BROADCAST tools INC

Installation and Operation Manual

WVRC-8

Eight Channel WEB and Voice Dial-Up Remote Control System

WVRC-8 Network Agent Version 3.01 and PIC firmware Version 1.38 or above. PCB Rev F and above.
Manual Update: 08/13/2009

CAUTION! The following information pertains to the above version(s) of firmware. If your unit is not loaded with this version of firmware, please contact Broadcast Tools for an upgrade.

Due to the dynamic nature of product design, the information contained in this document is subject to change without notice. Broadcast Tools, Inc., assumes no responsibility for errors and/or omissions contained in this document. Revisions of this information or new editions may be issued to incorporate such changes.

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Table of Contents

Section Title	Page #
Introduction	4
Safety Information	4
Who to Contact for Help	4
Product Overview	5
Inspection	6
Additional Features	6
Installation	7
Connecting to Other Equipment	10
Status Inputs	10
Raise/Lower Relays	11
Alarm Relay	11
Power Failure Input	11
Silence Sensor Input	11
Telco Send Audio Input	11
Telco Caller Audio Output	12
TEMPerature Probe Input	12
Front Panel Mic	12
BT-Link RJ45 Connectors	12
POTS Telephone Line RJ11	12
PGM, RJ11, TT Phone	12
PGM, RS232, DB9 Connector	12
Network Connector	12
Power Connector	12
Dial-up Programming	13
Installing Factory Defaults	13
Telnet Dialup setup	14
Programming via LAN/WAN	14
Dial Out Numbers	14
Dial Out List	15
Settings	16
Access Code	16
Lap	16
Repeat	16
Silence Sensor	16
Power Fail	16
HU	17
Monitor Access Code	17
Analog Debounce Timer	17
Pager Numbers and Data Strings	17
Analog (metering) Setup	18
Recording Voice Prompts	20

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Table of Contents – cont'd

Configure DIP Switch Settings 22
Dial-up Operation 23
Web and Dial-Up Notice 25
Web Setup 25
Ethernet Setup 25
Firmware 28
Java Applet 28
Main Screen 28
Login Dialog 29
User Setup Dialog 30
System Setup Dialog 31
Network Setup Dialog 32
Schedule Setup Dialog 33
Schedule Detail Dialog 33
Analog (metering) Setup Dialog 36
Status/Relay Setup Dialog 37
Virtual Channel Setup Dialog 38
About Dialog 38

Specifications 39
Declaration of Conformity 40
Warranty 41

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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® WVRC-8, Eight Channel WEB and Voice Dial-up Remote Control System (referred to as the WVRC-8 throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools® WVRC-8.

SAFETY INFORMATION

Only qualified personnel should install Broadcast Tools® products. Incorrect or inappropriate use and/or installation could result in a hazardous condition.

Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

Only qualified technical personnel should install the WVRC-8. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel, and/or damage to the WVRC-8 or other equipment. Broadcast transmitters can operate at voltages that are potentially lethal. Please ensure that proper safety precautions have been made before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the WVRC-8.

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure. Serious injury or death can occur if a command channel is activated while you are performing maintenance on your equipment. If you are performing maintenance on your equipment, you should press the "PGM" button on the front panel of your WVRC-8 forcing the unit in to local mode. The "PGM" LED will illuminate. Local mode prevents the unit from performing relay commands.

For additional safety, it is strongly recommended that, in addition to setting the WVRC-8 in to OP/PGM mode, the remote/local switch on any transmitter or high voltage equipment also be set to local mode.

While the WVRC-8's relays are physically capable of handling 250 VAC, this practice is extremely dangerous and should never be attempted. The pluggable euroblock screw terminals are not designed to shield humans from potentially dangerous voltages. Contact with high voltages can cause serious injury or death. The maximum recommended voltage for the WVRC-8 is 30V. Switching of high voltages should only be done external from the WVRC-8 and in a manner that isolates the voltages from accidental contact with humans.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment.

If you would like more information about Broadcast Tools® products, you may reach us at:

Broadcast Tools, Inc.
131 State Street
Sedro-Woolley, WA 98284-1540 USA
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Fax: 866.783.1742

Internet Home Page: www.broadcasttools.com
E-mail: support@broadcasttools.com

THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!

CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

NOTE:

This manual should be read thoroughly before installation and operation.

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Product Overview

The WVRC-8 provides a cost-effective, one rack-unit solution for web based and/or recordable voice response dial-up transmitter site control. The WVRC-8 was designed from a users point of view, so all of the basic functionality you need is included to control your site equipment, while including the accessories other manufacturers consider optional. Each analog (metering), status, silence sensor and power failure input could be configured to email up to four individual email addresses, allowing different input alarms to be routed to different email recipients.

The WVRC-8 is equipped with a browser based 100-event program scheduler for relay control and alarm muting, along with an 8192-event alarm logger. The user can also elect a sound effect to play when an out of tolerance alarm is generated. We have also provided SNMP capabilities to allow multiple units to be monitored with any SMNP manager software package. The WVRC-8 is equipped with eight high-resolution analog (metering) channels, while each of the eight optically isolated status channels may be configured for 5 to 24vdc wet (floating) or dry (contact closures) status monitoring. The first four control channels are equipped with independent SPDT one-amp relays, while relays five through eight are equipped with SPST relays for each raise/on and lower/off function.

The WVRC-8 is supplied with spoken words and phases in English, while the user is free to record words and phases in their language. In addition, the WVRC-8 may be programmed for dial-up operation via HyperTerminal, while the Java applet programming can be performed using your favorite web browser. System expansion may be accomplished by cascading multiple WVRC-8's on the same telephone line and/or Ethernet switch. Future external add-on products may be attached via the BT-Link expansion port.

Additional Features

Plug-in euroblock screw terminals for analog (metering), status, raise/lower alarm relays, stereo silence sensor and balanced caller/send telco audio

SPST alarm relay *

Jack for external power failure power supply*

1/8" T/R/S jack for the supplied Fahrenheit or Celsius temperature sensor*

Stereo Silence Sensor with remote telco monitoring*

Front panel microphone for remote aural site monitoring*

Simple telco hybrid with send and caller balanced audio I/O*

Front panel LED indicators for most operational activities

Front panel local/operate switch with LED indicator

Front/Rear panel RJ-11 telephone jack used for user voice response recording

Front/Rear panel DB-9, RS-232 programming connector

Rear panel RJ-45, 10/100base-T LAN/Ethernet interface

Rear panel dual RJ-45 BT-Link expansion ports

Rear panel RJ-11 telco POTS line jack

Fully RFI proofed

Surge protected power supply

1-RU chassis

120 VAC (optional 240V CE) power supply included

***Independent of the eight analog (telemetry) and status channels.**

Inspection

Please examine your WVRC-8 carefully for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the WVRC-8, this manual and/or CD, 25-foot temperature probe, 7 foot **BLUE straight-through** CAT 5 cable, 7 foot **GRAY crossover** CAT 5 cable, RJ-11 telephone cable, 7-foot DB-9 straight-through serial cable and the 12 **VAC@**1 amp wall transformer.

Surge Protection

The WVRC-8 has built-in resistance to voltage changes, we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and other high surges in voltage levels will damage your WVRC-8 and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

UPS Standby Power System

We recommend that you connect your WVRC-8 to a UPS system. While all operating and user parameters are stored in non-volatile EEPROM, brownout conditions and lightning induced spikes can disable or damage equipment. A UPS helps minimize the risk to the WVRC-8 and has the added benefit that it will then be able to notify you of the power outage by email, phone or pager depending on your system configuration.

CAUTION!

Installation of the WVRC-8 in high RF environments should be performed with care. Shielded cable is suggested for all monitoring and control connections with all shields tied to the station ground terminal. The station ground should be connected to any available rear panel ground terminal or chassis ground screw using an 18 or 20-gauge wire.

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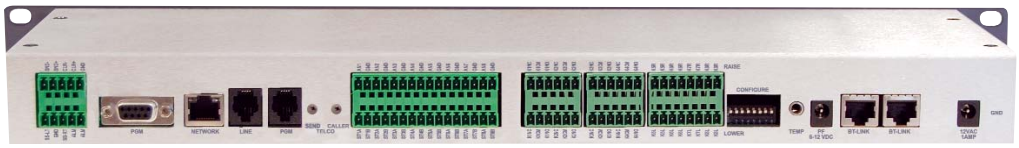
Installation

Front panel indicators, controls and connectors

Name	Type	Description
K1 - K8 Raise	LED	Illuminates when corresponding raise relays are activated.
K1 - K8 Lower	LED	Illuminates when corresponding lower relays are activated.
ST1 - ST8	LED	Illuminates when corresponding status inputs are activated.
TX	LED	Flashes during server/control processor data exchange.
RX	LED	Flashes during server/control processor data exchange.
REC	LED	Illuminated when in voice record mode.
RING	LED	Illuminated when a telco call is being received.
ACCESS	LED	Illuminated when a valid access code is entered.
HOOK	LED	Illuminated when the unit is off-hook.
TONE	LED	Illuminated when a valid DTMF tone is detected.
ALARM	LED	Illuminated when unit is in an alarm condition.
POWER	LED	Illuminated when valid power is applied to the power jack.
PGM	LED	Illuminated when the unit is in programming mode.
SS	LED	Illuminated when adequate audio is applied to the SS input, OFF when the level is to low and flashing if in an SS alarm condition, if enabled.
PF	LED	Illuminated when adequate DC voltage is applied to the PF jack, OFF with no power applied and flashing if a Power Failure has been detected, if enabled.
PGM	Push Button	Toggles between operate and programming (local) mode.

Name	Type	Description
SS Mon	Control	Sets the silence sensor audio sent to the phone line, when enabled.
SS Sense	Control	Sets the audio trip point of the silence sensor.
Microphone	Peep hole	Used to monitor site audio when enabled.
PGM	RJ11	Voice record TT phone port, user provided TT telephone.
PGM	Fem DB-9	RS-232 host PC programming port.



Rear panel connections, controls and switches.

Name	Type	Description
SND-/+	Connector	Balanced send (to telco) audio input (TOP).
CLR -/+	Connector	Balanced caller (from telco) audio output (TOP).
GND		Connector Audio ground.
SS-LT/SS-RT	Connector	Unbalanced silence sensor audio input (BOTTOM).
GND		Connector Audio ground (BOTTOM).
ALM/ALM	Connector	Normally open dry alarm relay contacts (BOTTOM).
PGM		Fem DB-9 RS-232 host PC programming port.
NETWORK	RJ45	ETHERNET port 10/100baseT, LAN/WAN.
LINE	RJ11	Connects to telephone line.
PGM	RJ11	Voice record TT phone port, user provided TT telephone.
SEND	Control	Sets the audio level sent to the phone line.
CALLER	Control	Sets the telco caller level.
AN 1 – 8	Connector	Analog (metering) inputs one thru eight (TOP).
AN GND	Connector	Analog (metering) ground reference terminals (TOP).

