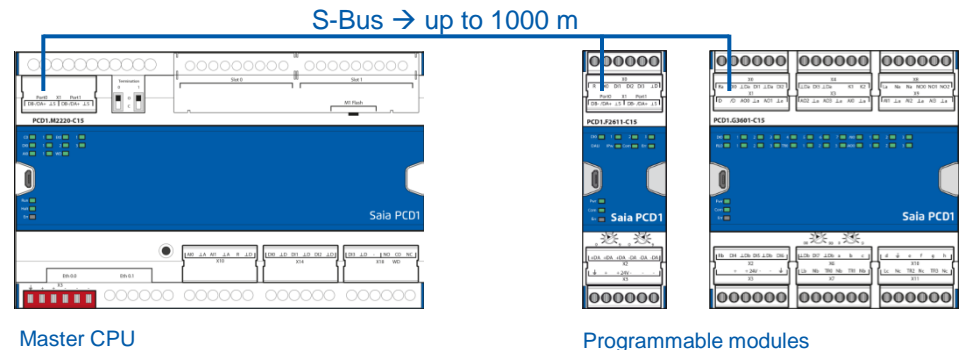
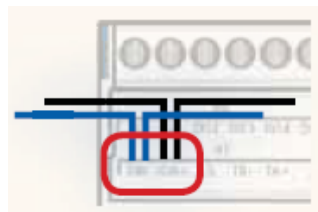
# Dimensions and Bus information

## Dimensions



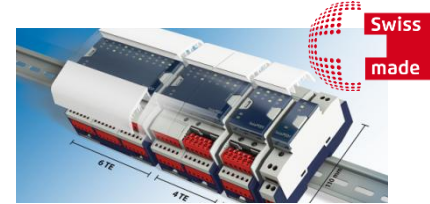
Compatible with electrical control cabinets (in accordance with DIN 43880)

## Bus wiring, topology & communication



- RS-485 topology
- S-Bus protocol (with some additional services)
- DB- and /DA+ for S-Bus communication
- Programmable Modules are S-Bus Slaves for a Head station (for example PCD1.M2220-C15)
- S-Bus Master for other station are not possible
- The programmable Modules needs external termination

# Overview modules



- **PCD1.F2611-C15**  
DALI controller with integrated DALI bus voltage supply
- **PCD1.G3600-C15**  
Controller for HVAC applications (fan coil, VAV, cooling ceiling radiators, etc.) and general applications
- **PCD1.G3601-C15**  
Controller for HVAC applications with additional RS-485 interface for intelligent room control devices
- **PCD1.G1100-C15**  
Controller for light and shading
- **PCD1.W5300-C15**  
Controller for VAV applications and control circuits with 100% analogue components

# Commissioning

## S-Bus Address setting

The S-Bus address can be set by switches or by device configuration.

In case of device configuration, the switches need to be set at 99, otherwise the switches have priority.

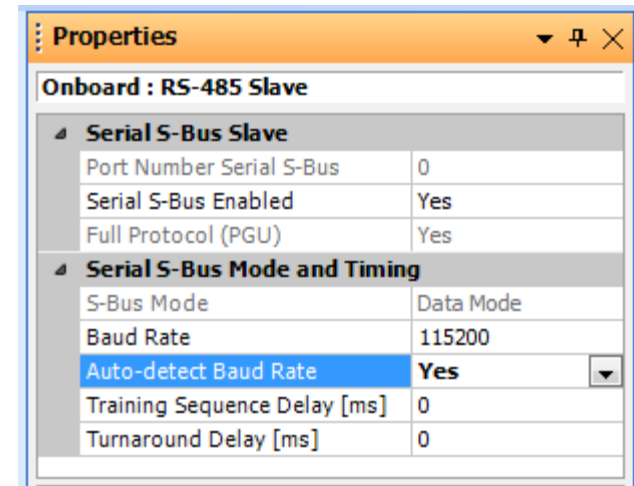


Example:

