

PRO Line Headend Series PLC-200/201/202/

300/301/302

Operation Manual

www.lemco.gr



Contents

1. IMPORTANT SAFETY PRECAUTIONS INFORMATION	3
2. INTRO	5
3. INSTRUCTIONS	5
4. INSTALLATION	9
5. TECHNICAL SPECIFICATIONS	34
6. DIMENSIONS	39
7. LEMCO LIMITED WARRANTY	40
8. WARNINGS	40

1. IMPORTANT SAFETY PRECAUTIONS INFORMATION

READ AND UNDERSTAND THE FOLLOWING WARNINGS BEFORE USING YOUR DEVICE TO ENSURE SAFE AND PROPER USAGE

WARNING

To prevent fire, electric shock, or other hazards, always observe the following safety precautions. These precautions include, but are not limited to:

Power supply / Mains cord

- Use the unit strictly within the voltage range specified by the manufacturer to prevent damage or malfunction.
- Regularly inspect the power connector and remove any accumulated dirt or dust to maintain optimal performance.
- Use only the mains cord provided with your unit to ensure compatibility and safety.
- Avoid using the unit or plugging in the mains cord if it appears damaged, frayed, or compromised in any way.

• Keep the mains cord away from heat sources and avoid pulling, placing heavy objects on, or causing damage to the cord. Store it safely out of children's reach.

• Plug the device into a properly grounded socket to minimize the risk of electrocution.

• When disconnecting plugs, always pull on the plug and not the cord. Ensure the unit's power switch is off before removing the cord from an outlet.

- Unplug the mains cord during extended periods of non-use or during storms to protect the unit.
- Avoid connecting the unit to a multi-outlet to prevent plug overheating and potential fire hazards.

Disassembling

• This unit contains specialized components that are not user serviceable. Refrain from disassembling or attempting repairs, as this will void any warranties. Contact the manufacturer for assistance with any issues.

Water/humidity

•Store and operate the unit in a dry environment, away from moisture or water sources.

• Never plug or unplug the unit with wet hands to avoid electric shock.

Fire

• Avoid placing open flames, such as candles, on or near the unit to prevent potential fires.

• In case of damaged mains cords, power connectors, sudden loss of functionality, unusual smells, or smoke, promptly turn off the unit, disconnect the mains cord, and contact the manufacturer's technical support department.

Installation / Storage

• To ensure optimal performance and prevent damage, store the unit in a clean, dry location, away from temperature extremes (e.g., direct sunlight, heaters, or inside a car during the day). Securely place the unit to prevent falls.

• Before moving the unit, disconnect all cords.

• When installing the unit, ensure that an outlet is easily accessible for quick disconnection in case of malfunction. Disconnect the mains cord when the unit is not in use for extended periods.

Connectivity

• Always turn off and unplug all devices before connecting the unit to other electronic devices.

Maintenance

• Avoid spilling liquids on the unit. To clean, use a soft, slightly damp cloth and allow the unit to dry completely before using it again. Do not use harsh chemicals or volatile liquids.

Handling

- Do not insert fingers or objects into the unit's openings.
- Never insert paper, metal, or other foreign objects into the unit's openings. If foreign objects are suspected inside the unit,
- turn it off, unplug the mains cord, and contact the manufacturer's technical support department.

• Refrain from stepping on or placing heavy objects on the unit. Gently handle all buttons, connectors, and switches to avoid

hardware damage.

Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) precautions

• Be aware that your device may cause or be affected by electromagnetic interference or radio frequency interference. Keep the device at a safe distance from other electronic devices, such as pacemakers, hearing aids, or other medical equipment, to prevent potential interference.

• Avoid placing the device near or on top of audio equipment or televisions, as it may cause interference with the reception or operation of these devices.

Accessory compatibility

• Use only compatible accessories and attachments approved by the manufacturer. Using unauthorized or incompatible accessories may cause malfunction, damage to the unit, or pose safety risks.

Software updates

• Regularly check for software updates and install them to ensure your device stays up to date with the latest security patches and bug fixes. This will help maintain the device's performance, stability, and overall user experience.

Child safety

• Keep the device and all its accessories out of the reach of children. Small parts may pose a choking hazard. Additionally, improper use of the device by children could result in damage or injury.

Environment and disposal

• Recycle or dispose of the device, its accessories, and batteries according to local regulations. Electronic devices and batteries should not be disposed of in regular household waste to prevent environmental harm.

Emergency situations

• Be aware that in certain emergency situations, such as earthquakes, fires, or power outages, the device may not function as expected. Always have alternative communication methods and emergency plans in place.

Grounding Precaution

Proper grounding is crucial for the safe and effective operation of your device. To minimize the risk of electric shock, equipment damage, or interference, please follow these grounding precautions:

• Ensure the device is connected to a grounded electrical outlet: The device should be connected to a properly grounded, threepronged electrical outlet. This will help to protect the device and users from potential electrical hazards.

• Check the grounding of your entire system: All interconnected devices, such as antennas, cables, and other equipment, should also be properly grounded. This helps prevent ground loops, which can cause interference and degrade system performance.

• Use grounded cables and connectors: When connecting the device to other devices, use shielded cables and connectors with proper grounding. This ensures that the entire signal path is grounded, reducing the potential for interference, and improving overall system performance.

• Inspect grounding connections periodically: Regularly check all grounding connections for signs of wear, damage, or corrosion. Loose or damaged grounding connections can compromise the safety and performance of your DTV headend system.

• Consult a professional if in doubt: If you are unsure about the grounding of your system or require assistance with grounding-related issues, consult a qualified technician or electrician. Proper grounding is essential for the safe and effective operation of your device and the overall DTV headend system.

By taking these additional safety precautions into consideration, you can further ensure the safe and proper use of your device.

2. **INTRO**

Congratulations on purchasing a Pro Line headend from PLC-2xx/3xx series. You are now the proud owner of a high-quality, professional DTV and IPTV headend. This powerful and versatile device is designed to provide you with exceptional performance and reliability for all your digital television needs.

3. INSTRUCTIONS

3.1 – DESCRIPTION

The Pro Line Common interface 2xx and 3xx series (PLC-2xx/3xx) are part of the Pro Line headends product line that provides models with Common Interface (CI) with advanced flexibility. These models offer TV distribution signal over RF+IP simultaneously or over IP ONLY for seamless integration with a wide range of applications. This feature-rich series is designed to meet the evolving needs of the broadcasting industry and offer a superior viewing experience to the end-users.

(PLC-2xx series)

The 2xx series headend from Lemco's Pro Line series is an advanced and powerful all-in-one device series, designed to meet diverse broadcasting requirements. It consists of the following part numbers:

PLC-200 is capable of receiving up to 16x independent satellite (DVB-S/S2), terrestrial (DVB-T/T2), or cable (DVB-C) signals, it converts them into 1xGbit IPTV streaming as well as IP reception (extra license is required).

PLC-201 is capable of receiving up to 16x independent satellite (DVB-S/S2/S2X) + multistream signals, it converts them into 1xGbit IPTV streaming as well as IP reception (extra license is required).

PLC-202 is capable of receiving up to 8x independent satellite (DVB-S/S2), terrestrial (DVB-T/T2) or cable (DVB-C) signals, as well as 8x independent satellite (DVB-S/S2/S2X) + multistream signals (16x input in total), it converts them into 1xGbit IPTV streaming as well as IP reception (extra license is required).

PLC-203 is capable of receiving up to 8x independent satellite (DVB-S/S2), terrestrial (DVB-T/T2) or cable (DVB-C) signals, as well as 8x independent satellite (DVB-S/S2/S2X) + multistream signals (16x input in total), it converts them into 1xGbit IPTV streaming as well as IP reception (extra license is required).

(PLC-3xx series)

The 3xx series headend from Lemco's Pro Line series is an advanced and powerful all-in-one device series, designed to meet diverse broadcasting requirements. It consists of the following part numbers:

PLC-300 is capable of receiving up to 16x independent satellite (DVB-S/S2), terrestrial (DVB-T/T2), or cable (DVB-C) signals, it converts them into 16x DVB-T/C RF output channels while simultaneously providing 1xGbit IPTV streaming as well as IP reception (extra license required).

PLC-301 is capable of receiving up to 16x independent satellite (DVB-S/S2/S2X) + multistream signals, it converts them into 16x DVB-T/C RF output channels while simultaneously providing 1xGbit IPTV streaming as well as IP reception (extra license required).

PLC-303 is capable of receiving up to 8x independent satellite (DVB-S/S2), terrestrial (DVB-T/T2) or cable (DVB-C) signals, as well as 8x independent satellite (DVB-S/S2/S2X) + multistream signals (16x input in total) and converts them into 16x DVB-T/C RF output channels while simultaneously providing 1xGbit IPTV streaming as well as IP reception (extra license required).

