

AT50SAW

Programmable Selective Amplifier

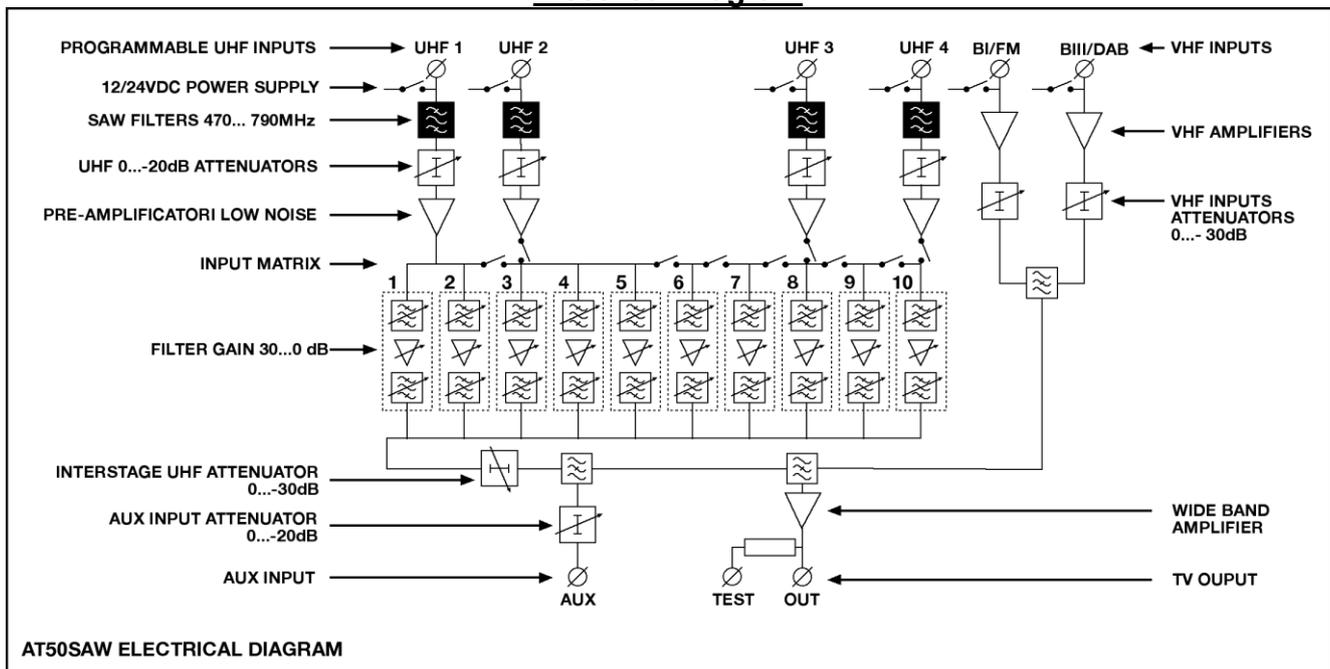


LEM ELETTRONICA srl - ITALY - Tel.+390309120006 - Fax+390309123035
www.lemelettronica.it - info@lemelettronica.it