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Name	Type	Description
ST1A - 8A	Connector	Status opto-isolators. When configured for DRY (factory default) this terminal is ground. When configured for WET (floating), this terminal is the anode via a 2.2K ohm current limiting resistor. (BOTTOM)
ST1B - 8B	Connector	Status opto-isolators. This terminal is always the cathode (BOTTOM)
K1NC - K4NC	Connector	Normally closed, dry relay contacts. Raise function (TOP)
K1CM - K4CM	Connector	Common (wiper), dry relay contact. Raise function (TOP)
K1NO - K4NO	Connector	Normally open, dry relay contact. Raise function (TOP)
K5R - K8R	Connector	Normally open, dry relay contact. Raise function (TOP)
K5R - K8R	Connector	Common (wiper), dry relay contact. Raise function (TOP)
K1NC - K4NC	Connector	Normally closed, dry relay contact. Lower function (BOT)
K1CM - K4CM	Connector	Common (wiper), dry relay contact. Lower function (BOT)
K1NO - K4NO	Connector	Normally open, dry relay contact. Lower function (BOT)
K5L - K8L	Connector	Normally open, dry relay contact. Lower function (BOT)
K5L - K8L	Connector	Common (wiper), dry relay contact. Lower function (BOT)
CONFIGURE	Dipswitch	Used to configure the unit. Refer to table of contents.
TEMP	3.5mm Jack	Temperature probe input jack. T/R/S.
PF	2.1mm Jack	Power Failure power jack (optically-isolated). 6 - 12 VDC,center positive.
BT-LINK	Dual RJ45's	RJ45, used for future system expansion.
12VAC	2.1mm Jack	System power supply input. 12 volts AC.
GND	# 6 screw	System ground screw. Tie to station ground system.

Connecting your WVRC-8 to other equipment

Analog (metering) inputs

CAUTION! Analog input (metering) samples may be elevated several hundred volts above ground on some external equipment. Permanent damage may occur to the WVRC-8 and/or external equipment if a high voltage metering source is connected to the WVRC-8! Failure to observe this warning may also cause injury to the installer or other personnel.

CAUTION! DO NOT CONNECT SAMPLE VOLTAGES IN EXCESS OF 10 VDC OR DAMAGE MAY OCCUR TO YOUR WVRC-8.

CAUTION! Floating Grounds

Except for all status (wet) inputs, none of the WVRC-8's metering inputs will accept a floating ground. Damage to the WVRC-8 or your equipment may result from connecting a floating ground output to the WVRC-8. If you require metering inputs with equipment that has a floating ground, an isolation amplifier must be used.

Eight analog (metering) channels are connected to the WVRC-8 via depluggable euro-block screw terminals. Connect the positive side of the source to the desired channel terminal labeled ANx (where x is the channel number 1 through 8) and associated GND (ground) terminal. Each analog (metering) input can handle up to (positive only) 10 volts DC and must be ground referenced. Connect your metering ground to the associated ground terminal. Inputs are self-calibrating and are based on an internal A/D converter with a precision, low-drift voltage reference, so the reading should not drift over time or with temperature. Metering setup is performed by connecting the sample voltage to the analog (metering) input, then programming the WVRC-8 for the desired value (reading).

Status Inputs

Each optically isolated status inputs can be configured to accept either a contact closure (dry = default) or a (floating, wet). Attach your dry contacts to the desired status channels StxA and STxB (where x is the status input) terminals.

Each input is equipped with a four-position header. JP4 supports the first four status inputs, while JP5 supports input five through eight. Each input is labeled IN-x (where x is the status input) and the header pins are labeled 1,2,3,4. The factory default is a DRY input (switch, relay contact) with jumpers between 1 & 2 and 3 & 4. In the dry configuration, the "A" terminal is ground while the "B" terminal is the cathode of the opto diode (pulled up to 5 volts through a 2.2K resistor).

To change the status input to (floating) WET (user supplied voltage between 5 and 24vdc), remove both jumpers and place ONE jumper over pins 2 & 3. Connect the positive voltage to terminal "A" (anode) and ground or minus voltage to terminal "B"(cathode). ! NOTE: Please observe proper polarity.

Raise/Lower Relays

NOTE: PCB Rev F and above.
Raise and lower relays K1 through K4 are supplied with SPDT dry contacts. Equipment to be controlled should be connected to the terminals labeled KxNC, KxCM and KxNO (where x is the channel number). Raise relays are on the TOP, while the lower relays are on the BOTTOM. Raise and lower relays K5 through K8 are supplied with normally open dry contacts. Equipment to be controlled should be connected to the lower terminals labeled KxL and KxL (where x is the channel number), while KxR and KxR (where x is the channel number) for raise relays five through eight. Raise relays are on the TOP, while the lower relays are on the BOTTOM. If mechanical relays are required, we suggest the Broadcast Tools LR-5-POLE mechanical latching relay.

Alarm Relay

The SPST normally open dry contact alarm relay is labeled "ALM" / "ALM". This relay follows the front panel "ALM" LED indicator.

Power Failure Input

Connect a user supplied 6 to 12 volts DC only power source (center positive) to the power failure input labeled PF. The barrel connector size is 2.1mm ID x 5.5mm OD. An inexpensive 6 to 12 volts DC wall transformer of any current of 50ma or more will work. ! NOTE: The primary (120vac) of the wall transformer should be connected to the utility company side of your service. An UPS is suggested to power the WVRC-8 during power outages.

Silence Sensor Inputs

Connect your unbalanced monaural or stereo audio source to the terminals labeled SS-LT, SS-RT and GND. The level should be between –10 and +8 dbu. The input impedance is approximately 10K ohms. When the SS is activated, you can adjust the SS Sense trimmer for an illuminated front panel SS led. If the SS led is out, the signal is low and if it's flashing, it in an alarm condition (if enabled). The silence sensor signal can only be aurally monitored in dialup mode. The front panel SS Mon trimmer should be adjusted for a comfortable level at the caller end.

Telco Send Audio Input

Connect your balanced or unbalanced monaural source equipment to the input labeled "SND-", "SND+" and GND. The level should be between –10 and +8 dbu. The input impedance is approximately 10K ohms. When activated, the rear panel (telco) SEND trimmer should be adjusted for a comfortable level at the caller end.

NOTE: *If the SS MON or Send telco level is too high, the unit may have trouble detecting DTMF tones. NOTE: The DTMF guard time jumper JP3 is factory set to the "MED" position for enhanced tone detection. In some applications, your may need to move this jumper.*

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Telco Caller Audio Output

Connect your input equipment to the balanced (CALLER) output. The output terminals are labeled **"CLR –"/"CLR +"** and **GND.** The level may be adjusted on the rear panel trimmer labeled (telco) **CALLER**. For unbalanced loads, use the "**+**" and GND terminals only. **Do not connect the "- or +" terminal to ground.**

TEMPerature Probe Input

Insert the temperature probes (25 foot cable) mini (3.5mm) plug in to the rear panel jack **labeled "TEMP" (-40°F to +190°F (-40°C to +85°C).**

NOTE: *Please limit the total length of cable to 50 feet. Please contact the factory for the proper extension cable. The Probe should only be installed or removed with the power supply disconnected from the WVRC-8.*

Front Panel Microphone

No setup is needed. The microphone pre-amp is equipped with an AGC circuit providing acceptable site monitoring levels (dial-up mode only).

BT-Link RJ-45 Connectors

Future product expansion.

POTS Telephone Line RJ11

Connect one end of the supplied RJ11 modular cable to the rear panel RJ11 jack labeled **"LINE"** and the other end to the telephone line.

NOTE: *Some "cell phone services" severely distort DTMF control tones resulting in unreliable control. If you plan on using the cellular system for your POTS connection, you may have to experiment with various service providers to get reliable control. With some cellular phone services, you may need to change the DTMF guard time jumper* ***JP3*** *to the* ***"FAST"*** *position.*

We recommend using the following products from Telular "Phonecell® SX5D or SX7" system (www.telular.com/).

PGM, RJ11, TT phone

Connect the modular cord of the user supplied TT telephone to the rear or front panel RJ11 jack labeled **"PGM"**

PGM, RS-232 female DB-9 connector

Connect one end of the supplied male/female straight-thru serial cable to this connector and the female end to a user provided PC (this may not be needed if the user elects to program the dial-up portion via telnet (INTERNET).

NETWORK connector

Connect one end of the supplied CAT5 (straight or xover) cable to desired ETHERNET (WAN/LAN) port.

POWER connector (12VAC)

Connect the supplied 12VAC power supply cord in to the WVRC-8's power jack labeled "12VAC 1 AMP", then plug the transformer in to a source of 120vac 60Hz. Verify that the front panel green power led is illuminated.

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Dial-Up Programming

Follow the steps below to configure the WVRC-8 for dial-up operation.

Installing factory defaults.

Remove power from the unit. Hold down the "PGM" button down while reinstalling the power plug. The "PGM" button must be held down for a few seconds after the power is restored. When the PGM button is released, the PGM LED will blink twice to show that the defaults were loaded.

CAUTION! If you reinstall factory defaults, the standard factory recorded voice prompts are not reloaded. The user MUST re-record the voice prompts.

NOTE: The dial-up programming may be accomplished locally using the RS-232 serial port or via the web using Telnet.

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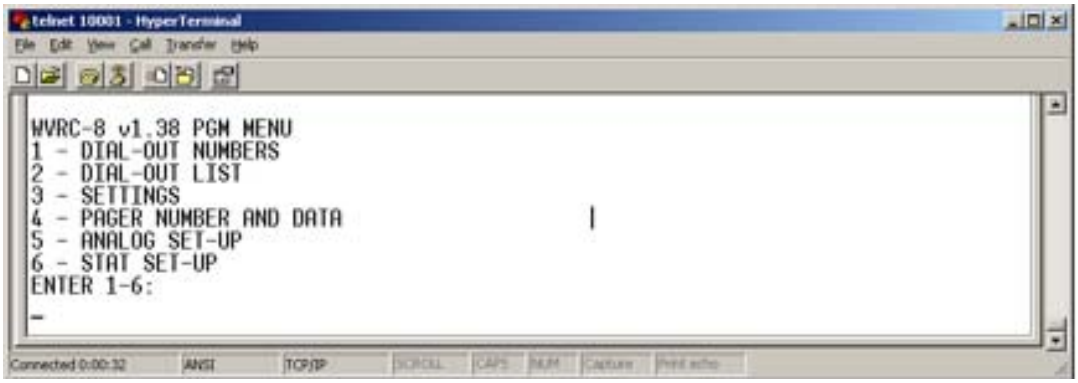
Local "DIAL-UP" programming via the front/rear panel RS-232 "PGM" port.

1 - Connect the supplied straight-through serial cable to an available com port on your PC (If the PC isn't equipped with a serial (com) port, contact your local PC store or Broadcast Tools for a USB to RS-232 serial adapter) and connect the other end to the front or rear panel "PGM" DB-9 female serial connector.

