

Manual for installation and maintenance

Weather Station



Weather Station

Wind, Rain, Temperature, Radiation
Sensors

Ag/MIS/UmEN-2741-05/19 Rev 1.5

P/N: 116792

 Munters

Weather Station

Manual for use and maintenance

Rev 1.5, 06/2024

This manual for use and maintenance is an integral part of the apparatus together with the attached technical documentation.

This document is destined for the user of the apparatus: it may not be reproduced in whole or in part, committed to computer memory as a file or delivered to third parties without the prior authorization of the assembler of the system.

Munters reserves the right to effect modifications to the apparatus in accordance with technical and legal developments.

Index

<i>chapter</i>		<i>page</i>
1	INTRODUCTION	4
	1.1 Disclaimer.....	4
	1.2 Introduction	4
	1.3 Notes	4
2	RAIN SENSOR.....	5
	2.1 Installation	5
	2.2 Maintenance	8
	2.2.1 Checking Resistance	8
	2.2.2 Surface Cleaning.....	8
	2.3 Rain Sensor Specifications	9
3	TEMPERATURE SENSOR	10
4	RHS + HUMIDITY SENSOR.....	12
	4.1 Installation	12
	4.2 Replacing the Sensor	13
	4.3 Cleaning and Maintenance	14
	4.4 Washing the House	14
5	WIND SPEED AND DIRECTION SENSOR	15
	5.1 Wind Speed and Direction Wiring.....	15
	5.2 Wind Speed and Direction Technical Data	15
6	RADIATION SENSOR.....	17
	6.1 Wiring Diagram.....	17
	6.2 Radiation Sensor Specifications	18
	6.2.1 General	18
	6.2.2 Input / Output Wires	19
	6.2.3 Sensor Output	19
7	ENVIRONMENTAL PROTECTION	20
8	WARRANTY	21

1 Introduction

1.1 Disclaimer

Munters reserves the right to make alterations to specifications, quantities, dimensions etc. for production or other reasons, subsequent to publication. The information contained herein has been prepared by qualified experts within Munters. While we believe the information is accurate and complete, we make no warranty or representation for any particular purposes. The information is offered in good faith and with the understanding that any use of the units or accessories in breach of the directions and warnings in this document is at the sole discretion and risk of the user.

1.2 Introduction

Congratulations on your excellent choice of purchasing a Weather Station!

In order to realize the full benefit from this product it is important that it is installed, commissioned and operated correctly. Before installation or using the units, this manual should be studied carefully. It is also recommended that it is kept safely for future reference. The manual is intended as a reference for installation, commissioning and day-to-day operation of the Munters equipment.

1.3 Notes

Date of release: July 2019

Munters cannot guarantee to inform users about the changes or to distribute new manuals to them.

All rights reserved. No part of this manual may be reproduced in any manner whatsoever without the expressed written permission of Munters. The contents of this manual are subject to change without notice.

2 Rain Sensor

Munters' Rain Sensor detects rain within a few seconds and allows control of agricultural facilities that must respond to rain. The Rain Sensor signals the presence of rain with both a dry contact relay, and a standard 5 Volt output, when the sensor plate gets wet. The Rain Sensor heating system dries the sensor plate once the rain stops. It normally signals the end of rain within five minutes after the rain has stopped.

A trimmer adjustment within the unit provides convenient sensitivity adjustment for light and heavy rain conditions.

- Installation
- Maintenance
- Rain Sensor Specifications

2.1 Installation

CAUTION *The Rain Sensor must be installed by an authorized electrician.*

Power must be disconnected to avoid electrical shock and damage when servicing the unit. The device must be disconnected from power before opening the enclosure for any purpose.

