



ATTENTION:

The Dish Pointing information herein is ONLY a starting point. You MUST optimize dish position to get error-free data.

OPERATION AND
INSTALLATION INFORMATION

WX-13
Receiving System for
EMWIN Weather Data
via GOES Satellite



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(We hope you won't have to worry with this)

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MAW12INT.SAM



READ THIS FIRST!

(Then keep for future FAQ reference)

The active software suppliers are steadily updating their product (WeatherNode is freeware and no longer supported). The software copies on your CD might be updated even by the time you receive it. Go to their sites periodically for downloadable upgrades. Sites are:

- RealEmwin: www.skywatch.org
- Digital Atmosphere: www.weathergraphics.com
- Global Tracks www.gtracks.com

The splitter/terminator that is furnished serves as an attenuator to prevent your receiver from making data errors due to signal overload. It **MUST** be used on cable runs less than 125' long. Even with the splitter installed, do not use less than 75' of cable.

MINIMUM QUALITY cable is RG-6 (furnished). We have a notebook of goofy problems that have occurred from RG-59. Just don't use it.

If, after a data outage (such as an eclipse period), your system doesn't resume receiving data (unless you shut down RealEMWIN and restart), go to "ingest-backup.txt" in your RealEmwin directory and edit it to read as follows:

```
#Enabled (0 = No, 1 = Yes)
1
#Backup Port Number (WHATEVER YOU USE AS YOUR CURRENT EMWIN COM PORT)
1
#Recheck primary port if backup is activated (in minutes, 0 = Manual Only)
1
```

This will have it close and reopen the com port until it starts getting data again.

readfirst.sam



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Tech Note

WEFAX INFORMATION FOR ZEPHYRUS WX-12/13 USERS

This information is supplied for "information only." Zephyrus is not in the software business and has no relationship with, or supports any of the following:

The WX-12 receiver is designed primarily for reception of 9600 baud EMWIN data. The EMWIN and WEFAX data streams are transmitted side-by-side on GOES 8 and GOES 10 satellites at approximately 1690 MHz. As an additional feature the WX-12/13 demodulates the WEFAX carrier to modem-tone format and makes it available for use with external facsimile decoders.

A simple way to receive the WEFAX information is to connect the WEFAX output from the WX 12/13 to the LINE input of a computer sound card such as a Sound-Blaster. Software is available on the internet in both free and trial versions.

An excellent free example is available on-line in several languages at:

http://www.hffax.de/WX_Satellite/WXSat/hauptteil_wxsat.html

If you need to select sampling rate and sound quality on your sound card, use a sampling rate of 11.025kHz, 8 bits, mono, telephone voice quality. Load and start the program WXSAT.EXE in Windows. To get started, select Parameters - Decoding. On the displayed screen, select Meteosat, change from (AM+PLL+Coh.Det.) to (AM+PLL) click S-N to make it say N-S. Click OK.

Select Recording - Start a Subcarrier and click on No Output File. Your images should start to come in. Other settings permit recording and recovery of incoming images etc. --Experiment around and enjoy.

Other sites have programs and want to be paid for permanent use. These tend to come and go and may be found with typical internet searches for "wefax software".

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Setting up and running your WX-13 system

Dish assembly -- Check appropriate information for your particular dish --

LNF (Low Noise Feed) mounting

The Low Noise Feed is clamped with the LNF inserted full into the mounting bracket. It is mounted with connectors **UP**. Refer to the Dish Aiming chart for Polarity at your location. Pretend the front of the dish is the face of a clock. Rotate the feedhorn so the connector is at the proper "clock" position for correct polarity. Tighten the feedhorn with the clamp screws. The plastic feedhorn cap is to keep varmints out. Be sure it has small holes on the bottom to prevent moisture buildup.

Connect the LNF connector to the 75 foot RG-6 cable furnished. Dress the cable to the upper LNF mounting bracket arm. It's a good idea to encase the connector on the feedhorn with a silicone putty such as Coax-Seal to prevent long-term corrosion from moisture entering the connector. Connect the LNF output to the WX-13 receiver with the 75 foot cable supplied. Connect the cable to the INPUT of the splitter furnished. One output of the splitter is terminated with the terminator supplied. Connect the other splitter output to the WX-13 receiver with the short RG-6 cable. If a longer run is required, use a 100% shield RG-6 cable such as Belden 9114. If the run is over 125', remove the splitter and connect directly to the WX-13. If your cable run is over 250 feet and data errors are observed, a line amplifier may be required.

