



State of West Virginia  
 Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

# Request for Quotation

RFQ NUMBER  
**HSE06073**

PAGE  
**1**

ADDRESS CORRESPONDENCE TO ATTENTION OF:  
**CHUCK BOWMAN**  
**304-558-2157**

VENDOR

RFQ COPY  
 TYPE NAME/ADDRESS HERE

SHIP TO

HOMELAND SECURITY & EMERGENCY  
 MANAGEMENT, DIVISION OF  
 BUILDING 1, ROOM EB80  
 1900 KANAWHA BOULEVARD, EAST  
 CHARLESTON, WV  
 25305-0360 304-558-5380

DATE PRINTED <b>08/24/2006</b>	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
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BID OPENING DATE: **09/19/2006** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LT		578-37		
<p>FLOOD CONTROL DEVICES AND EQUIPMENT</p> <p>THE WEST VIRGINIA PURCHASING DIVISION, ON BEHALF OF THE AGENCY, THE WEST VIRGINIA DIVISION OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT, IS SOLICITING BIDS FOR THE FOLLOWING WEATHER STATION AND STREAM GAUGE EQUIPMENT, AS WELL AS RECEIVERS AND TRANSMITTERS, PER THE FOLLOWING SPECIFICATIONS, BID REQUIREMENTS, AND TERMS &amp; CONDITIONS.</p> <p>THE MANUFACTURERS LISTED HEREIN ARE THE BASIS OF THE SPECIFICATION. THE STATE REQUIRES THAT ALL SUBMITTED MANUFACTURERS AND MODELS HAVE THE ABILITY TO INTERFACE WITH CURRENT EQUIPMENT INSTALLED WITHIN THE STATE AND IN CORRESPONDANCE WITH THE MODEL NUMBERS LISTED HEREIN.</p> <p>VENDOR'S SUBMITTING EQUIPMENT TO BE CONSIDERED AS 'OR EQUAL' SHOULD PROVIDE MANUFACTURER'S PUBLISHED SPECIFICATION INFORMATION OR 'CUT SHEETS' FOR AGENCY USE DURING THE EVALUATION OF BIDS FOR DETERMINATION OF COMPATIBILITY PRIOR TO THE AGENCY'S RECOMMENDATION FOR AWARD TO THE PURCHASING DIVISION. THE AGENCY RESEVES THE RIGHT TO REQUEST THIS OR ADDITIONAL INFORMATION AT ANY TIME DURING THE EVALUATION PROCESS AND EXPECT IT RECEIVED FROM THE CONTACTED VENDOR WITHIN A REASONABLE TIME FRAME AFTER THE REQUEST. FAILURE TO TIMELY PROVIDE SAID REQUESTED INFORMATION MAY RESULT IN THE DISQUALIFICATION OF A VENDOR'S PROPOSAL.</p> <p>PRICES ARE TO BE LISTED ON THE ATTACHED BID SCHEDULE</p>						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
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TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
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**GENERAL TERMS & CONDITIONS  
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)**

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125.00 registration fee.
5. All services performed or goods delivered under State Purchase Orders/Contracts are to be continued for the term of the Purchase Order/Contract, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this contract is automatically null and void, and is terminated without further order.
14. **HIPAA Business Associate Addendum** - The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

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**INSTRUCTIONS TO BIDDERS**

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications.

**SIGNED BID TO:**

Department of Administration  
Purchasing Division  
2019 Washington Street East  
Post Office Box 50130  
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<p>AND ARE TO BE INCLUSIVE OF FREIGHT CHARGES TO THE SHIP TO ADDRESS NOTED IN THE REQUEST FOR QUOTATION. SEPARATE FREIGHT INVOICES WILL NOT BE PROCESSED FOR PAYMENT. STANDARD LENGTH AND TERMS OF WARRANTIES ARE TO BE INCLUDED WITH THE VENDOR'S BID PROPOSAL.</p> <p>EXHIBIT 3</p> <p>LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE UPON AWARD AND EXTENDS FOR A PERIOD OF ONE (1) YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.</p> <p>UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.</p> <p>RENEWAL: THIS CONTRACT MAY BE RENEWED UPON THE MUTUAL WRITTEN CONSENT OF THE SPENDING UNIT AND VENDOR, SUBMITTED TO THE DIRECTOR OF PURCHASING THIRTY (30) DAYS PRIOR TO THE EXPIRATION DATE. SUCH RENEWAL SHALL BE IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ORIGINAL CONTRACT AND SHALL BE LIMITED TO TWO (2) ONE (1) YEAR PERIODS.</p> <p>CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICE</p>						

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<p>SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.</p> <p>OPEN MARKET CLAUSE: THE DIRECTOR OF PURCHASING MAY AUTHORIZE A SPENDING UNIT TO PURCHASE ON THE OPEN MARKET, WITHOUT THE FILING OF A REQUISITION OR COST ESTIMATE, ITEMS SPECIFIED ON THIS CONTRACT FOR IMMEDIATE DELIVERY IN EMERGENCIES DUE TO UNFORESEEN CAUSES (INCLUDING BUT NOT LIMITED TO DELAYS IN TRANSPORTATION OR AN UNANTICIPATED INCREASE IN THE VOLUME OF WORK.)</p> <p>QUANTITIES: QUANTITIES LISTED IN THE REQUISITION ARE APPROXIMATIONS ONLY, BASED ON ESTIMATES SUPPLIED BY THE STATE SPENDING UNIT. IT IS UNDERSTOOD AND AGREED THAT THE CONTRACT SHALL COVER THE QUANTITIES ACTUALLY ORDERED FOR DELIVERY DURING THE TERM OF THE CONTRACT, WHETHER MORE OR LESS THAN THE QUANTITIES SHOWN.</p> <p>ORDERING PROCEDURE: SPENDING UNIT(S) SHALL ISSUE A WRITTEN STATE CONTRACT ORDER (FORM NUMBER WV-39) TO THE VENDOR FOR COMMODITIES COVERED BY THIS CONTRACT. THE ORIGINAL COPY OF THE WV-39 SHALL BE MAILED TO THE VENDOR AS AUTHORIZATION FOR SHIPMENT, A SECOND COPY MAILED TO THE PURCHASING DIVISION, AND A THIRD COPY RETAINED BY THE SPENDING UNIT.</p> <p>BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER.</p> <p>THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES</p>						

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				AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM.  REV. 04/11/2001  THE MODEL/BRAND/SPECIFICATIONS NAMED HEREIN ESTABLISH THE ACCEPTABLE LEVEL OF QUALITY ONLY AND ARE NOT INTENDED TO REFLECT A PREFERENCE OR FAVOR ANY PARTICULAR BRAND OR VENDOR. VENDORS WHO ARE BIDDING ALTERNATES SHOULD SO STATE AND INCLUDE PERTINENT LITERATURE AND SPECIFICATIONS. FAILURE TO PROVIDE INFORMATION FOR ANY ALTERNATES MAY BE GROUNDS FOR REJECTION OF THE BID. THE STATE RESERVES THE RIGHT TO WAIVE MINOR IRREGULARITIES IN BIDS OR SPECIFICATIONS IN ACCORDANCE WITH SECTION 148-1-4(F) OF THE WEST VIRGINIA LEGISLATIVE RULES AND REGULATIONS.  VENDOR PREFERENCE CERTIFICATE  CERTIFICATION AND APPLICATION IS HEREBY MADE FOR PREFERENCE IN ACCORDANCE WITH WEST VIRGINIA CODE, 5A-3-37 (DOES NOT APPLY TO CONSTRUCTION CONTRACTS).  A. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:  ( ) BIDDER IS AN INDIVIDUAL RESIDENT VENDOR AND HAS RESIDED CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR  ( ) BIDDER IS A PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR AND HAS MAINTAINED ITS HEAD-QUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR 80% OF THE OWNERSHI		

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<p>INTEREST OF BIDDER IS HELD BY ANOTHER INDIVIDUAL, PARTNERSHIP, ASSOCIATION OR CORPORATION RESIDENT VENDOR WHO HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS CONTINUOUSLY IN WEST VIRGINIA FOR FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION; OR</p> <p>( ) BIDDER IS A CORPORATION NONRESIDENT VENDOR WHICH HAS AN AFFILIATE OR SUBSIDIARY WHICH EMPLOYS A MINIMUM OF ONE HUNDRED STATE RESIDENTS AND WHICH HAS MAINTAINED ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA CONTINUOUSLY FOR THE FOUR (4) YEARS IMMEDIATELY PRECEDING THE DATE OF THIS CERTIFICATION.</p> <p>B. APPLICATION IS MADE FOR 2.5% PREFERENCE FOR THE REASON CHECKED:</p> <p>( ) BIDDER IS A RESIDENT VENDOR WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES WORKING ON THE PROJECT BEING BID ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID;</p> <p>OR</p> <p>( ) BIDDER IS A NONRESIDENT VENDOR EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS OR IS A NONRESIDENT VENDOR WITH AN AFFILIATE OR SUBSIDIARY WHICH MAINTAINS ITS HEADQUARTERS OR PRINCIPAL PLACE OF BUSINESS WITHIN WEST VIRGINIA EMPLOYING A MINIMUM OF ONE HUNDRED STATE RESIDENTS WHO CERTIFIES THAT, DURING THE LIFE OF THE CONTRACT, ON AVERAGE AT LEAST 75% OF THE EMPLOYEES OR BIDDERS' AFFILIATE'S OR SUBSIDIARY'S EMPLOYEES ARE RESIDENTS OF WEST VIRGINIA WHO HAVE RESIDED IN THE STATE CONTINUOUSLY FOR THE TWO YEARS IMMEDIATELY PRECEDING SUBMISSION OF THIS BID.</p>						

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<p>BIDDER UNDERSTANDS IF THE SECRETARY OF TAX &amp; REVENUE DETERMINES THAT A BIDDER RECEIVING PREFERENCE HAS FAILED TO CONTINUE TO MEET THE REQUIREMENTS FOR SUCH PREFERENCE, THE SECRETARY MAY ORDER THE DIRECTOR OF PURCHASING TO: (A) RESCIND THE CONTRACT OR PURCHASE ORDER ISSUED; OR (B) ASSESS A PENALTY AGAINST SUCH BIDDER IN AN AMOUNT NOT TO EXCEED 5% OF THE BID AMOUNT AND THAT SUCH PENALTY WILL BE PAID TO THE CONTRACTING AGENCY OR DEDUCTED FROM ANY UNPAID BALANCE ON THE CONTRACT OR PURCHASE ORDER.</p> <p>BY SUBMISSION OF THIS CERTIFICATE, BIDDER AGREES TO DISCLOSE ANY REASONABLY REQUESTED INFORMATION TO THE PURCHASING DIVISION AND AUTHORIZES THE DEPARTMENT OF TAX AND REVENUE TO DISCLOSE TO THE DIRECTOR OF PURCHASING APPROPRIATE INFORMATION VERIFYING THAT BIDDER HAS PAID THE REQUIRED BUSINESS TAXES, PROVIDED THAT SUCH INFORMATION DOES NOT CONTAIN THE AMOUNTS OF TAXES PAID NOR ANY OTHER INFORMATION DEEMED BY THE TAX COMMISSIONER TO BE CONFIDENTIAL.</p> <p>UNDER PENALTY OF LAW FOR FALSE SWEARING (WEST VIRGINIA CODE 61-5-3), BIDDER HEREBY CERTIFIES THAT THIS CERTIFICATE IS TRUE AND ACCURATE IN ALL RESPECTS; AND THAT IF A CONTRACT IS ISSUED TO BIDDER AND IF ANYTHING CONTAINED WITHIN THIS CERTIFICATE CHANGES DURING THE TERM OF THE CONTRACT, BIDDER WILL NOTIFY THE PURCHASING DIVISION IN WRITING IMMEDIATELY.</p> <p>BIDDER: -----</p> <p>DATE: -----</p>						

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SIGNED: ----- TITLE: ----- * CHECK ANY COMBINATION OF PREFERENCE CONSIDERATION(S) IN EITHER "A" OR "B", OR BOTH "A" AND "B" WHICH YOU ARE ENTITLED TO RECEIVE. YOU MAY REQUEST UP TO THE MAXIMUM 5% PREFERENCE FOR BOTH "A" AND "B". (REV. 12/00) NOTICE A SIGNED BID MUST BE SUBMITTED TO: DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130 THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED: SEALED BID BUYER: CB-23 RFQ. NO.: HSE06073 BID OPENING DATE: 09/19/2006						

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BID OPENING TIME:				1:30 PM		
PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:						
-----						
CONTACT PERSON (PLEASE PRINT CLEARLY):						
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***** THIS IS THE END OF RFQ HSE06073 ***** TOTAL:						_____

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## FLOOD WARNING PURCHASING CONTRACT

### GENERAL:

The West Virginia Division of Homeland Security and Emergency Management operates the State Flood Warning System consists of radio reporting rain and stream gages located in all 55 counties. There are approximately 310 data gathering sites supporting approximately 900 sensors. This rain and stream gage data is relayed to the agency's office near Charleston, West Virginia using 35 radio repeater sites. Additionally, using funding provided by the U.S. Division of Homeland Security, the agency is in the process of installing 110 High Sierra complete weather stations. The rain and stream data is then placed on the Internet at [www.rainfall.net](http://www.rainfall.net). Additionally, we feed this data to the National Oceanic and Atmospheric Administration's gateway for use by the National Weather Service. Use of this data by the National Weather Service allows them to more accurately issue flood watches and warnings thus saving lives and reducing property damage.

Quotes are requested for the following or equivalent equipment. If equivalent equipment is bid, it must interface and interchange, as the State of West Virginia already has an extensive system in place consisting of the equipment below. Specification sheets are attached.

MANUFACTURER: High Sierra Electronics  
 155 Spring Hill Drive, Suite 106  
 Grass Valley, California 95945-5929

MODEL #	DESCRIPTION
3451	Packaged Weather Station NOTE: Must include wind speed, wind direction, humidity, temperature and precipitation sensors. Must be stand pipe design.
3424	Packaged Rain Gage Station NOTE: Must be stand pipe design.
1000-03	ALERT/IFLOWS Data Decoder; Includes Float Charger, Battery & Serial cables.
1001	ALERT/IFLOWS Data Decoder; Hand held field unit, w/internal rechargeable battery. Includes audio, serial & charger cables.

## FLOOD WARNING PURCHASING CONTRACT

MODEL #	DESCRIPTION
2400-15	<p>Rain Gage Top Section; 12" Orifice; Slotted Holes for Screw mount to standpipe assy. Cal: 1mm/Tip            NOTE: Must be capable of mounting on existing Handar and High Sierra stand pipes using three screw mounting techniques.</p>
3206-08	<p>ALERT/IFLOWS Data Transmitter; w/585 compatible I/O connector option; 7" x 18.5" Canister/Connector Chassis. Includes: Maxon Narrow Band VHF Radio &amp; 12 Amp Hour Gel Cell Battery.</p> <p>NOTE: The transmitter must have a second digital input with a 6-pin input that accepts the standard Handar model 585 precipitation/solar/encoder connector and interface with the standard High Sierra connectors.</p>
3210-04	<p>ALERT/IFLOWS Serial Data Transmitter; Asynchronous, NEMA Enclosure. Includes: Narrow Band Transceiver &amp; 2.2 Amp Battery. ( PLEASE SPECIFY)            NOTE: Must interface with Water Log 350XL pressure measurement system.</p>
3300	<p>Store and Forward Repeater; NEMA 4X Enclosure. With Echo Suppression &amp; Maxon Narrow Band VHF Transceiver. (16 Switch Selectable Freqs.) Includes: 2 ea 12 Amp Hr Batteries. Radio Frequencies: (PLEASE SPECIFY)            NOTE: Must be capable of echo suppression and must be programmable to pass only individual I.D.'s.</p>
3300-01	<p>Sensor Input Option; for Model 3300 Repeater. (Precip)</p>
3300-20	<p>Store &amp; Forward Repeater; (Duplex); w/2ea Maxon Narrow Band VHF Transceivers, Echo Suppression, NEMA 4X Enclosure. Includes: 2ea 12 Amp Hr Batteries</p>
3350-01	<p>ALERT Controller; Receives &amp; Decodes ALERT Signals. Transmits status messages on 1 analog &amp; 4 control outputs.</p>

## FLOOD WARNING PURCHASING CONTRACT

- 3701-15 Telemetry Transceiver Programming Kit; for Maxon/Midland VHF Radio; Includes: ACC-2000 interface module, ACC-900 Programming Software, 9-15 Vdc-200mA Power Supply, QPA-4000 Programmer interface cable for serial port, extender board & programming manual.
- 3801 VHF Power Amplifier;(25 Watt) (148-174 MHz.) w/Mounting bracket & cable
- 4004-00 Output Converter;4-20mA to 0-5V;(Please specify input and output device/ends. Standard cable length –6 feet each side, specify if change.
- 5310-0 ProTech Solar Panel Voltage Regulator Module
- 5723-00 Temperature/Relative Humidity Sensor; Includes 22' Cable; Range:-40 deg. F.
- 5722-0 Temperature/Relative Humidity Sensor w/60' cable; Model 45D, 0-1 V Output
- 7110-00 SE Omni-Directional Antenna; (VHF) Tuned for frequency range: 169-173 MHz.
- 7200-0 Antenna Lightning Protector

## FLOOD WARNING PURCHASING CONTRACT

MANUFACTURER: Daniels Electronics Ltd.  
 43 Erie Street  
 Victoria, B.C.  
 V8V 1P8 Canada

MODEL	DESCRIPTION
UR-3/420-SNC200	RECEIVER, MT-3, UHF 406-430 MHz., 12.5 KHz. NOTE: Equivalent equipment must plug into existing Daniels SR-39-3 subrack.
UT-3/420-SNCx00	TRANSMITTER, MT-3 UHF 406-430 MHz. 12.5 KHz. NOTE: Equivalent equipment must plug into existing Daniels SR-39-3 subrack.
VR-3/160-SNA200	RECEIVER, MT-3 VHF 150-174 MHz.) 12.5 KHz. NOTE: Equivalent equipment must plug into existing Daniels SR-39-3 subrack.
VT-3/160-SNA800	TRANSMITTER, MT-3 VHF 150-174 MHz., 12.5 KHz. NOTE: Equivalent equipment must plug into existing Daniels SR-39-3 subrack.
SR-39-3	MULTIPLE RECIEVER SUBRACK
SM-3-H0-014-05	AUDIO MONITOR, 8-11 VDC, NOTE: Must interface with Daniels SR-39-3 subrack.
PSA-12-40-RB-00	POWER SUPPLY, 12VDC, 40 AMPS WITH BATTERY BACKUP NOTE: Must interface with Daniels SR-39-3 subrack.
IM11-VR3H150S	MANUAL, VR-3/150 RX, ENHANCED SYNC

## FLOOD WARNING PURCHASING CONTRACT

MODEL #	DESCRIPTION
IM13-UR3H400	MANUAL, UR-3/400 RX, SYNTH
IM35-MB84RX	MANUAL, MULTI RX

MANUFACTURER: Water Log Series Environmental Products Division of  
Design Analysis  
75 West 100 South  
Logan, Utah 84321

MODEL #	DESCRIPTION
H350XL/H355	PRESSURE MEASUREMENT SYSTEM, 0-15 PSI NOTE: Equivalent equipment must be capable of self-purging on a time basis. Must be capable of being powered by a battery/solar system. Use of bottled compressed gas is not acceptable.
H250BRD	INSTRUMENT MOUNTING PANEL, 29 ½" x 21 5/8" X ¾"
H355DES2	LARGE DESICCATING AIR DRYER
H253	ORIFICE OUTLET KIT
H-264	ALERT SERIAL INTERFACE (UHF AND VHF) NOTE: Must interface with Water Log model H350SL/H355 system.