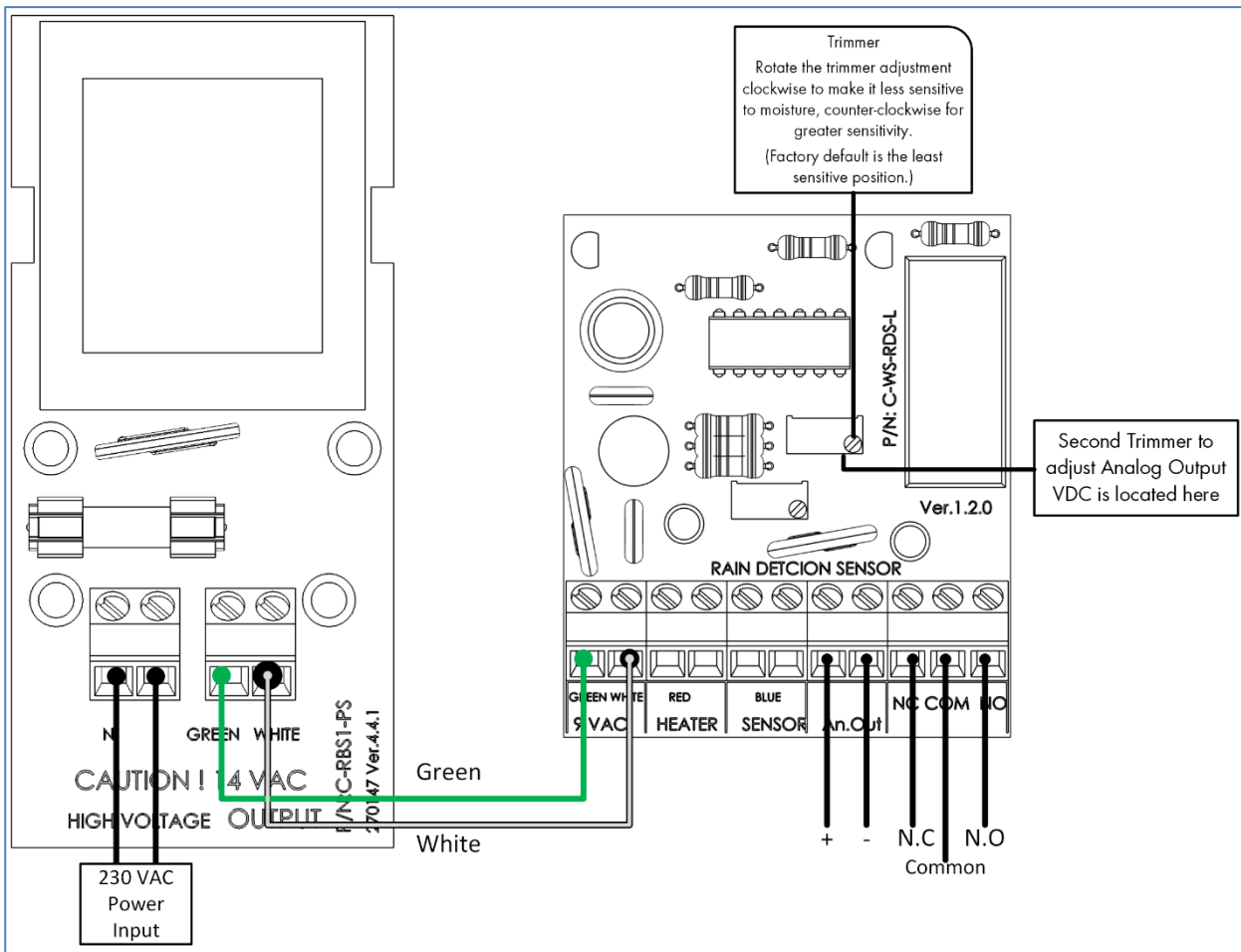


Figure 1: Wiring Diagram

- Use the Normally Open or Normally Closed terminal as required. During rain the relay activates to close the NO, and open the NC.

RDC Output	
Output VDC	Status
0V	No Rain
Adjust	Rain
0.5-5V Trimmer	



Figure 2: Rain Sensor mounting diagram

1. Screw the mounting plate to a solid mounting surface through the access holes.
2. Open the Rain Sensor box and attach it to the mounting plate as shown in the diagram.