Technical Specifications

N° Input BI/BII (40... 108 MHz)	1																																																																						
N° Input BIII/DAB (170... 320 MHz)	1																																																																						
N° AUX input (40... 860 MHz)	1																																																																						
N° Programmable Input UHF (470... 790 MHz)	4																																																																						
N° Programmable Clusters (Ch. 21... 60)	10																																																																						
N° Channel per Cluster	1... 6 (8... 48 MHz)																																																																						
UHF Cluster Groups	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>UHF1</th> <th>UHF2</th> <th>UHF3</th> <th>UHF4</th> </tr> </thead> <tbody> <tr><td>10</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>9</td><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>8</td><td>0</td><td>0</td><td>0</td><td>2</td></tr> <tr><td>7</td><td>0</td><td>3</td><td>0</td><td>0</td></tr> <tr><td>5</td><td>0</td><td>5</td><td>0</td><td>0</td></tr> <tr><td>7</td><td>0</td><td>2</td><td>2</td><td>1</td></tr> <tr><td>5</td><td>0</td><td>4</td><td>1</td><td>1</td></tr> <tr><td>6</td><td>0</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>5</td><td>0</td><td>3</td><td>2</td><td>2</td></tr> <tr><td>2</td><td>5</td><td>2</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td><td>3</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>4</td><td>2</td><td>2</td><td>2</td></tr> <tr><td>2</td><td>3</td><td>3</td><td>2</td><td>2</td></tr> </tbody> </table>		UHF1	UHF2	UHF3	UHF4	10	0	0	0	0	9	0	0	0	1	8	0	0	0	2	7	0	3	0	0	5	0	5	0	0	7	0	2	2	1	5	0	4	1	1	6	0	2	2	2	5	0	3	2	2	2	5	2	1	1	2	4	3	1	1	2	4	2	2	2	2	3	3	2	2
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* IM3 DIN 45004B -60dBc (Analogic Ch.)																																																																							
** IM3 DIN 45004B -35dBc (Digital Ch.)																																																																							
Clusters Gain Adjustment	0... 30 dB																																																																						
Clusters Selectivity +/- 10 MHz	12 dB																																																																						
Input attenuators UHF	0... 20 dB																																																																						
Max Input Level UHF	100 dBμV* / 105 dBμV**																																																																						
Gain VHF	46 dB																																																																						
Gain UHF	50 dB																																																																						
Gain AUX input	20 dB																																																																						
Interstage Gain Attenuator (UHF Output)	20 dB																																																																						
Max Output Level	123 dBμV* 128dBμV**																																																																						
BI / BII Attenuator	30 dB																																																																						
BIII / DAB Attenuator	30 dB																																																																						
Noise Figure	VHF 6dB UHF 6dB																																																																						
Return Loss In/Out	>12 dB																																																																						
Remote Power Supply VHF – UHF (Selectable)	12VDC 200mA / 24 VDC 100 mA																																																																						
Supply Voltage	230VAC +/- 10%																																																																						
Max Power Consumption	16 W																																																																						
Programming Port	USB																																																																						
Dimensions	320 x 260 x 60 mm																																																																						

Electrical Diagram



INTRODUCTION

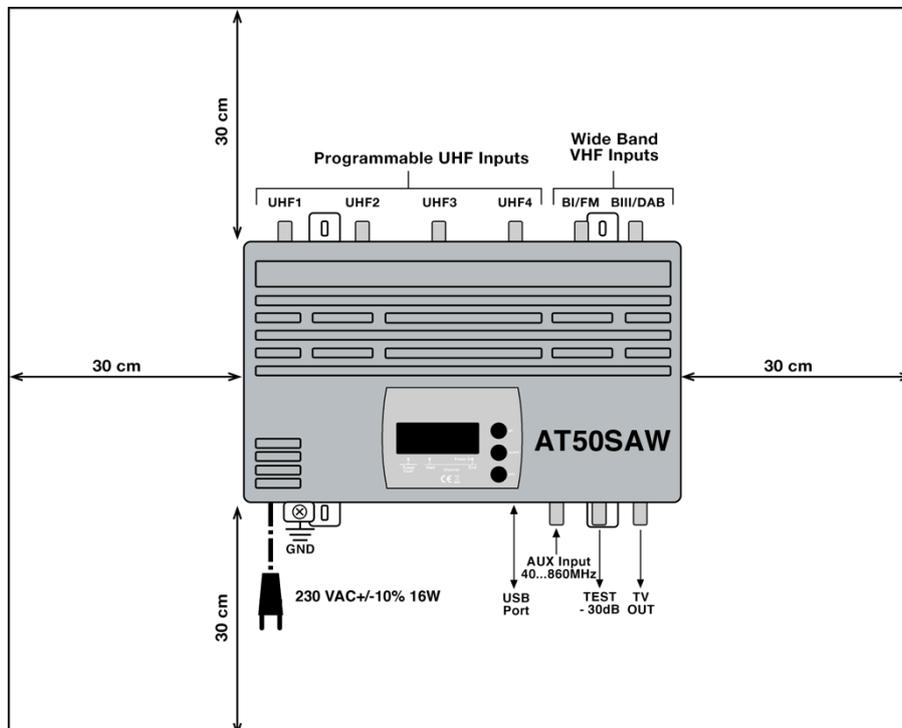
Congratulations for buying the AT50SAW programmable selective amplifier.
Read carefully the following instructions to ensure correct operation of the amplifier.

