2012

# Programming Manual
Dimmers &Relays

V2.1

**G4**

Created By Sameh  &  Basem

**Contents**

## Before you begin this course

Before you begin this course, you should have:
• Understand the basic bus Diagram Connection Topology
• Understand the Lighting and HVAC Connections Diagram
• Basic Knowledge about IP setting. (please see 2-2)
• Basic Knowledge of using Windows operating system.
• Basic Knowledge of using Windows Painter.


## Prerequisites

Either
• Products overview course.
• Installation Course.


## How this course is organized

Lighting and HVAC Programming Guide Course Organized in Simple way of

Product overview, Example Picture,   ( Notices) , ( Advices),

(  Example) .


For Training Course Request Please apply online
www.smarthomebus.com

# 1- <u>Introduction</u>

Welcome to S-BUS manual Programming Guide, you are now a Beginner Programmer who well know soon how the S-bus Programming is simple.

## 1-1   Objective:

After this course you will be able to program the Lights Dimmers ad relays with the switches Panel, Program curtain shades control, program the Air condition setting and DDP panel, create and download different Picture on the LCD, and start with Motion sensor and Automate your Project and many more…

## 1-2   S-Bus products:

S-BUS Products is vary with its powerful and multi functions, it have the high power dimmer and relay, Curtain, DMX and LED controller, Wall switches and Dynamic Display Panel "DDP", HVAC2 Air condition control and different type of sensors, like Motion sensor, light intensity sensor, Ultrasonic sensor, Dry input sensor, Analog input, current sensor, Power meter, Infrared receivers and transmitter, Security and Automation, Audio Module, Rs232, Programming and integrations Module

## 2- <u>Start Programming</u>

In smart home G4 there are two ways For Programming:
- Manual Way (For Basic Programming).
- Pc /Laptop Way (For Basic and Advanced Programming).

## 2-1  S-Bus Programming Software overview

You need on this lesson: to have your computer with you. Running on windows Operating system, Smart Cloud **G4** software, Programming port SB-DN-1IP, that enable you to search for all the devices that connected to the bus network.

1- Install your S-bus configuration software in your Computer by pressing   the
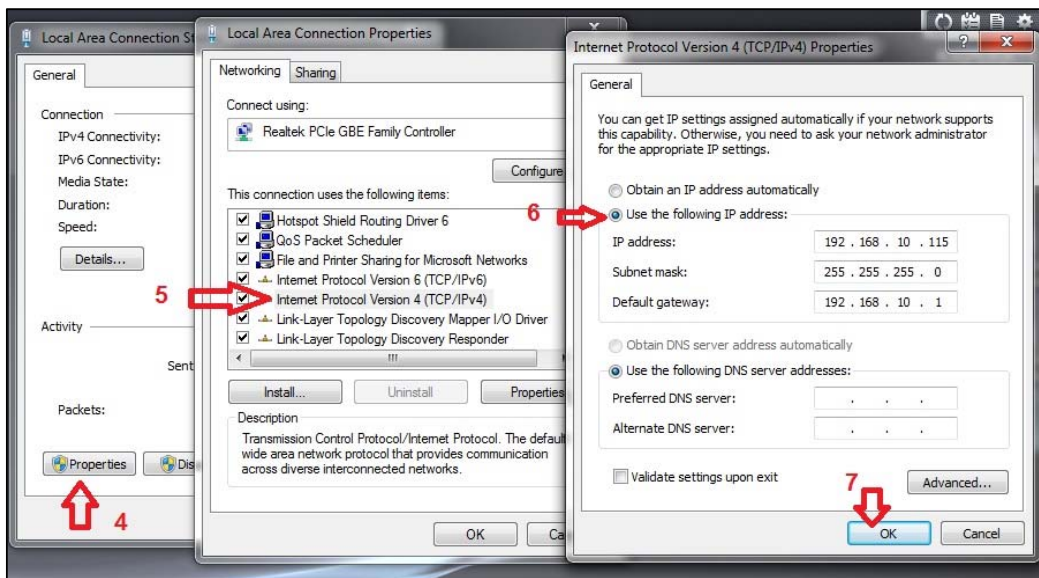     **Setup** icon and follow the installation steps windows

2- Plug in your Ethernet cable (Rj45) in your pc and the other end in the **RSIP** module or **Zaduio** module then **Set** your computer IP Address, for example

| | |
|---|---|
| IP | 192.168.**10**.115 |
| Subnet | 255.255.255.0 |
| Getaway | 192.168.**10**.1 |

