

Airport Weather Advisor® AWOS

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## Dalton Municipal Airport, GA KDNN

### AWOS IIPT Proposal

Solicitation Number:

11 April 2022

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## 1 SCOPE OF WORK

Mesotech is pleased to propose the following scope of work for the installation of a new Airport Weather Advisor® FAA Certified AWOS IIPT system at Dalton Municipal Airport, GA.

### 1.1 Removal of existing system

- Mesotech will remove the existing AWOS equipment from the tower and mounting fixtures
- Mesotech will salvage the removed parts and provide them to the airport
- Upon request, Mesotech will dispose of any unwanted parts in designated receptacles on-site at the airport.
- Off-site disposal is excluded.

### 1.2 Installation of new AWOS IIPT system

- Mesotech will install a new, FAA type-certified AWOS IIPT system using the existing concrete pads, tower, conduit, mounting poles, and electrical service (circuit breaker panel, etc.).
- Mesotech will connect the new AWOS IIPT to existing electrical service
- Installation/replacement of mains electrical service is excluded and, if required, should be completed by the airport prior to installation.
- The installation is expected to take approximately 3 business days. The airport should plan for a total installation time of up to 5 business days.

### 1.3 Commissioning and Training

- Mesotech will arrange with the FAA to perform and complete the commissioning of the new AWOS system. Mesotech's qualified AWOS technician will perform the commissioning.
- During the day of the commissioning, Mesotech will provide necessary support for the airport's AWOS technician to complete their performance exam with the FAA.
- Mesotech will provide up to one-day on-site operator and/or maintainer training for up to 10 airport staff.

### 1.4 NADIN Service

- Mesotech will provide one year of NADIN service through a third-party service provider (Remote Systems Integration).



## APPENDIX A: PRICING



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# Quotation

**Quotation Number:** 21112321 R2  
**Quotation Date:** 6 April 2022  
**Validity:** 60 days  
**Delivery:** 120 days  
**Ship Via:** Best Way  
**Terms:** Net 30  
FOB Sacramento

**To:** Dalton Municipal Airport  
City of Dalton, GA  
[awiersma@daltonga.gov](mailto:awiersma@daltonga.gov)  
706-618-4384

Item	Part No.	Description of Item	Qty	Unit Price	Ext. Price
1		<b><u>Airport Weather Advisor® AWA-30PT System</u></b> FAA Type-Certified AWOS IIIPT System with installation includes: <ul style="list-style-type: none"> <li>• Data Collection Platform Pro</li> <li>• Central Processing Station</li> <li>• Airport Weather Advisor® Software</li> <li>• Technical Manual Set</li> <li>• Altimeter Barometer Kit</li> <li>• Mechanical Wind Sensor Kit</li> <li>• Temp/RH Sensor Kit</li> <li>• Rain Gauge Kit</li> <li>• Ceilometer Kit</li> <li>• Visibility and Precipitation Identification Sensor Kit</li> <li>• Thunderstorm Sensor Kit</li> <li>• Ground to Air Transmitter, Voice Report radio broadcast</li> <li>• Communications Kit, UHF Data Radios</li> <li>• Telephony Kit, Voice Reports via Telephone</li> </ul> Installation of AWOS IIIPT at existing AWOS location. Includes: <ul style="list-style-type: none"> <li>• Removal of existing equipment, salvage to airport</li> <li>• Installation of new AWOS IIIPT system</li> <li>• Re-use of existing concrete pads, conduit, and tower</li> <li>• Commissioning</li> <li>• 1 day on-site operator and/or maintainer training</li> <li>• Connection of AWOS system to existing electrical service</li> </ul> Scope excludes electrical work: installation/replacement of electrical service to be completed by customer if required.	1	\$107,880.00	\$107,880.00
2		<b><u>Optional Services</u></b> <b>NADIN Annual Service</b> One year NADIN service, hardware and data service <b><u>Freight Estimate:</u></b> \$2,000.00	1	\$920.00	\$920.00
2	Destination: USA (Dalton, GA)			<b>Total:</b>	\$108,800.00

These Commodities are licensed for the ultimate destination shown. Diversion contrary to US laws is prohibited

US Dollars

## APPENDIX B: CERTIFICATION AND DATASHEETS





U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Mike Monroney  
Aeronautical Center

P. O. Box 25082  
Oklahoma City, OK 73125

Mr. Michael Lydon, Managing Director  
Mesotech International, Inc.  
4531 Harlin Dr.  
Sacramento CA 95826

**Subject:** Type Certification of Mesotech International Inc.'s Airport Weather Advisor, AWA, Non-Federal AWOS Systems

**References:** Mesotech's Manufacturer's Submittal for AWOS Type Certification Approval, dated 18 May 2020, as received via email dated May 20, 2020. (Including Mesotech AWA AWOS BOMs, dated 18 May 2020.)

FAA Letter, Type Certification of Mesotech International Inc.'s Airport Weather Advisory7 AWA, Non-Federal AWOS Systems, dated November 16, 2017.

FAA Advisory Circular 150/5220-16E, change 1, Automated Weather Observing Systems (AWOS) for Non-Federal Applications, dated January 31, 2019.

Dear Mr. Lydon:

The Federal Aviation Administration (FAA) has reviewed the subject materials (first reference) and subsequent submittals in accordance with the criteria found in revision E, change 1 of the non-Federal AWOS advisory circular (AC16E) (third reference).

