

Manual for installation and maintenance

Weather Station



Weather Station

Wind, Rain, Temperature, Radiation Sensors

Ag/MIS/UmEN-2741-05/19 Rev 1.2

P/N: 116792

 **Munters**

Weather Station

Manual for use and maintenance

Rev 1.2, 11/2020

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.

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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 fan, 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 Controllers.

1.3 Notes

Date of release: July 2019

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

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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.

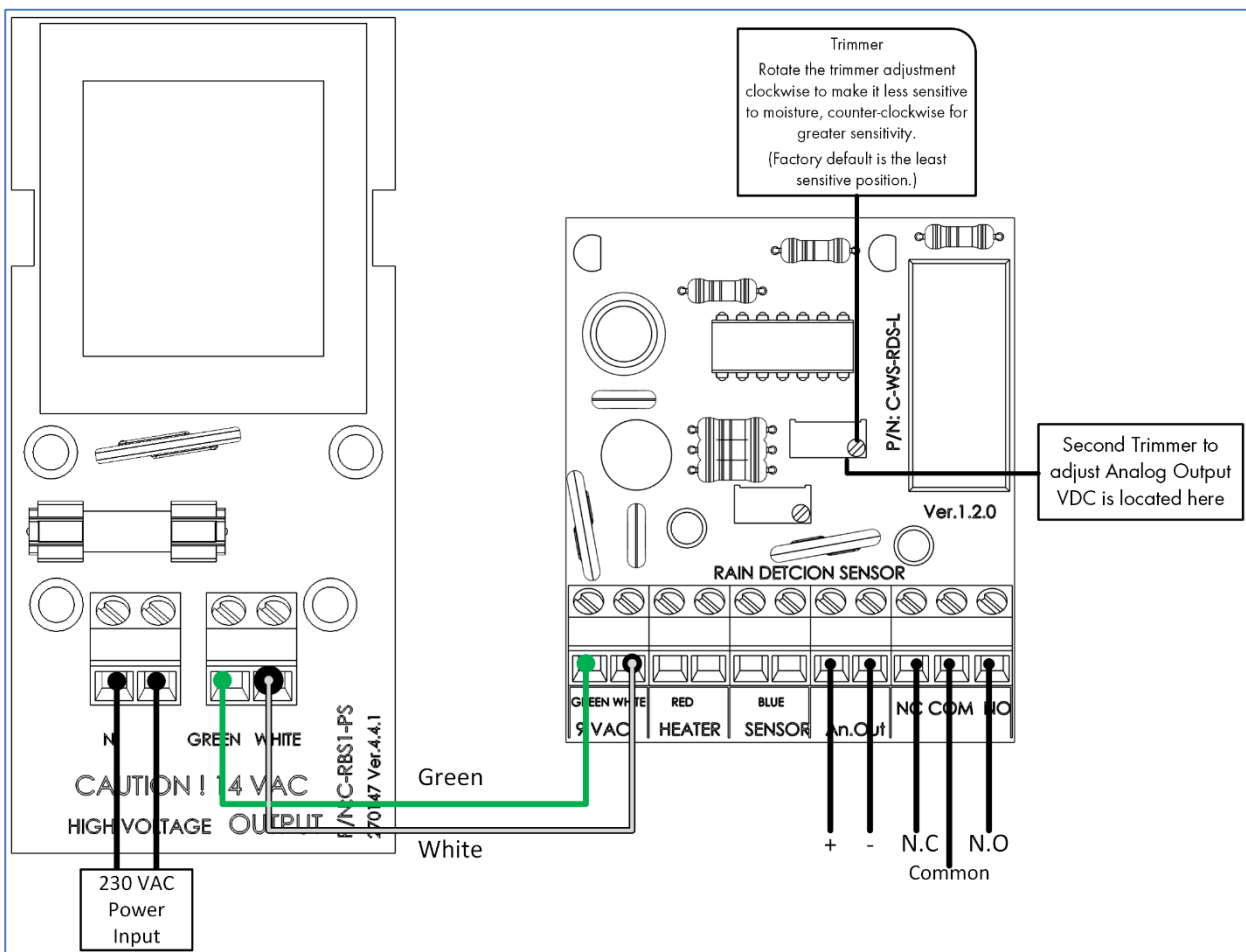


Figure 1: Wiring Diagram

- 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 | |

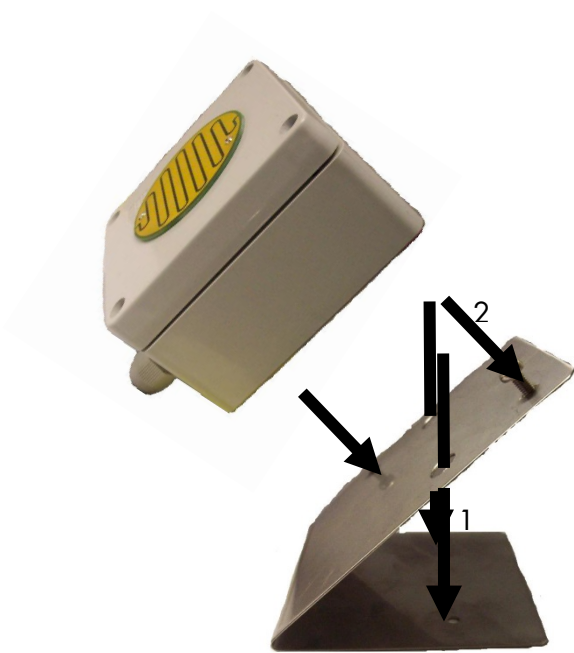


Figure 2: Rain Sensor mounting diagram

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.