# Weather Stations



Rain, snow, heat, cold, drought, and storms all play a dramatic part in shaping our lives. Every life form reacts to both great and small changes in the weather. Briefly stated, changes in weather are brought about by movement in air masses, which in turn brings about changes in wind speed, wind direction, humidity, and atmospheric pressure.

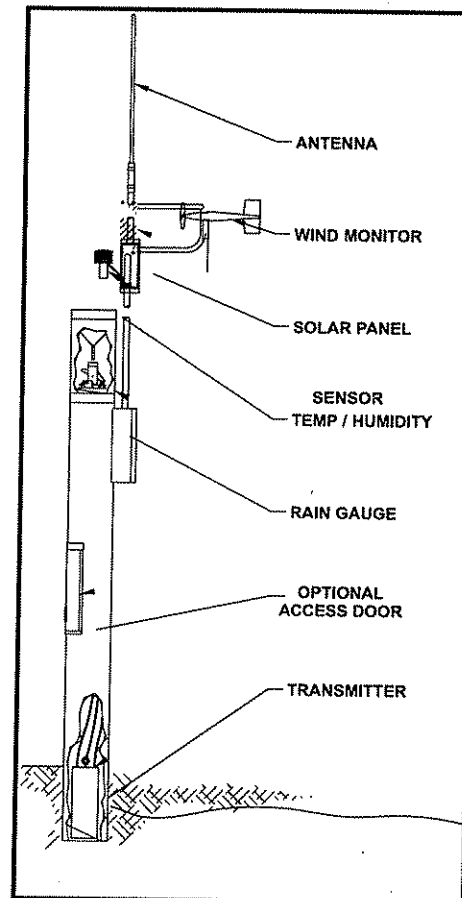
Weather changes can be from slow and subtle to swift and volatile. Agencies such as the U.S. National Weather Service rely on a wide variety of stations and observation systems to monitor and measure surface-weather conditions. Automatic weather stations, designed by High Sierra Electronics, can be configured with a variety of sensors to meet the real time data processing and reports requirements for federal, state, and local authorities.

A typical weather station is built around a tower on which much of the equipment and sensors are mounted. Sensors may include those for measuring wind, rainfall, temperature, barometric pressure, and humidity. These automated sensors format the data and send it instantaneously by radio transmitter to a base station or personal computer.

In 1989, the NWS launched a 3 billion dollar plan to modernize the gathering of weather data and the distribution of forecasts and warnings. Since then, High Sierra Electronics has played an integral part in designing and manufacturing high-speed communication and data collection systems.

High Sierra Electronics provides:

- ▶ Data Transmitter with Tower
- ▶ Shelters or Environmental Enclosures
- ▶ Automated Sensors including:
  - Wind Speed, Wind Direction, Wind Gust
  - Barometric Pressure
  - Temperature, Relative Humidity
  - Snow & Rainfall, Solar Radiation
  - Soil Moisture & Soil Temperature
- ▶ Software for Automated Data Collection & Modeling
- ▶ Batteries, Solar Panels, Cables, Antennas



# MODEL 3424 Packaged Rain Gauge Station

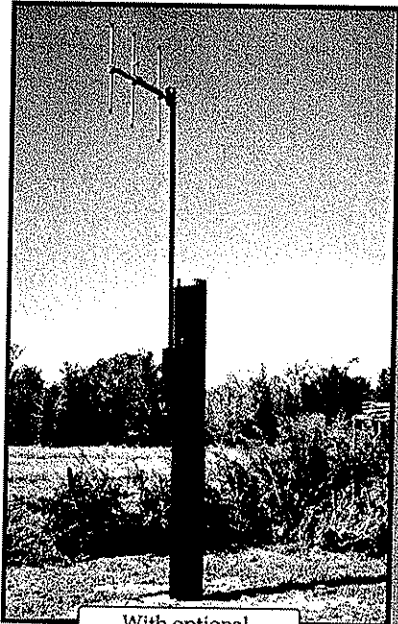
- Real-time Data
- Accuracy of  $\pm 1.5\%$  for 0 to 2 Inches per Hour
- Measures in 1mm or 0.01 In. Increments
- Set-And-Forget Operation



PHONE: (800) 275-2080

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2089



With optional directional antenna

## DESCRIPTION:

The Model 3424-00 Rain Gauge Station generates real-time data to help in flood warning, reservoir management, and any other application that calls for timely rainfall information. The data provides information of precipitation patterns and events as they happen, helping the system operator understand and predict runoff. This information facilitates the decision making of emergency management personnel during times of potential flooding helping to save property and lives.

The Rain Gauge tipping bucket is machined from a solid piece of aluminum. This eliminates the possibility of cracks forming due to repeated freezing and melting which could result in leakage and errors. The standard ALERT/IFLOWS tipping bucket measures 1mm with each tip of the bucket. An optional .01 inch bucket is available.

With each tip of the bucket a magnet passes over a sealed reed switch. This switch closure increments one count in an accumulator (counter) circuit in the 3206-00 ALERT/IFLOWS Transmitter. This awakens the transmitter and initiates a transmission to the base station consisting of the assigned sensor ID# and the accumulator value. As a result, the computer and its forecasting software computes within 1mm the rainfall amounts at gauges throughout the system.

When the tipping bucket top section is mounted on top of the ALERT/IFLOWS standpipe, the rain gauge funnel opening is 10 feet above the ground.

For remote, hard to reach sites, an optional Model 8900-00 Radio Path Study can be made to analyze radio transmission paths, ensuring clean, accurate signals between various locations.

The Model 3424-00 Rain Gauge Station includes a weatherproof Standpipe Assembly, ALERT/IFLOWS Data Transmitter w/battery, Rain Gauge Top Section, Antenna, and Antenna Mast & Cable.

## SPECIFICATIONS:

Standpipe Assembly:  
 Height . . . . . 10 feet  
 Diameter . . . . . 12 inches  
 Shipping weight . . . . . 60 Pounds

## OPTIONAL:

Model 7000-13 . . . . .	Standpipe Assembly (slotted)
Model 2400-15 . . . . .	Rain Gauge Top Section (slotted)
Model 7000-01 . . . . .	Standpipe Door (Specify Position on Standpipe)
Model 7000-02 . . . . .	Extended Lengths of Standpipe (Price per Foot)
Model 7000-04 . . . . .	Mounting Bracket (to mount standpipe against walls, railings, etc.)
Model 7000-06 . . . . .	Conduit Mounting Tabs (hold-downs)
Model 7000-09 . . . . .	Standpipe Guard Ring
Model 7200-00 . . . . .	Antenna Lightning Protection
Model 7105-04 . . . . .	HSE High Gain Directional Antenna
Model 3206-20 . . . . .	Transmitter Data Logging Board
Model 5301-00 . . . . .	Solar Panel
Model 8900-00 . . . . .	Radio Path Study
Series 3800 . . . . .	RF Power Amplifier

## ORDERING GUIDE:

Model 3424-00 . . . . . Rain Gauge Station  
Included are:  
 Model 7000-00 . . . . . Standpipe Assembly (twist-lock)  
 Model 3206-00 . . . . . ALERT/IFLOWS Data Transmitter  
 Model 2400-00 . . . . . Rain Gauge Top Section (twist-lock)  
 (Optional .01" Tipping Bucket)  
 Model 7100-00 . . . . . Omni Antenna, Unity Gain  
 Model 7300-00 . . . . . Antenna Mast & Cable

ACCURACY YOU CAN COUNT ON

WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)



# MODEL 1000-03 ALERT / IFLOWS Decoder

- Two RS-232 Channels
- 12 VDC Powered
- Low Power Consumption
- Sensitive to Weak Messages

016



PHONE (800) 275-2080 HIGH SIERRA ELECTRONICS FAX (530) 273-2089



## DESCRIPTION:

The Model 1000-03 ALERT/IFLOWS Decoder decodes incoming data and provides an RS-232C output for computer input. Data is transferred out the serial port at the same time it is received at the audio input. An "active" light comes on when receiving data as visual feedback for verifying proper operation.

The Model 1000-03 is powered by 12 VDC. This facilitates its use in the field while performing gauge maintenance and installation. (Note: the Model 5601-00, 7 Amp Hour Battery, is recommended for uninterrupted power.) The decoder comes with a 6 foot serial cable, (25-Pin Male to 9 pin Female), a 12 VDC charger (110 VAC), and a harness for optional battery back-up.

## SPECIFICATIONS:

Inputs . . . . .	1/8" Phone Jack Audio Input Connector
Outputs . . . . .	RS-232C Format, 2 each 25-Pin Female Connectors
Data Format . . . . .	ALERT/IFLOWS Binary Standard, A/I ASCII, A/I Wind, Enhanced IFLOWS Format
Temp Range . . . . .	-30°C to +50°C
Operating Temp . . . . .	-30°C to +50°C
Enclosure . . . . .	Aluminum Box with External Connectors (Screw Terminals, 1/8" Phone Jack, RS-232C 25-Pin)
Power . . . . .	12 VDC (300 mA Charger is Included) Active <220mA; Standby 13mA
Size . . . . .	2.063" H x 8.375" L x 6.375" D
Weight . . . . .	2 Pounds
Shipping Weight . . . . .	3 Pounds

## ORDERING GUIDE:

Model 1000-03 . . . . . ALERT Decoder

## OPTIONAL:

Model 1000-09 . . . . . ALERT/IFLOWS Decoder with User Programmable Pass/Fail Capability; Includes Float Charger, Battery Cable & 9-Pin Serial Cable.

Model 5601-00 . . . . . 7 Amp Hour Battery

ACCURACY YOU CAN COUNT ON

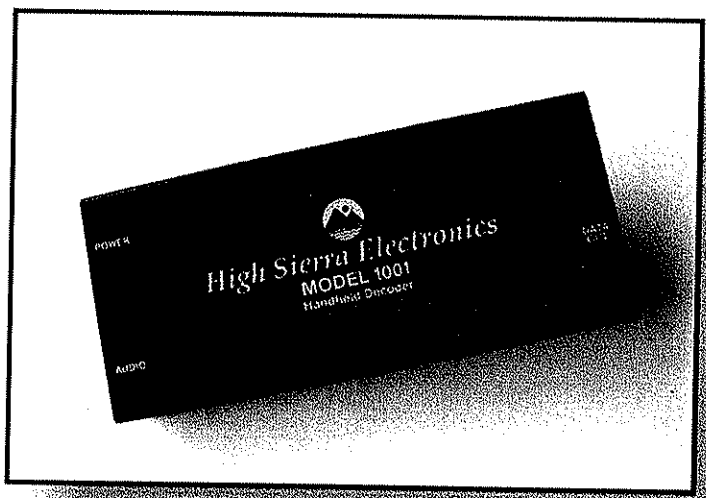
WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)

# MODEL 1001 Field Technician Decoder

- ☐ Small and Light for Field Use
- ☐ Internal Speaker
- ☐ No External Battery Required



PHONE: (800) 275-2080 HIGH SIERRA ELECTRONICS FAX: (530) 276-2089



### DESCRIPTION:

The Model 1001 Field Technician Decoder was designed to make the technician's work in the field easier. Used in conjunction with a radio scanner and laptop computer, the Field Decoder allows the technician to receive and display transmitted ALERT/IFLOWS gauge data on site. It is small, lightweight and requires no external battery.

The internal, rechargeable 9 Volt battery will power the decoder for more than 4 hours between charges and the Model 1001 includes a charger that can plug into the service vehicle lighter socket.

A built-in speaker allows the technician to hear incoming signals (the scanner's speaker is deactivated when the audio cable is plugged in). An active light is lit when an incoming signal is received.

### SPECIFICATIONS:

Inputs .....	1/8" Phone Jack Audio Input Connector
Outputs .....	RS-232C Format, 9-Pin Female Connector
Data Format .....	ALERT/IFLOWS Binary Standard, A/I ASCII, A/I Wind, Enhanced IFLOWS Format
Temp Range .....	-30° C to +50° C
Operating Temp .....	-30° C to +50° C
Enclosure .....	Aluminum Box with External Connectors (1/8" Phone Jack, RS-232C 9-Pin, Charging Jack)
Power .....	12 VDC, Charging Cable Supplied
Size .....	7.5" L x 3.25" W x 1.125" H
Weight .....	12 Ounces
Shipping Weight .....	1 Pound

### ORDERING GUIDE:

Model 1001..... Field Technician Decoder

ACCURACY YOU CAN COUNT ON

WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)

# MODEL 2400

## Tipping Bucket Rain Gauge

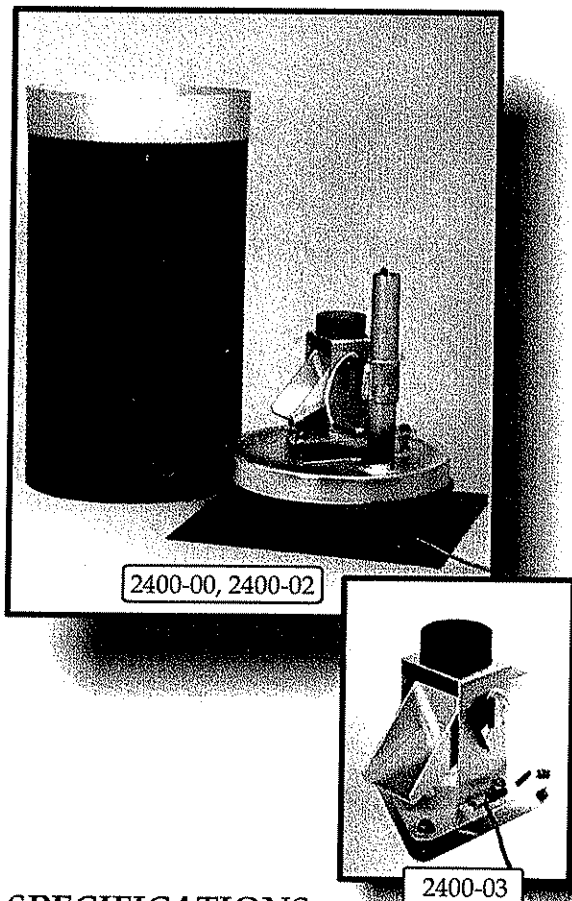
- One-Piece Machined Aluminum Bucket
- Accuracy of  $\pm 1.5\%$  for 0 to 2 Inches per Hour
- Measures in 1mm and 0.01 In. Increments
- Set-And-Forget Operation



PHONE: (800) 275-2080

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2089



2400-00, 2400-02

2400-03

### SPECIFICATIONS:

Catch Bucket . . . . .	Machined Aluminum
Sensor Type . . . . .	Form A 2 Wire Switch
Sensor Housing . . . . .	12" Aluminum Cylinder
Materials . . . . .	Anodized Aluminum
Event Resolution . . . . .	1mm or 0.01 Inch
Accuracy . . . . .	$\pm 1.5\%$ for 0 to 2 Inches per Hour $\pm 3\%$ for 2 to 6 Inches per Hour
Contact Closure . . . . .	Normally Open - Momentary Contact Closure
Output . . . . .	Pulse Count - Upward
Output Connector . . . . .	5 Pin MS Connector
Orifice Diameter . . . . .	12 Inch, 2.5 Inch Lip above Screen
Operating Temp. . . . .	0°C to 60°C, 32°F to 140°F
Signal Output . . . . .	Normally Open Contact Closure
Mounting . . . . .	Standpipe Assembly
Cable . . . . .	Shielded
Cable Length . . . . .	25 Foot
Size . . . . .	12" D x 22.5" H
Weight . . . . .	11 Pounds
Shipping Weight . . . . .	13 Pounds

### DESCRIPTION:

The 2400-00 Tipping Bucket Rain Gauge provides state-of-the-art technology for ALERT flood warning. It consists of a 12" diameter housing, a 12" anodized funnel, a 12" anodized debris screen, and a 4" stainless steel screen. The Tipping Bucket Mechanism is mounted on an anodized aluminum base with an integrally mounted bulls-eye level that uses spring-tensioned adjusters for accurate, set-and-forget operation.

The gauge comes complete with 25' signal cable and 5 Pin MS connector. Water is directed into the tipping bucket mechanism which is adjusted to tip when 1mm or 0.01 inch of rain is collected. As the bucket tips, it causes a magnet to pass over a sealed reed switch, closing the switch momentarily. The contact closure is then counted by the circuitry in the data collection equipment. Measurement accuracy is  $\pm 1.5\%$  at a precipitation rate of 0 to 2 inches per hour and  $\pm 3\%$  for above 2 inches to 6 inches per hour. Water is discharged through drain holes at the base of the gauge housing, these holes are protected by screens to prevent insect entry.

The Model 2400-00 is designed to fit on a standpipe assembly, but can easily be a "standalone" with the Roof Mount option.

### ORDERING GUIDE:

Model 2400-00 . . . . .	Rain Gauge Top Section (Twist-lock)
Model 2400-15 . . . . .	Rain Gauge Top Section (Slotted)

### OPTIONAL:

Model 2400-01 . . . . .	Rain Gauge Top Section without Spun Cap
Model 2400-02 . . . . .	Roof Mount Option
Model 2400-03 . . . . .	1 mm Tipping Bucket Mechanism w/25' Cable Optional: (2400-10) 0.01 Inch Tipping Bucket Mechanism w/25' Cable
Model 2400-04 . . . . .	Exchange - Form "C" - 3 Wire Reed Switch (Sierra Misco Type)
Model 2400-05 . . . . .	2 Wire Read Switch
Model 2400-06 . . . . .	Replacement Funnel w/3" Lip
Model 2400-07 . . . . .	Altershield for Rain Gauge
Model 2400-08 . . . . .	Bracket for Altershield & 12" Tube
Model 2400-09 . . . . .	Replacement Screen
Model 2400-10 . . . . .	Tipping bucket w/Base Plate, (.01")
Model 2400-11 . . . . .	Top Section Retrofit Kit
Model 2400-16 . . . . .	Field Calibrator for Tipping Bucket

ACCURACY YOU CAN COUNT ON

WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)

# 3200 SERIES ALERT/IFLOWS Data Transmitters

- Reliable, Highly Accurate Data
- Easy Field Set-up Without a Computer
- Universal Water Level Shaft Encoder Selection
- Digital Stilling Well Dampening

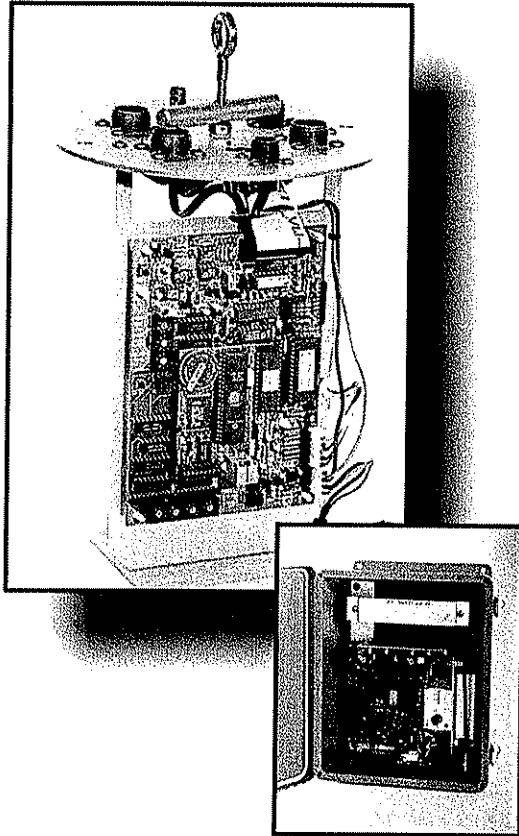
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PHONE: (800) 275-2080

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2089



## DESCRIPTION:

The 3200 Series of ALERT/IFLOWS Data Transmitters are a versatile line of compact, full featured telemetry devices designed to meet the most rigorous hydrological and meteorological applications. No laptop computer terminals, optional analog cards or connector packages are required. Standard features include: VHF/UHF Transceiver, 11 Bit analog interface, sealed lead acid battery, connector compatible with third party hardware (i.e., Sierra Misco 5050 & sensors) and a water resistant canister or NEMA enclosure. To put the data transmitter into operation, you simply set some switches/jumpers, plug in the sensors & antenna cable, and connect the battery.