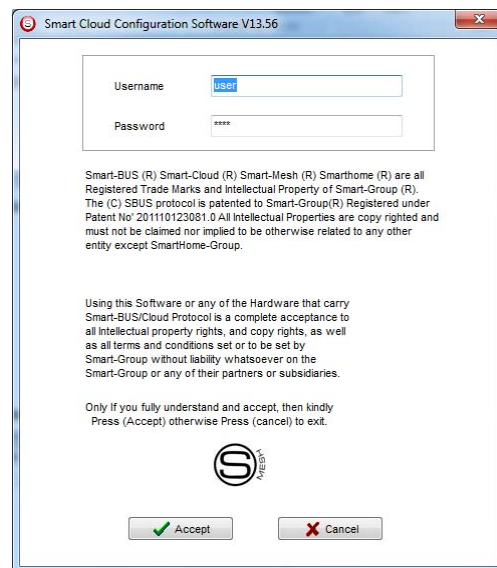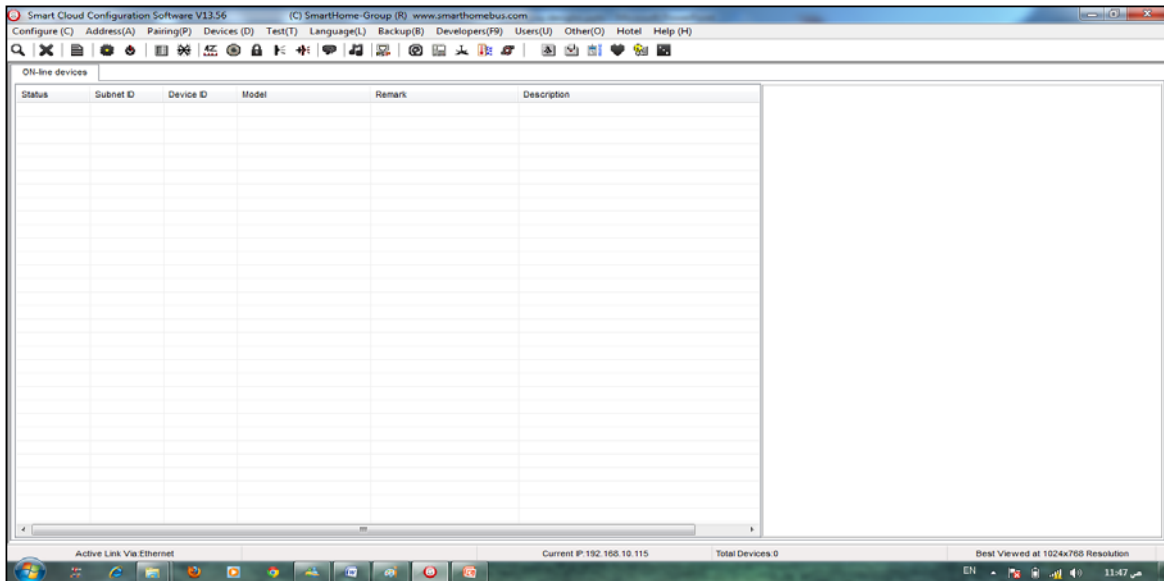⚠ The default address for S-bus Product is **192.168.10.xxx**
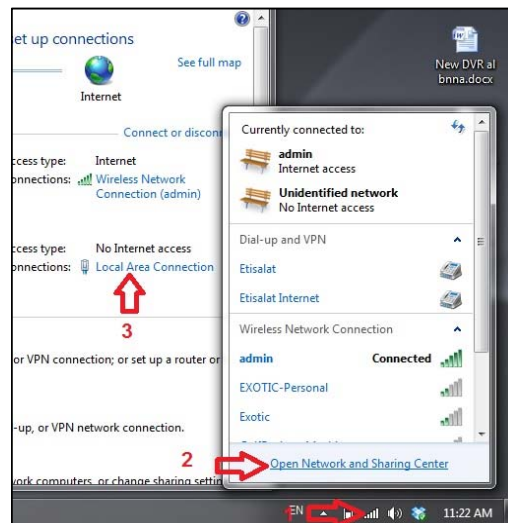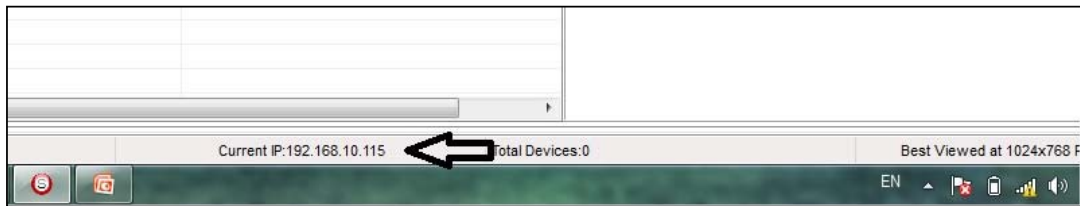
3- Run your S-bus smart cloud Software 

4- The Password window will open, type the default password is **user**



5- Your software will start

6- You can see your current IP on the footer of the software as 192.168.**10**.115 then your IP setting is ok.



⚠️ *Set your computer IP setting before starting the S-BUS Smart Cloud.*

⚠️ *You should always reset your Module every time you change the IP Address in order the new setting to be Active.*

After you set your Module IP Address now you should connect the module to Your Computer Network in order to communicate. The connection can be in two ways

1- Connect the 1Port IP/RSIP Module to the HUB or Data Switch and connect your Computer to the same data Switch as standard straight cable Network wiring.

2- Without using the HUB or data switch you can use the cross cable to connect your computer directly to the IP Module, see the next cross wiring diagram of TIA/EIA 568B crossed wiring

**TIA/EIA 568B Crossed Wiring**
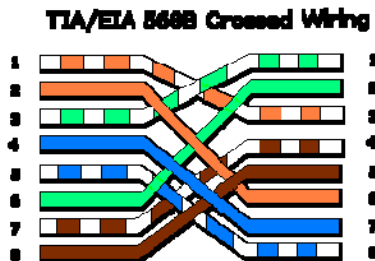


*You can use the Line command **Ping** to check your connection.*
*On your Computer, Go to start/ Run/ CMD then type Ping 192.168.10.xxx*
*If you see the following results similar to this Picture then your connection is successful*



*Always the Programmer should carry with his programming kit the cross cable for programming without needs of the Data Switch or HUB.*

## 2-2 S-bus Smart cloud Software basic setting

**Configure**
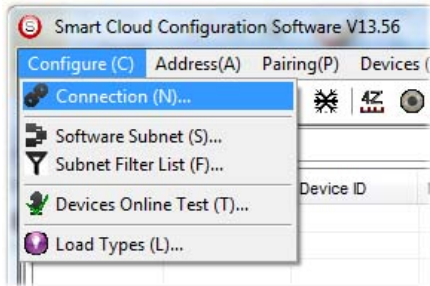


- *1- Connection*

You can change between Ethernet Connection and Serial Port connection,

 the Serial Port connection is old, slow and no longer use. Always Keep the setting on Ethernet connection
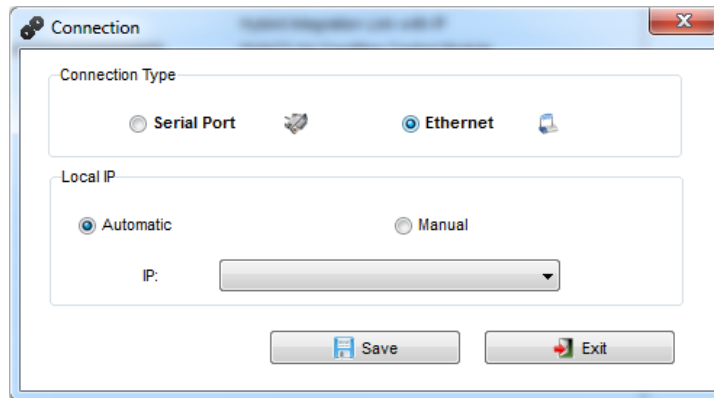


Also you can choose between **obtain Local IP Automatically** (Default)，
or to **input local IP Manually**.

