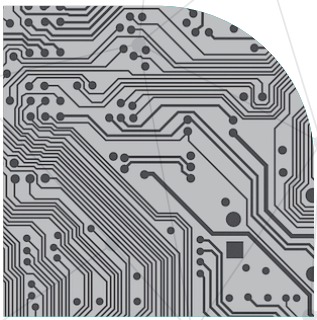
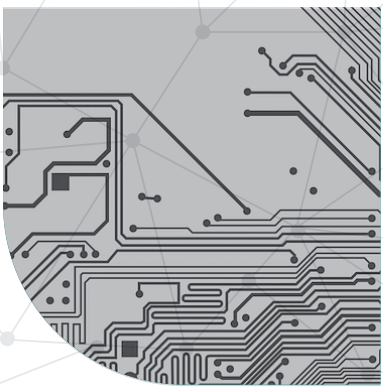
Telematic Schools Project

TELEMATIC USER GUIDE

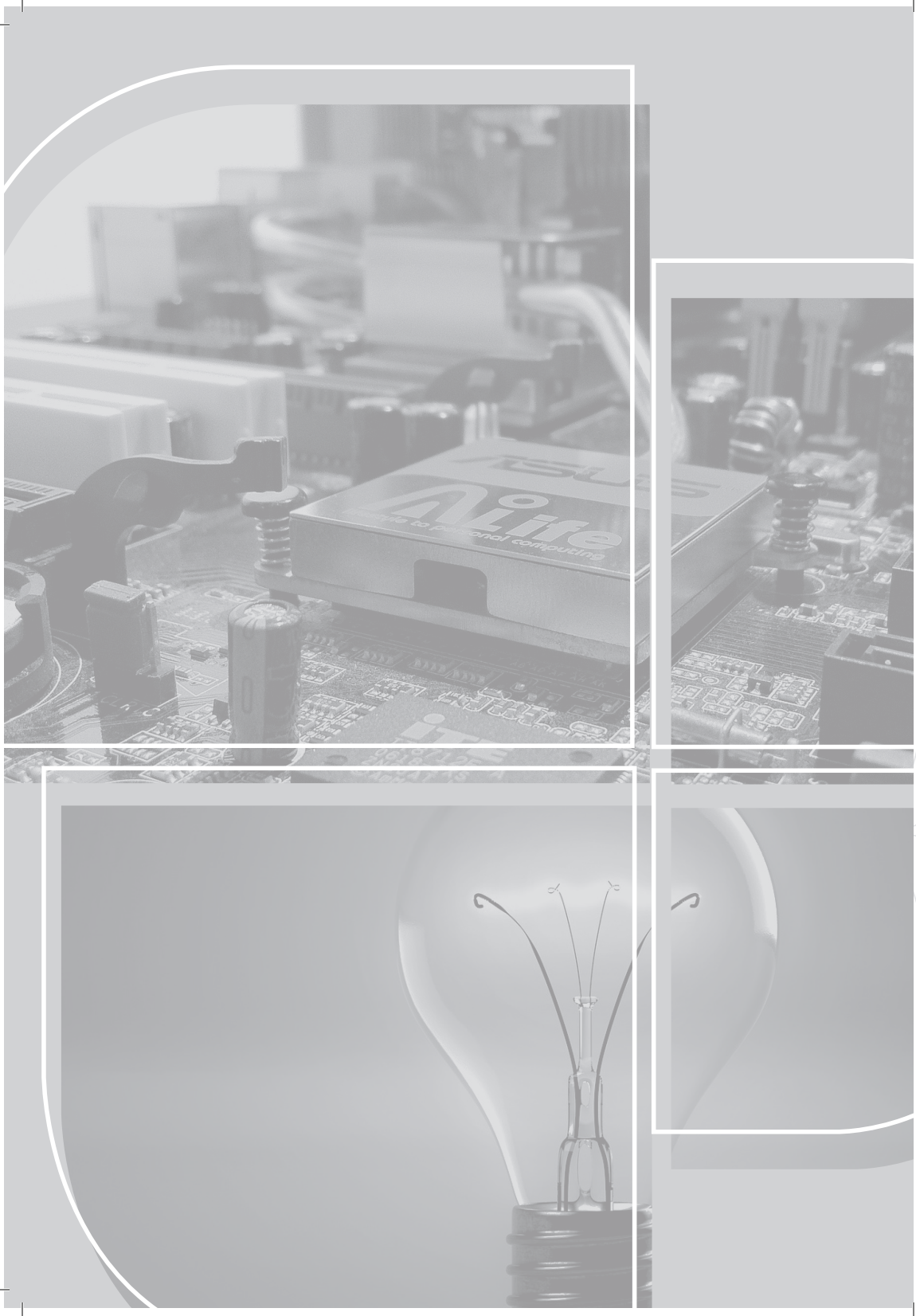




UNIVERSITEIT iYUNIVESITHI STELLENBOSCH UNIVERSITY 100 1918·2018

Sentrum vir Leertegnologieë
Centre for Learning Technologies
iZiko lokuFunda ezobuGcisa

Western Cape Government
Education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the personal computing

Telematic Schools Project

TELEMATIC USER GUIDE

TABLE OF CONTENTS

ABBREVIATIONS AND DESCRIPTIONS

AMPLIFIER:
A device used to increase the strength of electrical signals for your speakers.

