Product Manual

Sensor

255-100

Novalynx Analogue Output Evaporation Gauge

Revision: 8/18

RELIABLE SINCE 1974 MONITORING

CAMPBELL SCIENTIFIC

Guarantee

This equipment is guaranteed against defects in materials and workmanship. We will repair or replace products which prove to be defective during the guarantee period as detailed on your invoice, provided they are returned to us prepaid. The guarantee will not apply to:

- Equipment which has been modified or altered in any way without the written permission of Campbell Scientific
- Batteries
- Any product which has been subjected to misuse, neglect, acts of God or damage in transit.

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Please inform us before returning equipment and obtain a Repair Reference Number whether the repair is under guarantee or not. Please state the faults as clearly as possible, and if the product is out of the guarantee period it should be accompanied by a purchase order. Quotations for repairs can be given on request. It is the policy of Campbell Scientific to protect the health of its employees and provide a safe working environment, in support of this policy a "Declaration of Hazardous Material and Decontamination" form will be issued for completion.

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PLEASE READ FIRST

About this manual

Please note that this manual was originally produced by Campbell Scientific Inc. primarily for the North American market. Some spellings, weights and measures may reflect this origin.

Some useful conversion factors:

Area: 1 in^2 (square inch) = 645 mm^2

Length: 1 in. (inch) = 25.4 mm
1 ft (foot) = 304.8 mm
1 yard = 0.914 m
1 mile = 1.609 km

Mass: 1 oz. (ounce) = 28.35 g
1 lb (pound weight) = 0.454 kg

Pressure: 1 psi (lb/in^2) = 68.95 mb

Volume: 1 UK pint = 568.3 ml
1 UK gallon = 4.546 litres
1 US gallon = 3.785 litres

In addition, while most of the information in the manual is correct for all countries, certain information is specific to the North American market and so may not be applicable to European users.

Differences include the U.S standard external power supply details where some information (for example the AC transformer input voltage) will not be applicable for British/European use. *Please note, however, that when a power supply adapter is ordered it will be suitable for use in your country.*

Reference to some radio transmitters, digital cell phones and aerials may also not be applicable according to your locality.

Some brackets, shields and enclosure options, including wiring, are not sold as standard items in the European market; in some cases alternatives are offered. Details of the alternatives will be covered in separate manuals.

Part numbers prefixed with a "#" symbol are special order parts for use with non-EU variants or for special installations. Please quote the full part number with the # when ordering.

Recycling information

At the end of this product's life it should not be put in commercial or domestic refuse but sent for recycling. Any batteries contained within the product or used during the products life should be removed from the product and also be sent to an appropriate recycling facility.

Campbell Scientific Ltd can advise on the recycling of the equipment and in some cases arrange collection and the correct disposal of it, although charges may apply for some items or territories.

For further advice or support, please contact Campbell Scientific Ltd, or your local agent.

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Safety

DANGER — MANY HAZARDS ARE ASSOCIATED WITH INSTALLING, USING, MAINTAINING, AND WORKING ON OR AROUND **TRIPODS, TOWERS, AND ANY ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC**. FAILURE TO PROPERLY AND COMPLETELY ASSEMBLE, INSTALL, OPERATE, USE, AND MAINTAIN TRIPODS, TOWERS, AND ATTACHMENTS, AND FAILURE TO HEED WARNINGS, INCREASES THE RISK OF DEATH, ACCIDENT, SERIOUS INJURY, PROPERTY DAMAGE, AND PRODUCT FAILURE. TAKE ALL REASONABLE PRECAUTIONS TO AVOID THESE HAZARDS. CHECK WITH YOUR ORGANIZATION'S SAFETY COORDINATOR (OR POLICY) FOR PROCEDURES AND REQUIRED PROTECTIVE EQUIPMENT PRIOR TO PERFORMING ANY WORK.

