

P275E FM Monitor+

Firmware version 2.2f

User Guide



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1 Introduction

1.1 Using this guide

This guide covers the P275E FM Monitor+ device. It provides the information needed to install and using the equipment. **Please read this entire guide and familiarize yourself with the controls before attempting to use this device.**

If you have any questions or comments regarding this document, please contact us. We welcome your feedback.

Document revision 2026-03-21.

1.2 Description of the equipment

The P275E FM Monitor+ is economical measuring and monitoring equipment designed for continuous supervision and analysis of technical parameters of FM broadcast. Its primary purpose is to ensure stable operation, high transmission quality, and early detection of abnormal conditions within FM broadcasting systems.

User may connect to the unit at any time either via a dedicated Windows application or through a standard web browser, allowing manual verification of signal parameters, system status, and received broadcast content. In addition to the direct remote access for on-demand inspection, the device provides automatic monitoring and alarm email reporting.

The P275E FM Monitor+ is suitable for use at transmitter sites, control centers, and remote locations where uninterrupted monitoring of FM broadcast performance is required, making it a powerful tool for broadcasters, network operators, and service providers.

The device extends the original P275's capabilities with direct Ethernet communication and adds some useful features:

- Remote control and access to the values via TCP connection or integrated HTTP server
- Configurable 5V logic outputs can be activated in case of alarm condition or can remotely reset any device in the broadcast chain
- Email alarm notifications via standard SMTP protocol
- Programmable Command Sequencer
- Aluminium case providing excellent shielding in strong RF signal environment
- Switchable attenuator to extend the input power range up to 1W

The device fully supports the FM Scope and RDS Spy software for Windows, on all communication ports.

1.3 Other documents

This document is not a complete reference manual. Please follow these resources for complete information:

- P275 FM Broadcast Analyzer User Manual
- FM Scope User Guide
- Support section at <http://www.pira.cz>
- Specification of the Device Server Lantronix Xport EDGE (XPE200100B), <http://www.lantronix.com>

1.4 Required user knowledge

The user should be familiar with fundamental FM broadcast concepts, including basic signal parameters and their significance for transmission quality. An understanding of common broadcast terminology and typical operating ranges is required in order to correctly configure monitoring limits and interpret measured values.

Basic knowledge of computer networking is necessary, particularly IP addressing, subnet configuration, and access to devices via a web browser or a dedicated Windows application. The user should also be able to configure standard Ethernet connections and understand how the device integrates into an existing network.

Since the device can send alarm notifications and periodic reports by email, the user should have a general understanding of email systems and SMTP settings, including server addresses, authentication, and email addressing.

2 Device description

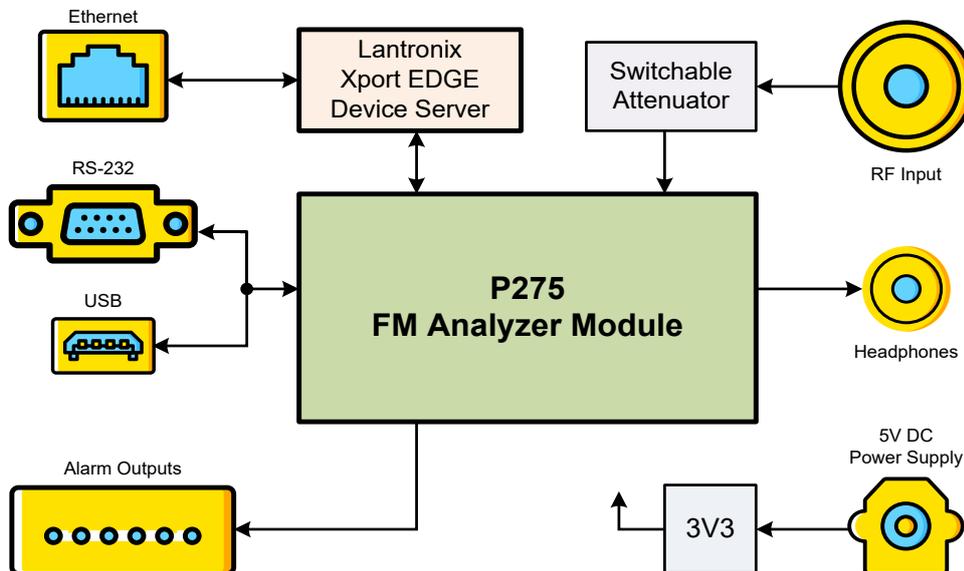
2.1 Technical parameters

Frequency range	64.0 to 108.0 MHz
Outer dimensions	144 x 105 x 37 mm
Power supply voltage	5 V DC
Supply current	max. 0.5 A (350 mA typical)
Power supply connector	2.1 mm (central is positive)
RF input	BNC 50 ohms
Min. recommended input RF voltage	40 dB μ V (single frequency, attenuator OFF)
Max. input RF power	1 W (attenuator ON) / 10 mW (attenuator OFF)
Attenuator	20 dB (+/- 2 dB)
Remote listening audio format	ADPCM 82.5 kbps 1-ch
Measurement data formats	ASCII, JSON, HTTP
Network protocols	DHCP, DNS, TCP, SMTP, HTTP



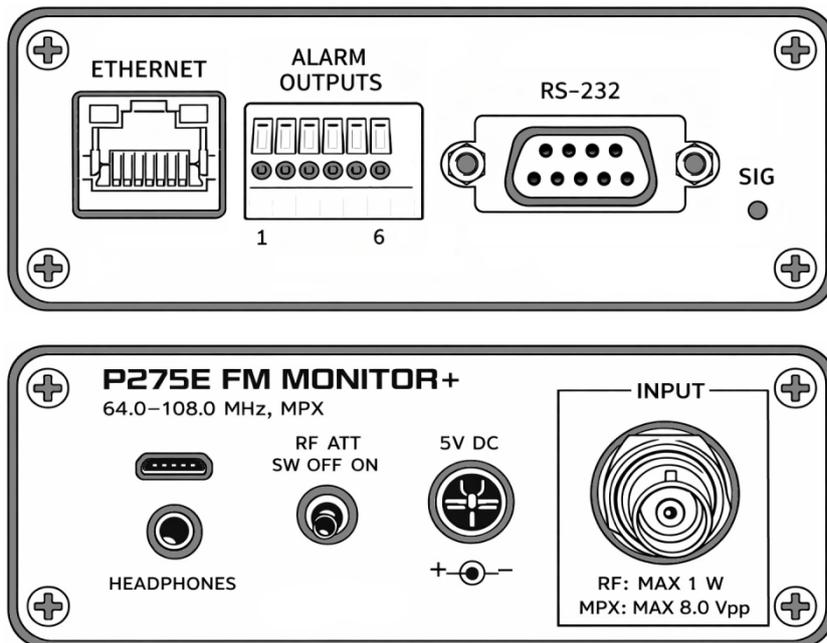
IMPORTANT!!! The device power supply voltage is 5 V. Exceeding that voltage may result in permanent damage to the device! Always check the power supply voltage or use the original power supply adapter.

2.2 Block schematic



2.3 Connectors, control elements and status indicators

All the elements can be found on the side panels:



Connector or element	Description
USB Micro	The USB port allows local connection to the control software. It is also useful for setup of the device and preparing device for final installation, see section 3.3. Data port only (not intended for powering the device).
Headphones	Stereo 3.5mm JACK connector for optional connection of headphones.
ATT (RF attenuator)	Controls switchable attenuator for the input signal. The attenuation value depends on specific hardware configuration, by default it is 20 dB (+/- 2 dB). The switch has 3 positions: ON – the attenuator is enabled OFF – the attenuator is disabled SW – the attenuator can be remotely controlled, see section 4.5.1. For the MPX input signal, the switch must be in OFF position.
5V DC	Power supply connector. Recommended power supply adapter: 5 V, min. 1 A, connector 2.1/5.5mm, central + IMPORTANT! Exceeding the voltage may result in permanent damage to the device!
Input	Input connector for RF or MPX signal. Nominal input impedance is 50 ohms (RF). Max. RF power (with attenuator disabled) is 10 mW. Max. MPX signal swing is 8.0 Vpp. Alarm and email notification functions are available only for the RF mode.
RS-232	The serial port allows local connection to the control software. It is also useful for setup of the device and preparing device for final installation, see section 3.3.
SIG	By default, the LED indicates reception of a station. This setting can be changed, see section 4.5.2.
Alarm Outputs	Optional outputs for alarm status indications, reset of external device or for general use. See section 4.5.2.
Ethernet	Ethernet connector RJ-45. Use a standard cat 5e cable to connect to an Ethernet network.