2 - Start HyperTerminal (or your favorite com program) configured for: **9600,8,N, 1**, flow control to **NONE**, Emulation set to **ANSI** and under **ASCII setup**, check the box **"echo typed characters locally".**

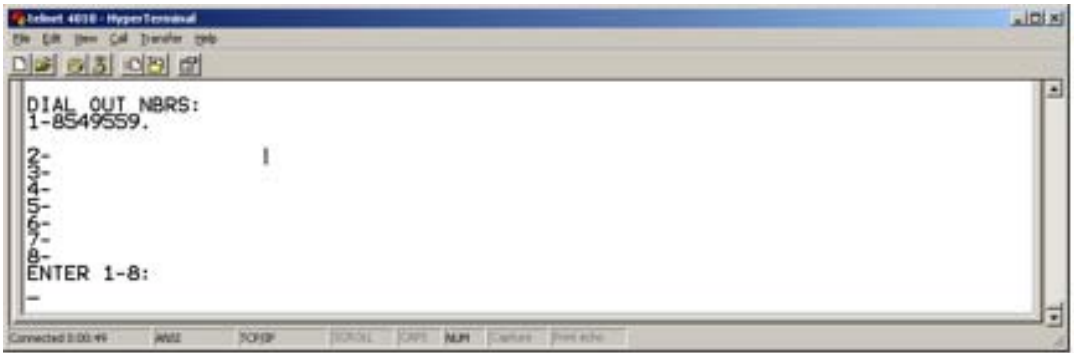
NOTE: *Step by step "COM" port HyperTerminal setup instructions are available on-line at www.broadcasttools.com under "Downloads".*

3 - Press the front panel "PGM" button. The front panel "PGM" LED will illuminate, while the program menu on the next page will be displayed:



Dial Out Numbers:

When (1) is selected from the PGM Menu, the Dial-Out number list will be displayed.

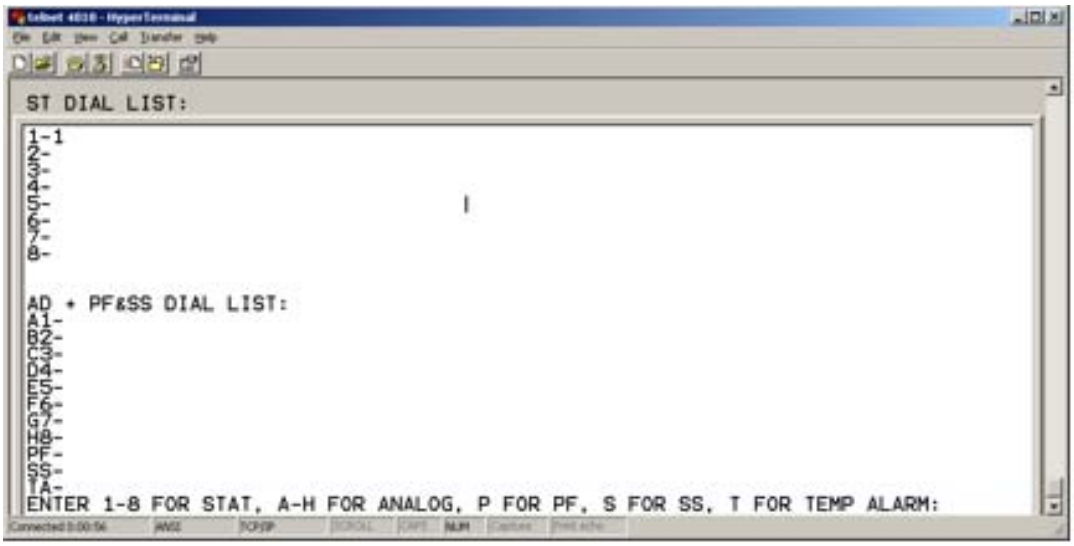


These are the numbers that will be dialed when alarms are generated. The dial-out list will select numbers from this pool to call out during an alarm condition. Up to 32 digits can be used in each number along with a comma **(,)** for one second and a semi-colon **(;)** for 5 second pauses.

Example: The first dial out number is 8549559. This number will be dialed when a 1 is inserted in any of the dial list items.

Dial-Out List:

When (2) is selected from the PGM menu, the Dial-Out List is displayed.



Select the Dial-Out List item you wish to program. Press escape (ESC) to jump back to the previous menu selection, and if pressed from the main menu, the program will be exited.

This is the list of dial-out items that will be used for dialing out alarms. 1à 8 are used for status inputs one through eight, AàH are used for analog (metering) inputs one through eight, P for Power Fail, S for Silence Sensor and T for Temp alarm. The numbers after the analog (metering) letter selection shows which analog (metering) channel is being selected. Only enter the letter designation to select the analog (metering) dial-out list to program.

Example: Status input 1 has a 1 programmed in to it. When status input 1 changes state, the WVRC-8 will dial the number stored in dial out number location 11, which is referred to as dial out number 1.

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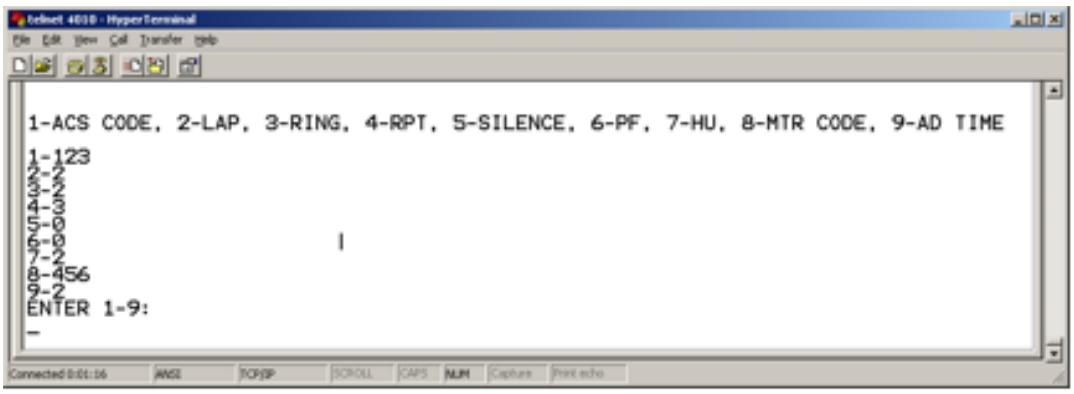
Settings:

When (3) is selected from the PGM menu, the Settings List is displayed.



Make your menu selection and then enter the values. The following are the explanation for each code.

The **"Access Code"** may be changed from the default code of 123, allowing a user all control functions.

"Lap" defines the number of times the WVRC-8 will go through all of the numbers in the call-out list when calling out an alarm if it does not receive an acknowledgement.
! NOTE: *Alarms are acknowledged by pushing the star (*) key when an alarm is called out.*

"Ring" defines the number of rings required before the WVRC-8 answers a call.

"Repeat (voice messages)" is the number of times the voice message will be repeated when the alarm is called out. Since there is no way of knowing when the remote party answers the phone line, the WVRC-8 will start playing the alarm message a few seconds after dialing for the "Repeat" number of times. So when an alarm call is answered, you may pick up the phone in the middle of an announcement or there may be a few seconds of silence before the start of the next message. Once the asterisk (*) is entered to acknowledge the alarm, it will stop playing the message. You can now enter your access code and perform control functions or polling.

"Silence" sensor delay time is programmed with a value of 0-9 with a 0 being off and 1à9 with values as follows: 1 = 10s, 2 = 30s, 3 = 60s, 4 = 1.5m, 5 = 2.0m, 6 = 2.5m, 7 = 3m, 8 = 4.0m and 9 = 5.0m.

"Power Fail" delay time is programmed in 10-second values. For example, 2 = 20 seconds of silence or power failure to generate an alarm, 9 = 90 seconds. If it is "0", the alarm will be turned off and not call out.

The **"HU"** value refers to the number of minutes the WVRC-8 will remain off-hook after answering the call before hanging up automatically. Normally a CPC signal is sent from the Central Office to signal it to hang up. If you are connected to a standard phone line, you can set the HU to 0, and it will remain off-hook until the CPC signal is received. If it is connected on the other side of a PBX system that does not pass the CPC signal, then a value of 1-9 minutes should be set into HU to keep it from remaining off hook and causing the line to be busy. The HU timer will be reset each time a valid DTMF is decoded showing activity. Once there is no more activity, the WVRC-8 will time-out after the HU time value and force a hang-up.

The **"Monitor Access Code"** is an alternate access code that allows a user only to monitor or poll the various inputs. No control functions can be performed unless a valid Control Access code has been entered.

The **"Analog Debounce Timer"** is the number of ten second increments required for the analog (metering) inputs to accept an alarm condition. For example, if it is set to 3, an analog input must be in an alarm condition for 30 seconds before an alarm will be generated.
NOTE: *If set to "0", analog (metering) alarms will be disabled and will not call out during an alarm.*

Pager Numbers and Data Strings:

When (4) is selected from the PGM menu, the pager number and pager data selections are displayed.

To force the WVRC-8 to dial a pager number, enter a "9" in the dial-list. That will cause the WVRC-8 to first dial the number in the page list, and then it will generate two digits to Identify the source of the alarm: 11à18 for **analog (metering)** inputs one through 8, 19 for **temperature**, 20 for **power failure**, 21à28 for **status inputs** one through eight and 29 for a **silence sensor**. After that number, the page data will be sent. This can be used to identify the station or location of the WVRC-8. The comma **(,)** can be used any place in the dialing strings to place a one second pause and the semi-colon **(;)** for a five second pause.

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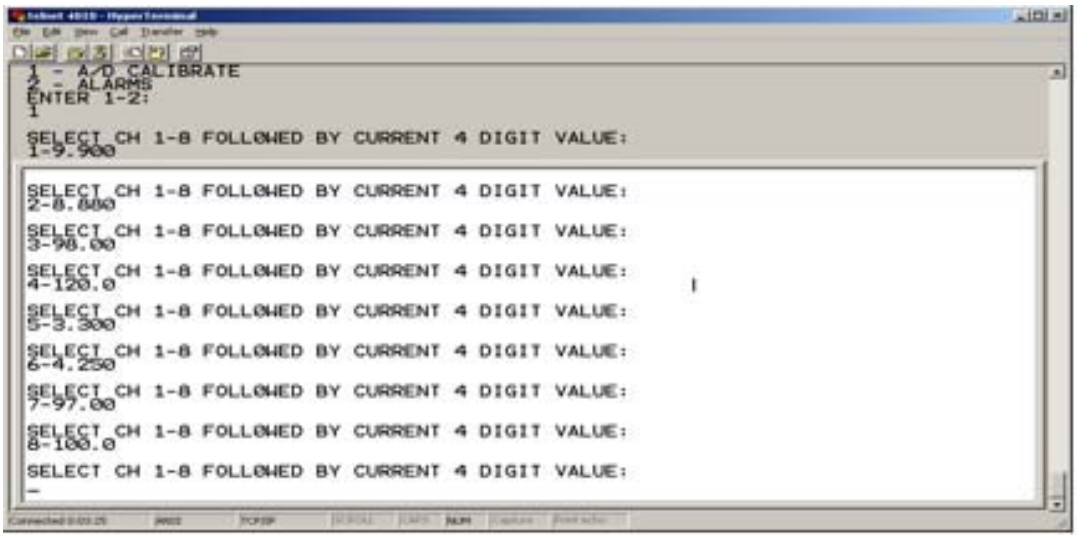
Analog (metering) Setup

When "5" is selected from the PGM Menu, the analog (metering) calibration and alarm selections are displayed.

