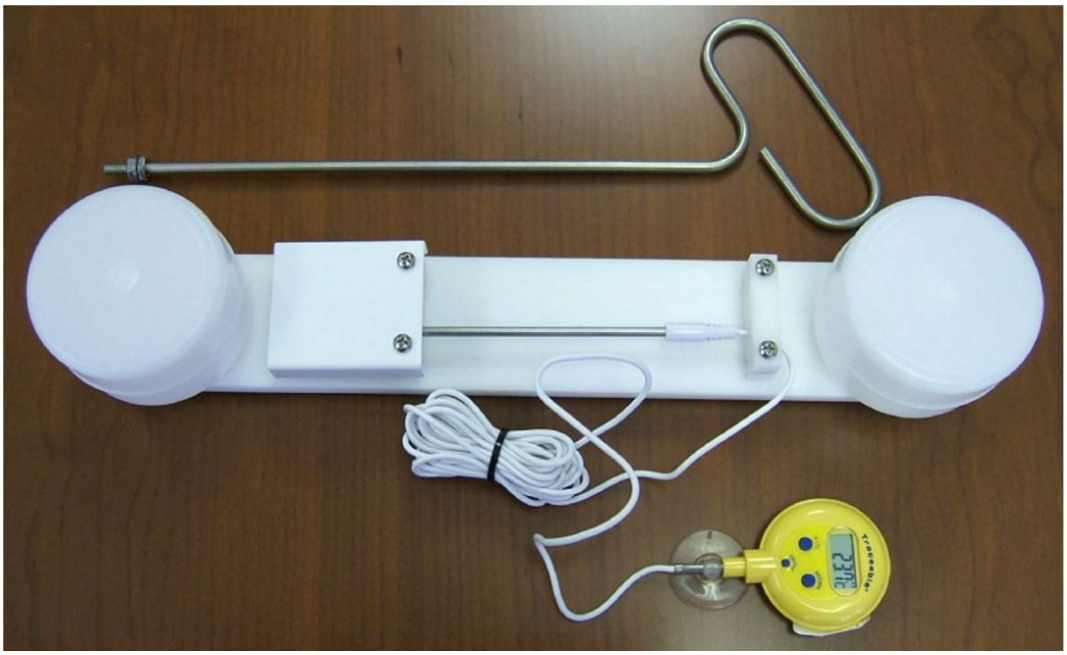
255-212D

User Manual

255-212D Digital Minimum-Maximum Thermometer

Floating or Submersible



Phone (530) 823-7185
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Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

Address

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1 FORWARD

Thank you for purchasing NovaLynx products. NovaLynx has been designing and manufacturing weather instruments since 1988. NovaLynx represents several well-known brands of quality manufacturers, including Gill Instruments, RM Young, Kipp & Zonen, and Vaisala. It is our hope that our products will meet all your monitoring requirements.

2 INTRODUCTION

The **255-212D Min/Max Thermometer** features a digital display and extended probe suitable for reading water temperature in an evaporation pan (NovaLynx 255-200). The unique base on which the probe is mounted can be configured to float on the surface or rest on the bottom of the evaporation pan.

Floating Configuration
Two floats are installed on the base to keep the thermometer probe approximately ¼" below the surface of the water. A solar radiation shield shades the tip of the probe from direct sunlight. Anchor lines attached to the rim of the evaporation pan keep the float near the center of the evaporation pan. The display is waterproof and can be mounted in a convenient location outside of the pan.

Submerged Configuration
The floats are removed and the probe placed in the evaporation pan on the south side (Northern Hemisphere) of the pan so that the thermometer is shaded. A non-magnetic wire handle is fastened to the base and hooked over the rim of the evaporation pan to keep the probe from moving.

3 SPECIFICATIONS

255-212D Minimum / Maximum Thermometer	
Type	Digital minimum-maximum thermometer with remote probe
Display	0.25" LCD, 3.5 digit
Cable Length	120" (305 cm)
Range	-50° to +300° C or -58° to +572° F
Accuracy	±1°C (-20 to 100°C)
Resolution	0.1° (-19.9 to 199.9°C); otherwise 1°C
Materials	Stainless steel hardware, white Delrin base, white powder-coated aluminum solar radiation shield, polypropylene floats
IP Rating	IP61
Battery	Button cell, 1.5V
Size	11-1/4" long without floats, 13-1/2" with floats
Weight / Shipping	1 lb / 3 lbs (0.5 kg / 1.4 kg)

4 NATIONAL WEATHER SERVICE RECOMMENDATIONS

The following information is excerpted from **National Weather Service Observing Handbook No. 2** (July 1989). The complete manual can be downloaded here:

https://novalynx.com/manuals/coophandbook2.pdf

1.5.1 RESETTING INSTRUMENTS
Reset the maximum and minimum thermometers only once each 24 hours, immediately after they have been read. Non-recording rain gages should be emptied after being read only once each 24 hours. Thermometers and gages should be reset only at the time of observation agreed to with the NWS representative. Instruments may be read at intermediate times, but they should not be reset.