1. Power ON with switch position 10 (EEPROM content is also 10) -> Display S-Bus -> 10
2. Download config with S-Bus 4 -> display S-Bus -> 10: EEPROM content is updated but not taken into account
3. Switch position 99 -> Display S-Bus -> 4: EEPROM content is used
4. Switch position 10 -> Display S-Bus -> 10: EEPROM content is updated
5. Switch position 99 -> Display S-Bus -> 10: EEPROM content is used

## Device configuration

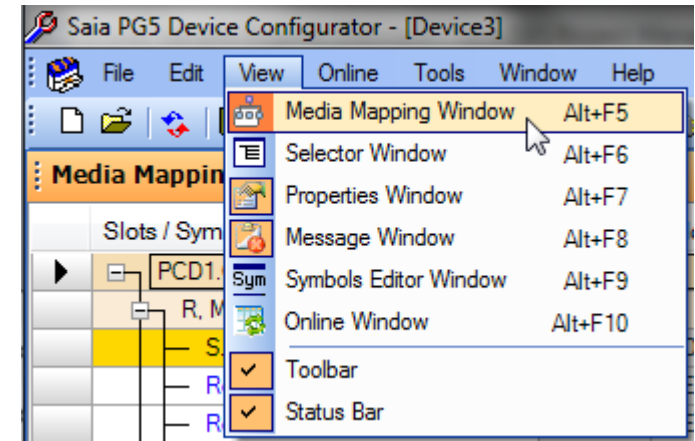
For easy installation set the device configuration to auto baud and download the settings. Attach the device to the S-Bus network and do the commissioning remote via the PCD.



# IO Data access

## IO Data definition

- IOs are represented by predefined symbols. Take them from the Device configurator.
- Direct access by I and O media is not supported.



The screenshot displays two windows from the Saia PG5 software suite. The left window, 'Saia PG5 Device Configurator - [Device3]', shows the 'Media Mapping' section for 'PCD1.G1100-C15, E-Line Light and Blind Controller'. It lists mapped registers and flags. The right window, 'Device3 - Saia PG5 Fupla Editor - [01 RemoteIO\_G1100.fup]', shows a ladder logic diagram with a 'Call PB' block and various digital input and output symbols connected to physical IO points.

Slots / Symbols	Type	Address	Comments
<b>R, Mapped Registers</b>			
S.ELINE.BaseRegister	R [14]	2000	
Relay0Current	R	S.ELINE.BaseRegister + 0	Relay
Relay1Current	R	S.ELINE.BaseRegister + 1	Relay
AoutStatus	R	S.ELINE.BaseRegister + 2	Analog
AoutValue0	R	S.ELINE.BaseRegister + 12	Analog
AoutValue1	R	S.ELINE.BaseRegister + 13	Analog
<b>F, Mapped Flags</b>			
S.ELINE.BaseFlag	F [14]	2000	
DinState0	F	S.ELINE.BaseFlag + 0	Digital
DinState1	F	S.ELINE.BaseFlag + 1	Digital
DinState2	F	S.ELINE.BaseFlag + 2	Digital
DinState3	F	S.ELINE.BaseFlag + 3	Digital
RelayState0	F	S.ELINE.BaseFlag + 12	Relay
RelayState1	F	S.ELINE.BaseFlag + 13	Relay

**Drag and drop Symbols from Device Conf. to Fupla**

# Resources

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## Application focus

- Room automation
- Decentralized control stations for district heating / cooling plants

## PLC Program (None Volatile Flash memory)

- 64k Program
- COB 0, COBSEG, XOB 10, 12,13 and 16
- 50 PBs with maximum calling hierarchy of 10 PBs
- 16 ROM Text / DB
- IEEE floating point
- SASI Mode C without interpreted text (EnOcean, MP-Bus...)
- No Graphtec and no Media pointer instructions, no Download in Run