ANTENNA:
The device that sends and/or receives signals from the satellite. Also, called a satellite dish.

AZIMUTH:
The horizontal angle between true north and the direction in which the antenna is pointing, with true north set to 0.0 degrees and due south set to 180 degrees.

BANDWIDTH:
The amount of spectrum used by a communication channel (analogue or digital), measured in hertz (Hz).

BIRD:
A nickname for a satellite.

BIT:
A single unit of information in the binary system that takes on the value of 1 or 0.

BROADCASTING:
To transmit a signal to multiple locations simultaneously by satellite, radio/TV station, data communications network or e-mail system.

DECODER:
A device used to unscramble encrypted or "scrambled" television signals.

DELAY:
The time it takes for a signal to travel from a transmitting earth station, through space, to a satellite and back. This time is calculated to be about ½ of a second.

DIGITAL:
A quantification scheme that allows the conversion of analogue information into bits of data. Digitisation allows signals to be compressed and signal integrity to be maintained.

RAIN FADE:
The loss of signal from the satellite during heavy rain. This happens more or less to all digital broadcast systems (DBS). The signal usually is lost for only a few minutes. Rain fade can occur even if it is not raining at your location. A large black thunderhead can block the signal if it gets between you and the satellite.

ENCRYPTION:
The process of electronically ciphering a signal so it cannot be received without a decoder.

FOOTPRINT:
The area of the earth's surface within which the signals of a specific satellite can be received.

FREQUENCY:
The rate at which a signal (e.g. electrical current) alternates. The standard unit of frequency is the hertz, abbreviated as Hz. If a signal completes one cycle per second, then the frequency is 1 Hz; 60 cycles per second equals 60 Hz.

JPEG:
Joint Photographic Experts Group. A subgroup of the International Organization for Standardization (ISO), which has established international standards for the digital compression of still pictures.

Ku-BAND:
Refers to the frequency in the 12 GHz to 14 GHz range (1 GHz = 1 billion cycles per second) used in support of applications such as broadcast TV, DBS, and direct-to-home television.

LNB:
Low noise block downconverter. An electronic part of a satellite earth station that is used to amplify the signal collected by the reflector and the feed horn.

MPEG:
Moving Picture Experts Group. This group develops standards for digital video and digital audio compression. It operates under the auspices of the International Organization for Standardization (ISO). The MPEG standards are evolving, and each is designed for a different purpose.

ORBITAL SLOT:
Specific location of a satellite in the geostationary area, specified in degrees east or west.

POLARISATION:
The orientation of a transmitted/received signal. Signals can have circular or linear polarisation.

SUN OUTAGE:
When the sun passes behind a satellite in relation to the earth, and the sun's energy momentarily interferes with the satellite's signal. This occurs two times each year, during the spring and autumn equinox (when the day and night are approximately the same length; on about 23 September and 20 March).

1. SAFETY AND STORAGE

Please read the following recommended safety precautions carefully.

1.1 MAINS SUPPLY

- Connect the power cord to the decoder before connecting the other end to the power outlet.
- Disconnect the decoder from the power outlet before connecting or disconnecting your unit from any other equipment.

1.2 LIQUIDS AND SPILLAGE

- Keep liquids away from the decoder and amplifier. Do not place any objects on the decoder and amplifier that might spill (e.g. lit candles or containers of liquid). Do not use or store the decoder and amplifier in extreme temperatures or high humidity.
- Please ensure all equipment is safely stored or mounted away from any water sources, such as

1. Geysers
2. Overhead water pipes for geyser

1.3 CLEANING

- Disconnect the decoder and amplifier from all power sources while using it. Use a dry cloth to clean the exterior.
- Do not attempt to remove the protective casing to do maintenance

1.4 VENTILATION

- Do not block ventilation holes. Ensure that air can move freely around the decoder. It is essential to keep the decoder cool in order to prolong its lifespan.
- Never stand the decoder or amplifier on soft furnishings or on a carpet.
- Never stack other electronic equipment on top of the decoder or amplifier.
- Never push or insert anything into the holes, slots or any other opening in the case.

1.5 SERVICING

- Never remove the decoder or amplifier cover.
- Do not attempt to service the products yourself.
- Any attempt to do so will invalidate the warranty.
- Refer all servicing to Telematics.

1.6 WEATHER AND LIGHT SOURCES

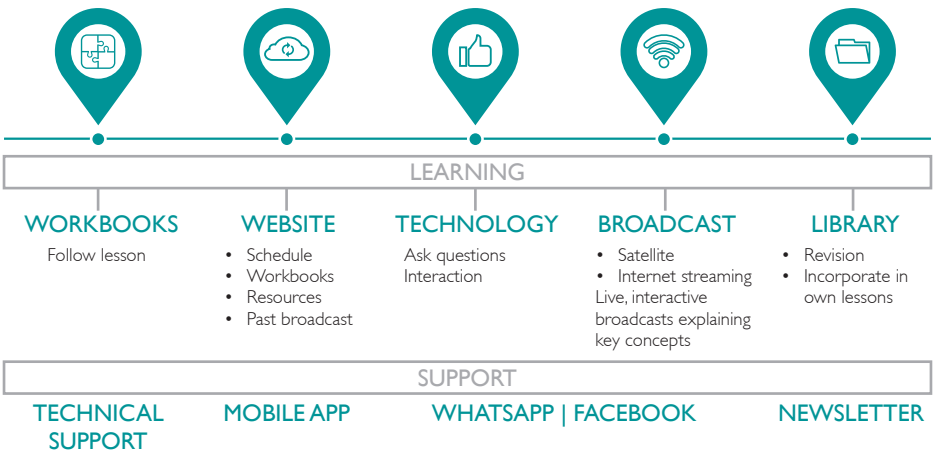
- If the decoder is installed in an area subject to intense lightning activity, the decoder mains should have some protection device.
- Do not use or store the decoder or amplifier near a heater or where it is exposed to direct sunlight.

