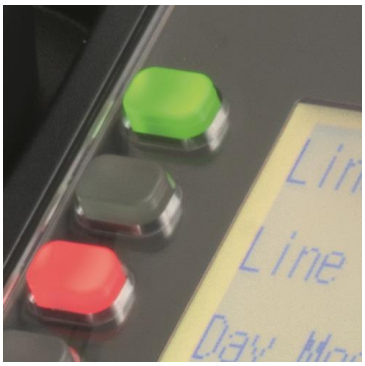
Orchestrating a brighter world NEC

The SL2100 Quick Install Guide: Music on Hold and External Audio

Out of the box installations for resellers



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This guide explains the installation and configuration of Music on Hold, Background Music and External Paging including the audio and relay connections of the interface cards.
Further information is available on BusinessNet.
Please keep all information supplied for future reference.

Regulatory Notice.
Refer to the Declaration of Conformity, Regulatory and Safety Considerations shown in the SL2100 Hardware Manual.
Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Music on Hold and External Audio

The SL2100 system supports the connection of external audio devices that can be used for Music on Hold tone and Background music.
Audio outputs can be used for connection to External Paging systems.
There are also solid state relays that can be used to control the external devices.

The external audio interfaces are located on the IP7WW-308U-A1 or IP7WW-082U-B1 cards. A system would not typically have both types of these cards installed, ensure you use the instructions within this guide for the correct card installed in your system.

Music on Hold can also use a pre-recorded file uploaded to the SL2100 CPU card.

Parts available for the SL2100

Not all parts are included within this guide, please refer to the other SL2100 Quick Install Guides or the SL2100 Hardware Manual for a full description and installation instructions of all parts available.

IP7WW-4KSU-C1	SL1100 Chassis unit	
IP7EU-CPU-C1	SL2100 CPU card	
IP7EU-CPU-C1-A	SL2100 CPU card with pre-installed IP licenses and 2hour InMail	
IP7WW-308U-A1	3 Analogue trunks and 8 Hybrid Extensions card for digital (4wire) extensions or SLT extension	3 Analogue trunks and 8 digital or SLT extension interfaces, max 4 per unit With audio interfaces
IP7WW-082U-B1	8 Digital Extension (2wire) and 2 SLT extension card	8 digital and 2 SLT extension interfaces, max 3 per unit With audio interfaces

Refer to Prophix for all parts and licenses available in your region.

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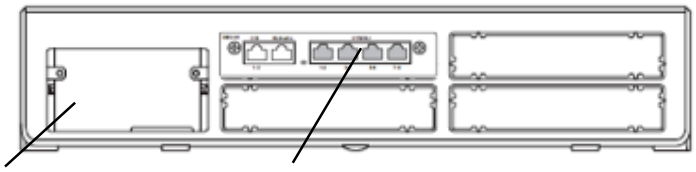
1- IP7WW-308U-A1 / IP7WW-082U-B1 Interface Card

Audio interfaces can be connected to either the IP7WW-308U-A1 or the IP7WW-008U-C1 extension interface cards.

SL2100 chassis showing the CPU card with an extension interface card installed.

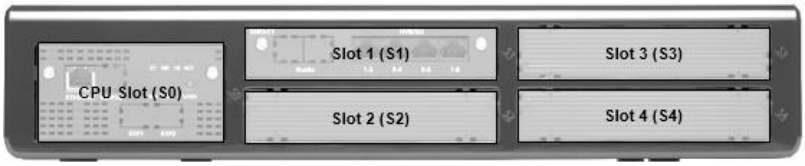


SL2100 CPU card

Extension
Interface card

	Extension Interface card	
	IP7WW-308U-A1	**IP7WW-082U-B1**
Analogue trunks	3	0
Hybrid extensions	8	0
Digital extensions	0	8
Analogue extensions	0	2
External Music/BGM input	1	1
External Paging output	1	1
Relay contacts	2	2
Trunk daughter card supported	No	Yes

The interface cards can be installed into any of the universal slots S1~S3.
Note – Slot S4 does not support digital extensions, an IP7WW-308U-A1 or IP7WW-008U-C1 card can be installed but will only support analogue extensions.
Note – Slot S4 does not support External MOH/BGM or paging interfaces



SL2100 Capacity

Item	**Maximum capacity in a single chassis**
External Music on Hold	1
External Background Music	1
External Paging	3
Relays	6

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2- Unpack the IP7WW-308U-A1 / IP7WW-082U-B1 Card

IP7WW-308U-A1 - SL2100 Hybrid Extension Interface card
1 x Interface card

IP7WW-082U-B1 - SL2100 Extension Interface card
1 x Interface card

Additional Items Required:

- Cross head screwdriver.
- Utility knife or small cutters to remove the plastic knockouts

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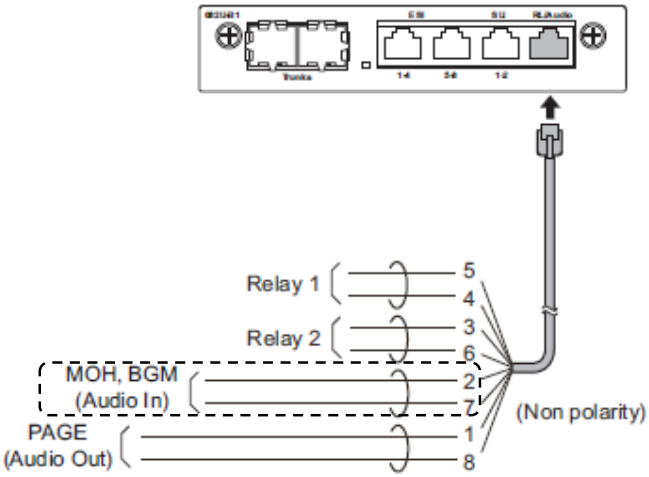
3a- IP7WW-082U-B1: Connect the External Music on Hold / BGM Device

The SL2100 supports external music on hold (EXMOH) or Background music (BGM) input via the Audio In port of an IP7WW-082U-B1 card.