Safety instructions

- Do not expose the amplifier to extreme temperatures.
- Place the amplifier in a dry and well-aired location.
- Install the unit on a vertical wall, or in a waterproof cabinet to a minimum IP55 rating, and fix it safely using the special through holes supports.

INSTALLATION AND START-UP

- Connect the ground wire (you find it on the amplifier's chassis) to the IRS or MATV earth.
- Connect the TV aerial(s) to the amplifier's inputs.
- Terminate the unused inputs with 75Ω terminators.
- Connect the supplied power pack.
- Only then connect the amplifier to the mains plug.



Programming

It is possible to programme the AT50SAW from either the front panel controls or from a the GUI software which is downloadable free of charge from our website

LEM Graphic User Interface (GUI)

From the download area in our website <http://www.lemelettronica.it>, it is possible to download a special free PC compatible software conceived to operate with the AT50SAW amplifier from your PC.

Hardware requirements

PC Windows compatible with USB interface.

Processor 800MHz or more.

256Mb RAM

USB A-B cable.

Software minimum requirements

Windows XP SP2 operating system or more recent Microsoft Framework .NET 3.5* or higher and langpack (free download from Microsoft website).

Installation procedure

Close all the active applications (included antivirus programs)

Start the Setup.exe program

Follow the guided procedure until the installation is completed

The program needs the **Framework.NET 3.5** or higher to work.

It is usually in the PC if there is a recent version of Windows XP. If not the **Framework.NET** can be freely downloaded from the Microsoft website.

Use

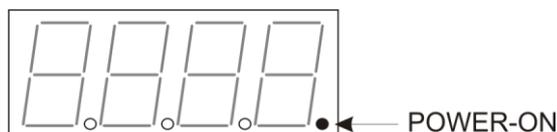
If correctly installed and started the GUI software will automatically find the USB interface of the AT50SAW amplifier, then all the setting, reading and storing operations, are available.

Manual Programming (from the keys on the front panel of the amplifier)

At start-up (i.e. connection of the mains cable) the letter “b” will appear on the display. It indicates the microprocessor boot phase. Then the release “Firmware” will be indicated for a while to confirm the correct system initialization.

At the end of the start-up procedure the amplifier is in the “POWER ON” status.

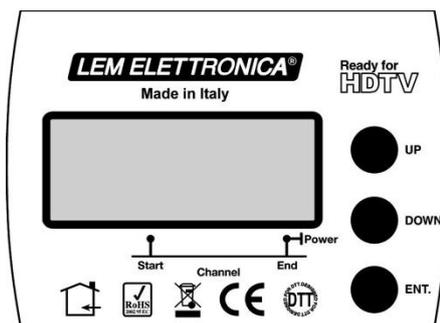
This status is indicated by the lighting of the fourth LED on the display.



The “POWER ON” status denotes that the amplifier is operative and ready to be programmed.

PARAMETERS SET AND PROGRAMMING

A 4 digit display indicate the amplifier's selectable modes. Using the "UP", "DOWN" and "ENTER" keys you can see the factory set parameters and program new ones.