Select "1" to calibrate any of the analog (metering) inputs for the desired value. Selecting a "1" will produce the following prompt "Select Ch 1-8 followed by the desired 4 digit value". Enter the channel number, then the desired value.
NOTE: *The decimal point may be added and is not considered part of the four digits*

Example: To calibrate analog (metering) channel 1, enter 1, then enter the desired four digit reading.
Example: 75.00 would be seventy-five; 750.0, seven hundred and fifty while 7500 would be seventy five hundred.
NOTE: *The correct value on the analog (metering) input MUST be present for several seconds prior to entering program mode. Once program mode is entered, the analog (metering) inputs are locked and changes made while in program mode will not be read. If there is no signal on the input, an error message will be displayed.*



Enter a "2" from the Analog Set-Up menu to establish alarm set points. Analog (metering) input set points are set up using items 1 - 8, representing analog (metering) inputs one thru eight.

Example: If your reading is normally 7000 V, and you want it to alarm when the voltage drops below 6300 (-10%) or over 7350 (+ 5%), then enter 6300/7350.

Temperature alarm set points are set up in the analog (metering) "Alarms" menu section. Item "9" sets the low and high set points. The entry is a four-digit number with the first digit being the F or C designator. If the first digit is a "0" then the number is assumed to be Fahrenheit. If the first digit is a "1" then Celsius is assumed.

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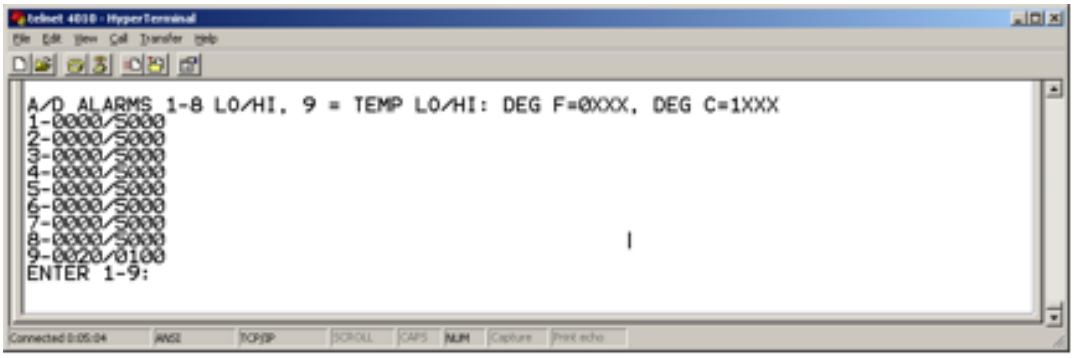
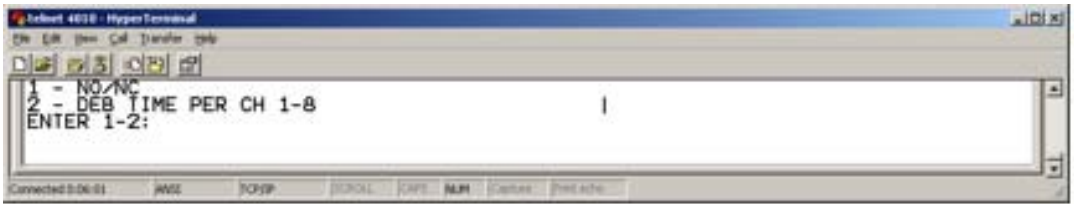
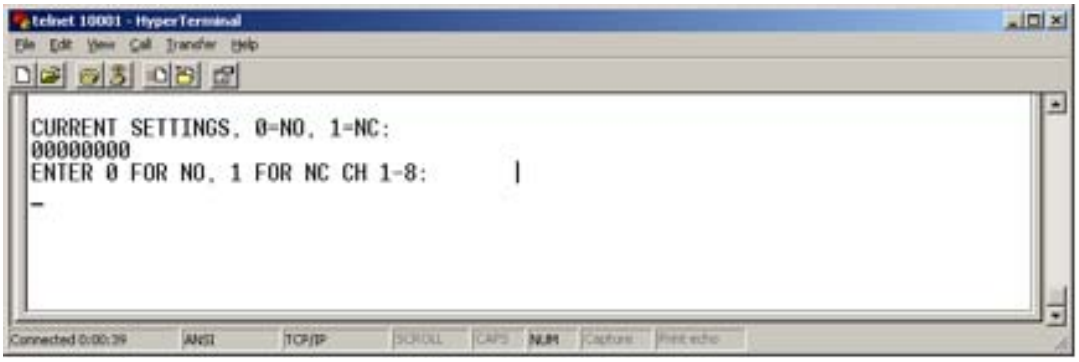
Example: To enter low and high alarm set points of 30F and 95F, enter 0030/0095. To enter low and high alarm set points of 10C and 40C enter 1010/1040. **Do not enter the "/", it will be entered automatically.**



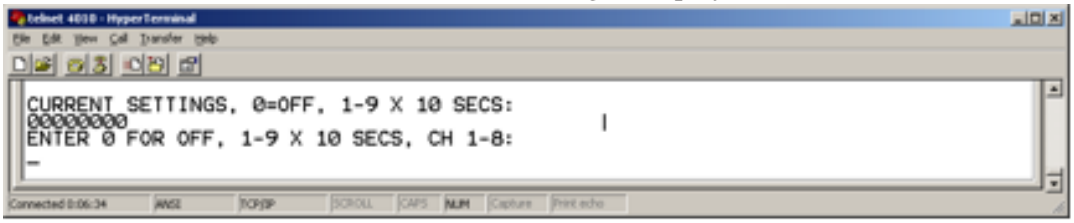
When "6" is selected from the PGM menu, the Status inputs are set up for either Normally Open or Normally Closed and the required **DEB**ounce time needed before generating an alarm.



When 1 is selected from the menu: Make changes or press **ESC**ape to accept current values. If changes are made, all eight values must be entered in sequence.



When 2 is selected from the menu, the following is displayed:



Make changes or press **ESC** to accept current values. If changes are made, all eight values must be entered must be entered in sequence. Valid settings are 0 through 9. A "0" will turn off the status input so that it will not generate an alarm. Entering any number from 1→ 9 will set the "DEBounce" period from 10 to 90 seconds, requiring the input to be in an alarm state for that amount of time before an alarm is generated. Any interruption will cause the timer to reset.

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Recording Voice Messages

The following steps are required to record voice messages into the WVRC-8.

NOTE: *If the time allotted for the message you are recording elapses before the "PGM" button is pressed, it will turn off automatically.*

Example: To record the greeting message, press the "PGM" button, enter 00 on the key-pad, speak the new greeting message, then press the "PGM" button again.

1 - Connect a TT telephone to either the front or rear panel RJ-11 jacks labeled "PGM".

2 - Press the front panel "PGM" button; this should illuminate the front panel "PGM" led.

3 - Enter the two-digit address of the message you wish to program. The list of messages are below.

4 - The red "REC" led will illuminate. As soon as it lights, begin speaking the new message into the telephones mouth piece.

5 - When finished, press the PGM button again, the "REC" and the "PGM" led's will extinguish.

NOTE: *The following above procedures allows changing any of the messages. If you want to listen to a message, without recording, preface the address with the asterisk (*) key.*

Example: To hear the current greeting message, press the "PGM" button and Enter ***00**. The current greeting message will play. Here is a list of the voice messages pre-recorded in the WVRC-8.

Message	Address	Seconds
Greeting	00	10
On	01	2.6
Off	02	2.6
Raise	03	2.6
Lower	04	2.6
Access Accepted	05	5
Silence Alarm	06	5
Power Fail Alarm	07	5
High	08	5
Low	09	5
Status Input 1	11	5
Status Input 2	12	5
Status Input 3	13	5
Status Input 4	14	5
Status Input 5	15	5
Status Input 6	16	5
Status Input 7	17	5
Status Input 8	18	5
Analog Input 1	21	5
Analog Input 2	22	5
Analog Input 3	23	5
Analog Input 4	24	5
Analog Input 5	25	5
Analog Input 6	26	5
Analog Input 7	27	5
Analog input 8	28	5
Engineering Unit 1	31	2.6
Engineering Unit 2	32	2.6
Engineering Unit 3	33	2.6
Engineering Unit 4	34	2.6
Engineering Unit 5	35	2.6
Engineering Unit 6	36	2.6
Engineering Unit 7	37	2.6
Engineering Unit 8	38	2.6
Number 0	40	2.6
Number 1	41	2.6
Number 2	42	2.6
Number 3	43	2.6
Number 4	44	2.6
Number 5	45	2.6
Number 6	46	2.6
Number 7	47	2.6
Number 8	48	2.6
Number 9	49	2.6
Relay 1	51	5
Relay 2	52	5
Relay 3	53	5
Relay 4	54	5

Message	Address	Seconds
Relay 5	55	5
Relay 6	56	5
Relay 7	57	5
Relay 8	58	5
Temperature	60	2.6
Degrees Celsius	61	2.6
Degrees Fahrenheit	62	2.6
Minus	63	2.6
Enabled	64	2.6
Disabled	65	2.6
Point	66	2.6
Temperature Alarm	67	2.6

"CONFIGURE" DIP Switch settings:

NOTE: *The "UP" position is OFF*

DIP 1 - Feature creep.

DIP 2 - OFF = Voice Temperature in Fahrenheit, ON = Celsius.

DIP 3 - If OFF, description messages will be played when controlled via dial-up. If ON, raise and lower description messages will not be played.

DIP 4 - OFF = Xport control, ON = PC control via DB9.

DIP 5 - OFF = Normal operation, ON = DB9 RS-232 to Xport.

DIP 6 - Feature creep
DIP 7 - Feature Creep
DIP 8 - If OFF, input alarms are active. If ON, alarms will not respond.

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Dial Up Operation

When the WVRC-8 is called, it will answer on the number of rings programmed. When it answers, enter the security code, which in this example is the default 123. The access LED will turn on once a valid security code is entered and the "Access Accepted" Message will play. After a valid access code is received, the addressed unit will a generate DTMF "AB" which will cause any other units in parallel to hang up.

Raise and Lower Relays are controlled with single digits 1-8 followed by *** for Lower** or **# for Raise**. Once a single channel number has been entered, you can enter * or # to operate the selected channels raise and lower relays until a new channel number has been entered. The analog (metering) value for the selected channel will play each time a number between 1 and 8 is entered as long as DIP3 is off.