Each IP7WW-082U-B1 card supports one audio input, if both EXMOH & BGM are required then two IP7WW-082U-B1 cards are required.

The EXMOH/BGM mode selection of the Audio In port is setup within system configuration.

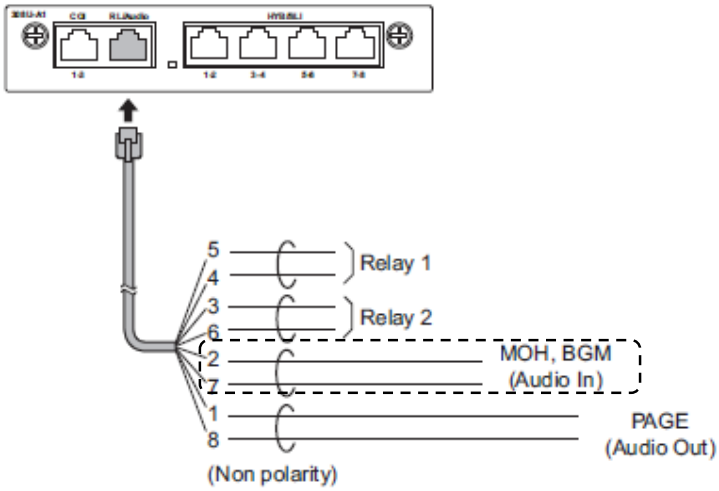


3b- IP7WW-308U-A1: Connect the External Music on Hold / BGM Device

The SL2100 supports external music on hold (EXMOH) or Background music (BGM) input via the Audio In port of an IP7WW-308U-A1 card.

Each IP7WW-308U-A1 card supports one audio input, if both EXMOH & BGM are required then two IP7WW-308U-A1 cards are required.

The EXMOH/BGM mode selection of the Audio In port is setup within system configuration.



Connecting to the RJ45 socket can be done using the adapters, cables or direct termination as shown in this guide.

Audio In for EXMOH/BGM uses pins 2 & 7 of the RJ45 socket.

The external device should conform to this specification.

Description	Specification
External MOH/BGM input	High Impedance (>10 KOhm) Nominal input level: 250mV (-10dBm) Maximum input level: 1V RMS

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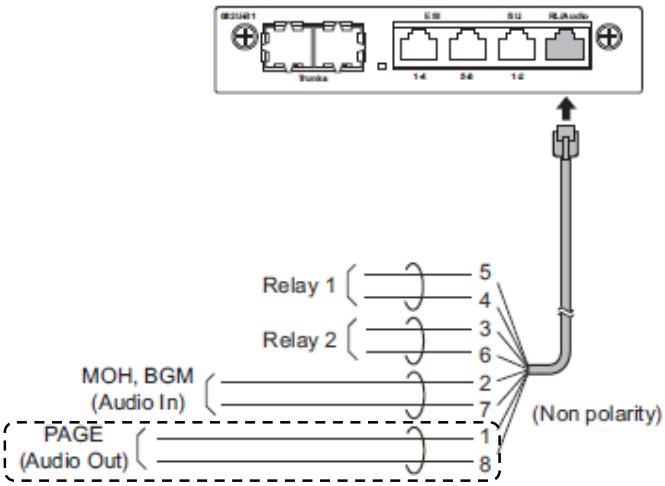
4a- IP7WW-082U-B1: Connect the External Paging Device

The SL2100 supports External Paging via the Audio Out port of the IP7WW-082U-B1 card.

The SL2100 supports up to three External Paging outputs.
Each IP7WW-082U-B1 card supports one audio output, additional IP7WW-082U-B1 cards are required for additional audio outputs.

The audio output ports are setup within the system configuration.

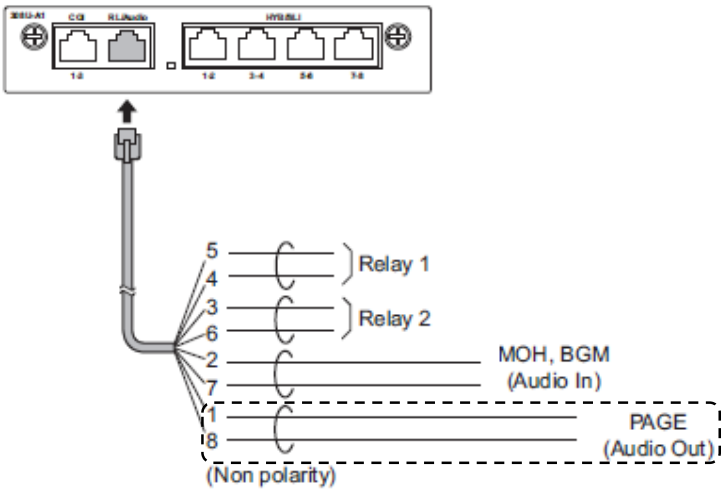


4b- IP7WW-308U-A1: Connect the External Paging Device

The SL2100 supports External Paging via the Audio Out port of the IP7WW-308U-A1 card.

The SL2100 supports up to three External Paging outputs.
Each IP7WW-308U-A1 card supports one audio output, additional IP7WW-308U-A1 cards are required for additional audio outputs.

The audio output ports are setup within the system configuration.



Connecting to the RJ45 socket can be done using the adapters, cables or direct termination as shown in this guide.
Audio Out for Paging uses pins 1 & 8 of the RJ45 socket.
The external device should conform to this specification.