Use tripods, towers, and attachments to tripods and towers only for purposes for which they are designed. Do not exceed design limits. Be familiar and comply with all instructions provided in product manuals. Manuals are available at www.campbellsci.eu or by telephoning +44(0) 1509 828 888 (UK). You are responsible for conformance with governing codes and regulations, including safety regulations, and the integrity and location of structures or land to which towers, tripods, and any attachments are attached. Installation sites should be evaluated and approved by a qualified engineer. If questions or concerns arise regarding installation, use, or maintenance of tripods, towers, attachments, or electrical connections, consult with a licensed and qualified engineer or electrician.

General

- Prior to performing site or installation work, obtain required approvals and permits. Comply with all governing structure-height regulations, such as those of the FAA in the USA.
- Use only qualified personnel for installation, use, and maintenance of tripods and towers, and any attachments to tripods and towers. The use of licensed and qualified contractors is highly recommended.
- Read all applicable instructions carefully and understand procedures thoroughly before beginning work.
- Wear a **hardhat** and **eye protection**, and take **other appropriate safety precautions** while working on or around tripods and towers.
- **Do not climb** tripods or towers at any time, and prohibit climbing by other persons. Take reasonable precautions to secure tripod and tower sites from trespassers.
- Use only manufacturer recommended parts, materials, and tools.

Utility and Electrical

- **You can be killed** or sustain serious bodily injury if the tripod, tower, or attachments you are installing, constructing, using, or maintaining, or a tool, stake, or anchor, come in **contact with overhead or underground utility lines**.
- Maintain a distance of at least one-and-one-half times structure height, or 20 feet, or the distance required by applicable law, **whichever is greater**, between overhead utility lines and the structure (tripod, tower, attachments, or tools).
- Prior to performing site or installation work, inform all utility companies and have all underground utilities marked.
- Comply with all electrical codes. Electrical equipment and related grounding devices should be installed by a licensed and qualified electrician.

Elevated Work and Weather

- Exercise extreme caution when performing elevated work.
- Use appropriate equipment and safety practices.
- During installation and maintenance, keep tower and tripod sites clear of un-trained or non-essential personnel. Take precautions to prevent elevated tools and objects from dropping.
- Do not perform any work in inclement weather, including wind, rain, snow, lightning, etc.

Maintenance

- Periodically (at least yearly) check for wear and damage, including corrosion, stress cracks, frayed cables, loose cable clamps, cable tightness, etc. and take necessary corrective actions.
- Periodically (at least yearly) check electrical ground connections.

WHILE EVERY ATTEMPT IS MADE TO EMBODY THE HIGHEST DEGREE OF SAFETY IN ALL CAMPBELL SCIENTIFIC PRODUCTS, THE CUSTOMER ASSUMES ALL RISK FROM ANY INJURY RESULTING FROM IMPROPER INSTALLATION, USE, OR MAINTENANCE OF TRIPODS, TOWERS, OR ATTACHMENTS TO TRIPODS AND TOWERS SUCH AS SENSORS, CROSSARMS, ENCLOSURES, ANTENNAS, ETC.

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CRBasic Examples

255-100 Novalynx Analogue Output Evaporation Gauge

1. Introduction

The 255-100 determines evaporation rate by measuring the changing water level in an evaporation pan. The evaporation gauge produces a resistance output that our dataloggers can monitor. The 255-200 or another standard National Weather Service Class A evaporation pan must be purchased separately.

NOTE This manual provides information only for CRBasic dataloggers. For Edlog datalogger support, see an older manual at *www.campbellsci.eu/old-manuals*.

2. Precautions

- READ AND UNDERSTAND the *Safety* section at the front of this manual.
- When unpacking the 255-100, use caution when removing packing materials and parts from inside the gauge and avoid hitting the potentiometer sprocket wheel.
- Install a fence or another deterrent to prevent animals from using the evaporation pan as a watering trough.
- Keep the evaporation pan free of algae and dirt (Section 8, *Maintenance* *(p. 12)*).
- During the winter months when the water may freeze, drain the pan and store both the pan and evaporation gauge indoors (Section 8, *Maintenance* *(p. 12)*).

3. Initial Inspection

- Upon receipt of the equipment, inspect the packaging and contents for damage. File damage claims with the shipping company.