All Non-Federal AWOS criteria (third reference) have been satisfactorily completed for Mesotech systems having the following configurations (first reference):

AWOS-II (Mesotech AWA-20) through  
AWOS-IV-Z (Mesotech AWA-40Z)

These configurations are type certified in accordance with revision E, change 1, of the advisory circular (third reference). By virtue of the common design and components, this type certification is also extended to Mesotech's AWA-A and AWA-10 configurations. Please note, Mesotech's previous AWA-A and AWA-10 type certification approval (second reference) also remains intact.

Mesotech is hereby granted AC16E type certification approval of the following AWA system components and documentation for use in existing and future Mesotech Non-Federal AWOS.

Table 1: Hardware

Mesotech P/N	Description
19000081	AWA Kit: Communication, RS422RS485 to RS232
19000083	AWA Kit: Dial telephony voice output
19000084	AWA Kit: GTA transmitter with antenna, coax, audio I/F [AWOS 2000]
20250132	AWA Kit: Desktop computer with O/S
20250130	AWA Kit: DCP with mounting hardware
20250210	AWA Kit: DCP Pro with mounting hardware
25000141	AWA Kit: Tower, non-frangible, tilt-over, with cross-arm, obs light, ltx protection
29000120	AWA Kit: Dual barometer with port and hose [HPA-200]
29000122	AWA Kit: Temp/RH Sensor [HC2A-S3]
29000164	AWA Kit: Ultrasonic Wind Sensor [Observer 70]
29000213	AWA Kit: PIDVISAL Sensor [OWI-430]
29000214	AWA Kit: Rain Gauge [MT-PA01D]
29000215	AWA Kit: Ceilometer [CBME120]
29000216	AWA Kit: Lightning Sensor [NT-TL01D]
29000217	AWA Kit: Freezing Rain Sensor [0872F1]

Table 2: Options

Mesotech P/N	Description
19000060	AWA Kit: UHF Modem, with antennae, coax, surge protection [RV-M7-U]
19000080	AWA Kit: Communication, Short Haul Modem
25000140	AWA Kit: Tower, frangible with cross-arm, obs light, ltx protection
29000187	AWA Kit: Mechanical Wind Sensor [HD Alpine]
29000218	AWA Kit: Hail and Ice Pellet Sensor [HIPS]

Table 3: Replacement Parts

Mesotech P/N	Description
12000003	Antenna, Yagi, 450-470MHz, 6.5dB
12000045	Antenna, Omni, 75-140Mhz, unity gain, fiberglass
13000021	Microphone, Dynamic Cardioid with XLR/XLR cable, 15ft
13000051	Amplifier, Audio, Single Channel for GTA Radio
19000015	Modem, short range, 1080A, 120VAC, DB25 female, RJ45
19000035	Transmitter, GTA VHF, FAA approved [AWOS 2000]
19000206	Radio, UHF 5W, 4800bps, 450-480MHz, 12.5KHz channel [RV-M7-U]
20000031	Computer Expansion Card, PCIe, Sound Card
20000041	Mouse, USB, 2 button
20000058	Computer Expansion Card, PCIe, Telephony
20000061	Serial Converter, RS422/485 to RS232
20250130	AWA Kit: DCP with mounting hardware
20250210	AWA Kit: DCP Pro with mounting hardware
20250149	Computer, Windows compatible, with keyboard and mouse
24500024	Display, LCD Monitor, VGA with signal and power cables
24600003	Lamp, Replacement, 120V/116W, for FAA L-810



Mesotech P/N	Description
24600020	Lights, Obstruction, dual L-810, 116W, 120V, with 1in bottom hub
25000082	Pressure Port, with offset bracket, tubing [610002]
26000007	Filter, Blower
26000145	Radiation Shield, motor aspirated with junction box [43502]
29000089	Sensor, Lightning [NT-TL01D]
29000161	Sensor, T/RH, Rotronic HC2A-S3, White [HC2A-S3]
29000175	Sensor, Barometer [HPA-200]
29000180	Sensor, Ultrasonic Wind [Observer 70]
29000503	Sensor, Precipitation Accumulation [MT-PA01D]
29000509	Sensor, Precipitation ID/Visibility/Ambient Light with Heated Hood [OWI-430]
29000514	Sensor, Mechanical Wind [HD Alpine]
29000515	Sensor, Ice Accretion [0872F1]
29000517	Sensor, Cloud Height [CBME120]
29000518	Sensor, Hail and Ice Pellet (HIPS) [HIPS]
43000029	Fuse, 3AG, SB, 20A
43000073	Fuse, 1.0 A/250 VAC. 3AG Time Delay. Cartridge
43000076	Surge Protector, RF, 100-512 MHz, NF/NF
51500004	Keyboard, USB, standard
60000042	Cable Assembly, DB9F to DB25M, 3 ft.
60000211	Cable Assembly, External, Temp/RH to DCP, RS485
60000478	Cable, Serial, DB9 M/F, 6ft
60000539	Cable, Audio, Stereo, 3.5 mini plug, 3ft
60000558	Cable Assembly, External, DCP to RS422 Host Port
60000559	Cable Assembly, External, DCP to Mechanical Wind Sensor
60000714	Cable Assembly, External, DCP to MARS
60000721	Cable Assembly, External, DCP to Ceilometer
60000815	Cable Assembly, External, DCP to PIDVISAL
60000816	Cable Assembly, External, DCP to Rain Gauge
60000817	Cable Assembly, External, DCP to HIPS
60000878	Cable Assembly, External, DCP to Ultrasonic Wind Sensor
60003166	Cable Assembly, External, DCP to Lightning