 *Input local IP manually you can use it for example, if you are using in your laptop or computer Wireless and wired Network with different IP setting, and you want to choose the right one of it for programming, and don't want your S-bus software to detect your other IP address Automatically.*

- **2**- *Software Subnet ID*

The S-bus configuration software have fixed Device ID (254), but you can change its subnet ID only, the default software subnet is (Default = 254)

⚠️ *The software default subnet ID address is 254, Device ID 254, this address must be <u>unique</u>, in case other Device has the same address you will not be able to find that Device unless you change the Subnet of the software.*

- **3**- *Subnet Filter List:*

Here you can filter your subnet ID's that mean you can add more ranges if you have more than 254 devicess so you can add another subnet ID

- **4-** *Devices On-Line* test

You can Deactivate or activate the auto test of Online devices (Activate is Default).

- **5**- *Load type*

You can add some Remarks to your Load type to use it as reference and print it out later on the excel sheet.

## <u>Address</u>
Here you can search for the Device Addresses and load the Network and solve any conflict in the address. (For more Information see 3-2)

## <u>Pairing</u>
You can enable pairing or disable either for one device or for all devices, disable meaning you can't program S-bus modules in manual anymore until you enable it again.

## <u>Devices</u>
You can go here directly to Devices setting Categorized by type

## <u>Test</u>
This is important Function to check your Lights Circuit by flashing the lights ON/OFF and then you can give it name (for more information see 3-3 section).

## <u>Language</u>
You can change the Language between English and Chinese, and other Languages

## <u>Backup</u>
Important to backup and restore your Devices address and setting.
- For Backup:  put the subnet and device ID for desire device , choose the location for the backup file then click "Start backup" ,
- For Restore: put the subnet and device ID for desire device, choose the backup which you already made then click "Restore".
-
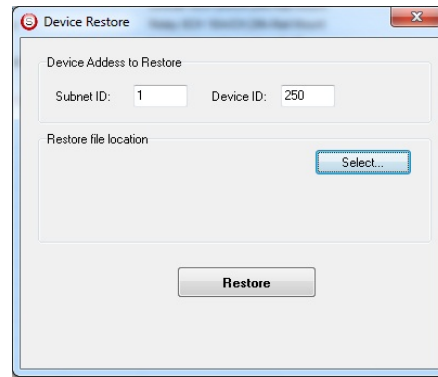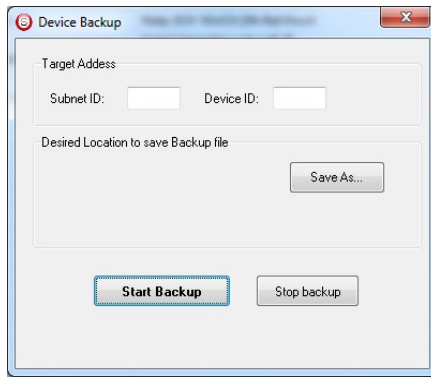
## 2-3   Devices address and Search:

Each of S-bus Devices must have its own Address in the Network, the Address
for each Device consist of 2 parts:
- ❖ **Subnet ID**
- ❖ **Device ID**

The subnet ID can be from 0 – 254
And the Device ID can be from 1 – 254
So you can put up to 65024 Deferent Devices in the same network with
deferent subnet and device ID Address
For example one of Dimmer Module Address is (Subnet 1, Device ID 5)

**There is 5 ways to Search for the Devices in the Smart cloud Software**
1- Fast Search
2- Advanced Search
3- Manually Search
4- Broadcast Address Device Search
5- Solve Conflict address search

*Fast Search*
The Fast search is very useful tools to test your communication and search your
devices Fast , the Fast search take around 2-15 seconds to finish load the
devices information in your network.
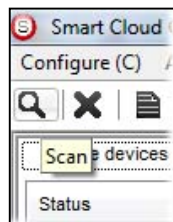


- Click on the **Scan** button
- Click on the **Fast search Button**
- Click **add all**
- Click **Exit** to exit the Window

⚠️ *Fast search can't load all the Network Devices, it is only load part of the devices, it is only good for small project that contain around 10 devices, and to check the network communication with your PC.*

## *Advanced Search*

The Advanced Search is a powerful tool for searching your Devices in the network. You can set the Subnet ID you like to search on it and select the range of device ID you want to search for.

Advanced search take 0.3 seconds for each device to load and total of 80 seconds to finish the search and load for 255 devices totally in each subnet.

- Click on the Online Search button 🔍
- Go to **advanced search** , put the subnet ID and the range of device ID search
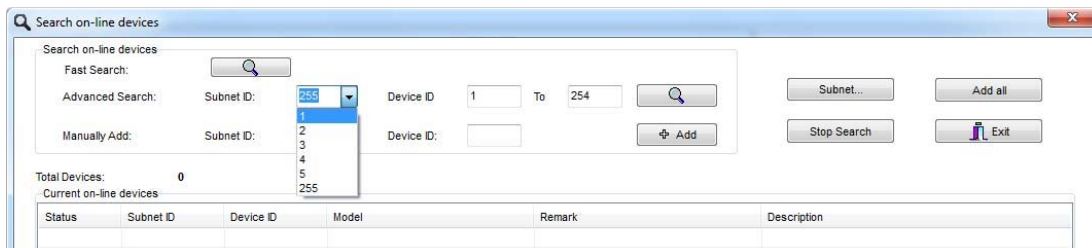


- Click **search ICON**
- Click **ADD ALL** after the search finish
- Click **Exit** to exit from the window
- click **stop** to stop the search
- Click **subnet** to add new subnet to the popup Menu subnet list

🤖 *Use the Advanced Search Always as your standard way to Load the Devices in the Network to your computer before you program in any new project.*

## *Manual Search*

Manual Search is a very fast and useful way to add known Device ID and subnet to your network