Featuring 8x Common Interface (CI) in total, both PLC-2xx and PLC-3xx series are able to descramble various TV content using the appropriate CAM (Conditional Access Module). Its innovative "pool" technology allows users to select any program from the 16x RF or IP inputs and assign it to any of the 16x RF+IP outputs, ensuring exceptional flexibility in content distribution.

Powered by a robust CPU (Quad-core @ 1.8GHz / 2GB RAM) and operating on Linux OS, the device guarantees efficient device control and offers a user-friendly, highly responsive interface. Additionally, the device can be managed remotely or locally

via Ethernet. With its compact design (1U rack mount) and impressive features, the PLC-2xx/3xx headend series is an ideal solution for distributing Free-To-Air (FTA) or scrambled TV programs from various sources (satellite, terrestrial, cable or IP) to a CATV installation using DVB-T/C and IP technology.

Furthermore, the PLC-2xx/3xx headend series can host Fleex Embedded which is an IPTV middleware without requiring an external server, allowing users to control Hotel IPTV monitors in an installation as well as IPTV STBs (more information at: www.fleex.gr) This provides a wide range of features, including Live TV, Live Radio, Info channels, CAST, Weather, Alarm, EPG, and more.

Overall, the PLC-2xx/3xx headend series is a sophisticated and versatile device that delivers top-quality TV distribution, making it an excellent choice for cable TV companies, IPTV providers, hotels, hospitals, and other similar installations.

3.2 - FEATURES

- 16 x independent multi-standard inputs DVB-S/S2/T/T2/C (For PLC-200/300)
- 16 x independent multi-standard inputs DVB-S/S2/S2X (For PLC-201/301)

• 8x independent multi-standard inputs DVB-S/S2/T/T2/C + 8x independent multi-standard inputs DVB-S/S2/S2X (For PLC-202/302)

• 8x Common Interfaces

- 16 x RF output DVB-T/C (software selectable)
- MER value > 45dB
- IPTV streaming (up to 128x SPTS) @ 800Mpbs
- IPTV reception (up to 112x SPTS) @ 800Mpbs
- SAP/SDP support
- "Pool" technology
- PID Filtering
- Custom NIT/SDT support
- PCR re-stamping, Correction
- EPG over RF and IP
- 1U rack mount device
- 2x (HOT pluggable) power supplies working in redundancy mode
- Fleex Embedded support (IPTV middleware)
- 5-year warranty

3.2.1 - Auto-reset functions and watchdog

During the normal operation of the PLC-2xx/3xx headend series, the main CPU monitors all the internal parts in order to ensure that the device works normally. In case of an internal error or module failure, the device immediately initiates the recovery procedure by resetting the appropriate module or the device. Finally, watchdog timers ensure that the device will be reset in case of CPU failure.

3.2.2 - Multi-Standard inputs

Discover the exceptional versatility of the Pro Line headend series as a Multi-standard headend solution. This advanced system is specifically designed to accommodate diverse broadcasting needs and industry standards, including DVB-S/S2/S2X+multistream, DVB-T/T2, DVB-C, HDMI as well as IPTV (IN/OUT). Its seamless integration of various signal formats makes it the ideal choice for cable TV companies, IPTV providers, hotels, hospitals, and other installations that require a flexible and efficient headend solution.

3.2.3 - "Pool" technology

One of the most state-of-the-art TS multiplexer is responsible of providing the "pool" technology feature as well as to offer a variety of different features such as custom NIT/SDT creation, EPG over RF and IP, LCN and more...

3.2.4 - RF and IPTV distribution simultaneously

Experience the best of both worlds with the PLC-2xx/3xx headend series solution, which offers simultaneous RF and IPTV distribution without any extra license. This cutting-edge system enables you to distribute content through both traditional coaxial infrastructure (RF) and modern internet protocol television (IPTV) networks, providing unparalleled flexibility and efficiency in content delivery.

<u>3.2.5 – Dual Power supplies</u>

The Pro Line headend series features dual power supplies operating in redundancy mode, ensuring uninterrupted performance. In case of a failure in the primary power supply, the system automatically switches to the backup, maintaining continuous operation. Both power supplies are hot-pluggable, allowing for easy replacement or maintenance without shutting down the system, further enhancing reliability and minimizing downtime.

<u>3.2.7 – 1U Rack mount</u>

The Pro Line headend series is designed as a compact 1U rack-mountable device, offering a space-efficient solution for installation in standard server racks. This form factor allows for easy integration into existing setups while maximizing rack space. The 1U design ensures optimal airflow and cooling, while maintaining a sleek and organized equipment configuration, perfect for professional environments where space and efficiency are key

3.2.7 - Cold Reset

The Pro Line headend series includes a convenient Cold Reset feature, allowing users to remotely initiate a full reset of the device via LAN. When triggered, the device powers off completely for 10 seconds before automatically powering back on. This function helps in resolving system issues or applying critical resets without the need for physical access, making remote management and troubleshooting more efficient and user-friendly

3.2.8 - Fleex Embedded support

Enhanced guest experience with Fleex Embedded IPTV middleware enabling control of TVs from major brands such as LG, Samsung, and Philips, and offering basic middleware functionality directly from the headend without the need for external server.

3.3 – Product views

3.3.1 – Front panel view



- 1. RF output (Only for PLC-3xx series)
- 2. IP LAN & Fleex Embedded control port
- 3. Power ON/OFF button
- 4. Reset button
- 5. Status indicator
- 6. IP IN/OUT port
- 7. Common Interfaces (CI)

3.3.2 – Back panel view

PLC-200/300



1. Dual power supplies 2. DVB-S/S2 RF input 3. DVB-T/T2/C RF input PLC-201/301



- 1. Dual power supplies
- 2. DVB-S/S2/S2X RF input
- 3. SAT RF LOOP-THROUGH

PLC-202/302



- 1. Dual power supplies
- 2. DVB-S/S2/S2X RF input (No9...No16)
- 3. SAT RF LOOP-THROUGH (No9...No16)
- 4. DVB-S/S2 RF input (No1...No8)
- 5. DVB-T/T2/C RF input (No1...No8)

4. INSTALLATION

4.1 - General

The PLC-2xx/3xx headend series offers a highly user-friendly interface for programming and monitoring purposes. To access the intuitive graphical user interface, simply open an internet browser, such as Internet Explorer, Firefox, or Chrome, and enter the following static IP address: 192.168.1.200. This easy-to-use interface provides an efficient way to manage and monitor your headend system, ensuring optimal performance and seamless content delivery.

Once connected to the PRO Line headend device, you will be prompted to log in, as shown in the provided image:



The default username and password for the device are as follows:

Username: admin Password: 12345

Enter the default credentials to access the system's user interface, where you can manage and monitor your headend solution with ease.

4.2 – Graphical User Interface (GUI)

Status

4.2.1 - "Dashboard" page

Every time you connect to a PLC-2xx/3xx headend device, the "Dashboard" page is automatically loaded, providing a comprehensive overview of the device's current status. This dashboard presents essential information about the system's performance and operation, allowing you to monitor and manage your headend solution effectively.

In the Dashboard, users can easily monitor essential aspects of the device's operation, ensuring smooth performance and quick identification of any issues. The information displayed on the Dashboard includes:

Temperatures

Keep track of the device's board and CPU temperature to ensure proper cooling and temperature monitoring.

Fans

Monitor the performance of the two cooling fans to maintain optimal operating conditions as well as displaying their current RPM. The PLC-2xx/3xx headend device use a sophisticated smart cooling system in which the RPM of the fans increases/decreases based on the internal board and CPU temperature. In case of fan failure, several alarms will take place to inform the user.

Status

1. Multiplexer and Modulator engine status: Check the working status of the device's core components for seamless content processing and distribution.

2. System date and time: Verify the accuracy of the device's internal clock for proper scheduling and event handling.

3. Application: Monitor the overall health and functionality of the device's primary software such multiplexers, modulators condition etc...

PRO Line Headend Series

Operation Manual

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Power

Monitor the voltage and current of both power supplies of the PLC-2xx/3xx headend device.

Infographics

Additionally, the Dashboard features four infographics that provide insights into:

1. Tuner lock status: Display the number of tuners currently locked onto a frequency for stable signal reception.

2. Device working mode: Show the operational mode of the device, indicating how it processes and distributes content.

3. Number of TV programs distributed over RF: Display the count of TV programs being transmitted via RF (Radio Frequency) channels.

4. Number of TV programs distributed over IP: Show the count of TV programs being streamed via IP (Internet Protocol) networks.

Tuners:

In this section, users can monitor the working status of all the RF inputs of the device. This includes information on whether they are locked or unlocked, their working mode, and their current settings.

Common Interface:

In this section, users can monitor the status of all the Common Interfaces of the device. This includes information if there is any CAM or not on any CI slot as well as their positions.

RF Output:

This section allows users to view the working status of all the RF outputs of the device, such as the modulator's state, RF output frequencies, and modulation settings.

Output Bitrates:

The device displays the output bitrates of all multiplexers in a chart format, enabling users to quickly assess the data transmission rates for each output.

