lundix it SPC Bridge Modbus Integration of Vanderbilt SPC Intrusion System User Manual

lundix it SPC Bridge Modbus Integration of Vanderbilt

SPC Intrusion System User Manual

SPC Bridge Modbus User Manual

Revision 1.0

History Record

Revision	Date	Author	Comment
1.0	Mars-2021	Lundix IT	First edition

Lundix IT
Renvägen 22
S-433 70 Sävedalen
Sweden
info@lundix.se

Contents

1 Introduction

1.1 SPC Bridge Modbus

SPC Bridge

SPC Bridge Modbus allows integration of Vanderbilt SPC intrusion system with a third-party system, e.g. a SCADA system, using the Modbus protocol. Using the SPC Bridge you are able to use events from all your SPC connected motion detectors, door/window contacts, fire detectors and alarm status for automations in the third-party system.

1.2 Main Features

- SPC Bridge Modbus acts as a Modbus TCP server (only one Modbus TCP client connection is allowed at a time).
- Provides SPC zone and area states/status to a Modbus TCP client, g. a SCADA system.
- Support for area and zone commands from a Modbus TCP client, g. arm/disarm, inhibit zone.
- SPC Panel Communication based on Vanderbilt official FlexC
- Web based Admin GUI
- Recommended for maximum 128 zones and 16 areas. (The Modbus Register Map is designed for 256 zones and 16 areas. The recommendation is only an estimation. The actual limit depends on the use case, e.g. number of SPC events, number of motion detectors and the Modbus polling rate)
- Recommended Modbus Client poll rate >= 2 seconds.

1.3 Hardware Specification

SPC Bridge	
Processor	400MHz, 24K MIPS
Flash	16MB
RAM	64MB
Power input	9 – 12V DC
Network	2 x 10M/100M RJ45 Connectors
WiFi	802.11 b/g/n
USB	1 x USB 2.0 host connector
Type Approval	FCC Part15 Subpart B, Subpart C, CE NB, C-Tick

1.4 Modbus

SPC Bridge Modbus provides a Modbus TCP server. The default port for Modbus TCP Client connection is 502, but port number can be reassigned if desired. Only one Client connection is accepted at a time. For increased security it is possible to restrict which Client (client ip address) is allowed to connect.

There is any stated time for the poll rate. A lot of factors will come into play that can affect the response time, such as the type of request and how much data is being requested. Read multiple might take slightly longer for a response but more data will be transferred at once vs a read single might take less time to respond to but you will need to send more requests increasing the time. As a general recommendation you should use a poll rate >= 2 seconds.

2 Installation

2.1 Prerequisites

- Vanderbilt SPC panel with firmware >= 6 (3.6 was the first version with support for FlexC)
- Network router with DHCP server enabled
- SPC Bridge and SPC panel connected to same local network

- Internet access (to be able to use time synchronization via NTP)
- A Modbus TCP client, g. a SCADA system

2.2 First Time Installation Workflow

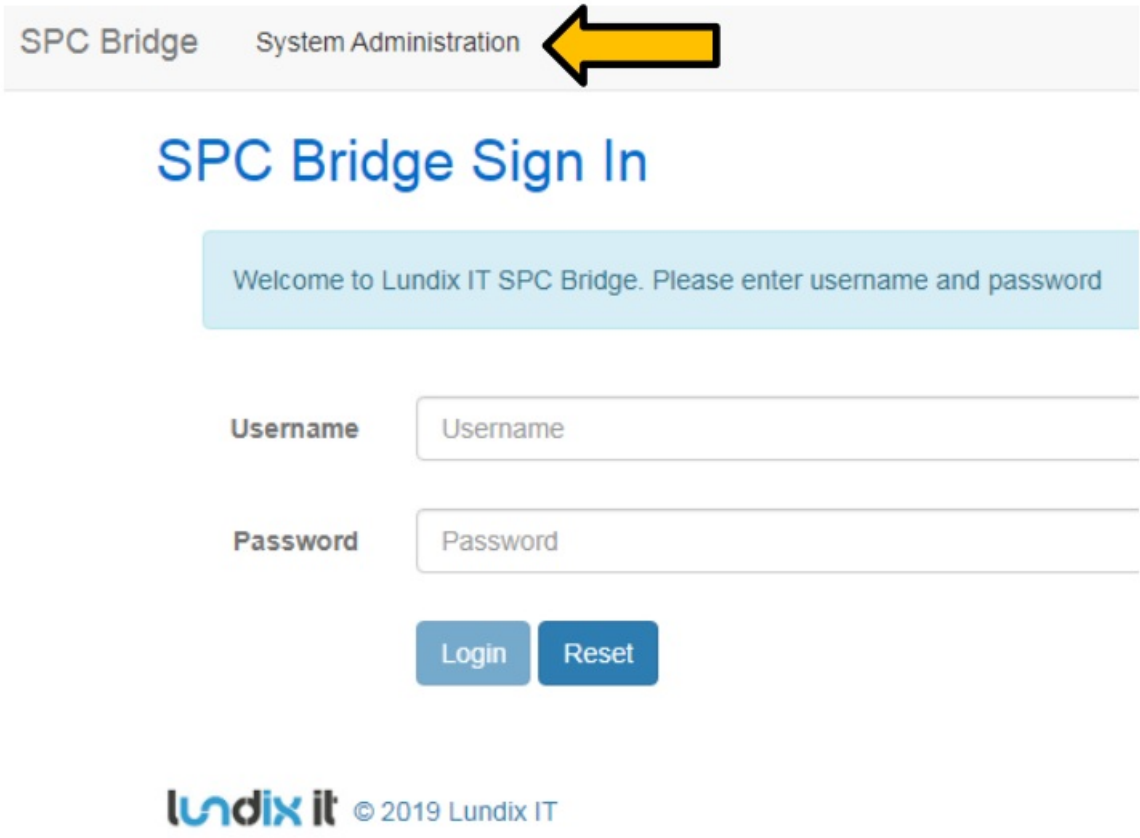
1. Read carefully **End-User License Agreement for SPC Bridge (EULA)** in last section in this document. If you do not agree to the terms of the EULA, do not install or use the SPC
2. Connect the SPC Bridge **LAN** port, with a regular network cable, to your network switch or
3. Power up the device by connecting the included power adapter to a wall socket and then to the SPC
4. Wait (~3 minutes) until the SPC Bridge has fully started.
5. Open a web browser and access your router (DHCP-server) to find the IP address assigned to the SPC Type the IP address in the web browser to go to the SPC Bridge sign in page.
6. Assign a static IP address to the SPC Follow instructions in section **System Administration, Static IP Address**.
7. Configure SPC Follow the instructions in section **SPC Bridge Configuration, SPC Communication**.
8. Test the SPC See **SPC Communication Test**.
9. Configure the Modbus