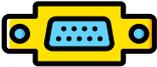
3 Installation

3.1 Hardware installation

For basic steps and rules, please follow the original P275 manual.

3.1.1 Communication ports

The device is equipped with two independent communication ports. Each port can be used by different application. Each port supports the communication protocol as described in section 'USB and COM Port Communication' in the original P275 manual.

Physical socket	Port reference	Description and purpose
 Ethernet	Port 1	<p>All Ethernet activity is handled via this port. Supported network protocols include DHCP, DNS, TCP, HTTP and SMTP.</p> <p>The port supports single client (connection), maximum data throughput is 115200 bps. The connection protocol can be either pure TCP or HTTP or SMTP (during the email sending session). Additional connection is available for the Web Manager (Ethernet setup).</p>
 RS-232  USB micro	Port 2	<p>This port is dedicated mainly for initial device setup or for local data connection. The user can choose either the RS-232 or USB interface. Supported baud rates for data acquisition are 19200 and 115200 bps. The device supports autobaud feature as described in the original P275 manual.</p> <p>The Port 2 normally works in complete independence of the Port 1. The only exception is the CLI mode. During the CLI session the Port 2 works as a monitor of the Port 1 data communication. Due to this, the Port 2 is especially useful for setup of the device, troubleshooting and preparing device for final installation.</p>

3.2 Ethernet setup

The Ethernet setup represents an essential set of parameters required for establishing remote connection to the device.

3.2.1 Factory default values

When the device is powered on for the first time (or after the Ethernet settings have been restored to factory defaults) following values are automatically applied. They define the initial network behavior of the device, incl. access for remote connection.

Ethernet setting	Factory default value
IP address / gateway / DNS	Get automatically (DHCP client enabled)
Hostname	P275E
Tunnel connection mode	TCP Server (Accept)
TCP local port	10001
Disconnect timeout	10 minutes
Web Manager HTTP server port	80
Web Manager user name	admin
Web Manager password	PASSWORD

Note: To restore factory default values on existing device, follow section 3.3.2.

Using the factory default values, you can instantly connect to the device via TCP from the FM Scope Windows control software, using the device's current IP address and the TCP port 10001. The Ethernet Web Manager is accessible via any web browser, after typing the device's current IP address to the address bar.

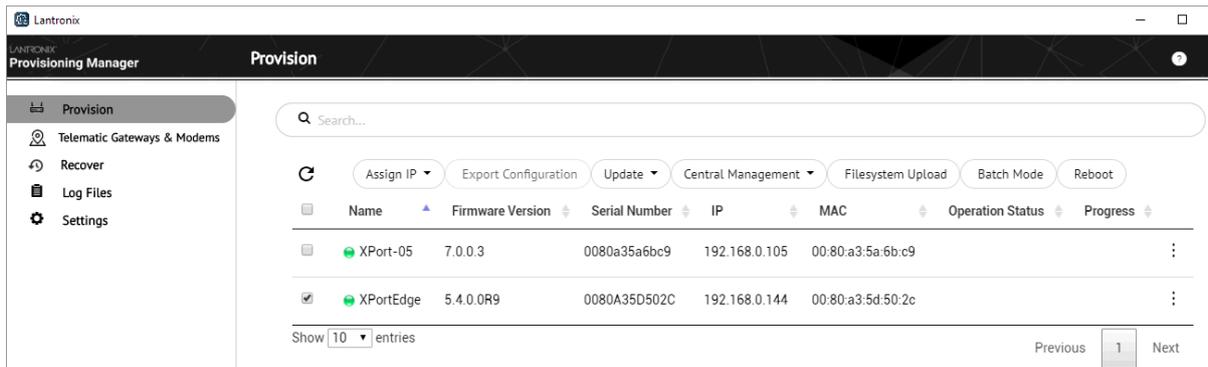
Changes to the default settings can be made at any time using the steps on the following pages.

3.2.2 Determining the device's IP address

If the device IP address is not known (usually on first use), the IP address can be determined using several methods, including:

- Lantronix Provisioning Manager for Windows or Linux
- Lantronix Device Installer (legacy)
- Local network router website, section DHCP
- CLI Monitor in the FM Scope software (see section 3.3.3)

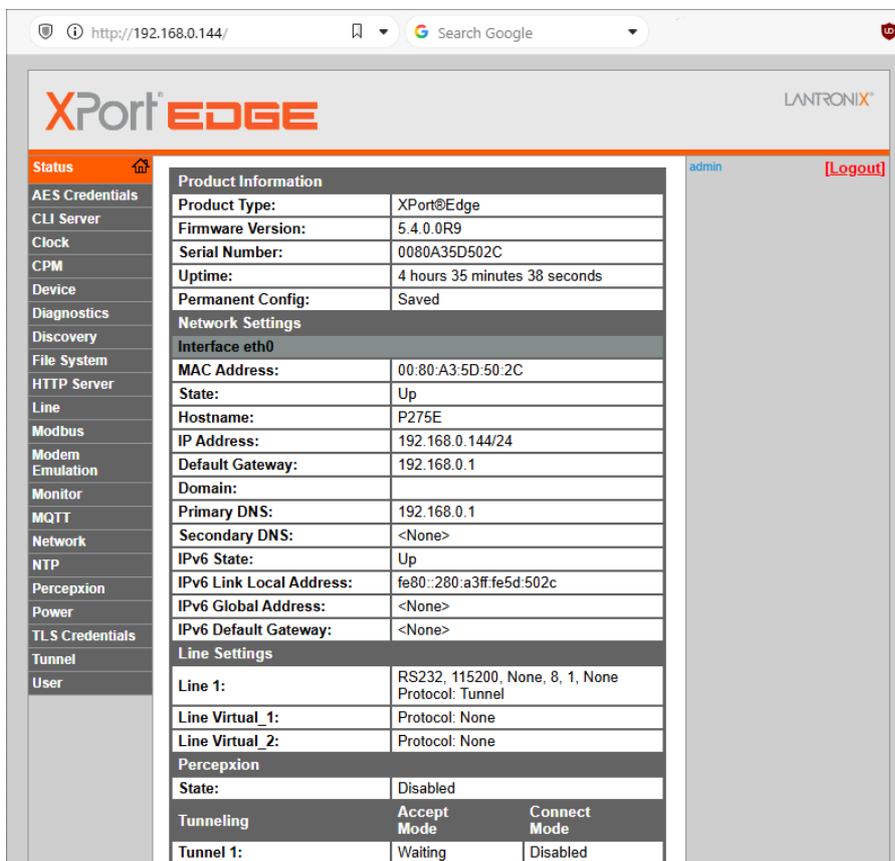
You can download the Lantronix utilities from www.lantronix.com upon creating an account. In local network, the Lantronix utilities can also assign the IP address even if the device is not directly accessible due to improper network configuration.



Device Discover feature in the Lantronix Provisioning Manager.

3.2.3 Ethernet setup using the Web Manager

Once the IP address of the device is known, type that IP address to address bar of the web browser and follow the instructions on the screen. When you're prompted for user name and password, type **admin** and **PASSWORD**. The Status page appears:



To change the network interface parameters, select the page Network, section eth0 – Interface – Configuration:

The screenshot shows the XPort EDGE web interface. The left sidebar contains a menu with 'Network' highlighted. The main content area is titled 'Interface eth0 Configuration'. At the top, there are tabs for 'eth0' and 'lo0', and sub-tabs for 'Interface' and 'Link'. Below these are buttons for 'Status', 'Counters', 'Configuration', and 'Filter'. The configuration table below has the following fields:

State:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Hostname:	P275E
Priority:	1
MSS:	1460 bytes
DHCP Client:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
DHCP Client Lease duration:	1 day
DHCP Server:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
IP Address:	<None>
Domain:	
Default Gateway:	<None>
DNS:	DHCP
Primary DNS:	<None>
Secondary DNS:	<None>

By default, the DHCP client is enabled and no changes are necessary to be made.