Description	Specification
External Paging output	Impedance: 600Ohm @ 1kHz Nominal output level: 250mV (-10dBm) Maximum output level: 1V RMS

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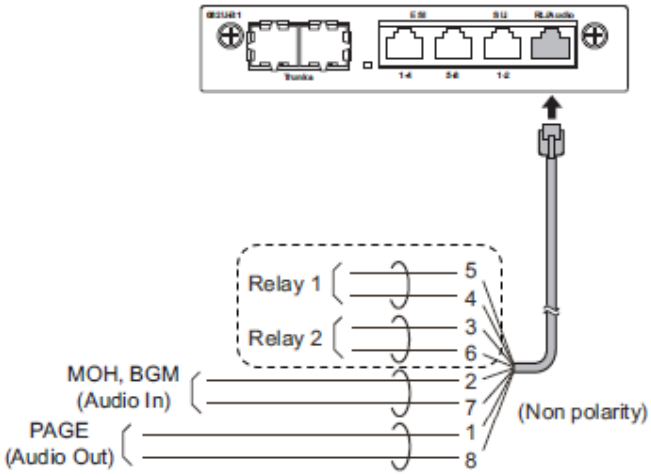
5- Controlling External Devices

The SL2100 has solid-state relay contacts that can be used to control the external audio devices.
The SL2100 supports up to eleven relays.
Relays are assigned to one of the external devices (EXMOH, BGM, External Paging or Doorphone) within the system configuration.

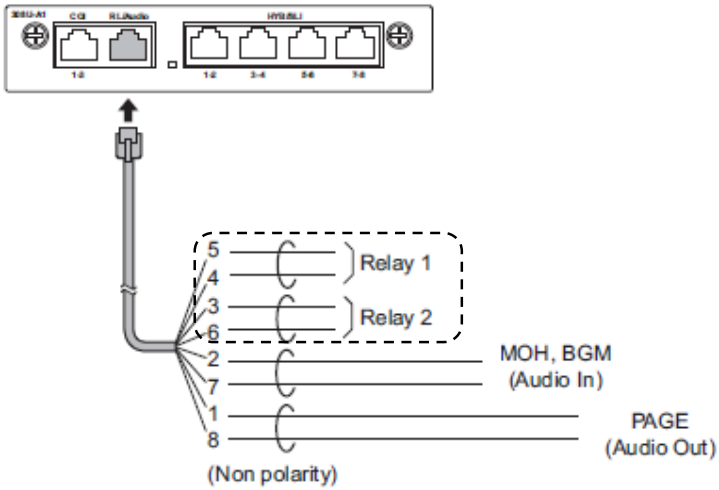
Connecting the external device to the IP7WW-082U-B1 card

Each IP7WW-082U-B1 card supports two relays, additional IP7WW-082U-B1 cards are required for additional relays



Connecting the external device to the IP7WW-308U-A1 card

Each IP7WW-308U-A1 card supports two relays, additional IP7WW-308U-A1 cards are required for additional relays.



Connecting to the RJ45 socket can be done using the adapters, cables or direct termination as shown in this guide.
Relay 1 uses pins 4 & 5, Relay 2 uses pins 3 & 6 of the RJ45 socket.

The external device must conform to this specification.

Description	Specification
Relay contacts	Rated voltage: DC 48V maximum Rated current: DC 320mA maximum Contacts: normally open (Form A)

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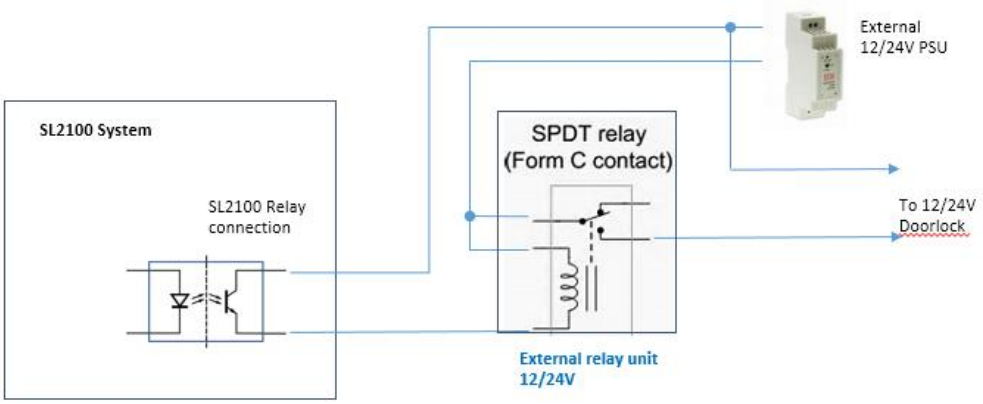
Note – Exceeding the rated maximum current will damage the solid state relay within the SL2100.
If you need to control an external device that requires more than 320mA then an external relay should be used with the correct rated contacts.
External relays can also be used to provide a normally closed (Form B) contact.



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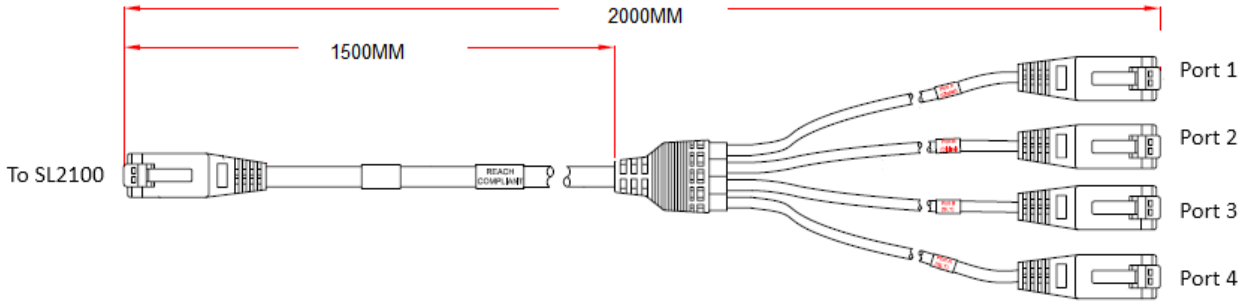
6- Connecting to the RJ45 sockets of the IP7WW-308U-A1 & IP7WW-082U-B1 card

The are several methods available to connect these interfaces into the customer's building infrastructure.

Use the cable assembly or adapter available from NEC

Cable LPNEC4 – 2m length, converts a four port RJ45 socket to four RJ45 plugs, one port per plug.