3 System Administration

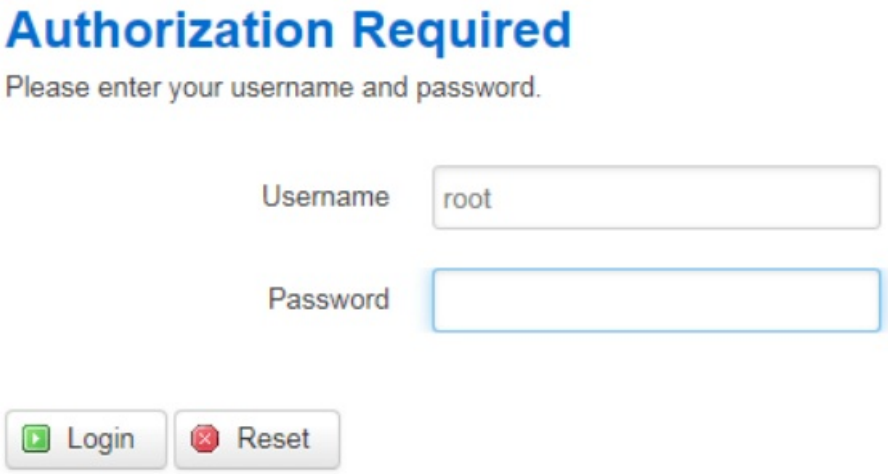
The SPC Bridge is based on a standard Linux platform, Open Wrt, that is very common on routers. The System Administration Web GUI contains many settings intended only for advanced users. Only the settings described in this section should be changed by normal users.

3.1 System Administration Login

Type IP address of the SPC Bridge in the web browser address field, go to SPC Bridge sign in page and click on **System Administration** in the **top bar**.



This will open the Open WRT sign in page. Enter username (**root**) and password (default: **dragoon**) and click on **Login**.



NOTE! To return to SPC Bridge sign in page you need to type the SPC Bridge IP address in the web browser address field.

3.2 Static IP Address

Default will SPC Bridge use DHCP to get an IP Address. To be sure that the SPC Bridge keeps the IP address after a network/router restart you should assign the SPC Bridge a static IP Address. In the System Administration GUI, go to ***Network -> Interfaces*** and:

1. Select **LAN – Edit**.
2. In **Interfaces – LAN**, select **Static address** in the **Protocol** option menu

3. Click on **Switch Protocol**
4. In **Common Configuration – General Setup** fill in; IPv4 address, netmask, gateway and custom DNS
5. In **DHCP Server – General Setup**; check the checkbox **Ignore interface**. **NOTE!** It is very important to disable the DHCP server in the SPC Bridge to avoid conflict with your normal DHCP
6. Click on **Save & Apply**.
7. Redirect your browser to the new IP

3.3 Time Setting

To set correct Time zone, go to ***System -> System*** and select **Time zone** in section **System Properties – General Settings**.

The device is as default using NTP to synchronize time. This setting is in ***System -> System*** section **Time Synchronization**.

NOTE! The device has no RTC clock. During boot the device can have incorrect time. Some events in the system log can therefore have incorrect timestamps.

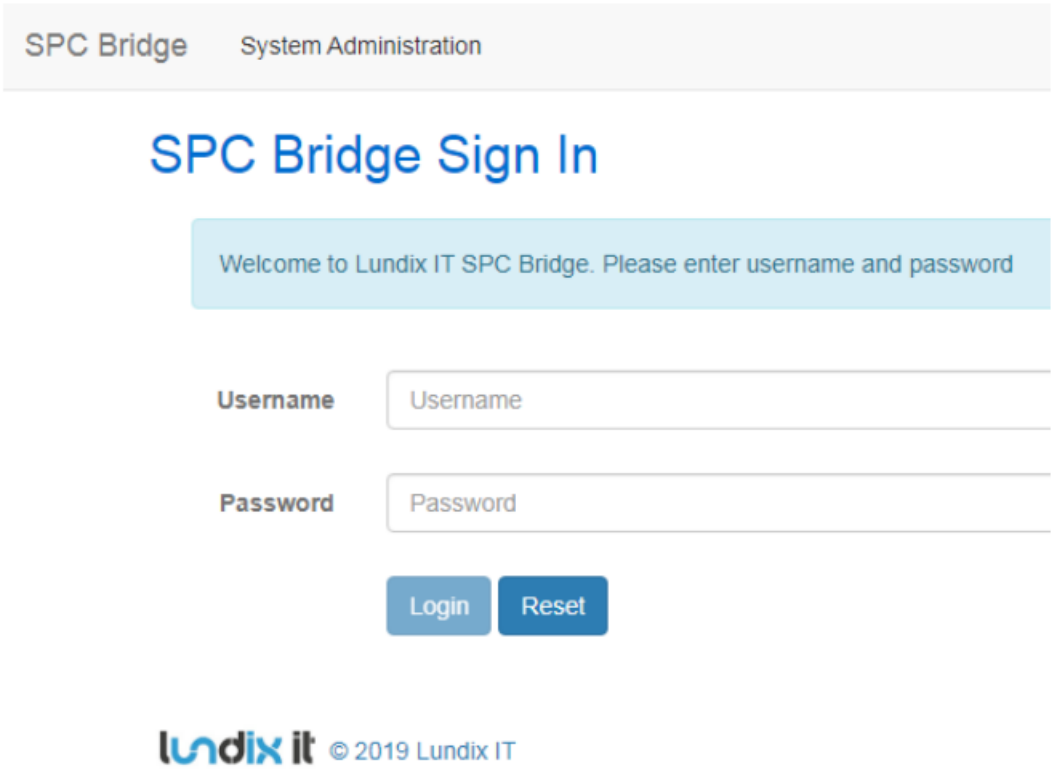
3.4 Change Administration Password

The default administration password for accessing the device is **dragino**. Of security reasons it is highly recommended to change the password as soon as possible. Go to ***System -> Administration*** section **Device Password** to change the password. The same password is used in both Administration Web GUI and for ssh access to the device.