5.3.6.1.3 RECORDING THERMOMETERS
Any recording thermometer with an immersible sensing element may be used. Examples are electrical resistance, mercury-in-steel, and gas-filled steel elements. The line connecting the thermometer to the recorder should be long enough to permit installation of the recorder where it will not cast a shadow on the pan, and more than four feet from any instrument. It should be in a low housing along a fence in the northern half of the enclosure (northern hemisphere). The thermometer should be mounted on an adjustable float mechanism in a horizontal position. It must be shielded from direct solar and sky radiation and from possible physical damage. The float mechanism should be adjusted to support the thermometer about 1/4 inch beneath the surface of the water near the center of the pan.

5.3.6.3 ACCURACY CHECKS
Check the accuracy of the water temperature readings once a month when the pan is cleaned…

5 INSTALLATION

The **255-212D Min/Max Thermometer** consists of two main parts, the digital display unit and the probe, which is mounted on a floating/submersible base. The display unit is weather-proof, but will last longer if some protection from the weather is provided. *Suggestion: Provide a small enclosure mounted on a short post to house the display and protect it from sun and rain. Make sure the post/enclosure will not cast a shadow on the evaporation pan.*

5.1 Floating Configuration

The probe is mounted on a base which has a float on either end. When placed in the evaporation pan, the probe will be visible and will be submerged approximately ¼" below the surface of the water. The tip of the probe is shielded by white cover to keep sunlight from heating the probe.

The floating probe must be tethered to keep it near the center of the evaporation pan. Tie short lengths of string (of a type that will not rot, such as fishing line) through the plastic loops on the base which holds the probe. Secure the sting to the rim of the pan or to screws in the wooden platform that supports the evaporation pan. Leave enough slack in the string so that when the water level in the pan is at its lowest, the base will still float level to the surface of the water.

5.2 Submerged Configuration

Remove the two floats at either end of the base that supports the probe. Do not remove the probe from the base.

Locate the wire handle provided with your thermometer. Remove one of the nuts from the threaded end of the handle. Insert the handle in the base using the hole closest to the thermometer cable. The handle should extend away from the base on the same side as the probe. Put the nut back on and tighten to secure the handle to the base.

Lower the probe assembly into the evaporation pan near the southern edge (Northern Hemisphere). This location will ensure that sunlight does not shine directly on the probe. Hook the upper end of the handle over the rim of the evaporation pan to keep the probe in position. Check to make certain the thermometer base is as flat as possible against the bottom of the pan.

6 OPERATION

The **255-212D Min/Max Thermometer** must be left ON between readings otherwise the minimum and maximum temperatures cannot be calculated and retained. In fact, when the unit is switched off the minimum and maximum values are reset. Be sure the operating instructions are understood to prevent losing data.

When idling, the temperature displayed is the current temperature. Pressing the MAX/MIN button starts a 3-second timer, during which time the minimum or maximum value must be read. The process can be repeated if needed, as long as the memory hasn't been reset by turning off the unit.

1. Press the ON/OFF button to turn the unit on.
2. Press the °F/°C button to switch between Fahrenheit and Celsius.

3. To view the minimum temperature reached since activating the unit, press the MAX/MIN button. “MIN” appears on the display to indicate the minimum temperature recorded.
4. Press the MAX/MIN button a second time, within 3 seconds, to view the maximum temperature reached since activating the unit. “MAX” appears on the display to indicate the maximum temperature recorded.
5. Three seconds after pressing the MAX/MIN button, the unit automatically returns to the current temperature reading. (“MIN” and “MAX” are no longer displayed.)
6. After recording the MIN and MAX values and it is appropriate to reset the MIN and MAX memory (NWS Recommendations, Section 4), press the ON/OFF button. The unit will turn OFF and be reset. Press the ON/OFF button again to turn the unit on so that it will begin to record new MIN and MAX values.

7 BATTERY REPLACEMENT

WARNING: Keep all batteries away from young children.

Erratic readings, a faint display, no display, or the battery icon () appearing on the display are all indications that the battery must be replaced. Using a coin, turn the battery cover on the back of the unit in the direction of the “open” arrow. Remove the exhausted battery and replace with a new 1.5 volt silver-oxide 389 size battery. Make certain the positive (+) side is visible. Replace the battery cover.

8 MAINTENANCE

The requirement to leave the display unit running in order to capture the daily minimum and maximum temperatures means the battery will need to be replaced regularly. Variations in battery capacity, temperature during operation, and individual differences among units makes predicting battery life problematic. After some experience, however, a suitable interval may be determined to anticipate the battery end-of-life so that it can be replaced before data is lost.

Clean the probe and its base whenever the evaporation pan is cleaned. Lightly brush off any algae or other debris, and flush off with water.

Check the cable between the probe and display. Ensure the cable is not stretched, kinked, or rubbing against sharp edges.

Whenever the thermometer is not being used (i.e. stored at the end of a season) turn off the display. For long term storage remove the battery. **WARNING: Keep all batteries away from young children.**

9 CALIBRATION

This thermometer cannot be user-calibrated. However, the sensor should be compared with a high-quality reference thermometer periodically (NWS Recommendations, Section 4). Make sure the battery is fresh before doing the comparison.

10 TROUBLESHOOTING

If this thermometer does not function properly for any reason, replace the battery with a new high quality battery (Section 7, Battery Replacement). Low battery power can occasionally cause any number of “apparent” operational difficulties. Replacing the battery with a new fresh battery will solve most difficulties.