- Type the subnet and device ID that you know
- Click ADD
- Exit the Menu

## *Broadcast Address Device Search*

This tool is important when you add new devices or you start your new Project installation, many devices could have the same Address or the communication is not yet tested, this tool is important to check the communication between your device and the bus network and to change its initial address in the first time installation.
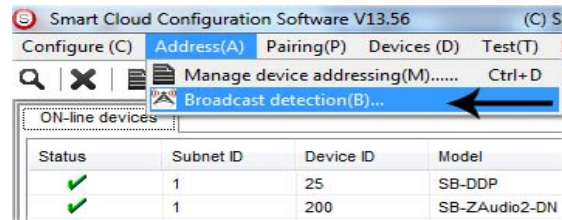


- On your software Click **Address** then **broadcast detection**
- Go to your device like Dimmer / Relay / sensor or Panel and keep pressing the **broadcast Address button** for 2 ~ 4seconds until the button LED color change to **RED**.
- In your software in the Broadcast Detection window click the **Detect Address** Button.
- Your Device ID and Subnet well appear automatically
- To change the address just type the new subnet ID or device ID you want then click **Save Address**
- Click **ADD to online device list** to load your device in the Devices Network List.
- Click **Exit** to Close the Window

S-BUS - Smart Home Programming Guide Ver. 2.1
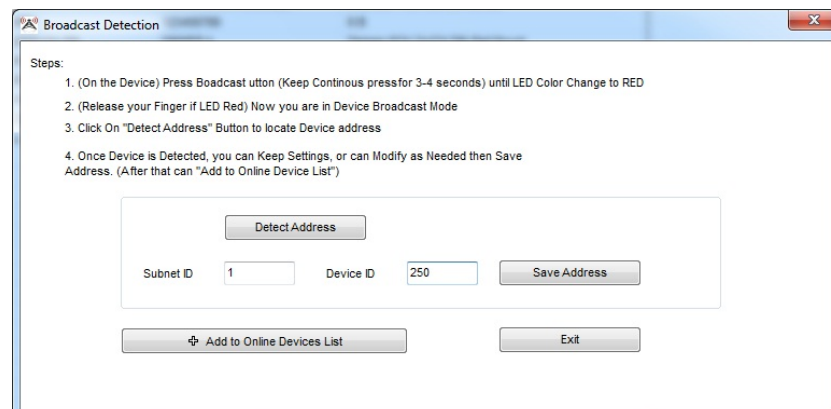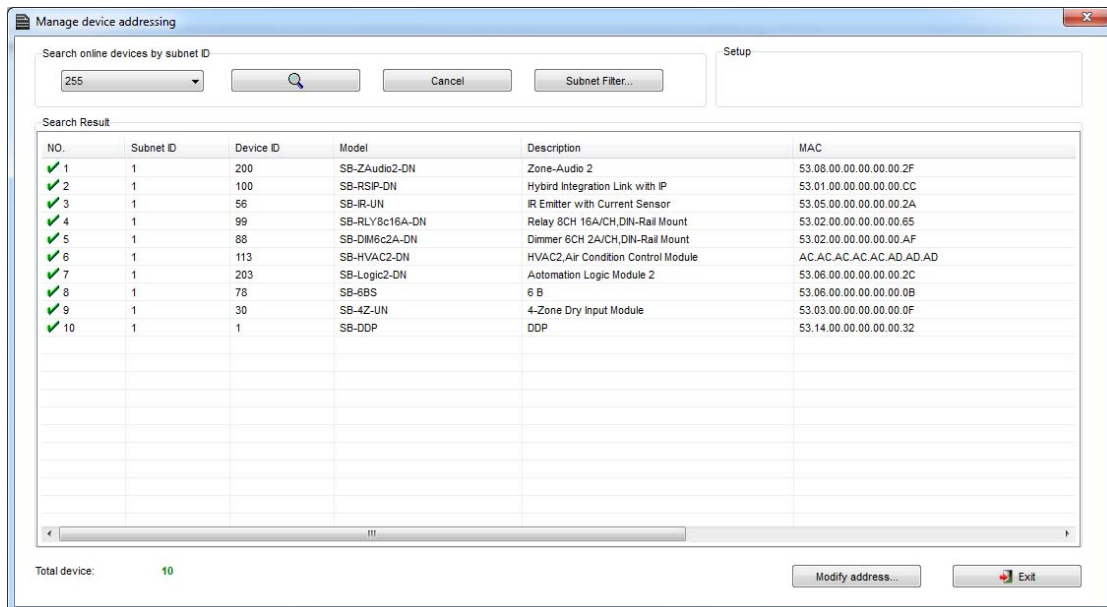
### 💡 *Solve Conflict address search*
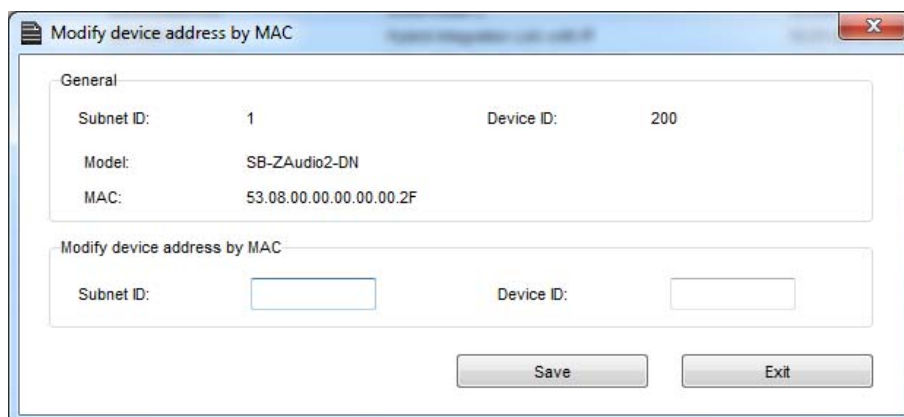
This type of search used to solve the conflict address, for example if 2 devices have the same address, then you can easily change the address of it without the need of disconnecting its wires from the network.

- Click **Address** or click the Address Shortcut icon   📄



- Select Subnet **255 (recommended)** or any desired subnet then click the search icon.
- Select the device you want to modify its address then click **modify Address** or double click on it
- New window will open, and then type the new Subnet ID and Device ID, then Click **Save**

S-BUS – Smart Home Programming Guide Ver. 2.1

## 2-4  Steps of Basic Programming

The Basic Programming for Lighting Motor and HVAC of S-bus Products
has procedure of Basic Steps as following

A- Check the communication   between your computer and the Bus

B- Broadcast each Dimmer, Relay, Motor curtain   HVAC control++ initial Address

C- Change the initial addresses to the desired one (**kindly check 2.5 for addresses range).**

D- Give name of each Dimmer, Relay Module (Remark).