LED Display fixedly on	Parameters visualisation
LED Display blinking slowly	Parameters configuration
LED Display blinking rapidly	Not desirable programming or setting

To access the UHF input attenuators' programming menu: press the "DOWN" key for 3 seconds.

To access the clusters' programming and UHF-VHF output level adjustment menu: press the "ENTER" key for 3 seconds.

To access the programming menu of the remote supplies by the inputs: press the "UP" key for 3 seconds.

Any change of the parameters (blinking display) must be confirmed by pressing the "ENTER" key. In this way it will be permanently stored.

Note: To quit any programming menu: press the "UP" and the "DOWN" keys simultaneously, this will happen automatically after 5 minutes if the menu is unused.

1) UHF inputs' attenuator

This is manually adjustable from 0 to -20 dB.

To access the UHF attenuators' programming menu:

- press the "DOWN" key for 3 seconds.
- the display will show the word **U1.00**. : this indicates that the UHF1 input attenuation level is at zero.
- press the "ENTER" key. The display will start blinking. This indicates the parameters' setting mode.
- press "UP" or "DOWN" to adjust the attenuation level from 0 to -20dB.
- press "ENTER" again to confirm your choice. The display will return with a fixed light, this indicates that the new setting was saved.

NOTE: the attenuation settings will be cancelled if you do not press the "ENTER" key for confirmation at the end of the procedure.

To adjust the UHF2, UHF3 and UHF4 input attenuators:

- press "UP" or "DOWN" to choose the desired attenuator.
- then follow the described procedure above.

To leave the remote power supply setting menu:

- press the "UP" and "DOWN" keys simultaneously.

- the display will return to "POWER ON" status.

2) selection of the cluster-groups configuration

There are 15 possible configurations:

INPUT	UHF1	UHF2	UHF3	UHF4
CLUSTER-GROUPS	10	0	0	0
	9	0	0	1
	8	0	0	2
	7	0	3	0
	6	0	4	0
	5	0	5	0
	7	0	2	1
	6	0	3	1
	5	0	4	1
	6	0	2	2
	5	0	3	2
	2	5	2	1
	2	4	3	1
	2	4	2	2
	2	3	3	2

You can enter into these configurations by pressing the "ENTER" key for 3 seconds.

The display indicates the selected configuration: it views the cluster-groups corresponding to the 3 UHF inputs.

Note:

The cluster-group 5-0-3-2 assigns: 5 clusters to the UHF1 input, 3 clusters to the UHF3 input, 2 clusters to the UHF4 input .

Each cluster can be programmed for a bandwidth variable from 8 to 48 Mhz. with a 8 Mhz. step, that means from 1 to 6 UHF channels with 1 channel steps.

To select a different configuration:

- press "ENTER" : the display starts blinking.
- press "UP" or "DOWN" to choose the desired configuration.
- press "ENTER" again to confirm your choice: the display will return with a fixed light and it will show the selected configuration.

3) UHF cluster attenuation manual levelling

The attenuation of each cluster can be levelled from 30 to 0 dB with 1 dB steps.

The cluster can also be switched off.

This function will be shown on the display by the visualisation of "L+ cluster number".

Procedure

From the cluster-groups' visualisation/configuration mode you can sequentially go to the visualisation of the clusters' levels + channels parameters.

To enter into the adjustment mode:

- press the "ENTER" key. The display will start blinking. This indicates the parameters' setting mode.
- press "UP" or "DOWN" to adjust the cluster's attenuation level.
- press "ENTER" again to confirm your choice.

To deactivate a cluster:

- press the "ENTER" key .The display will start blinking. This indicates the parameters' setting mode.
- press the "UP" and "DOWN" keys simultaneously.
- the display will show the word **o F**.
- press "ENTER" again to confirm your choice.