Example: Enter 1 – analog (metering) value 1 will play - * - The number 1 Lower relay will close for as long as "*" is received. # - The raise relay will close for as long as "#" is received. If DIP3 is OFF, the associated relay message plus "raise" or "lower" will be played after the * or # is released. To query the new analog (metering) value, press 1 again to repeat the value.

Audio I/O functions are controlled with the following codes, once the security code has been entered:

01 – Local MIC Monitor ON / Feeds the local mic audio to the phone line.
02 – Local MIC Monitor OFF / Turns off feed.

03 – Telco Caller Audio Output ON / Feeds phone line (CALLER) audio to the (CLR -/+) output terminals.
04 – Telco Caller Audio Output OFF / Turns off feed.

05 – Telco Send audio input ON / Feeds send (SND -/+) audio to the phone line.
06 – Telco Send audio input OFF / Turns off feed.

07 – SS monitor audio to telco ON / Feeds Silence Sensor source audio (SS-LT/SS-RT) to the phone line.
08 – SS monitor audio to telco OFF / Turns off feed.

The status inputs, analog (metering) inputs, silence sensor, temperature and power fail inputs can be polled by entering the following codes.

Polling Silence Sensor Alarm: 910

Polling Status inputs: 911 - polls input 1, 912 - polls input 2 …. 918 polls input 8.

Polling Power Failure: 919

Manual Hang-up: 920 will cause the WVRC-8 to hang up.

Polling Analog (metering) inputs: 921 - polls analog (metering) input 1, 922 - polls analog (metering) input 2 ….. 928 polls analog (metering) input 8

Polling temperature: 929

DTMF Control of Alarm Enable Registers 97, 98 & 99)
All of the alarm call-outs can be enabled, disabled or polled remotely using DTMF control. First enter the access code.

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The status alarms can be controlled by entering 97 followed by the status number 1 through 8 and **1 for enable**, **0 of disable** or **9 for poll**.

The analog (metering) alarms can be controlled by entering 98 followed by the analog number 1 through 8, and **1 for enable**, **0 for disable** or **9 for poll**.

Power fail, silent sensor and temperature are controlled with 99 followed by **1 for power fail**, **2 for silent sensor** and **3 for temperature**. **1 to enable**, **0 to disable** or **9 to poll**.

Some **examples** are listed below:

Enable Status 4 alarm:	9741
Disable Status 4 alarm:	9740
Poll Status 4 alarm enable:	9749
Enable Analog (metering) 5 alarm:	9851
Disable Analog (metering) 5 alarm:	9850
Poll Analog 5 alarm enable:	9959
Enable Power Fail Alarm:	9911
Disable Power Fail alarm:	9910
Poll Power Fail alarm enable:	9919
Enable Silent Sensor Alarm:	9921
Disable Silent Sensor Alarm:	9920
Poll Silent Sensor Alarm enable:	9929
Enable Temperature Sensor Alarm:	9931
Disable Temperature Sensor Alarm:	9930
Poll Temperature Sensor Alarm enable:	9939

NOTE: *To clear an alarm, press the star (*) key.*

Web and/or Dial-up Notice

The WVRC-8 can be used for dial-up only, web only or a combination of both. It is suggested that the user configure for both the dial-up and WEB operation. Some features such as the scheduler and logger will require the user to configure the web portion of the WVRC-8 even if web access isn't being used.

WEB Setup

The WVRC-8 firmware supports an HTTP (web) interface on TCP port 80, which is user programmable. The default page contains a Java applet used to monitor and control the WVRC-8.

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Ethernet setup

NOTE: If you are not familiar with Ethernet enabled equipment, it may be useful to contact your IT department, network administrator or network consultant.

CAUTION! Assigning an IP address already in use by another device may cause problems with your network!

Information you'll need to configure the WVRC-8

Factory default settings:

IP Address:	192.168.1.55
Subnet Mask:	255.255.255.0
Default Username	wvrc8 or admin (lower case)
Default Password	wvrc8 (lower case) or 1234

1 - An available Static IP address to assign to the WVRC-8.
NOTE: *If a static IP isn't available, consider using http://www.dynip.com/*
2 - The network's subnet mask.
3 - Your network's gateway address (essential for proper operation).
4 - The IP address of the email server.
5 - The SMTP port used by your email server (usually 25).
6 - Up to four email addresses to which you want to send email alarms.

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NOTE: *The network administrator may be required to enter the IP address of the WVRC-8 into the SMTP server to allow email forwarding. In some installations, an email forwarding service such as http://www.smtp.com/ may be required for the email function to operate properly.*

7 - IP address of a NTP timeserver, if used.
NOTE: *Here is the IP address for the NIST NTP server 132.163.4.103 (http://tf.nist.gov/service/time-servers.html) or pool.ntp.org.*

The WVRC-8's RJ-45 (**Network**) is normally attached to a DSL/Cable router, Ethernet hub or switch. The supplied "Device Installer" software should be used to configure the IP address of your WVRC-8.

The "Device Installer" version 4.2 software or greater is also available on our web site: www.broadcasttools.com, under downloads or on the supplied CD.

NOTE: *The Device Installer application requires Microsoft's .NET Framework version 1.1. If you do not already have .NET Framework version 1.1 or greater (dotnetfx.exe) installed, you can download it from the Microsoft web site.*

1 - Install the "Device Installer" software on the PC used for the WVRC-8 setup.

NOTE: *The WVRC-8 applet requires a compatible* ***Java Runtime Environment*** *Version 6 Update 6.6 or greater). If your browser is lacking Version 6 Update 6.6 or greater, we have provided a link to download the required application: http://www.java.com/en/download/index.jsp, then click on the* ***"Free Java Download"*** *button and follow the prompts. This is also available on our web site: www.broadcasttools.com, under downloads or on the supplied CD.*

2 - Connect the supplied ***BLUE straight-through*** CAT 5 cable to the RJ-45 connector on the WVRC-8 labeled (**Network)** and the other end to your hub or switch.

NOTE: *If you are attaching the WVRC-8 directly to your computer, you MUST use the supplied GRAY Xover CAT 5 cable and set your PC's IP for 192.168.1.60*

3 - Connect the supplied 12 VAC @ 1amp power supply to the WVRC-8's power jack labeled **12VAC/1 Amp**. Verify that the front panel **power** LED and left **"LINK"** LED above the **"NETWORK"** RJ-45 are illuminated

Ethernet port LED indicator functions

Link LED Left Side	
Color	Meaning
Off	No Link
Amber	10 Mbps
Green	100 Mbps

Activity LED Right Side	
Color	Meaning
Off	No Activity
Amber	Half Duplex
Green	Full Duplex

4 - Start the "Device Installer" software.

a - Click on **"SEARCH"**

b - When the WVRC-8 is found, click on the listed device. If more than one WVRC-8 is found, refer to the MAC address label attached to the WVRC-8 RJ-45 case and click on the desired WVRC-8, which should be highlighted.

NOTE: Locate the MAC address label attached to the top of chassis.

c - Click on the **"ASSIGN IP"** button, then follow the instructions for setting a static IP address, along with the subnet and gateway, if applicable.

d - After rebooting the WVRC-8, set you computer IP setting back to it's original settings and access the WVRC-8 at it's new address or click the **"SEARCH"** button, the configured WVRC-8 should be listed.

NOTE: *You may have to click the search button more than once after the reboot.*

NOTE: *You can also open your browser and type in the assigned IP address in the "ADDRESS" area of your browser.* ***Example:*** 192.168.1.101

5 - If you are behind a firewall or router, you will need to port forward not only port 80, but also open ports 3001, 3002, 10001 and set the SUN Java to direct.

NOTE: *To set up port forwarding, refer to the manual supplied with the firewall or router.*

6 - To change the WVRC-8 from **port 80, contact the factory**

7 - To access the WVRC-8, open your browser and type in the assigned IP address in the "ADDRESS" area of your browser. ***Example:*** 192.168.1.101

NOTE: We recommend using the latest version of the FireFox or Safari web browser.

8 - If things are working correctly, you should see the WVRC-8 web page.

NOTE: *On some machines and browsers, this may take a few seconds.*

9 - Log in using the **default: user name either** wvrc8 or admin (lower case)
and password: either wvrc8 (lower case) or 1234

NOTE: *If you change the user name and password,* ***be sure to write it down.***

10 – Follow the descriptions on the following pages to set up the WVRC-8.

The WVRC-8 software consists of two components – firmware running in the Xport and a Java applet hosted on the Xport, running in a web browser. This document describes the operation of both components.

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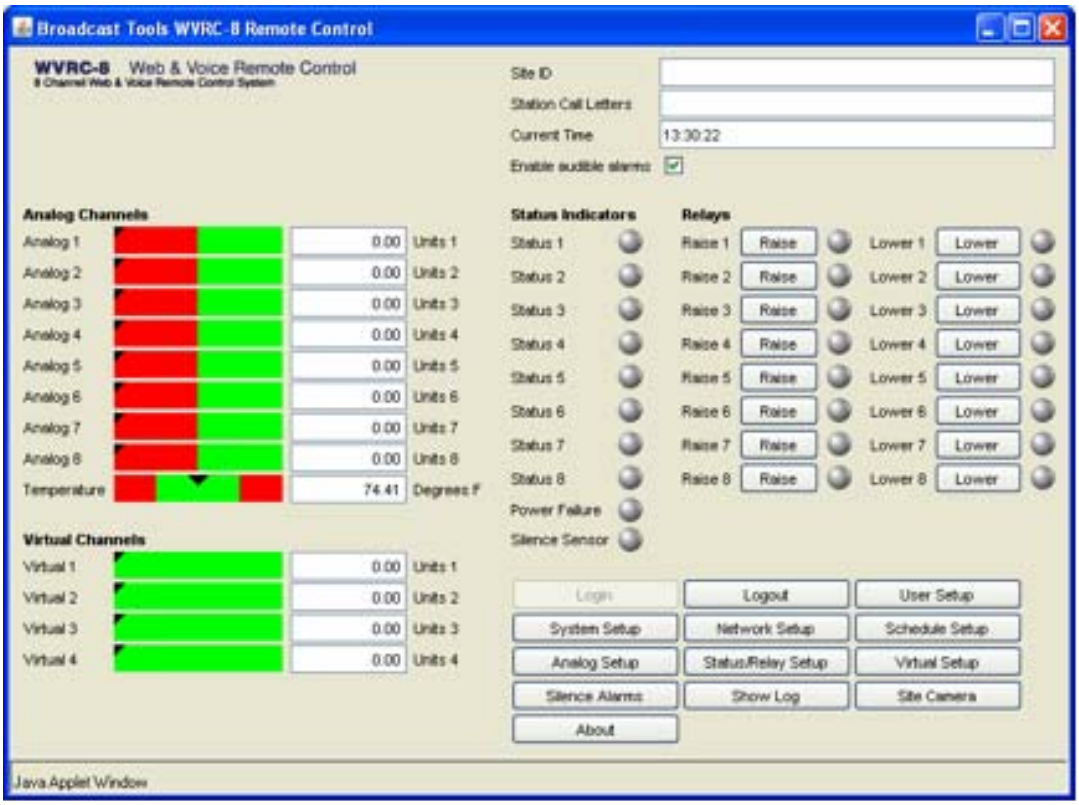
Firmware

The WVRC-8 firmware starts when the Xport is booted. The firmware communicates with the WVRC-8 microcontroller via its serial port and provides several network interfaces via its Ethernet port. The following network interfaces are supported:
Telnet command interface
Telnet setup interface
SNMP agent interface
SMTP e-mail interface
Web interface
SMTP E-mail Interface
E-mail alerts are sent to registered recipients on the following conditions, if enabled:
Analog (Telemetry) value exceeds high or low threshold
Status state changes
Silence sensor detection
Power failure
Temperature value exceeds high or low threshold
Login failure count exceeds threshold
Serial communication failure count exceeds threshold

The WVRC-8 firmware supports an HTTP (web) interface on TCP port 80. The default page (index.html) contains a Java applet used to monitor and control the WVRC-8.