4 SPC Bridge Configuration

4.1 SPC Bridge Sign In

Type IP address of the SPC Bridge in the web browser address field, go to SPC Bridge sign in page, enter username (**spacebridge**) and password (default **Spacebridge!**) and click **Login**.



4.2 SPC Communication (FlexC)

To setup the communication link between SPC Panel and SPC Bridge you have to configure the link in both SPC Panel and SPC Bridge ends.

4.2.1 SPC Panel – FlexC Settings.

Use **Vanderbilt SPC Web interface** and define the FlexC communication following this instructions:

1. Select Full Engineer mode
2. Create a specific user for the SPC Bridge communication, e.g **spcbridge**. User profile should be Manager and you need also to define a web password for the user. (To be able to set a web password you need to login as the user in the SPC web interface).
3. Select **Communications -> FlexC -> Event Profiles**. Click on **Add** to add a new event profile. Give the event profile the name **SPC Bridge Events** and select (check) the report checkboxes for all event (You may consider reducing these settings later to just necessary events for the application)
4. Select **Communications -> FlexC -> FlexC ATS**. Select **Add Custom ATS** and change following from the default settings:
    - ATS Name = SPC Bridge
    - Event Profile = SPC Bridge Events (created in step 3)
    - ATS Polling Timeout = 60 seconds
    - Uncheck Generate FTC and Re-queue Events

5. Select **Add ATP to FlexC RCT** and change following from the default settings:
    - SPT Account Code = 999
    - RCT URL or IP Address = IP Address of the SPC Bridge
    - ATP Category = Cat 6 [Ethernet]

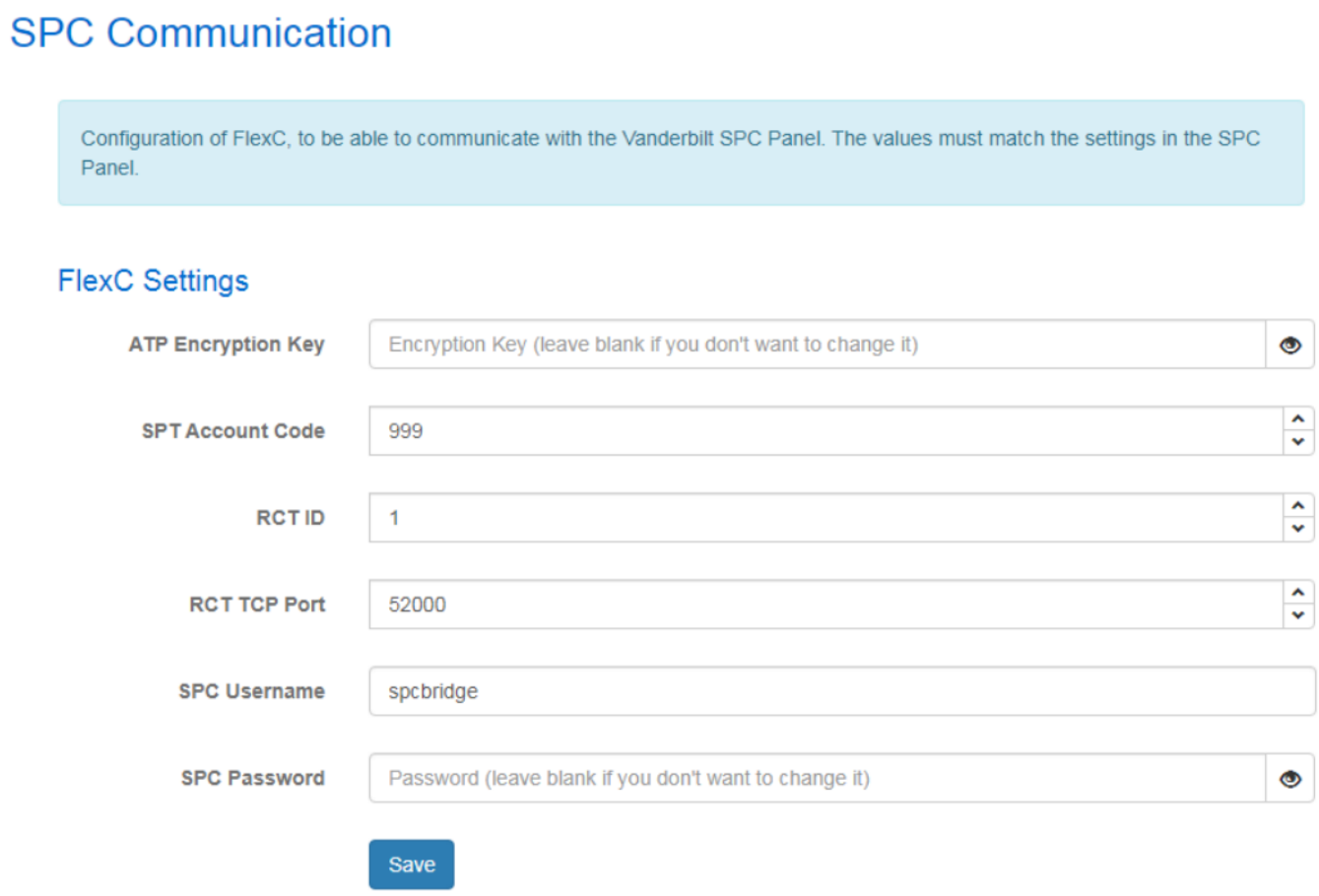
6. Open **Advanced ATP Settings** and change following from the default settings:
    - Encryption Key Mode = Fixed Encryption
    - Encryption key (64 hex digits) = Your own Must be exactly 64 hex digits (0-9, a-f).

7. Leave Full Engineer

NOTE! In Full Engineer mode the SPC panel is not reporting any events to the SPC Bridge.