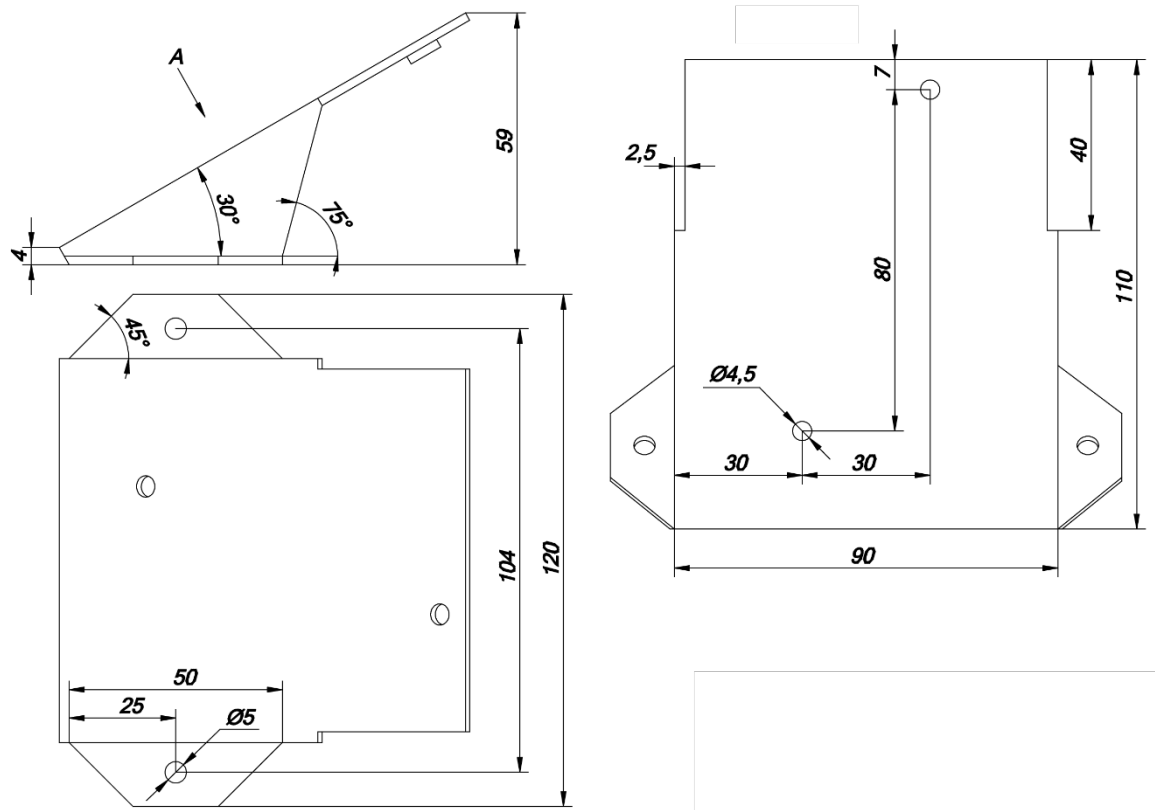


Figure 3: RRS-1 Plate dimensions

2.2 Maintenance

- Checking Resistance
- Surface Cleaning

2.2.1 CHECKING RESISTANCE

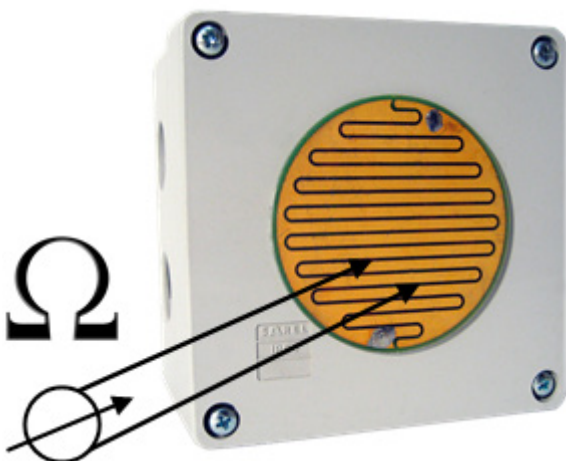


Figure 4: Rain Sensor Resistance check (should be disconnected when dry)

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)