Logs:

The Logs section provides a record of the last ten event logs, giving users a snapshot of recent device activity and assisting in troubleshooting any issues that may arise.



Status Device

At the bottom of the left menu of the device we've the following information:

- Status of the software application:
 - o Running: The application is running properly
 - o Initializing: The application initializes the headend device
 - o Stopped: The application has stopped working
- System's current date and time
- System's up time
- CPU and Memory usage by %

Setup

4.2.2 - "RF Input" page

In the "RF Input" page, users have the ability to select the working mode for each RF input:



There are sixteen sections, one for each RF input. Users can configure the working mode of each RF input using the following field:

(PLC-200/300/202/302)

Tuner – This field allows users to select the tuner's working mode (DVB-S/S2, DVB-T/T2, DVB-C or Disabled)

For Satellite signal reception the user must select DVB-S/S2 mode from Tuner field and provide the following parameters:

- 1. RF or IF Radio button Select frequency input format
- 2. Frequency Insert satellite frequency
- 3. Symbol rate Insert satellite symbol rate
- 4. LNB voltage Select the LNB voltage (13V,18V, OFF)
- 5. Band Select the appropriate SAT band (works only if IF frequency is selected as input method)
- 6. DiSEqC Select DiSEqC A, B, C, D

For Terrestrial signal reception the user must select DVB-T/T2 mode from tuner field and provide the following parameters:

- 1. Frequency Insert the terrestrial input frequency or
- 2. Channel Instead of inserting a frequency you can add the channel number
- 3. Bandwidth Insert the input channel bandwidth

For DVB-C signal reception the user must select DVB-C mode from tuner field and provide the following parameters:

- 1. Frequency Insert the input cable frequency
- 2. Symbol rate Insert the symbol rate
- 3. Constellation Insert constellation

Once all settings are being written for both tuners, the user must click the "Lock" button to begin the lock process.

(PLC-201/301/202/302)

Tuner - This field allows users to select the tuner's working mode (DVB-S/S2/S2X, Disabled)

For Satellite signal reception the user must select DVB-S/S2/S2X mode from Tuner field and provide the following parameters:

- 7. RF or IF Radio button Select frequency input format
- 8. Frequency Insert satellite frequency
- 9. Symbol rate Insert satellite symbol rate
- 10. LNB voltage Select the LNB voltage (13V,18V, OFF)
- 11. Band Select the appropriate SAT band (works only if IF frequency is selected as input method)
- 12. DiSEqC Select DiSEqC A, B, C, D
- 13. PLS Insert PLS value in case of multistream reception
- 14. Stream ID Insert stream ID value to select specific stream in case of multistream reception

For Terrestrial signal reception the user must select DVB-T/T2 mode from tuner field and provide the following parameters:

- 4. Frequency Insert the terrestrial input frequency or
- 5. Channel Instead of inserting a frequency you can add the channel number
- 6. Bandwidth Insert the input channel bandwidth

For DVB-C signal reception the user must select DVB-C mode from tuner field and provide the following parameters:

- 4. Frequency Insert the input cable frequency
- 5. Symbol rate Insert the symbol rate
- 6. Constellation Insert constellation

Once all settings are being written for both tuners, the user must click the "Lock" button to begin the lock process.

More options

Relock – It will initialize new lock procedure for tuner without erasing the previous program list. PCR correction – Enable / Disable to perform PCR correction of the input stream. Comments – Text box to add any comments for this specific input.



Tuner Status color	Description
Green	The tuner is locked
Yellow	The tuner is unlocked
Red	Error in the tuner
Blue	Tuner is disabled

4.2.3 - "IP Input" page

From the "IP Input" page the user is able to setup all the parameters regarding the IP reception option of the device. Both IP receiver and IP streamer share the same LAN interface which is the "TS OUT" RJ45 port.

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Program selection								
Output Transport stream		Input streams						
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Fleex Embedded			230.0.0.1	1234				
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STATUS		Apply						
Running								
Verte 3, 1941; System date & time: 2024-09-25, 14:21 System uptime: Od Oh 47m 17s								
SYSTEM								
CPU usage: 0% Memory usage: 26.59%								

and then for each IP input stream to provide the

IGMP Settings

From this section the user is able to Disable, or enable IGMP v2 or IGMP v3.

Input Streams

To add an IP input stream the user requires to click the "Add" button following information:

- IP address The multicast/unicast IP address of the incoming stream
- IP port The port of the incoming stream
- Notes Field in which the user is able to write free notes

When all IP inputs streams are set, by clicking the "Apply" button the device will start receiving them. A green indicator as well as each stream bitrate will be visible under the "Bitrate" field.

4.2.4 - "Common Interface" page

The "Common Interface" page provides information regarding the eight Common Interface of the device:



For each CI interface (CI1 to CI8) the user is able to select if the CI will be connected at the input or at the output using the "Position" field as follow:

Position	Input 1	~	
	Input 1		
	Output 1		

CAM on the input

In case one CAM is selected to be at one input then the CI interface is connected after the tuner and before TS multiplexer. All the TS that is received from the tuner pass through the CI interface and then it enters the TS multiplexer of the device. In this scenario the user is able to descramble programs coming only from the relevant Input (tuner) Eg. CI 1 will descramble programs coming only from Input No 1.

CAM on the output

In case one CAM is selected to be at one output then the CI interface is connected at the output of the TS multiplexer. In this scenario the user is able to descramble programs coming from any input Eg. two (2) programs from Input No1 and two (2) programs from Input No2 can be combined in one TS multiplexer's output and then pass through the CAM 1. In this case the CAM 1 will descramble programs coming from both Input No 1 and No2. Finally, in this page the user is able to select the speed grade for each CI interface between 47.6MHz or 76.9MHz. Speed grade selects the clock working speed of the CAM.

SpeedGrade	76.9 MHz ~	Apply speed
	47.6 MHz	
	76.9 MHz	

4.2.5 - "Program Selection" page

At the "Program Selection" page the user is able manage all the available TV programs of the device as follow:

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				SAME NE									-			
				1015									-			
				-				OLODOIT				•	2380.34	CD4		
				112 Nov 1 D				OLEMENT 2005					5588			Pask detectors
				-								area	00005	-		Billione Wass 21000 Kitpe Billione Date: 2 740 Kitpe
								CLODENT SHIP				8100	2360.31	-	000	
				Tribunat				OLANENT STOP				-	0188			
				Conservations								san	0.000			Bit de Den 2297 Nove
				-				4035				690	00.00			TS DIE 16 785
				DVDVDNETER								0.00	60.88			Pass detection 🔮 Bitrare Wax (1660 Kops
				MIN									1250			Ders De. 150, Kose
				TVS HOREE				0189087 2947				0000	2200.37	9291	AN.	- And
				AUGTO DE TV								200	9099			

Progress Bar



At the top of the page there is a progress bar depicting the analysis status of the multiplexer. When the progress bar is at 100% it means that the multiplexer has successfully finished the analysis of all the available TV/Radio programs of all locked inputs.

The device will display all the available TV/Radio programs that it has detected from all its input that are locked to a DVB-S/S2/T/T2/C frequency.

Export Options



The user is able to print or export the selected TV/Radio programs in Excel, .m3u or pdf file by clicking on the appropriate button.

Search

The headend provides the ability for real-time searching of any program from the list by using the following Search field.



By entering any text in the search field, the list will automatically start to filter and display the available results that match the entered text. This feature allows users to quickly find and sort through the programs or options they are looking for, enhancing the overall user experience and simplifying the process of content management.

TV / Radio programs list table

The TV/Radio programs list table provides the following field information for each program:

			Original 🔃								
			Service	LCN	Bandwidth		TS	Output	IP address	IP port	Protocol
PIDs	Input	Program title	ID	11023	(Kbps)	Encrypted	Output	Service ID	*	\$. 🕈

- PIDs Submenu for PID filtering (see below)
- Input Depicts from which input the TV/Radio programs is received
- Program Title Displays the name of the TV/Radio program. At the same time the user can edit this field to change it.
- Original Service ID Depicts the original Service ID number
- LCN No which is the logic channel number of the program
- Bandwidth which is the bitrate of the program in Kbps
- Encrypted which depicts if the program is encrypted or not
- TS Output To select in which multiplexer's output the TV/Radio program will be assigned.
- Descramble The user is able to select in which CI this specific program will use for descrambling purposes.
- Output Service ID The user is able to provide custom Service ID number
- IP address Set the IP address of the current TV/Radio program for IPTV streaming
- Port Set the port of the current TV/Radio program for IPTV streaming
- Protocol Select between UDP/RTP IPTV streaming protocol for the current TV/Radio

* Most of the fields provide Sorting options by using the UP/DOWN arrows

Mass insert function

The IP address, port and Protocol fields offering quick setup by clicking the edit button as follow:

î↓	1	1 1
IP address	IP port	Protocol
*	*	*

To massively insert IP addresses to selected TV/Radio programs follow the below steps:

1. Sort all the TV/Radio programs by clicking the DOWN arrow at "TS Output" column to sort all the programs that you've selected to output from the device.