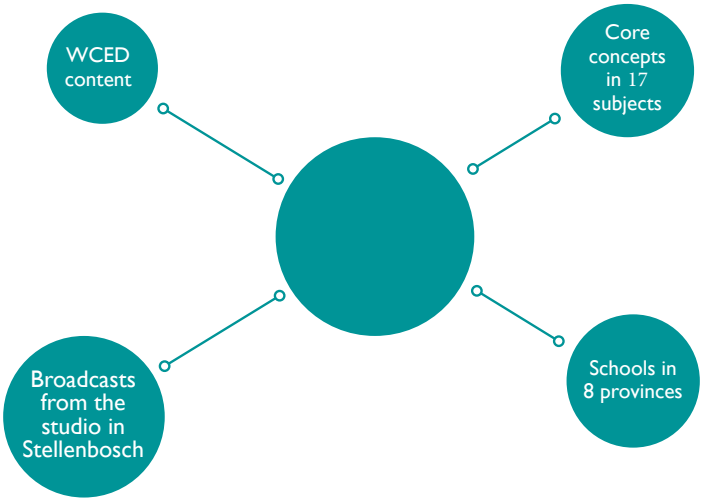
2. THE TELEMATIC SCHOOLS PROJECT

The Telematics Schools Project is an intervention that seeks to improve the Grades 10 through 12 year-end results of participating schools via the interactive satellite platform of the Stellenbosch University Telematics Division. The project is a partnership between the Centre for Learning Technologies at Stellenbosch University and the Western Cape Education Department, which is making the service available to the learners at no cost.

The extra tuition is all arranged and scheduled by the Western Cape Education Department (WCED) in line with the CAPS curriculum. The presenters explain core concepts and address problem areas in which learners had experienced difficulties in previous examinations. The whole curriculum is thus not dealt with during the broadcasts. All the broadcasts are available on DVD or as part of the online video library, which is a powerful tool the teachers can use for exam revision.

Technology is used to create an online community for the learners and teachers. The Telematic Schools website, schools.sun.ac.za is the core of the project. Each school is issued a unique username and password, which gives access to the subject workbooks, the presenters' PowerPoint presentations and the broadcast schedule. A major factor in the success of the project is the dynamic interaction that can take place between the presenters, working from the broadcast studio at Stellenbosch University, and the learners watching via satellite or live Internet streaming all over South Africa. Learners are able to respond to or ask questions of the presenter in the studio via an interactive webpage, Facebook messenger or WhatsApp. The Telematic Schools Project Facebook page is used to keep the schools informed of updates and alerts and also as a platform to ask questions.





3. BROADCAST SCHEDULE

This is the schedule indicating when telematics classes will take place. Also refer to Facebook and the Telematic Schools Website (TSW).

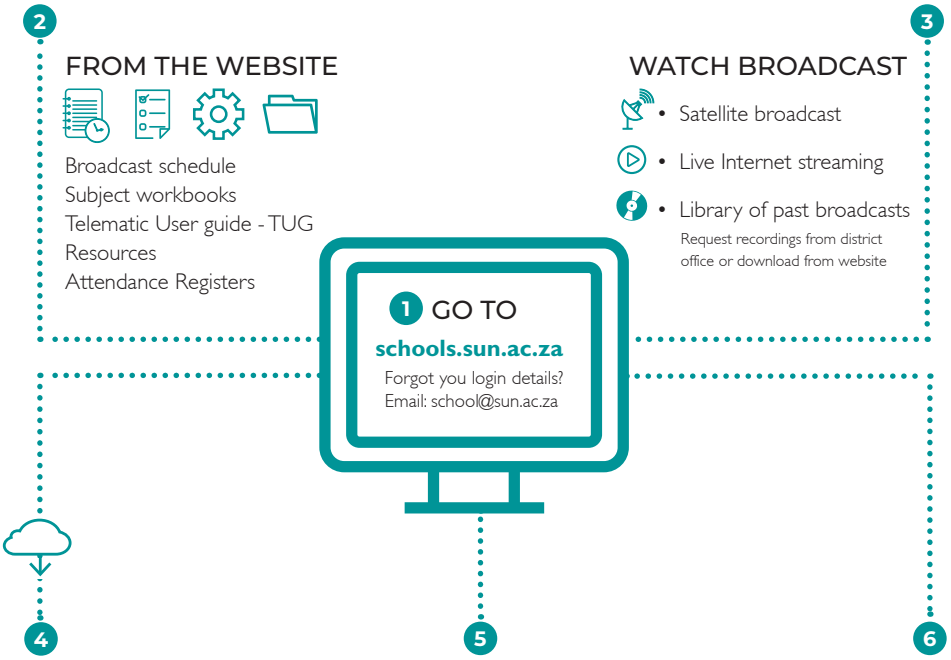
TSW link to schedule: https://schools.sun.ac.za/login/index.php
Facebook link: https://www.facebook.com/telematicschoolsproject

4. TELEMATIC SCHOOLS WEBSITE

4.1 What is the Telematic Schools Website (TSW)?
The Telematic Schools Website (TSW) is a learning management site where participants can interact. It is also used for the storage of all the documents (the workbooks, schedule, videos and PowerPoint presentations) used by the presenters during presentations.