4. Overview

Novalynx Corporation manufacturers the 255-100 Analogue Output Evaporation Gauge (FIGURE 4-1) and the 255-200 Class A Evaporation Pan (FIGURE 4-2). The 255-100 consists of a stilling well and potentiometer based shaft encoder. It is a low-power option for reading the water level of an evaporation pan such as the 255-200.

FIGURE 4-1. 255-100 Novalynx Analogue Output Evaporation Gauge

FIGURE 4-2. 255-200 Novalynx Class A Evaporation Pan

The 255-100 uses a chain-mounted float and counter weight that turns a sprocket attached to a precision 1000 Ω potentiometer. When provided with a precision excitation from the datalogger, the 255-100 Evaporation Gauge produces a dc voltage that changes proportionally to the change in water depth of the evaporation pan. The datalogger measures the voltage to determine water level and, consequently, evaporation and rainfall.

Novalynx Corporation manufacturers the 255-100P/F Steel Pipe and Fittings (FIGURE 4-3) for connecting the evaporation gauge to the evaporation pan. The 255-100P/F allows the gauge to be installed outside of, but hydraulically connected to the pan. This configuration will prevent the gauge from interfering with the wind flow over the pan or from altering the solar loading on the pan. A pipe connects the pan to the gauge keeping both at the same head.

FIGURE 4-3. 255-100P/F Novalynx Stainless Steel Pipe and Fittings for Evaporation Pan

A flexible hose may be used instead of the stainless-steel pipe, provided it does not deteriorate in outdoor weather conditions. You'll need 0.5 inch polybraid (fibre-reinforced) flexible hose, nylon fittings (0.5 inch NPT Hose Bar), and small stainless-steel hose clamps. This equipment is available at most local hardware stores.

NOTE International customers should use the 255-100P/F instead of purchasing the equipment separately since pipes with the correct diameter may be difficult to locate in their country.

Evaporation pans need to be periodically refilled. Depending on the local rainfall, the pan should be filled to about 2 to 3 inches below the top. The evaporation pan can be refilled automatically with the 255-620A Automatic Refill Kit. More precise refill control can be done by programming the datalogger to control a solenoid valve. Programming the datalogger for partially draining the evaporation pan, using a second solenoid valve, may be desirable if the site regularly experiences heavy rainstorms. Refer to Section 7.2, *Automatically Refilling the Evaporation Pan* *(p. 10)*, for more information.

5. Specifications

5.1 255-100 Analogue Output Evaporation Gauge

Features:

- Low-power device for reading the water level of an evaporation pan such as the 255-200
- Compatible with Campbell Scientific CRBasic Dataloggers: CR200(X) series, CR300 series, CR6, CR800 series, CR1000, CR1000X, CR3000, CR5000, and CR9000(X)

Height:	700 mm (27.5 in)
Diameter:	203 mm (8 in)
Weight:	3.4 kg (7.5 lb)
Shipping weight:	6.8 kg (15 lb)
Cable description:	3-conductor, 24 AWG, shielded
Cable length:	15.2 m (50 ft)
Float:	10.2 cm (4 in) diameter, plastic
Counter weight:	114 g (4 oz), stainless steel
Water input port:	0.5 inch NPT coupling, female
Base dimensions:	40.6 cm (16 in) triangle with levelling screws
Total resolution:	0.76 mm (0.03 in)
Potentiometer accuracy:	0.25%

Rotation:	360° continuous
Electrical angle:	340°, ±1° (20° gap)
Resistance:	1000 Ω, ±10%
Operating temperature:	–40 to 60 °C (evaporation is normally not measured at temperatures below freezing)
Linearity:	0.25%
Mechanical range:	0 to 254 mm (0 to 10 in)
Electrical range:	0 to 240 mm (0 to 9.44 in)