4) Clusters' amplitude setting

The bandwidth (from 1 to 6 channels) and the attenuation level (from 0 to -30 dB Typ) of the 10 clusters can be independently adjusted.

For the setting you need to select the desired cluster (F1...F0) and then adjust the attenuation level, if you require to use it, or

switch it off choosing **o F**.

Afterwards you can select the cluster's start and stop channels.

If you switch a cluster off, it is better to reset its channels to zero choosing **o F**.

Procedure

- start from visualisation mode (display fixed switched on) of the first cluster's level settlement.
- press the "UP" key: the display will show the F1 cluster .
- The display will also indicate the F1 cluster's start channel by the lighting of the second LED.
- press "UP" again .
- the display will show the F1 cluster's stop channel followed by a dot **F I 27**.

Note: If the start channel is at the same value as the stop one (single-channel setting) the display will indicate this mode viewing the word **o F** as cluster's stop channel **F I oF**.

To reset the cluster's start channel:

- select the desired cluster on the display.
- the lighting of the second LED confirms that you are at the cluster's start channel.
- press the "ENTER" key .The display will start blinking.
- press "UP" to increase the channel's number or "DOWN" to decrease it.
- press "ENTER" again to confirm your choice.

To reset the cluster's stop channel:

- press the "UP" key.
- the lighting of the fourth LED confirms that you are at the cluster's stop channel.
- press the "ENTER" key .The display will start blinking.

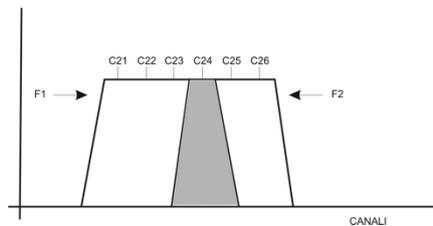
- press “UP” to increase the channel’s number or “DOWN” to decrease it.
- press “ENTER” again to confirm your choice.

To deactivate the cluster’s start or stop channel:

- press the “UP” and “DOWN” keys simultaneously.
- the display will show the word **o F.**

Note:

Channel overlapping is possible and it is shown on the display by the rapid blinking of the overlapped clusters.



Note:

The setting of the F1 cluster’s start channel at the value 21 and of the stop channel at the value 24 while the F2 cluster has the start channel at the value 24 and the stop channel at the value 26 implicates an overlapping of the F1 cluster’s stop channel with the F2 cluster’s start channel.

5) Inter-stage attenuator regulation (UHF output level)

After the input levels’ setting a further adjustment of the total output level of the UHF signals can be useful.

Procedure

- press the “UP” or “DOWN” key to select **LU.00** on the display.
- press the “ENTER” key .The display will start blinking. This indicates the parameters’ setting mode. -
- press “UP” or “DOWN” to adjust the UHF total attenuation level.
- press “ENTER” again to confirm your choice.

6) B II (and BI) and B III input level adjustment.

The B II and B III inputs are provided with level attenuators from 0 to –30 dB.

Procedure

- press the “UP” or “DOWN” key to select **b1.00.** or **b3.00.** on the display.
- press the “ENTER” key. The display will start blinking. This indicates the parameters’ setting mode.
- press “UP” or “DOWN” to adjust the band I and band III cluster attenuation level.
- press “ENTER” again to confirm your choice.

NOTE: the attenuation settings will be cancelled without pressing the “ENTER” key for confirmation at the procedure’s end.

7) Clusters Self-Alignment Setting

SELF-ALIGNMENT can be used after programming all the UHF clusters. By running this function the programmable amplifier will automatically level all clusters to get an equalized and optimized output.

Important

Before starting the SELF ALIGNMENT procedure disconnect the BI/FM; BIII/DAB and AUX input

Procedure

To set the SELF-ALIGNMENT select the **L. E. v. L.** menu and press the ENTER key. When the display start flashing showing the set level (default level d.115 = 115 dB μ V), press the keys **UP** and **DOWN** if you want to modify it. The range is from 100 to 115 dB μ V.