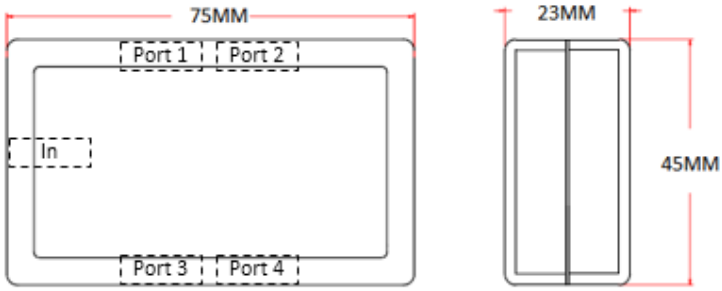


Can be used to plug into RJ45 face plates if IDC termination is required.
Cable colour: black

One cable is required for each RJ45 RL/Audio socket of the IP7WW-308U-A1 or IP7WW-082U-B1 card.

RJ45 plug	Pin	Function
Port 1	4	Relay 1
	5	
Port 2	4	Relay 2
	5	
Port 3	4	Audio in EXMOH/BGM
	5	
Port 4	4	Audio out Paging
	5	

Adapter ADNEC14 – Converts a four port RJ45 socket to four RJ45 sockets, one port per socket.
Can be used to plug into RJ45 face plates if IDC termination is required or you can terminate your own cables on site.
Colour: black
Supplied with an adhesive pad.
One adapter is required for each RJ45 RL/Audio socket of the IP7WW-308U-A1 or IP7WW-082U-B1 card.



RJ45 socket	Pin	Function
Port 1	4	Relay 1
	5	
Port 2	4	Relay 2
	5	
Port 3	4	Audio in EXMOH/BGM
	5	
Port 4	4	Audio out Paging
	5	

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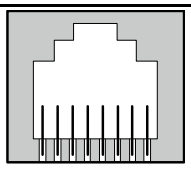
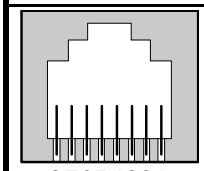
Terminate cables on site with RJ45 plugs

Connect directly to the RJ45 sockets of the IP7WW-082U-B1 card.

RL/Audio	Pin No.	Function
 87654321	1	Paging
	2	EXMOH/BGM
	3	Relay 2
	4	Relay 1
	5	Relay 1
	6	Relay 2
	7	EXMOH/BGM
	8	Paging

Use pre-terminated RJ45 patch cables

Connect directly to the RJ45 RL/Audio socket of the IP7WW-308U-A1 or P7WW-082U-B1 card.
Use the following cable colours when using a straight through RJ45 patch cable directly into the RJ45 RL/Audio socket.

			Using an RJ45 patch cable into the RJ45 connectors
RL/Audio	**Pin No.**	**Port**	**RJ45 Colour code**
 87654321	1	Paging	White/Orange
	2	EXMOH/BGM	Orange/White
	3	Relay 2	White/Green
	4	Relay 1	Blue/White
	5	Relay 1	White/Blue
	6	Relay 2	Green/White
	7	EXMOH/BGM	White/Brown
	8	Paging	Brown/White

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7- Configure the SL2100

This Quick Install guide will cover the most frequently used configuration options. For advanced configuration please refer to the SL2100 Features and Specifications manual.
You must have SL2100 PCPro installed to your laptop/PC, this can be downloaded from BusinessNet, refer to the Quick Install Guide – SL2100 PCpro.
The SL2100 can also be configured via an SL2100 System phone or via a WebPro interface, these are not included within this guide.

Before you configure your system it is important that you:

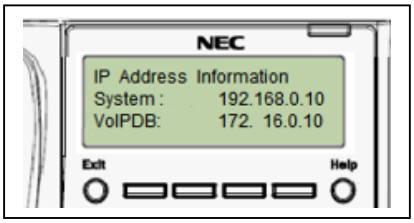
- Have a diagram of your exchange lines and telephones.
- Plan your requirements before you start.

While you configure your system it is advised that you:

- Make a record of your configuration as you make each change.
- Make small changes, upload to the SL2100 and test the changes. Avoid making all your changes at once as this can make testing more difficult.

Connecting PCPro to the SL2100

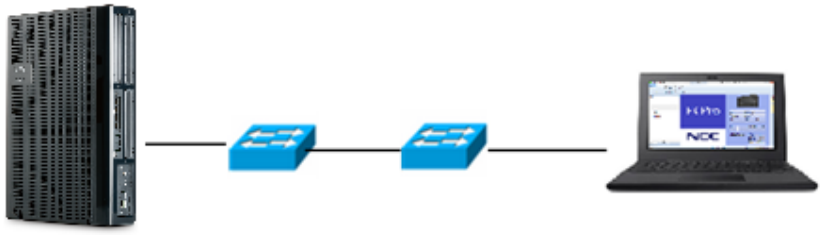
CPU Default IP Address: 192.168.0.10 / 255.255.255.0
VOIP Default IP Address: 172.16.0.10 / 255.255.255.0
(The VOIP IP address is for either built-in VOP or the VOIPDB card)



You can check the IP address at any SL2100 system phone:
Press the centre Navigation Key and dial 841

Direct to Ethernet connector on the SL2100 CPU card.

Via the customer's LAN.