The analog interface includes an industry first 11-Bit (1 part in 2048) resolution. A pressure transducer with a 20' span will have a resolution of .01'. On the Model 3206-00, 4 single ended 0 to 5 VDC inputs or 2 single-ended and 1 differential inputs are possible. In addition, a battery sensor constitutes a 5th analog input. Any of the 5 inputs may be disabled by installing a jumper. The Model 3206-08 option replaces the second digital input with a 6-pin input that accepts the standard Handar Model 585 precip/solar/shaft encoder connector. The Model 3206-01 Wind Connector option adds another analog input. The Model 3208-01 is similar to the 3206-00 but includes either 8 single-ended 0 to 5 VDC inputs or 6 single-ended and 1 differential input. Any of the 8 analog inputs may be disabled by installing a jumper.

Digital dampening of noisy wells is accomplished with the use of the HOLDOFF TIME and the WATER LEVEL ALARM OVERRIDE switches. The HOLDOFF TIME switch allows transmission of incremental water level reports only at fixed intervals unless a change has occurred that is greater than or equal to the setting of the override switch. Then the HOLDOFF time is ignored and the transmission is sent anyway. The resolution of the shaft encoder is not affected by the settings of these switches. Three different incremental shaft encoders can be accommodated by simply changing a jumper.

The Models 3206-00 and 3208-01 come with several other features for improved maintenance at remote sites. Pressing both TEST and RESET at the same time will power the radio continuously, which simplifies power output measurements. Pressing TEST powers up all the analog section continuously, while releasing TEST will cause the enabled sensors to be read and transmitted. A battery saving feature disables transmissions if the voltage drops below 10.5 VDC, protecting the battery from deep discharge situations.

**ACCURACY YOU CAN COUNT ON**

WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)

# 3200 SERIES

## Specifications, Ordering Guide, & Options



PHONE: (800) 275-2030

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2039

### SPECIFICATIONS:

Inputs . . . . .	Analog Inputs, either All Single-Ended 0 to 5 VDC or 2 Single-Ended & 1 Differential Input w/ Adjustable Signal Conditioning, User Selectable.	Programming . . . . .	Mnl Jumpers/Rotary Switches
Radio Range . . . . .	VHF 136 to 174MHz @ 5W UHF and other bands available.	Data Format . . . . .	ALERT Binary Standard Enhanced IFLOWS Format
Transmission Modes . . . . .	Incremental Inputs are on an EVENT Basis.	Temp Range . . . . .	-50°C. to +70°C.
Analog Sensor . . . . .	Modes are either Timed or Timed Event.	Operating Temp . . . . .	-40°C. to +60°C.
Timed . . . . .	5, 10, 15, 20, 30, 45 Minutes or 1, 2, 3, 6, 12 Hours	Radio Connector . . . . .	BNC (3208 has screw terminals)
Timed Event . . . . .	Sensors scanned Every 1 Minute. The Change in Sensor Value from the Previous Transmission is Required to Initiate a transmission is either .05%, .25%, .5%, 1%, or 2% of Full Scale. (A report is also sent every 12 hours on Timed event Sensors.)	Lightning Protection . . . . .	Standard on All Inputs
Holdoff . . . . .	Holdoff time for all Transmissions is 20 seconds so that a single 3200 Series Transmitter will transmit no more than every 20 seconds. The hardware circuit will disable the radio after 5 seconds of on-time. Battery: When the battery drops below 10.5V RF transmissions are disabled.	I.D. Number range . . . . .	0 to 8191, Switch Selectable
		RF Warm-Up Time . . . . .	Jumper Selectable to 180, 250 320 or 390 milliseconds
		Power . . . . .	12 VDC @ 250µA, Solar Panel Connection Standard.
		Battery . . . . .	12 VDC, 12 A/H
		Warranty . . . . .	3 Years from Date of Shipment

### OPTIONAL:

3206-01 . . . . .	Wind Connector w/ Signal Conditioning
3206-20 . . . . .	Data Logging; 512K
3801-00 . . . . .	Power Amplifier
3206-03 . . . . .	Conn. Circuit Board for Model 3206-00
3206-05 . . . . .	Conn. Circuit Board for Model 3206-00 w/Wind Modification
3206-06 . . . . .	Transmitter with UHF, AES Radio
3206-08 . . . . .	Handar 585 Connector
3206-09 . . . . .	GOES Telemetry Option for 3206-20
3206-12 . . . . .	Telephone Modem
3206-13 . . . . .	Cellular Telephone Modem
3206-14 . . . . .	Radio Modem Option

### ORDERING GUIDE:

	3206-00	3208-01	3216-00	3216-02
ANALOG INPUTS	4	8	8	16
UP ONLY COUNTING	1	1	1	2
UP/DOWN COUNTING	1	1	1	2
INPUT CONNECTORS	MS	Terminal Strip	MS	MS
ENCLOSURE	Aluminium Canister	NEMA 4X Enclosure	NEMA 4X Enclosure	NEMA 4X Enclosure
SIZE	7" X 17"	12" X 14" X 5"	12" X 14" X 5.5"	14" X 16" X 9"
WEIGHT	9 Pounds	15 Pounds	15 Pounds	19 Pounds
SHIPPING WEIGHT	10 Pounds	20 Pounds	20 Pounds	24 Pounds

ACCURACY YOU CAN COUNT ON

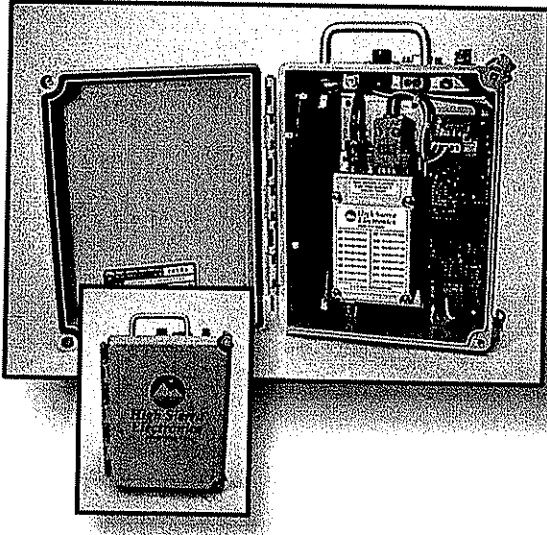
WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)

# MODEL 3210 Serial Transmitter

- Reliable, Simple Interface for ALERT Transmissions
- Low Cost Addition to Other Manufacturers Data Loggers
- Compatible with All Existing ALERT/IFLOWS Networks



PHONE: (800) 275-2030 HIGH SIERRA ELECTRONICS FAX: (530) 276-2039



### DESCRIPTION:

The Model 3210 Serial Transmitters receives either Synchronous or Asynchronous serial output data from a data logger or data acquisition unit and converts this data to an ALERT/IFLOWS format for radio frequency transmission.

High Sierra's Serial Transmitter is compatible with all existing ALERT/IFLOWS Networks.

The 3210 is programmed with a battery protection function and has a holdoff mode.

Support by an application engineer for program development is included at the time of order.

### SPECIFICATIONS:

Size: ..... 7" x 7" x 4.5" Deep  
 Chassis Type: ..... NEMA 4X Polycarbonate with Clear Cover  
 Mounting Holes: ..... 6.57" x 6.50"  
 Weight: ..... 9 Pounds  
 Ship. Weight: ..... 11 Pounds  
 Temp Range: ..... -40°C to +50°C  
 Connector: ..... Antenna is BNC Female, Asynchronous Input via a Male DB9 Connector, Synchronous Input via Tinned Leads and Tinned Leads for the Charging Circuit.

Battery: ..... 12 Volts @ 2.2 A/H, rated for 10,000 transmissions without charging.  
 Power Requirements: ... 12 Volt DC @ 150µA; Charging input is via 3-Pin MS Connector.  
 Radio: ..... VHF (150-175MHz) or UHF (450-475MHz)  
 Narrowband transceiver with 5 watts output. Multiple channels are available. Optional is a 25 watt power amplifier.  
 Narrowband Compliant

RF Warmup Time: ..... Jumper selectable to 180, 250, 320, or 390 milliseconds.

Sensor Inputs: ..... None. Data is transferred serially into the 3210  
 Data Format: ..... ALERT Binary Standard  
 (Enhanced IFLOWS Format also available).

Collision Avoidance: ... If the receive channel is busy, the Model 3210 waits until it is clear. May be disabled via a jumper.

Holdoff Modes: ..... Holdoff time for all transmissions is 20 seconds so that a single Model 3210 Data Transmitter will transmit no more than every 20 seconds.  
 A hardware circuit will disable the radio after 5 seconds of on-time. When the battery voltage drops below 10.5 VDC the RF transmissions are Disabled.

### ORDERING GUIDE:

Model 3210-04 ..... Serial Transmitter with Battery, Synchronous  
 Model 3210-03 ..... Serial Transmitter with Battery, Asynchronous

### OPTIONAL:

Model 3801-00 ..... VHF Power Amplifier  
 Model 3803-00 ..... UHF Power Amplifier

ACCURACY YOU CAN COUNT ON

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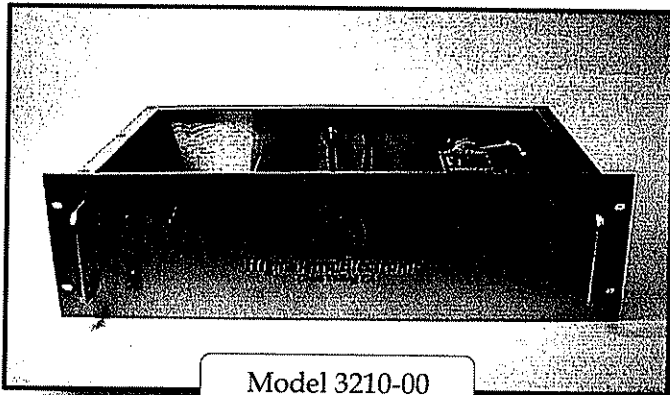
# MODEL 3300

Programmable  
Store & Forward  
Repeater

- Field Programmable
- Echo Suppression For Single Frequency Systems
- Digital Noise Suppression Of Extraneous Signals
- Self Reports It's Battery Voltage
- Optional Sensor Inputs



PHONE (800) 275-2080 HIGH SIERRA ELECTRONICS FAX (530) 273-2089



Model 3210-00  
Rack Mount

### DESCRIPTION:

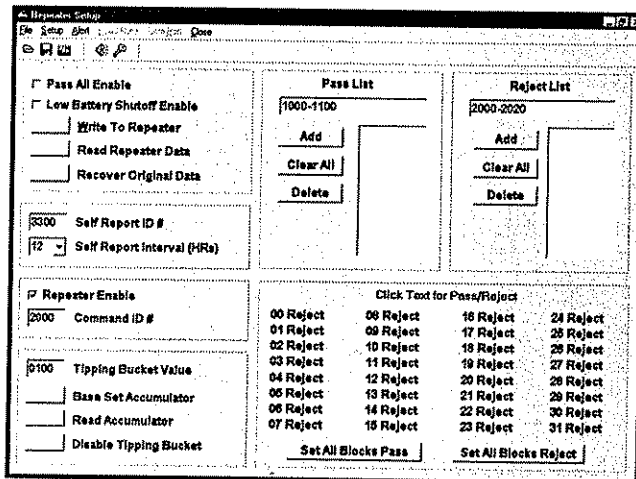
Repeaters are one of the key components of an ALERT/IFLOWS data collection network. Often an entire network or a significant portion of the system's gauges report through a single repeater. Given the critical nature of the role the Repeater plays in a system, High Sierra Electronics has always paid particular attention to repeater applications to insure system integrity. Over the years we have incorporated innovations to our repeater such as **Echo Suppression** which eliminates the "ping pong" or echo affect that could be a problem in some systems. The New Model 3300-00 includes Echo Suppression as a standard feature.

The 3300-00 can be supplied in a rack mount case for rack or wall mounting, or optionally in a NEMA 4 enclosure for installation in a standpipe. The speaker, speaker switch, external reset, and external LED's are not available with the NEMA 4 option.

### User Programmable

The field technician can alter the Model 3300-00 configuration parameters in just minutes on-site with a laptop utilizing a Windows based set-up screen. These parameters include: Status Report ID and report interval, Command ID for remote control activation or de-activation of the Repeater and the Pass/Reject IDs. This in-field programming capability saves time and site visits for the field technician.

The Model 3300-00 can be programmed to pass all valid ALERT/IFLOWS IDs, pass or reject blocks of IDs and/or pass up to 255 individual IDs and reject up to 255 individual



The Programming Screen

*See next page for Specifications, Ordering Guide, and Options*

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# MODEL 3300

## Specifications, Ordering Guide & Options



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An optional precipitation input allows the connection of a Rain Gauge. The software will allow the setting of an initial value for the precipitation accumulator and to enable/disable the precipitation input.

### Duplex Mode

An optional duplex mode adds a second radio to the repeater and the associated electronics. This enables the repeater to continue to receive while messages are being transmitted. To prevent feedback from the transmit antenna to the receive antenna, a minimum frequency separation must be 2MHz between the receive and transmit frequency.

### Remote Control of Repeaters

An Optional feature of the 3300-00 allows remote control of the repeater from the base station. This command capability allows for remote activation or de-activation of a repeater. This command signal capability can also be applied in applications where a back up or standby repeater is desired. If the primary repeater stops reporting, a signal can be sent from the base station to activate the standby repeater. This feature can minimize system downtime in the event of a repeater failure.

### Status Reports

Repeater status reports containing battery level can be set by the user at intervals from two to twenty four hours. This allows the base station software to monitor repeater operation and issue an alarm if status reports are not received or if battery levels drop below an acceptable level or at an unacceptable rate.

### Digital Filtering - Improved performance in noisy environment

There are times when Repeaters must be installed in the midst of mountain top antenna farms with a great deal of other radio equipment operating in close proximity. This equipment at times includes high power transmitters such as TV Broadcasting and NWS Weather Radio. A digital filtering process enables the repeater to pick out valid ALERT/IFLOWS data out of noise even with a completely unquelled radio.

### ORDERING GUIDE:

Model 3300-00 .....	Store & Forward Repeater w/Transceiver; NEMA 4X Enclosure. (please specify frequency)
Model 3310-00 .....	Store & Forward Repeater w/ Transceiver; Rack Mount Enclosure. (please specify frequency)

### SPECIFICATIONS:

RF Range .....	VHF 136 - 174 Mhz, other bands available
Programming .....	Pass or Reject Specified ID Numbers or Blocks of Numbers
Data Format .....	ALERT Binary Standard; Enhanced IFLOWS Format
Temp Range .....	-40°C. to +50°C.
Enclosure .....	Rack Mount (NEMA Fiberglass Optional)
Connection Types .....	Solar or AC Back-up Power (3-Pin MS type, BNC, Antenna)
Power .....	12VDC @ 90mA (may vary w/ different radios) 1.5 Amps when transmitting
Battery .....	2ea., 12 Amp 12 Volt DC
Rack Mount Size .....	5.25"H x 19.0"W x 11.75"D
NEMA 4 Size .....	15.75"H x 9.875"W x 4.875"D
Weight .....	28 Pounds
Shipping Weight .....	31 Pounds

NOTE: Radio & Battery are warranted by the Original Manufacturer.

### OPTIONAL:

Model 3300-01 .....	Sensor Input Option
Model 3300-09 .....	Remote Control Capability
Model 3300-10 .....	Chassis w/RF Coating & Conductive Gasket
Model 3300-11 .....	Antenna Switch (for Dual Antenna Site)
Model 3300-20 .....	Duplex Repeater; NEMA 4X Enclosure
Model 3801-00 .....	Power Amplifier (VHF)
Model 7200-00 .....	Lightning Protection Device

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# 3350 SERIES ALERT Controllers

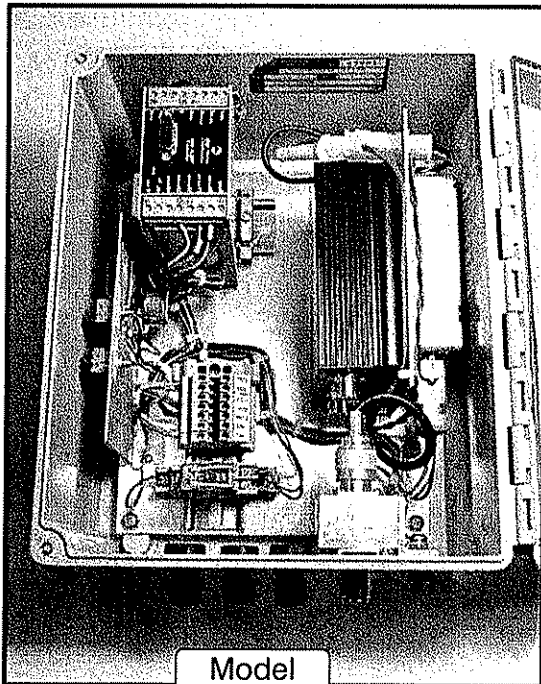
- Command & Response System
- User Selectable Alarms
- Local or Remote Control
- Rugged, Proven Performance



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Model  
3356-01

## DESCRIPTION:

The Model 3350 Series of ALERT Controllers is an intelligent command and response control system for automatically turning on traffic warning signals. It is capable of real-time monitoring, using the ALERT format, for multiple sites where flow rate and water level poses a safety threat. Other applications include low water crossings, gate & pump controllers, and situations using alarms or automatic dialers.

The 3350 Series works with existing systems to receive and decode ALERT formatted messages. It gives users the ability to integrate "Master" & "Slave" Controllers with their remote data-collection stations. The Master can be programmed to pass control commands to as many as five Slave units. It will relay commands from the base station and/or create commands in response to preset sensor levels. The ID number and set points are programmed using a simple Windows based interface. It will also send timed reports, event generated reports and command generated response reports.

The Slave will have a relay controlled device, for example a traffic warning sign with flashing lights or an automatic road crossing-arm, and will send timed reports and command generated response reports to its Master controller and to the Base Station. All controllers, Masters and Slaves, have the ability to send timed (programmable) reports to the base station. This report consists of the battery voltage, sensor value and status information.

In communications between controllers or the base station and controllers, commands expect a return response within 10 seconds. All of the radio traffic is displayed and archived at the base station, which can also issue commands to override local control at the Master sites. As an additional safety feature, if a Master receives no response or an incorrect response from a Slave unit, that information is included in the Status Report transmitted to the Base Station. Software can be programmed to activate an alarm under this condition. The personnel can then attempt to control the Slave unit directly and/or dispatch maintenance personnel to the site.

The 3350 Series uses solar panel or AC charged batteries for power to energize the various operating components.