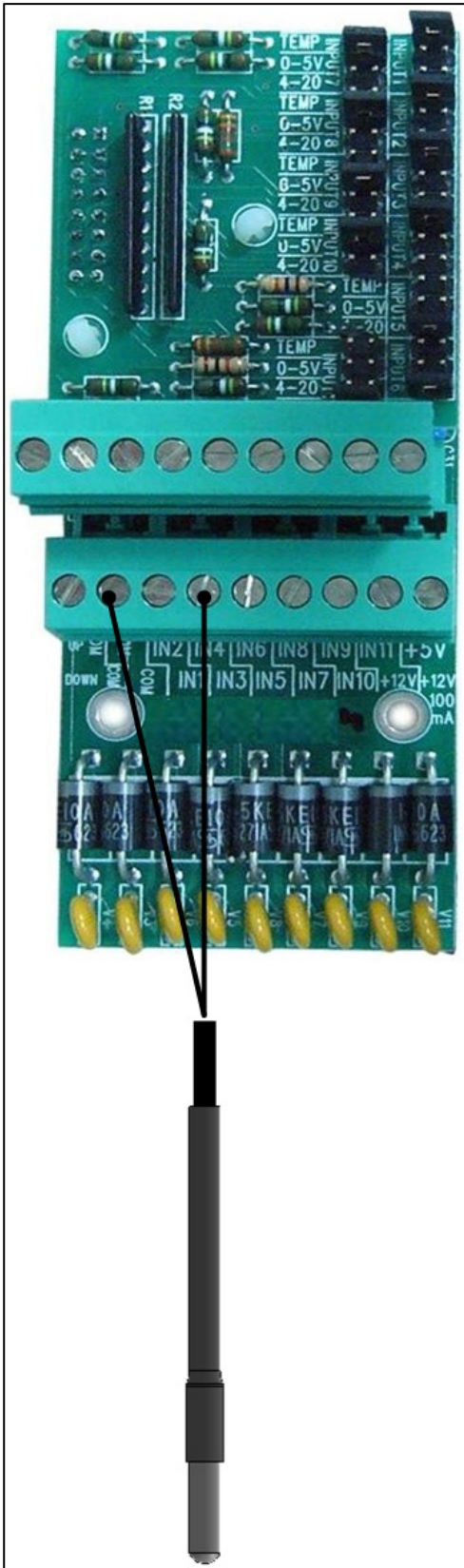


Figure 5: RTS Wiring

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 +

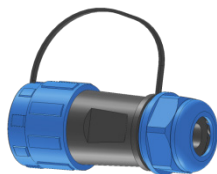


Figure 7: Female Connector

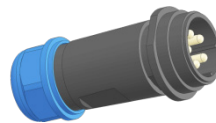
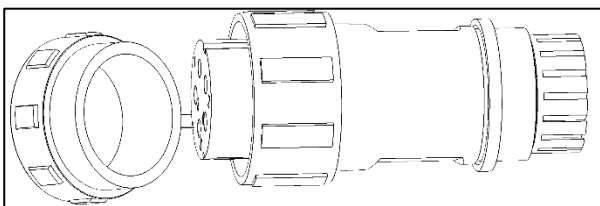


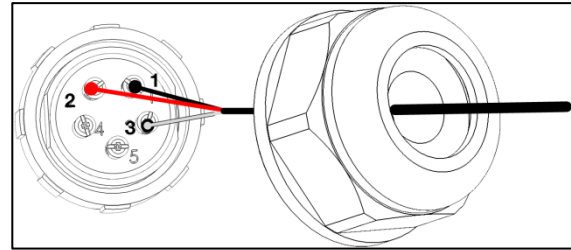
Figure 8: Male Connector

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

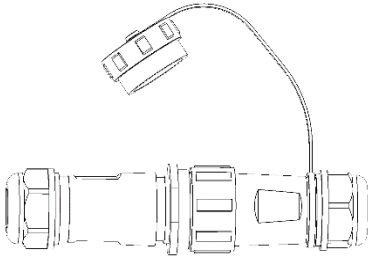


3. Attach the controller wires to the sensor according to the following color chart:

| 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 - 24 VDC
- **Output voltage:** 0 - 3 VDC
- **Operating temperature:** -10° to +70° C
- **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

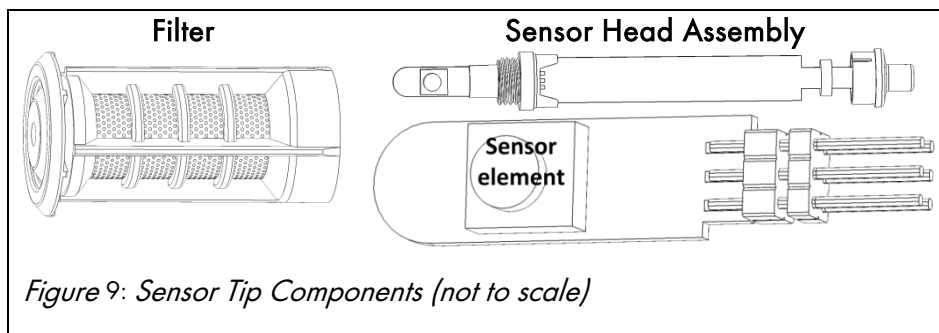


Figure 9: Sensor Tip Components (not to scale)