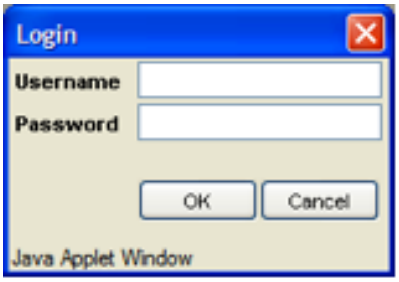
Main Screen

The main screen displays information identifying the site, gauges and LED's representing analog (telemetry) values, status state, buttons representing relays and buttons to login, set up, and control the WVRC-8.



Site ID	User defined identification.
Station Call Letters	Call letter identification.
Current Time	Current time set in the WVRC-8.
Enable Audible Alarms	Specifies whether alarms cause a beeping noise or are silent.
Analog Labels	User defined labels for analog inputs.
Analog Display	Graphical representation of the defined analog values.
Analog Text	Numeric representation of the defined analog values.
Analog Unit Labels	User defined labels giving analog units of measure.
Status Labels	User defined labels for status inputs.
Status LED's	On/Off indicators showing current state of status inputs.
Relay Button Labels	User defined labels for relays.
Relay Buttons	Buttons to momentarily activate or latch relays.
Virtual Labels	User defined labels for virtual values.
Virtual Displays	Graphical representation of current virtual values.
Virtual Text	Numeric representation of current virtual values.
Virtual Unit Labels	User defined labels giving virtual units of measure.
Login Button	Displays the Login dialog described below.
Logout	Logs the user out.
User Setup	Displays the User Setup dialog described below.
System Setup	Displays the System Setup dialog described below.
Network Setup	Displays the Network Setup dialog described below.
Schedule Setup	Displays the Schedule Setup dialog described below.
Analog Setup	Displays the Analog Setup dialog described below.
Status/Relay Setup	Displays the Status/Relay Setup dialog described below.
Virtual Setup	Displays the Virtual Setup dialog described below.
Silence Alarms	Sends the silence(clear)alarms command to the WVRC-8.
Show Log	Displays the event log as a text file in the browser. (IP/log.txt) Be sure to allow pop-ups.
User Defined Button	Displays a user-defined label and activates a user-defined URL when clicked (Example: URL of site camera, etc).
About	Displays the "About" dialog described below.

Login Dialog



The Login dialog asks the user for a username and password. This information is used to determine the user's privilege level and the commands the user can execute.

Default Username **wvrc8 or admin (lower case)**
Default Password **wvrc8 (lower case) or 1234**

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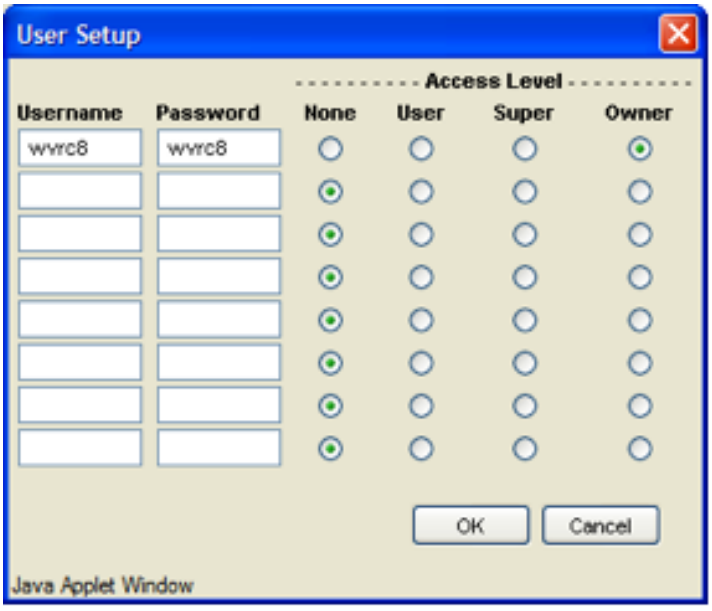
User Setup Dialog



The User Setup dialog is used to assign passwords and privilege levels for up to eight users. Privilege levels allow the following activities:

None - Monitor analog (metering), status, and virtual inputs

User - Monitor analog (metering), status, and virtual inputs and activate relays

Super - Monitor analog (metering), status, and virtual inputs, activate relays and perform setup functions excluding User Setup

Owner - Monitor analog (metering), status, and virtual inputs, activate relays and perform setup functions including User Setup

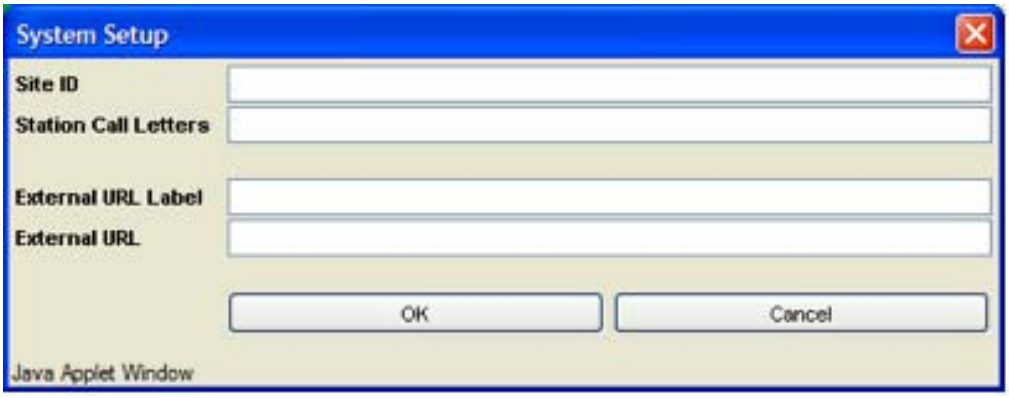
Buttons - Selects a privilege level.

OK - Saves the settings and exits.

Cancel Exits without saving settings.

Default Username wvrc8 or admin (lower case)
Default Password wvrc8 (lower case) or 1234

System Setup Dialog



The Unit Setup dialog allows the user to set up the following operating characteristics of the WVRC-8 firmware and applet.

Site ID	Changes the site ID displayed on the main page.
Station Call Letters	Changes the station call letters displayed on the main page.
External URL Label	Changes the label displayed on the user-defined button.
External URL	Defines the URL that is activated when the user-defined button is clicked.
OK	Saves the information and exits.

NOTE: *After changing labels and values, it is necessary to restart (refresh the browser) the applet to make these items appear.*

Cancel	Exits without saving values.

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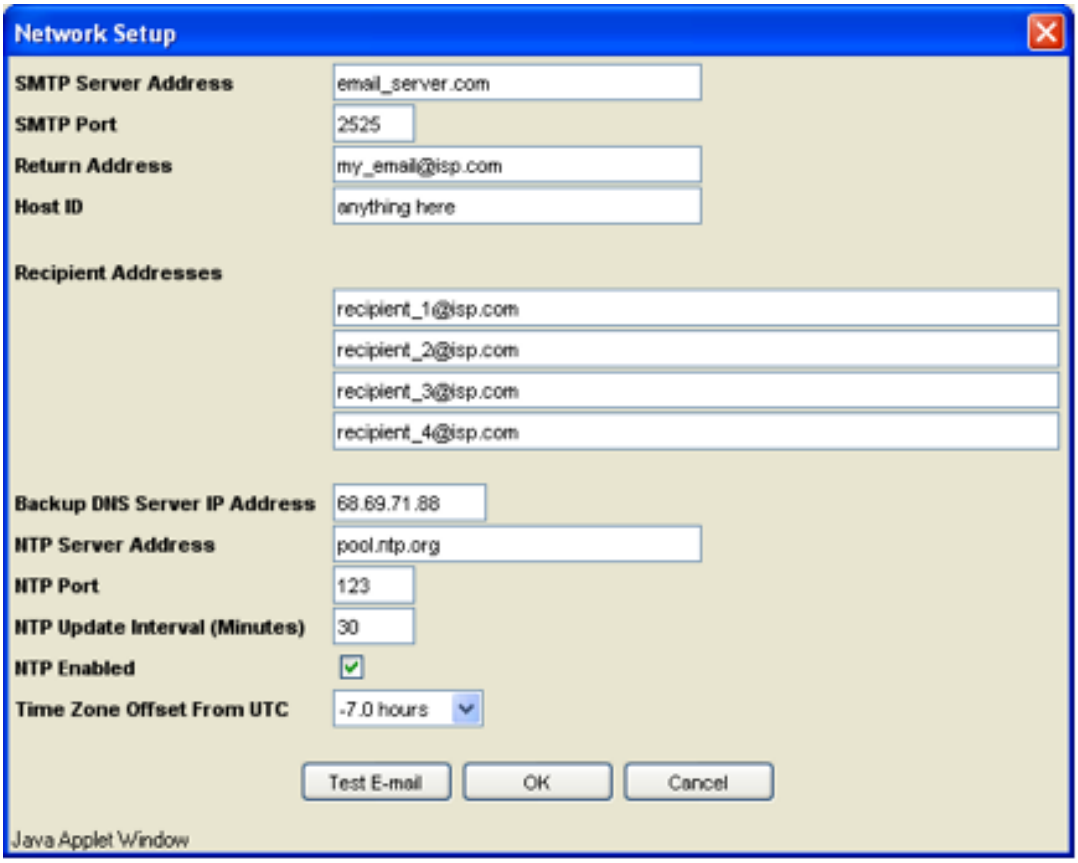
Network Setup Dialog



The Network Setup dialog allows the user to set up the following operating characteristics of the WVRC-8 firmware and applet.

SMTP Server Address Outbound e-mail server IP address.

SMTP Port Outbound e-mail port, usually 25 but may be redefined by server administrator.