4.2.2 SPC Bridge – SPC Communication Settings

In the **SPC Bridge Web interface,** login and select **SPC ->SPC Communication** and fill in the form according to:

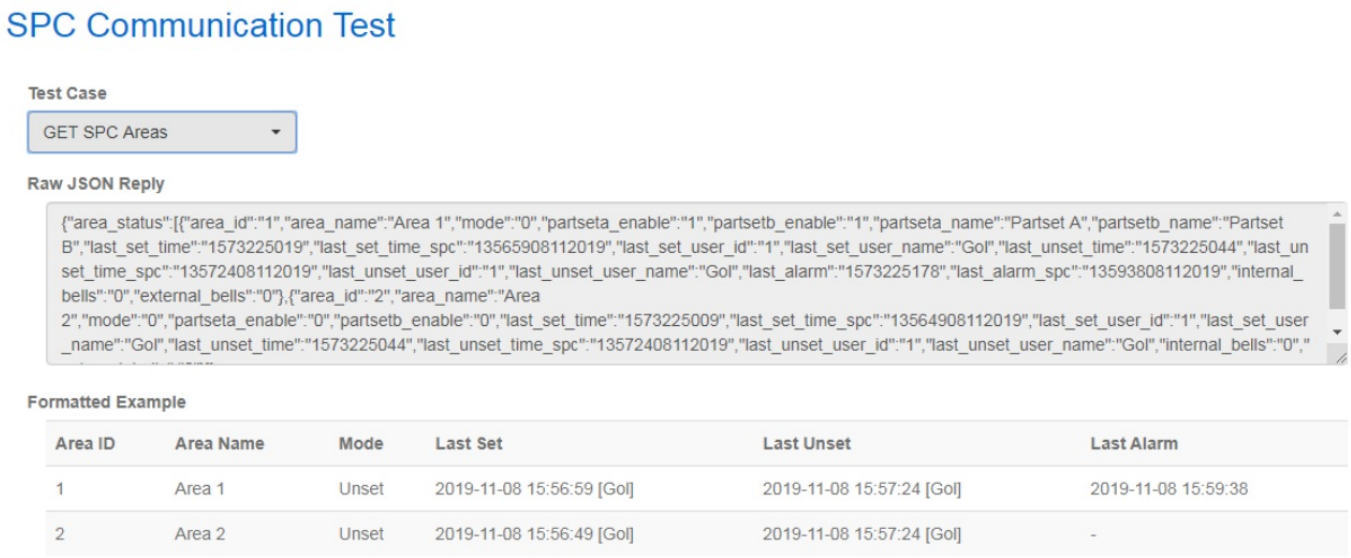


Element	Description
ATP Encryption Key	ATP Encryption Key. 64 hex numbers (0-9, a-f, A-F). Must match correspon ding key in SPC Panel FlexC settings. (Default key: 000011112222…dddd eeeeffff) **NOTE!** Of security reason a saved encryption key is never shown again. Just leave the field blank if you don’t want to change the key.

SPC Account Code	ATP Account Code. Must match corresponding key in SPC Panel FlexC set tings.
RCT ID	RCT Id. Must match corresponding id in SPC Panel FlexC settings.
RCT TCP Port	RCT TCP Port. Must match corresponding value in SPC Panel FlexC settin gs.
SPC Username and Password	Credentials for FlexC communication. User must be defined in the SPC Pa nel and have a corresponding web password. Valid username: max 16 characters, not including space, double quotes, ba ckslash or tilde characters. Valid password: max 16 characters, not including space, double quotes, ba ckslash or tilde characters. **NOTE!** Of security reason a saved password is never shown again. Just le ave the field blank if you don't want to change the password.

4.3 SPC Communication Test

To be sure that the communication between SPC Bridge and SPC panel is working properly you can use the tests provided in **SPC ->SPC Communication Test**. In the option menu you can choose between query SPC areas, zones or the system log.



4.4 Modbus TCP Server

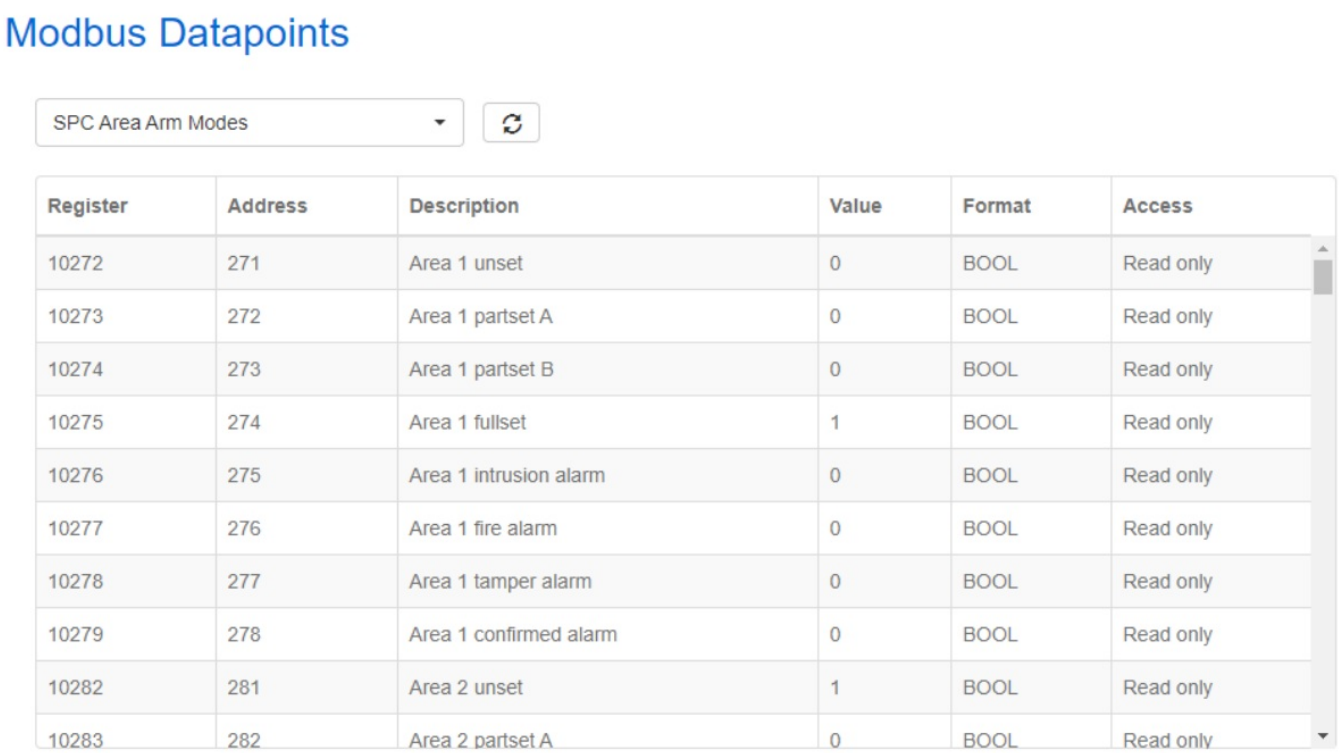
Element	Description
Modbus Server Port	The port the Modbus Client should use for connection to SPC Bridge Modbus. Default value is 502.
Allowed Modbus Client	IP Address of Modbus Client allowed to connect to SPC Bridge Modbus. Default value 0.0.0.0 allows any Client to connect.
NOTE! Of security reason, it is highly recommended to set the IP address of the Modbus Client in **Allowed Modbus Client**.	