Table 4: Software/Firmware

Mesotech P/N	Description	Revision
20500084	Operating Systems, Microsoft Windows, AWA Compatible	7+ / 10+
20500091	Firmware, DCP32, Airport Weather Advisor	2
20600001	Software, AWA v8 Single User Edition, Media with License Keys	8
20500050	AWA Kit: AWA software, single user edition (includes 20600001 above)	N/A

Table 5: Documentation

Mesotech P/N	Revision	Title	Manufacturer
23250040	2.3	AWA AWOS System Description Manual	Mesotech
23250041	2.2	AWA AWOS Installation and Checkout Manual	Mesotech

Mesotech P/N	Revision	Title	Manufacturer
23250042	2.4	AWA AWOS Maintenance Manual	Mesotech
23250043	1.8	AWA AWOS Operating Instructions Manual	Mesotech
23250044	2.2	AWA Training Manual & Test Booklet	Mesotech
23250045	2.3	AWA Kit: AWOS System Technical Manual Set	Mesotech
23250046	1.7	AWA AWOS Configuration Control Plan	Mesotech
23250047	1.8	AWA AWOS Certification Test Report	Mesotech
05108-45-90	A030513	Model 05108-46 Wind Monitor HD Alpine	R.M. Young Co.
1390-PS-0038	6	WindObserver 70/75 User Manual	Gill Instruments
E-M-HC2	V-1_21	HygroClip 2 Humidity Temperature Probes User Guide	Rotronic AG
43502-90	A062006	Model 43502 Compact Aspirated Radiation Shield	R.M. Young Co.
61002-90	36586	Model 61002 Gill Pressure Port	R.M. Young Co.
RV-M7	E2	RV-M7 Data Radio Modem Technical Manual	Raveon Technologies Co.
172210	8	AWOS 2000 VHF Transmitter Owners/Installation/Operations Manual	Val Avionics Ltd.
07M1040-B	35914	User Manual: Model 1040 Universal Short Range Modem	Patton Electronics Co.
07M1080A-D	35965	User Manual: Model 1080A Universal Short Range Modems	Patton Electronics Co.
990-2164		Back-UPS® RS 900 / Back-UPS® XS 900 User's Manual	APC
18860-90	B062309	Wind System Calibration	R.M. Young Co.
9R68-E	42522	M202 Precision Absolute Manometer	Meriam Process Tech
E-M-HP22	V1_20	HygroPalm HP22 Hand-Held Indicator User Guide	Rotronic AG
BEAB218800	2.4.2	Ceilometer CBME120 User's Guide	Eliasson
23250012	1.1	MT-PA01D Heated Precipitation Accumulation Gauge	Mesotech
29100003	Nov2017	Lightning and Thunderstorm Sensor Technical Manual	Mesotech
0872F1	May2009	Instruction Manual 0872F1 Ice Detector	Campbell Scientific
1203-902-1	07/25/17	User's Guide OWI-430	Optical Scientific Inc.

Table 6: Site-Specific Annual Revalidation Test Equipment

Mesotech P/N	Manufacturer	Specification	Application
12090026	Mesotech	Tower Cradle	Tower lowering
14000088	Mesotech	Hard Case	Storage of peculiar support equipment
20250172	Mesotech	Maintenance Laptop	DCP maintenance
29250001	R.M. Young Co	Vane Torque Gauge	Wind direction verification
29250002	R.M. Young Co	Propeller Torque Disk	Wind speed verification
29250003	R.M. Young Co	Anemometer Drive	Wind speed verification
29250004	R.M. Young Co	Vane Angle Fixture	Wind direction verification
29250012	Rotronic AG	Temp/RH Verification Device	Temp/RH verification

Mesotech P/N	Manufacturer	Specification	Application
29250018	Mesotech	Ultrasonic Wind Sensor Verification Device	Wind sensor verification
29250022	Meriam Process	Pressure Verification Device	Barometer verification
54000017	Mesotech	Inclinometer	Wind sensor alignment
54000018	Mesotech	Compass	Wind sensor alignment
60000526	Mesotech	Cable, USB A to B type, 6ft	DCP maintenance
29250025	Mesotech	Precipitation Accumulation Verification Device	Precip accumulation sensor verification

Please note, the documentation included in the first reference included the following bill of materials lists:

1. Mesotech AWA AWOS BOMs, 18 May 2020.xlsx
2. AWOS Configuration Control Plan, 18 May 2020
3. System Description Manual AWA AWOS, 18 May 2020

The above tables are based on the first BOM, in the .xlsx file. The additional information in square brackets (“[ ]”) is primarily from the Master Test List in the AWA AWOS Test Report (first reference).

All systems commissioned after the date of this letter are to be commissioned in accordance with this letter, the current advisory circular, and any relevant subsequent FAA approved ECOs.

All non-Federal technicians responsible for AWA systems are to be trained, examined, and authorized by the FAA in accordance with the advisory circular (third reference) and the above approved training materials.