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

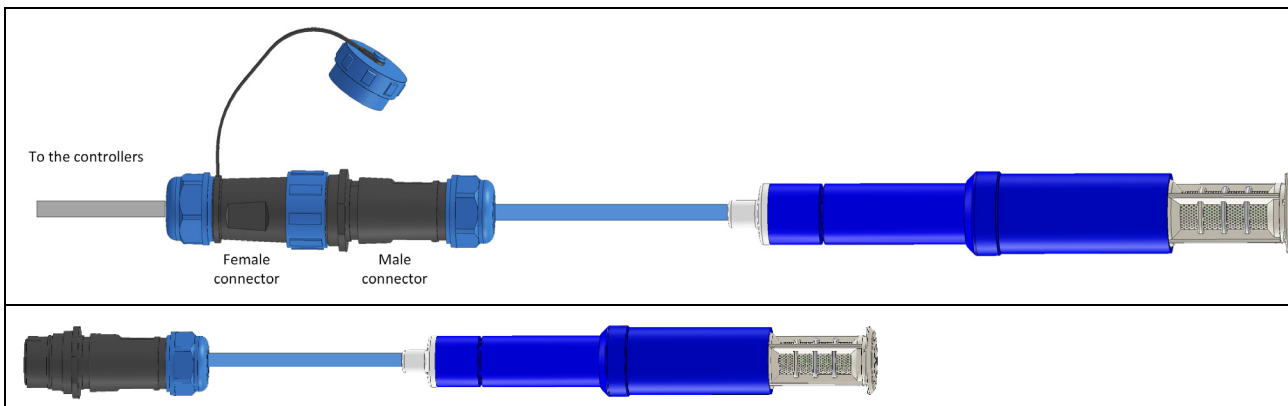
- Remove the filter before cleaning it. Clean the filter every six months or as required, using water only. Avoid touching the sensor while cleaning.

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.



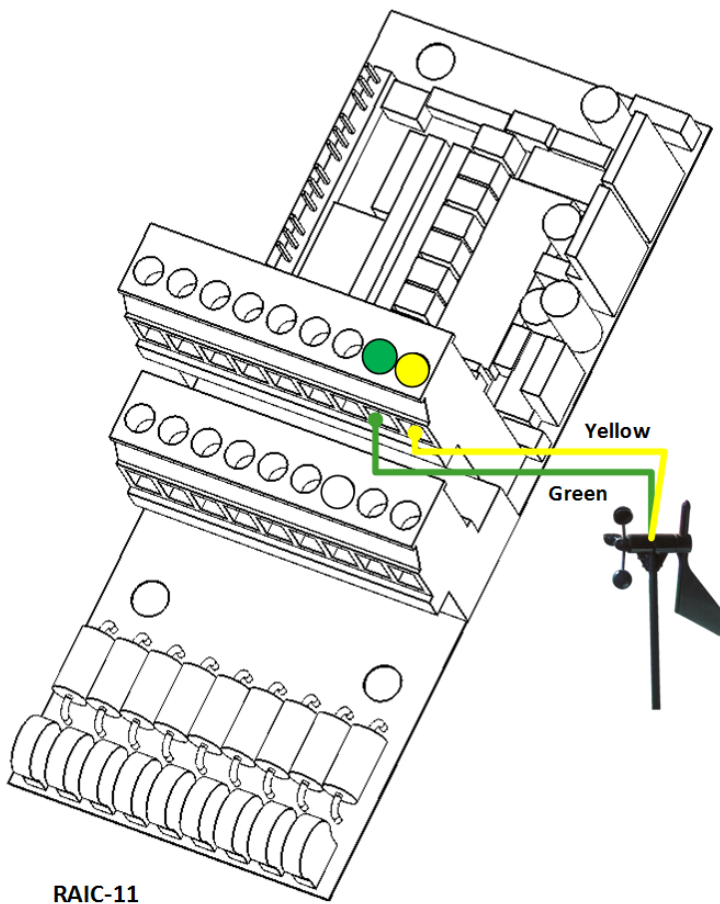
3. Clean the house and reattach the connectors.