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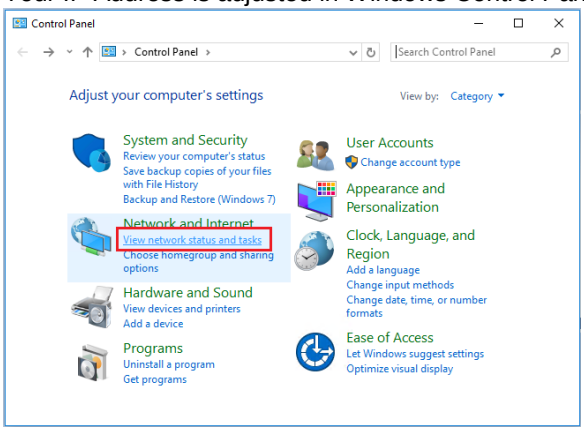
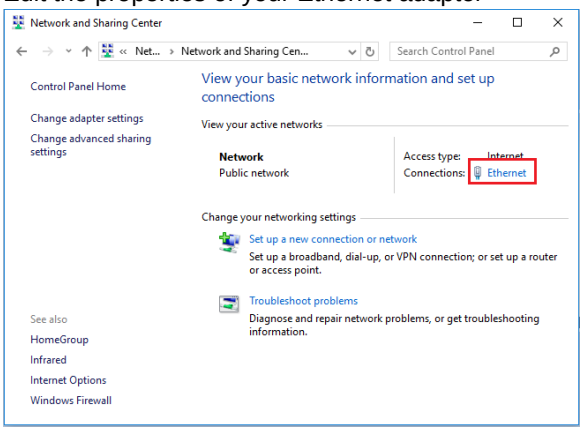
Change your PC IP Address

You will need to reconfigure your PC to have an IP address in the same subnet as the SL2100 during system commissioning. You will be able to change the IP address of the SL2100 during this process.

Your IP Address is adjusted in Windows Control Panel, select 'View network status and tasks'

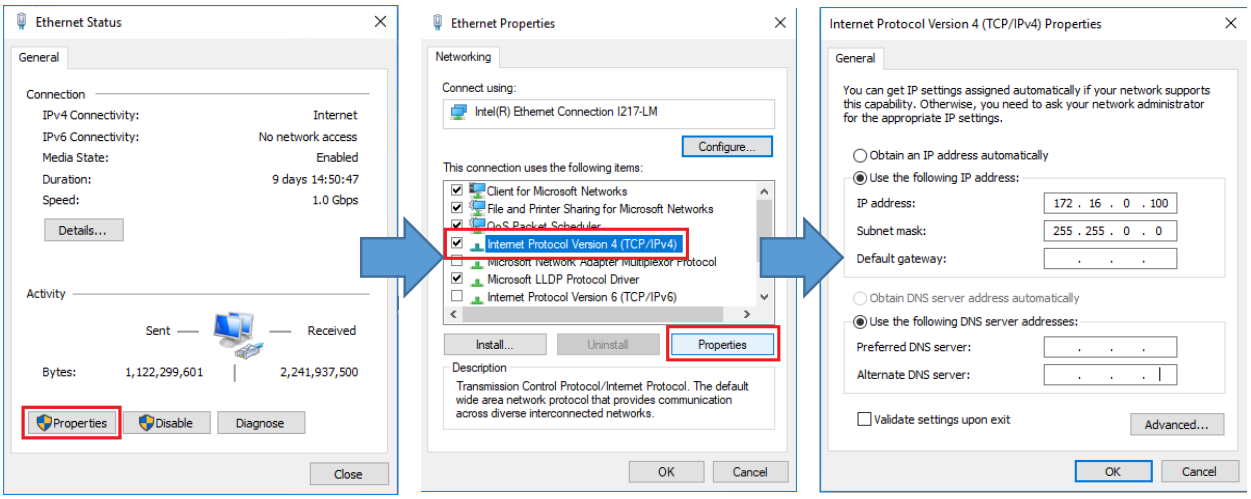


Edit the properties of your Ethernet adaptor



You will need to define an IP address in the same network as the SL2100. Recommended values are 172.16.0.100 / 255.255.0.0

Gateway and DNS addresses are not necessary. Once commissioning of the SL2100 is completed you can return to this area and reconfigure your network adaptor to the previous values.



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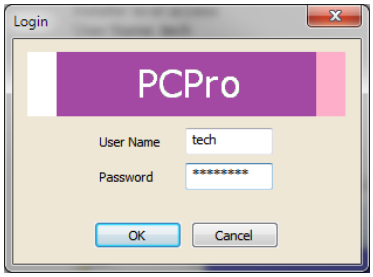
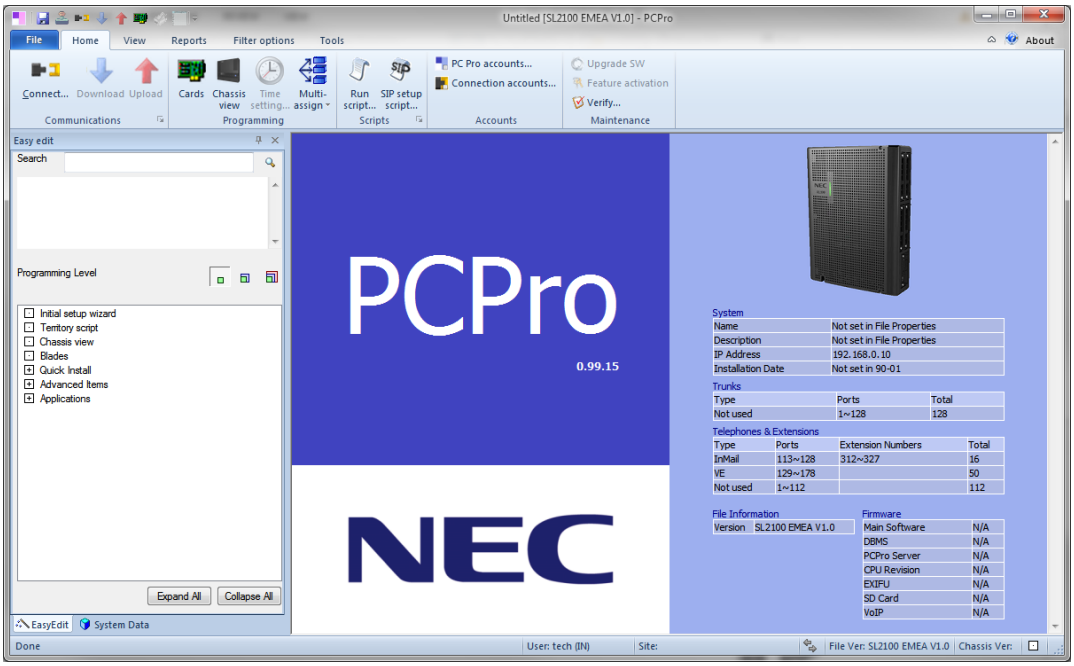
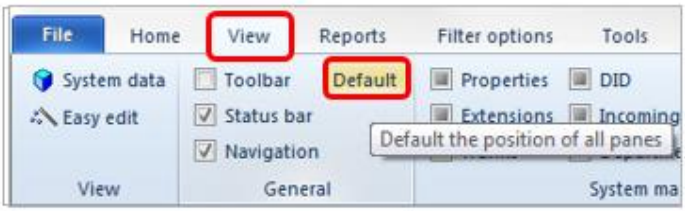
SL2100 PCPro
Installer level access:
User Name: tech
Password: 12345678