2. By clicking the edit button under the title of IP Address column the following pop-up window is displayed:

	Mass insert	×
IP address	230.0.0.1	
	 Copy the same ip address Increment by one 	
Start from	1	
Rows to change	16	
	Арріу	
		Close

3. In the IP address field insert your starting IP address

4. If you want to copy the same address in all programs, choose the radio button "Copy the same ip address". In case you want to increment by one the last octet of the IP address choose the "Increment by one" option.

5. From the "Start from row" and "Rows to change" fields define from which specific rows the automatic procedure will begin and it will end.

6. And click the "Apply" button.

Repeat the same process for Port and Protocol field.

PID Filtering

At the second column the headend provides the ability to make PID filtering by clicking the "burger" icon available PIDs for each TV/Radio program as show below:

to reveal the

PIDs	†↓ Input	î↓ Program title	Original ↑↓ Service ID	1⊥ LCN 11023	Bandwidth (Kbps)
 ✓ ✓	Input 1	ZDF	28006	0	CURRENT 5322

By using the checkboxes, users can easily deselect any PIDs, instructing the headend to filter them out. This feature allows users to manage and control which PIDs are processed and distributed, further enhancing the customization and flexibility of the system according to their specific needs and preferences.

Program Selection

With the drop-down menu in the "TS Output" column, users can easily assign any TV/Radio program to any of the sixteen outputs of the headend. By following the same process for each program, users can create their own custom multiplex for the sixteen output channels. This feature provides a high level of flexibility and customization, allowing users to tailor the head-end's output to their specific needs and preferences for content distribution.

Caution!

The number of programs that a device is able to distribute depends on the resolution (SD, HD, 4K etc.), the compression (MPEG2, H.264 etc...) and in general from the total bitrate of each program.

For example, if we select the following DVB-T setting of the sixteen modulators outputs:

- Constellation: 64 QAM
- Guard Interval: 1/32
- Code rate: 7/8
- Bandwidth: 8 MHz

We will have a total output bitrate of 31.67Mbps/ RF OUT. That means that we can select as many programs as the user wants but their total bitrate must not exceed the 31.67Mbps, otherwise artifacts may occur.

CI Selection

At the same time, the user is able to select for each TV/Radio program from which CI the specific program can be descrambled from the "Descramble" field as show below:



Caution!

The "Descramble" field will display the available options based on the CI configuration on "Common Interface" page as described above.



Status

The status section at the right provides a general idea to the user of the current payload (according to the selected programs) comparing it to the max. output payload.

It is recommended that the user must not exceed the 85% from each output, since all the bitrates are variable according to their specific content.

Peak Detection mechanism

As shown in the image there is a colored indicator of the peak detection mechanism, for each output transport stream. This indicates if any overflow has occurred on modulator's output bitrate with the following colors:

- Green No overflow occurred
- Yellow No overflow occurred but the input bitrate is close to the output bitrate
- Red Overflow occurred. The user must decrease the input bitrate

4.2.6 - "Output" page

On the "RF Output" page, the user can configure the RF output settings for the device as shown below:



Output Mode

With the use of the radio buttons the user is able to select the mode that the device will operate as follows:

Output	t mode		-
Mode:	ODVB-T + IP	ODVB-C + IP	● IP (ONLY)
		Apply	

DVB-T: 16 x modulator working in DVB-T standard + IP streaming DVB-C: 16 x modulator working in DVB-C standard + IP streaming IP only: All modulators are disabled, the device does IP streaming ONLY

IP streamer

IP streamer		-
IP address:	192.168.1.220	Apply
MAC:	54:10:EC:6D:52:7E	

The IP streamer section provides the IP address of the headend's streamer that can be used for PING purposes as well as it's MAC address.

Attenuation



The device headend provides an electronic embedded -31.5dB attenuator to provide the ability to the user to increase or decrease the total RF output level of all outputs of the headend at the same time.

Modulator Settings

All the RF output channels from the device are working in adjacent frequencies based on the DVB standard as follows:

DVB-T mode

In DVB-T mode, the 16x RF output channels are working in 2x different groups of 8x adjacent RF channels (2x8). The user is able to select the modulation parameters only from the first channel of the group and then all the other RF channels will use the same.

DVB-C mode

In DVB-C mode, the 16x RF output channels are working in 8x different groups of 2x adjacent RF channels (8x2). The user is able to select the modulation parameters only from the first channel of the group and then all the other RF channels will use the same.

Modulato	r Settings							-
Output	Channel	Frequency (MHz) 110.00 - 900.00	Constellation	Code rate	Guard interval	Channel bandwidth	Modulation	Enabled
	21 ~	474.00	64-QAM ~	7/8 ~	1/32 ~	8 MHz 🗸	8K ~	
	28	530.00	64-QAM	7/8	1/32	8 MHz	8K	

For each modulator output in DVB-T mode as the above example the user is able to setup the following parameters:

- Channel Set the desired output channel in channel format
- Frequency Set output frequency of the first modulator*
- Constellation Set the constellation of the first modulator*
- Code Rate Set the code rate of the first modulator*
- Guard Interval Set the guard interval of the first modulator*
- Channel Bandwidth Set the channel bandwidth of the first modulator*
- Modulation Set the modulation type of the first modulator*
- Enable/Disable Enable or disable the current modulator

In DVB-C the available fields are the following:

- Frequency Set output frequency of the first modulator*
- Constellation Set the constellation of the first modulator*
- Symbol Rate Set the Symbol rate of the first modulator*
- Frequency Step Set the frequency step of the first modulator*

* All the sixteen outputs of the device operate in adjacent RF output channels. This means that the user setups only the first modulator output and all the other three modulators have the same settings and automatically are being programmed in adjacent channels.

E.g. If the user sets the CH21 in UHF band on modulator No1 the other three modulators will be automatically set to CH22, CH23 and CH24, respectively.

PRO Line Headend Series

Status

The status section at the right provides a general idea to the user of the current payload (according to the selected programs) comparing it to the max. output payload.

It is recommended that the user must not exceed the 85% from each output, since all the bitrates are variable according to their specific content.

Transport Stream

4.2.7 - "Settings" page

In this section the user is able to setup all the TS settings of the sixteen-output multiplexes of the device as shown below:

For each multiplex output the user can set the following settings:

TS ID: Which is the ID No of the specific multiplex (1...65535) Network ID: Which is the Net ID No of the specific multiplex (1...65535) Original Net ID: Which is the Org. Net ID No of the specific multiplex (1...65535) Network Name: Which is the network name of the specific multiplex NIT: Choose from Default, Global and Custom NIT version: From 1 to 31 SDT: Select Default or Custom LCN provider: Choose the appropriate LCN provider (EACEM, ITC, Nordig, APN)

LEMCC)								PLC-301 🥙 📟 🗈	l 🗸 🔒 admin 🗸
		TS se	ettings						۵ / ۹	Setup / Output / TS setting
Dashboard										
🗶 Setup		s	lettings							
RF Input IP Input			Output	TS ID (1-65535)	Network ID (1.65535)	Original net ID (1-65535)	Network name (16 characters max.)	NIT	NIT version (1-31)	SDT
Program selection					8720	8720	DTV 1 LEMCO	Default		Default ~
Transport stream					8720	8720	DTV 2 LEMCO	Default v		Default ~
Settings					8720	8720	DTV 3 LEMCO	Default v		Default ~
SDT				110	8720	8720	DTV 4 LEMCO	Default v		Default
Fleex Embedded					8720	8720	DTV 5 LEMCO	Default ×		Default
👂 Licenses				116	8720	8720	DTV 6 LEMCO	Default -		Default ~
RF matrix					8720	8720	DTV 7 LEMCO	Default		Default
Running					8720	8720	DTV 8 LEMCO	Default v		Default ~
DATE & TIME System date & time: 2024 00 25 14/31					8720	8720	DTV 9 LEMCO	Default ×		Default ~
System uptime: 0d 0h 57m 31s					8720	8720	DTV 10 LEMCO	Default v		Default
SYSTEM CPU usage: 0.51%					8720	8720	DTV 11 LEMCO	Default v		Default
Memory usage: 27.39%					8720	8720	DTV 12 LEMCO	Default v		Default ~
					8720	8720	DTV 13 LEMCO	Default		Default
				140	8720	8720	DTV 14 LEMCO	Default v		Default
				143	8720	8720	DTV 15 LEMCO	Default v		Default
				146	8720	8720	DTV 16 LEMCO	Default v		Default ×
				NIT Of						
				ider European						
			Apply							

Peak detection Bitrate Max.31668 Kbps Bitrate Cur. 3495 Kbps TS OUT 2 18% Peak detection Bitrate Max.31668 Kbps Bitrate Cur. 5916 Kbps TS OUT 3 5% Peak detection Bitrate Max.31668 Kbps Bitrate Cur. 1787 Kbps