Please keep in mind, the advisory circular (third reference) also contains siting and installation criteria that must be addressed before a site may be commissioned and allowed to disseminate weather information.

Should you have questions relative to this letter, please contact Dennis Kamin at 405-954-1815.

Sincerely,

Bettie Loudenslager  
Manager, Weather Systems

cc: Natashia Jones, AJW-1X  
Michael Schoen, AJW-1X  
Stewart Stepney, AJM-333

The Mesotech Central Processing Station (CPS) is a secure computer system with an easy to use interface to support Airport Weather Advisor®.

### Fully Automated Reporting

The easy to use interface allows for editing and augmentation of fully automated METAR reports when necessary by a report editor. The CPS distributes reports through multiple data formats including voice reports by ground-to-air radio (VHF) and telephone. The CPS performs built-in automatic self-testing of electronic components and data quality.

### Communication

The CPS communicates with the Data Collection Platform (DCP) using one of many communication options including UHF data radio, optical fiber, and twisted pair copper.

### Unlimited Workstations

The CPS comes standard with a single operator interface, but there is no limit to the number of individual work stations, display stations, and remote maintenance or maintenance stations the CPS can support, all with customizable user screens and real-time data.

### Fully Compliant

The CPS processes data and distributes METAR reports in real-time, fully compliant with FAA requirements. The system meets or exceeds all FAA requirements for data processing, operator interfaces, and the voice subsystems.

### Key Features

- Customizable user screens
- Supports an unlimited number of workstations.
- Supports voice reports for up to 4 telephone lines plus VHF transmission
- Standard tower computer form-factor with display for operator interface

### Technical Specifications

<b>Operating System:</b>	Latest Microsoft Windows O/S
<b>Security:</b>	Passwords with user management
<b>Compliance:</b>	Component of Mesotech's FAA type-certified non-Federal AWOS
<b>Voice Outputs:</b>	Up to 4 telephone lines, VHF transmitter
<b>Automated reporting:</b>	In accordance with FAA non-Federal AWOS requirements
<b>Report Editing:</b>	Built-in syntax certification supports intelligent supplemental editing and augmentation
<b>Work Stations:</b>	Unlimited
<b>Dimensions:</b>	Tower Server: 7 x 14 x 17in UPS: 4 x 10 x 15in Monitor with stand: 16 x 20 x 7in UHF Radio: 3 x 1 x 5in VHF Radio: 6 x 2 x 8in

Mesotech's Airport Weather Advisor® Data Collection Platform is the 'in the field' brains of the Airport Weather Advisor® system.

### Software Interfacing

Our DCPs work seamlessly with our Airport Weather Advisor® Central Processing Station to provide the user with accurate sensor data, sensor status, and maintenance capabilities. The DCP and attached sensors can be serviced through the DCP's USB service port or remotely via AWA.

### Data Collection

Mesotech DCPs connect directly to analog and digital sensors without external interface components or special programming. Sensor data is evaluated prior to being packaged and sent to the CPS.

### Data viewing and distribution

Sensor status and data can be viewed locally via a laptop using the service port. The USB service port allows any laptop with a terminal emulator to serve as a maintenance tool.

### Harsh environment reliability

Each Mesotech DCP is a completely self-contained data collector and processor for all types of weather stations. Designed for exposed and severe outdoor weather conditions, all components are contained in a rugged weatherproof enclosure with sealed circular MIL connectors.

### Highlights

- FAA type-certified for use in Mesotech non-Federal AWOS
- Compact and easy to install
- Sensors connect quickly with MIL-STD connectors
- Flexible and highly reliable
- Supports most aviation weather sensors on the market
- Broad range of communication options including UHF data radio
- Easy to use menu-driven software
- Build-in automatic self-testing

### Technical Specifications

<b>Dimensions:</b>	15 x 16 x 8"	<b>Inputs:</b>	Sensors up to AWOS Level IV Z
<b>Mounting Hole Spacing:</b>	9 x 13.4" (C-C)	<b>Connectivity:</b>	UHF Data Radio
<b>Mounting Options:</b>	C-Channel		Ethernet
<b>Weight:</b>	30lbs		Twisted pair copper
<b>Supply Voltage:</b>	120VAC or 12VDC		Optical Fiber
<b>Power</b>	<10W	<b>Internal Sensors:</b>	Supports dual barometers
	(without sensors)	<b>Maintenance port:</b>	USB
<b>Operating Temp:</b>	-55C to 70C	<b>Enclosure rating:</b>	NEMA 4X



Mesotech's digital barometer is a highly accurate pressure transducer with a digital output signal. This instrument measures atmospheric pressure to within  $\pm 0.03\%$  FS. It is ideal for automated weather observing systems based on Airport Weather Advisor.

The barometer offers outstanding value in real-world conditions that demand

accurate and stable barometric measurements. It uses proven silicon sensor technology with microprocessor-based signal compensation, eliminating the need to insulate or temperature-regulate the barometer.

The sensor can operate from unregulated supply voltage in the range of 6 to 26 volts without affecting performance. Current consumption is 17 to 30 mA in measurement mode. For operation in remote locations under battery power, the sensor has instant warm-up and turn-on to full rated accuracy. This allows sampled operation at low average power consumption.