On first install you may need to setup the default sliding panes if you wish to use these.
Select **View** tab and click **Default**



PCPro Initial Setup Wizard
Refer to the Quick Install Guide for the trunks installed for details of PCPro Initial Setup Wizard, this guide contains only the configuration items for MOH/BGM, external paging and relay contacts.

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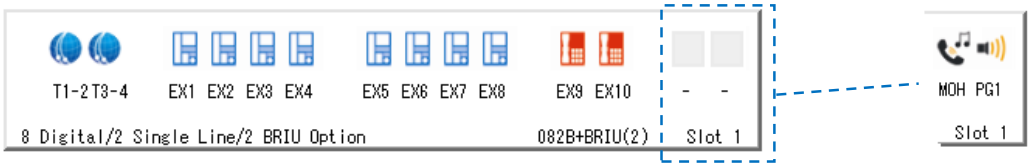
Setup Audio Interfaces

There are two audio interfaces on the IP7WW-082U-B1 and IP7WW-308U-A1 cards:

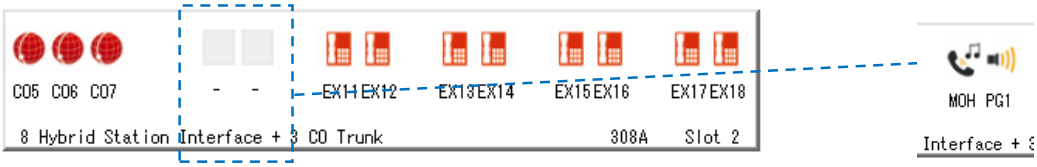
- MOH interface can be assigned to External MOH or External BGM
- External Paging can be assigned to paging zones 1~3

Within the Chassis View you can setup the audio interfaces.

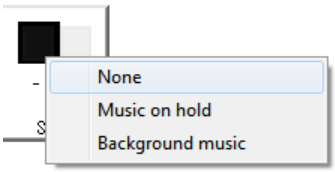
IP7WW-082U-B1:

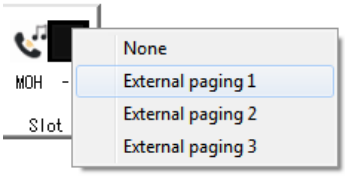


IP7WW-308U-A1:



To set the interface, right click the mouse over each audio interface and select the mode from the list.





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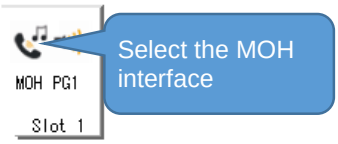
Music on Hold

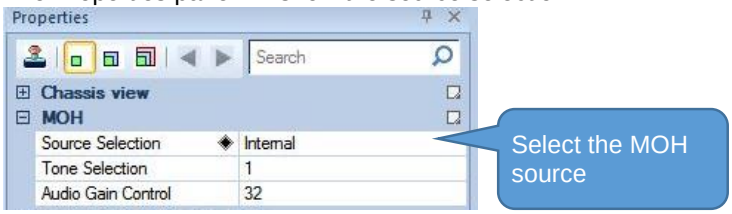
There are several options available:

- Internal music tune
- Internal service tone (this is the PCPro wizard default setting)
- Internal VRS message
- Connect an external music device (External MOH)

Within the Chassis View click the MOH interface.

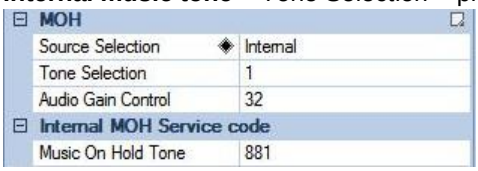


The Properties pane will show the source selection.

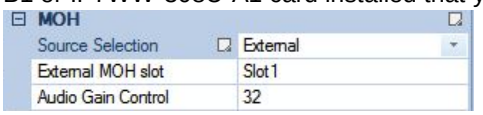


The Properties pane will then show the configuration options for each of the selections:

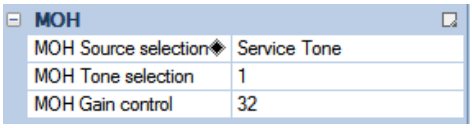
Internal music tone – Tone Selection = pre-recorded tune 1



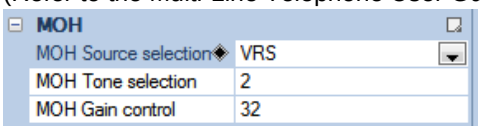
External music device – External MOH slot = Universal slots 1~12, select the slot that has the IP7WW-082U-B1 or IP7WW-308U-A1 card installed that you want to use for External MOH input.



Internal service tone – Uses Service tone 64 (beep-beep comfort tone)



VRS Message – Tone Selection = VRS message 001~100 which can be a recorded announcement by a user (Refer to the Multi-Line Telephone User Guide for instructions to record the VRS message).



Note – the VRS selection has further options available (eg upload of professionally recorded announcements).