Status

Peak detection Bitrate Max.31668 Kbps Bitrate Cur. 4890 Kbps TS OUT 5 13% Peak detection Bitrate Max.31668 Kbps Bitrate Cur. 4128 Kbps

4.2.8 - "NIT" page

In this section the user is able to create custom NIT table for each of the sixteen outputs of the device as shown below:

LEMCC)		PLC-301	🚥 EN 🗸 🔒 admin 🗸
		NIT - Network Information Table		A / Setup / Output / NIT
Dashboard				
🎗 Setup				
RF Input		NIT mode: Default NIT type Actual Network name: DTV1LEMCO NIT version: 1 Network (D: 8720	LCN provider: Eur	opean ~
IP Input Common Interface		Orig. Freq Transmission Code Guard Private	Services	
Program selection		F TSID Net ID (Milz) Bandwidth Constellation mode rate interval data # Svc ID LCN Type	visible	Manage
Output		■ 101 8720 474.00 8MH2 64-QMM 8K 7/8 1/52 00000028 1 1100 16 01:D	Digital TV sv 🛛 🜌	
Transport stream				
Settings		Apply Export Import Delete selected		
SDT				
🕫 Settings				
Eleav Embedded				
Licenses				
RF matrix				
STATUS				
Running				
DATE & TIME				
2024-09-25, 14:32				
System uptime: 0d 0h 57m 57s				

For more information on how to create a custom NIT/SDT table please refer to "Lemco custom NIT/SDT guideline.pdf" document in Lemco's website.

4.2.9 - "SDT" page

In this section the user is able to create custom SDT table for each of the sixteen outputs of the device as shown below:

LEMCC	כ													PLC-30)1	💼 EN 🛩	8	adr
		SDT -	Service	Descript	tion Table											6	Setup / C	butț
Dashboard		_																
💥 Setup																		
RE Innuit																		
IP Input				TOD		Orig.	Table to a	14	28		Sur. 10	freder and	Sen	vices		i.		
Common Interface				1510		8730	fable type	vers	on		SVCID	Service name	Provider nam	e sve	туре		unage	
Program selection						6/20	Actual				1100	ALPHA HD	DIGEA	01: Di	gital TV svc			
Output																		
Transport stream			φ p ły	Export I	import Dele	lo selected												
Settings																		
NIT																		
SDT																		
Settings																		
Fleex Embedded																		
P Licenses																		
RF matrix																		
STATUS																		
Running																		
DATE & TIME																		
System date & time:																		
2024-09-25, 14:32 System uptime:																		
0d 0b 58m 11s																		

For more information on how to create a custom NIT/SDT table please refer to "Lemco custom NIT/SDT guideline.pdf" document in Lemco's website.

Settings

4.2.10 - "Event log" page

In "Event log" page the system logs all the last one thousand (1000) events occurs in the device during its operation. These logs are divided in three different categories based on their priority as follow:

LEMCO	8					PLC-301	🖴 🛤 🖌 🛛 🔒 adam 🖻		
		Event log					A / Selings / Event		
Dathboard									
X Setur									
Octango		Filter by severity	Nigh 🗹 Madum 💌 Law 💌 Inte						
Eventings							Port Earte POE		
Network:									
System		Taxa and the second				Boardh			
Firmanie update			Date & Gine	12 Soverity 1	Description				
Fate & Sma									
1000									
Firex Entrotted									
J. Linner									
Reming									
PATEA TIME				Wellers					
Dystem date & Sime: \$024.03-25, 54:13									
System optime Od Ob Star 32e									
35309M									
CPU unago: C.64% Memora unago: 27.29%				Veture					
				Modum					

• High

- With red color the system indicates event logs which are of high priority
- Medium
- Low • Info
- With yellow color the system indicates event logs which are of high priority
- With green color the system indicates event logs which are of high priority - With grey color the system indicates event logs which are of high priority

The user has the ability to print or export in excel or pdf file all the selected events.

4.2.11- "Network" page

On the "Network" page, users can set up all the parameters related to the LAN control of the device as follows:

LEMCO	1			PLC-301	💼 EN 🛩	8	idmin -
		Network settings				🍙 / set	tings / L
Dashboard							
🔀 Setup		LAN					
🗢 Settings			NO				
Event logs Network			192.168.1.190				
User profile System			255 255 255 0				
Firmware update			192.168.1.1				
Date & time SNMP			8888				
Info			884.4				
Fieex Embedded			58 C4-1E-30.01.0F				
P Licenses							
📕 RF matrix							
<u>STATUS</u>							
Running			Apply				
System date & time: 2024-09-25, 14:33 System upbme: 0d 0h 59m 0s							

- DHCP Enable or disable DHCP
- IP address: Set a static IP address for controlling the device
- Subnet mask: Set the specific Subnet mask
- Gateway: Set the gateway's IP address
- Primary DNS: Set the IP address of the primary DNS
- \bullet Secondary DNS: Set the IP address of the secondary DNS
- Port: Assign the control port
- MAC address: Depicts the MAC address of the LAN control

4.2.12 - "User profile" page

On "User profile" section the user is able to do the following:

LEMCC)					PLC-301	🔤 EN 🛩 🛛 🔒	admin 🗸
		Us	ser profile				A / Settings	s / User profil
la Dashboard								
X Solup			User interface settings					
Settings				English				
Event logs Network				Dark mode				
User profile System				Acoli				
Firmware update								
SNMP			Change username and password					
Info				admin				
Fleex Embedded					 🔊			
Licenses								
RF matrix								
Running					<u> </u>			
DATE & TIME				Appay				
System date & time: 2024-09-25, 14:33								
0d 0h 59m 29s			Fleex user					
SYSTEM CPU usage: 0.25%				fleex	=			
Memory usage: 27.41%					•			
				_				
				Apply				
			Hoteluser					
				hotel	=			
					••			
				Aught .				
				_				
			Guest user					
				quest				
					-			
				Аррау				
								^

- From the "Select Language" field to select the language of the interface
- From the "Appearance" field to select the Light of dark mode theme.

The device supports several user profiles as follow:

Profile Name	Username	Password	Description						
Admin	admin	12345	The user has full read/write privileges to all pages						
Fleex	fleex	12345	The user has full read/write privileges only to Fleex						
			section						
Hotel	hotel	12345	The user has full read/write privileges only to "Home page" and "Info" page from Eleex						
			Embedded.						
Guest	guest	12345	The user has full read privileges						

Caution!

• In case of factory default procedure, the username and password will be reset unless the check box "Keep username & password after applying factory defaults" is selected.

4.2.13 - "System" page

On system page the user is able to do the following:

LEMCC)		PL	C-301 📟 EN 🗸 🔒 admin 🗸
		System		A / Settings / System
Dashboard				
🗶 Setup		Export configuration +	Import configuration	
Settings				
Event logs		Export		Select file
Network				
System				
Firmware update				
Date & time SNMP				
Info		Restart ~	Factory defaults	
Fleex Embedded				
P Licenses				
RF matrix		Application: Restart	 Keep username and password. Erase all event logs. 	
<u>STATUS</u>		Device: Restart	Load factory defaults	
Running		Cold restart: Restart		
System date & time:				
2024-09-25, 14:34 System uptime:				
Od 1h Om 9s		EPG over Fleex *	Power Up modes	
CPU usage: 0.25%		Enable EPG information over Fleex.	Last state Always ON Always OFF Apply	
Memory usage: 27.44%				

Import/Export

- Export: Save the headend' s configuration in a specific .dat format file.
- Import: Upload a previously saved configuration .dat file to the device

Restart

The device offers the following restart options:

- Application The device will apply restart only to software application that controls the device.
- Device The device will apply restart to its Linux Operating System.
- Cold The device will power OFF and after 10 seconds will power ON automatically.

Factory Defaults

By clicking on the "Load factory defaults" button the device will restore to factory defaults supporting the following options:

Check Box	Description					
Keep network settings	If enabled, the device will keep Network settings upon factory default					
Keep username and password	If enabled, the device will keep username and password.					
Erase all event logs	If enabled, the device will erase all event logs during factory default procedure.					

4.2.14 - "Firmware update" page

On "Firmware update" section the user is able to apply a new firmware update to the device.

LEMCC	ĺ		PLC-301	🚥 EN 🗸 🔒 admin 🗸
		Firmware update		A / Settings / Firmware update
Cashboard				
🔀 Setup		Software and firmware update		
Settings				
Event logs Network User profile Bystern Firmeare update Date & time SNAP Into				
🖵 Fleex Embedded				
P Licenses				
RF matrix		Installabela		
STATUS				
Running				
<u>DATE & TIME</u> System date & time: 2024-09-25, 14:35 System uptrae: Od 1h 0m 475				

The device automatically downloads the available firmware update from the cloud server and notifies the user that there is a new firmware update. The user by clicking the "Install" button the device does the update automatically and reboots itself...

The whole procedure might take up to 2 min and it does not affect the current configuration of the device.

At the same time, device offers offline firmware update by uploading a firmware update .bin file manually.