4.2 Where can I find it?
https://schools.sun.ac.za/login/index.php
[Please see the Telematics schools website manual on page 21 for more information on the TSW.]

5. INTERACTION



During the live broadcasts, you can interact directly with the presenters.

CELLPHONE INTERACTION:

Message to presenter	(WhatsApp) comments, questions, answers etc. to 083 792 1239
Interactive web page	ite.sun.ac.za/school
Facebook	www.facebook.com/telematicschoolsproject

WEBSITE INTERACTION:

Log on to the following website and follow the instructions:
schools.sun.ac.za

- Click on the up/down arrow, then select your district
- Click on the up/down arrow, then select your school
- Enter your name to log in
- Enter a question
- Enter your vote if asked
- Learner logs help request
- Message that displays when successfully logged on

6. ATTENDANCE

Attendance must be logged by each school by completing the attendance register.

The Attendance register can be found on the Telematic Schools website: https://schools.sun.ac.za/login/index.php
Completed registers can be sent to school@sun.ac.za

7. TECHNICAL TRAINING MANUAL

Kindly see the instructions below on the various settings needed to ensure a secure satellite session.

7.1 CORE COMPONENTS | GETTING STARTED

Scan QR code for video

NO SOUND **NO VIDEO**

DECODER, REMOTE AND CABLE

Decoder (Set to box). No network input.

- Satellite input/output
- HDMI output
- RCA video, stereo audio output
- Component output
- RF modulation output
- Antennae 90 CM
- Input power: 220 to 240 VAC; 50 to 60 Hz
- Barcode serial number: Under plate

Remote control

- Device used to control and set up the decoder

SATELLITE DISH

- One-piece high surface accuracy, offset feed, steel reflector
- Heavy-duty feed arm capable of supporting up to 30 kg
- LNB 9700 to 10600 KU band
- Works seamlessly with the world's most popular commercially available KU band systems
- Extended supporting brackets
- Wind deployed 120 km/h
- Wind stowed 120 km/h
- Temperature -40°C to 65°C

CORE COMPONENTS CONTINUED

WALL MOUNT CABINET

- Cabinet used to store amplifier
- Public address amplifier 100 W
- Encased in 9U wall mount cabinet
- Connected with surge protector
- VGA cable installed
- Decoder installed with audio and video

HDMI Cable: HDMI 10 – 15m (1.4v)

- This High Speed HDMI Cable enables the delivery of high definition video and digital audio through just one cable.
- A cable length of 10m allows for an extended reach.

Audio Cables (Amp & Decoder) Dual RCA Audio Cable for Stereo Sound

- Dual (left and right) RCA
- Stereo Male to Male cable
- 1.5 m length
- Red and White marking for easy connection

Satellite Cable: Coaxial RG6U

- Manufactured to withstand the harsh South African climate.
- Used for standard TV aerial and satellite connections.
- 32 braid economy cable.
- 75 Ohm Coaxial cable RG 6 standard 1 GHz

Speaker Cable: Standard Copper with White PVC jacket speaker wire

- Multi-stranded/flexible OFC, copper, tinned-copper wire conductor
- Reliable connection
- High quality PVC material
- CE, RoHS SGS, ISO9001 Standard
- Rated voltage: 300/300V
- Keep working under 70°C for long period operation

Construction:

Stranded tinned copper/bare copper/CCA conductor speaker cable, PVC insulated, twin parallel or twisted.

Applications:

The speaker cables are used for speaker ranges, home theatre or audio system, Used for connecting power amplifier and broadcasting systems, for transmitting the audio signals amplified by the amplifier.

7.2 GETTING STARTED

DILOG

SWITCHING ON

- Kindly ensure the decoder is switched on
- Press the red power button

DECODER BOOTING UP

- Decoder will boot up

DECODER ON

- Decoder then will display 0001 OR 0011.
- Decoder will now start working.

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- Kindly ensure the decoder is switched on
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DECODER BOOTING UP

- Decoder will boot up

DECODER ON

- Decoder then will display 0001 OR 0011.
- Decoder will now start working.