E- Check each Lighting channel circuit if working and connected good

F- Give name for each channel (remark).

G- Make an excel sheet for all your Dimmers, relays, other module
    address and circuit name.

H- Make Area for each Dimmer, Relay module if required .

I-  Make Scene and Sequence for each Module if required .

J- Make safety power restore and delay time for scenes and safety as
    required.

K- Check the curtain module gives it address and name.

L- Set the channel name, the running time open and close running time.

M- Give the switch (6 gangs) and panel (DDP) its addresses and Name.

N- Assign the panel button to the corresponding scene or channel.

O- Set the button graphic picture for the DDP for each button.

P- Check the HVAC address give it address and name.

Q-Set on off relay sequence.

R- Set the VAV Voltage output if required.

 S- Set the safety HVAC running sequence T- assign the DDP Panel to its
HVAC unit.

U- Set the FAN speed, cool set point, type, adjust temperature sensor on the
    panel setting.

V- Set the required graphic for AC, and panel basic setting

W- Search for PIR motion sensor and give it address and name

X- Set the sensitivity, way of triggering, motion, no movement delay and
    commands

Y-connect the Z-audio 2 to the s-bus And address it

Z-Test and enhance your programming.


*Following the basic Programming steps procedure will save the
programmers time and effort.*

## 2-5  What is The Magic Line In our software ? :

In programming in  all S-bus Modules you will find the same line with same fields that's why we called it "Magic Line " .

If you want to send any command you have to use this magic line.

| Function no. | Subnet ID | Device ID | Type | Parameter 1 | Parameter 2 | Parameter 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 50 | Invalid switch | 1 | 2 | N/A |
| 2 | 10 | 11 | Invalid switch | 12 | 13 | N/A |
| 3 | 255 | 255 | Invalid switch | 255 | 255 | N/A |
| 4 | 255 | 255 | Invalid switch | 255 | 255 | N/A |
| 5 | 255 | 255 | Invalid switch | 255 | 255 | N/A |

If you notice the Command Line is contained of :

**Function No**.  : indicated to Order/Function  Number , the maximum order you can put is depend of the module .

**Subnet ID** : each device has subnet ID in our software you can put up to 254 subnet  ID.

**Device ID** : additional to the Subnet ID also each device must has uniqe ID to avoid the conflict . and  the range is 254.

Each Subnet ID can cover 254 devices and we have 254 subnet ID that means the total Number is 64516 devices.

**Type :**  What type of order you want to send, if you notice in the following pic the system has many types depend on the module

| Function no. | Subnet ID | Device ID | Type | Parameter 1 | Parameter 2 | Parameter 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 50 | Scene switch | 1 | 2 | N/A |
| 2 | 10 | 11 | Invalid switch | 12 | 13 | N/A |
| 3 | 255 | 255 | Scene switch | 255 | 255 | N/A |
| 4 | 255 | 255 | Sequence switch | 255 | 255 | N/A |
| 5 | 255 | 255 | Universal switch | 255 | 255 | N/A |
|  |  |  | Single channel lighting |  |  |  |
|  |  |  | Curtain switch |  |  |  |
|  |  |  | SMS control |  |  |  |
|  |  |  | Panel control |  |  |  |
|  |  |  | Broadcast scene |  |  |  |
|  |  |  | Broadcast channel |  |  |  |
|  |  |  | Security module |  |  |  |
|  |  |  | Zone-Audio 2 |  |  |  |

S-BUS   Smart Home Programming Guide Ver. 2.1

Parameter 1 ,Parameter 2 and Parameter 3 are related to "TYPE" field
like this Table :

| Function type | Parameter 1 | Parameter 2 | Parameter 3 |
|---|---|---|---|
| **Invalid** | N/A | N/A | N/A |
| **Scene Switch** | Area Number | Scene Number | N/A |
| **Sequence Switch** | Area Number | Sequence Number | N/A |
| **Universal Switch** | Switch Number | ON / OFF | N/A |
| **Single channel** | Channel Number | Brightness 0-100% | Fade time 0S - 60 M |
| **Curtain Switch** | Switch Number | Stop / ON/ OFF | N/A |
| **SMS** | Message | Message SMS Number | N/A |
| **Panel** | Invalid | N/A | N/A |
| **Panel** | IR Receiver | ON / OFF | N/A |
| **Panel** | Lock | ON / OFF | N/A |
| **Panel** | AC Power | ON / OFF | N/A |
| **Panel** | AC Cooling | 0-30 C , 32- 86F | N/A |
| **Panel** | ACFan Speed | Auto/high/med/slow | N/A |
| **Panel** | AC Mode | Auto/Cooling/Heating/FA | N/A |
| **Panel** | AC Heating | 0-30 C , 32- 86F | N/A |
| **Panel** | Rise temp | 0-30 C , 32- 86F | N/A |
| **Panel** | Reduse temp | 1-5 C/F | N/A |
| **Panel** | LCD Backlit | ON / OFF | N/A |
| **Panel** | LCD status ligh | 1~100 | N/A |
| **Panel** | Floor heating power | ON / OFF | N/A |
| **Panel** | Floor heating mode | Normal-day-night -away | N/A |
| **Panel** | Goto page | 1~7 | N/A |

| Function type | Parameter 1 | Parameter 2 | Parameter 3 |
|---|---|---|---|
| **Broadcast scene** | All Areas | Scene Number | N/A |
| **Broadcast Channel** | ALL Channel | Brightness 0-100% | Fade time 0S - 60 M |
| **Security Module** | Area Number | Arming Mode | N/A |
| **Zone-audio 2** | Source Control | SD Card/Audio In/FTP Server/FM Radio | N/A |
| **Zone-audio 2** | Play Mode | No Repeat/ Repeat Song/ Continued/ Repeat all | N/A |
| **Zone-audio 2** | Play List/Radio Channel | PREV Play List/Next Play ListSpecify Play List No/PREV | N/A |
| **Zone-audio 2** | Play Control | PREV Song/Next Song/Play/Stop | N/A |
| **Zone-audio 2** | Volume | VOL | 0-100 |
| **Zone-audio 2** | Volume | TREBLE | Reduce/increase |
| **Zone-audio 2** | Volume | BASS | Reduce/increase |
| **Zone-audio 2** | Play Specify Song | Folder No. | Song No. |

# 3- Relays and Dimmers Programming

Relays and Dimmers are the main modules for every lighting control system, the Leading Edge Dimmer, and smart relay save 30-70% of your lighting Energy consumption.