4.2.15 - "Date & Time" page

On "Date & Time" section the user is able to select the time zone for the device by using the "Timezone" drop down menu:

LEMCC)			PLC-301	EN Y	🔧 admin 🗸
		Date & time			Ġ / Set	tings / Date & time
Dashboard						
🗶 Setup						
Settings			2024-09-25, 14:35			
Event logs			Od 1h 1m 4s			
Network User profile			From NTP server v			
System			Detault			
Date & time						
SNMP			Europe/Athens v			
Info						
Fleex Embedded						
P Licenses						
RF matrix						
STATUS						
Running						
DATE & TIME						
2024-09-25, 14:35						
0d 1h 1m 4s			Accity			
SYSTEM						

4.2.16 - "SNMP" page

On this section, the user is able to setup the SNMP interface of the device.

LEMCC)		PLC-301	🖴 EN 🗸 🔒 admin 🗸
		SNMP		A / Settings / SNMP
Dashboard				
🗶 Setup		SNMP settings		
🗢 Settings		Enable SNMP v2		
Event logs Network		Averal		
User profile				
System Firmware update		MR No		
Date & time				
SNMP		Devriced		
Fleex Embedded				
₽ Licenses				
RF matrix				
STATUS				
Running				
DATE & TIME				
System date & time: 2024-09-25, 14:35 System uptime: 0d 1h 1m 24s				
SYSTEM	~			

- The device supports SNMP v2
- To use the SNMP client feature of the device a SNMP manager software is required
- To export the .MIB file of the device the user must click the Download button from MIB file section.

4.2.17- "Info" page

The "Info" page provides several information of the device as follow:

LEMCO)					PLC-301	🖴 EN 🛩	8	admin 💙
		Int	fo					⊜ /se	ttings / In
Dashboard									
🗶 Setup			Hardware and Firmware i	nformation					
🗘 Settings				2402080063	011010055501E848				
Event logs				1.33d	8084100100				
User profile				1.13	1.0.25-1.0.25-1.0.25-1.0.25				
System Firmware update				1.13	1.0.84-1.0.84-1.0.84-1.0.84				
Date & time SNMP				1.992	12.EA				
Into					21.01				
Fleex Embedded					31.03				
P Licenses									
RF matrix									
<u>STATUS</u>									
Running									
System date & time: 2024-09-25, 14:36 System uptime: Od 1h 1m 48s									

- Serial number of the device
- Software application Which is the version of the software application
- Web version Which is the version of the web application
- Fleex version Which is the version of the Fleex Embedded
- Cloud version Which is the version of the firmware package.
- Platform HW version Hardware version of the FPGAs
- Platform FW version Firmware version of the FPGAs
- CI stack HW version Hardware version of the Common Interface
- CI stack FW version Firmware version of the Common Interface
- VHDL 1 version VHDL version of the FPGA No1
- VHDL 2version VHDL version of the FPGA No2
- VHDL 3 version VHDL version of the FPGA No3

4.2.18- "Licenses" page

From the "Licenses" page the user is able to enable extra features and options of the device as follows:

LEMCO		PLC-301	🖴 EN 🗸 🔒 admin 👻
	Licenses		A / Licenses
Dashboard			
💥 Setup	Fleex Embedded license		
RF Input			
IP Input	Liourise CCNUCANARL9CNW7NYGHC64ACDBA	Apply	
Program selection			
Output			1
Transport stream	IP Receiver license		•
🌣 Settings			
Fleex Embedded		Apply	
P Licenses		_	
RF matrix			
<u>STATUS</u>			
Running			
DATE & TIME			
System date & time: 2024-09-25, 14:36 System uptime: 0d 1h 2m 30s			
<u>SYSTEM</u>			
CPU usage: 0% Memory usage: 27.57%			

Fleex Embedded license

To enable the Fleex Embedded on the specific device the user has to enter the license in the following field and click the "Apply" button:

Fleex Embedded license		
	ABN#4VEJZC89V8LPGPXJP7GRDDR	Apply

*More information regarding Fleex Embedded can be found here: www.fleex.gr

IP Receiver license

To enable the IP receiver option on the specific device the user has to enter the license in the following field and click the "Apply" button:

IP Receiver license		
	CCNJCANAKL9CNN7NYGHC64ACDCA	Apply

*To obtain any of the above license please contact us at: info@lemco.gr

5. TECHNICAL SPECIFICATIONS

PROLINE PLC-200

16 x DVB-S/S2/T/T2/C + 8 x FlexCAM to IP





PID filtering

EPG information

Yes

Yes over RF and IP





		IP Streaming (OUT)	
	16 x DVB-S/S2/S2X	IP TS Out	Yes
Frequencies	9502150 MHz	Protocol	UDP / RTP (Multicast/Unicast)
	75Ω - F, female	Speed	1 Gbit (800 Mbps in IP only mode)
Loop-through connector	Yes	Type	Up to 128 x SPTS or 16 x MPTS
1		SDP/SAP Support	Yes
	OFF / 13V / 18V	IP Streaming (IN)	
	Less than 400mA (per input)	Optional	Requires extra license
22 kHz signal	ON / OFF	IP TS In	Yes
22 kHz signal - Voltage	0.65V ± 0.35V	Protocol	UDP / RTP (Multicast/Unicast)
22 kHz signal - Erequency	22 KHz + 4Hz	Speed	1 Gbit (800 Mbps)
22 kHz signal - DiSEgC	1.0 (Port A. B. C. D)	Type	Up to 112 x SPTS
DVB-S (IN)		IGMP snooping	Yes v2 and v3
Symbol rate	1 - 45 MBaud	Programming Interface	100, 12 010 10
Boll off factor	0.35	Operating system	Linux OS
not on factor	1/2 2/3 3/6 5/6 7/8 (Automatic)	Ethernet webserver	Ves embedded webserver
Spectral inversion	Reverse Non-reverse (Automatic)	Speed	100/1000 Mbps
DVD C2 (IN)	Reverse, Non-reverse (Automatic)	Speed	D VE
DVB-S2 (IN)	ODCK ODCK (Automatic)	Connector	RJ45 Charana Finafau Safari Garana Edan akal
Constellation	UPSN, 6PSN (Automatic)	Browser compatibility	Chrome, Firelox, Salari, Opera, Edge et al.
Symbol rate	1 - 45 MBaud (QPSK) - 1 - 30 MBaud (6PSK)	EAN-13	50100007/10/0
Roll off factor	0.2 / 0.35 (Automatic)	Lode	5213009761840
	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (uPSK-Automatic)	General	000 0/01/10
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK-Automatic)	Power supply	230-240 VAC
Spectral inversion	Reverse, Non-reverse (Automatic)	Frequency range	5060Hz
DVB-S2X (IN)		Number of power supplies	Up to two(2)
	EN302 307-1 V1.4.1	Hot-swap technology	Yes
Constellation	QPSK, 8PSK (automatic)	Power supply consumption	~65VA
Symbol rate	1 - 45 MBaud (QPSK) / 1 - 30 MBaud (8PSK)	Operating temperature	0 °C to 40 °C
Roll off factor	Апó 0.05 to 0.35 (automatic)	Storage temperature	-10 °C to +70 °C
	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (QPSK- automatic)	Humidity	Up to 90%
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK- automatic)	Dimensions	480 x 295 x 43.5mm
Multi-stream support	Yes	Mounting	1U rack
T2MI MPLP (multiple PLP) signa	Yes	Weight	4.55 Kg
CI Interface			
Number of Common Interfaces	8x (in total)		
Connectror	PCMCIA (front access)		
Max. Frequency	77MHz		
Transport Stream Processing			
Pool technology support	Yes		
	User selection by service names or Service ID		
Automatic regeneration	PAT, CAT, SDT, PMTs, EITs tables		
	Pass-through, custom, automatic		
Custom NIT/SDT creation	Yes		
	Re-stamping		
PCR correction	Yes		
LCN support	Yes		
PID filtering	Yes		
EPG information	Yes over RF and IP		