4.5 Modbus Datapoints

Interface -> Modbus Datapoints shows the current values of the Modbus datapoints and can be used for troubleshooting. The objects are divided in following categories:

- Com Status
- SPC Area Arm Status
- SPC Area Status
- SPC Zone Input States
- SPC Zone Status
- SPC Area Commands
- SPC Zone Commands

See section **5.3 Modbus Register Map** for the datapoints details.

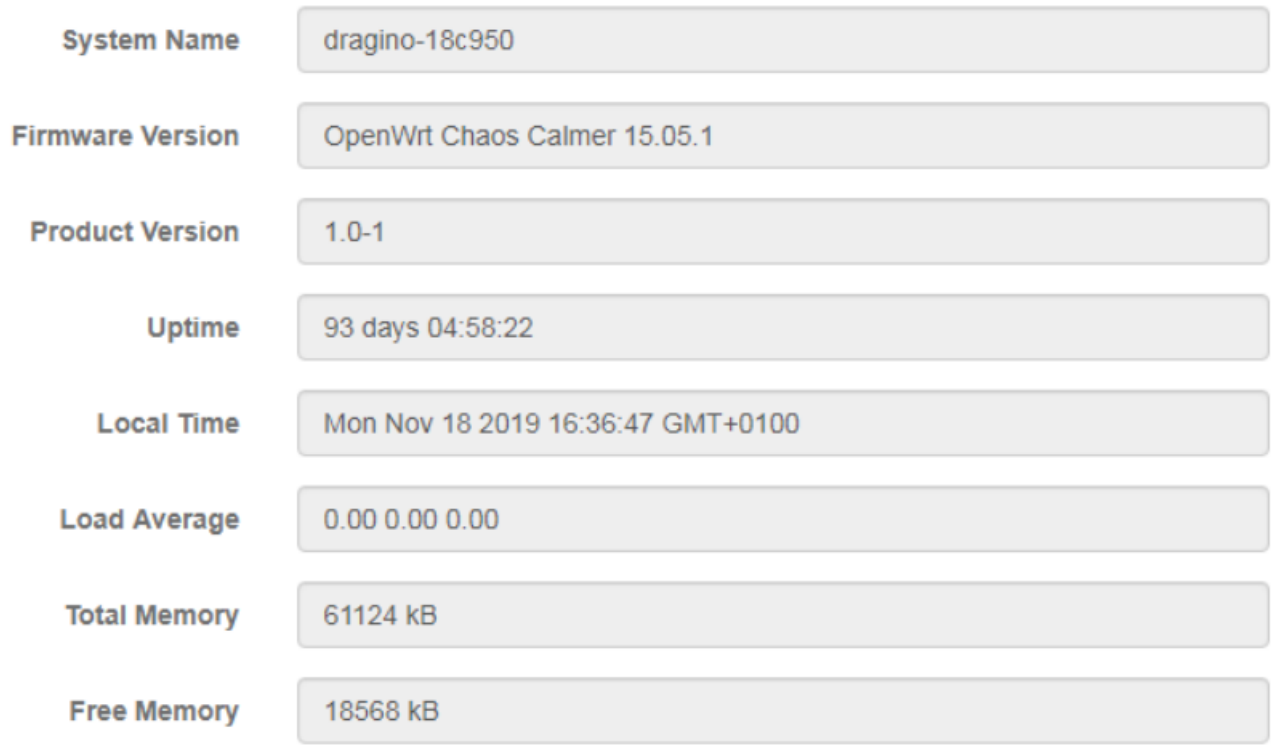


Element	**Description**
Register	Modbus register number
Address	Modbus relative address (decimal)
Description	Datapoint description
Value	Current value
Format	BOOL (0/1) or UINT16 (16 bits unsigned integer)

Access	Read only: Modbus client is only allowed to read the value Write only: Modbus client is allowed to change the value. (Read is not supported)

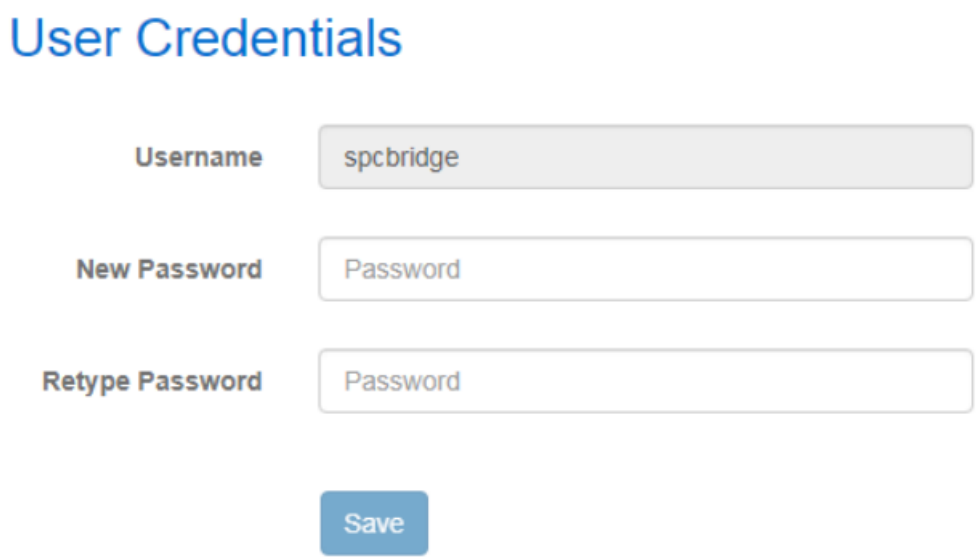
4.6 System Info

System -> System Info shows some basic information about the SPC Bridge hardware and software.