If you want to assign IP address and other related parameters manually, disable the DHCP client first. Finally, confirm the settings by the Submit button.

On the Tunnel page, section Tunnel 1 – Accept, check the parameters of the embedded TCP server, especially the local port on which the device will accept the client application connection. Note the selected port value for later use:

The screenshot shows the XPort EDGE web interface. The left sidebar contains a menu with 'Tunnel' highlighted. The main content area is titled 'Tunnel 1 Accept Configuration'. At the top, there are tabs for 'Tunnel 1', 'Tunnel Virtual_1', and 'Tunnel Virtual_2'. Below these are buttons for 'Status', 'Line', and 'Packing', and a sub-section with 'Accept', 'Connect', and 'Disconnect' buttons. The configuration table below has the following fields:

Mode:	Always
Local Port:	10001
Multiple Connections:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
Protocol:	TCP
Flush Line:	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Block Line:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
Block Network:	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
Password:	

If any changes have been made, confirm the settings by the Submit button. The changes are saved permanently and will take effect on next reboot. You can reboot any time using the [Reboot] button on the Device page.

Note: Please don't change other parameters unless you're absolutely sure what you're doing. There's usually no need to change other parameters. To restore factory default values, follow section 3.3.2. Don't use the [Factory Defaults] button in the Web Manager as this method does not load the P275E's specific settings.

3.3 Local serial connection

The local serial connection is useful for setup of the device, troubleshooting and preparing device for final installation. The local serial connection is also useful when the Ethernet setup is not accessible via Port 1.

3.3.1 USB connection setup

Local connection can be realized either by RS-232 cable or USB cable. Correct USB cable type is USB A to USB micro.

USB driver must be installed prior to start communicating. Some Windows versions are already supplied with the driver. Virtual COM port feature provides seamless compatibility with all software.

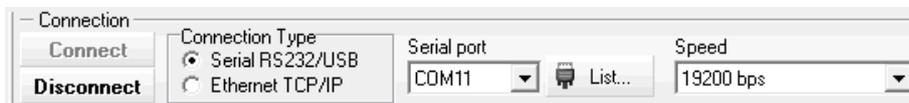
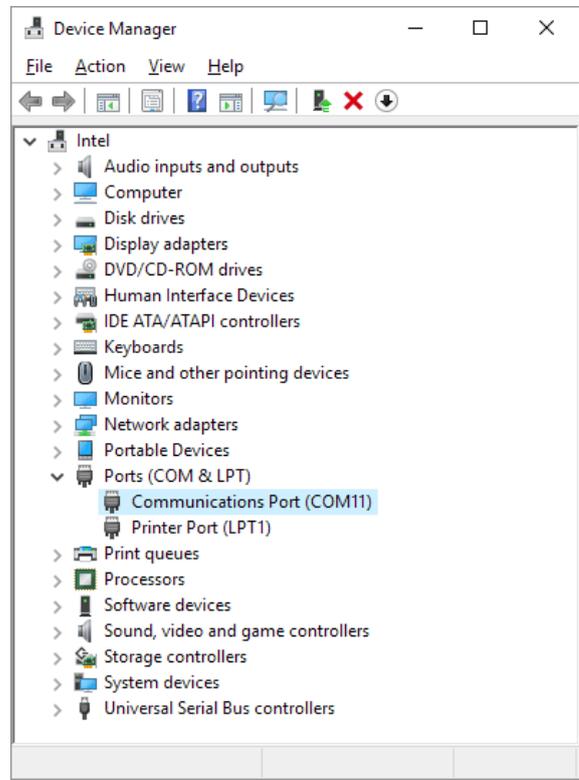
After successful installation a new COM port will appear in Windows Control Panels – Device Manager ►

To change the assigned COM port number, double-click on the line and go to Port Settings – Advanced.

Note: Latest USB drivers are available at <https://ftdichip.com/drivers/vcp-drivers/>

Note: The RS-232 connection requires no extra driver. For the cable wiring, please follow the original P275 manual.

Once you know the COM port number, you may connect to the device from the software:



3.3.2 Reset Ethernet settings to factory defaults

Resetting the Ethernet settings returns all network-related parameters, including IP configuration and access credentials, to their original default values (see section 3.2.1). This procedure is particularly useful if access to the Web Manager is no longer possible, for example due to a forgotten username or password. Restoring factory defaults should be performed with care, as any custom network settings will be lost and must be reconfigured afterward.

1. Connect the device to a PC using a serial RS-232 or USB cable.
2. On the PC run the FM Scope application and connect to the device.
3. In main menu select Device – P275E+ Extra, then click on the Ethernet Defaults button (see the image).
4. Confirm by Yes.
5. Reboot the device by disconnecting and connecting the power supply, or by selecting menu item Device – Special – Reboot.



Note: SMTP setup is not affected by the Ethernet settings reset.

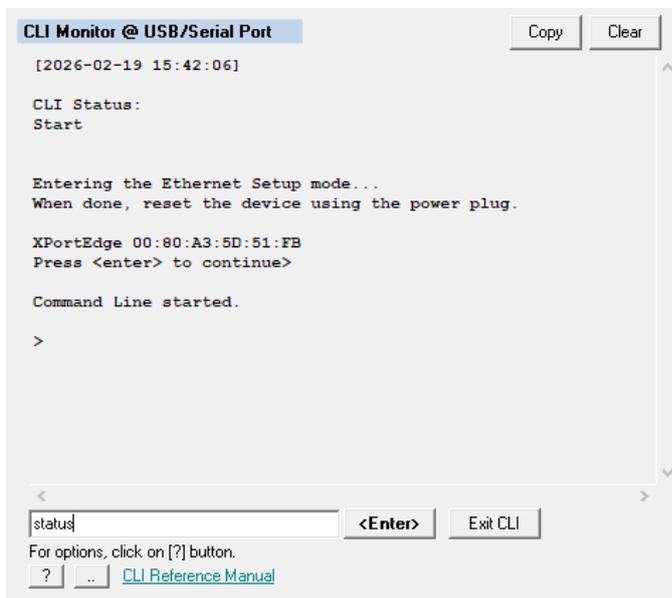
3.3.3 Ethernet setup using CLI mode

In addition to standard configuration through the web interface, the device allows direct communication with the Lantronix module via the serial RS-232 or USB port in Command Line Interface (CLI) mode. CLI access is intended primarily for advanced configuration and service purposes. It may be required in situations such as:

- Identification of the currently assigned IP address
- Verification or modification of network settings
- Low-level diagnostic or recovery procedures

This configuration method is recommended for experienced users or service personnel familiar with command-line environments and network configuration principles. Incorrect settings entered in CLI mode may affect network connectivity.

1. Connect the device to a PC using a serial RS-232 or USB cable.
2. On the PC run the FM Scope application and connect to the device.
3. In main menu select Device – P275E+ Extra, then click on the Enter CLI mode button.
4. Confirm by Yes.
5. Don't press anything and wait until you see 'Command Line started' in the CLI Monitor.



Now you can access the Device Server setup according to the Lantronix CLI reference.

Finally, click on the Exit CLI button and reboot the device by disconnecting and connecting the power supply. The device will also return from the CLI mode automatically after ~10 minutes. During the CLI session, standard functions of the device are not available.

Example (getting current Ethernet status including IP address):

```
status<Enter>
interface eth0<Enter>
show<Enter>
```

Example (getting the Device Server log):

```
tlog<Enter>
```

If you're not in the root level (indicated by >), click on the [...] button or type `exit<Enter>`. Typing the `exit` in the root level causes the Device Server to terminate the CLI mode.