See Other Side for Specifications, Ordering Guide and Options

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# 3350 SERIES ALERT Controller



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## SPECIFICATIONS:

Power Supply.....	12 Volts Nominal
Current .....	Receive - 50mA with Model 3703 Radio Transmit - 2 Amps. Maximum
Digital Output .....	250 mA Open Collector
Analog Input.....	0-5 Volts (4-20 mA, 0-1 mA with External Resistor)
Status Input.....	Contact Closure
12 Volt Switched Output ...	2 Amps Maximum
Radio Frequency .....	(166 - 171 MHz) - Standard (406 - 412 MHz) - Optional
Protocol .....	ALERT Binary Standard
Tone In.....	700 mV Peak to Peak
Tone Out .....	700 mV Peak to Peak
Push to Talk.....	Active Low
LED Indicators .....	1 Transmit / 1 Receive
Size.....	4" Height X 3" Length X 1.75" Deep
Weight.....	4 Ounces

## ORDERING GUIDE:

Model 3350-01 .....	ALERT Remote Controller Module
Model 3350-04 .....	ALERT Controller with Analog Input
Model 3350-05 .....	ALERT Controller Decoder / Serial Transmitter
Model 3354-01 .....	ALERT Controller; 4 Digital Output with Transceiver (Din Rail)
Model 3355-01 .....	ALERT Controller with Data Transceiver & Relay
Model 3355-02 .....	ALERT Controller with Data Transceiver, Relay & 1 Analog, 1 Digital Input
Model 3356-01 .....	ALERT Controller with Data Transceiver, 2 Analog & 1 Digital Input (NEMA)
Model 3356-02 .....	ALERT Controller with Data Transceiver, 2 Analog & 1 Digital Input (Cannister)
Model 3480 .....	Advanced Warning Station Includes: 16 Foot 4" Spun Aluminum Pole, Breakaway Base, Anchor, 12" Diameter Yellow Beacon Signal (Quantity 2) with Mounting Brackets, 50 Watt Solar Panel with Mounting Brackets, All Hardware and Mounting Brackets for Attaching a 48" Warning Sign, Antenna & Antenna Cable, ALERT Controller Electronics Package Mounted Inside a Locking Aluminum 26" X 17" X 16" Cabinet.

## OPTIONAL:

Model 3703.....	Data Radio
5600 Series .....	Battery

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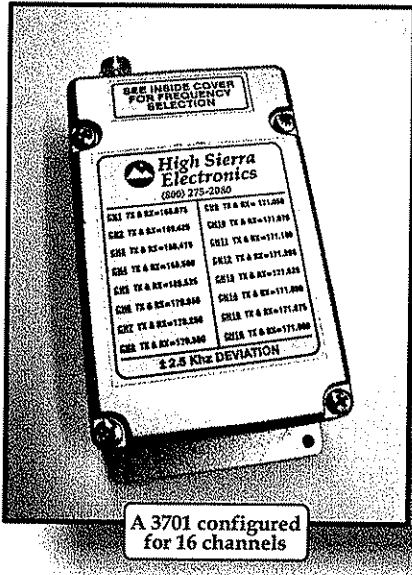
# MODEL 3701

## Data Transceiver

- Programmable Narrow or Wide Band
- Factory Alignment for Peak Performance
- Water Proof Casing
- Programmable up to 16 Channels



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### DESCRIPTION:

The Model 3701 Data Transceiver is designed for use with data generating devices using AFSK type modulation systems. It provides outstanding frequency stability and control.

The Model 3701 comes in VHF and UHF frequency ranges (see Ordering Guide for dash number) and features 16 programmable channels. Each has extremely short turn-on time that conserves power in battery operated systems. Multiple functions include 1200 to 9600 baud rates, and AC and/or DC audio coupling. When used in a repeater, the transmit frequency typically is specified as the receive frequency when using the 3701 in an ALERT/IFLOW Transmitter.

This Radio, with 16 dip switch selectable channels, is the standard transceiver featured in High Sierra Electronics' ALERT/IFLOWS transmitters and repeaters. For certain applications, however, other radios or technology may be more appropriate. A High Sierra Electronics' Systems Engineer can recommend the telemetry solution best suited to a specific situation. These alternatives include Spread Spectrum, RS-232 radio modems, GOES radio modules, crystal controlled radios, and telephone modems. Please contact High Sierra Electronics technical support for more specifications.

### SPECIFICATIONS:

#### GENERAL:

Frequency range . . . . .	V2: 148-174MHz VHF (U2: 440-470MHz)
Frequency stability . . . . .	±5.0 ppm VHF (±2.5 ppm)
Channels spread . . . . .	V2: 26MHz VHF (U2: 30MHz)
Channel spacings . . . . .	25KHz, 12.5KHz programmable
RF output power . . . . .	5/1 watt
Number of channels . . . . .	16
Frequency source . . . . .	Synthesizer
Power supply . . . . .	Ext. power supply (12 VDC nominal voltage)
Temperature range	
Storage . . . . .	-40°C. to +80°C.
Operating . . . . .	-30°C. to +60°C.
Current consumption	
Standby (muted) . . . . .	25mA receive w/power save mode
Transmit 5W RF power . . . . .	<2.0A
Transmit 1W RF power . . . . .	<1.0A
Connector . . . . .	9dB
Dimensions . . . . .	30mm H x 62mm W x 118mm D
Weight . . . . .	253grams

#### TRANSMITTER:

Carrier power . . . . .	Nom.	Max	Min
Hi . . . . .	5W	<6W	>4.5W
Low . . . . .	1W	<1.5W	>0.8W
Frequency deviation:			
25KHz ch spacing . . . . .	Peak -5.0, min. -3.8		
12.5KHz ch spacing . . . . .	Peak -2.5, min. -1.9		

### SPECIFICATIONS:

#### TRANSMITTER cont.:

Frequency error . . . . .	<0.5KHz nom. condition for VHF <0.75KHz nom. condition UHF
	-3.0 ppm max. condition UHF
	-5.0 ppm max. condition VHF
Spurious emission . . . . .	<-57dBc
Modulation sensitivity . . . . .	100mV rms @ 60% peak dev.

#### RECEIVER:

Sensitivity (12dB sinad) . . . . .	UHF <-117dBm, VHF <-118dBm @ nominal condition UHF <-115dBm, VHF <-118dBm @ maximum condition
Adjacent ch Selectivity:	
25KHz ch spacing . . . . .	>60dB @ nom., >55dB @ maximum
12.5KHz ch spacing . . . . .	>50dB @ nom., >45dB @ maximum
Spurious rejection . . . . .	70dB (100KHz - 4GHz)

### ORDERING GUIDE:

Model 3701-00 . . . . .	Data Transceiver, VHF
Model 3701-01 . . . . .	Data Transceiver, UHF

### OPTIONAL:

Model 3701-15 . . . . .	Data Transceiver Programming Kit w/Extender Board
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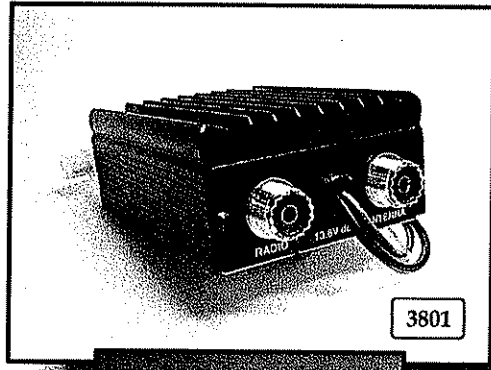
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# 3800 SERIES RF Power Amplifiers

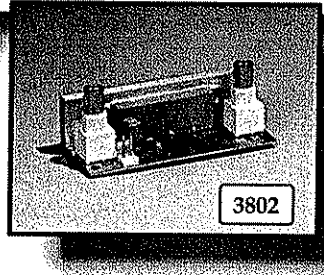
- Strengthen Weak Radio Paths
- 3 Frequency Ranges
- Solid-State Design



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3801



3802

### DESCRIPTION:

The 3800 Series of RF Power Amplifiers are compatible with most ALERT/IFLOWS manufacturer's equipment.

All of the units are class "C" tunable amplifiers. Each have an internal transmit/receive switching circuit, an RF power stage, and a low-pass filter section. The 3 frequency ranges are:

- Model 3801 - VHF 148 to 174MHz
- Model 3802 - UHF 400 to 440MHz
- Model 3803 - UHF 450 to 470MHz

The 3800 Series of RF Power Amplifiers would be appropriate to add to any of High Sierra Electronics' repeaters or data transmitters whenever a radio path would be unreliable without it. Examples would include very long paths and paths without a line of sight.

### SPECIFICATIONS:

	<b>3801 (VHF)</b>	<b>3802 (UHF)</b>	<b>3803 (UHF)</b>
Range .....	148 - 174MHz	400 - 440MHz	450 - 470MHz
Temp Range .....	-30°C. - +60°C.	-30°C. - +60°C.	-30°C. - +60°C.
Operating Temp .....	-30°C. - +60°C.	-30°C. - +60°C.	-30°C. - +60°C.
Enclosure .....	Black Aluminum	Black Aluminum	Black Aluminum
Connector Types .....	PC-259, Molex, PL-259	BNC, Molex, BNC	BNC, Molex, PL-259
Power Output .....	25.0W @ 5.0W	15.0W @ 5.0W	15.0W @ 5.0W
Nominal Input .....	Nominal Input Reduced Power Operation @ 2 -4W.	Nominal Input Reduced Power Operation @ 1.4W.	Nominal Input Reduced Power Operation @ 1.4W.
Power .....	13.8 VDC	13.8 VDC	13.8 VDC
Size .....	4.88"L x 1.575"W x 1.563"H	1.531" W x 1.563" H x 3.906" L	1.531" W x 1.563" H x 3.906" L
Weight .....	1 Pound	1 Pound	1 Pound
Shipping Weight .....	2 Pounds	2 Pounds	2 Pounds

### ORDERING GUIDE:

- Model 3801..... Power Amplifier, VHF
- Model 3802..... Power Amplifier, Low Band UHF
- Model 3803..... Power Amplifier, High Band UHF

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# MODEL 5720

## Temperature Sensor

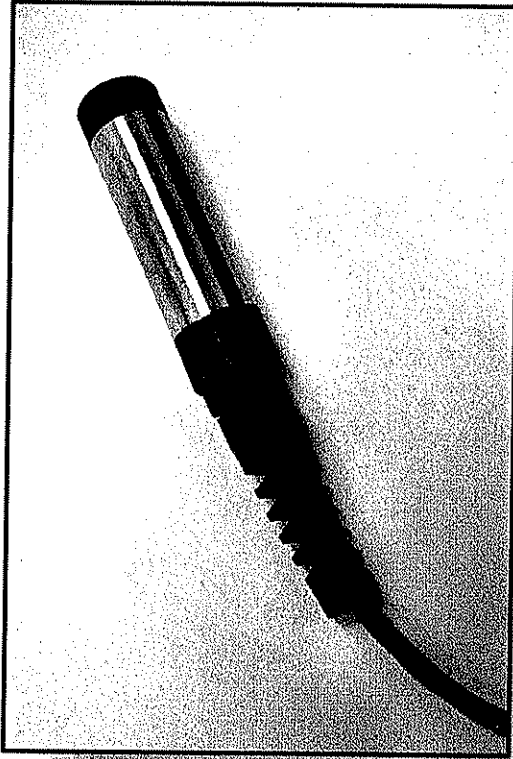
- Submersible, Waterproof Enclosure
- Rugged Construction
- Signal Conditioning Available
- Low Power Usage



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### DESCRIPTION:

The Model 5720-00 Temperature Sensor is a highly accurate, low power temperature sensor for both water and air temperature measurement applications. It utilizes a thin film platinum RTD element that provides an accuracy of  $\pm 0.2^{\circ}\text{C}$ . and a measuring range of  $-40^{\circ}\text{C}$ . to  $+60^{\circ}\text{C}$ . The temperature element is encapsulated within a waterproof, stainless steel enclosure to prevent corrosion. This casing allows the sensor to be mounted in a Model 5728-01 multi-plate radiation shield for mast mounts. While not designed for deep water immersion, the 5720 is suitable for water temperature measurements in bogs, wetlands, wells, lakes, reservoirs, streams, and rivers.

The Model 5720-00 is used with the 5720-10 through 5720-22 Temperature Signal Conditioning Module (RTD) to convert the sensor's signal for use with telemetry systems, data loggers, recorders, etc. The 5720-00 can also be used in combination with High Sierra Electronics' Model 5740-01 Humidity Sensors.

### SPECIFICATIONS:

Sensor Type . . . . .	Air or Water Temp Probe PT100 3-Wire (1/3 DIN meets IEC Class B)
Sensor Element . . . . .	Platinum RTD
Sensor Housing . . . . .	Stainless Steel Tube
TCR . . . . .	0.00385
Operating Temp. . . . .	$-40^{\circ}\text{C}$ . to $+60^{\circ}\text{C}$ . ( $-40^{\circ}\text{F}$ . to $+140^{\circ}\text{F}$ .)
Accuracy . . . . .	$\pm 0.20^{\circ}\text{C}$ . ( $.01^{\circ}\text{C}$ . optional)
Input Voltage . . . . .	12 VDC
Output . . . . .	4 to 20mA or .3 to 1.5 VDC
Power . . . . .	12 VDC
Materials . . . . .	Potted Polyethylene Thermoplastic
Size . . . . .	5.0" x 0.75" Diameter
Weight . . . . .	1 Pounds
Shipping Weight . . . . .	3 Pounds

### ORDERING GUIDE:

Model 5720-00 . . . . .	Temperature Sensor RTD
Model 5720-03 . . . . .	Temperature Sensor AD22110

### OPTIONAL:

Model 5720-10 . . . . .	Signal Conditioning, 0.3 to 1.5V
Model 5720-11 . . . . .	Signal Conditioning, 0 to 5V
Model 5720-12 . . . . .	Signal Conditioning 0.3 to 1.5V(DIN Rail)
Model 5720-13 . . . . .	Signal Conditioning 0 to 5V(DIN Rail)
Model 5720-20 . . . . .	Signal Conditioning, 4-20mA
Model 5720-22 . . . . .	Signal Conditioning 4-20mA(DIN Rail)
Model 5720-02 . . . . .	Extra Cable, 3 Conductor (1' Increments)
Model 4004-00 . . . . .	Output Converter (4-20mA to 0 to 5V output)
Model 5728-01 . . . . .	Multiplate Solar Radiation Shield

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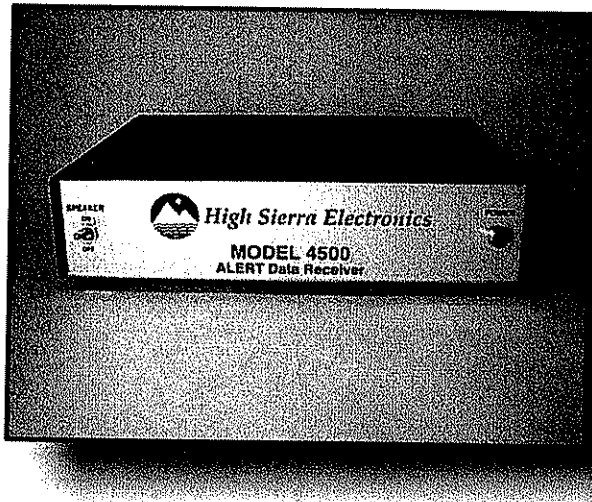
# MODEL 4500

## Base Station Receiver

- Compact and Lightweight
- Includes VHF/UHF Data Transceiver
- Low Power Consumption
- Internal Speaker



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### DESCRIPTION:

The 4500-02 Base Station Receiver accepts transmitted data from field transmitters or repeater stations. It is small and lightweight for convenient placement close to the antenna, and is powered by a 12 VDC charger. (As an option, the Model 5601-00, 12Volt, 7 Amp Hour Battery is recommended for un-interruptable power.)

The 4500-02 has an internal speaker with an on/off switch located on the front panel. This speaker allows the system operator or technician to hear the quality of the data signals. Equally important, the speaker is capable of revealing radio interference present on the system frequency.

The 4500-02 includes a VHF/UHF narrowband receiver which is tuned to a specific frequency. The audio output of the receiver is connected to the Model 1000-03 ALERT Decoder. The 4500-02 comes with a 12 VDC charger, 6' audio cable, and harness for optional battery.

### SPECIFICATIONS:

Inputs . . . . .	RF (VHF or UHF)
Frequency Stability . . .	±2.5 ppm
Sensitivity . . . . .	0.25µV Minimum @ 12dB SINAD
Noise Squelch . . . . .	1 - .35µV Adjustable
Spurious Rejection . . .	7dB Minimum
Image Rejection . . . . .	70dB Minimum
Selectivity . . . . .	60dB Minimum @ 12.5KHz
Frequency Range . . . . .	VHF 135 -174MHz; UHF 406 - 470MHz
Outputs . . . . .	Audio is set for 700mV pp @ System Deviation. Output Connector is 1/8" Phone Jack.
Audio Output Imped. . . .	8ohms
Temp Range . . . . .	-30°C to +60°C
Operating Temp. . . . .	-30°C to +60°C
Enclosure . . . . .	Aluminum Box w/ External Connectors (BNC, Screw Terminals, 1/8" Phone Jack)
Power . . . . .	12 VDC (300mA Charger is Included) Active <220mA; Standby 13mA
Size . . . . .	2.062" H x 6.375" W x 8.375" L
Weight . . . . .	2 Pounds
Shipping Weight . . . . .	3 Pounds
Regulatory . . . . .	FCC Parts 90,15. Canada: RSS-119 Issue 5

### ORDERING GUIDE:

Model 4500-02 . . . . . ALERT Base Station Receiver

### OPTIONAL:

Model 1000-03 . . . . . ALERT Decoder  
Model 5601-00 . . . . . 12 Volt, 7 Amp Hour Battery

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# MODEL 5310

## Solar Panel Voltage Regulator

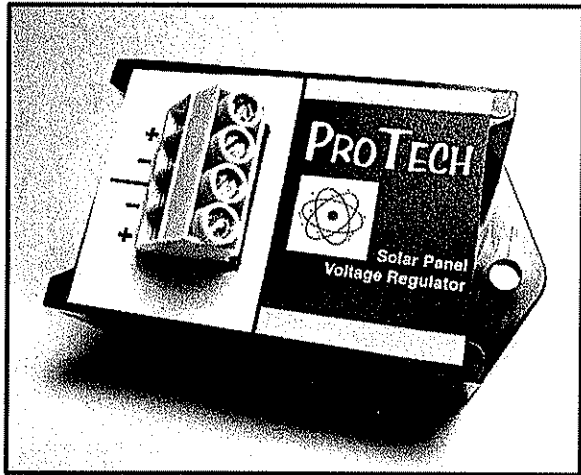
- ☐ Useable with Any Size Lead-Acid Battery
- ☐ No Reverse Current Flow
- ☐ Safe Float Charging for Long Battery Life



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### DESCRIPTION:

The Model 5310-00 ProTech Solar Panel Voltage Regulator is intended for float charging of lead acid batteries. It is compatible with solar arrays whose current output is less than or equal to 3 Amperes. It may be used with any size lead-acid battery. Unlike some other regulators, the Model 5310-00 will not damage your battery due to overcharging.

The 5310-00 will act as a blocking diode when the battery voltage is greater than the solar array voltage. There will be no reverse current flow. The Model 5310-00 draws no current from the battery.

The regulator includes a thermal switch which will momentarily interrupt the current flow when the 5310-00 is dissipating too much heat.

While the Model 5310-00 can be installed outdoors, it is best to choose a mounting position which is protected from direct falling rain and from direct sunlight. This can usually be accomplished by mounting the regulator on the backside of the solar panel.