4.7 System User

To change the password for the SPC Bridge user (spcbridge) go to **System -> User** and enter a new password twice. **Note!** Username is not possible to change.



5 Modbus Communication

5.1 Modbus Function Codes

SPC Bridge Modbus supports following function codes:

Function Code	Description	Max Consecutive Values in reply
02	Read discrete inputs (1x). Value type: 1-bit (0 or 1) (BOOL)	2000
03	Read holding registers (4x). Value type: unsigned 16 bits integer (UINT16)	125
04	Read input registers (3x). Value type: unsigned 16 bits integer (UI NT16)	125
06	Write a single holding register (4x). Value type: unsigned 16 bits i nteger (UINT16)	–

5.2 Modbus Error Codes

SPC Bridge Modbus can reply with following errors:

Error Code	Name	Description
1	Illegal Function	The function code received in the query is not is not allowed by the Modbus server
2	Illegal Data Address	The data address (register number) received in the query is not an allowed address for the Modbus server. If multiple registers were requested, at least one was not permitted.
3	Illegal Data Value	The value contained in the query's data field is not acceptable to the Modbus server.

5.3 Modbus Register Map

5.3.1 Register Types

SPC Bridge Modbus use following Modbus Registers:

Register	Modbus Address Range	Description
Discrete Input (1x)	0 – 430	Discrete inputs. Value type: 1 bit (0 or 1) (BOOL)
Input Register (3x)	0 – 350	Input registers. Value type: unsigned 16 bits integer (UINT16)
Holding Register (4x)	0 – 24	Holding register. Value type: unsigned 16 bits integer (UINT16)

5.3.2 Communication Status

Following data are available:

Register Number	Modbus Address	Name	Values	Format	Access
30001	0	SPC com status	0 = SPC communication is under initialization (datapoint values are not reliable), 1 = SPC communication is OK, 2 = SPC communication has failed (data point values are not reliable) To test SPC communication please see section 4.3.	UINT16	Read only

30002	1	Area command reply status	0 = Last area command succeeded, 1-255 = Area command failed error code. Codes are listed in section 7.1 SPC Command Error Codes.	UINT16	Read only
30003	2	Zone command reply status	0 = Last zone command succeeded, 1-255 = Zone command failed error code. Codes are listed in section 7.1 SPC Command Error Codes.	UINT16	Read only

5.3.3 SPC Area Commands

Common for all SPC areas following commands will be available:

Register Number	Modbus Address	Name	Values	Format	Access
40012	11	Area unset command	ID of area to unset The success/error of the command is reported in “Area command reply status”.	UINT16	Read/Write
40013	12	Area partset A command	ID of area to partset A The success/error of the command is reported in “Area command reply status”.	UINT16	Read/Write

40014	13	Area partset B command	ID of area to partset B The success/error of the command is reported in “Area command reply status”.	UINT16	Read/Write
40015	14	Area fullset command	ID of area to fullset (immediately) The success/error of the command is reported in “Area command reply status”. The fail to set reason is reported in “Area fail to set reason”	UINT16	Read/Write

40016	15	Area delayed full set command	ID of area to fullset when exit time has expired The success/error of the com mand is reported in “Area command re ply status”. The fail to set reason is reported in “Ar ea fail to set reason” (after exit time ha s expired or been canceled)	UINT16	Read/Writ e

Area ID = 1 to maximum number of areas (16).

5.3.4 SPC Zone Commands

Common for all SPC zones following commands will be available:

Register Number	**Modbus A ddress**	**Name**	**Values**	**Format**	**Access**
40022	21	Zone inhibit com mand	ID of zone to inhibit The success/error of the command is r eported in “Zone command reply statu s”.	UINT16	Read/Writ e

40023	22	Zone deinhibit co mmand	ID of zone to deinhibit The success/err or of the command is reported in “Zon e command reply status”.	UINT16	Read/Writ e
40024	23	Zone isolate com mand	ID of zone to isolate The success/error of the command is r eported in “Zone command reply statu s”.	UINT16	Read/Writ e
40025	24	Zone deisolate c ommand	ID of zone to deisolate The success/error of the command is r eported in “Zone command reply statu s”.	UINT16	Read/Writ e

Zone ID = 1 to maximum number of zones (256).

5.3.5 SPC Area Arm Status

For **each SPC area** following arm status will be available:

Relative Register Number *	Relative Modbus Address **	Name	Values	Format	Access
+1	+1	Area X unset	0 = Area is not unset, 1 = Area is unset (disarmed)	BOOL	Read only
+2	+2	Area X partset A	0 = Area is not partset A, 1 = Area is partset A	BOOL	Read only
+3	+3	Area X partset B	0 = Area is not partset B, 1 = Area is partset B	BOOL	Read only
+4	+4	Area X fullset	0 = Area is not fullset, 1 = Area is fullset (armed)	BOOL	Read only
+5	+5	Area X intrusion alarm	0 = Area has no intrusion alarm ***, 1 = Area has at least one intrusion alarm ***	BOOL	Read only

+6	+6	Area X fire alarm	0 = Area has no fire alarm ****, 1 = Area has at least one fire alarm ******	BOOL	Read only
+7	+7	Area X tamper alarm	0 = Area has no tamper alarm *****, 1 = Area has at least one tamper alarm *****	BOOL	Read only
+8	+8	Area X confirmed alarm	0 = Area has no confirmed alarm ***, 1 = Area has at least one confirmed alarm ***	BOOL	Read only
+9	+9	Not used			

+10	+10	Not used			

X = 1 to maximum number of areas (16).

*Register number = 10271 + (X-1) * 10 + ‘relative register number’
** Modbus address = 270 + (X-1) * 10 + ‘relative modbus address’.
*** Value is based on Alarm status for zone types Alarm, Exit/Entry, Glassbreak and Exit/Entry2.
**** Value is based on Alarm status for zone type Fire.
***** Value is based on Alarm status for zone type Tamper and Tamper status for all zone types.

Example.