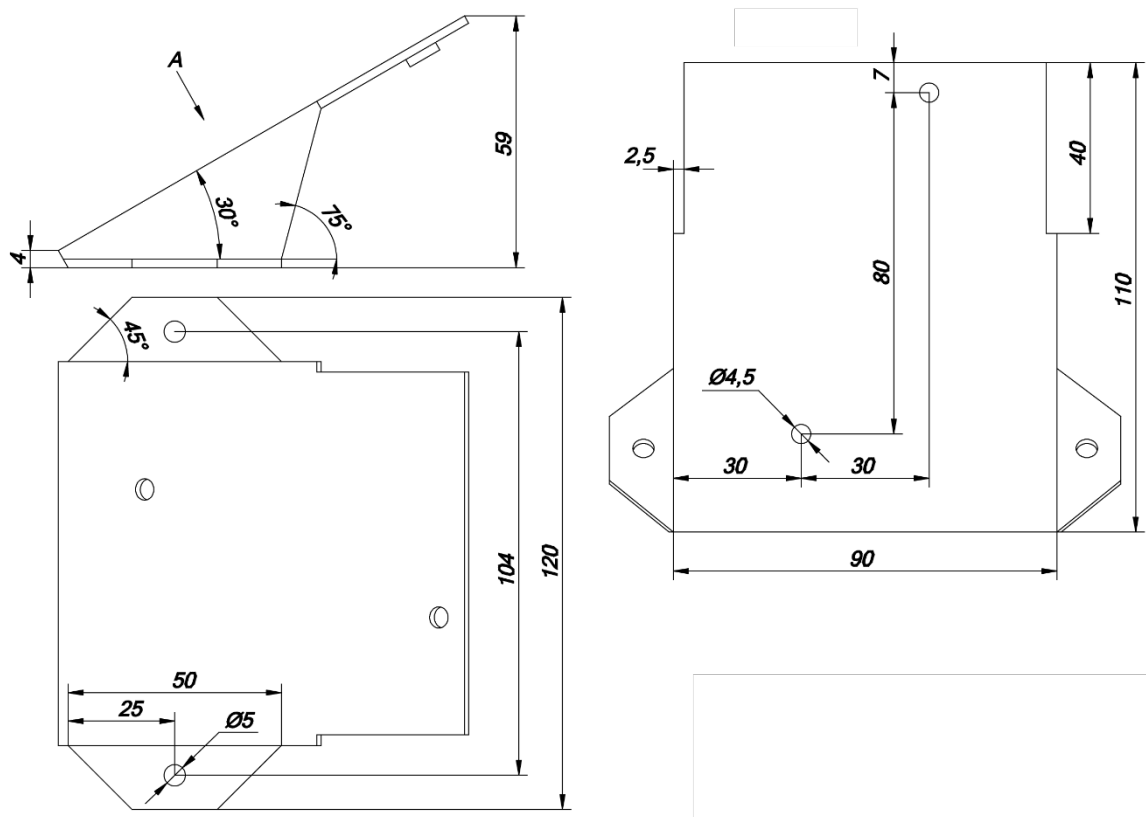


Figure 3: RRS-1 Plate dimensions

2.2 Maintenance

- Checking Resistance
- Surface Cleaning

2.2.1 CHECKING RESISTANCE

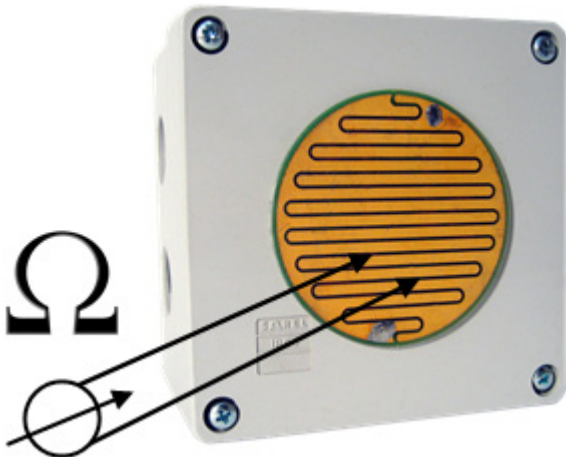


Figure 4: Rain Sensor Resistance check (should be disconnected when dry)