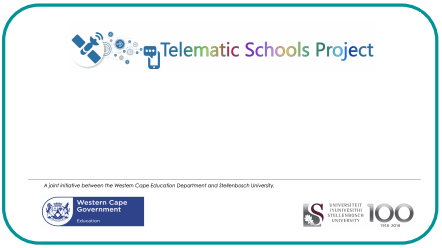
GETTING STARTED (continued)

AMPLIFIER SWITCHING ON

- Now switch on the amplifier by pressing the power button
- Turn the volume knob to 50%

PROJECTOR SWITCHED ON

- Switch on the projector with the projector using the remote control power button



THIS SCREEN SHOULD NOW BE VISIBLE

- You now should have audio and video (sound and pictures) and see this screen

NOTE: IF YOU CANNOT SEE THE SCREEN FOLLOW THE STEPS ON PAGE 13

7.3 TROUBLESHOOTING (solving problems with sound and picture)

Scan QR code for video

SOUND – THE AMPLIFIER

- Check if the audio amplifier is on
- Check if the volume is at 50%
- Check the correct audio selector on the audio amplifier
- Raise the volume on the decoder remote control

PICTURE – THE PROJECTOR

- Check that the electricity is on
- Ensure that the projector is switched on
- Check the input video selector
- The setting must be must be on Video/HDMI/ AV1

7.4 CONFIGURING THE DECODER

Scan QR code for video on how to configure the decoder

Scan QR code for video

CONFIGURING THE DECODER (continued)

SETTING UP THE DECODER

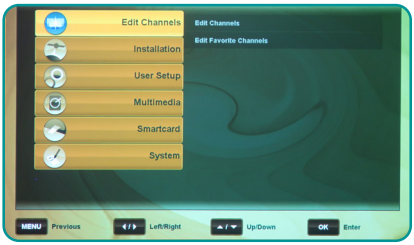
- When the decoder displays **No Signal**
- Connect the LNB cable (white cable with point) to the "SAT IN" input hole on the decoder
- Connect the HDMI cable (black Cable) to the "HDMI" input on the decoder, as well as to the TV/projector
- Switch on the decoder

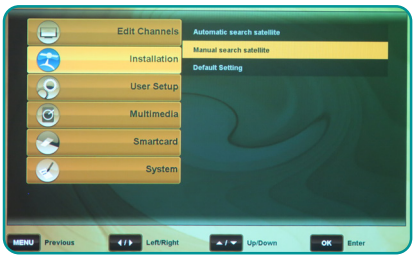
THE REMOTE CONTROL FOR THE DECODER

- Now press the Menu button on the decoder's remote control

CONFIGURING THE DECODER (continued)

DILOG





CONFIGURING THE INSTALLATION

- Using the remote, select **'Installation'** on the screen
- Under **'Installation'**, select **'Manual search satellite'**

SELECTING THE SATELLITE – (Intelsat)

- Scroll down until you find **"INTELSAT 12"**, and then select it
- Press the yellow button on the remote control [sleep]
- Press the green button [Subtitle] on the remote control

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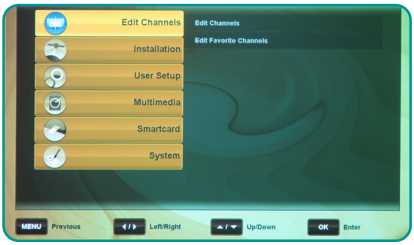

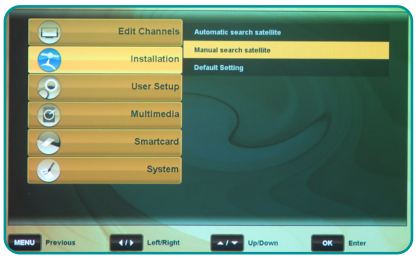

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CONFIGURING THE DECODER (continued)

DILOG

EDIT TP LIST

- **Edit TP List** will appear – Press the green button [Subtitle] on the remote control

- **TP Add** will appear: Each item in the list will have to be set as indicated below. Please use the arrows to select (left/right; up/down)

TP ADD

Frequency	11497
Symbol rate	2400
Polarisation	Horizontal
S2 mode	Off
Modulation	QPSK
FEC rate	Auto
Pilot	Off

- Please refer to above to see if this has been done correctly
- 'Save' by pressing the red button [Audio] on the remote control. **Edit TP List** then will appear again

CRENOVA

EDIT TP LIST

- **Edit TP** List will appear – Press the green button [Subtitle] on the remote control

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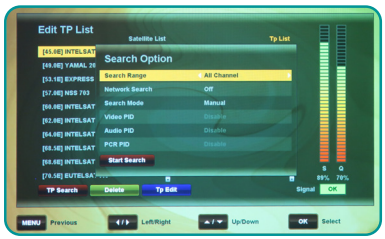
- 'Save' by pressing the red button [Audio] on the remote control. **Edit TP List** then will appear again

EDIT TP LIST (continued)

DILOG

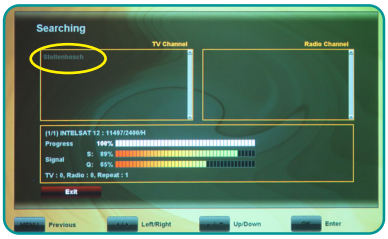
EDIT TP LIST (continued)

- Press right arrow ▸ button on the remote control and select **11497/2400/H**



TP SEARCH

- Select **TP SEARCH**, which is the red button on the remote control (search option will appear)
- Press the red button on the remote control once again to start search.



CHANNEL SEARCHING SCREEN

- The decoder will undergo a channel search.