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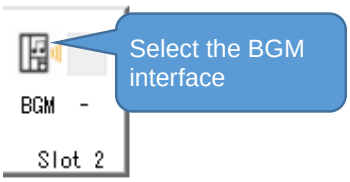
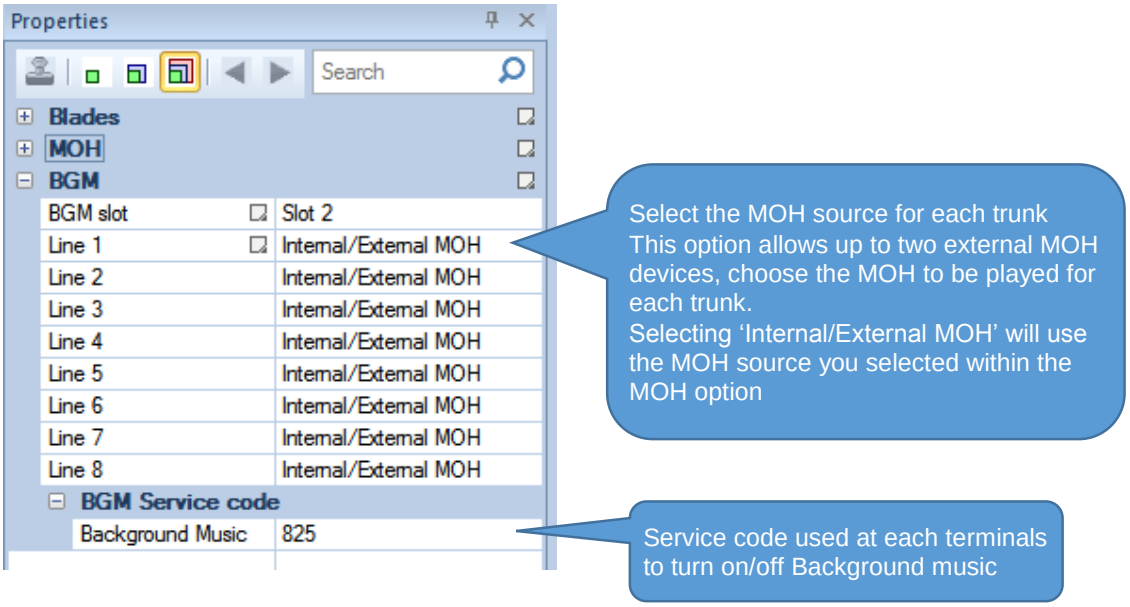
Background Music

BGM can be played from the speaker of each terminal while the phone is idle, the user turns the feature on/off with a service code.
BGM can also be used as a second source for external Music on Hold, you can select the source for each trunk on the system.

Within the Chassis View click the BGM interface.



The Properties pane will show the BGM options.



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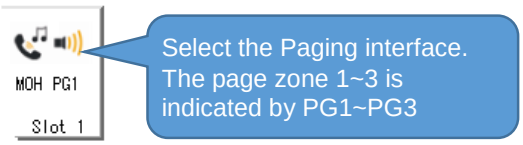
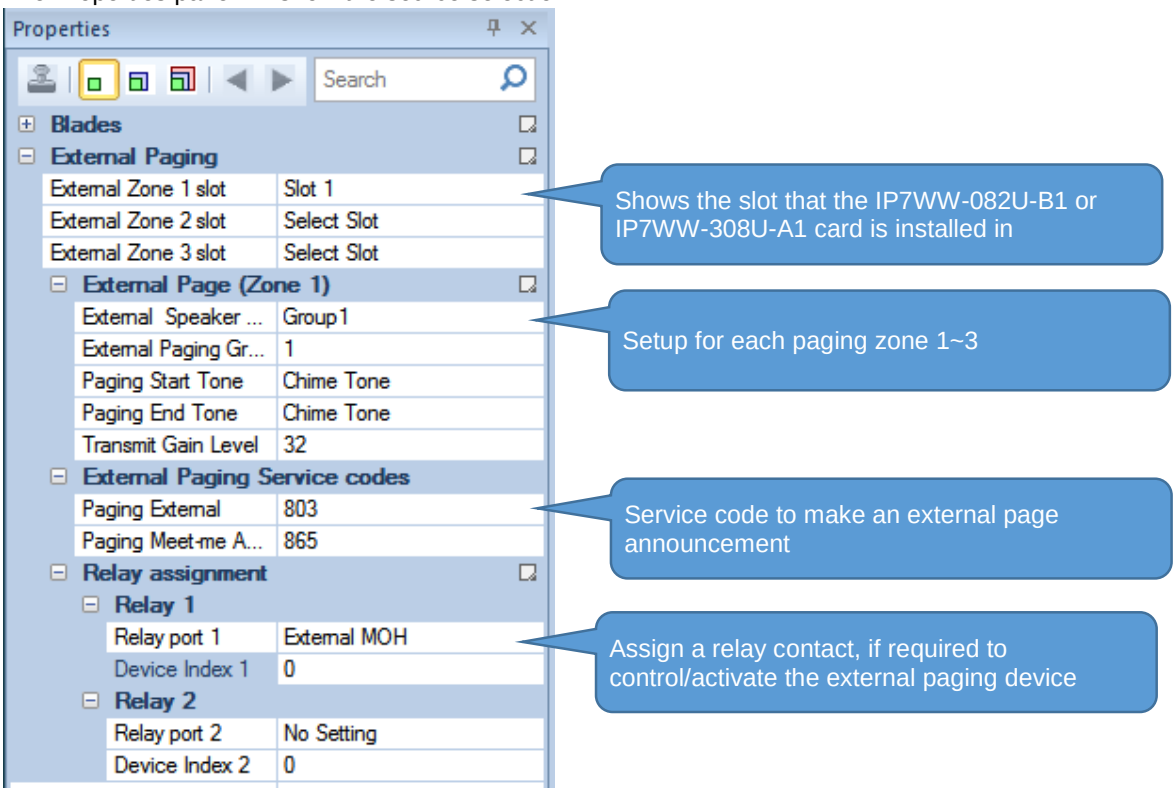
External Paging

External Paging equipment can be connected to the audio paging output of the IP7WW-082U-B1 or IP7WW-308U-A1 card.

Within the Chassis View click the Paging interface.



The Properties pane will show the source selection.