### Technical Specifications

<b>Pressure Range:</b>	0 to 17.6 psia	<b>Operating Temp:</b>	-40°C to +85°C (-40°F to +185°F)
<b>Accuracy:</b>	$\pm 0.03\%$ FS max (0.3 hPa)	<b>Storage Temp:</b>	-55°C to +90°C (-67°F to +194°F)
<b>Stability:</b>	0.02% FS max per year	<b>Pressure Fitting:</b>	Brass barbed fitting for 1/8 inch ID tubing
<b>Output:</b>	RS-232	<b>Supply Voltage:</b>	5.5 to 30 VDC
<b>Dimensions:</b>	1.8 x 2.2 x 0.975 inches	<b>Weight:</b>	5 oz. without fittings

## Airport Weather Advisor® FAA Type-Certified Component Temperature/Relative Humidity Probe



The Mesotech Temperature and Humidity Probe can be used in a wide variety of environments and is excellent for use in automatic meteorological stations. It interfaces easily with data loggers and recorders, is simple to service, and features EMI/RFI protection.

With one of the most accurate and reliable transducers available, the probe provides up to 100 percent RH measurement with high accuracy. It has negligible hysteresis and

excellent long-term stability, even in extremely high humidity. The probe is also insensitive to dust and has a good tolerance to chemicals.

This probe combines advanced microprocessor and Application Specific Integrated Circuit (ASIC) technology with a robust plug-in design. The digital processing allows accurate linearization and temperature compensation over the entire operating range. It has 100 percent interchangeability to reduce user maintenance costs and practically eliminate downtime. If repairs are needed; the probe head, which contains the transducer and electronics, can be quickly removed and replaced, allowing measurements to continue within moments with little interruption.

The combined performance of the probe and NEMA4 protected housing enables you to make accurate and repeatable temperature and humidity measurements.

### Technical Specifications

<b>Environment:</b>	Humidity: 0 to 100% RH
	Temperature: -50°C to +100°C (-58°F to +212°F)
<b>Accuracy:</b>	Humidity: ±0.8% RH at 23°C and 10, 35, 80% RH
	Temperature: ±0.1°K at 23°C and 10, 35, 80% RH
<b>Dimensions :</b>	Ø15 x 108 mm

<b>Digital Interface:</b>	RS-232
<b>Operating Temp:</b>	-40°C to +60°C (-40°F to +140°F)
<b>Power:</b>	12VDC, 1W
<b>Housing:</b>	ABS plastic. NEMA4 (IP65)
<b>Weight:</b>	17g



## Airport Weather Advisor® FAA Type-Certified Component Motor Aspirated Radiation Shield



Mesotech's Motor Aspirated Radiation Shield (MARS) provides forced aspiration of a temperature sensor to increase its measurement accuracy in an outdoor environment. Unique in its small size and exceptional performance, this MARS reduces radiation errors to less than 0.2°C RMS with the shield exposed to solar radiation of 1000 W/m<sup>2</sup>.

The shield employs a triple-walled intake tube and multiple canopy shades to isolate the sensor from precipitation and solar radiation. A continuous duty blower draws ambient air through intake tubes and across the sensor, minimizing radiation errors. The

temperature sensor mounts vertically in the center of the intake tubes. The blower housing and shield assembly are made from reflective white UV-stable plastic.

Temperature sensors can be RTD, thermocouples, or thermistor types with sheath diameters up to 10 mm (0.4 inches) and 150 mm (6.0 inches) in length. Longer probes may be used with the optional shield extender tube. This ARS can also accommodate other types of sensors up to 24 mm in diameter.

The small shield size reduces the surface area exposed to incoming radiation during the day, significantly reducing the amount of heat that needs to be washed away from the intake tubes. Errors from outgoing radiation at night are similarly reduced. The versatile DC blower is designed for continuous duty of more than 80,000 hours (9 years) at 25°C (77°F). The blower draws ambient air through the intake tubes and across the sensors, minimizing radiation errors. Flow rate at the sensor is 5 to 11 m/s, depending upon the sensor size. Brushless electronic commutation with the blower is achieved using dependable solid-state circuitry.

The universal mounting brackets, which use tough UV-stable plastic and corrosion resistant stainless-steel U-

### Technical Specifications

<b>Sensor Types:</b>	Accommodates temperature and humidity sensors up to 24 mm (.94 inches) in diameter.	<b>Power Consumption:</b>	12-14 VDC @ 500 mA
<b>Radiation Error:</b>	Ambient Temperature 0.2°C (0.4°F) RMS at 1000 W/m <sup>2</sup> intensity	<b>Material:</b>	UV stabilized white thermoplastic shield and blower housing. Aluminum mounting bracket, white coated. Stainless steel U-bolt clamp.
<b>Dimensions:</b>	33 x 20 cm	<b>Weight:</b>	1.1 kg



## Airport Weather Advisor® FAA Type-Certified Component Mechanical Wind Sensor



The mechanical wind sensor is high resolution and includes ice-resistant coating on external surfaces. The all-black color scheme enhances ice-shedding performance. The wind speed sensor is a four-blade helicoid-shaped propeller. Propeller rotation produces an AC sine wave with frequency directly proportional to speed. The AC signal is induced in a transducer coil by a six-pole magnet mounted on the propeller shaft. The coil resides on the non-rotating central portion of

the main mounting assembly. Slip rings and brushes are eliminated for increased reliability. The direction sensor is a lightweight vane with a low aspect ratio to assure good fidelity in fluctuating wind conditions.