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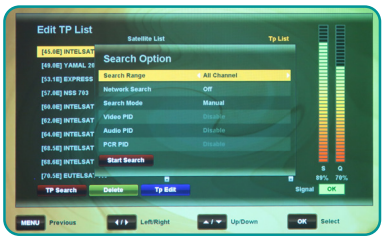
EDIT TP LIST (continued)

- Press right arrow ▸ button on the remote control and select **11497/2400/H**



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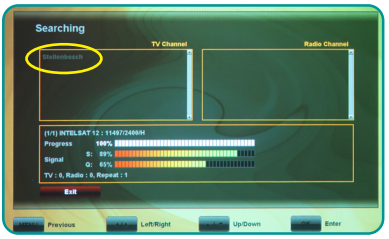

CHANNEL SEARCHING SCREEN

- The decoder will undergo a channel search.

CONFIGURING THE DECODER (continued)

DILOG

CHANNEL SEARCHING SCREEN

- The decoder will now after a successful scan pick up the Stellebosch channel.
- Confirm all changes by selecting **'Yes'** to save and press the [OK] button on the remote control.

CHANNEL SEARCHING SCREEN

- Your changes will be saved and you will be redirected back to the Menu screen [Edit TP list].

FINAL CONFIGURATION SCREEN

- Press the [EXIT] button on the remote control, and then confirm all changes by selecting 'Yes' to save and press the [OK] button on the remote control.
- The decoder will now save.

CRENOVA

CHANNEL SEARCHING SCREEN

- The decoder will now after a successful scan pick up the Stellebosch channel.
- Confirm all changes by selecting **'Yes'** to save and press the [OK] button on the remote control.

CHANNEL SEARCHING SCREEN

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- Press the [EXIT] button on the remote control, and then confirm all changes by selecting 'Yes' to save and press the [OK] button on the remote control.
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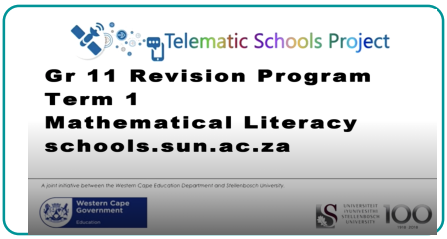
CONFIGURING THE DECODER (continued)

DILOG



LOGON PAGE

- The video will start to play

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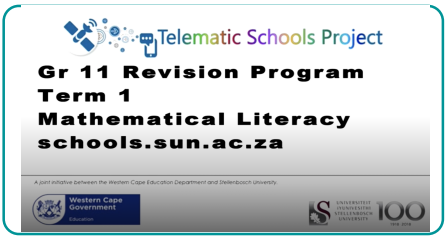


LOGON PAGE

- The video will start to play

7.5 U_12 ERROR CODE

- This means that your decoder was not switched off and went into sleep mode.
- Press the yellow SLEEP button on your remote until sleep mode is off.

8. CHECKLIST FOR SAFE VIEWING

Please follow the correct procedure, as indicated below. Also make sure you are using the correct settings for your decoder model (see decoder configuration on page 13).

Work through the checklist 30 minutes before the session starts to ensure that all the equipment is working and so that programming (the video feed and sound) can run smoothly.

Please scan QR code to view the equipment connections

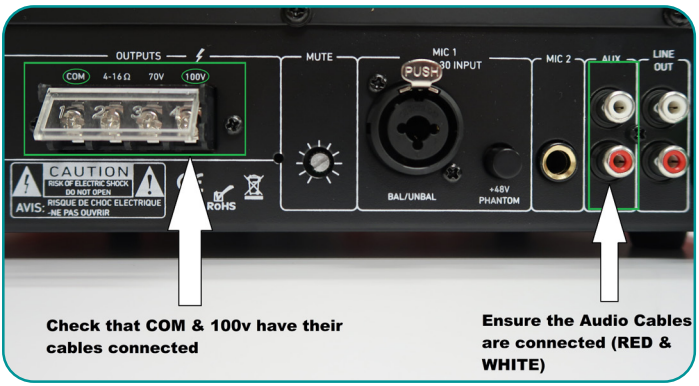
Scan QR code for video

For safety reasons, make sure that there is no leakage in or around the equipment.
Also make sure that power is running to ALL devices:

- Projector
- Sound
- Satellite
- Check that ALL cables are plugged in correctly.

Please scan QR code to view the equipment connection for the amplifier.

Scan QR code for video



Back of Amplifier

Connection with Auxiliary cables

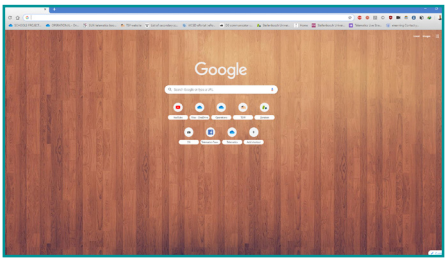
Audio connection on decoder

Back of Amplifier (CORRECT POSITIONS FOR CABLES)

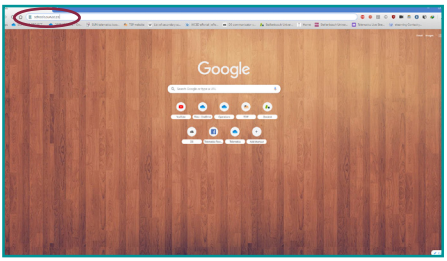
- Please follow the steps below after the broadcast has finished:
- Switch off ALL appliances before disconnecting the power cables
- Report any faulty wiring and constant connection failures

9. TELEMATICS SCHOOLS WEBSITE

The step-by-step manual

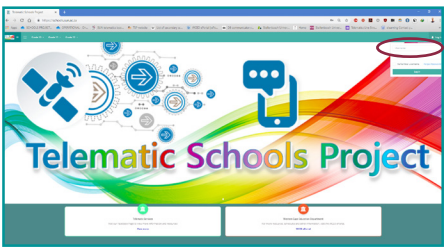


- How to log in and out of the Telematic Schools Project website, where you will find useful resources:
- Open your browser window (Internet Explorer, Google Chrome, Firefox, Safari or Opera, it does not matter which one you use or prefer).
- Make sure you have access to the internet (in other words, can you view other internet pages?)