Dish aiming

Refer to the Dish Aiming chart to determine the azimuth and elevation settings for your location. If you are mounting the dish ring on a **level** surface, adjust the rear support leg for the length shown on the DISH chart. Apply power to your receiver. Aim the dish horizontally in the direction of the Azimuth (degrees clockwise off **true** north). *Be sure your dish has a clear shot of the sky in the "look" direction.* If these settings are correct, your receiver "loss-of-signal" light should be out. If it's on, sweep slowly till it goes out, then peak the alignment tone for highest pitch as described on the following pages.

-VITAL- YOU MUST DO THE FOLLOWING-

Once the satellite is located, set the SPEAKER switch on the rear of the WX-13 to TONE and locate the center of the satellite boresight by slowly moving the dish in vertical and horizontal directions for the highest pitch tone (tone pitch may be adjusted on the rear panel for best audibility).

Important: *The system will function over a wide arc of dish pointing. The dish must be peaked.*

Operation of your system

The WX-13 may be powered either with the "wall" power supply furnished or a 24 volt DC source that is capable of furnishing 500 ma.

Set up your computer using instructions that come with your WeatherNode software.

Connect the RS-232 output of the WX-13 to a serial (COM) port on your computer.

If you are using the WEFAX signal, connect it to the LINE input of a Sound Blaster compatible input on your computer. Use a cable with mini-mono audio plugs.



3' dish LNF Mounting Detail

Front panel indicator lamps

There are four lamps on the front panel of the WX-13 receiver. From left to right they are:

PWR Self-explanatory

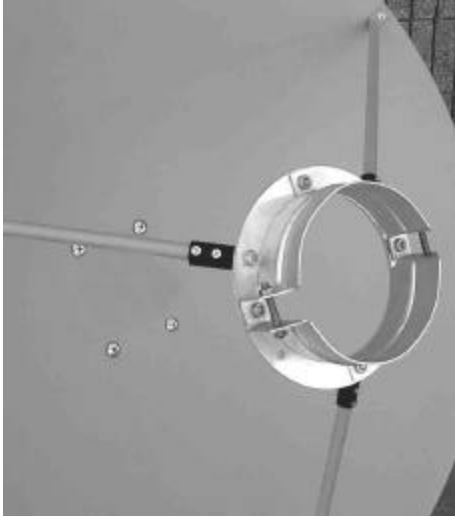
LNA SHORT

Indicates a short-circuit in the cable run to the LNA and that an electronic "crowbar" circuit has shut down power to the LNA cable. Disconnect power to the WX-13. Locate and repair the short before restoring power.

SIG LOSS This provides an "alarm" function that the system is not receiving a signal. It is also used for COARSE dish alignment as described earlier.

DATA Indicates that a data stream is being transmitted.

Assembly details of Three point mounting 3' dish



Mounting Ring Assembly



Universal Mount



Feedhorn Mounting Detail



Non-Penetrating Mount

Dish Optimization Procedure

WX-12 & 13 EMWIN Receivers

After assembling your satellite dish, you will need to acquire the EMWIN signal from GOES-8 or 10 and optimize the signal strength. **Follow these procedures to obtain error-free data.**

There are three factors to be considered when aligning a satellite dish for reception, and should be accomplished before attempting to optimize signal strength:

1. AZIMUTH

Refer to the dish-aiming chart to determine the azimuth settings. Use the chart as a reference to your location, and “split the difference” relative to those listed. A compass is a handy tool at this point. Aim the dish in the direction of the azimuth (degrees clockwise from **true** north). *Be sure your dish has a clear shot of the sky in that direction.* If this setting is correct, your receiver signal loss light should be out. If it’s on, check the elevation and polarity, then sweep s-l-o-w-l-y until it goes out. Remember that these settings are *approximates* and only by optimizing your system with the procedures listed will you be able to have error-free data.