## 3-1   Relays and Dimmers type overview

S-bus Dimmers and Relay have many types that you can install in any project
1- Dimmers
- DIN-Rail Mount Dimmer 2ch 6A
- DIN-Rail Mount Dimmer 4ch 3A
- DIN-Rail Mount Dimmer 6ch 2A
- DIN-Rail Mount Dimmer 8ch ~ 1.5A
- DIN-Rail Mount Dimmer 12ch 1A

2- Relay ON/OFF controller
- DIN-Rail Mount, Relay Module 3CH, 1A
- DIN-Rail Mount, Relay Module 4CH, 20A
- DIN-Rail Mount, Relay Module 4CH, 16A
- DIN-Rail Mount, Relay Module 6CH, 16A
- DIN-Rail Mount, Relay Module 8CH, 10A
- DIN-Rail Mount, Relay Module 12CH, 10A

## 3-2   Setting Relay and Dimmers Address

When you install the Dimmer or relay first time, it takes default address as Subnet ID 1, Device ID 6. To change the address and check the communication you should use the *Broadcast Address Device Search as you see in the section 2-5 before)*
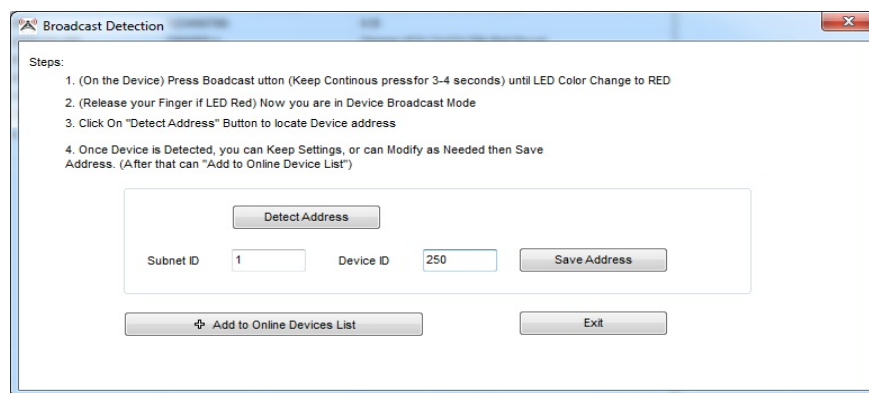*Every Din rail Module have Broadcast button as you can see in this Picture*



- On your software Click **Address**
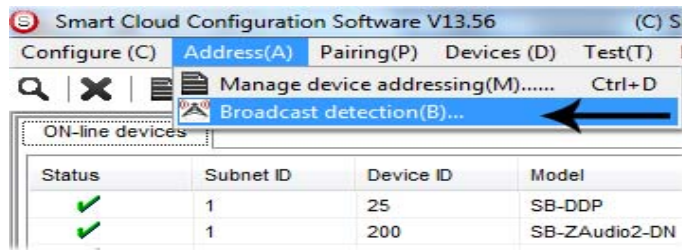
- Go to your device like Dimmer or Relay then keep pressing the broadcast Address button for 3-4 seconds    until LED color change to RED.
- In your software in the Broadcast Detection window click the **Detect Address**    Button.



- Your Device ID and Subnet well appear Automatically
- To change the address just type the new subnet ID or device ID you want, then click **Save Address**
- Click **Add to Online Devices list** to load your device in the Devices Network List.
- Click **Exit** to Close the Window


## 3-3   Channels search and Remarks

After you finish editing the initial Address for each Dimmer and Relay, Search for all Modules in the network using the Advanced Search, after that you can start giving different Name in the remarks for each Module.

- Double click on the Module that you see on the List after searching to open it for editing
- In the Remarks field type the name of the Module
- Click save after you type the name

S-BUS   Smart Home Programming Guide Ver. 2.1

⚠️ *Without giving name to the Dimmers or Relays in your Project, the program will be hard for any programmer to understand, troubleshoot, and enhance the program in the future; name and remarks always will help every programmer to do the programming*

*Always Give the Dimmers and Relay name that refer to its Location, for example if the Dimmer install in the floor 10 Apartment 20 then you can give it name for example DIM-10-20-A the next Dimmer in the same apartment can be DIM-10-20-B and so on and sticker Labeling can be stick on the dimmer Module itself with the same name*

Testing Channels online:
After we gave Address and name to the Dimmer, now we must test it channel and gave it name.
- In your software Menu go to **Test**
- set the Interval of seconds that will be flash the Light channel ON/OFF within this time (2 seconds is Default) after Editing it Click Save
- Edit the Subnet ID, Device ID of your Dimmer or Relay and Its Light Channel you want to test then click save

S-BUS   Smart Home Programming Guide Ver. 2.1

- Click start test button, than light icon will start Flashing ON/OFF
- Go to the channel light in your project that connect to this channel and see if the light is flashing or not.
- If the light channel is flashing ON/OFF that mean your connection is fine, then you can click stop test.
- Give the name of this Light channel in the channel remarks field then click save
- Go for the next light channel test, click save and follow the same steps for each module channels in your project.

Channel Remarks is very important for any programming, Programmer should edit all the remarks in simple and clear way to refer to the lights Channel name.