Note: With the exception of the above examples, which can sometimes be useful in practice, the CLI mode of setup has no meaning for common use. There are no hidden features. The Web Manager provides more intuitive way for the Device Server setup.

Note: To restore factory default values, follow section 3.3.2.

4 Using the device

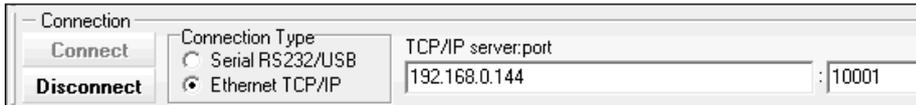
4.1 FM Scope application

For basic steps and description of all features, please refer to the FM Scope User Guide.

4.1.1 First communication with the FM Scope

The FM Scope application is free for download at <https://www.pira.cz>. The application version must be 1.7.3 or later.

In the Connection field, select 'Ethernet TCP/IP' connection type, fill the IP address of the device and the network port from the previous step. Click on Connect.

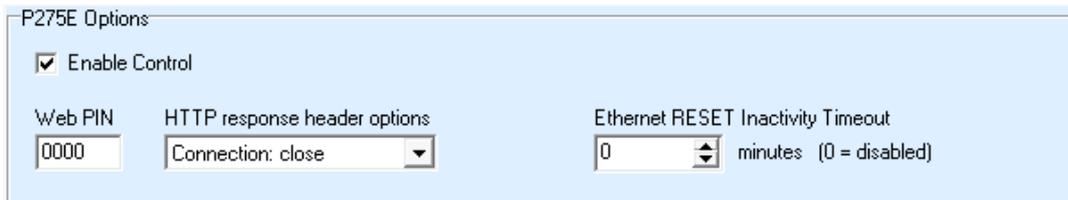


The application status bar at the bottom indicates the connection status. Verify the function by selecting a local station and clicking on Tune.

For further description, please refer to the FM Scope User Guide and the original P275 manual.

4.1.2 Ethernet options

Additional Ethernet options are available in the menu: Device – Device Setup.

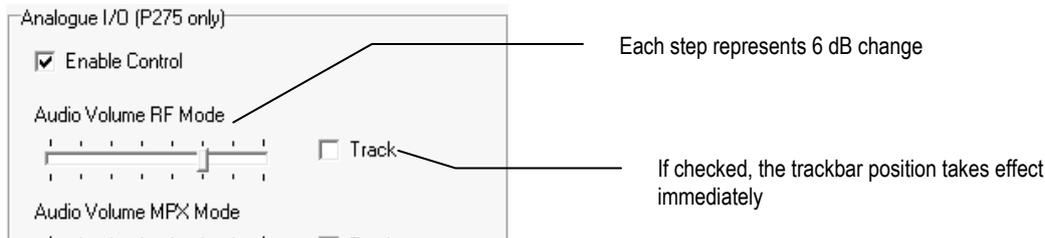


Web PIN	Restricts the access to the device's embedded web server unless the predefined PIN is entered. The PIN consists of four digits. Allowed range is '0000' to '9999'. See also section 4.2. Default value is '0000' which means 'no PIN entry is required'.
HTTP response header options	Specifies HTTP response header options for selected attribute. This control item only affects the HTTP response header. The 'keep-alive' option cannot be selected unless 'Inactivity Timeout' is enabled in the Disconnect Mode setup window. See also sections 3.2.3 and 4.2. Default and recommended value is 'Connection: close' which requires no extra care.
Ethernet RESET Inactivity Timeout	Forms an additional simple Ethernet watchdog. If no meaningful command is received during the period specified, a RESET operation is performed on the embedded Device Server. Default value is 0 (disabled). It is recommended to turn it on, taking into account the longest expected pause in communication with the device.

Note: Reset of the Device Server is performed also any time an email is sent, as the reset is a part of the CLI mode entry procedure. In all cases the P275 FM analyzer module itself is unaffected by such reset.

4.1.3 Headphones audio output setup

The analogue audio output may be useful in some specific applications. The audio output options are available in the menu: Device – Device Setup. Here you can adjust volume, pre-emphasis and some more parameters.



Note: The headphones audio output is not suitable for audio applications like rebroadcasting. Higher volume results in better S/N.

4.1.4 Saving device's current configuration

Once all settings are done and work as expected, save the configuration to the device's non-volatile (permanent) memory:

In toolbar, click on the button 

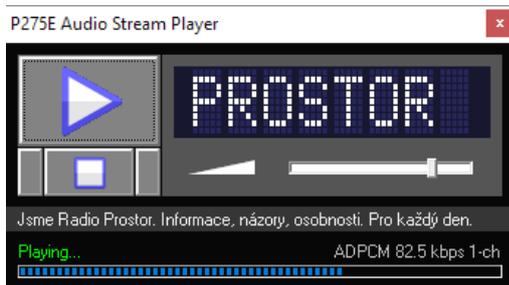
The same option is available in the menu: Device – Save configuration.

It is especially important to save the configuration before leaving the site. The device is then ready for stand-alone operation.

4.1.5 Remote audio listening

The device supports remote audio listening of currently tuned station, incl. RDS functions PS, RT and TA.

In the FM Scope menu, select Utilities – **P275E Audio Stream Player**:



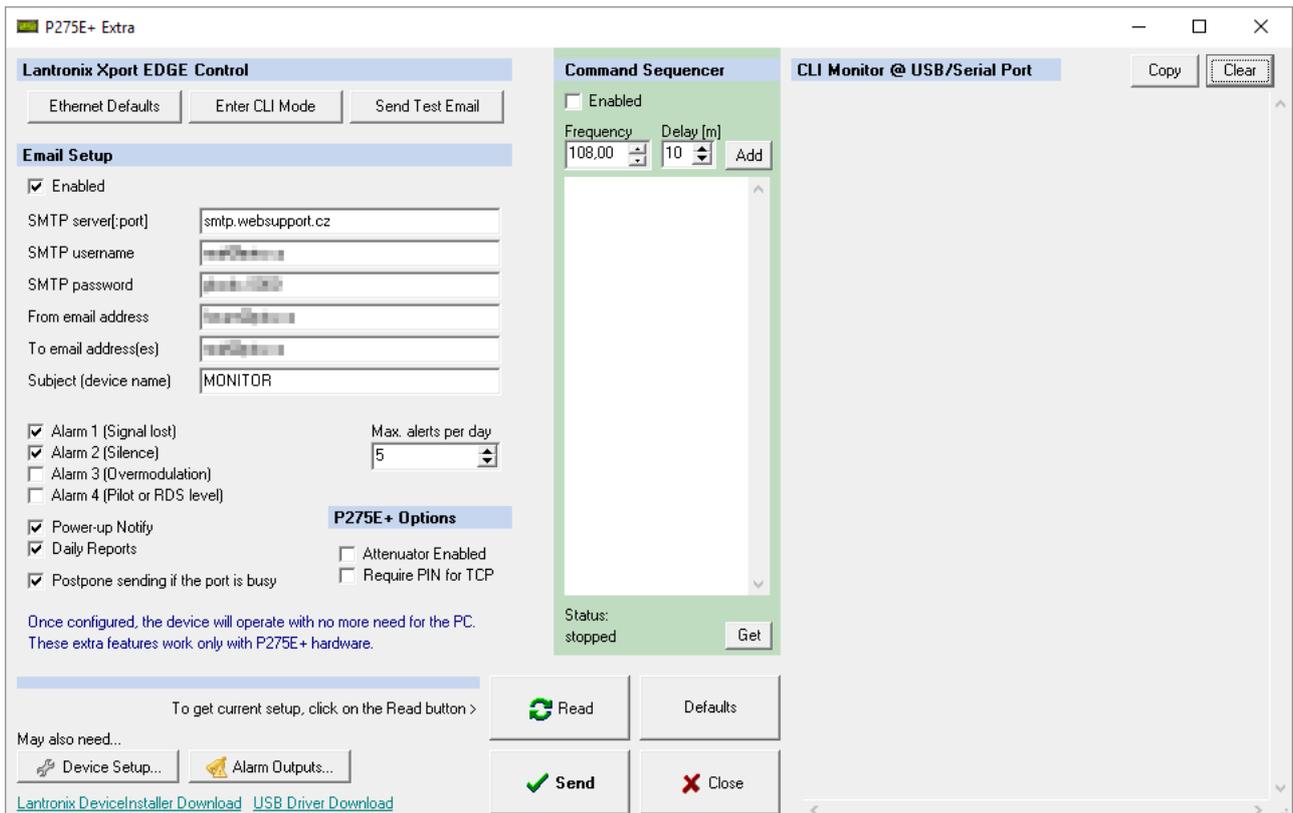
The audio streaming uses lossy audio compression. It is thus not intended for audio quality evaluating.