Return Address Return e-mail address for alerts sent from the WVRC-8.

Host ID Optional, in the form: host. domain.

Recipient Addresses E-mail addresses (four) of alert recipients.

Backup DNS Server IP address of DNS server.

NTP Server Address Time server address.

NTP Port Time server port, usually 123.

NTP Interval Specifies how frequently the WVRC-8 acquires time. More frequent updates ensure more precise time.

NTP Enabled *Must be c*hecked.

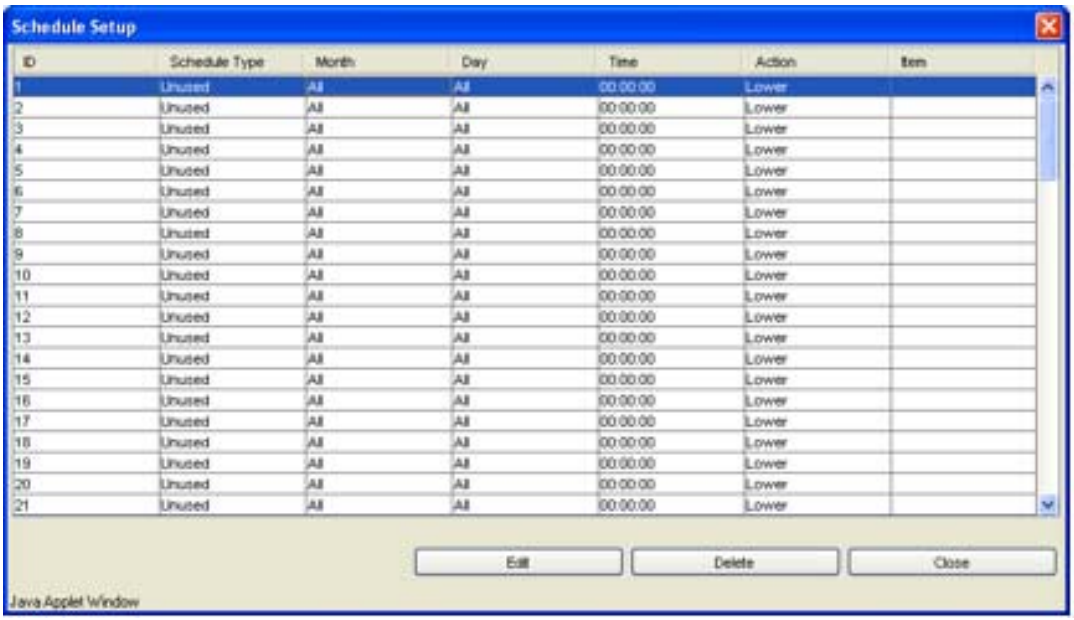
Time Zone Offset NTP time must be adjusted to account for time zones. This item lets the user specify the appropriate offset for his/her location.

OK Saves the information and exits.

Test E-mail Saves settings and sends a test e-mail to each recipient.

Cancel Exits without saving values.

Schedule Setup Dialog



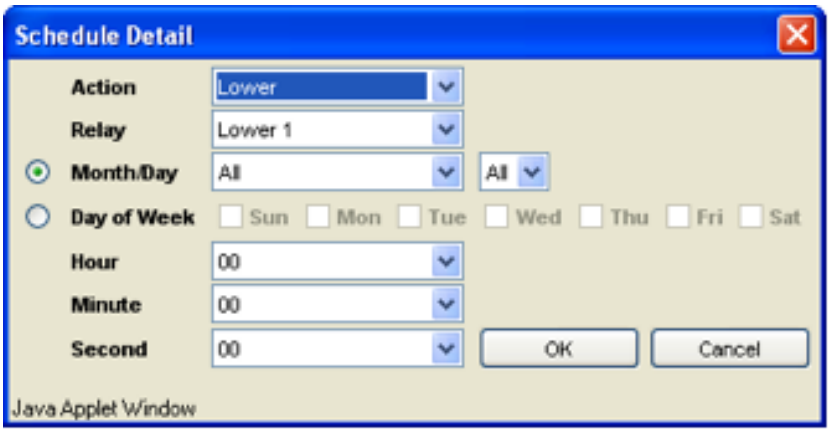
Raise, lower relays and alarm enable/disable can be activated on a scheduled basis. Up to 100 scheduled events can be defined. These can be one-time or repeating events. The Schedule Setup Dialog displays a list of scheduled events and allows the user to edit the schedule event's details, described under Schedule Detail Dialog below.

Edit — Opens the Schedule Detail Dialog for the selected event. The user can also double-click the event to open the detail dialog.

Delete — Delete the selected event.

Close — Close the Schedule Setup Dialog.

Schedule Detail Dialog



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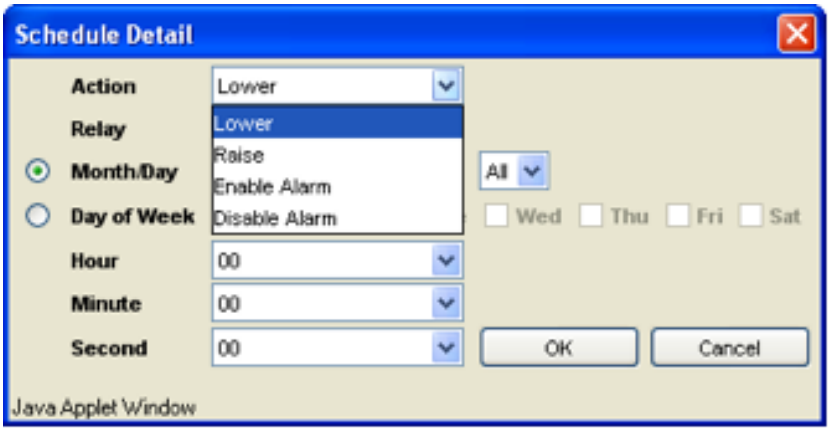

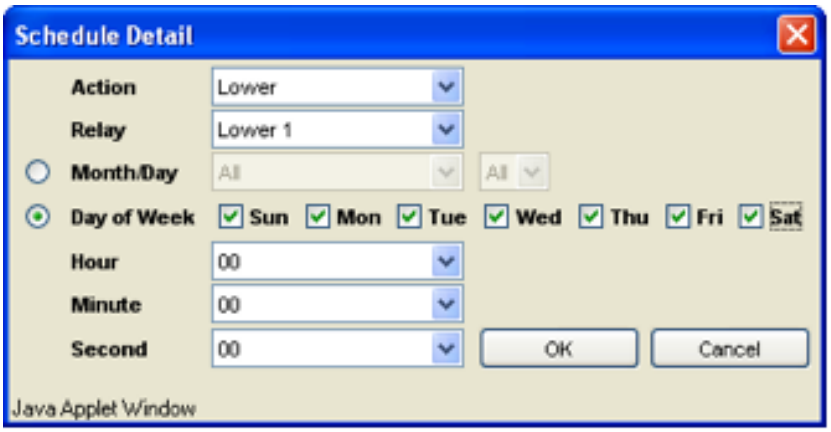

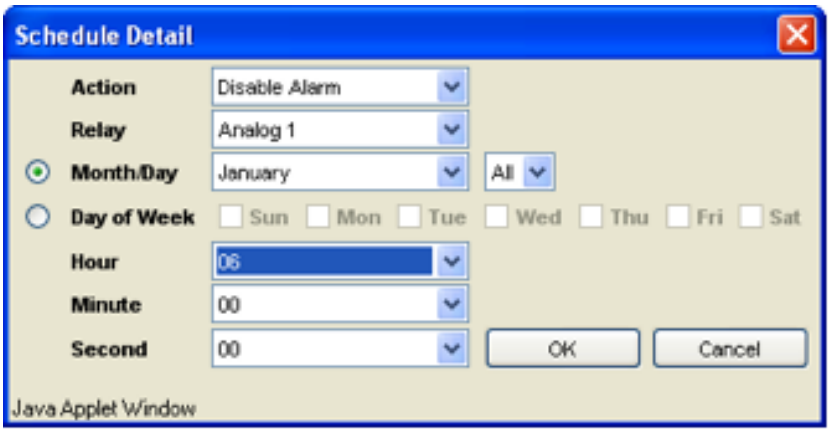

The Schedule Detail Dialog is used to set up a single schedule event. An event specifies an action (raise or lower), a relay or alarm muting/unmuting, and a time when the action occurs. The scheduler supports both day-of-month and day-of-week schedules. Wildcards can be specified in any of the date/time fields to create a repeating event.

Action — Raise or lower relay, enable alarm, disable alarm.

Relay(Item) — User-defined name of the raise or lower relay, alarm enable/disable (status input, analog (metering) input, silence sensor, power failure or temperature).

Month	Select the month when the event should occur, or ALL if the event should occur during every month.
Day of Month	Select the calendar day when the event should occur, or ALL if the event should occur every calendar day.
Day of Week	Check the day(s) of the week on which the event should occur. Check all boxes if the event should occur every day of the week.
Hour	Select the hour when the event should occur, or ALL if the event should occur every hour.
Minute	Select the minute when the event should occur, or ALL if the event should occur every minute.
Second	Select the second when the event should occur, or ALL if the event should occur every second.
OK	Saves the event and exits.
Cancel	Exits without saving the event.
Examples:	1 - To set up an event that occurs at 12:01AM on January 1, select Month=January, Day of Month=1, Hour=00, Minute=01, Second=00. 2 - To set up an event that occurs every Tuesday at 9:15AM, select Month=All, Day of Week=Tuesday, Hour=09, Minute=15, second=00.

A single event can be defined quite flexibly. However, complex schedules might require multiple events. For example, to schedule an event that occurs at 16:30 on March 31, June 30, September 30, and December 31 would require four separate event entries.