## PLC Media (Volatile RAM without battery back up)

- 2000 Registers
- 2000 Flags
- 200 Timer / Counter
- 5K Byte memory for 16 RAM Text / DB
- Real time clock, cyclically synchronized by the PCD
- 500 Elements of EEPROM memory for parameter (media) backup



# Supported Fbox libraries I

## Standard

- ⊗ Analog I/O
  - ⊗ PCD2/3
  - ⊗ PCS1
  - ⊗ Sensor Error
  - ⊗ Weigh module
- ☐ Binary
  - ✓ Arithmetic
  - ✓ Buffer
  - ✓ Flip-Flop
  - ✓ Indirect addressing
  - ✓ Ladder diagram
  - ✓ Multiplexer
- ☐ Blocks Control
  - ✓☐ Call FB
  - ✓☐ Call PB
  - ⊗☐ Call SB
  - ⊗☐ End of transition
  - ⊗☐ Execute XOB
  - ⊗☐ Install cyclic task
  - ⊗☐ XOB Diagnostics
- ⊗ Communication S-Bus
- ⊗ Communication Text
- ☐ Conversion
  - ✓ BCD to
  - ✓ Binary to
  - ✓ Count bits
  - ⊗ Floating Point to
  - ⊗ IEEE to
  - ⊗ Integer to
  - ⊗ IP address to
- ☐ Counter
  - ⊗ Counter (Graftec)
  - ✓ Pulses counter
- ☐ Data Block
  - ⊗☐ DB Logger
  - ✓☐ Init DB
  - ✓☐ Read DB
  - ✓☐ Text/DB address
  - ✓☐ Write DB
- ⊗ Display module
- ⊗ Energy Meter
- ⊗ File System
- ⊗ Floating Point
- ✓ Integer
- ⊗ IP Protocols
- ⊗ Modem RF
- ⊗ PWM outputs
- ☐ System information
  - ⊗☐ Battery
  - ⊗☐ Clock on SuperCap
  - ⊗☐ CPU LED
  - ⊗☐ Hardware Watch Dog
  - ⊗☐ PGU Switch / PCS1
  - ⊗☐ Read CPU type
  - ⊗☐ Read device type
  - ⊗☐ Read EEPROM Register
  - ⊗☐ Read firmware version
  - ⊗☐ Read IP configuration
  - ⊗☐ Read S-Bus PGU parameters
  - ✓☐ Read S-Bus station
  - ⊗☐ Read serial number
  - ✓☐ Read system counter
  - ✓☐ Read time
  - ⊗☐ Read user program name
  - ⊗☐ Software Watch dog
  - ⊗☐ Summer Time
  - ⊗☐ System self test
  - ⊗☐ Write EEPROM Register
  - ⊗☐ Write IP configuration
  - ⊗☐ Write S-Bus station
  - ✓☐ Write time
- ⊕ Timer
- ⊗ Wide Area Automation

# Supported Fbox libraries II

## Application

- ⊗ Alarm
- ⊗ Blind - Lighting
- ⊗ BuES P1
- ⊗ BuES1++
- ⊗ Communication Email
- ⊗ Communication HTTP
- ⊗ DALI Driver
- ✓ DALI-E-Line Driver
  - ✓ Command Fboxes
  - ✓ Communication Driver
  - ✓ Configuration Fboxes
  - ✓ Master Receive Fboxes
  - ✓ thebenHTS
- ⊗ DALI-F26x Driver
- ⊗ Data buffer
- ⊗ DDC Suite
- ⊗ DDC Suite 25
- ⊗ EIB Driver
- ⊗ E-Line
- ⊗ Energy Meter
- ⊗ EnOcean Bidirektional
- ✓ EnOcean V3
- ✓ E-Suite
  - ✓ Communication
  - ✓ Electric
  - ✓ General
  - ✓ HVC
  - ✓ Web
- ⊗ Historic Data Logging
- ☐ HVC
  - ⊗ Analogue
  - ✓ Clocks
  - ✓ Controllers
  - ✓ Electric
  - ✓ Energy
  - ✓ Filters
  - ✓ General
  - ☐ Init
    - ✓ ☐ Initialization HVC 4
    - ⊗ ☐ Initialization HVC 5
    - ⊗ ☐ Initialization HVC 7
    - ⊗ ☐ Initialization HVC 8
    - ⊗ ☐ Reset Heavac
  - ✓ Set-points
  - ⊗ Test
- ⊗ JCI N2-Bus
- ⊗ Lon
- ⊗ Lon IP+FT
- ⊗ Modem
- ⊗ MP-Bus
- ✓ PEHA PHC
- ⊗ Persy\_P\_bus\_Gateway
- ⊗ Persy\_P\_bus\_Gateway\_read
- ⊗ Room controller
- ⊗ Saia PCD Modbus
- ⊗ S-Monitoring