Minimum version required: FM Scope 1.7, P275E firmware 2.2d.

During the remote audio listening, the FM Scope does not provide MPX and RF spectrum functions.



The FM Scope application environment.



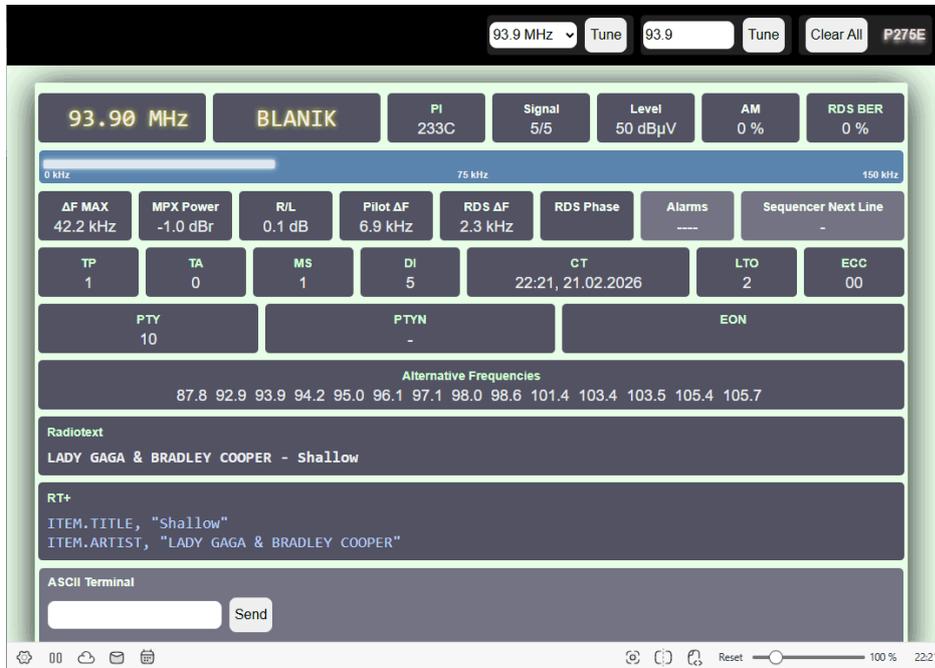
Setup window for the device related features (menu Device – P275E+ Extra).

4.2 Embedded HTTP server

The HTTP server is only available in TCP server mode (Tunnel – Tunnel 1 – Accept – Mode: Always). The HTTP server is only accessible if the TCP server is not serving any existing connection or performing SMTP session. The HTTP server's access URL is composed of the device IP address and the Connection TCP port (Local Port).

4.2.1 Display the values in a web browser

Type the web server URL to the PC web browser or to your mobile device, for example `http://192.168.1.60:10001/`



Only one client can download the data at the same time. Under no circumstances should you leave the HTTP server accessible from the internet. To avoid situations where a TCP connection remains open if the client does not terminate it properly, enable the Inactivity Timeout option (sections 3.2.3 and 4.1.2). Multiple clients are supported via the web server integrated in the FM Scope.

4.2.2 Getting the values in JSON format

The device can be fully controlled by HTTP GET method and any value can be acquired this way. Returned data format is JSON. The query format is according to the 'USB and COM Port Communication' section in the original P275 manual. The query is a part of the URL.

Example (get current frequency, signal level and deviation MAX):

```
http://192.168.1.60:10001/output.json?y=%3FF%3FU%3FM
```

```
{
  "Frequency": " 96.70 MHz",
  "Level": "   36 dBuV",
  "MAX": "  53.3 kHz"
}
```

URL encoding table:

?	%3F
*	%2A
:	%3A
,	%2C

Example (tune to 106.2 MHz):

```
http://192.168.1.60:10001/output.json?y=106200%2AF
```

If the device PIN is different from '0000', the PIN needs to be included in the URL as the first attribute.

Example (tune to 106.2 MHz, device PIN included):

```
http://192.168.1.60:10001/output.json?pin=1234&y=106200%2AF
```

4.3 Embedded SMTP client

The device includes an integrated email notification system based on a standard SMTP client. This function allows the device to automatically inform designated recipients about relevant events without requiring additional PC, monitoring software or manual intervention.

By providing automated evaluation of modulation parameters, the device enables early detection of abnormal operating conditions. The function is directly linked to the standard P275 alarm feature, referenced as Alarm 1 to Alarm 4. For more information, follow the original P275 manual.

Alarm notifications enable rapid response to critical situations. Periodic reports provide quick overview of the last day and confirmation that the device is online and working properly.

TIP: Most modern email clients allow incoming messages to be automatically filtered, sorted, or labeled based on criteria such as the sender address or the email subject. By creating dedicated rules for messages sent by the device, users can automatically route the notifications to specific folders or recipients, apply visual labels, or mark important messages. This provides a well-organized archive of device notifications for later reference and ensures that routine reports do not clutter the main inbox.

4.3.1 The SMTP client overview

- Operates standalone, no need for a PC
- Supports TLS and authentication, works with all common SMTP services
- Sends email upon 'alarm' event
- Sends daily reports
- Supports data collection about multiple frequencies, together with the Command Sequencer feature

Note: The 'day' always starts with the device power-up or reboot, the transition time is not configurable nor tied to real midnight.

Note: During the message sending process (usually takes about 15 seconds), all standard device functions are temporarily suspended and existing TCP connection is terminated (put into 'reconnecting' state). The connection is then automatically resumed.

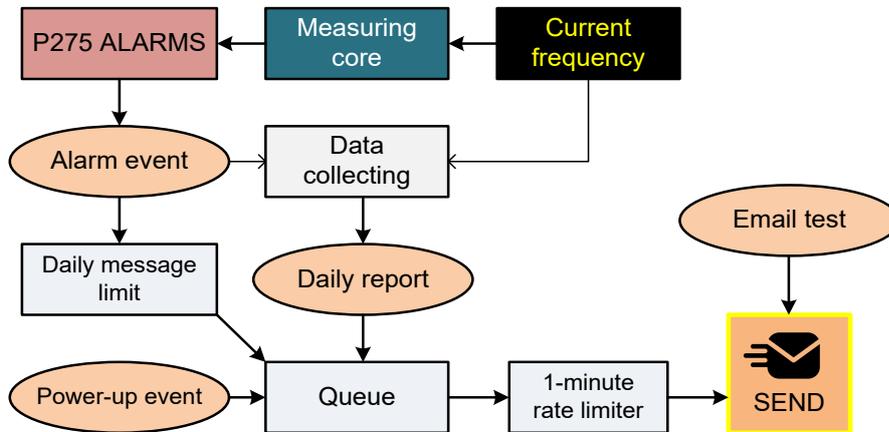
<p>Od [redacted] [redacted]</p> <p>Komu [redacted] [redacted] 19. 2. 2026 10:21</p> <p>Předmět UKS_2 Alarm</p> <p>87.90 MHz 2D09 "R-VYSOC "</p> <p>Pilot or RDS level!</p> <p>Signal Quality 5/5 Pilot 5.2 kHz RDS 3.0 kHz AVE 49.6 kHz MAX Hold 58.9 kHz Histogram MAX 43 kHz Pm -0.2 dBr Linear R/L 348/ 322</p> <p>Sent from the P275E+</p>	<p>Od [redacted] [redacted]</p> <p>Komu [redacted] [redacted] 19. 2. 2026 20:13</p> <p>Předmět UKS_2 Daily Report</p> <p>87.90: Pilot or RDS level! 89.00: OK 90.50: No signal! 93.90: OK 94.30: OK 95.00: OK 97.40: OK 100.10: OK 104.60: Silence! Pilot or RDS level! 106.20: OK</p> <p>Alarm messages: 9 sent 0 skipped 0 error(s)</p> <p>Sent from the P275E+</p>
--	--

Example of alarm and daily report message.