## 3-4    Relay Channels Setting

Relay channel setting will allow you to edit the channel remarks in faster way if you have the List of your connected channels on your relay before testing it, also you can edit for each channel the load type remarks, Switch On Delay (Seconds), and Protection ON Delay (Minutes)



Double click on any relay Module on the List the relay setting window will appear go to the Channel tab, and start editing
**_Channel Remarks_**: it is another fast way to type your channels of your module in simple way.
**_Load type_**: to edit every channel load type as reference remarks
**_Switching On Delay:_** for industry and some motors connection needs to delay the Relay to be ON from (0 to 25 seconds) for each channel
**_Protection Delay:_** is used for industry use mainly and some heavy duty Machines for safety ON by long time delay range from (0 – 60 Minutes)

## 3-5    Dimmer Channel Setting

In the Dimmer channel setting you can edit your Dimmer Lighting channel Remarks, Load type remarks, Lower Limit, Higher Limit.
Double click on any Dimmer    Module on the List then the Dimmer setting window will appear go to the Channel tab, and start editing
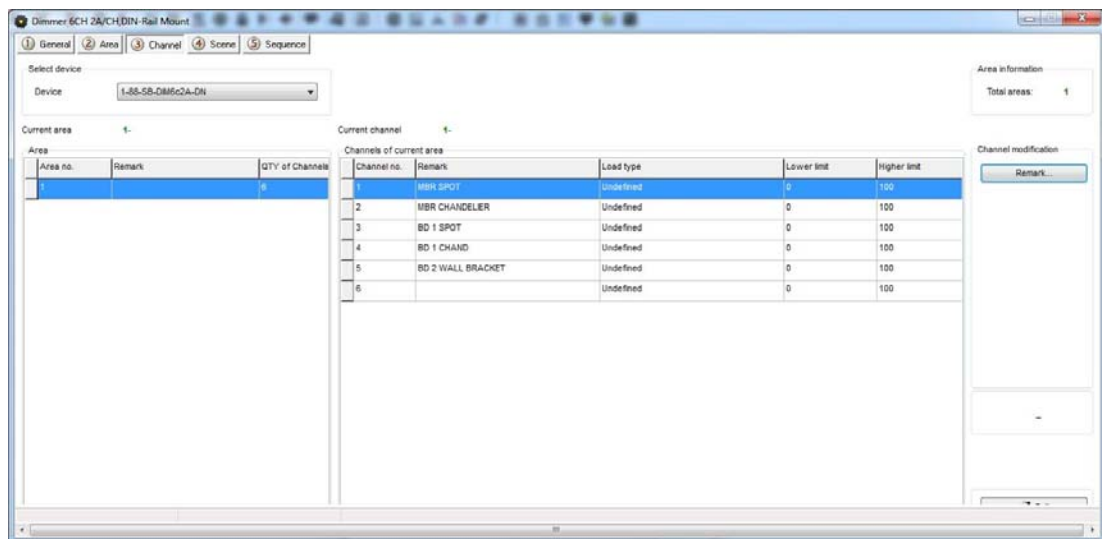
**Channel Remarks**: it is another fast way to type your channels of your module in simple way.

**Load type**: to edit every channel load type as reference remarks

**Lower Limit**: in this setting you can sit the lower Limit that you can dim to, beyond this level the Light will turn off totally.

*Lower Limit Option is useful when you connect a florescent Light that can't be dimmable to Dimmer module channel and you don't want it to be flickering when low voltage supply the florescent*

*if you don't want the florescent light to be ON while you make diming with fade time for all your channels than you can set the channel Lower Limit as 90% if connected to florescent or not dimmable light*

**Higher Limit**: in this setting you can sit the Higher Limit that you can Ramp to, Beyond this level the Light will turn ON to the maximum level.

## 3-6    Area Setting

In the Area setting you will divide your dimmer or Relay channels to different Area according to your project installation, each Area will have its scenes and sequences.
For example: if you have an apartment of 2 bed rooms, all its channels connected to the same dimmer, that mean you can divide the dimmer channels into 2 areas , type name for each area and later you can set the scenes and sequences of each Area separately.
- Double click on any Dimmer or relay on the List
- Got to **Area** Tab
- Click **Area Setup**
- By default all channels is included in Area 1, Remove the channel that not belong to this area by checking them and click the **Left Arrow**.
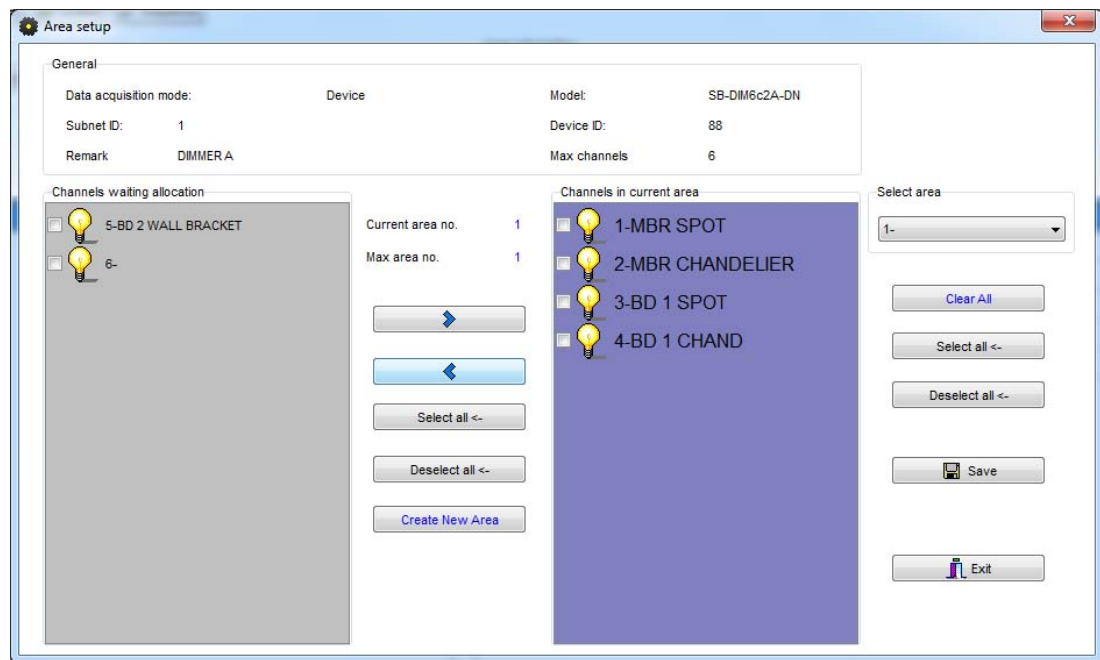


- Click **Create Area** to Add new Area
- Insert the remaining channels on this Area by pressing the **Right Arrow**
- When you create all you Area and assign Channels to it, Click **Save** and Click **Exit** to close your Area Setting
- Click **Area Remarks** and edit your Area names, then Click **Save** then **Exit**.