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 |

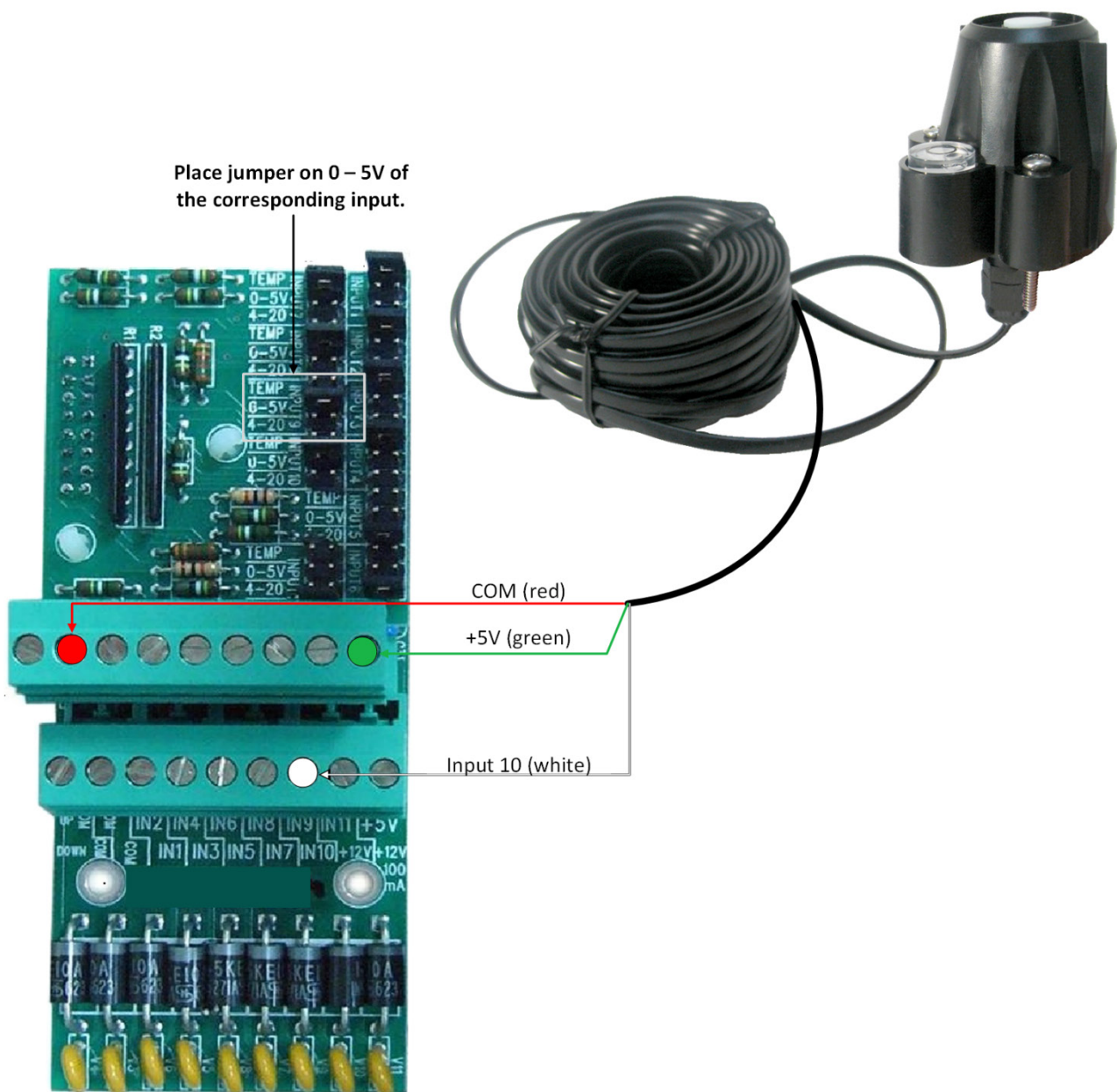
| | |
|------------------------------------|--|
| Wind Direction | Wind Vane and Potentiometer |
| Attached Cable Length | 40 Feet (12 m) |
| Maximum Cable Length | 330 Feet (100 m) |
| Cable Type | 4-Conductor, 26 AWG |
| Connector | Modular Connector (RJ-11) |
| Material | |
| Wind Vane and Control 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) |
| Console Data | |
| 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 Radiation Sensor

- Wiring Diagram
- Radiation Sensor Specifications

6.1 Wiring Diagram

In this example, the radiation sensor is connected to INPUT 10 of the Analog Input Card.