# Supported Fbox libraries III

## If you used not supported Fboxes...

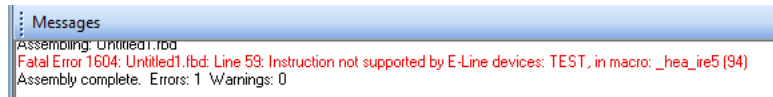
For example you place the not supported “HVC Init 8” FBox



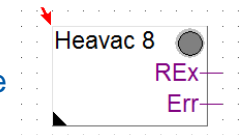
After a built



You get the following error message:



With duple click on the message you go directly to the false page



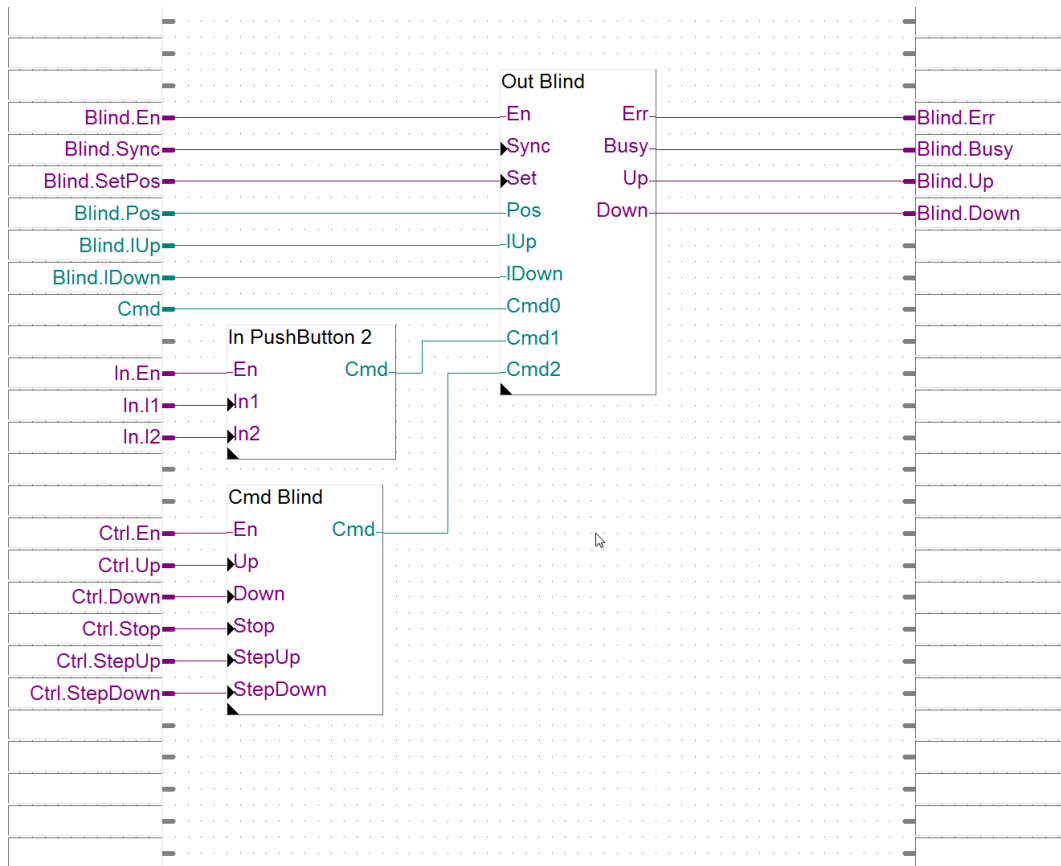
It is not possible to have more information on the error message, but you can see you have placed Fboxes how are not supported. Please have a look to the list of supported Fboxes or make this small test.