A precision potentiometer housed in a sealed chamber senses vane angle. An orientation ring assures the instrument can be removed for maintenance and reinstalled without loss of wind direction reference.

The instrument is made of UV stabilized plastic with stainless steel and anodized aluminum fittings. It utilizes extremely long-wearing, oversize ceramic bearings to increase service life many times longer than standard stainless-steel bearings. A convenient junction box houses transient protection and cable terminations. The instrument mounts on a standard 1-inch pipe.

### Technical Specifications

<b>Wind Speed:</b>	0 to 100 m/s (224 mph)	<b>Power:</b>	15 VDC maximum excitation
<b>Azimuth:</b>	360° mechanical 355° electrical (5° open)	<b>Operating Temp:</b>	- 50 to +50°C (-58 to +122°F)
<b>Wind Speed Accuracy:</b>	±0.3 m/s (0.6 mph) or 1%	<b>Direction Output:</b>	DC voltage from 10K Ω potentiometer
<b>Wind Direction Accuracy:</b>	±3 degrees	<b>Transducer Output:</b>	AC sine wave signal induced by rotating magnet . 80 mV p-p at 100 rpm. 8.0 V p-p at 10,000 rpm.
<b>Propeller Threshold:</b>	1.0 m/s (2.2 mph)	<b>Signal Output:</b>	Wind Speed: Magnetically induced AC voltage, 3 pulses per revolution 18 cm diameter
<b>Vane Threshold:</b>	1.0 m/s (2.2 mph)	<b>Propeller:</b>	50 cm pitch
<b>Dimensions:</b>	40 x 57 cm	<b>Mounting:</b>	34 mm diameter
<b>Weight:</b>	1.0 kg		



Mesotech's combination Present Weather/Visibility/Ambient Light Sensor (PIDVISAL) is a fully automated instrument that provides accurate visibility, present weather, and ambient light measurement in a single sensor. This next generation intelligent sensor uses all digital signal processing (DSP) for no-drift high-accuracy results. The environmentally adaptive algorithms use artificial-intelligence technology derived from over 100 million field hours of real-world data

from sensors installed around the world. The result is the most advanced weather sensor in the world.

This combination sensor has over 2,000 systems in the field, providing critical weather information to airport, highway, military, research, and meteorological weather information systems worldwide. It is designed for year-round continuous operation in all climates from Antarctica to tropical rain forests, detecting and quantifying rain, snow, drizzle, and mixed precipitation conditions with 90% visibility accuracy up to 10 km.

The PIDVISAL uses DSP electronics to eliminate the need for field calibration, and it has built-in self-diagnostics and testing.

### Technical Specifications

<b>Present Weather Type ID:</b>	Rain, snow, drizzle, and mixed	<b>Power:</b>	Electronics: 12VDC, 36W Heater: 24VDC,, 40W
<b>Accumulation:</b>	0.001 to 999.999 mm (rain and snow)	<b>Operating Temp:</b>	-40°C to +50°C (-40°F to +122°F)
<b>Measurement Resolution:</b>	0.001 mm (rain and snow)	<b>Humidity:</b>	0 to 100%
<b>Measurement Accuracy:</b>	Rain 5% accumulation  Snow: 10% accumulation	<b>Wind Speed:</b>	125 knots
<b>Visibility Accuracy:</b>	10% to 10 km, 15% to 20+ km, 20% to 30+ km		
<b>Ambient Light:</b>	0 to 9,990 candles / m <sup>2</sup>	<b>Sensor Weight:</b>	10 lbs
<b>Signal Output:</b>	RS-232	<b>Dimensions:</b>	35 x 5 x 11 inches

## Airport Weather Advisor® FAA Type-Certified Component Tipping Bucket Rain Gauge



The Mesotech Tipping Bucket Rain Gauge is a dependable instrument used for measuring precipitation. The gauge also measures snowfall and is equipped with a 400-watt electric heater.

Rainfall entering the 8-inch funnel collector is directed to the tipping bucket assembly. When an incremental

amount of precipitation has been collected, the bucket assembly tips and activates a magnetic reed switch. The sample is discharged through the base of the gauge. A momentary electrical contact closure actuates for each increment of rainfall. This contact closure can be used to operate an event recorder or other data acquisition system.

The standard gauge is made of anodized and powder coated aluminum. A bubble level is located on the base for correct positioning. The funnel has a screen to prevent debris from entering the gauge. Mounting brackets with leveling adjustments are included.

The rain gauge includes an electric heater for measurements of snow and rain. The heating components include a 400-watt heater installed in the base, insulation in the outer tube, and a freeze-point thermostat control at the funnel. Snow falling into the funnel is melted and the resulting water drains into the tipping bucket assembly.