To ensure that email notifications are sent when the desired events occur, it is necessary to check the Alarm outputs settings. The default settings are usually satisfactory, but may not meet your specific needs. Click on the Alarm Outputs button. For more information, follow the original P275 manual.

4.3.2 Functional diagram

Following image represents simplified functional diagram of the email message generation chain:



Notes:

- If some alarm event repeats at the same frequency, a new message is not generated until a different alarm event occurs or a new 'day' begins.
- If alarm message gets stuck in the queue and another frequency is tuned in, the message is removed. The entry in the report remains and the number of messages removed that way is included in the daily report as 'skipped messages'.
- If different alarm event occurs while alarm message already waits in the queue, the alarm messages are merged.
- If the SEND operation was not successful, the device will retry sending two more times within following five minutes. An error record is added to the report.

4.3.3 Email setup

In main menu, select Device – P275+ Extra. To get current device setup, click on the Read button.

Email Setup

Enabled

SMTP server[:port]

SMTP username

SMTP password

From email address

To email address(es)

Subject (device name)

Alarm 1 (Signal lost) Max. alerts per day

Alarm 2 (Silence)

Alarm 3 (Overmodulation)

Alarm 4 (Pilot or RDS level)

Power-up Notify

Daily Reports

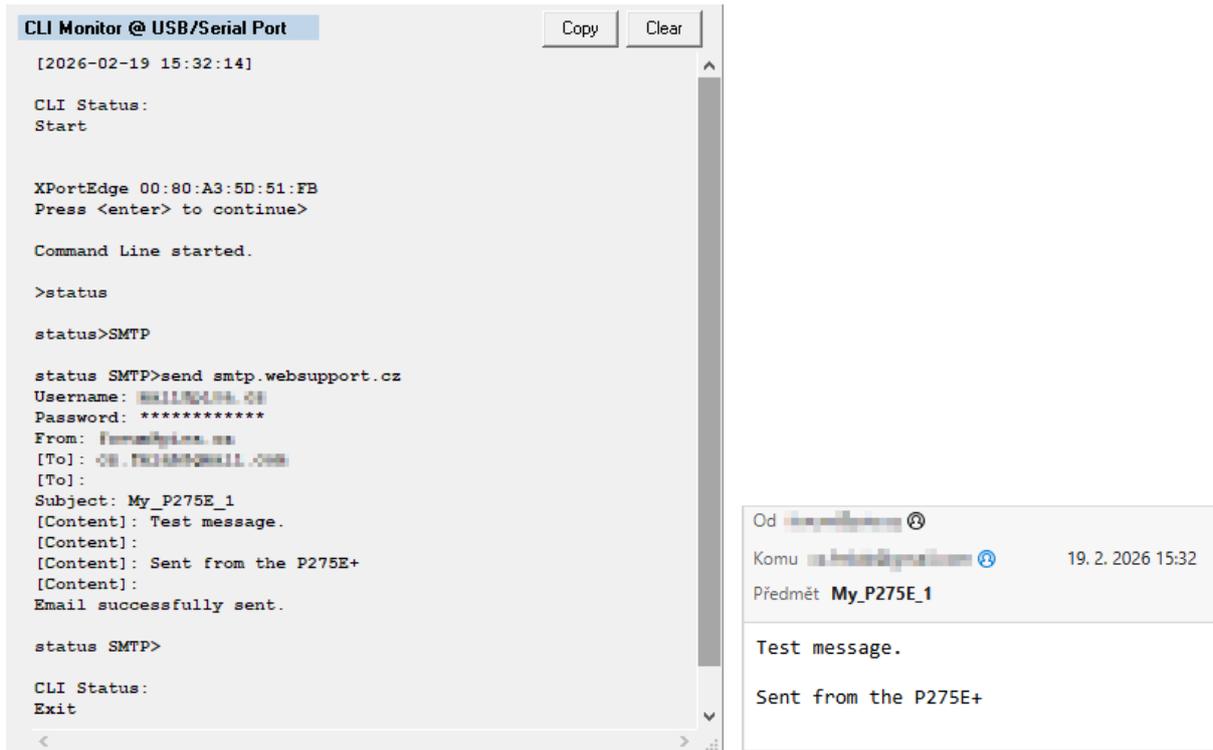
Postpone sending if the port is busy

Setup item	Description	Max. length
Enabled	Needs to be enabled, otherwise no email operation is performed regardless of other settings.	
SMTP server	Enter the hostname or IP address of the outgoing mail (SMTP) server used to send email notifications. This is typically provided by your email service provider or your company's IT administrator (for example: smtp.example.com). You may optionally specify the port number after a colon, e.g. smtp.example.com:587 If no port is specified, the device will use the default SMTP port according to the security mode.	64
SMTP username	Enter the username used to authenticate with the SMTP server. In most cases, this is the full email address (e.g. monitor@example.com). Some providers may require only the account name instead of the full address.	32
SMTP password	Enter the password associated with the SMTP username. This is the password for the email account used to send messages. For security reasons, use a dedicated email account for the device rather than a personal mailbox. If your email provider (typically Gmail) uses two-factor authentication (2FA), you may need to generate and use an application-specific password instead of your regular account password.	32
From email address	Enter the email address that will appear as the sender of the notification messages. This address should normally match the SMTP account used for authentication (SMTP username), as many SMTP servers reject messages if the sender address differs from the authenticated account. Example: monitor@example.com Recipients will see this address as the sender of alarm and status emails.	32
To email address(es)	Enter the destination email address that will receive the notifications generated by the device. This can be any valid email address, for example: service@example.com If multiple recipients are required, separate addresses with comma. Ensure that the receiving mailbox can accept messages from the configured sender address to prevent filtering as spam.	64
Subject (device name)	Enter the device name that will be used as the first part of the email subject. This text helps you easily identify which device sent the message, especially if you operate multiple units or receive notifications from several locations. Choose a short but descriptive name that clearly identifies the device and its installation location.	32
Alarm 1 to 4	Only selected events will generate the alarm emails. To configure the alarms, click on the Alarm Outputs button.	
Power-up Notify	If enabled, the device will send email message any time the power supply is connected or the device reboots. The message includes device's firmware version.	
Daily Reports	When enabled, the device automatically sends daily summary reports by email. When disabled, no periodic reports are generated or sent. Other functions are not affected. It is strongly recommended to enable this option because, in addition to the daily overview, it also provides feedback that the device is online.	
Postpone sending	If an email event is triggered while the device is engaged in data communication (via the Windows application or web interface), the email transmission is deferred. The message is queued internally and sent once the port activity has been completed and the device becomes idle.	
Max. alerts per day	The daily message limit prevents more than the configured number of alarm notifications from being sent per day. This becomes important if monitoring more frequencies using the Command Sequencer, to prevent sending too many messages whose content may be repeated. The number of messages that did not fit within the limit is included in the daily report as 'skipped messages'. Usually, it is enough to set a small number of messages per day without missing any crucial information.	

4.3.4 Sending test email

After setting all SMTP client parameters, it is necessary to make sure that the settings were made correctly and that they are accepted by the SMTP server:

1. Connect the device to a PC using a serial RS-232 or USB cable.
2. Open the Device – P275E+ Extra window.
3. If not done yet, confirm the Email Setup by the Send button.
4. Click on the Send Test Email button, confirm by Yes.
5. The CLI Monitor will show the progress of sending the message.
6. In case of an error, the complete log is automatically displayed, from which it is possible to determine the cause of the problem.