Register Number	Modbus Address	Name
10272	271	Area 1 unset
10273	272	Area 1 partset A
10274	273	Area 1 partset B
10275	274	Area 1 fullset
10276	275	Area 1 intrusion alarm
10277	276	Area 1 fire alarm
10278	277	Area 1 tamper alarm
10279	278	Area 1 confirmed alarm
10280	279	Not used
10281	280	Not used
10282	281	Area 2 unset
10283	282	Area 1 partset A
|	|	|
10422	421	Area 16 unset
10423	422	Area 16 partset A
|	|	|
10429	428	Area 16 confirmed alarm
10430	429	Not used
10431	430	Not used

5.3.6 SPC Area Status

For **each SPC area** following area status will be available:

Relative Register Number *	Relative Modbus Address **	Name	Values	Format	Access
+1	+1	Area X unset user id	1 – 255 = SPC User ID of user who last unset the area, 0 = User Id is unknown Will be updated every time Area mode changes to Unset and if value changes of other reason e.g at startup.	UINT16	Read only
+2	+2	Area X fullset user id	1 – 255 = SPC User ID of user who last fullset the area, 0 = User Id is unknown	UINT16	Read only

			Will be updated when Area mode changes to Fullset (and if value changes of other reason e.g at startup)		

+3	+3	Area X fail to set reason	0 = Area fullset succeeded, 1 = Interlocked, 2 = Calendar was preventing area fullset, 100 (0x64) = An area was preventing area fullset, 101 (0x65) = A (open) zone was preventing area fullset, 102 (0x66) = An alert was preventing area fullset, 200 (0xC8) = Other reason was preventing area fullset Will be updated every time Area mode changes to new value and if value changes of other reason e.g at exit delay and startup.	UINT16	Read only
+4	+4	Not used			
+5	+5	Not used			

X = 1 to maximum number of areas (16).

- Register number = 30271 + (X-1) * 5 + ‘relative register number’
- ** Modbus address = 270 + (X-1) * 5 + ‘relative modbus address’

Example.

Register Number	Modbus Address	Name
30272	271	Area 1 unset user id
30273	272	Area 1 fullset user id
30274	273	Area 1 fail to set reason
30275	274	Not used
30276	275	Not used
30277	276	Area 2 unset user id
30278	277	Area 2 fullset user id
30279	278	Area 2 fail to set reason
30280	279	Not used
30281	280	Not used
|	|	|
30347	346	Area 16 unset user id
30348	347	Area 16 fullset user id

30349	348	Area 16 fail to set reason
30350	349	Not used
30351	350	Not used

5.3.7 SPC Zone Input States

For **each SPC zone** (alarm input) following input value will be available:

Register Number	Modbus Address	Name	Values	Format	Access	
10011 + X	10 + X	Zone X state	0 = Zone is Closed, 1 = Zone is Open	BOOL	Read only	

X = 1 to maximum number of zones (256).

Example.

Register Number	Modbus Address	Name
10012	11	Zone 1 state
10013	12	Zone 2 state
|	|	|
10139	138	Zone 128 state
|	|	|
10267	266	Zone 256 state

5.3.8 SPC Zone Status

For **each SPC zone** (alarm input) following status value will be available:

Register Number	Modbus Address	Name	Values	Format	Access	
30011 + X	10 + X	Zone X status	0 = OK, 1 = Inhibited, 2 = Isolated, 3 = Soak, 4 = Tamper, 5 = Alarm, 6 = OK, 7 = Trouble, 8 = Masked, 9 = Post Alarm	UINT16	Read only	

X = 1 to maximum number of zones (256).

Example.

Register Number	Modbus Address	Name
30012	11	Zone 1 status
30013	12	Zone 2 status
|	|	|
30139	138	Zone 128 status
|	|	|
30267	266	Zone 256 status

6 Advanced Users

6.1 Backup of Configuration Settings

In ***System Administration -> System -> Backup / Flash Firmware***, section **Backup /Restore**, you can save a backup copy of your settings on your PC and later use it to restore the settings.

6.2 Upgrading software

In ***System Administration -> System -> Backup / Flash Firmware***, you can upgrade the firmware to a new version. The firmware/image file should have the name **dragino-spc-bridge-Modbus-vX.X.X- squashfs-sysupgrade.bin.** For minor upgrades you can keep your current settings by selecting **Keep settings**. For major upgrades it is preferable to not keep the settings, because they can be incompatible with the new firmware.

1. Copy the image file provided by Lundix to the desktop of your
2. In SPC Bridge ***System Administration GUI***, go to ***System->Backup/Flash firmware***
3. Just to be sure, do a backup copy of your settings with ***Download backup***
4. Under Flash new firmware image

- Check **Keep settings** if you would like to preserve your current
- Select **Image** Select and open the new image file.
- Click on **Flash image.** The file is now uploaded and verified. Click **Proceed** to continue the installation

5. Wait at least 5 minutes until the installation is finished. (LED Power is ON and LED LAN is ON or Blinking)
6. Go back to sign in page, sign in again and check the settings

6.3 SSH Access

The device has as default **ssh** access enabled. Login using username **root** and same password as in the System Administration GUI (default **dragino**). The settings for the SSH access can be changed in the ***System Administration->System -> Administration,*** section **SSH Access**.

6.4 Resetting the SPC Bridge

The SPC Bridge has a toggle button which can be used to reset the device. When the SPC Bridge is **running in normal mode**, you can use a paper clip or similar to press and hold the toggle button.

- If pressing the toggle button and hold it for **5 seconds**, it will reset the **network settings** and other settings will be
- If pressing the toggle button and hold it for **30 seconds**, it will reset **ALL settings** to factory default

7 Appendices

7.1 SPC Command Error Codes

Error Code	Error Message
0	OK: Command succeeded
10	ERROR: Generic
11	ERROR: Unknown
12	ERROR: Missing ID
13	ERROR: Invalid ID
14	ERROR: Unknown Tag
15	ERROR: Memory Full
16	ERROR: Invalid Data
17	ERROR: Missing Data
18	ERROR: Invalid CRC

19	ERROR: Invalid Length
20	ERROR: Not ready
21	ERROR: Invalid Sequence No
22	ERROR: Invalid Decryption
23	ERROR: Invalid Connection Details
24	ERROR: Invalid Username
25	ERROR: Invalid Password
40	ERROR: Generic check failed
50	ERROR: Active
51	ERROR: Inactive
52	ERROR: Invalid User
53	ERROR: Invalid Number
54	ERROR: Authentication Failed
55	ERROR: Engineer Not Authorizedl
56	ERROR: Invalid Name
57	ERROR: Invalid Profile
58	ERROR: Invalid Site Code
59	ERROR: Invalid PIN
60	ERROR: Duplicate
61	ERROR: Invalid Card Number
62	ERROR: In use
63	ERROR: Global ID in use
64	ERROR: Global Data Protected
65	ERROR: No Rights
66	ERROR: System Set
67	ERROR: Cannot delete
68	ERROR: Cannot delete last
69	ERROR: Date
70	ERROR: Calendar
71	ERROR: Area
72	ERROR: Door
73	ERROR: Web password not enabled