6.2 Radiation Sensor Specifications

- General
- Input / Output

6.2.1 GENERAL

| Specification | Description |
|----------------------------------|--|
| Sensor Type | Silicon Photodiode |
| Spectral range (10% points) | 400 to 1100 nanometers |
| Cosine response | |
| Percent of reading | $\pm 3\%$ (0° to $\pm 70^\circ$ incident angle); $\pm 10\%$ (70° to $\pm 85^\circ$ incident angle) |
| Percent of full scale | $\pm 2\%$ (0° to $\pm 90^\circ$) |
| 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) |
| Housing material | UV-resistant plastic |
| Dimensions | "2 x 2.75" x 2.25" (51 mm x 70 mm x 57 mm) |
| Weight | 12 oz. (340 g) |
| Range | |
| Solar radiation intensity | 0 to 1500 W/m ² |
| Solar energy | 0 to 1999 Langleys |
| Accuracy | |
| Solar global radiation intensity | $\pm 5\%$ |
| Solar energy | $\pm 5\%$ |
| Resolution | |
| Solar radiation intensity | 1 W/m ² |
| Solar energy | 0.1 Langleys |

6.2.2 INPUT / OUTPUT

| Specification | Description |
|-------------------------|---|
| Connections | |
| White | Output (0 to +3VDC); 1.67 mV per W/m ² |
| Red | Ground |
| Green | 5+V DC ±10%; 3mA (typical) |
| Temperature coefficient | reference temperature = 72° F (22° C) |

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. A full list of contact details can be found on the back page of this manual.

Munters Israel

18 HaSivim Street

Petach-Tikva 49517, Israel

Telephone: +972-3-920-6200

Fax: +972-3-924-9834

support@munters.co.il



www.munters.com

Australia Munters Pty Limited, Phone +61 2 8843 1594, **Brazil** Munters Brasil Industria e Comercio Ltda, Phone +55 41 3317 5050, **Canada** Munters Corporation Lansing, Phone +1 517 676 7070, **China** Munters Air Treatment Equipment (Beijing) Co. Ltd, Phone +86 10 80 481 121, **Denmark** Munters A/S, Phone +45 9862 3311, **India** Munters India, Phone +91 20 3052 2520, **Indonesia** Munters, Phone +62 818 739 235, **Israel** Munters Israel Phone +972-3-920-6200, **Italy** Munters Italy S.p.A., Chiusavecchia, Phone +39 0183 52 11, **Japan** Munters K.K., Phone +81 3 5970 0021, **Korea** Munters Korea Co. Ltd., Phone +82 2 761 8701, **Mexico** Munters Mexico, Phone +52 818 262 54 00, **Singapore** Munters Pte Ltd., Phone +65 744 6828, **South Africa and Sub-Sahara Countries** Munters (Pty) Ltd., Phone +27 11 997 2000, **Spain** Munters Spain S.A., Phone +34 91 640 09 02, **Sweden** Munters AB, Phone +46 8 626 63 00, **Thailand** Munters Co. Ltd., Phone +66 2 642 2670, **Turkey** Munters Form Endüstri Sistemleri A.Ş, Phone +90 322 231 1338, **USA** Munters Corporation Lansing, Phone +1 517 676 7070, **Vietnam** Munters Vietnam, Phone +84 8 3825 6838, **Export & Other countries** Munters Italy S.p.A., Chiusavecchia Phone +39 0183 52 11