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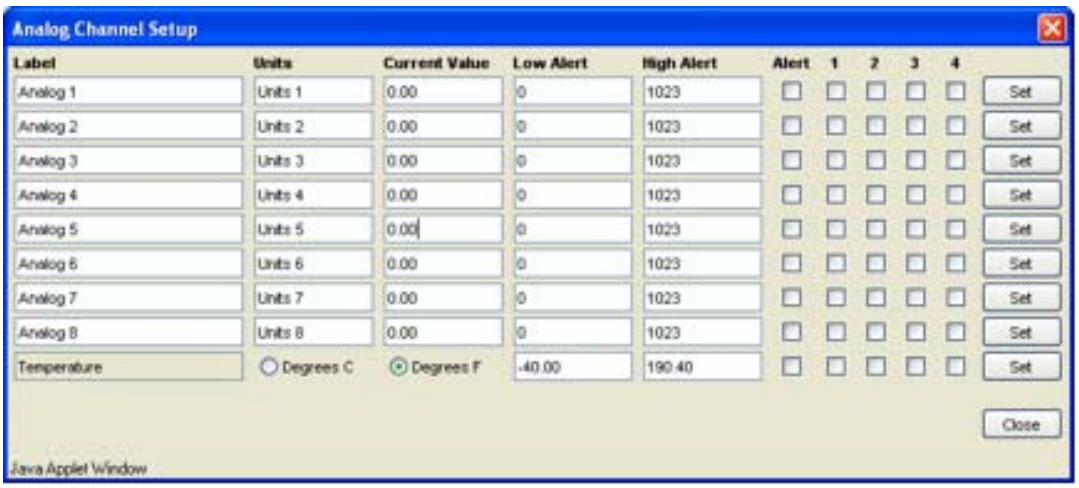
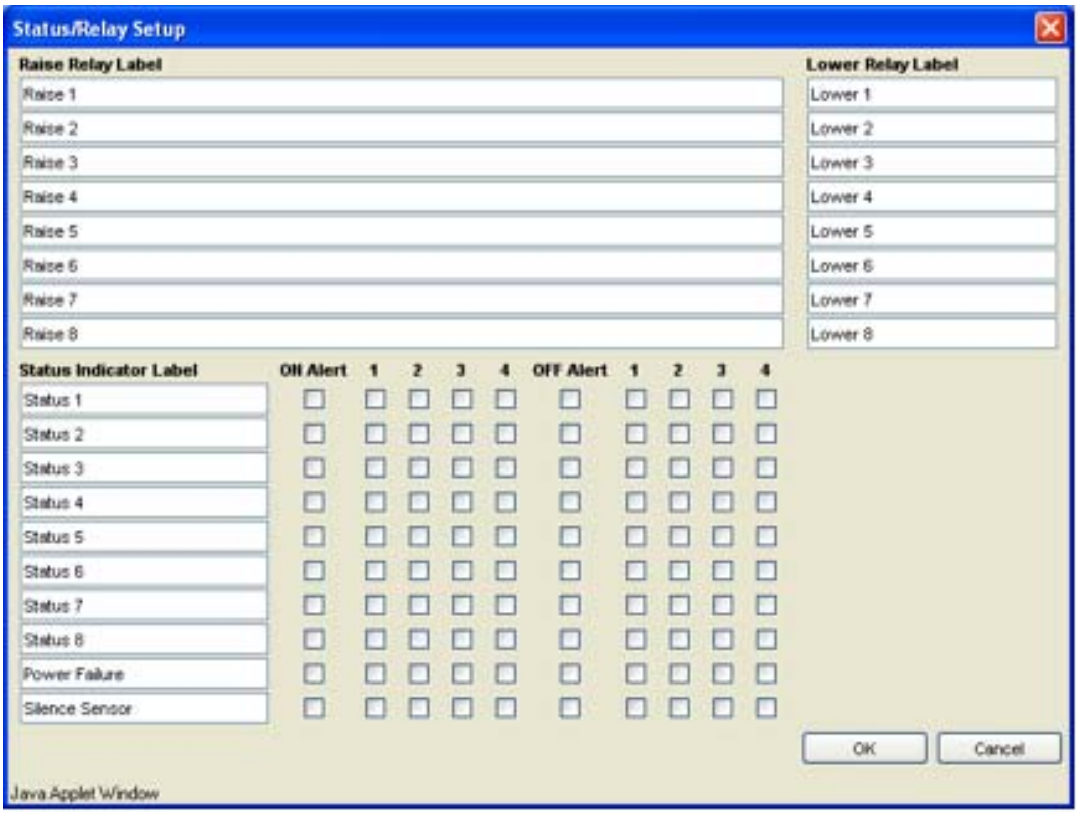
Analog (metering) Setup Dialog



Analog (metering)	Changes the label associated with any of the analog channels.
Units	Changes the units label associated with any of the analog (metering) channels.
Current Value	Sets the analog scaling factor by associating the current A/D value with the user-supplied value.
Low Alert	A low alert is issued when the analog value falls below this value.
High Alert	A high alert is issued when the analog value exceeds this value.
Alert Flag	Enables alerts for this analog channel.
Email Recipients	Specifies, which e-mail recipients receive, the alert.
Set	Sets parameters for the analog (metering) channel using the current actual value.
Close	Exit the analog setup dialog.

NOTE: *The analog (metering) value portion of the display will flash for any channel in an alarm condition and will cause the PC to beep, if enabled.*

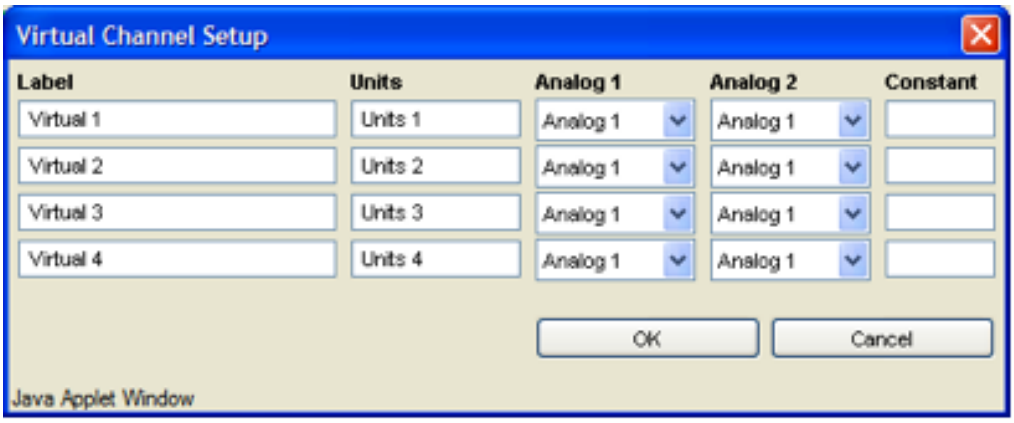
Status/Relay Setup Dialog



Raise Relay Label	Changes the label associated with any of the raise relays
Lower Relay Label	Changes the label associated with any of the lower relays
Status Indicator Label	Changes the label associated with any of the status items
ON Alert	Enables alerts when this status item changes from OFF to ON.
ON Email Recipients	Specifies which e-mail recipients receive the ON alert.
OFF Alert	Enables alerts when this status item changes from ON to OFF.
OFF Email Recipients	Specifies which e-mail recipients receive the OFF alert.
OK	Save the settings and exit.
Cancel	Exit without saving settings.

NOTE: *The LED will flash for any status channel in an alarm condition and will cause the PC to beep if enabled.*

Virtual Channel Setup Dialog



The WVRC-8 lets you define up to four "virtual" channels. These are similar to analog channels, but their values are derived from the product of two real analog channels and a constant.

Label	Changes the label associated with any of the virtual channels.
Units	Changes the engineering units label of any virtual channel.
Analog 1	Selects the first of two analog (metering) channels used in the calculation.
Analog 2	Selects the second of two analog (metering) channels used in the calculation.
Constant	Specifies the constant used in the calculation.
OK	Saves the settings and exits.
Cancel	Exits without saving settings.

Example: Assume analog (metering) channel 1 shows voltage in volts and analog (metering) channel 2 shows current in amps and an efficiently factor of 72%. You would define a virtual channel showing indirect power in Watts by setting Label=Indirect Power, Units="Watts", Analog (metering) 1=Voltage, Analog (metering) 2=Current, Constant=0.72

About Dialog

The About dialog displays the firmware version numbers, Broadcast Tools contact information, web link, and e-mail link.

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Specifications

Ethernet Interface:	RJ-45, 10Base-T or 100Base-TX, auto sensing with Link & activity indicator - Full/half duplex.
Control Logic:	Microprocessor with non-volatile memory.
Temperature Sensor:	Sensor with 25-foot cable and 3.5mm T/R/S plug. -40°F to +190°F (-40°C to +85°C)
Silence Sensor:	Stereo unbalanced 10K ohm inputs. MIL, -20dBu. Trip level and telco send adjustable
Telco Send:	Balanced 10K ohm input. Adjustable input. MIL, -10dBu.
Telco Caller:	Balanced low Z adjustable output. +4dBm nominal.
Relays:	Eight SPDT (PCB Rev G and above) / Nine - SPST normally open dry contacts, 24 VDC @ 1 Amp. May be configured for 1-second momentary or latching operation (Dial-up only).
CAUTION!	***For safety, never connect 120 Vac circuits to these relays!***
Analog (metering) inputs:	Eight - Single ended (ground referenced) 0 to 10 VDC input range. 10-bit resolution.
Status inputs:	Eight - Optically Isolated, RFI protection. Internal jumper for (Wet, floating) external 5 to 24 VDC or internal 5 VDC source (Dry). Open collector, contact closures to ground or external source.
Power Failure input:	Optically-isolated, 6 to 12vDC @ 50ma. Center positive. 2.1mm x 5.5mm coaxial connector.
Protocols:	TCP/IP, UDP/IP, ARP, ICMP, SNMP, TFTP, Telnet, DHCP, BOOTP, HTTP, and AutoIP.
Connectors:	Analog (metering), Status, Relays and Audio I/O - Plug-in euroblock screw terminals. 2 x 2.1mm x 5.5mm coaxial
Telco:	Standard POTS line. RJ11
EMI Compliance:	Class B limits of EN 55022:1998
FCC Compliance:	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference received, including that which may cause undesired operation.
Power:	12 VAC only @ 1 amp. 2.1mm x 5.5mm coaxial connector. Surge protected. Transformer supplied.
Operating Temperature:	-40°F to +185°F (-40°C to +85°C)
Size:	19" x 5.75" x 1.75" (W,D,H)
Weight:	3.0 lb.
Options:	CE certified 240VAC power supply. Smart USB to RS-232 Serial adapter cable. LR-5, 5PDT latching relay.

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Declaration of Conformity

The XPORT Device contained in the WVRC-8 conforms to the following standards:
(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:
WVRC-8: Broadcast Tools, Inc. 131 State Street, Sedro Woolley, WA 98284-1503 USA
XPORT: Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA
Declares that the following product:

Product Name Model: XPORT™ Device Server
Conforms to the following standards or other normative documents:

Electromagnetic Emissions:
EN55022: 1998 (IEC/CSPIR22: 1993) Radiated RF emissions, 30MHz-1000MHz
Conducted RF Emissions – Telecom Lines – 150KHz – 30MHz
FCC Part 15, Subpart B, Class B
IEC 1000-3-2/A14: 2000
IEC 1000-3-3: 1994

Electromagnetic Immunity:
EN55024: 1998 Information Technology Equipment-Immunity Characteristics
Direct ESD, Contact Discharge
Indirect ESD
Radiated RF Electromagnetic Field Test
Electrical Fast Transient/Burst Immunity
RF Common Mode Conducted Susceptibility
Power Frequency Magnetic Field Test

Manufacturer's Contact:
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Tel: 360 . 854 . 0608 Fax: 866 . 783 . 1742

XPORT
Lantronix:
Director of Quality Assurance
15353 Barranca Parkway, Irvine, CA 92618 USA
Tel: 949.453.3990 Fax: 949.453.3995

WEBSITE:
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