PROLINE PLC-202

8 \times DVB-S/S2/T/T2/C + 8 \times DVB-S/S2/S2X + 8 x Cl to IP

Input		IP Streaming (OUT)	
Type	8 × DVB-S/S2/T/T2/C + 8 × DVB-S/S2/S2X	IP TS Out	Yes
Frequencies	950	Protocol	UDP / RTP (Multicast/Unicast)
		Speed	1 Gbit (800 Mbps in IP only mode)
Connector	750 - E female	Type	Up to 128 x SPTS or 16 x MPTS
Loop_through connector	Voe	SDP/SAP Support	Vos
INP	105	IP Strooming (IN)	165
Voltago	OEE / 12V / 19V	Ontional	Paguiras extra license
Current	Loss than (00m A (non-input)	ID TC In	Vec
22 kHz sizest	Cess than 400mA (per input)	IF 13 III	HOD (DTD (Multisest (Usingst))
22 KHZ Signal		Protocol	1 Ohit (000 Minut)
22 KHz signal - Voltage	0.65V ± 0.35V	Speed	I GDIT (800 MDPS)
22 kHz signal - Frequency	22 KHZ ± 4HZ	lype	Up to 128 x SPIS or 16 x MPIS
22 kHz signal - DiSEqC	1.0 (Port A, B, C, D)	IGMP snooping	Yes, v2 and v3
DVB-S (IN)		Programming Interface	
Symbol rate	1 - 45 MBaud	Operating system	Linux 0S
Roll off factor	0.35	Ethernet webserver	Yes, embedded webserver
Code rate	1/2, 2/3, 3/4, 5/6, 7/8 (Automatic)	Speed	100/1000 Mbps
Spectral inversion	Reverse, Non-reverse (Automatic)	Connector	RJ45
DVB-S2 (IN)		Browser compatibility	Chrome, Firefox, Safari, Opera, Edge et al.
Constellation	QPSK, 8PSK (Automatic)	EAN-13	
Symbol rate	1 - 45 MBaud (QPSK) - 1 - 30 MBaud (8PSK)	Code	5213009762427
Roll off factor	0.2 / 0.35 (Automatic)	General	
Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (QPSK-Automatic)	Power supply	230-240 VAC
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK-Automatic)	Frequency range	5060Hz
Spectral inversion	Reverse, Non-reverse (Automatic)	Number of power supplies	Up to two(2)
DVB-S2X (IN)		Hot-swap technology	Yes
Standard	EN302 307-1 V1.4.1	Power supply consumption	~65VA
Constellation	QPSK, 8PSK (automatic)	Operating temperature	0 °C to 40 °C
Symbol rate	1 - 45 MBaud (QPSK) / 1 - 30 MBaud (8PSK)	Storage temperature	-10 °C to +70 °C
Roll off factor	Anó 0.05 to 0.35 (automatic)	Humidity	Up to 90%
Code rate	1/2 3/5 2/3 3/4 4/5 5/6 8/9 8/10 (0PSK- automatic)	Dimensions	480 x 295 x 43 5mm
obucifuic	3/5 2/3 3/4 5/6 8/9 9/10 (8PSK- automatic)	Mounting	111 rack
Multi-stream support	Vac	Weight	4.55 Kg
T2MLMPL P (multiple PLP) cigps	Vae	weight	4.55 Ng
	105		
Number of Common Interfaces	Ov (in total)		
FlawCAM to also also as	ox (in total)		
PlexCAM technology	Tes		
Connectror	PUMUIA (front access)		
Max. Frequency	77MHz		
Transport Stream Processing			
Pool technology support	Yes		
Services	User selection by service names or Service ID		
Automatic regeneration	PAT, CAT, SDT, PMTs, EITs tables		
NIT	Pass-through, custom, automatic		
Custom NIT/SDT creation	Yes		
PCR	Re-stamping		
PCR correction	Yes		
LCN support	Yes		
PID filtering	Yes		
EPG information	Yes over RF and IP		

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PROLINE

PLC-300 16 x DVB-S/S2/T/T2/C + 8 x FlexCAM to 16 x DVB-T/C & IP



In most		DE Outeut	
Input		KF Output	1/ DVD T 1/ DVD O DE -h
lype	16 x DVB-S/S2/1/12/C	lype	16 x DVB-1 or 16 x DVB-C RF channels
Frequencies	9502150 MHz DVB-5/52		2 groups of 8 adjacent channels in DVB-1
• •	118900MHz DVB-1/12/C	A	8 groups of 2 adjacent channels in DVB-C
Connector	750 - F, female	Output Frequencies	110900 MHz (10 KHz step)
Loop-through connector	No	Output Level	90dBhA
LNB	055 (10) (10)	Connector	75Ω - F, temale
Voltage	UFF/13V/18V	Output Attenuator	U30dB
Current 22 Lule sime l	Less than 400mA (per input)	DVB-I (001)	F / R 010-
22 KHZ signal		Bandwidth	5, 6, 7, 8 MHZ
22 KHZ SIghal - Voltage	U.65V ± U.35V	Mode	
22 kHz signal - Frequency	22 KHZ ± 4HZ	Constellation	UPSK, 16UAM, 64UAM
22 KHZ signal - DISEqU	1.0 (Port A, B, C, D)	Guard Interval	1/4, 1/8, 1/16, 1/32
DVB-S (IN)		Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Symbol rate	1 - 45 MBaud	MER	More than 42dB @ Full Band
Roll off factor	U.35	DVB-C (001)	1/0414 220414 //0414 1220414 25/0414
Lode rate	1/2, 2/3, 3/4, 5/6, 7/8 (Automatic)	Constellation	TouAM, 32UAM, 64UAM, 128UAM, 256UAM
Spectral Inversion	reverse, Non-reverse (Automatic)	Symbol rate	2.5-8.4 Ms/s
DVB-S2 (IN)		Channel step	310MHz
Constellation	UPSK, 8PSK (Automatic)	MER (OF T	More than 40dB @ Full Band
Symbol rate	1 - 45 MBaud (QPSK) - 1 - 30 MBaud (8PSK)	IP Streaming (OUT)	
Roll off factor	U.2 / U.35 (Automatic)	IP TS Out	Yes
Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (QPSK-Automatic)	Protocol	UDP / RTP (Multicast/Unicast)
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK-Automatic)	Speed	1 Gbit (800 Mbps in IP only mode)
Spectral inversion	Reverse, Non-reverse (Automatic)	Type	Up to 128 x SPTS or 16 x MPTS
Clinterface	A (SDP/SAP Support	Yes
Number of Common Interfaces	8x (in total)	IP Streaming (IN)	
Connectror	PCMCIA (front access)	Uptional	Requires extra license
Max. Frequency	77MHz	IP IS In	Yes
DVB-I (IN)	(Protocol	UDP / RTP (Multicast/Unicast)
Bandwidth	6, 7, 8 MHz	Speed	I Gbit (800 Mbps)
Mode	ZK, 8K	lype	Up to 112 x SPIS
Constellation	UPSK, 16UAM, 64UAM	IGMP snooping	Yes, v2 and v3
Guard Interval	1/4, 1/8, 1/16, 1/32	Programming Interface	11 00
Code rate	1/2, 2/3, 3/4, 5/6, 7/8	Operating system	Linux US
DVB-12 (IN)	5 (B ALU)	Ethernet webserver	Yes, embedded webserver
Bandwidth	5, 6, 7, 8 MHz	Speed	100/1000 Mbps
Mode	1K, 2K, 4K, 8K, 16K, 32K (Included extended mode)	Connector	RJ45
Constellation	UPSK, 16QAM, 64QAM, 256QAM	Browser compatibility	Chrome, Firefox, Safari, Opera, Edge et al.
Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6	EAN-13	50100007/1000
Multi PLP support	Yes	Code	5213009761888
DVB-C (Annex A,B,C)	5 (7 0 0 0	General	000 0/01/40
Bandwidth	5, 6, 7, 8 MHz	Power supply	230-240 VAC
Mode	Automatic modulation detection	Frequency range	5060Hz
Constellation	16UAM, 32QAM, 64QAM, 128QAM, 256QAM	Number of power supplies	Up to two[2]
Transport Stream Processing	X	Hot-swap technology	Yes
Pool technology support	Yes	Power supply consumption	~65VA
Services	User selection by service names or Service ID	Operating temperature	0 °C to 40 °C
Automatic regeneration	PAT, CAT, SDT, PMTs, EITs tables	Storage temperature	-10 °C to +70 °C
NIT	Pass-through, custom, automatic	Humidity	Up to 90%
Custom NIT/SDT creation	Yes	Dimensions	480 x 295 x 43.5mm
PCR	Re-stamping	Mounting	1U rack
PCR correction	Yes	Weight	4.65 Kg
LCN support	Yes		
PID filtering	Yes		
EPG information	Yes over RF and IP		