### SPECIFICATIONS:

Input Voltage .....	12 to 20 VDC
Output Voltage .....	13.7 VDC
Output Current Limit. . .	3 Amps
Operating Temp Range . .	-40°F to 140°F (-40°C to 60°C)
Max/Min Wire Size . . . .	12 AWG / 24 AWG
Size .....	1.5" x 1.5" x 3"
Mounting Holes .....	2 Each - 3/16" Holes, 2.5" Apart
Weight .....	4 Ounces
Shipping Weight .....	1 Pound

### ORDERING GUIDE:

Model 5310-00 . . . . . ProTech Solar Panel Voltage Regulator

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# MODEL 5723

## Relative Humidity & Temperature Probe

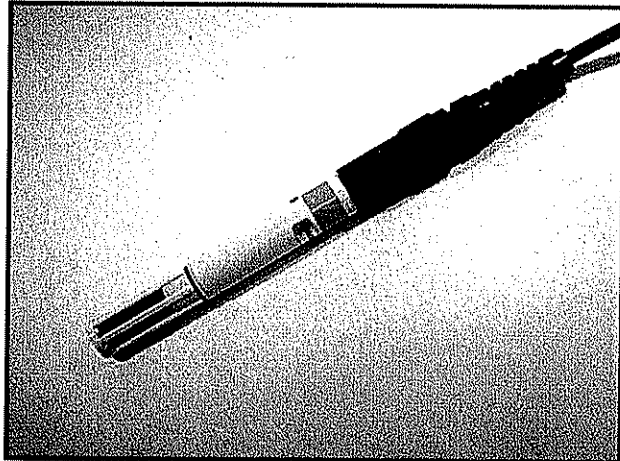
- Long Term Calibration-Free Operation
- High Accuracy
- Resists Condensation and Contaminants
- Fully Interchangeable with No Loss of Accuracy



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### DESCRIPTION:

The Model 5723-00 Relative Humidity & Temperature Probe is designed primarily for outdoor applications. This probe operates from a DC Voltage. Calibration data, sensor characteristics, serial number, etc., are retained in a non-volatile memory within the probe. The Model 5723-00 probe can be changed within seconds without any calibration and without any loss of accuracy.

The Model 5723-00 plug-in probe is easy to integrate into any system. It has two analog output signals and a one-wire digital output.

The probe, based on HygroClip technology, has two main subsystems:

ASIC (Application Specific Integrated Circuit) which is a custom designed chip that measures both the capacitive humidity sensor and the Pt100 RTD and converts the measurements into digital counts. The ASIC includes two D/A converters to convert the data from the micro controller into analog output signals.

Micro Controller/EEPROM which uses the digital counts generated by the ASIC to compute the value of humidity and temperature and returns the data to the ASIC (analog outputs). The micro controller also sends data to, or receives data from, the digital input/output (DIO). Calibration, linearization, temperature compensation and other sensor data are memorized in the EEPROM.

The operating range is 0 to 100%RH and -40°C. to 60°C. Standard factory calibration results in an accuracy of ±1.5%RH and ±0.2°C. At 23°C.

### SPECIFICATIONS:

Sensor Protection . . . . .	Wire mesh filter (std)/foam filter (opt)
Operating/Measuring Range . . . . .	-40°C. to +60°C., 0 to 100%RH
Accuracy at 23°C. . . . .	±1.5%RH and ±0.2°C.
Voltage Supply . . . . .	3.6 to 35VDC
Current Consumption . . . . .	10mA
Output Signal	
Humidity. . . . .	0 - 1VDC = 0 to 100%RH
Temperature - active . . . . .	0 - 1VDC = -40°C. to 60 C.
Accuracy (at 20.....25°C.) . . . . .	±1.5%RH from 0 to 100%RH ±0.2°C.
Repeatability . . . . .	±0.3% RH and <±0.1°C.
Humidity Sensor Stability . . . . .	Better than 1%RH over a year
Supply Voltage . . . . .	3.6 to 35VDC
Max. Current Consumption . . . . .	10mA
Cable Length Comp. . . . .	Effective up to 300 ft. (100m)
Weight . . . . .	7.5oz (210g)
Length . . . . .	12.1 inch (307mm)

### ORDERING GUIDE:

Model 5723-00 . . . . .	Relative Humidity & Temperature Probe
-------------------------	---------------------------------------

### OPTIONAL:

Model 5723-01 . . . . .	Foam Filter
Model 5723-02 . . . . .	HygroClip calibration software on CD ROM

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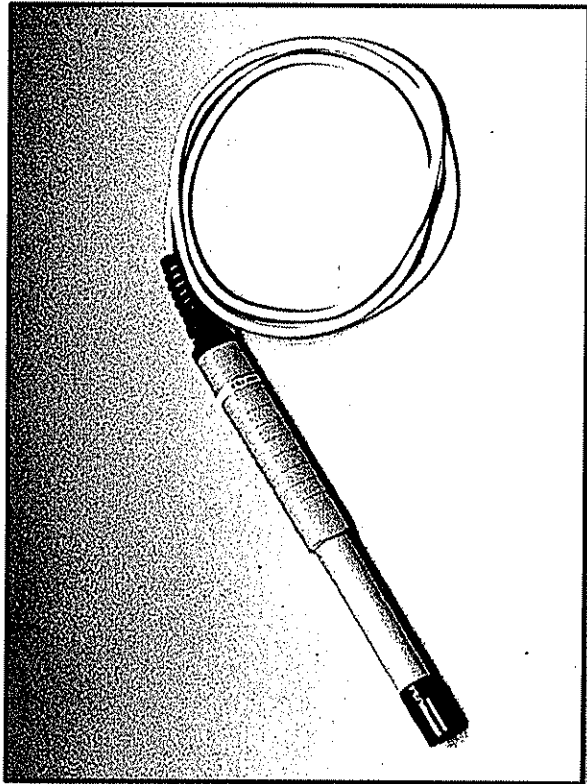
# MODEL 5722

## Relative Humidity & Temperature Probe

- 0 to 1VDC Temperature & Humidity
- Measures RH Over Full Range
- Temperature Compensated
- Dewpoint Temperature May Be Calculated



PHONE: (800) 275-2080 HIGH SIERRA ELECTRONICS FAX: (530) 278-2089



### DESCRIPTION:

The Model 5722-00 Relative Humidity & Temperature Probe was specifically designed for use in complex systems such as weather stations. The probe features low power consumption, 0-1 VDC output signals and is easy to install into a Model 5728-00 or 5729-00 Solar Radiation Shield.

The 5722-00 measures relative humidity over the full range of 0 - 100% RH both quickly and accurately. Humidity is measured by the capacitance change of a thin polymer film as it absorbs or releases moisture. The sensor provides long-term stability and low hysteresis, is not damaged by condensation, and is insensitive to dust or industrial pollutants - important features for a sensor located in outside ambient conditions. The Model 5722-00 has temperature compensation, allowing high accuracy to be maintained over a broad temperature operating range.

In addition to the RH sensor, the Model 5722-00 contains a PT100 temperature sensor. This sensor measures ambient temperatures and allows the dewpoint temperature to be calculated, if desired. The 5722-00 comes standard with a 15' cable.

A waterproof quick disconnect allows the sensor and it's associated electronics to be removed from the cable in a few seconds while in the field. With a spare sensor, maintenance and calibration can then be performed at the shop.

### ORDERING GUIDE:

Model 5722-00 . . . . . Relative Humidity & Temperature Probe

### OPTIONAL:

Model 5102-00 . . . . . Extra Cable, 5 Conductor (1' Increments)  
 Model 5520-00 . . . . . Humidity Calibrator  
 Model 4005 . . . . . Converts 0 - 1V to 0 - 5V  
 Model 5728-01 . . . . . Solar Radiation Shield (12 Disc Profile)  
 Model 5729-00 . . . . . Solar Radiation Shield (6 Disc Profile)

### SPECIFICATIONS:

Humidity Measurement . . . . . 0 to 100%RH Non Condensing  
 Accuracy at 68°F. (+20°C.) . . . . . ±2% RH (0 to 90%RH)  
 . . . . . ±3% RH (90 to 100% RH)  
 Typical Long-term Stability . . . . . Better than 1% RH per Hour  
 Output . . . . . 0 - 1V

#### TEMPERATURE

Temperature Range . . . . . -40°F. to +140°F. (-40°C. to +60°C.)  
 Accuracy . . . . . ±0.27°F. (+ 0.15°C.)  
 Output . . . . . 0 - 1V (optional 0 - 5V)  
 Dewpoint Temperature . . . . . -40°F. to +140°F. (-40°C. to 60°C.)  
 Absolute Humidity . . . . . 0 to 160g/m  
 Wet Bulb Temperature . . . . . 32°F. to 140°F. (0°C. to 60°C.)  
 Mixing Ratio . . . . . 0 to 160g/Kg d.a.  
 Operating Temperature . . . . . -40°F. to +140°F. (-40°C. to 60°C.)  
 Housing Material . . . . . ABS Plastic  
 Housing Classification . . . . . NEMA 4  
 Weight . . . . . 160 Grams

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# MODEL 7110

## Omni-Directional Antenna

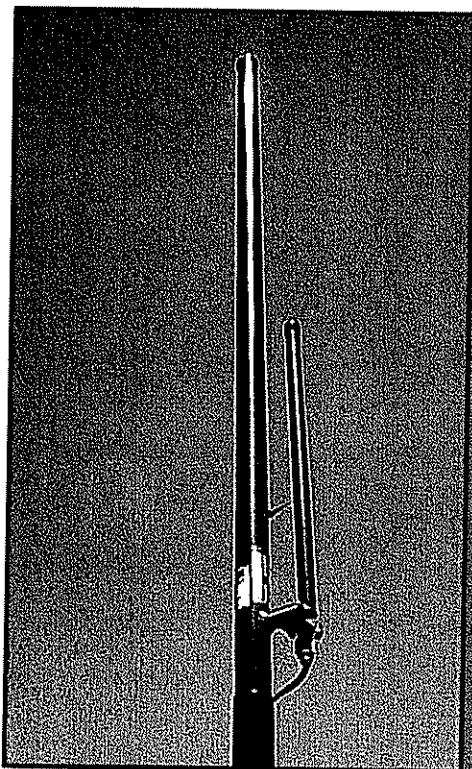
- 169 to 173 MHz Range
- No Frequency Adjustment Needed
- Requires No Ground Plane or Radials
- Integrated with the Model 7000 Standpipe



PHONE: (800) 275-2080

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2080

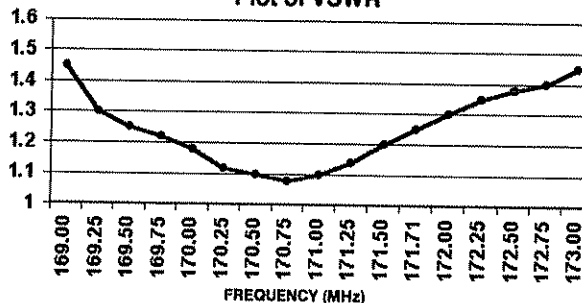


### DESCRIPTION:

The Model 7110-00 Omni-Directional Antenna is a 3dB base matched 1/2 wave vertical J-pole antenna fed at the end through a quarter wave shorted transmission line. It requires no ground plane radials for effective operation.

Typical applications for the Model 7110-00 include the 7000 Series Standpipes, base stations, and repeater sites where there are existing towers. It is made of seamless aluminum tubing and includes all stainless steel hardware for years of trouble free service.

Plot of VSWR



### SPECIFICATIONS:

Antenna Type . . . . .	Omni-Directional, 169 - 173 MHz
Power Rating . . . . .	500 Watts
Gain . . . . .	3dB
Lightning Protection . . . . .	DC Ground
Connector . . . . .	SO-239
Impedance . . . . .	50Ω Nominal
Max Rated Wind Velocity . . . . .	130 mph (145 kph)
Max Rated Wind Velocity with 1/2" Radial Ice . . . . .	90 mph (145 kph)
VSWR . . . . .	1.5 : 1 or less
Size . . . . .	With/J, 3.625" X 2.25" X 54.125" pole circumference - 1.4375"
Weight . . . . .	1.625 pounds
Shipping Weight . . . . .	5 Pounds

### ORDERING GUIDE:

Model 7110-00 . . . . . HSE Omni-Directional Antenna, VHF 3dB Gain, 169-173MHz

### OPTIONAL:

- Model 7110-01 . . . . . HSE Omni-Directional Antenna, VHF 3dB Gain, 148 - 151 MHz
- Model 7110-02 . . . . . HSE Omni-Directional Antenna, UHF 3dB Gain, 404 - 414 MHz
- Model 7150-00 . . . . . Antenna Cable, 22 Feet
- Model 7200-00 . . . . . Antenna Lightning Protection
- Model 7150-02 . . . . . Antenna Cable Set, using Lightning Protection, 23 Feet
- Model 7151-00 . . . . . Foam Transmission Cable - 1/2 inch/1 Foot
- Model 7151-01 . . . . . N-Type Connectors (for foam type transmission cable)
- Model 7152-00 . . . . . Foam Transmission Cable - 7/8 inch/1 foot
- Model 7152-01 . . . . . N-Type Connectors (for foam type transmission cable)
- Model 7153-00 . . . . . RG8 Cable

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# MODEL 7200

## Lightning Protection Device

- 1.5 to 1000 MHz Frequency Range
- Multi-Stroke Capability
- Low Strike Throughput Energy
- DC Blocked

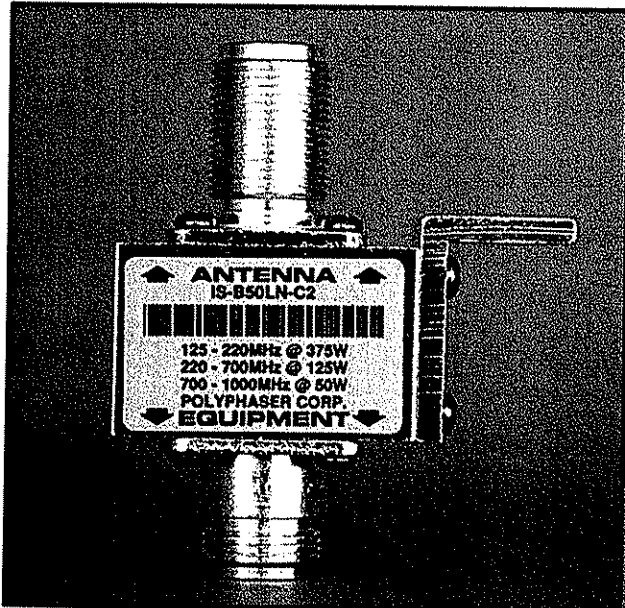


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PHONE: (800) 275-2080

HIGH SIERRA ELECTRONICS

FAX: (530) 273-2089



### DESCRIPTION:

The Model 7200-00 Lightning Protection Device reduces the risk of system failure for equipment frequently exposed to lightning storms. Electrical surges due to lightning are common sources of sensor and data acquisition equipment failures. Although protection against a direct lightning strike can not be guaranteed, the Model 7200-00 minimizes the amount of energy that will get through to the equipment. It diverts the strike energy to the Earth through a deliberate and controlled path so that no damage will be incurred.

As a broadband VHF/UHF coaxial protector, the 7200-00 is designed for general radio use where transmitter combining is *not* done. It works on all equipment unlike DC continuity protectors which can not protect receivers, shunt fed cavities, etc. Other features include multi-strike capability and bulkhead mounting for antenna connections to the chassis.

The 7200-00 has an aluminum enclosure, UHF nickel shell (silver center) TFE or N silver shell and gold center pin. Its small size makes it ideal for mounting in ALERT standpipes and inside NEMA enclosures. Specify connector types when ordering.

### SPECIFICATIONS:

Connectors . . . . .	Type "N" (Standard)
Size . . . . .	1"D x 1.5"W x 2.75"H
Weight . . . . .	5 ounces
Shipping weight . . . . .	1 pound

### ORDERING GUIDE:

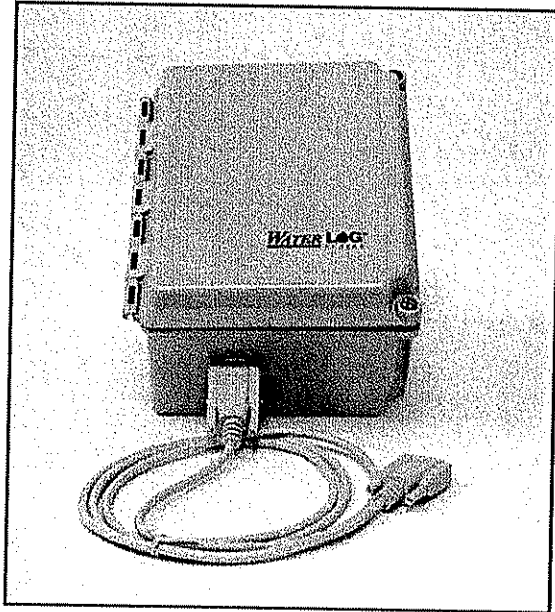
Model 7200-00 . . . . . Antenna Lightning Protection Device

### OPTIONAL:

Model 8000-03 . . . . . Telephone Modem Lightning Protection

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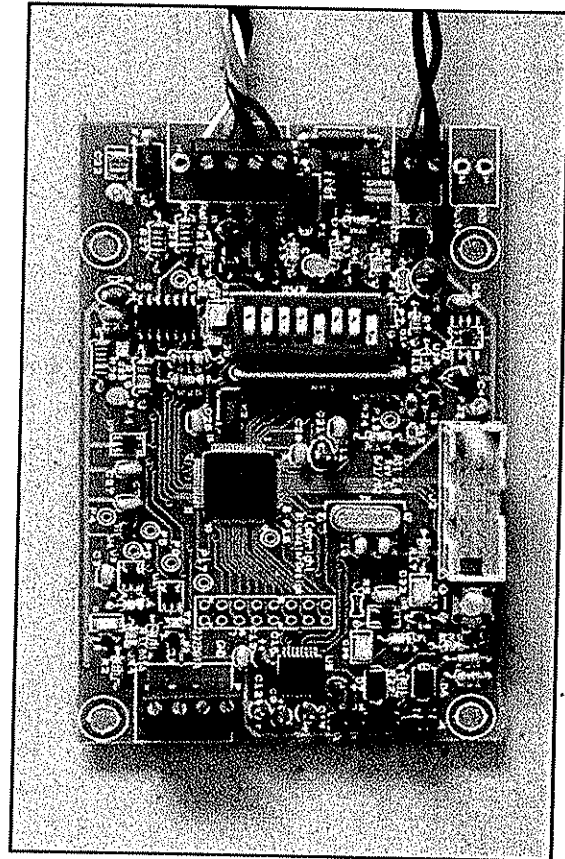
WEB SITE: [www.highsierraelectronics.com](http://www.highsierraelectronics.com) E-MAIL: [info@highsierraelectronics.com](mailto:info@highsierraelectronics.com)



The *WATERLOG*<sup>®</sup> H-264 ALERT Serial Interface (ASI) is a multi-purpose device that accepts ALERT ID and data reports in variety of serial data formats. It buffers, parses, and converts them to 300 baud FSK audio signals in binary ALERT format. The device controls power, audio and PTT lines of an attached transmitter to send a standard ALERT binary format transmission.

### KEY FEATURES

- User selectable, flexible serial input:
  - Asynchronous or Synchronous,
  - True RS-232 level input & output or Logic Levels, and
  - ASCII or Binary ALERT format.
- Automatic conversion from ASCII ALERT format input to binary ALERT transmission.
- Double buffered serial interface: receive serial data concurrently with ALERT transmissions.
- Each buffer accepts up to 10 serial input ALERT messages for conversion and transmission in a single ALERT transmission.
- High accuracy battery voltage monitor maximizes transmissions available from a battery.
- User selectable ALERT transmission preamble length (from 101 to 665 milliseconds) allows system design for maximum channel capacity with and without a repeater.
- Robust ESD and over-voltage protection on serial and battery supply inputs enhances reliability.
- Hardware watchdog timer guards against excessive transmitter on.
- 12-second duty cycle timer protects transmitter and ensure no single unit saturates a channel.