5.2 255-200 Class A Evaporation Pan

Material:	Low carbon stainless steel, type 304, 18 gauge
Construction:	Heliarc welded, 0.5 inch drain plug NPT female coupling
Inside depth:	25 cm (10 in)
Inside diameter:	120.6 cm (47.5 in)
Wall thickness:	1.2 mm (0.047 in)
Volume:	~77 gallons (291 litres); adding 7.7 gallons will raise water level in pan by 1 inch
Weight:	22 kg (48 lb)
Shipping weight:	26.8 kg (59 lb)

5.3 255-100P/F Stainless-Steel Pipe and Fittings for Evaporation Pan

Material:	304 stainless steel
Weight:	5.4 kg (12 lb)
Pipe diameter:	0.5 inch with NPT fitting
Pipe length:	152.4 cm (60 in)

6. Installation

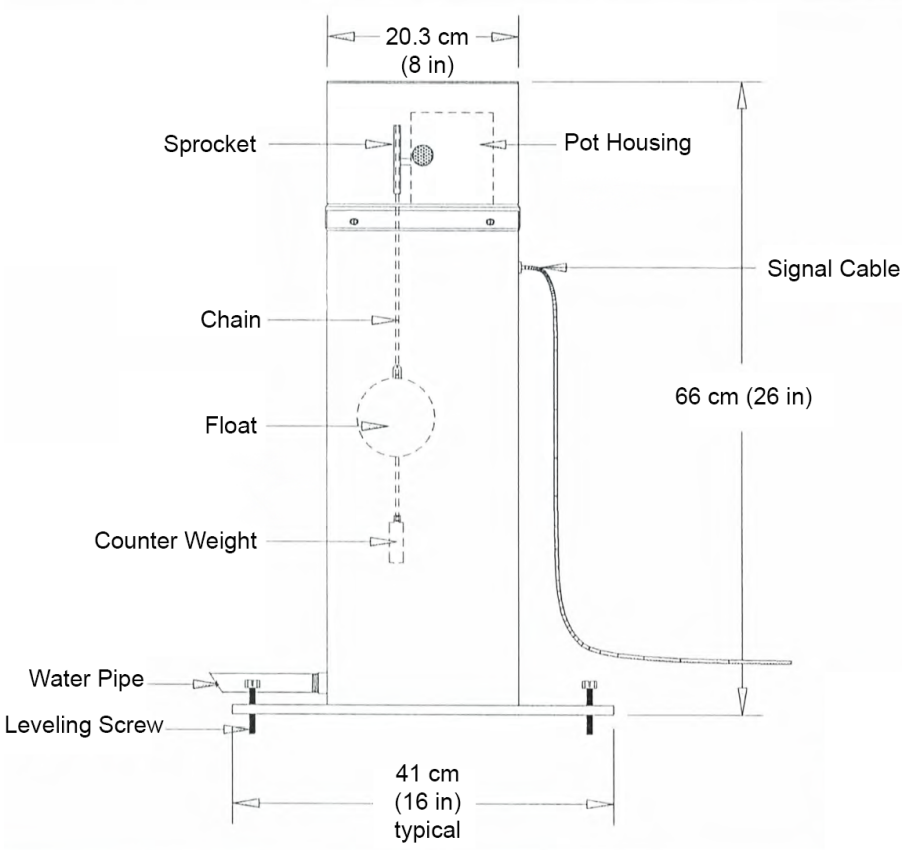

FIGURE 6-1. Components of the 255-100 Evaporation Gauge

6.1 Unpacking

Carefully unpack all of the evaporation gauge. Remove the top cover. The float with chain and counter-weight are shipped inside the bottom of the gauge housing. Remove packing material from inside the housing. The float cannot be removed without removing the pot/gear assembly housing.

CAUTION Carefully remove the packing materials and parts from inside the gauge, and avoid hitting the potentiometer sprocket wheel.

6.2 Siting

The site should be level and free of nearby obstructions that can cast shadows or reflect sunlight onto the evaporation pan. To avoid shadows or reflection, the evaporation gauge should be north of the evaporation pan. Placing the gauge away from the pan also helps reduce shadows and reflections.