Press again the key ENTER to start the SELF ALIGNMENT procedure. The display shows the word **A D J** followed by a moving cursor. Wait till the procedure is completed.

When the procedure is completed the display will show the selected level.

Low input level signals

If the input level signals are too low, the AT50SAW will stop and show the number of each involved filter with the symbol **Lo**. To complete the procedure press the ENTER key.

To correct the fault you can reduce the selected output level or add a pre-amplifier on the input.

High input level signals

If the input level signals are too high, the AT50SAW will stop and show the number of each involved filter with the symbol **Hi**. To complete the procedure press the ENTER key.

To correct the fault you can increase the selected output level if possible or adjust the input attenuator.

Operating principle

The SELF ALIGNMENT algorithm adjusts each filter to obtain the same selected output level. The selection range is from 100 to 115 dB μ V. At the end of the procedure the algorithm checks if the total output level obtained is compliant with the maximum level specifications of the amplifier.

If the total output level obtained is higher than the maximum level specifications of the amplifier, a proper value of the inter-stage attenuator will be automatically set up.

PassCode Protection

To enable or change the protection three digit PIN code press the keys **ENTER** and **UP** simultaneously for 3 seconds. Press again **ENTER** to activate the procedure (flashing display) then press the keys **UP** or **DOWN** to set the first digit and confirm pressing **ENTER**. Follow the same procedure to set the other two digits.

The code **P.000** = PIN code disabled (default setting).

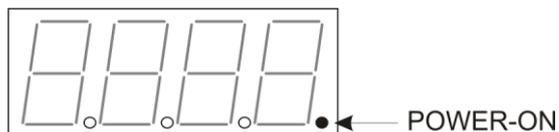
8) Remote power supply

Each “RF” input can supply 12 200mA* or 24 VDC 100mA. *

*amount of the total consumption of all the remote power supplied inputs.

Procedure

- You can enter into the remote power supply setting menu only if the display is in “POWER ON” status.



- if the amplifier is not yet in the “POWER ON” mode, then press the “UP” and “DOWN” keys simultaneously .
- keep pressing the “UP” key for 3 seconds.
- the display will indicates the remote power supply menu.

To set the remote power supplied voltage:

- press the “ENTER” key. The display will start blinking. This indicates the parameters’ setting mode.
- press “UP” or “DOWN” to select 12 or 24 Volt voltage.
- press “ENTER” again to confirm your choice.

To switch on the remote power supply or to check its presence at the UHF, VHF and SAT-IF inputs of the amplifier:

- press “UP” or “DOWN” .
- the “UHF1”, “UHF2”, “UHF3”, UHF4, “bI/II ”, “bIII ” inputs will be sequentially viewed on the display.
- for each input: “oF” means that input doesn’t provide remote power supply.
- for each input: “on” mean that input provides remote power supply.

To change the mode:

- press “ENTER” .
- press “UP” or “DOWN” to select “on” or “oF” .
- press “ENTER” again to confirm your choice.

To leave the remote power supply setting menu:

- press the “UP” and “DOWN” keys simultaneously.
- the display will return to “POWER ON” status.

If a short circuit or an overload occurs to one input or more, the first LED on the display will start blinking.
In case of short circuit: switch the amplifier off by disconnecting the mains cable. Remove the problem’s origin, then switch the amplifier on.

8) Amplifier's initial setting restoration

The amplifier can be reset at any time, this restores the initial factory setting. This will remove all the individual settings that have been previously entered. The amplifier will need to be reprogrammed at this stage.

Procedure

- disconnect the mains cable from the 230V electric system.
- keep pressed the "ENTER" key .
- in the meantime reconnect the mains cable .
- wait till the display indicates 4 hyphens (it means that the reset was successful) .
- then release the "ENTER" key.
- the display will return to "POWER ON" status.
- now the amplifier is programmable again.