2. ELEVATION

Refer to the dish-aiming chart to determine the elevation settings. A protractor is a handy tool at this point. If this setting is correct, your receiver signal loss light should be out. If it’s on, check the azimuth and polarity. Remember that these settings are *approximates* and only by optimizing your system with the procedures listed will you be able to have error-free data.

3. POLARITY

Refer to the dish-aiming chart to determine the polarity settings. The LNF feed horn assembly has a LNA down converter attached to it. When first placing the LNF feed horn assembly, you will be facing the front of the dish. Using the F-connector on the LNA as a reference to a clock’s hour hand, make your polarity settings from the dish-aiming chart.

The enclosed splitter with the attached 75-ohm terminator is necessary for the 75-foot run of RG-6 coaxial cable supplied with the unit. Install this assembly as close to the receiver as allowable. Cable runs up to 250 feet can be accomplished without line amplifiers, and do not need the splitter.

The WX-12 has a tone pitch dish optimizer. Set the tone pitch of the WX-12 dish optimizer, and adjust each of the three alignment factors for the maximum pitch between the points where the tone drops off or decreases in pitch. Be sure to turn the tone pitch **off** after optimizing signal strength, as it will interfere with data quality.

The WX-13 has a signal strength meter on the front panel in addition to the tone pitch dish optimizer that is very useful in noisy environments. These setup procedures should be accomplished *after* finding an approximate azimuth, elevation and polarity.

- First, set the tone pitch control on the back panel to mid-range, approximately half way between its maximum and minimum endpoints.
- Second, set the meter select switch above the heat sink on the back panel to **PEAK DISH**
- Adjust the **CENTER METER** control above the heat sink until the meter pointer is where you can easily see it change to indicate peak signal strength, usually around mid-range.
- Peak the dish by adjusting the azimuth, elevation and polarity for maximum signal strength as indicated by the meter.
- Re-center the meter, and then set the meter select switch to **MONITOR**. An indication somewhat less than full scale will allow you to observe fluctuations in signal strength.

Dish Optimization Procedure WX-12 & 13 EMWIN Receivers

**Approximate Dish Aiming for GOES Satellites
GOES 8 is at 75° Longitude and GOES 10 is at 135°**

Location	Goes 8 Elevation	Goes 8 Azimuth	Polarity		Goes 10 Elevation	Goes 10 Azimuth	Polarity
Washington State	20°	126°	1:00		34°	194°	11:30
Oregon	23°	126°	1:00		38°	198°	11:30
San Francisco	25°	120°	1:30		45°	198°	11:30
Los Angeles	30°	122°	1:30		47°	205°	11:15
Utah	31°	132°	1:30		39°	211°	11:15
Arizona	28°	118°	1:15		45°	215°	11:00
Minnesota	34°	156°	12:30		25°	228°	11:00
Kansas City	39°	147°	1:00		32°	228°	10:45
Dallas	46°	146°	1:00		35°	234°	10:30
Corpus Christi	49°	139°	1:15		40°	236°	10:30
Chicago	40°	162°	12:30		24°	236°	10:45
Nashville	47°	162°	12:30		26°	240°	10:30
New Orleans	52°	154°	12:45		32°	242°	10:45
New Hampshire	39°	186°	12:00		12°	249°	10:30
New York City	43°	183°	12:00		15°	249°	10:30
Washington	45°	180°	12:00		17°	248°	10:30
Orlando	57°	169°	12:15		25°	250°	10:00
Florida Keys	60°	170°	12:15		25°	252°	10:00
Massachusetts	65°	183°	12:00				

FEEDHORN MOUNTING ON 6 FOOT MESH DISH FOR GOES EMWIN AND WEFAX RECEPTION

Use the supplied hardware to bolt the four arms from the dish to the LNF (low noise feed) mounting collar and plastic base plate of the weather cover "bullet."

Insert the LNF as shown with the Low-noise amplifier assembly **ON TOP**. Refer to the dish aiming instruction page for the proper rotation position of the LNF at your location.

Dress the RG-6 cable up the lower arm and inside the plastic base plate ring as shown. Be sure the cable F connector is snug. Mold a silicone base clay sealer such as "Coax-Seal" around the entire F connector down onto the cable.

Align the dish with the satellite per the instructions with your WX series receiver.