The evaporation pan should sit upon a level wooden platform that is placed over soil typical of the area. Dimensions of the platform need to be 127 x 127 x

25.4 cm (50 x 50 x 10 inch). This platform can be made of wood pallets. You can also use the 255-250 Evaporation Pan Support Platform (available by special order).

Fences or other deterrents may be required to prevent animals from using the evaporation pan as a watering trough. Locate the fence so that it does not cast shadows or reflect sunlight onto the evaporation pan.

6.3 Field Installation Procedure

1. Level the wooden platform.
2. Place the evaporation pan on the level wooden platform so that the water pipe fitting faces the evaporation gauge.
3. Mount the evaporation gauge so that the bottom of the gauge is at the same elevation as the pan. This may require a platform for the evaporation gauge.
4. Level the gauge by adjusting the three levelling screws located on the triangular base.
5. Remove the top cover and place a bubble level across the opening.
6. Adjust the levelling screws until the bubble in the level is centred.
7. Ensure that the float and chain inside the stilling well hang down straight and are centred in the gauge. The float must be free to move up and down without touching the sides of the gauge.
8. Connect the evaporation gauge to the datalogger (Section 6.4, *Wiring* (p. 7)).
9. Attach the evaporation gauge to the evaporation pan (FIGURE 6-2).

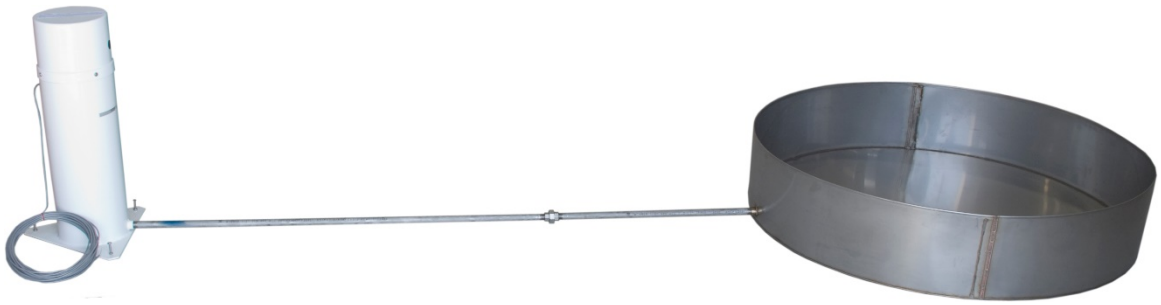

FIGURE 6-2. 255-100 Attached to the 255-200 by Using the 255-100P/F

10. Fill the evaporation pan with water. Depending on the local rainfall, the pan should be filled to about 2 to 3 inches below the top of the pan.
11. Carefully check the joints for leaks. Using Teflon® tape or plumbers pipe joint compound at each threaded coupling will help prevent leaks.

6.4 Wiring

TABLE 6-1 and FIGURE 6-3 show the datalogger connections. FIGURE 6-4 provides a close-up of the evaporation gauge terminal.

TABLE 6-1. Wire Colour, Function, and Datalogger Connection

Wire Colour	Wire Function	Datalogger Connection Terminal
Red	Voltage-excitation input	**U** configured for voltage excitation[1], **EX**, **VX** (voltage excitation)
White	Analogue-voltage output	**U** configured for single-ended analogue input[1], **SE** (single-ended, analogue-voltage input)
Black	Negative Signal	⏚ (analogue ground)
Clear	Shield	⏚ (analogue ground)

[1]**U** terminals are automatically configured by the measurement instruction.