### Technical Specifications

<b>Capacity:</b>	Unlimited	<b>Operating Temp:</b>	-55°C to +50°C
<b>Orifice:</b>	8 inches	<b>Heater Power:</b>	115 VAC 50/60 Hz @400 watts
<b>Calibration:</b>	0.01 inches	<b>Dimensions:</b>	8 x 17 inches
<b>Accuracy:</b>	±1% for 1 to 3 inches per hour	<b>Weight:</b>	12 lbs
	±3% for 0 to 6 inches per hour	<b>Contact Maximum Rating:</b>	3 watts, 0.25 amps, 24 VDC (27 V surge suppressor)
<b>Accuracy Calibrated Rate:</b>	±1% at 2.3 inches/hour	<b>Mounting:</b>	3 legs, ¼ inches diameter bolt holes on 9½ inches
	±1% at 5.1 inches/hour	<b>Output:</b>	0.1 second switch closure

## Airport Weather Advisor® FAA Type-Certified Component CBME120 Ceilometer



Mesotech's CBME120 ceilometer is a detects cloud height using an eye-safe laser. It uses the Light Detection and Ranging (LIDAR) principle with a low power diode laser. This highly reliable and accurate ceilometer has a detection range up to 40,000 feet (12,000 m).

The main advantages of this ceilometer are its size, weight, power requirement, and modern design which makes for easy installation and integration. The small size and weight facilitates easy, one-person maintenance. The ceilometer can be carried in one hand and can operate from 12 VDC or

AC mains power. The ceilometer's modern electronic design includes only two replaceable subassemblies and allows complete field replacement without adjustments or calibration.

The ceilometer employs unique digital signal processing techniques that enable detection of up to five cloud layers simultaneously. This design also extends the life of the laser beyond 10 years. The ceilometer has outputs for different types of display and recording units. An RS-232 interface supports local control, test, and data acquisition, and an internal FSK modem offers remote control and data acquisition. A digital readout on the ceilometer enclosure provides cloud base and operation status information.

The ceilometer has built-in test equipment for automatically adjusting its operating parameters and for self-diagnostics. The cyclic self-testing completely covers the ceilometer's operation and reports current status in every output message. It does not require periodic calibrations or adjustments. The ceilometer has been tested to IEC environmental standards for vibration, shock, impulse voltages, transients, operating temperature, and EMI susceptibility and emissions.

### Technical Specifications

<b>Range:</b>	0 to 40,000 feet	<b>Outputs:</b>	One service port (RS-232) One data port (FSK, RS-232, or RS-485 half duplex)
<b>Resolution:</b>	10 feet		
<b>Accuracy:</b>	±15 ft or ±1% of height	<b>Weight:</b>	15 kg without stand
<b>Measure Interval:</b>	15, 30, 60, or 120 seconds	<b>Dimensions</b>	232 x 468 x 408 mm
<b>Power Consumption:</b>	Electronics: 30W Heaters: 160W Blower: 250W	<b>Operating Temp:</b>	-40°C to +55°C (-40°F to +130°F)
<b>Laser Safety:</b>	Laser class 1M, IEC-60825-1		



Mesotech's thunderstorm and lightning sensor detects electrical discharges associated with lightning within a 200 nautical mile radius of the system with a <2% false detection rate. This passive lightning detection sensor uses a receiving antenna to "listen" for electromagnetic signals.

The antenna mounts to a 16 x 16 inches ground plane and includes a processor housed in a NEMA 4X enclosure. The frangible pedestal is aluminum with an epoxy finish.

The sensor's lightning detection processor receives electrical discharge information from the antenna, processes it to determine range and azimuth,

### Technical Specifications

<b>Detection:</b>	Intra-cloud, inter-cloud, and cloud-to-ground discharges	<b>Communication:</b>	RS-422, RS-232
<b>Detection Accuracy:</b>	Within 3 nm in the 0-10 nm range (≥90% detection rate) Within 6 nm in the 10-30 nm range (≥80% detection rate)	<b>Operating Temp:</b>	-55°C to +70°C
<b>Distance Range:</b>	0 to 200 nm	<b>Pedestal:</b>	Aluminum, epoxy finish, 3ft height
<b>Distance Resolution:</b>	Reported in increments: 0-5 nm, 5-10 nm, 10-30 nm, 30-200 nm.	<b>Protection Class:</b>	IP66, NEMA 4X
<b>Direction Range:</b>	360°	<b>Voltage:</b>	12VDC
<b>Direction Resolution:</b>	Reported by octant	<b>Power:</b>	10W
<b>False Detection:</b>	<2%	<b>Weight:</b>	18 kg
<b>Dimensions:</b>	400 x 400 x 340 mm		

## **APPENDIX C: WARRANTY AND REPAIR POLICY**



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## **Warranty and Repair Policy**

The AWA equipment has been manufactured and should perform in accordance with requirements of FAA Advisory Circular 150/5220-16, latest revision. Any defect in design, materials, or workmanship which may occur during proper and normal use during a period of 1 year from date of installation or a maximum of 2 years from date of shipment will be corrected by repair or replacement. The details of Mesotech's warranty and repair policies follow.





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## LIMITED WARRANTY

Mesotech International Inc. ("Mesotech"), a California Corporation, warrants its instrumentation and systems products ("Products") as follows:

### 1. Limited Warranty.

Mesotech warrants that the Products sold hereunder will be free from defects in material and workmanship for a period of one (1) year from the date of installation or a maximum of two (2) years from shipment. If the Products do not conform to this Limited Warranty during the warranty period (as herein above specified), Buyer shall notify Mesotech in writing of the claimed defects and demonstrate to Mesotech's satisfaction that said defects are covered by this Limited Warranty. If the defects are properly reported to Mesotech within the warranty period, and the defects are of such type and nature as to be covered by this warranty, Mesotech shall, at its own expense, repair the Products or, at Mesotech's option, furnish replacement Products for the defective Products. Shipping and installation of the replacement Products or replacement parts shall be at Buyer's expense.