PROLINE PLC-301 16 x DVB-S/S2/S2X + 8 x FlexCAM to 16 x DVB-T/C & IP



Input		RF Output	
Туре	16 x DVB-S/S2/S2X	Туре	16 x DVB-T or 16 x DVB-C RF channels
Frequencies	9502150 MHz		2 groups of 8 adjacent channels in DVB-T
Connector	75Ω - F, female		8 groups of 2 adjacent channels in DVB-C
Loop-through connector	Yes	Output Frequencies	110900 MHz (10 KHz step)
LNB		Output Level	90dBuV
Voltage	OFF / 13V / 18V	Connector	75Ω - F, female
Current	Less than 400mA (per input)	Output Attenuator	030dB
22 kHz signal	ON / OFF	DVB-T (OUT)	
22 kHz signal - Voltage	0.65V ± 0.35V	Bandwidth	5. 6. 7. 8 MHz
22 kHz signal - Frequency	22 KHz ± 4Hz	Mode	2K. 8K
22 kHz signal - DiSEgC	1.0 (Port A. B. C. D)	Constellation	QPSK. 16QAM. 64QAM
DVB-S (IN)		Guard interval	1/4.1/8.1/16.1/32
Symbol rate	1 - 45 MBaud	Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Roll off factor	0.35	MER	More than 42dB @ Full Band
Code rate	1/2. 2/3. 3/4. 5/6. 7/8 (Automatic)	DVB-C (OUT)	
Spectral inversion	Reverse Non-reverse (Automatic)	Constellation	160AM 320AM 640AM 1280AM 2560AM
DVB-S2 (IN)	noreree, non rereree (naternate)	Symbol rate	2.5-8.4 Ms/s
Constellation	OPSK 8PSK (Automatic)	Channel sten	3 10MHz
Symbol rate	1 - 45 MBaud (OPSK) - 1 - 30 MBaud (8PSK)	MFR	More than 40dB @ Full Band
Roll off factor	0.2 / 0.35 (Automatic)	IP Streeming (OUT)	More man 4000 e rationna
Code rate	1/2 3/5 2/3 3/4 4/5 5/6 8/9 8/10 (0PSK-Automatic)	IP TS Out	Voc
obderate	3/5 2/3 3/4 5/4 8/9 9/10 (8PSK-Automatic)	Protocol	IDP / PTP (Multicast/Unicast)
Spectral inversion	Boyerse Nep reverse (Automatic)	Speed	1 Ghit (900 Mbrs in IP only mode)
	Reverse, Non-reverse (Automatic)	Time	In to 129 x CPTS or 14 x MPTS
DVD-32A (IN)	EN202.207.1.V1.6.1	CDD/CAD Support	Op to 120 X SP15 0F 10 X MP15
Constallation	ENSU2 507-1 V1.4.1	ID Streaming (IN)	105
Constitution	1 (EMPaud (ODEK) (1 20 MPaud (ODEK)	Ontional	Deguires extra license
Symbol rate Dell off faster	1 - 45 MBadu (GPSK) / 1 - 50 MBadu (GPSK)		Kequires exira license
Roll off factor	Ano 0.05 to 0.35 (automatic)	IP IS IN	Tes
code rate	1/2, 3/3, 2/3, 3/4, 4/3, 3/6, 6/7, 6/10 (QPSK- automatic)	Protocol	1 Chik (000 Mhara)
Multi electro europeat	3/5, 2/5, 5/4, 5/6, 6/7, 7/10 (or SK- automatic)	Speed	I obit (oou Mbps)
Total MOLD (mouthing DLD) along	tes	Type	
12MI MPLP (multiple PLP) signa	res	IGMP shooping	res, vz and v3
CI Interface	On Contraction	Programming Interface	Lines OC
Number of Common Interfaces	8x (in total)	Operating system	Linux 05
Connectror	PUMUIA (front access)	Ethernet webserver	Yes, embedded webserver
Max. Frequency	77MHz	Speed	TUU/TUUU Mbps
Iransport Stream Processing	M	Connector	RJ45
Pool technology support	Yes	Browser compatibility	Chrome, Firefox, Safari, Opera, Edge et al.
Services	User selection by service names or Service ID	EAN-13	F04 00000 (400F
Automatic regeneration	PAT, CAT, SDT, PMTs, ETIs tables	Code	5213009761895
NIT	Pass-through, custom, automatic	General	
Custom NIT/SDT creation	Yes	Power supply	230-240 VAC
PCR	Re-stamping	Frequency range	5060Hz
PCR correction	Yes	Number of power supplies	Up to two[2]
LCN support	Yes	Hot-swap technology	Yes
PID filtering	Yes	Power supply consumption	~65VA
EPG information	Yes over RF and IP	Operating temperature	0 °C to 40 °C
		Storage temperature	-10 °C to +70 °C
		Humidity	Up to 90%
		Dimensions	480 x 295 x 43.5mm

Mounting

Weight

1U rack

4.65 Kg

PROLINE **PLC-302**

 $\mathbf{8} \times \mathbf{DVB}\text{-}\mathbf{S}/\mathbf{S2}/\mathbf{T}/\mathbf{T2}/\mathbf{C} + \mathbf{8} \times \mathbf{DVB}\text{-}\mathbf{S}/\mathbf{S2}/\mathbf{S2X} + \mathbf{8} \times \mathbf{CI}$ to 16 x DVB-T/C & IP

Innut		DE Output	
Time		RF Output	14 x DVP T or 14 x DVP C PE shannels
Type	8 X DVB-5/52/1/12/C + 8 X DVB-5/52/52X	Туре	16 X DVB-1 or 16 X DVB-C RF channels
Frequencies	7502150 MHZ		2 groups of a adjacent channels in DVB-1
Connector	750 E fomale	Output Eroguancias	110 900 MHz (10 KHz stop)
Loop through connector	Yor	Output Frequencies	00dDuV
I NP	Tes	Connector	750 - E fomalo
Voltago	OEE / 12V / 18V	Output Attopustor	0_20dB
Current	Less than (00mA (ner input)	DVB-T (OUT)	050dB
22 kHz signal	ON / OEE	Bandwidth	5 6 7 8 MHz
22 kHz signal - Voltage	0.45V + 0.35V	Mode	2K 8K
22 kHz signal - Frequency	22 KHz + 4Hz	Constellation	OPSK 160AM 660AM
22 kHz signal - DiSEaC	1 0 (Port A B C D)	Guard interval	1/4 1/8 1/16 1/32
DVB-S (IN)		Code rate	1/2 2/3 3/4 5/6 7/8
Symbol rate	1 - 45 MBaud	MFR	More than 42dB @ Full Band
Roll off factor	0.35	DVB-C (OUT)	
Code rate	1/2, 2/3, 3/4, 5/6, 7/8 (Automatic)	Constellation	160AM, 320AM, 640AM, 1280AM, 2560AM
Spectral inversion	Reverse Non-reverse (Automatic)	Symbol rate	2 5-8 4 Ms/s
DVB-S2 (IN)		Channel sten	3 10MHz
Constellation	OPSK 8PSK (Automatic)	MFR	More than 40dB @ Full Band
Symbol rate	1 - 45 MBaud (QPSK) - 1 - 30 MBaud (8PSK)	IP Streaming (OUT)	
Roll off factor	0.2 / 0.35 (Automatic)	IP TS Out	Yes
Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (QPSK-Automatic)	Protocol	UDP / RTP (Multicast/Unicast)
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK-Automatic)	Speed	1 Gbit (800 Mbps in IP only mode)
Spectral inversion	Reverse, Non-reverse (Automatic)	Type	Up to 128 x SPTS or 16 x MPTS
DVB-S2X (IN)		SDP/SAP Support	Yes
Standard	EN302 307-1 V1.4.1	IP Streaming (IN)	
Constellation	QPSK, 8PSK (automatic)	Optional	Reguires extra license
Symbol rate	1 - 45 MBaud [QPSK] / 1 - 30 MBaud [8PSK]	IP TS In	Yes
Roll off factor	Апó 0.05 to 0.35 (automatic)	Protocol	UDP / RTP (Multicast/Unicast)
Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10 (QPSK- automatic)	Speed	1 Gbit (800 Mbps)
	3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (8PSK- automatic)	Туре	Up to 128 x SPTS or 16 x MPTS
Multi-stream support	Yes	IGMP snooping	Yes, v2 and v3
T2MI MPLP (multiple PLP) signa	Yes	Programming Interface	
CI Interface		Operating system	Linux 0S
Number of Common Interfaces	8x (in total)	Ethernet webserver	Yes, embedded webserver
FlexCAM technology	Yes	Speed	100/1000 Mbps
Connectror	PCMCIA (front access)	Connector	RJ45
Max. Frequency	77MHz	Browser compatibility	Chrome, Firefox, Safari, Opera, Edge et al.
Transport Stream Processing		EAN-13	
Pool technology support	Yes	Code	5213009762434
Services	User selection by service names or Service ID	General	
Automatic regeneration	PAT, CAT, SDT, PMTs, EITs tables	Power supply	230-240 VAC
NIT	Pass-through, custorn, automatic	Frequency range	5060Hz
Custom NIT/SDT creation	Yes	Number of power supplies	Up to two(2)
PCR	Re-stamping	Hot-swap technology	Yes
PCR correction	Yes	Power supply consumption	~65VA
LCN support	Yes	Operating temperature	0 °C to 40 °C
PID filtering	Yes	Storage temperature	-10 °C to +70 °C
EPG information	Yes over RF and IP	Humidity	Up to 90%
		Dimensions	480 x 295 x 43.5mm
		Mounting	1U rack
		Weight	4.65 Kg



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6. DIMENSIONS





7. LEMCO LIMITED WARRANTY

This device is subject to Lemco Warranty Terms & Conditions that can be downloaded from Lemco's website www.lemco.gr

8. WARNINGS

Content warning

This document contains preliminary information about a product of Lemco company. Lemco reserves the right to make any changes or modifications at any time without prior notice.

9. NOTES

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