# S-Meter for FlexRadio (improvised) Manual



## Overview

S-Meter for FlexRadio provides a visual representation of signal strength (S-Meter) in the form of a needle gauge. The application supports custom backgrounds and transparency effects, which can be configured and calibrated to ensure a personalized appearance.

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## Requirements

### System Requirements

- **Compatibility with Windows:** The application is compatible with Windows systems and has been tested only on Windows 11.
- **Compatibility with FlexRadio 6000/8000 Series:** The application supports FlexRadio models from the 6000 and 8000 series. It has only been tested with a FlexRadio 6600.

## Getting Started

### Launching the Application

- **Launching:** Double-click the application icon in the application folder.
- **Startup Sequence:** S-Meter for FlexRadio attempts to automatically detect and connect to your FlexRadio at startup.

**Initial Setup** When starting the application for the first time, you may need to perform calibration and/or configuration to ensure the intended functionality and appearance.

## Main Features

**Needle Movement Modes** The S-Meter application offers two different modes for needle movement:

1. **Exponential Smoothing:** This mode ensures smooth and gradual needle movement by smoothing out abrupt changes.
2. **Fast Attack, Slow Decay:** In this mode, the needle responds quickly to increasing signal strength while it returns more slowly during signal decreases, creating a more dynamic display. **(Not tested, probably broken at this time.)**

**Calibration** To ensure accurate display with custom scales, the S-Meter application can be calibrated. If no calibration file exists, the application will prompt you to perform a calibration. Simply click on the S0 to S9+60 points on the scale. The application will confirm when calibration is complete, and it will then start normally.

**Important:** The application does not support further menu or mouse interactions beyond calibration. Once calibration is complete or a calibration file is present, the application runs without requiring further user interaction.

**Logging** The application can log events and operational parameters to a log file.

## Configuration Options

### Window Settings

- **Borderless Mode:** Removes the window frame for a clean and distraction-free appearance.
- **Always on Top:** Keeps the application window always above other windows.
- **Click-Through Mode:** Makes the window click-through, so it does not block interactions with other applications.

### Display Settings

- **Needle Color:** Customize the color of the needle to suit your preferences.
- **Background Image:** The application supports custom background images in PNG format with transparency. The resolution of the image is automatically recognized and it is believed to support full 4K resolution. To use a custom background, simply rename the appropriate image file to `smeter.png`.
- **Needle Length and Position:** Specify how the needle should respond to changes in signal strength.

### Connection Settings

- **FlexRadio Connection:** The application automatically detects and connects to your FlexRadio upon startup. No configuration is required or possible.

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## Using the Application

**Interacting with the User Interface** The application offers no menu or mouse interactions except when calibration is required. If the `calibration.txt` file is not present, you will be prompted to perform the calibration by clicking on the corresponding points on the scale. After that, the application no longer responds to mouse interactions.

### Calibrating the Needle

1. **Calibration:**
   o Follow the on-screen instructions and click sequentially on the S0-S9+60 points.
   o The calibration is saved automatically.
2. **Loading Calibration:**
   o The calibration is loaded automatically on application start.

### Customizing the Display

- Save the background/scale image as `smeter.png` in the same folder as `smeter.exe`.
- Delete `config.ini` and `calibration.txt`.
- Start the application.
- Calibrate your scale by clicking sequentially on the S0 to S9+60 points.
- Move the application to the intended place on your monitor.
- Close the application.

- Edit the `config.ini` file to your needs.
- Depending on your scale (if it does not fit the default needle settings well), you might need to delete the calibration file and recalibrate.
- Enjoy!

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## Troubleshooting

- **Connection Issues:** Ensure that your FlexRadio is powered on and properly networked. Check the log file to identify any connection errors.
- **Needle Not Moving:** Verify the calibration settings and ensure that the application is receiving data from FlexRadio.

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## Frequently Asked Questions (FAQ)

1. **How do I reset the application settings?**
   - Delete or rename the `config.ini` file and restart the application.
2. **Can I use the application on multiple monitors?**
   - Yes, just ensure that the window is positioned within the boundaries of the selected monitor.
3. **How do I enable logging?**
   - Enable logging in the `config.ini` file.

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## Installation and Directory Structure

A typical installation folder contains the following files:

- `smeter.exe`: The main application.
- `smeter.png`: The default background image and S-Meter scale.
- `config.ini`: The configuration file. This file is automatically created if it is not present at startup.
- `calibration.txt`: Optional. This file is also automatically created if it does not exist and stores the calibration data.

**Note:** If the configuration file is not present, it will be automatically created and saved when the application is closed. It is not recommended to edit the configuration file while the application is running, as your changes may be overwritten.

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**The configuration file (config.ini) contains the following options:**

```
[Window]
Top=67
Left=8303

[Settings]
TimerInterval=10              ; Internal time for meter updates (change this
value only if you know what you are doing)
NeedleLength=220              ; Sets the length of the needle in pixels - from
the pivot point to the desired scale position
ImageBottomOffset=-50         ; Vertical position of the needle pivot point
relative to the bottom of the application. Can be offset out of the field
of view if needed
NeedleThickness=2             ; Sets the thickness of the needle - depending
on your design
BackgroundImageFileName=smeter.png ; Filename of the background image/scale
NeedleColor=#FF0000           ; Color of the needle - depending on your design
(default: red)
NeedleMovementMode=ExponentialSmoothing ; The only available needle
movement mode
EnableLogging=0               ; Enable application logging (set to 1 to
enable)
Borderless=1                  ; Borderless mode. The application cannot be
moved in borderless mode. (set to 1 to enable)
AlwaysOnTop=1                 ; Keeps the application always on top (set to 1
to enable)
ClickThrough=1                ; Makes the application transparent to mouse
interactions (set to 1 to enable)
```

**Application Location** The application will launch at the last position where it was closed.

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## Support / Liability

**I provide absolutely no support for this application. By starting/using it, you accept that it is not a finished product, is not for sale, and may or may not cause harm to your hardware and/or software.**