2.2.2 SURFACE CLEANING

- Clean the gold-plated conductors with a home cleaning detergent that contains a maximum of 9% sodium hydroxide and at least 5% nonionic and cationic active agents. Follow the detergent's safety instructions.
 - Pour the detergent on the entire sensing surface and leave it to react for two minutes. Scrub the surface using a soft cloth. Rinse away the contaminated detergent with water. Repeat this step until all the residue contamination is completely removed.
 - Pour the detergent on the entire sensing surface and leave it to react for two minutes. Use a soft brush to clean the insulation gaps between the gold-plated conductors. Rinse away the contaminated detergent with water.

NOTE Scrubbing and brushing will not degrade the plated gold.

2.3 Rain Sensor Specifications

Specification	Description
Power Voltage	9-12 VAC
Power Consumption (Electronic + Heating)	3 VA
Ambient Temperature	(-20°) - 60°C
Storage Temperature	(-30°) - 70°C
Relative Humidity	0-100%
Dropout Time	5 Minutes (±20%)
Relay Output	10A 250VAC 1/4HP
Analog Output	0-5VDC
Housing	PVC
Protection Class	IP 66
Weight incl. Mounting & Power Supply	900gr.

3 Temperature Sensor

P/N: 918-01-00001



- Type : 30 Kohm Thermistor
- Maximum Cable Length: 1640 feet (500 meter)
- Curve Number: 1
- Typical Accuracy: 0.3° C
- Maximum 25°C Tolerance: ±3%
- Operating Temperature: -40° to 105° C / -40° to 221° F
- Minimum wire size: 22 AWG (2 wire shielded cable)

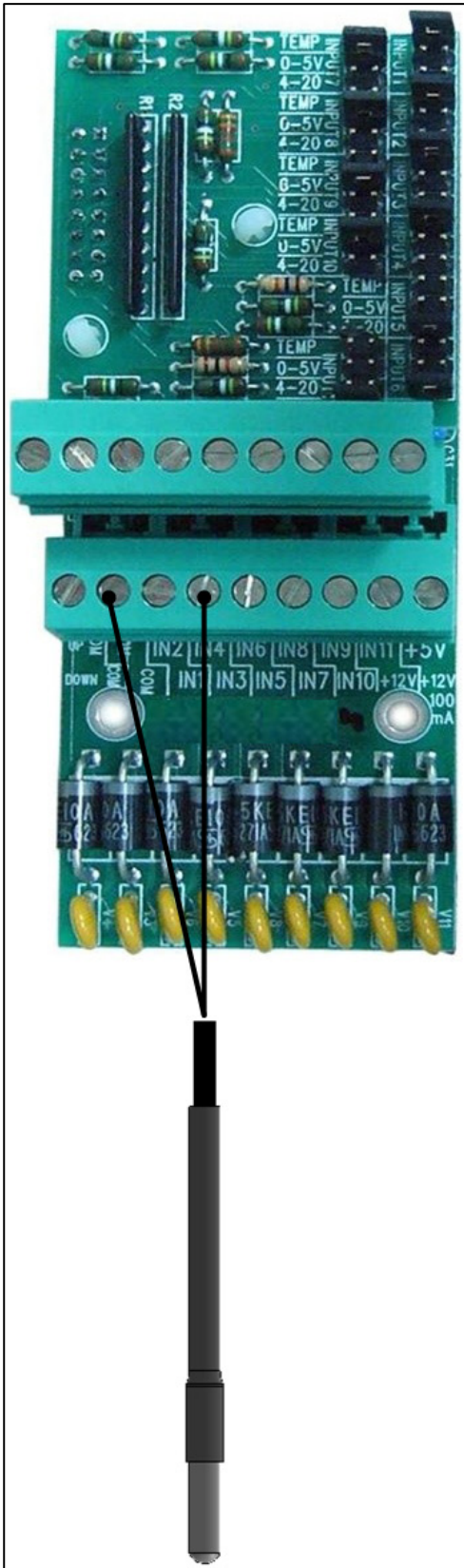


Figure 5: RTS Wiring

4 RHS + Humidity Sensor

- Installation
- Replacing the Sensor
- Cleaning and Maintenance
- Washing the House

4.1 Installation

The RHS + comes with a male-female connector used to connect the sensor to a controller. The male connector comes attached to the RHS +. Installing the sensor hardware consists of properly attaching the controller's wires to the female connector and then joining the female and male halves.