**In this case please use “HVC Init 4” FBox !**



# E-Suite Fbox library

- Solutions for standard components like switches, blinds and dimmer and room control loops
- Parameter Backup / Restore
- Efficient engineering interfaces for Web / Visi+\*  
(\*in preparation)

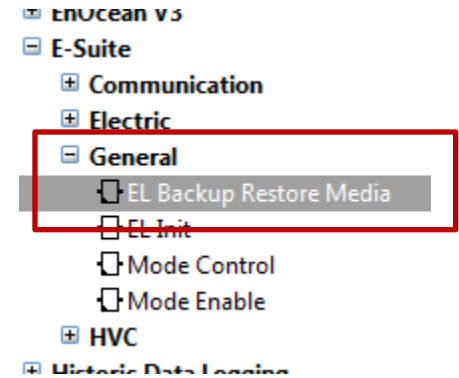
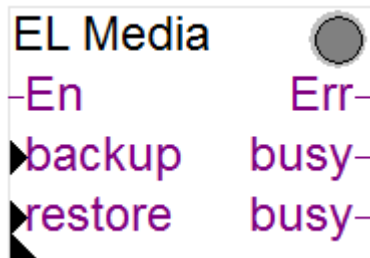


- ▣ E-Suite
  - ▣ Communication
    - ▣ Com Box Master
    - ▣ Com Box Station
    - ▣ Com Rcv Flags
    - ▣ Com Rcv Register
    - ▣ Com Send Flags
    - ▣ Com Send Register
    - ▣ Modbus
  - ▣ Electric
    - ▣ Cmd Blind
    - ▣ Cmd Dimmer
    - ▣ Cmd On+ Off
    - ▣ In PushButton 1
    - ▣ In PushButton 2
    - ▣ In Switch
    - ▣ In Switch td
    - ▣ Out Blinds
    - ▣ Out Blinds Set
    - ▣ Out Dimmer
    - ▣ Out On+ Off
  - ▣ General
    - ▣ EL Backup Restore Media
    - ▣ EL Init
    - ▣ Mode Control
    - ▣ Mode Enable
  - ▣ HVC
    - ▣ SetPoint
    - ▣ SetPoint2
    - ▣ Valve 0-10V
    - ▣ Valve PWM
    - ▣ Ventilator
    - ▣ Ventilator2
  - \* ▣ Web
    - ▣ ES Web Cmd
    - ▣ ES Web Cmd State
    - ▣ ES Web State
    - ▣ ES Web Val
    - ▣ ES Web Val State

# E-Suite Fbox library - Parameter Backup / Restore

## Volatile RAM without battery back up

- 500 Elements of EEPROM memory for parameter (media) backup
- FBox for programmable E-Line devices to backup and restore adjust parameters “EL Backup Restore Media”



FBox for programmable E-Line devices to backup and restore adjust parameters. For Backup and restore the FBox Enable Input “En” must be set.

EEPROM chips have a limited amount of write cycles (typically 100.000). Backup triggered by the FBox input writes all parameters to the EEPROM. For backup of only changed parameters in runtime the cycle time adjust parameter shall be used.

For more Information please have a look to the Help of this Library!