### 2. Other Limits.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Mesotech does not warrant against damages or defects arising out of improper or abnormal use or handling of the Products; against defects or damages arising from improper installation (where installation is by persons other than Mesotech), against defects in products or components not manufactured by Mesotech, or against damages resulting from such non-Mesotech made Products or components. Mesotech passes on to Buyer the warranty it received (if any) from the maker thereof of such non-Mesotech made products or components. This warranty also does not apply to Products upon which repairs have been affected or attempted by persons other than pursuant to written authorization by Mesotech.

### 3. Exclusive Obligation

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Mesotech shall be to repair or replace the defective Products in the manner and for the period provided above. Mesotech shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Mesotech be liable for incidental, special, or consequential damages.

### 4. Other Statements.

Mesotech's employees or representatives' ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Buyer, and are not a part of the contract for sale or this Limited Warranty.

### 5. Entire Obligation.

This Limited Warranty states the entire obligation of Mesotech with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.





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## REPAIR AND SERVICE POLICY

### Service Order and RMA (Return Material Authorization)

Mesotech creates a Service Order for every item being returned for service or repair. You will be asked a number of questions, such as model, serial number, symptoms, etc., to help us determine the scope of the service. Once we have all the necessary information to proceed with the work, you will be given an RMA number and shipping instructions. Your RMA number will expire 30 days after being issued if the product is not returned to us. All returns require your purchase order or equivalent to insure payment.

### Shipping and Freight

You are responsible for shipping the product to our Service Center. This includes products returned for warranty repair. If the product is covered by our warranty, we will ship the repaired product by ground freight to any location designated by you within the USA at no cost to you. However, if the product required non-warranty repair or service, or if no problem was found, then the costs of shipping the product to your location will be added to the repair invoice.

When shipping your product, make sure to boldly mark the outside of the shipping container with the RMA number. We may refuse packages that are not marked clearly with the RMA number. We may refuse products returned without prior authorization and an RMA number. If we inadvertently received such a package, it may be returned to you freight-collect.

Please make sure to properly pack your product for shipping. We recommend returning the product in its original shipping container. Your warranty may be voided if your product is received without adequate shock, vibration, and ESD protection. We recommend that you insure the contents of the shipment and use a carrier that offers a package tracking service. Mesotech is not responsible for undelivered and refused packages or products damaged during shipment.

For international shipments, the warranty excludes all costs of shipping. Any customs clearance and related charges incurred by Mesotech to receive your package will be added to the repair invoice. Please include all importation documents with the package so that it can clear U.S. Customs. You should include U.S. Customs Form 3311, Declaration for Free Entry Of Returned American Products.

### New Customers

If you are a new customer to Mesotech, we will require specific information to establish a customer account and payment terms. If you are a reseller, we will need a copy of your Tax-Exempt Certificate or Resale Certificate.

### Non-Warranty Service and Repair Costs

All non-warranty returns will be evaluated to determine if the item can be repaired and, if so, what repairs will be necessary. Prior to giving you an RMA number, we will quote a fee to cover the costs of the evaluation. The amount of the evaluation fee will depend on the type and age of the product being returned. It will not be less than \$60 for 30 minutes of inspection and diagnosis. This fee will be credited toward the final repair cost if you choose to proceed with the repair. If the estimated repair cost is less than \$300, then we will complete the repair without further authorization from you. For service and repairs exceeding \$300, you will be given a detailed quotation for your approval. We will provide you with any information you need concerning the cost of service or repair. If you choose not to proceed with the repair, you may have the product returned “as is” or have it disposed of by us for a fee. If we do not receive your instructions to proceed with the repair within 10 working days of the quotation, we



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will return the product to you “as is” and the RMA will be closed. Our repairs are warranted for 90 days from the date of repair or the remainder of the original warranty. Our fees are subject to change at any time.

### **No Defect or Problem Found**

If we are unable to identify a problem with your product, we may ask you for more information to assist in further diagnosis. If we cannot identify the defect within a reasonable amount of time, we will assume the product is operating within specifications and return it. You will be billed the evaluation fee and shipping costs when no problem is found.

### **Upgrades**

An upgrade is any service or modification to a product that is not required to meet original factory specifications and performance. If you request an upgrade on a product still under warranty, it will be treated as a non-warranty service.

### **Items Beyond Repair**

We may choose to credit you for items that cannot be repaired if the defect is considered a warrantable defect and a replacement is not readily available. If we choose to give you a credit, we will credit you the purchase price of the item. Items determined to be beyond repair as a result of your actions will be returned “as received” and we will bill you the evaluation fee. We cannot guarantee a replacement or credit of any type when the warranty has expired or is not applicable.

### **Re-Stocking Policy**

Please call to receive an RMA (Return Material Authorization) number within 30 days of purchase prior to returning merchandise, returns WILL NOT be accepted without one. Twenty percent (20%) restocking fee applies to all returns. Only un-opened, un-used product will be accepted for return.

### **Address:**

Mesotech International, Inc.

4531 Harlin Drive

Sacramento, CA 95826

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800-637-6832

Fax: 916-368-2030

Email: [service@mesotech.com](mailto:service@mesotech.com)

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