Figure 6: RHS +

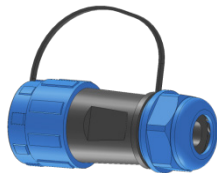


Figure 7: Female Connector

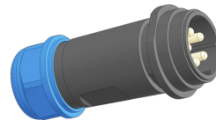
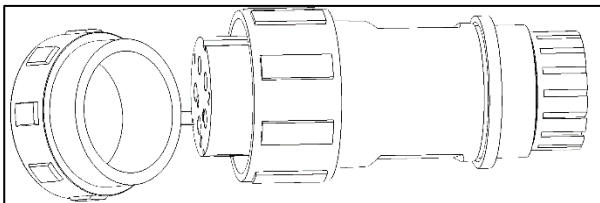


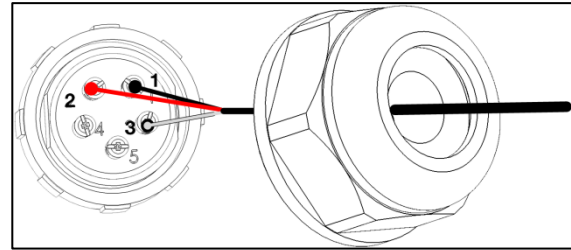
Figure 8: Male Connector

1. Install the sensor in place.
2. Remove both caps from the female connector.

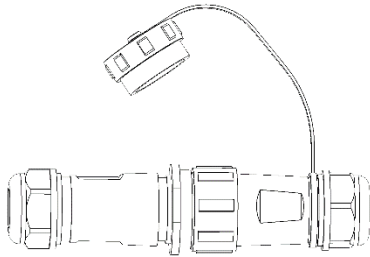


3. Attach the controller wires to the sensor according to the following color chart:

Pin Number	Cable Color
1	Black
2	Red
3	White



4. Reattach the cap screwing the wiring.
5. Connect the male/female connectors.



CAUTION Connect shield to the safety ground!

- Configure the controller as detailed in the controller manual.

Specifications

- Input voltage: 12 VDC
- Output voltage: 0 - 3 VDC
- Operating temperature: 0° to +60° C/32° - 140° F
- RH range: 0 - 100%
- Accuracy: 20 - 80% humidity ($\pm 3\%$); above 80% humidity ($\pm 5\%$)
- Maximum cable length: 300 meter
- Minimum wire size: 22 AWG
- Sensor Tip Part Number: SP-RHS10-TIP SE: SP-RHS10-TIP SE

4.2 Replacing the Sensor

P/N: 999-99-00214

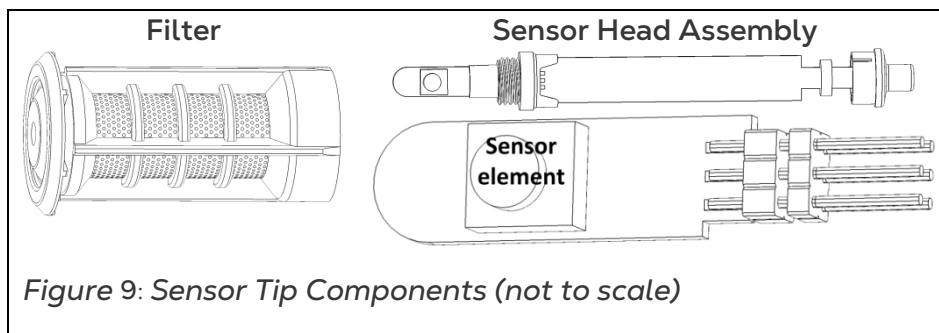


Figure 9: Sensor Tip Components (not to scale)

1. Untwist the filter.
2. Pull out the sensor from the sensor head assembly.

CAUTION Do not touch the sensor element!