S-BUS  Smart Home Programming Guide Ver. 2.1

## 3-7    Scene Setting

After you complete your Area setting, then you can assign Different Scenes for Each Area you create
- Click on the **scene** tab
- **Select the Area** on the select Area section
- Input the scene number you want to edit From … To then click **confirm**
- Click **scene setup** to edit your scenes



- Edit the scene by modifying the output brightness and then click the next scene on the right list to edit it.
- Edit the scene running fade time on Minutes and seconds
- After you finish editing your scenes, click **save** and **exit**.
- Click **Remarks** to give the hint name for your scenes, click **save** and **exit**

**You have many tools to help you editing the scenes**



- **Modify Running time Synchronously** to apply the change effect for all the scenes running time together
- **Modify scene intensity Synchronously**, to modify all channels output level together
- **On-site Output scene**, to see the effect Live on your room before saving the scene.

Creating Area and scenes in the Modules is recommended for faster respond that control many channels in the same command.

⚠️ Every area has Scene 0 and it is not modifiable, and always Pre-Programmed as scene Off that set all the channels Lights of the area to 0%.

## 3-8   Scene Resume

This setting is very important for the dimmer in case of Power failure. The scene restore is the specified scene that the dimmer module will run it once the Power restore after the electricity down.
- Click **scene** tab then click on scene Resume
- Select   one of   2 options,
- **1- Resume the same scene before power off,**
- **2- specify scene**



- Remember Scene **0** it mean all Lights on the Area will be OFF when the Power restores.
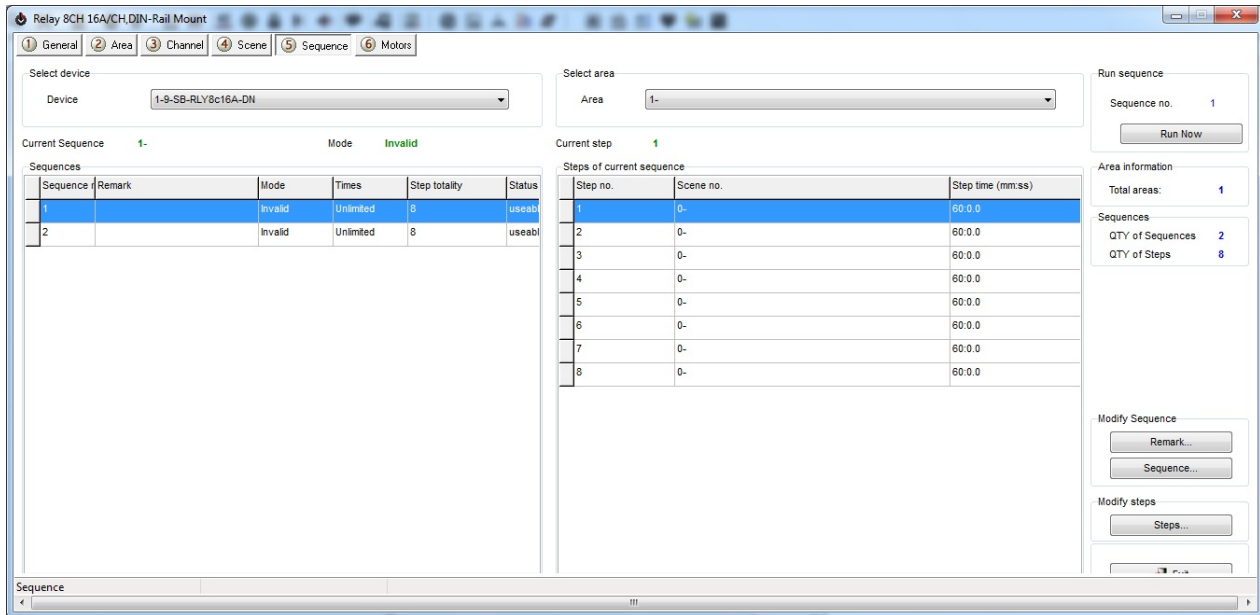
Restore to scene 0 is useful for many applications to save the Electrical parts when the power came in higher load from the main usually.

S-BUS   Smart Home Programming Guide Ver. 2.1

## 3-9    Sequence Setting

Sequence setting is used to make Lights show and some other needed application in industry, security and others.
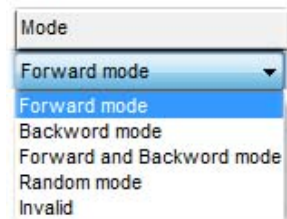
- Click on the Sequence tap



- Click on **sequence** Button to edit the sequence
- Select the mode you want
  **Invalid**: not used
  **Random**: well run the sequence scenes in random way **Forward,  and  backward:**  will run  the  scenes  from  first scene to last one then from last to first
  **Backward:** will run the sequence scene from last to first
  **Forward:** will run the sequence scene from first to Last



  **Times**: the sequence can be **Unlimited** forever running, or will run from
  1 time to 99 times.

  **Step totally**: is the  sequence  scenes  steps  number  that want  to  be include it in the Sequence
- After    you    finish    editing    your sequence setting, Click **save** and **exit**.

S-BUS   Smart Home Programming Guide Ver. 2.1

- Click Remarks to edit your Sequence name
- Click **Steps** to edit your sequence steps
- Edit your **scene number** in each step
- Edit your step time **interval on** Minutes, seconds and part of seconds
- Click **Save** and **exit**

⚠️ Relay Module that support the sequence like SB-DN-R0816 and

## 3-10   Motor Setting

### 1.  Version Needed

Firmware version of relays: V2.17 or above
Smart-Cloud configuration software version: V13.61 or above

### 2.  Motor Max. Time Settings

Max. Time is the time that motor fully open or close



### 3.  Running time

Command Type: Single Channel Control

Parameter 1: it's the channel No

Parameter 2: it's always be 100 Parameter 3: it is running time of motor, the scope of running time is 0 ~ MAX. Time

If running time equal 0, it means MAX. time. If you set the running time 5 seconds, the motor will run only 5 seconds then stop.