4.3.5 Alarm overview

Four alarms can be assigned to the email notification feature. The alarm thresholds values as well as the timeouts are user configurable.

Alarm name	Short description	Parameters watched
Alarm 1	No signal	Signal quality
Alarm 2	Silence	Min. ΔF AVE, channel balance
Alarm 3	Overmodulation	ΔF Max. Hold, ΔF Max. At, Max. ΔF AVE, Max. Pm
Alarm 4	Pilot or RDS level	Min. ΔF Pilot, Max. ΔF Pilot, Min. ΔF RDS, Max. ΔF RDS

For more information about the alarm function, follow the original P275 manual.

For the alarm setup, select the menu item Device – Alarm Outputs.

4.4 Programmable command sequencer

Beyond single-frequency monitoring, the device incorporates an internal command sequencer, which allows automated execution of predefined commands. Using this function, the unit can periodically switch between multiple FM frequencies and perform monitoring tasks on each of them in succession.

This capability makes it possible to supervise all FM transmissions within a given site using a single device. Each frequency can be checked according to defined order, ensuring comprehensive coverage without the need for multiple dedicated monitors.

4.4.1 Command sequencer basic setup

In main menu, select Device – P275+ Extra. To get current device setup, click on the Read button.

Individual commands are inserted into the appropriate editing area.

In the basic usage of this function, you can enter individual frequencies that the device should monitor in sequence. Each frequency entry command must be followed by a delay command that specifies the time for which the frequency is monitored. A simple helper is available for such case:

1. In the Frequency box, select or enter the frequency.
2. In the Delay box, select or enter the delay in minutes.
3. Click on the Add button.
4. Repeat until all desired frequencies are entered. Maximum number of frequencies is 16.
5. Tick the Enabled box.
6. Click on the Send button.

The screenshot shows the 'Command Sequencer' interface. At the top, there is a blue header with the title 'Command Sequencer'. Below the header, there is a green background area. On the left, there is a checked checkbox labeled 'Enabled'. To the right of the checkbox are two input fields: 'Frequency' with the value '106.00' and 'Delay [m]' with the value '10'. To the right of these fields is an 'Add' button. Below the input fields is a list of commands: '087900*F', '0600*d', '089700*F', '0600*d', '093900*F', '0600*d', '106000*F', and '0600*d'. At the bottom of the interface, there is a 'Status:' label followed by 'line 2 (0600*d)' and a 'Get' button.

Notes:

- It takes 1 minute after power-up before the Command Sequencer becomes active (i.e. before first line is processed). This time window can be used to disable the function in case of entering an inappropriate command sequence.
- In case of detected activity on any port (receiving a command which includes '*'), the Command Sequencer is paused for 3 minutes.

4.4.2 Command sequencer advanced usage

In the general usage of this function, any command from the P275 repertoire is accepted if its length is 8 characters or less. Each line can contain multiple commands, but the maximum length of each line is limited to 8 characters.

Example (tune to 87,9 MHz and change the Alarm 4 pilot tone min. level limit to 0):

```
087900*F
ARE:00*X
0600*d
```

Maximum number of lines is 32.

4.5 Further features

4.5.1 Remote control of the attenuator

If the attenuator switch is in the 'SW' position, the attenuator can be controlled remotely. This can be done from the FM Scope software (Device – P275E+ Extra) or using special commands:

ASCII command	Operation
ATT:0*X	Attenuator disabled
ATT:1*X	Attenuator enabled

When sending the commands from the FM Scope script, insert them as a parameter of the Send command:

```
Send(ATT:0*X)
```

resp.

```
Send(ATT:1*X)
```

4.5.2 ALARM outputs

Six terminals are available: four independent digital outputs, optional +5V output and ground:

Terminal	Function	Terminal	Function
1	+5V output	4	Alarm 3 (Overmodulation)
2	Alarm 1 (Signal lost)	5	Alarm 4 (Pilot or RDS level)
3	Alarm 2 (Silence)	6	Ground

The function of the ALARM outputs is described in the P275 FM Broadcast Analyzer User Manual.

For setting up the alarm outputs, select Device – Alarm Outputs in the FM Scope software. For each output the user can assign a function and additional parameters, if apply. For manual control, the response is immediate upon clicking on the ON/OFF buttons. Other settings take effect when confirmed by the Send button. To make the configuration permanent, follow section 4.1.4.

The outputs can be also controlled from a script (for example for driving a relay switching between two antennas). When using such mode of manual control for particular terminal, the original alarm function is disabled:

ASCII command	Meaning
ARI:GD*X	Terminal 2 logical 0, SIG LED on
ARI:GH*X	Terminal 2 logical 1, SIG LED off
ARJ:GD*X	Terminal 3 logical 0
ARJ:GH*X	Terminal 3 logical 1
ARK:GD*X	Terminal 4 logical 0
ARK:GH*X	Terminal 4 logical 1
ARL:GD*X	Terminal 5 logical 0
ARL:GH*X	Terminal 5 logical 1

An indication LED, marked as 'SIG', is connected between terminals 1 and 2. By default it indicates when a station is tuned:

ASCII command	Meaning
ARI:03*X	After power-up or tuning to a new station the LED is on. It turns off within 30 seconds if no signal is being received or the signal is weak. After a correct signal is fed into the unit, the LED turns on again. This is a default setting.

4.5.3 TCP communication PIN authorization

The device as well as the FM Scope application support optional protection of TCP communication via Port 1 using a configurable 4-digit PIN code.

This PIN mechanism is already used to secure access to the web interface (see section 4.1.2). It can also be enabled for raw TCP communication. When the corresponding option is activated, any incoming TCP connection must be authorized before standard communication with the device is permitted.

To enable the PIN authorization for TCP communication, check the option Device – P275+ Extra – Require PIN for TCP.

This protection may be important when the device is accessible from public or routed networks. An exposed TCP server without authentication may be subject to automated scanning or unsolicited connection attempts by internet bots. Even unintentional or randomly transmitted data may interfere with the communication protocol and, in extreme cases, could alter device settings.

When TCP protection is enabled, communication remains locked until a valid authorization sequence containing the correct PIN code is received. After successful authentication, the connection is unlocked for a period of 120 seconds, during which normal TCP communication is allowed. Once this time window expires, the interface is automatically locked again and requires reauthorization, if not sent yet. See also section 5.1.

This mechanism provides an additional layer of protection against unauthorized access while maintaining compatibility with existing control and monitoring systems.

In case of forgotten PIN, connect to the device using the local port (see section 3.3) and change/update the PIN related settings.

4.5.4 TCP communication password authorization

The Lantronix Xport EDGE supports also another layer of TCP communication protection, based on a special password. When set, client must send the correct password string to the unit within 30 seconds from opening network connection in order to enable data transmission.

This kind of authorization is not supported by the FM Scope and cannot be used together with the Embedded HTTP server.

To set the password, follow section Tunnel 1 – Accept in the Web Manager.

The password may contain up to 31 characters and must contain only alphanumeric characters and punctuation. The password sent to the unit must be terminated with one of the following:

0A (Line Feed)
00 (Null)
0D 0A (Carriage Return / Line Feed)
0D 00 (Carriage Return / Null)

If Prompt for Password is "Enabled", the user will be prompted for the password upon connection.

See the Lantronix documentation for details.