# SPECIFICATIONS

## Data Inputs

### ALERT Asynchronous Serial Input

- RS-232 level (negative logic), 2 wire input (Data & Gnd), or
- Logic Level (positive logic, 0 – 2.8V min to 16V max), 2 wire input (Data & Gnd).
- Baud Rate DIP switch selectable: 300, 1200 or 4800, with
- Asynchronous Format: 8 data bits, no parity bit, 1 stop bit.
- Input Message format: ASCII ALERT format (8 bytes for each ID+Data message), or
- Binary ALERT Format (4 bytes for each ID+Data message).
- ESD protection: +/- 15kV - Human Body Model; +/- 8kV – IEC1000-4-2, Contact Discharge; +/- 15kV – IEC 1000-4-2, Air Gap Discharge.

### ALERT Synchronous Serial Input

- 3 wire interface: Sync Data, Sync CLK and Gnd, with
- Logic level input (positive logic, 0 – 2.8V min to 16V max),
- Bits read at positive transitions of Sync CLK line.
- Minimum positive & negative CLK pulse width 1 millisecond each (500 Hz data rate, software limited; hardware deglitch filter time constant 200 microseconds).
- ESD protection exceeds JESD 22: 2000-V Human Body Model (A114-A); 200-V Machine Model (A115-A); 1000-V Charged Device Model (C101).

### Test Switch Input (forces test transmission)

- Contact Closure; 2 wire input switch interface; transmission on contact “break”.
- Minimum open time 2 milliseconds; RC & Schmitt trigger debounced.
- Over-voltage protection: 100 ohm + 10V bidirectional 400 mW zener diode
- ESD protection exceeds JESD 22: 2000-V Human Body Model (A114-A); 200-V Machine Model (A115-A); 1000-V Charged Device Model (C101).

## Output

### ALERT Transmitter Interface

- 4 wire interface (Switched Battery Power, Gnd, Push To Talk, and Audio).
- Switched Battery Power:
  - Low dropout high side power switch: typically < 0.05 V drop (1 A), max TBD.
  - High current rating: min 2 A at 18 V continuous without additional heat sink.
  - High breakdown voltage rating: 30 V.
- PTT Output:
  - Open collector NPN output, no pull up; on (“current sink”) for “Push to Talk”.
  - 200 mA max current; V(CE) typically 0.3 V at 50 mA.
- Audio Tone Output:
  - AC coupled (non-polarized 1 uF capacitive coupling).
  - 200 mV RMS, +/- TBD%; (factory settable for 50 - 707 mV RMS).
  - FSK tones: Mark - 2140 Hz, Space - 1920 Hz, +/- 0.05%.
  - 3 pole low pass FSK filter: typical: 3<sup>rd</sup> harmonics attenuated 30 dB, min TBD
  - No spurious transitions at bit period transitions

- All Outputs RF attenuated for noise control (in line ferrite bead, nominal 100 ohms series resistance at 100 MHz – 500 MHz).
- Transmission Indicators:
  - Green LED on Switched Battery Power output.
  - Red LED on “Push to Talk” output.

## Power Requirements

### Input Voltage Range (ASI only):

Minimum: 4 V DC Maximum: 20 V DC

### Supply Current (ASI only, with nominal 12 V DC input):

- Idle (waiting for serial input)
  - Typical: 9 uA Maximum: TBD
- Buffer Message Conversion
  - Typical: 320 uA Maximum: TBD
- High speed processing (ADC)
  - Typical: 2.8 mA Maximum: TBD
- ALERT transmission (with LEDs & audio filter on)
  - Typical: 10 mA Maximum: TBD

## Mechanical

Size: 10.0 cm x 6.20 cm

### Mounting Holes:

- 4, (0.381 cm diameter, designed for M3x0.5mm mounting screw clearance);
  - 2 located 0.40 cm from top edge and 0.40 cm from the right side,
  - 2 located 0.40 cm from bottom edge and 2.00 cm from the left side.

### Connectors:

- Screw terminal connector rated 125 V DC, 6 A, wire size AWG 28-16, 3.5 mm spacing, and 5.5 mm wire strip length.
  - 2 pin battery input (left edge),
  - 4 pin transmitter I/O (left edge),
  - 4 pin serial input (right edge)
- 0.025” gold plate square post, 0.1” on centers; rated 500 V DC, 2.5 A
  - 2 pin test switch input header (right edge),
  - 4 pin AuxRS232 header (right edge)
- Reset Switch: Momentary, 6.5mm x 6.5 mm, tactile switch

## Environmental

Operating & Storage Temperature: -40 degrees C to +85 degrees C

Relative Humidity: 10% - 95% non-condensing

## Warranty

The **WATERLOG**® H-264 is warranted against defects in materials and workmanship for one year from date of shipment.

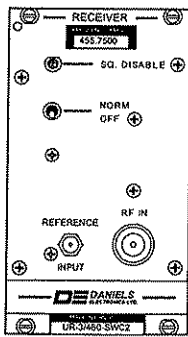
## Note

Specifications subject to change without prior notice due to ongoing commitment to product testing and improvement.

**WATERLOG**®  
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ENVIRONMENTAL PRODUCTS  
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**MT-3 Radio Systems**
**TN261 UR-3/400-S UHF Low Current Receiver**


The UR-3/400-S receiver is a low standby current, synthesized FM receiver capable of operating in 12.5 KHz (narrowband) or 25 KHz (wideband) channels. The UR-3/400-S receiver operates in one of two frequency bands: 406 to 430 MHz or 450 to 470 MHz. A modular design allows each of the receiver's three internal modules, 21.4 MHz FM IF/Audio Main Board, FE3 Front End, and OS-3/400 Synthesizer, to be individually assembled and tested. This facilitates construction, tuning and maintenance as well as troubleshooting procedures. The synthesizer module can be programmed to have up to 16 channels exclusive to one frequency band.

**Specifications**

<b>Frequency Bands</b>	406 - 430 MHz / 450 - 470 MHz
<b>Channel Spacing</b>	12.5 KHz or 25 KHz
<b>Receiver Switching Range</b>	± 1 MHz
<b>Reference Sensitivity (12 dB SINAD)</b>	< -116 dBm (.350 µV)
<b>Adjacent Channel Rejection (Selectivity)</b>	> 65 dB (narrowband) / > 70 dB (wideband)
<b>Spurious Response Rejection</b>	> 85 dB
<b>Intermodulation Rejection</b>	> 70 dB
<b>Hum &amp; Noise Ratio (20 KHz Low Pass Filter)</b>	> 45 dB (narrowband) / > 50 dB (wideband)
<b>L.O. Frequency Stability</b>	± 1.0 ppm (-30 °C to +60 °C) (-40 °C to +60 °C optional)
<b>Modulation Type</b>	11K0F3E (FM) or 16K0F3E (FM)
<b>Audio Distortion</b>	< 2.0% @ 25 °C (< 6.0% @ -40 °C to +60 °C)
<b>Receiver Attack Time</b>	< 10 ms
<b>Receiver Closing Time</b>	< 10 ms
<b>Squelch Threshold / Hysteresis</b>	-123 to -105 dBm, adjustable from 2 dB to 20 dB
<b>Audio Output (600 Ω Balanced or Unbalanced)</b>	+3.0 dBm De-emphasis/Flat
<b>Input Impedance</b>	50 Ω (Type N Connector)
<b>Operating Temperature</b>	-30 °C to +60 °C (-40 °C to +60 °C optional)
<b>Operating Current (Squelched)</b>	< 100 mA

**Models Available**

<b>UR-3/420-SWC200</b>	Low Current Synthesized, 25 KHz Bandwidth, 406 - 430 MHz
<b>UR-3/420-SNC200</b>	Low Current Synthesized, 12.5 KHz Bandwidth, 406 - 430 MHz
<b>UR-3/460-SWC200</b>	Low Current Synthesized, 25 KHz Bandwidth, 450 - 470 MHz
<b>UR-3/460-SNC200</b>	Low Current Synthesized, 12.5 KHz Bandwidth, 450 - 470 MHz

**Receiver Operating Frequency**

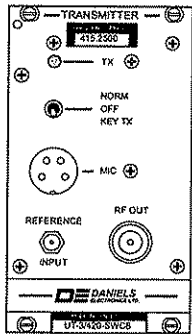
The receiver is initially aligned at the factory for the frequency stamped on the 'Factory Set Operating Frequency' label on the front panel. For a small frequency change, no re-alignment of the receiver may be required. If the frequency change is greater than ±1 MHz from the frequency at which the last complete receiver alignment was performed, the **synthesizer** and **front end** will need to be realigned. To align and / or adjust the receiver the outer cover needs to be removed, the receiver needs to be plugged into the subrack via a cable and / or extender card and power must be applied to the system.

 43 Erie Street  
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 Phone: 1-800-664-4066  
 Fax: 1-877-750-0004

**International**  
 Phone: 250-382-8268  
 Fax: 250-382-6139

**Internet**  
 e-mail: sales@danelec.com  
 web: www.danelec.com

**MT-3 Radio Systems**
**TN362 UT-3/400-S UHF Synthesized Transmitter**


The UT-3/400-S transmitter is a low power, synthesized FM transmitter capable of operating in 12.5 KHz (narrowband) or 25 kHz (wideband) channels. The UT-3/400-S transmitter operates in one of two frequency bands: 406 to 430 MHz or 450 to 470 MHz. A modular design allows each of the transmitter's modules, MT-3 Transmitter Main Board, MT-3 Audio Processor, UT-3/400 Amplifier, and OS-3/400 Synthesizer, to be individually assembled and tested. This facilitates construction, tuning and maintenance as well as troubleshooting procedures. The synthesizer module can be programmed to have up to 16 channels exclusive to one frequency band.

**Specifications**

<b>Frequency Bands</b>	406 - 430 MHz / 450 - 470 MHz
<b>Channel Spacing</b>	12.5 KHz or 25 KHz
<b>Transmitter Switching Range</b>	± 2 MHz
<b>RF Output Power</b>	0.5 to 2.0 or 2.0 to 8.0 Watts adjustable
<b>Duty Cycle</b>	100% (-40 °C to +60 °C)
<b>Undesired Emissions (Conducted Spurious)</b>	< -80 dBc
<b>Undesired Emissions (Conducted Harmonics)</b>	< -90 dBc
<b>FM Hum &amp; Noise Ratio (300 Hz - 3.4 KHz)</b>	> 40 dB (narrowband) / > 45 dB (wideband)
<b>Carrier Frequency Stability</b>	± 1.0 ppm (-30 °C to +60 °C) (-40 °C to +60 °C optional)
<b>Modulation Type</b>	11K0F3E (FM) or 16K0F3E (FM)
<b>VSWR Protection</b>	< 20:1 (All Phase Angles)
<b>Audio Distortion</b>	< 2.0% @ 25 °C (< 2.5% @ -40 °C to +60 °C)
<b>Output Impedance</b>	50 Ω (Type N Connector)
<b>Operating Temperature</b>	-30 °C to +60 °C (-40 °C to +60 °C optional)
<b>Standby Current</b>	< 20 mA
<b>Transmit Current (2.0 W)</b>	< 1.20 A
<b>Transmit Current (8.0 W)</b>	< 2.50 A

**Models Available**

<b>UT-3/420-SWCx00</b>	Enhanced Synthesized, 25 KHz Bandwidth, 2.0 or 8.0 W, 406 - 430 MHz
<b>UT-3/420-SNCx00</b>	Enhanced Synthesized, 12.5 KHz Bandwidth, 2.0 or 8.0 W, 406 - 430 MHz
<b>UT-3/460-SWCx00</b>	Enhanced Synthesized, 25 KHz Bandwidth, 2.0 or 8.0 W, 450 - 470 MHz
<b>UT-3/460-SNCx00</b>	Enhanced Synthesized, 12.5 KHz Bandwidth, 2.0 or 8.0 W, 450 - 470 MHz

**Transmitter Operating Frequency**

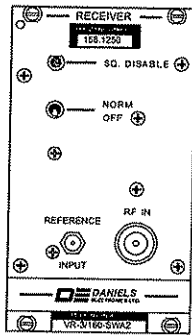
The transmitter is initially aligned at the factory for the frequency stamped on the 'Factory Set Operating Frequency' label on the front panel. For a small frequency change, no re-alignment of the transmitter may be required. If the frequency change is greater than ±2 MHz from the frequency at which the last complete transmitter alignment was performed the **audio processor** and **amplifier alarms** (if used) will need to be realigned. To align and / or adjust the transmitter the outer cover needs to be removed, the transmitter needs to be plugged into the subrack via a cable and / or extender card and power must be applied to the system. A 50 Ω dummy load should be connected to the RF output when transmitting.

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Fax: 250-382-6139

Internet  
e-mail: sales@danelec.com  
web: www.danelec.com

**MT-3 Radio Systems**
**TN241 VR-3/150-S VHF Low Current Receiver**


The VR-3/150-S receiver is a low standby current, synthesized FM receiver capable of operating in 12.5 KHz (narrowband) or 25 KHz (wideband) channels. The VR-3/150-S receiver operates in one of two frequency bands: 132 to 150 MHz or 150 to 174 MHz. A modular design allows each of the receiver's three internal modules, 21.4 MHz FM IF/Audio Main Board, FE3 Front End, and OS-3/150 Synthesizer, to be individually assembled and tested. This facilitates construction, tuning and maintenance as well as troubleshooting procedures. The synthesizer module can be programmed to have up to 16 channels exclusive to one frequency band.

**Specifications**

<b>Frequency Bands</b>	132 - 150 MHz / 150 - 174 MHz
<b>Channel Spacing</b>	12.5 KHz or 25 KHz
<b>Receiver Switching Range</b>	± 1 MHz
<b>Reference Sensitivity (12 dB SINAD)</b>	< -118 dBm (.280 μV)
<b>Adjacent Channel Rejection (Selectivity)</b>	> 75 dB (narrowband) / > 85 dB (wideband)
<b>Spurious Response Rejection</b>	> 85 dB
<b>Intermodulation Rejection</b>	> 70 dB
<b>Hum &amp; Noise Ratio (20 KHz Low Pass Filter)</b>	> 45 dB (narrowband) / > 50 dB (wideband)
<b>L.O. Frequency Stability</b>	± 1.0 ppm (-30 °C to +60 °C) (-40 °C to +60 °C optional)
<b>Modulation Type</b>	11K0F3E (FM) or 16K0F3E (FM)
<b>Audio Distortion</b>	< 2.0% @ 25 °C (< 3.0% @ -40 °C to +60 °C)
<b>Receiver Attack Time</b>	< 10 ms
<b>Receiver Closing Time</b>	< 10 ms
<b>Squelch Threshold / Hysteresis</b>	-123 to -105 dBm, adjustable from 2 dB to 20 dB
<b>Audio Output (600 Ω Balanced or Unbalanced)</b>	+3.0 dBm De-emphasis/Flat
<b>Input Impedance</b>	50 Ω (Type N Connector)
<b>Operating Temperature</b>	-30 °C to +60 °C (-40 °C to +60 °C optional)
<b>Operating Current (Squelched)</b>	< 100 mA

**Models Available**

<b>VR-3/140-SWA200</b>	Low Current Synthesized, 25 KHz Bandwidth, 132 - 150 MHz
<b>VR-3/140-SNA200</b>	Low Current Synthesized, 12.5 KHz Bandwidth, 132 - 150 MHz
<b>VR-3/160-SWA200</b>	Low Current Synthesized, 25 KHz Bandwidth, 150 - 174 MHz
<b>VR-3/160-SNA200</b>	Low Current Synthesized, 12.5 KHz Bandwidth, 150 - 174 MHz

**Receiver Operating Frequency**

The receiver is initially aligned at the factory for the frequency stamped on the 'Factory Set Operating Frequency' label on the front panel. For a small frequency change, no re-alignment of the receiver may be required. If the frequency change is greater than ±1 MHz from the frequency at which the last complete receiver alignment was performed, the **synthesizer** and **front end** will need to be realigned. To align and / or adjust the receiver the outer cover needs to be removed, the receiver needs to be plugged into the subrack via a cable and / or extender card and power must be applied to the system.

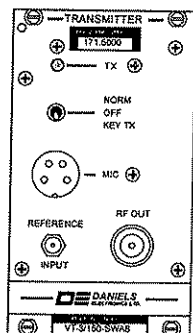
43 Erie Street  
Victoria, B.C.  
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Toll Free Canada & U.S.A.  
Phone: 1-800-664-4066  
Fax: 1-877-750-0004

International  
Phone: 250-382-8268  
Fax: 250-382-6139

Internet  
e-mail: sales@danelec.com  
web: www.danelec.com



**MT-3 Radio Systems**
**TN342 VT-3/150-S VHF Synthesized Transmitter**


The VT-3/150-S transmitter is a low power, synthesized FM transmitter capable of operating in 12.5 kHz (narrowband) or 25 kHz (wideband) channels. The VT-3/150-S transmitter operates in one of two frequency bands: 132 to 150 MHz or 150 to 174 MHz. A modular design allows each of the transmitter's modules, MT-3 Transmitter Main Board, MT-3 Audio Processor, VT-3/150 Amplifier, and OS-3H150 Synthesizer, to be individually assembled and tested. This facilitates construction, tuning and maintenance as well as troubleshooting procedures. The synthesizer module can be programmed to have up to 16 channels exclusive to one frequency band.

**Specifications**

<b>Frequency Bands</b>	132 - 150 MHz / 150 - 174 MHz
<b>Channel Spacing</b>	12.5 KHz or 25 KHz
<b>Transmitter Switching Range</b>	± 2 MHz
<b>RF Output Power</b>	2.0 to 8.0 Watts adjustable
<b>Duty Cycle</b>	100% (-40 °C to +60 °C)
<b>Undesired Emissions (Conducted Spurious)</b>	< -80 dBc (narrowband) / < -90 dBc (wideband)
<b>Undesired Emissions (Conducted Harmonics)</b>	< -90 dBc
<b>FM Hum &amp; Noise Ratio (300 Hz - 3.4 KHz)</b>	> 50 dB (narrowband) / > 55 dB (wideband)
<b>Carrier Frequency Stability</b>	± 1.0 ppm (-30 °C to +60 °C) (-40 °C to +60 °C optional)
<b>Modulation Type</b>	11K0F3E (FM) or 16K0F3E (FM)
<b>VSWR Protection</b>	< 20:1 (All Phase Angles)
<b>Audio Distortion</b>	< 2.0% @ 25 °C (< 2.5% @ -40 °C to +60 °C)
<b>Output Impedance</b>	(Type N Connector)
<b>Operating Temperature</b>	-30 °C to +60 °C (-40 °C to +60 °C optional)
<b>Standby Current</b>	< 15 mA
<b>Transmit Current (8.0 W)</b>	< 2.50 A

**Models Available**

<b>VT-3/140-SWA800</b>	Enhanced Synthesized, 25 KHz Bandwidth, 8.0 W, 132 - 150 MHz
<b>VT-3/140-SNA800</b>	Enhanced Synthesized, 12.5 KHz Bandwidth, 8.0 W, 132 - 150 MHz
<b>VT-3/160-SWA800</b>	Enhanced Synthesized, 25 KHz Bandwidth, 8.0 W, 150 - 174 MHz
<b>VT-3/160-SNA800</b>	Enhanced Synthesized, 12.5 KHz Bandwidth, 8.0 W, 150 - 174 MHz

**Transmitter Operating Frequency**

The transmitter is initially aligned at the factory for the frequency stamped on the 'Factory Set Operating Frequency' label on the front panel. For a small frequency change, no re-alignment of the transmitter may be required. If the frequency change is greater than ±2 MHz from the frequency at which the last complete transmitter alignment was performed, the **synthesizer** and **audio processor** will need to be realigned. To align and / or adjust the transmitter the outer cover needs to be removed, the transmitter needs to be plugged into the subrack via a cable and / or extender card and power must be applied to the system. A 50 Ω dummy load should be connected to the RF output when transmitting.