3. Put a new sensor in place and replace the filter.

4.3 Cleaning and Maintenance

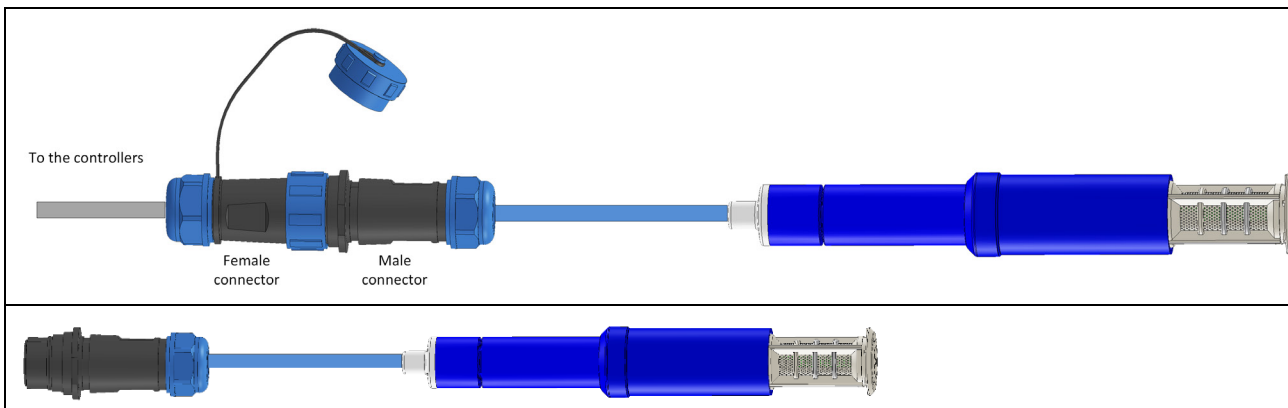
- Remove the filter before cleaning it. Clean the filter every six months or as required, using water only. Avoid touching the sensor while cleaning.

4.4 Washing the House

CAUTION *Failure to remove the unit before washing or cleaning the chicken house will result in cancellation of the RHS +'s warranty!*

Before you clean the coop/house:

1. Remove the entire unit from the female connector.
2. Place the cap on the female connector.



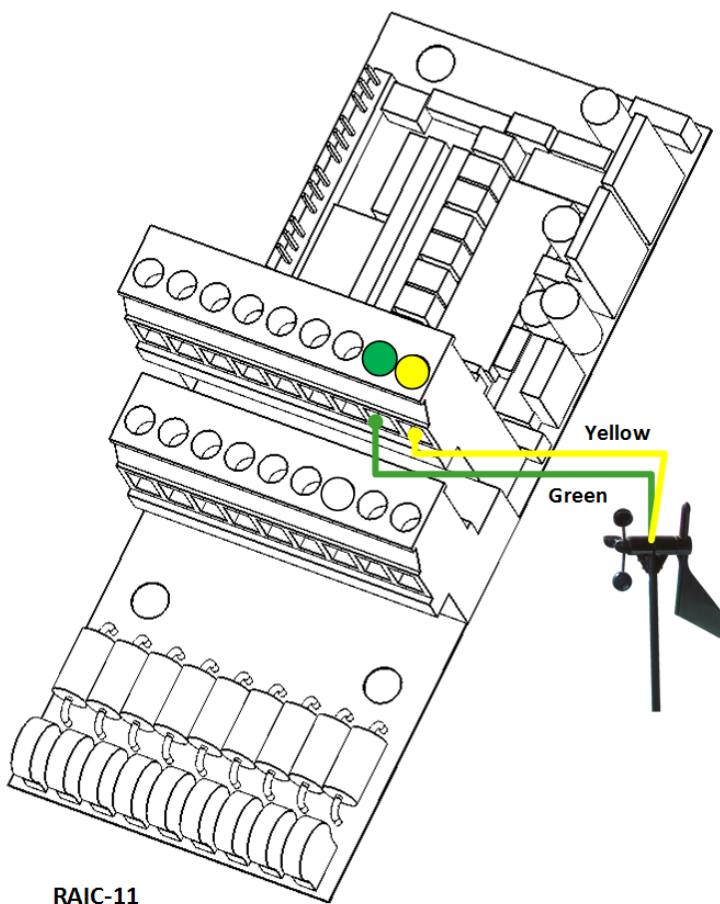
3. Clean the house and reattach the connectors.