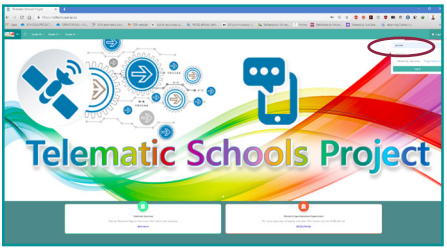


- In the address bar, type: schools.sun.ac.za
- Then press the Enter key on your keyboard or click on the "Go" button

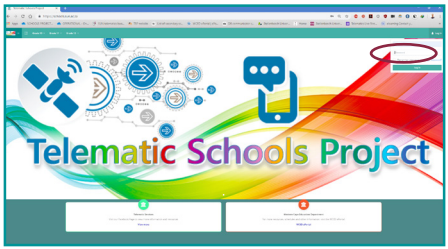
- How to log in:
- Click on the Log in link



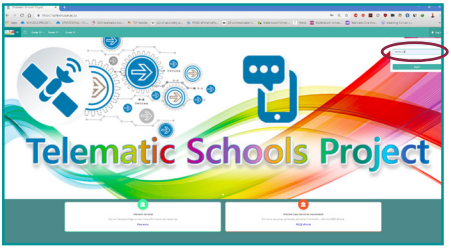
- Select the Username text box and type in your own unique username, as supplied to you



- Make sure to use ONLY lower case letters for your username

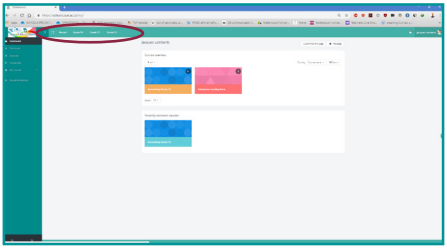


- Select the Password text box and type in your password

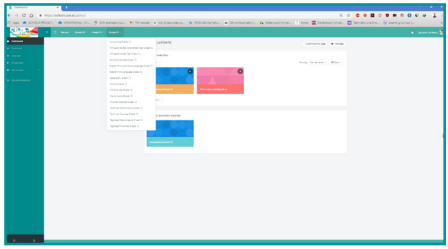


- Your Password starts with an Upper case letter, followed by lower case letters, for example School123!

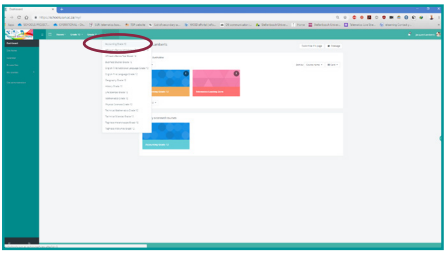
- Then click the Log in button



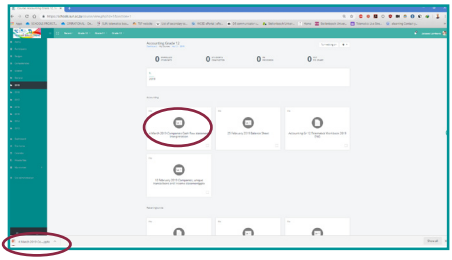
- You are now logged in



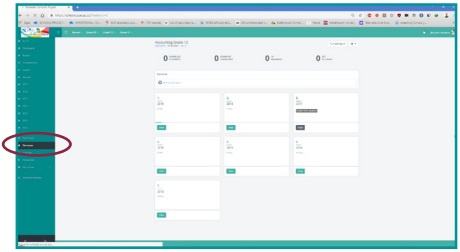
- Subjects can be selected by clicking on their respective Grades on the horizontal navigation bar



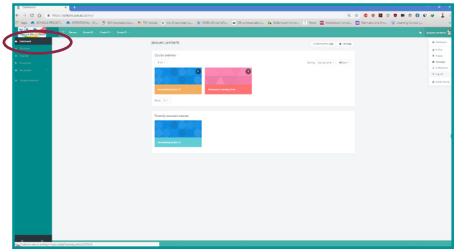
- Scroll down to select your topic



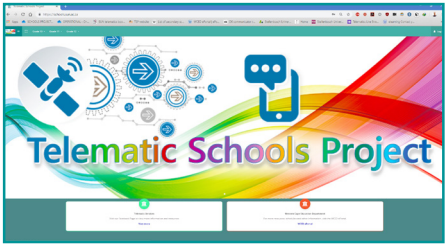
- All content available for the subject can be found on this page. Workbooks, PowerPoint Presentations etc.
- By simply clicking on an item it will download to your computer



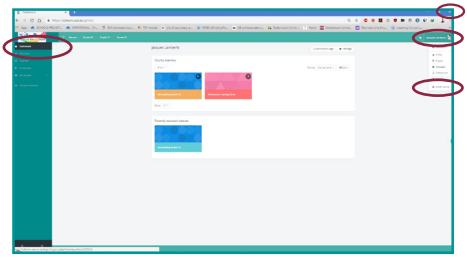
- To go back to your Home Screen or Dashboard, navigate the Vertical Navigation bar and select your preferred landing page.