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Victoria, B.C.  
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Phone: 1-800-664-4066  
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International  
Phone: 250-382-8268  
Fax: 250-382-6139

Internet  
e-mail: sales@danelec.com  
web: www.danelec.com

## Subracks

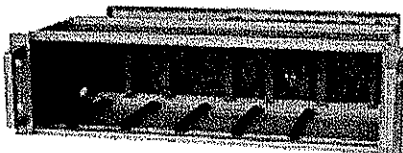
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Daniels sells a variety of subracks for modules to plug into. The subracks provide interconnection between modules via a universal motherboard located at the rear of the subrack.

*Dimensions (all Models): 19" W x 14.5" D x 5.25" H*

### SR-39-1 Standard Subrack

---



The SR-39-1 subrack is designed to hold and interconnect the receiver, transmitter and control modules on one universal motherboard. This Type 84 motherboard makes extensive use of cage jacks to interconnect the A and B systems supporting a number of field configurations.

Additional auxiliary control connectors provide easy access to virtually all control and audio lines, simplifying many standard base / repeater configurations. Modules may be inserted in the subrack in many various configurations. Receivers and transmitters connect to 48 pin connectors in four slots on the subrack. The A and B sides are shown below.

SR-39-1: 19" Subrack, holds 2 RX Modules, 2 TX (Exciter) Modules, 1 Control Card and 1 System Monitor. SR-39-1 standard features include: Euro-standard metalwork, stainless-steel hardware, fused power connection, transient protectors, gold-plated connectors, and a standard 90-degree, quick-release module-locking system.

***Please see the PDF technical note to view more information about the SR-39-1 subrack.***

### SR-39-3 Multiple Receiver Subrack

---

The SR-39-3 subrack is designed to hold and interconnect multiple receivers and control modules on one universal motherboard. The SR-39-3 subrack holds up to five receiver modules and one audio monitor (a specially modified system monitor compatible with the multiple receiver subrack). The audio monitor is required for voltage regulation and distribution on the subrack. The multiple receiver subrack is ideal for voting receivers or with the multiple transmitter subrack and multiple power amplifier subrack for multi-channel trunking systems.

The multiple receiver subrack does not interconnect the different receivers but brings control lines and audio out to connection points on the rear of the subrack. The external control connector allows access to the following signals on each receiver:

- Receiver channel select lines
- Receiver Carrier Operated Relay connections (open collector, pull-up resistor or mechanical relay)
- Receiver priority COR output Receiver discriminator or flat / de-emphasis audio output
- Receiver squelch override input
- Receiver signal strength indicator
- Receiver balanced audio output
- Receiver mute input
- Receiver synthesizer lock detect
- Ground

***Please see the PDF technical note to view more information about the SR-39-3 Multiple Receiver subrack***

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### **SR-39-4 Multiple Transmitter Subrack**

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The SR-39-4 subrack is designed to hold and interconnect multiple transmitters on one universal motherboard. The SR-39-4 subrack holds up to five transmitter modules. The multiple transmitter subrack is ideal for multi-channel trunking systems with the multiple receiver subrack and multiple power amplifier subrack.

The SR-39-4 has a built in voltage regulator mounted behind the blank panel on the right side of the subrack. The multiple transmitter subrack does not interconnect the different transmitters, but brings control lines and audio out to connection points on the rear of the subrack. The external control connector allows access to the following signals on each transmitter:

- Transmitter channel select lines
- Transmitter microphone output
- Transmitter standby
- Transmitter Push To Talk
- Transmitter balanced audio input
- Transmitter squelch flat audio input
- Transmitter squelch de-emphasis input
- Transmitter subtone input 1 and 2
- Transmitter Push To Talk output
- Transmitter direct modulation input
- Ground

***Please see the PDF technical note to view more information about the SR-39-4 Multiple Transmitter Subrack.***

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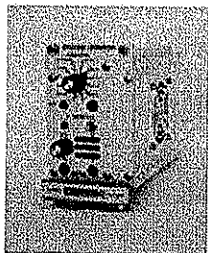
## System Monitor

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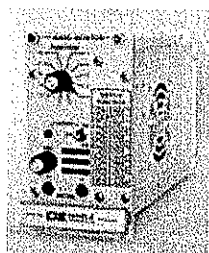
The System Monitor modules provide voltage regulation, system metering and audio monitoring for the MT-3 Radio System. The System Monitor includes a +9.5 VDC high current (5A) voltage regulator with an anti-latch hysteresis circuit. Selected options can include antenna relay drivers, front panel switch selectable meter outputs to check supply voltages, carrier strengths, etc, and audio amplifier and loudspeaker.

A rotary switch on the front panel allows the various functions to be selected for monitoring. Two front panel jacks, or the optional analog DC voltmeter, are provided for monitoring of selected functions. An audio amplifier and loudspeaker allow for audio monitoring. Front panel controls allow for audio volume adjustment and for selecting audio from receivers A or B, or turning the audio circuits off reducing power consumption. A LED indicator illuminates when the audio circuits are on. A front panel switch enables PTT on both transmitters for testing.

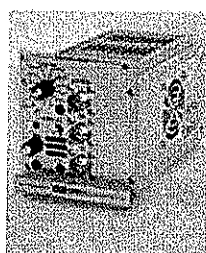
Stock Code	Basic Features
<b>SM-3-H0-014-00</b>	Standard SM-3 with no relays or meters (14 HP width)
<b>SM-3-H0-014-05</b>	Audio Monitor for SR-39-3 Multiple Receiver Subrack
<b>SM-3-H0-R1N-00</b>	SM-3 with single antenna relay on the front panel (21 HP width)
<b>SM-3-H0-R2N-00</b>	SM-3 with dual antenna relays on the front panel (21 HP width)
<b>SM-3-H0-MV1-00</b>	SM-3 with an analog edge meter on the front panel (21 HP width)
<b>SM-3-H0-M1R1-00</b>	SM-3 with an edge meter and antenna relay on the front panel (21 HP width)
<p>Some versions of the system monitor are available with a main power switch on the front panel. These are the SM-3-H0-014-40, SM-3-H-R1N-40 and SM-3-H0-MV1-40. A rotary switch on the front panel allows the various functions to be selected for monitoring. Two front panel jacks, or the optional analog DC voltmeter, are provided for monitoring of selected functions. An audio amplifier and loudspeaker allow for audio monitoring. Front panel controls allow for audio volume adjustment and for selecting audio from receivers A or B, or turning the audio circuits off to reduce power consumption. A LED indicator illuminates when the audio circuits are on. A front panel switch enables PTT on both transmitters for testing.</p>	



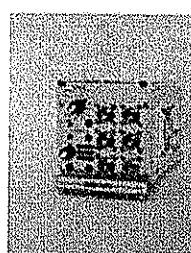
SM-3-H0-014-00



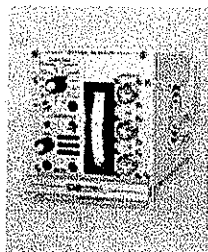
SM-3-H0-014-05



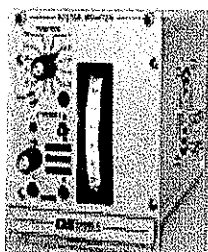
SM-3-H0-R1N-00



SM-3-H0-R2N-00



SM-3-H0-M1R1-00



SM-3-H0-MV1-00

***Please see the PDF technical note to view more information about the system monitor.***

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**ISO 9001:2000 certified Quality Management System**

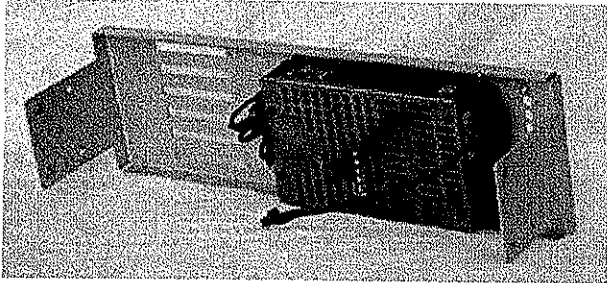
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## Power Supplies

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### 10 Amp AC Power Supply

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The PSA-12A09-PB-00 10 Amp AC Power Supply is mounted on a frame that attaches to the rear of the subrack. The supply input ranges from 117 - 120 Vac to 220 Vac at 50 - 60 Hz. The DC-DC converters (floating inputs) are mounted on a frame that attaches to the rear of the subrack.

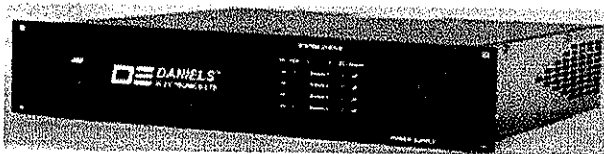
The PSA-12A09-PB-00 AC Switching power supply provides a regulated +13.8 Vdc to the output terminals. Valuable rack space has been saved by mounting the AC power supply inside the rear panel frame that attaches to the rear of the subrack. An AC power socket is located on the outside of the subrack rear panel and accepts standard IEC320 type cord sets.

Input Voltage Range	105 to 130 Vac or 180 to 265 Vac (Jumper Selectable)
Input Frequency Range	50 / 60 Hz
Output Voltage	13.8 Vdc
Output Current	10 Amps continuous @ 13.8 Vdc (+60 °C)
Operating Temperature	-40 °C to +50 °C continuous duty

***Please see the PDF technical note to view more information about the 9 Amp AC Power Supply.***

### 40 Amp AC Power Supply

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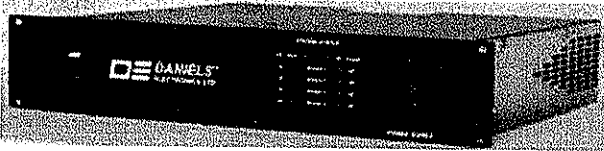


The PSA-12-40-RB-00 (40 Amp) AC Switching Power Supplies is mounted directly to the 19" rack and includes battery backup.



Input Voltage	120/220 Vac
Input Frequency Range	50 / 60 Hz
Output Voltage	13.8 Vdc
Output Current	40 Amps continuous @ 13.8 Vdc (+60 °C)
Operating Temperature	-40 °C to +60 °C continuous duty

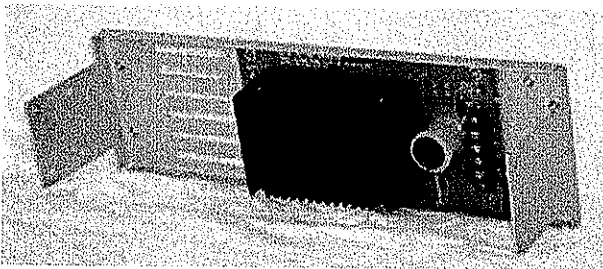
## 60 Amp AC Power Supply



The PSA-12-60-RB-00 (60 Amp) AC Switching Power Supplies is mounted directly to the 19" rack and includes battery backup.

Input Voltage	120/220 Vac
Input Frequency Range	50 / 60 Hz
Output Voltage	13.8 Vdc
Output Current	60 Amps continuous @ 13.8 Vdc (+60 °C)
Operating Temperature	-40 °C to +60 °C continuous duty

## DC to DC Converters



The DC to DC converters provide a regulated +13.8 Vdc to the output terminals over a wide range of DC input voltages. Valuable rack space has been saved by mounting the DC to DC converter inside the rear panel frame that attaches to the rear of the subrack. A terminal block is located on the outside of the subrack rear panel for the DC input voltage. The DC to DC converters comes in two different models.





<b>PSD-15-08-P0-80</b>	<b>DC to DC Converter</b>
Input Voltage Range :	18 - 36 Vdc floating input (non-polarity sensitive)
Output Voltage	Factory set at 15.0 Vdc. Adjustable from 13.5 Vdc to 16.5 Vdc
Output Current	8 Amps continuous @ 15 Vdc
Operating Temperature	-25 C to +60 C continuous duty

<b>PSD-15-08-P0-90</b>	<b>DC to DC Converter</b>
Input Voltage Range :	36 - 72 Vdc floating input (non-polarity sensitive)
Output Voltage	Factory set at 15.0 Vdc. Adjustable from 13.5 Vdc to 16.5 Vdc
Output Current	8 Amps continuous @ 15 Vdc
Operating Temperature	-25 C to +60 C continuous duty

***Please see the PDF technical note to view more information about the DC to DC Converters.***

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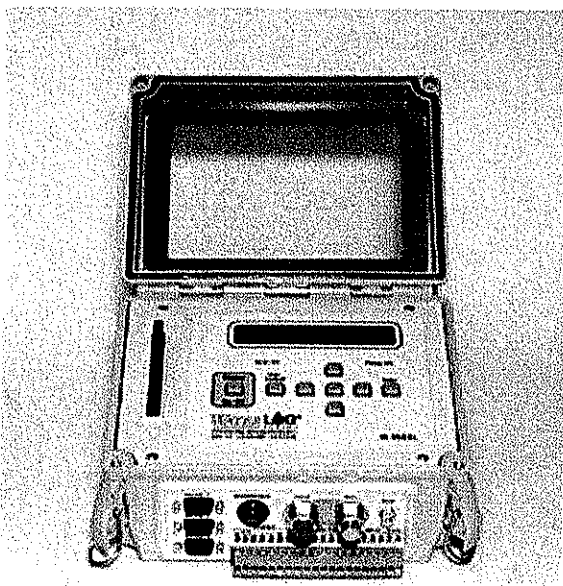
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# H-350XL™

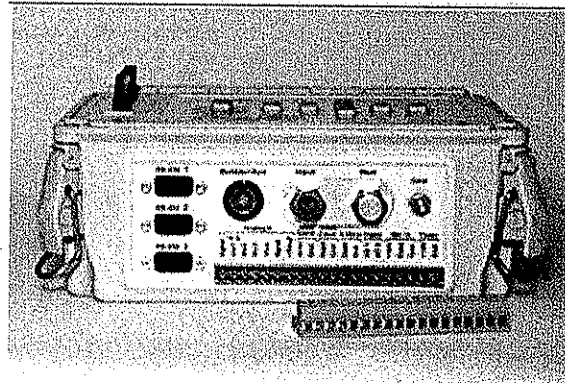
*Pressure Measurement System/  
Data Collection Platform (DCP)*

<a href="#">H-350XL™ Brochure</a>	Version 1.00 (Posted: 10-02-02)	99KB - Adobe Acrobat Format
<a href="#">H-350XL™ User Manual</a>	Version 1.17 (Posted: 02-16-04)	952KB - Adobe Acrobat Format
<a href="#">Menu Trees</a> <a href="#">Keypad Menu Tree</a> <a href="#">PC Menu Tree</a>	Version 1.17 (Posted: 02-16-04)	24KB - Adobe Acrobat Format 20KB - Adobe Acrobat Format
<a href="#">Firmware Update</a>	Version (Posted: )	- PKZIP Format
<a href="#">Using a Pocket PC with the H-350XL™</a>	N/A (Posted: 03-11-03)	N/A - Web Page (HTML)
<u>XL-Series Resources</u>		



The **WATERLOG®** Model H-350XL™ is a microprocessor controlled pressure sensor/data logger designed for remote operation. This instrument can be interfaced with:

- Data Loggers
- Chart Recorders
- Goes Transmitter
- Remote Displays
- Telemetry Systems



## Key Features

- Direct replacement for mercury

- Quadrature shaft encoder input
- Scalable and programmable 4-20 mA

<ul style="list-style-type: none"> <li>• Direct replacement for mercury manometers</li> <li>• Easy to read digital display shows stage directly in engineering units (feet or meters)</li> <li>• Compatible with SDI-12 and RS-232 data loggers</li> <li>• Built-in temperature compensation and auto-zero functions</li> <li>• Operating temperature range of -40 to 60°C</li> <li>• Ideal for small Hydrologic/Met Stations</li> <li>• Three RS-232 serial communication ports</li> </ul>	<p><b>Output</b></p> <ul style="list-style-type: none"> <li>• Four analog inputs</li> <li>• SDI-12 Slave and Master mode</li> <li>• Two programmable digital inputs/outputs</li> <li>• One event counter input (Tipping Bucket Rain Gauge)</li> <li>• Frequency input (wind speed)</li> <li>• Sealed, corrosion-resistant, nonconductive enclosure</li> <li>• Data logging capability using non-volatile internal storage (4 Meg and up)</li> </ul>
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## Specifications

<p><b>Performance</b></p> <p><b>Pressure Sensor</b></p> <p><b>Accuracy</b> (Maximum percent of error in measurement) Pressure: Less than or equal to 0.02% of full scale output (FSO) over temperature range referenced to a straight line stretched from zero psi to maximum pressure Temperature: Internal temperature <math>\pm 1^\circ\text{C}</math> over temperature range</p> <p><b>Resolution</b> (Smallest change detectable in output signal) Pressure: 1 part in 65,536 (0.002%) Temperature: 1 part in 65,536 (0.002%)</p> <p><b>Linearity</b> Less than 0.02% deviation from a straight line referenced to end points</p> <p><b>Pressure Hysteresis</b> Less than 0.01% of FSO</p> <p><b>Long-term Stability</b> Accuracy drift is less than <math>\pm 0.05\%</math> of FSO per year</p>	<p><b>Digital I/O (Cont.)</b> Output Voltage Low: 0.4 V (Max) @ -5mA High: 3.5V (Min) @ +5mA</p> <p><b>4-20 mA Output</b> Resolution: 4.0<math>\mu\text{A}</math></p> <p><b>Data Storage</b> Type: Non-Volatile FLASH Size: 4 Mega Byte (Expandable)</p> <p><b>Interface</b></p> <p><b>SDI-12</b> Supports both Master and Slave modes Protocol: SDI-12, 7-bit even parity, 1 stop bit Baud Rate: 1200</p> <p><b>RS232</b> 3 RS-232 Communication Ports Protocol: RS-232, 8-bit, no parity, 1 stop bit Baud Rate: Programmable</p> <p><b>Mechanical Data</b></p> <p><b>Physical</b> Enclosure: Sealed, corrosion resistant fiberglass with clear Lexan®</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

year

### Response Times

Pressure only: 10-second measurement sequence  
 Pressure & Temp.: 10-second measurement sequence  
 Temperature only: 5-second measurement sequence

### Pressure Range Options

Pressure	Depth	Accuracy
0 to 15 PSI	0 to 34.60 feet	± 0.007 feet
0 to 30 PSI	0 to 69.20 feet	± 0.014 feet

Custom calibration ranges available from 5 to 100 PSI

Pressure Overload: Less than 2 times the rated pressure

### General Analog Input

Channels: 4 (Single Ended)  
 Resolution: 16-Bit Resolution (1 Part in 65536)  
 Accuracy: ±0.01% FS  
 Input Ranges:  
 • 0 to 5 Volts (All Channels)  
 • 0 to 500mV (Additional Input Range Only Available on Channel 1)

### Excitation

5.0V: Switched, Ratiometric with 10mA (max load)

### Accuracy

± 1.0 mV Over Load and Temperature Range

### Frequency Input

Input Range:  
 • 1 to 10 KHz at ±75m Volts or greater  
 • 1 to 15 KHz at ± 1 Volt or greater  
 Input Amplitude: ± 5.0 V Max  
 Accuracy: ± 0.1%  
 Resolution: 1/10000 \* Reading

### Counter Input

Type: Switch closure or voltage pulse, Internal 50k pull up resistor, falling edge triggered.

window

Size: 7.0 in. wide x 8.5in. long x 4.3in. deep  
 Weight: 4.25 lbs  
 Mounting: Hardware supplied for wall mounting  
 Pressure Inlet: 1/8 in. NPT female fitting

### Power

Input Voltage: 10.0 to 16.0 volts DC  
 Input Current: Sleep Mode: 10 mA typical  
 Active: 70 mA average (measuring, display off)  
 Active: 350 mA average (measuring, display on)  
 Auto display shut-off after 5 minutes

### Environment

#### Temperature

Extended Operating Range: -40 to 60°C  
 Storage: -40 to 80°C

#### Humidity

0-95% non-condensing

#### Media Compatibility

Non-corrosive dry gases only

### Miscellaneous Options

Data Logging: Data is stored internally on MB ATA Compact FLASH Card  
 GOES: H-222-SE (Signal Engineering) or H-222 (Telonics)

### Accessories

Cables:  
 • Power/SDI-12 cable supplied with base unit  
 • 9-pin D connector cable required for RS-232 communication available (H-350-RSC)  
 • 9-pin D Male to Make Gender Changer  
 • RS-232 Null Modem Adaptor  
 • Sensor Terminal Block

Hardware: Pressure inlet plumbing installation kit available (H-350-INS)

### Warranty

The **WATERLOG**® H-350XL™ is warranted against defects in materials and workmanship for

Input Voltage: 0-5 Volts  
Minimum Pulse Width:  
5 mS  
Input Frequency: 100Hz Max

**Digital I/O**

Channels: 2, Independently configured for  
input or output  
Input Voltage: 0-5 Volt  
High Level: 3.5 V (Min)  
Low Level: 0.8 V (Max)

one year from date of shipment.