5 Wind Speed and Direction Sensor

- Wind Speed and Direction Wiring
- Wind Speed and Direction Technical data

5.1 Wind Speed and Direction Wiring

Connect according to the color code on the PCB.



RAIC-11

Figure 10: Wind speed and direction sensor wiring

5.2 Wind Speed and Direction Technical Data

General	
Wind Direction Input Range	0 – 10 kOhm
Wind Speed Input	Pulse output, 0 – 10 KOhm
Sensor Type	
Wind Speed	Wind Cups and Magnetic Switch
Wind Direction	Wind Vane and Potentiometer

General	
Attached Cable Length	40 Feet (12 m)
Maximum Cable Length	330 Feet (100 m)
Cable Type	4-Conductor, 26 AWG
Connector	Modular Connector (RJ-11)
Material	
Wind Vane and Control Head	UV-Resistant ABS
Wind Cups	Polycarbonate
Anemometer Arm	Anodized Aluminum
Dimensions	18.5" Long x 7.5" High x 4.75" Wide (89mm x 83mm x 38mm)
Weight	2lbs 15oz (1.332Kg)
Range	
Wind Speed	2-175 mph (2-150 knots, 0.9to 78m/s, 4-280 km/hr)
Wind Direction	0°-360° or 16 Compass Points
Wind Run	0-1999.9 Miles (0-1999.9 km)
Accuracy	
Wind Speed	+/-5%
Wind Direction	+/-7%
Wind Run	+/-5%
Resolution	
Wind Speed	1 mph (1 knot, 0.1m/s, 1km/hr)
Wind Direction	1° (1°-355°) 22.5° between Compass Points
Wind Run	0.1m (0.1km)
Sample and Display Update Interval	16 Seconds (Max)
Input/Output Connections	
Black	Wind Speed Contact Closure to Ground
Green	Wind Direction Pot Wiper
Yellow	Pot Supply Voltage
Red	Ground

6.2 Radiation Sensor Specifications

- General
- Input / Output Wires
- Sensor Output

6.2.1 GENERAL

Specification	Description
Sensor Type (transducer)	Silicon Photodiode
Spectral range (10% points)	400 to 1100 nanometers
Cosine response	
Percent of reading	±3% (0° to ±70° incident angle); ±10% (70° to ±85° incident angle)
Percent of full scale	±2% (0° to ±90°)
Temperature coefficient	+0.067% per °F (+ 0.12% per °C)
Reference temperature	72° F (22° C)
Correction per degree above reference temp	-0.067% of reading per °F (-0.12% per °C)
Correction per degree below reference temp	+0.067% of reading per °F (-0.12% per °C)
Cable Specifications	
Attached cable length	40 feet (12 m)
Maximum cable length	330 feet (100 m)
Cable type	4-conductor, 26 AWG
Connector	Modular connector (RJ-11)
Range	
Solar radiation intensity	0 to 1500 W/m ²
Solar energy	0 to 1999 Langleys
Accuracy	
Solar global radiation intensity	±5%
Solar energy	±5%
Resolution	
Solar radiation intensity	1 W/m ²
Solar energy	0.1 Langleys
Physical Specificaitons	
Housing material	UV-resistant plastic
Dimensions	2" x 2.75" x 2.25" (51 x 70 x 57 mm)
Weight	12 oz. (340 g)
Operating Temperature	-40° to +150° F (-40° to +65° C)
Storage Temperature	-50° to +158°F (-45° to +70°C)