- Dashboard landing screen



- Site Home



- Remember to **log out** when you are done & click the **close button** to end your session.

10. TELEMATICS SELF-SERVICE – Q & A

How do I know if I have a signal from the satellite dish?
Check the decoder settings (page 13). If there is any signal coming through, it will be on a level 7-8%. If you get a reading of 5-6% it's a sign that the cable is not faulty but your LNB (on the dish) could be faulty or the cables not connected properly.

Scan QR code for video

What should we do if we have no picture?
When experiencing problems with the picture, refer to page 12.

Scan QR code for video

What should we do if we have no sound?
When experiencing problems with the sound, refer to page 12.

Scan QR code for video

What should we do if we have a broken/scrambled/NO signal?
When experiencing NO signal, refer to page 13.

Scan QR code for video

What do we do if there is a blue screen that says No Signal
This means there is no connection from your decoder to your data projector. Check that the cables are inserted correctly and data projector is on the right video setting. Refer page 18-19.

What does it mean if we have a white screen with NO signal in the middle?
You might have as satellite problem. Go through the troubleshooting and report the problem to school@sun.ac.za.

Where do we find the broadcast schedule?
Refer to page 5.

What is the Telematic Schools Website?
This is where you can find all your learning material; refer to page 5.

Where do we get technical support?
Email: school@sun.ac.za / Tel: 021-808-9507

What should the connections behind the decoder look like?
Refer to page 19-20.

Why do we have sound and no picture?
There is a problem with the connections or the data projector. Refer to page 12.

Why do we have picture and no sound?
There is a problem with the connections, speakers or amplifier. Refer to page 18-20.
Check that your data projector is on Video or HDMI.

How do we know if we are on the right channel to watch the broadcast?
You are on the right channel if you see the university logo. See page 11 or check that the display on the decoder matches that in page 18.

Why does my decoder display a U_12 code?
Refer to page 18.

Are we allowed to plug out the decoder and store it in a different room for safekeeping?
This is not advisable unless you have a picture of what the connections should look like and are able to reconnect it exactly the way it was. (Take a picture before disconnecting.)

What happens if we lose the remote?
Keep the remote in a safe place, as it is not easy to replace.

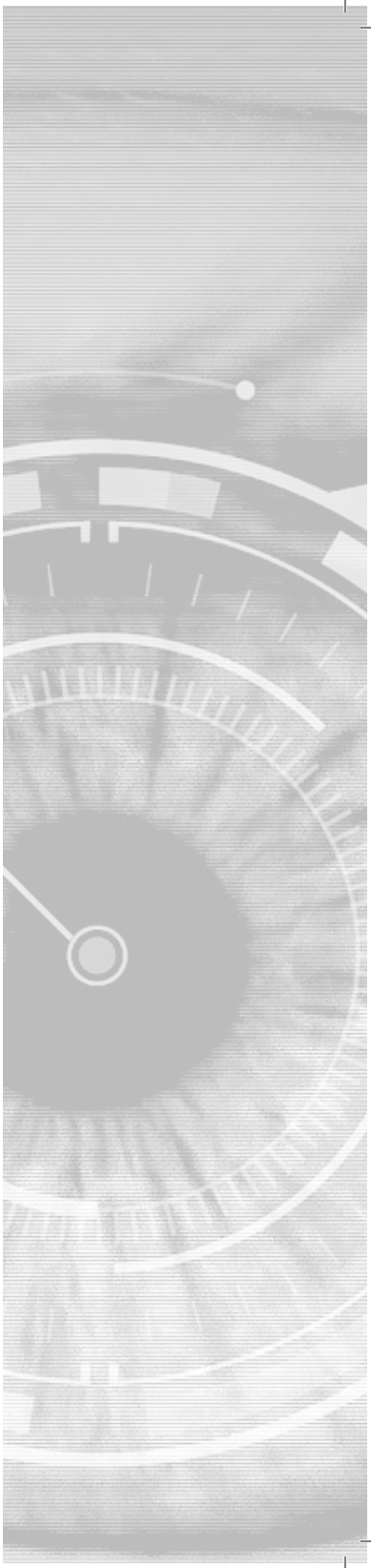
What happens if the equipment is stolen?
As soon as equipment is installed it is the responsibility of the school to insure the equipment. In the unfortunate event that the equipment is stolen, please file a police report and take the necessary steps to claim from your insurance. Report the theft to school@sun.ac.za.

Where do we get quotes for new equipment?
E-mail: school@sun.ac.za

11. CONTACT DETAILS

For more information, contact:

Email: school@sun.ac.za
Tel: 021-808-9507/4129




0
150
300
450
600
750
1000

Telematic Schools Project

TELEMATIC USER GUIDE