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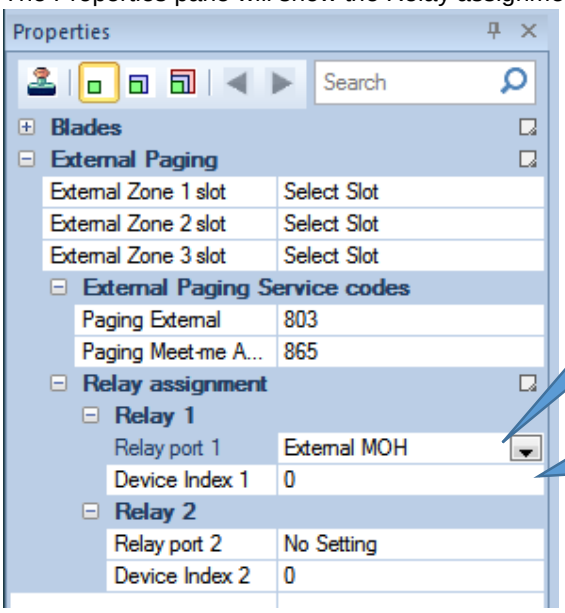
Relay Contacts

There are two solid state relay contacts on the IP7WW-082U-B1 and IP7WW-308U-A1 cards; each contact can be assigned to External MOH, External BGM, Doorphone 1~6 or External Paging 1~3.
The contact activates when the assigned device is in use/active.

Within the Chassis View you can setup the relay contacts by clicking audio interface 2.
IP7WW-082U-B1:

IP7WW-308U-A1:

The Properties pane will show the Relay assignment.



Select the device assigned to Relay 1:

- No setting
- External MOH
- BGM
- External Speaker/Page
- Doorphone

Select the device port:

- For External MOH and BGM this value is not used and should be set to 0
- For External Speaker/Page enter the page zone 1~3
- For Doorphone enter the Doorphone port 1~6

Door Lock Relay Contacts

The relay will operate (make contact) when the user is in conversation with the doorphone and they press the FLASH key on their phone to activate the door lock.

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Upload VRS Messages for MOH

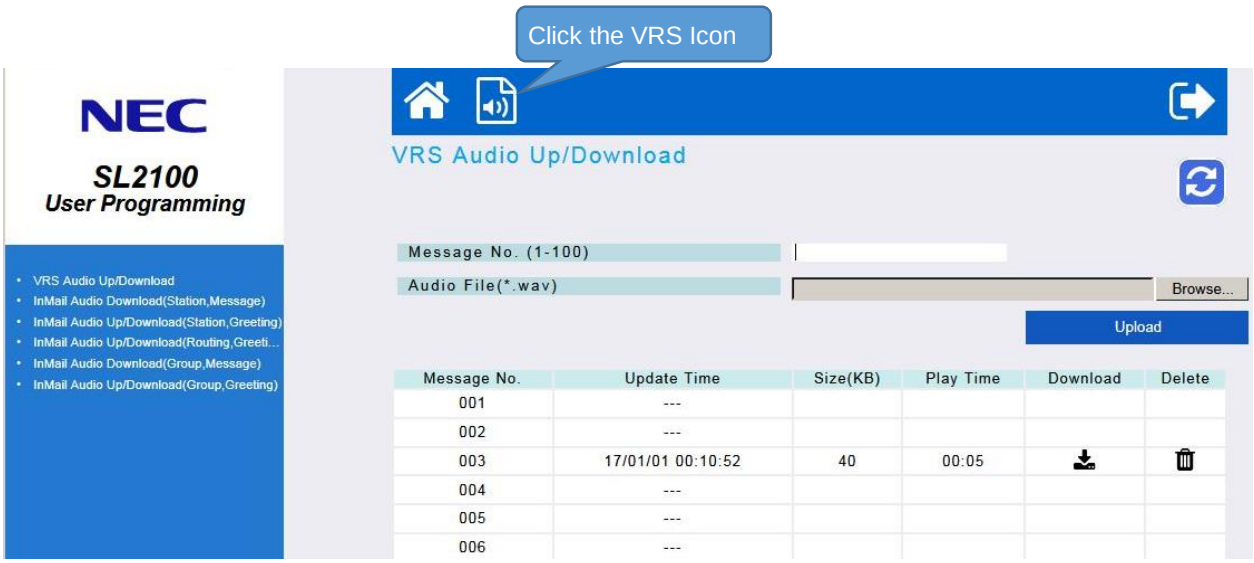
You can upload professionally recorded audio files to the VRS messages 1~100.
The VRS message can then be selected as the MOH source.

You will need to use WebPro to connect to the SL2100 User Administrator.

- **User Administrator**

  User Name : user1, Password : 1111
  (Setup in CMD90-02)

1. Open your web browser.
2. Browse to the IP address of the SL2100 system (CPU default = 192.168.0.10)
3. Enter the Administrator user name and password.
4. Click the VRS Icon to view the VRS page
5. Select VRS Audio Up/Download from the menu
6. Enter the VRS message number 1~100 and click browse to navigate to the audio file to be uploaded
7. Click Upload



Audio File Format

In order for uploaded file to play they must be in the proper format. Audio files not recorded in the proper format may not playback. The required format is:

• Bit Rate: 64 kbps
• Sampling Size: 8 bits
• Channel: 1 (Mono)
• Sampling Rate: 8 kHz
• Audio Format: CCITT A-law

Maximum audio file size: 2MB

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What to do if you make errors within the SL2100 Configuration

Errors that break configuration rules will be highlighted when you click the Apply button.
The errors will usually show red or you will see a pop-up message depending which area you are configuring.
Enter the correct value and re-apply.
Then Upload your changes to the SL2100 and re-test.

Tip - Press F1 to get help within PCro.

If you can't locate your errors within PCPro then you may need to default the SL2100 back to factory defaults and run the Initial Setup wizard again (this will only take a few minutes).

- Before doing this, download the current SL2100 configuration with PCPro and save the file to your PC, you may then be able to copy and paste the majority of your changes back in, eg the non-configuration effecting items like extension names, speed dials, programmable function keys etc.

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