6.2.2 INPUT / OUTPUT WIRES

Specification	Description
Connections	
White	5+V DC $\pm 10\%$; 3mA (typical)
Red	Ground
Green	Output (0 to +3VDC); 1.67 mV per W/m^2

6.2.3 SENSOR OUTPUT

Specification	Description
Resolution and Units .	1 W/m^2
Range	0 to 1800 W/m^2
Accuracy	$\pm 5\%$ of full scale (Reference: Eppley PSP at 1000 W/m^2) plus 45 W/m^2 per 100' (30 m) of additional cable
Drift	Up to $\pm 2\%$ per year
Update Interval. .	50 seconds to 1 minute

7 Environmental Protection



Recycle raw materials instead of disposing as waste. The controller, accessories and packaging should be sorted for environmental-friendly recycling. The plastic components are labeled for categorized recycling.

8 Warranty

Warranty and technical assistance

Munters products are designed and built to provide reliable and satisfactory performance but cannot be guaranteed free of faults; although they are reliable products they can develop unforeseeable defects and the user must take this into account and arrange adequate emergency or alarm systems if failure to operate could cause damage to the articles for which the Munters plant was required: if this is not done, the user is fully responsible for the damage which they could suffer.

Munters extends this limited warranty to the first purchaser and guarantees its products to be free from defects originating in manufacture or materials for one year from the date of delivery, provided that suitable transport, storage, installation and maintenance terms are complied with. The warranty does not apply if the products have been repaired without express authorisation from Munters, or repaired in such a way that, in Munters' judgement, their performance and reliability have been impaired, or incorrectly installed, or subjected to improper use. The user accepts total responsibility for incorrect use of the products.

The warranty on products from outside suppliers fitted to the Weather Station components, (for example antennas, power supplies, cables, etc.) is limited to the conditions stated by the supplier: all claims must be made in writing within eight days of the discovery of the defect and within 12 months of the delivery of the defective product. Munters has thirty days from the date of receipt in which to take action, and has the right to examine the product at the customer's premises or at its own plant (carriage cost to be borne by the customer).

Munters at its sole discretion has the option of replacing or repairing, free of charge, products which it considers defective, and will arrange for their despatch back to the customer carriage paid. In the case of faulty parts of small commercial value which are widely available (such as bolts, etc.) for urgent despatch, where the cost of carriage would exceed the value of the parts, Munters may authorise the customer exclusively to purchase the replacement parts locally; Munters will reimburse the value of the product at its cost price.

Munters will not be liable for costs incurred in demounting the defective part, or the time required to travel to site and the associated travel costs. No agent, employee or dealer is authorised to give any further guarantees or to accept any other liability on Munters' behalf in connection with other Munters products, except in writing with the signature of one of the Company's Managers.

WARNING: In the interests of improving the quality of its products and services, Munters reserves the right at any time and without prior notice to alter the specifications in this manual.

The liability of the manufacturer Munters ceases in the event of:

- dismantling the safety devices;

- use of unauthorised materials;
- inadequate maintenance;
- use of non-original spare parts and accessories.

Barring specific contractual terms, the following are directly at the user's expense:

- preparing installation sites;
- providing an electricity supply (including the protective equipotential bonding (PE) conductor, in accordance with CEI EN 60204-1, paragraph 8.2), for correctly connecting the equipment to the mains electricity supply;
- providing ancillary services appropriate to the requirements of the plant on the basis of the information supplied with regard to installation;
- tools and consumables required for fitting and installation;
- lubricants necessary for commissioning and maintenance.

It is mandatory to purchase and use only original spare parts or those recommended by the manufacturer.

Dismantling and assembly must be performed by qualified technicians and according to the manufacturer's instructions.

The use of non-original spare parts or incorrect assembly exonerates the manufacturer from all liability.

Requests for technical assistance and spare parts can be made directly to the nearest [Munters office](#).