74	ERROR: Null data
75	ERROR: Bad Command
76	ERROR: Pin Expired
77	ERROR: Blocked
78	ERROR: Not allowed in Engineer mode
79	ERROR: Cannot delete default profile
80	ERROR: Cannot edit default profile
100	ERROR: XML – Buffer Fail
101	ERROR: XML – Bad Format
102	ERROR: XML – Bad Data
103	ERROR: XML – Unknown Tag
104	ERROR: XML – Compulsory Parameter Not Found
120	ERROR: File – Fail
121	ERROR: File – No Space
122	ERROR: File –Not Found
123	ERROR: File – Header
124	ERROR: File – Flash
125	ERROR: File – Flash Verify
126	ERROR: File – Flash Erase
140	ERROR: HTTP – Compulsory Parameter Not Found
160	ERROR: SAM – WD Output
255	ERROR: SPC Communication error

7.2 End-User License Agreement for SPC Bridge (EULA)

IMPORTANT PLEASE READ THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT CAREFULLY BEFORE USING THE SPC BRIDGE SOFTWARE OR HARDWARE. SPC Bridge End-User License Agreement ("EULA") is a legal agreement between you (either an individual or a single entity) and Lundix IT, Sweden, for the SPC Bridge software and hardware product(s) (referred to as the "PRODUCT") which may also include associated software components, media, printed materials, and "online" or electronic documentation. By installing, copying, or otherwise using the PRODUCT, you agree to be bound by the terms of this EULA. This license agreement represents the entire agreement concerning the PRODUCT between you and Lundix IT (referred to as "licenser"), and it supersedes any prior proposal, representation, or understanding between the parties. If you do not agree to the terms of this EULA, do not install or use the PRODUCT.

The PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The software is licensed, not sold.

GRANT OF LICENSE.

The PRODUCT is licensed as follows:

- The FlexC communication program is based on Vanderbilt propriety protocol FlexC and therefore **NOT open-source.**
- **All other software in SPC Bridge** is licensed under many different open source licenses**.**
- **Backup Copies.** You may make copies of the software as may be necessary for backup and archival purposes.

DESCRIPTION OF OTHER RIGHTS AND LIMITATIONS.

- **Maintenance of Copyright**
  You must not remove or alter any copyright notices on any and all copies of the PRODUCT.
- **Prohibition on Reverse Engineering, DE compilation, and**
  You may not reverse engineer, decompile, or disassemble the program SPC Flex Gateway.
- **Support**
  Lundix IT may provide you with support services related to the PRODUCT ("Support Services"). Any supplemental software code provided to you as part of the Support Services shall be considered part of the PRODUCT and subject to the terms and conditions of this EULA.
- **Compliance with Applicable**
  You must comply with all applicable laws regarding use of the PRODUCT.

COPYRIGHT

All title, including but not limited to copyrights, in and to the PRODUCT and any copies thereof are owned by Lundix IT or its suppliers. All title and intellectual property rights in and to the content which may be accessed through use of the PRODUCT is the property of the respective content owner and may be protected by applicable copyright or other intellectual property laws and treaties. This EULA grants you no rights to use such content. All rights not expressly granted are reserved by Lundix IT.

NO WARRANTIES

Lundix IT expressly disclaims any warranty for the PRODUCT. The PRODUCT is provided 'As Is' without any express or implied warranty of any kind, including but not limited to any warranties of merchantability, noninfringement, or fitness of a particular purpose. Lundix IT does not warrant or assume responsibility for the accuracy or completeness of any information, text, graphics, links or other items contained within the PRODUCT. Lundix IT makes no warranties respecting any harm that may be caused by the transmission of a computer virus, worm, time bomb, logic bomb, or other such computer program. Lundix IT further expressly disclaims any warranty or representation to Authorized Users or to any third party.

LIMITATION OF LIABILITY

In no event shall Lundix IT be liable for any damages (including, without limitation, lost profits, business interruption, or lost information) rising out of 'Authorized Users' use of or inability to use the PRODUCT, even if Lundix IT has been advised of the possibility of such damages. In no event will Lundix IT be liable for loss of data or for indirect, special, incidental, consequential (including lost profit), or other damages based in contract, tort or otherwise. Lundix IT shall have no liability with respect to the content of the PRODUCT or any part thereof, including but not limited to errors or omissions contained therein, libel, infringements of rights of publicity, privacy, trademark rights, business interruption, personal injury, loss of privacy, moral rights or the disclosure of confidential information.

7.3 Open Source Software

The SPC Bridge software is based on OpenWrt, a Linux distribution that bundles lots of third party software, under many different licenses. Source code for OpenWrt is available on **http://dev.openwrt.org.**

The most frequently used licenses are:

GNU General Public License (GPL) and GNU Lesser General Public License (LGPL) version 2. These firmware images contain software licensed under the GPLv2. A copy of that license can be found at **http://www.gnu.org/licenses/gpl-2.0.txt.**

Apache License version 2.0. These firmware images contain software licensed under the APLv2. You may obtain a copy of the License at **http://www.apache.org/licenses/LICENSE-2.0.** Modified files carry prominent notices stating who made the changes.

MIT License. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the “Software”), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

7.4 Open Source Hardware

The SPC Bridge hardware is based on the open source hardware Dragino, **http://www.dragino.com.** The Dragino hardware design is released under the **Creative Commons License**, **https://creativecommons.org/licenses/**. The modular Dragino design enables rapid development cycles for commercial products.

END OF DOCUMENT

Documents / Resources

	**lundix it SPC Bridge Modbus Integration of Vanderbilt SPC Intrusion System** [pdf] User Manual SPC Bridge Modbus, Integration of Vanderbilt SPC Intrusion System, SPC Bridge Modbus Integration of Vanderbilt SPC Intrusion System

References

- OpenWrt
- Apache License, Version 2.0
- Dragino :: Open Source WiFi, Linux Appliance
- gnu.org/licenses/gpl-2.0.txt
- A propos des licences - Creative Commons