**Note**

Specifications subject to change without prior notice due to ongoing commitment to product testing and improvement.

# Model H-355

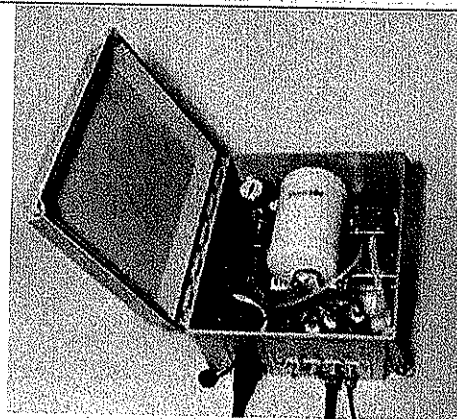
## The "SMART-GAS" System

[H-355 Brochure](#) - Adobe Acrobat Format

[H-355 User Manual](#) - Adobe Acrobat Format

[H-355 Product Accessories Checklist](#) - Adobe Acrobat Format

The **WATERLOG**® H-355 "SMART-GAS" unit replaces the heavy, dangerous, high-pressure gas bottles, oil sight feeds, flow regulators, and leaky manifolds found in gas purge pressure measurement systems. It is reliable, light weight, and low power-suitable for deployment in the most remote locations.



### Key Features

- A complete single unit replacement for gas purge bubbler systems
- Depths to 115 feet (50 psi)
- No needle valve or diaphragm problems
- No mercury
- No sight feed oil in orifice line
- No heavy, dangerous Nitrogen tank required
- Operation temperature -40 to +60°C
- Offers both SDI-12 and RS-485 interfaces
- Automatic and/or controlled purge
- Dependable mass flow rate control (temperature compensated)
- Flow rates are selectable
- ISO 9000 qualified components approved for medical applications
- Automatic Bubble Control "ABC" Constant Bubbler Rate over wide stage range
- Low power operation (can be powered by 12-volt battery and solar panel)

## Specifications

### Environment

Standard Operating Range: -40 to 60°C  
Storage: -50 to 80°C

It is recommended to install unit in weather shielded enclosure.

### Gas Delivery

Particulars: Microprocessor controlled unit

Gas Flow Technology:  
Constant mass flow

Gas Flow Control:  
Bubble rate is user selectable from 30 to 120 bubbles per minute based on 1/4" tubing orifice pointing down

Auto zero error controlled flow nozzle (patent application in process)  
**(NO NEEDLE VALVE PROBLEMS)**

### Compressor

Type: HI-REL medical grade ISO 9003 qualified piston compressor  
**(NO BROKEN DIAPHRAGM PROBLEMS)**  
Operation: Low duty cycle

(7 hours typical runtime per year at 60 bubbles per minute flow rate into 12ft of stage-purges not included)

### Purge Functions

Purge Pressure Level: User Selectable  
15 PSI to 80 PSI

Options: Manual, Internally sensed requirement, Automatic timed interval, Remote controlled

### Interface

#### RS - 485 Electrical Specification

Protocol: Flexible  
Commands: Half-duplex, 8-bit, no parity, 1stop bit  
Baud rate: 9600

### Power Requirements

Qualified for 12-volt battery operation

Two Supply Inputs:  
Electronics supply via the RS-485 cable (10 to 16 volts)  
Compressor supply (10 to 16 volts)

24 hour average current draw: 10 mA  
Based on a 60 bubbles per minute flow rate

### Mechanical

#### Physical

Enclosure: Sealed corrosion resistant fiberglass

Size: 10.0 in. wide x 12.0 in. long x 6.0 in. high

Weight: 12 lbs

Mounting: Hardware supplied for wall mounting

Pressure Outlet: 1/8 in. FNPT  
Sensor Pressure Outlet: 1/8 in. FNPT  
Reserve Tank Inlet: 1/8 in. FNPT  
(80 psi MAX)  
Pressure relief valve included

### Miscellaneous

#### Ordering Information

H-355 Base model number  
H-350/355 Combination  
H-350 pressure measurement system and H-355 "SMART-GAS" system

#### Warranty

The **WATERLOG**® H-355 is warranted against defects in materials and workmanship for one year from date of shipment.

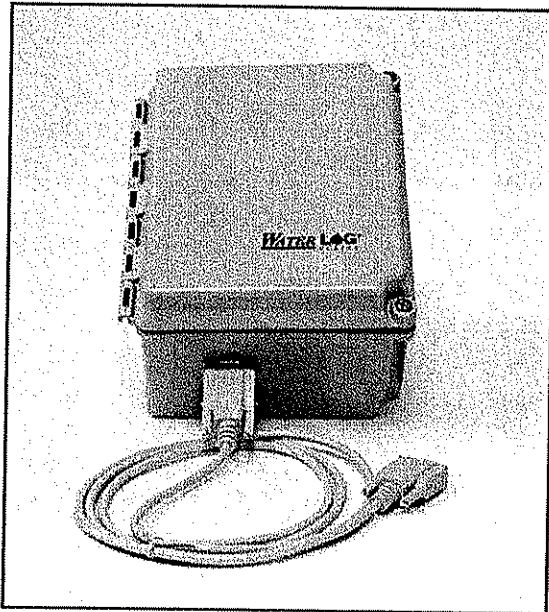
#### Note

Specifications subject to change without prior notice due to ongoing commitment to product testing and improvement.



## Model H-264

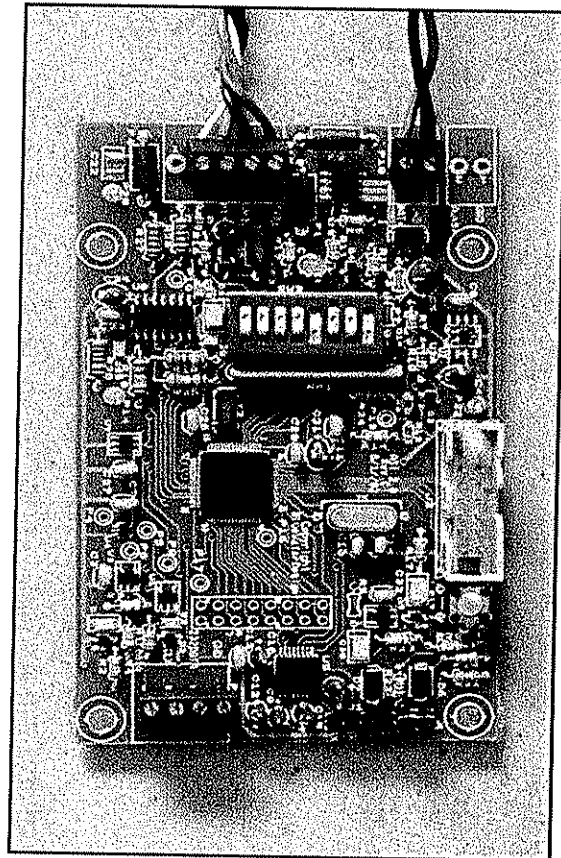
ALERT Serial Interface



The *WATERLOG*<sup>®</sup> H-264 ALERT Serial Interface (ASI) is a multi-purpose device that accepts ALERT ID and data reports in variety of serial data formats. It buffers, parses, and converts them to 300 baud FSK audio signals in binary ALERT format. The device controls power, audio and PTT lines of an attached transmitter to send a standard ALERT binary format transmission.

### KEY FEATURES

- User selectable, flexible serial input:
  - Asynchronous or Synchronous,
  - True RS-232 level input & output or Logic Levels, and
  - ASCII or Binary ALERT format.
- Automatic conversion from ASCII ALERT format input to binary ALERT transmission.
- Double buffered serial interface: receive serial data concurrently with ALERT transmissions.
- Each buffer accepts up to 10 serial input ALERT messages for conversion and transmission in a single ALERT transmission.
- High accuracy battery voltage monitor maximizes transmissions available from a battery.
- User selectable ALERT transmission preamble length (from 101 to 665 milliseconds) allows system design for maximum channel capacity with and without a repeater.
- Robust ESD and over-voltage protection on serial and battery supply inputs enhances reliability.
- Hardware watchdog timer guards against excessive transmitter on.
- 12-second duty cycle timer protects transmitter and ensure no single unit saturates a channel.



# SPECIFICATIONS

## Data Inputs

### ALERT Asynchronous Serial Input

- RS-232 level (negative logic), 2 wire input (Data & Gnd), or
- Logic Level (positive logic, 0 – 2.8V min to 16V max), 2 wire input (Data & Gnd).
- Baud Rate DIP switch selectable: 300, 1200 or 4800, with
- Asynchronous Format: 8 data bits, no parity bit, 1 stop bit.
- Input Message format: ASCII ALERT format (8 bytes for each ID+Data message), or
- Binary ALERT Format (4 bytes for each ID+Data message).
- ESD protection: +/- 15kV - Human Body Model; +/- 8kV – IEC1000-4-2, Contact Discharge; +/- 15kV – IEC 1000-4-2, Air Gap Discharge.

### ALERT Synchronous Serial Input

- 3 wire interface: Sync Data, Sync CLK and Gnd, with
- Logic level input (positive logic, 0 – 2.8V min to 16V max),
- Bits read at positive transitions of Sync CLK line.
- Minimum positive & negative CLK pulse width 1 millisecond each (500 Hz data rate, software limited; hardware deglitch filter time constant 200 microseconds).
- ESD protection exceeds JESD 22: 2000-V Human Body Model (A114-A); 200-V Machine Model (A115-A); 1000-V Charged Device Model (C101).

### Test Switch Input (forces test transmission)

- Contact Closure; 2 wire input switch interface; transmission on contact “break”.
- Minimum open time 2 milliseconds; RC & Schmitt trigger debounced.
- Over-voltage protection: 100 ohm + 10V bidirectional 400 mW zener diode
- ESD protection exceeds JESD 22: 2000-V Human Body Model (A114-A); 200-V Machine Model (A115-A); 1000-V Charged Device Model (C101).

## Output

### ALERT Transmitter Interface

- 4 wire interface (Switched Battery Power, Gnd, Push To Talk, and Audio).
- Switched Battery Power:
  - Low dropout high side power switch: typically < 0.05 V drop (1 A), max TBD.
  - High current rating: min 2 A at 18 V continuous without additional heat sink.
  - High breakdown voltage rating: 30 V.
- PTT Output:
  - Open collector NPN output, no pull up; on (“current sink”) for “Push to Talk”.
  - 200 mA max current; V(CE) typically 0.3 V at 50 mA.
- Audio Tone Output:
  - AC coupled (non-polarized 1 uF capacitive coupling).
  - 200 mV RMS, +/- TBD%; (factory settable for 50 - 707 mV RMS).
  - FSK tones: Mark - 2140 Hz, Space - 1920 Hz, +/- 0.05%.
  - 3 pole low pass FSK filter: typical: 3<sup>rd</sup> harmonics attenuated 30 dB, min TBD
  - No spurious transitions at bit period transitions

- All Outputs RF attenuated for noise control (in line ferrite bead, nominal 100 ohms series resistance at 100 MHz – 500 MHz).
- Transmission Indicators:
  - Green LED on Switched Battery Power output.
  - Red LED on “Push to Talk” output.

## Power Requirements

### Input Voltage Range (ASI only):

Minimum: 4 V DC Maximum: 20 V DC

### Supply Current (ASI only, with nominal 12 V DC input):

- Idle (waiting for serial input)
  - Typical: 9 uA Maximum: TBD
- Buffer Message Conversion
  - Typical: 320 uA Maximum: TBD
- High speed processing (ADC)
  - Typical: 2.8 mA Maximum: TBD
- ALERT transmission (with LEDs & audio filter on)
  - Typical: 10 mA Maximum: TBD

## Mechanical

Size: 10.0 cm x 6.20 cm

### Mounting Holes:

- 4, (0.381 cm diameter, designed for M3x0.5mm mounting screw clearance);
  - 2 located 0.40 cm from top edge and 0.40 cm from the right side,
  - 2 located 0.40 cm from bottom edge and 2.00 cm from the left side.

### Connectors:

- Screw terminal connector rated 125 V DC, 6 A, wire size AWG 28-16, 3.5 mm spacing, and 5.5 mm wire strip length.
  - 2 pin battery input (left edge),
  - 4 pin transmitter I/O (left edge),
  - 4 pin serial input (right edge)
- 0.025” gold plate square post, 0.1” on centers; rated 500 V DC, 2.5 A
  - 2 pin test switch input header (right edge),
  - 4 pin AuxRS232 header (right edge)
- Reset Switch: Momentary, 6.5mm x 6.5 mm, tactile switch

## Environmental

Operating & Storage Temperature: -40 degrees C to +85 degrees C  
Relative Humidity: 10% - 95% non-condensing

## Warranty

The **WATERLOG**® H-264 is warranted against defects in materials and workmanship for one year from date of shipment.

## Note

Specifications subject to change without prior notice due to ongoing commitment to product testing and improvement.

**WATERLOG**®  
SERIES  
ENVIRONMENTAL PRODUCTS  
A Division of Design Analysis Associates, Inc.

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Fax: (435) 753-7669  
E-mail: sales@waterlog.com  
Internet: www.waterlog.com

**BID TIME: 1:30 PM**

**BID SCHEDULE**

PLEASE SEE SPECIFICATIONS FOR COMPLETE EQUIPMENT DESCRIPTION

ITEM	EST. YRLY QTY	MANUFACTURER	MODEL #	DESCRIPTION	UNIT COST	EXTENDED COST	LENGTH OF WARRANTY
1	20	High Sierra Electronics	3451	PACKAGED WEATHER STATION			
2	20	High Sierra Electronics	3424	PACKAGED RAIN GAGE STATION			
3	5	High Sierra Electronics	1000-03	ALERT/IFLOWS DATA DECODER			
4	5	High Sierra Electronics	1001	ALERT/IFLOWS DATA DECODER HANDHELD UNIT			
5	20	High Sierra Electronics	2400-15	RAIN GAGE TOP SECTION			
6	50	High Sierra Electronics	3206-08	ALERT/IFLOWS DATA TRANSMITTER			
7	15	High Sierra Electronics	3210-04	ALERT/IFLOWS SERIAL DATA TRANSMITTER			
8	5	High Sierra Electronics	3300-00	STORE AND FORWARD REPEATERS			
9	5	High Sierra Electronics	3300-01	SENSOR INPUT OPTION FOR MODEL#3300			
10	5	high sierra Electronics	3300-20	STORE AND FORWARD REPEATER (DUPLICATE)			
11	5	High Sierra Electronics	3350-01	REPEATER CONTROLLER W/PRECIP OPTION			
12	2	High Sierra Electronics	3701-15	TELEMETRY TRANSCIVER PROGRAMMING KIT			
13	10	High Sierra Electronics	3801	VHF POWER AMPLIFIER 25 WATT 148-174 MHZ			
14	10	High Sierra Electronics	4004-00	OUTPUT CONVERTER 4-20MA 10 0-5V			
15	50	High Sierra Electronics	5310-0	PROTECH SOLAR PANEL VO REGULATOR MODULE			
16	30	High Sierra Electronics	5723-00	TEMPERATURE/RELATIVE HUMIDITY SENSOR			
17	5	High Sierra Electronics	5722-0	TEMPERATURE/RELATIVE HUMIDITY SENSOR			
18	15	High Sierra Electronics	7100-00	HSE OMNI-DIRECTIONAL ANTENNA (VHF)			
19	5	High Sierra Electronics	7200	ANTENNA LIGHTNING PROTECTOR			
20	2	Daniels Electronics	UR-3/420-SNC200	RECEIVER, MT-3, UHF 406-430 MHz			
21	2	Daniels Electronics	UT-3/420-SNCX00	TRANSMITTER, MT-3 UHF 406-430 MHz			
22	2	Daniels Electronics	VR-3/160-SNA200	RECEIVER, MT-3, VHF 150-174 MHz			
23	3	Daniels Electronics	V-3/160-SNA800	TRANSMITTER, MT-3 VHF 150-174 MHz			
24	2	Daniels Electronics	SR-39-3	MULTIPLE RECEIVER SUBRACK			

**BID TIME: 1:30 PM**

**BID SCHEDULE**

PLEASE SEE SPECIFICATIONS FOR COMPLETE EQUIPMENT DESCRIPTION

ITEM	EST. YRLY QTY	MANUFACTURER	MODEL #	DESCRIPTION	UNIT COST	EXTENDED COST	LENGTH OF WARRANTY
25	1	Daniels Electronics	SM-3-HO-014-05	AUDIO MONITOR, 8-11 VDC			
26	1	Daniels Electronics	PSA-12-40-RB-00	POWER SUPPLY, 12VDC,40 AMPS			
27	2	Daniels Electronics	IM11-VR3H150S	MANUAL VR-3/150RX			
28	2	Daniels Electronics	IM13-UR3H400	MANUAL, UR-3/400 RX			
29	2	Daniels Electronics	IM35-MB84RX	MANUAL, MULTI RX			
TOTAL							
30	10	Water Log	H350XL/H355	PRESSURE MEASUREMENT SYSTEM 0-15 PSI			
31	10	Water log	H250BRD	INSTRUMENT MOUNTING PANEL			
32	10	Water log	H350DES2	LG DESICCATING AIR DRYER (4400 CU FT)			
33	10	Water Log	H253	ORIFICE OUTLET KIT			
34	15	Water Log	H-264	ALERT SERIAL INTERFACE (UHF- AND VHF)			

Vendor: \_\_\_\_\_

Signature: \_\_\_\_\_

**A F F I D A V I T**058**West Virginia Code §5A-3-10a states:**

No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owned is an amount greater than one thousand dollars in the aggregate.

**DEFINITIONS:**

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Debtor" means any individual, corporation, partnership, association, limited liability company or any other form or business association owing a debt to the state or any of its political subdivisions.

"Political subdivision" means any county commission; municipality; county board of education; any instrumentality established by a county or municipality; any separate corporation or instrumentality established by one or more counties or municipalities, as permitted by law; or any public body charged by law with the performance of a government function or whose jurisdiction is coextensive with one or more counties or municipalities.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**EXCEPTION:**

The prohibition of this section does not apply where a vendor has contested any tax administered pursuant to chapter eleven of this code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**LICENSING:**

The vendor must be licensed in accordance with any and all state requirements to do business with the state of West Virginia.

**CONFIDENTIALITY:**

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendors should visit [www.state.wv.us/admin/purchase/privacy](http://www.state.wv.us/admin/purchase/privacy) for the Notice of Agency Confidentiality Policies.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), it is hereby certified that the vendor acknowledges the information in this said affidavit and are in compliance with the requirements as stated.

Vendor's Name: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_