5 ANNEXES

5.1 List of commands and configuration registers

The command set of the P275 FM Monitor+ contains some specific enhancements which are listed in this section. **For complete reference, follow the original P275 manual.**

Command	Meaning	Key
ATT:y*X	Attenuator control (the ATT switch must be in 'SW' position). To enable the attenuator: ATT:1*X To disable the attenuator: ATT:0*X	
<\$\$\$>TSxx*X	Set text string. Example (set email subject): <My_Subject>TS44*X	
TSxx?a	Return text string. Example (read email subject): TS44?a	ASCII
EMLx:y*X	Set email control bit. Example (disable the email feature completely): EML0:0*X	
EMLL:yyyy*X	Set daily limit for the alarm email messages. yyyy = decimal value 0000 to 9999 Example (max. 20 emails per day): EMLL:0020*X	
EMTEST*X	Send email test message.	
NETDEFAULTS*X	Load factory defaults to the Device Server.	
NETSETUP*X	Enter the CLI mode and allow user input.	
yyyy*d	Delay (in Command Sequencer only). yyyy = decimal value 0001 to 9999 seconds Example (wait 10 minutes): 0600*d	
?q	Return next Command Sequencer line.	Seq Line
yyyy*u	If entered PIN is equal to the preconfigured Web PIN, the TCP communication gets unlocked for next 120 seconds. TCP connection only. Not required by default. See also section 4.5.3. Example (if Web PIN = 1234): 1234*u	

Text strings

TS	Meaning	Max. length
00 to 31	Command Sequencer line 1 to line 32. Empty line marks the sequence end.	8
32	SMTP username	32
36	SMTP password	32
40	From email address	32
44	Subject (device name)	32
48	SMTP server	64
56	To email address(es)	64

Following characters are not allowed within the text strings: CR, LF, space, <, >, ?

Email control bits

	Meaning	0	1		Meaning	0	1
EML0	Email general enable	Disabled	Enabled	EML1	Alarm 1 email	Disabled	Enabled
EML2	Alarm 2 email	Disabled	Enabled	EML3	Alarm 3 email	Disabled	Enabled
EML4	Alarm 4 email	Disabled	Enabled	EML5	(reserved)		
EMLA	Daily reports	Disabled	Enabled	EMLB	Power-up notify	Disabled	Enabled
EMLC	Send email vs. port activity	Ignore	Postpone	EMLD	(reserved)		

DIP switches

	Meaning	0	1	Default
DIP9	Command Sequencer	Disabled	Enabled	0
DIPA	Require PIN even for TCP communication	No	Yes	0

5.2 Memory map

The memory map of the P275 FM Monitor+ contains some specific enhancements which are listed in this section. **For complete reference, follow the original P275 manual.**

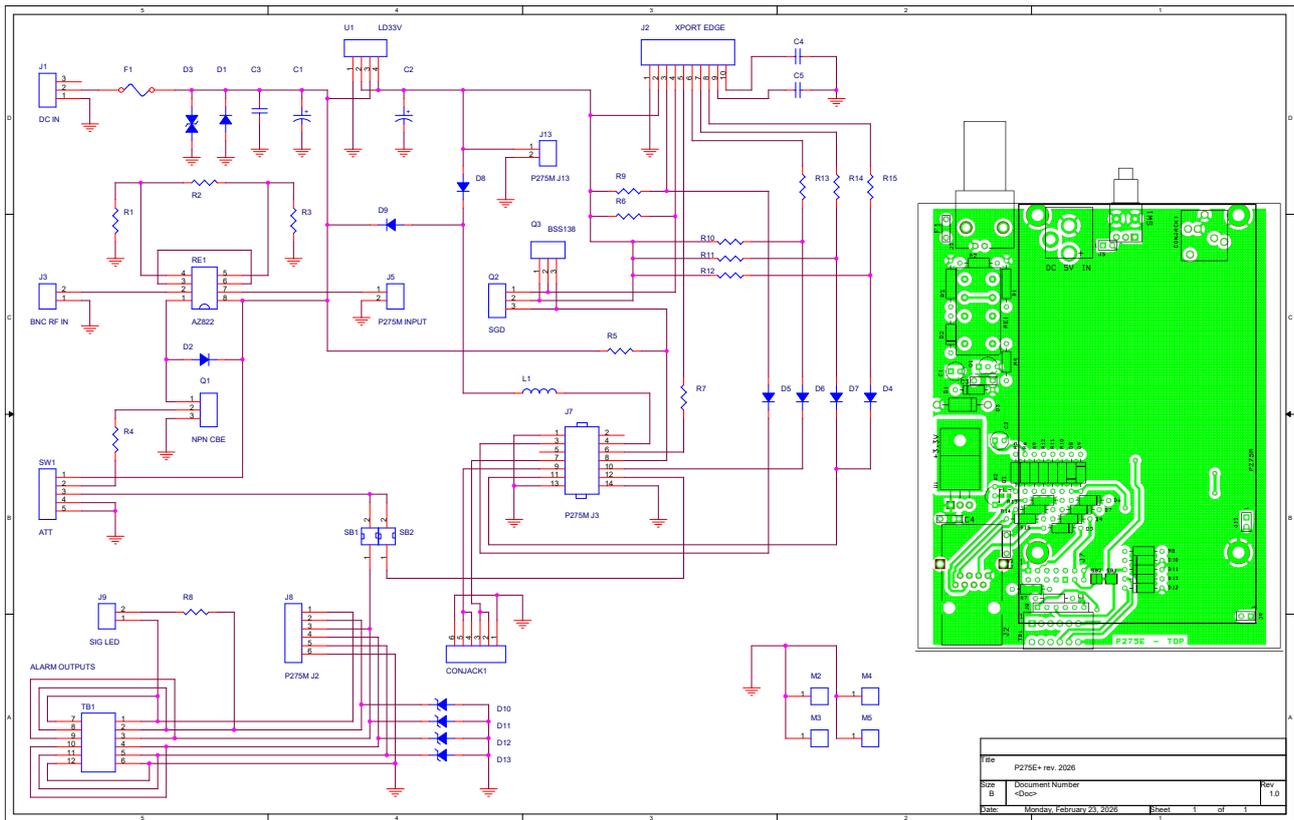
Address	Length	Content	Unit
852	002	Daily limit for the alarm email messages	-
854	002	Email control bits \$FFFF = not set yet	-
856	002	Attenuator status (valid only if the ATT switch is in 'SW' position) \$0000 or \$FFFF = disabled	-

5.3 Device differences

Feature	P275E FM Monitor+ (current hardware)	P275E FM Monitor (2018 to 2025)
Device Server	Lantronix Xport EDGE XPE200100B	Lantronix Xport-05 XP1001000-05R
Email notifications and reports	✓	Via the FM Scope only
Programmable Command Sequencer	✓	Via the FM Scope only
USB connector	✓	Not accessible
Alarm outputs	Terminal block	Exposed pins
Attenuator remote control (SW)	Separate control	Via Alarm Output 2

Features which are not listed are common to both device variants. Both variants use the same P275 firmware.

5.4 Schematic diagram



Doc	P275E+ rev. 2026
Size	Document Number
B	<Doc>
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Marking	Description	Ordering code
D1, D2, D5, D8	Schottky diode 2A	
D3	Transil 7V5	1.5KE7V5CA
D10, D11, D12, D13	Transil 7V5, DO41	P4KE7.5A
F1	Polymer fuse 0,7 A	BX075 / RA075-6
Q1	Transistor BC547B	
Q2	Transistor ZVNL120A	
U1	Voltage regulator 3,3V TO220	LD1117V33C
C1	Capacitor 22 to 100 uF	
C2	Capacitor 10 to 22 uF	
C3, C4, C5	Capacitor 100 nF	
L1	1000 nH	DLA1-N
R1, R3	Resistor 62 ohms 1 W	
R2	Resistor 255 ohms	
R4, R7	Resistor 470 ohms	
R5, R6, R9	Resistor 2k	
R8	Resistor 4k7	
J1	Coaxial DC power supply connector 2.1 mm	
J2	Lantronix Xport EDGE	XPE200100B
J3	BNC connector 50 ohms, 90 deg.	BNC-125
J7	Female header 2x7	ZL262-14DG
J8	Female header 1x6	ZL262-6SG
J9	LED green	LL-204PGD2L-G5-2B
RE1	Signal relay 5V, DPDT	RS-5-L
SW1	Switch ON-OFF-ON, SP3T	TSSM1032C3
TB1	Terminal block 1x6	TB-2.5-PD
SB1	Soldering bridge (open)	
SB2	Soldering bridge (short)	
P275M	P275 FM Analyzer Module	

D4, D6, D7, D9, Q3, R10, R11, R12, R13, R14, R15 not placed in the P275E+