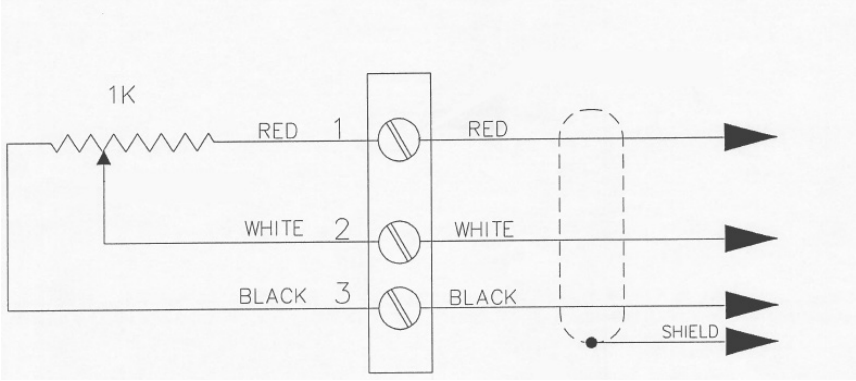

FIGURE 6-3. 255-100 Schematic

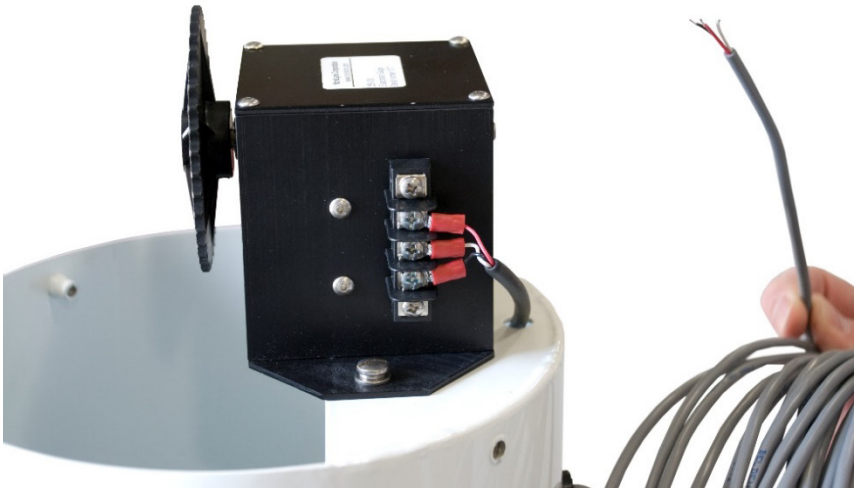

FIGURE 6-4. Close-up of Terminal Strip on 255-100

6.5 Programming

Programming basics for CRBasic dataloggers are provided in the following sections. Complete program examples for select CRBasic dataloggers can be found in Appendix A, *Example Programs* (p. A-1). Programming basics and programming examples for Edlog dataloggers are provided at *www.campbellsci.eu\old-manuals*.

6.5.1 BrHalf Instruction

CRBasic dataloggers (except the CR200(X) series) use the **BrHalf()** instruction, which has the following structure:

BrHalf(*Dest, Reps, Range, SEChan, ExChan, MeasPEx, ExmV, RevEx, SettlingTime, fN1/Integ, Mult, Offset***)**

TABLE 6-2 shows the excitation and voltage ranges used for this instruction. Refer to Section 7.1, *Calibration* (p. 9), to determine the multiplier and offset. The multiplier and offset are unique for individual evaporation gauges.

TABLE 6-2. Excitation and Voltage Ranges

Datalogger	mV excitation	Full Scale Range
CR300 Series	2500	± 2500 mV
CR6	2500	± 5000 mV
CR800 Series	2500	± 2500 mV
CR1000	2500	± 2500 mV
CR1000X	2500	± 5000 mV
CR3000	5000	± 5000 mV
CR5000	5000	± 5000 mV

You can average the readings to reduce error from ripples in the water by using the **AvgSpa()** instruction. An example of doing this is shown in Appendix A.1, *CR1000X Program* (p. A-1).

6.5.2 ExDelSE Instruction

CR200(X)-series dataloggers use the **ExDelSE()** instruction, which has the following structure:

ExDelSE(*Dest, Reps, SEChan, ExChan, ExmV, Delay, Mult, Offset***)**

Use *mV2500* for the *ExChan* parameter. Refer to Section 7.1, *Calibration* (p. 9), to determine the multiplier and offset. The multiplier and offset are unique for individual evaporation gauges.

You can average the readings to reduce error from ripples in the water by using the **AvgSpa()** instruction.

7. Operation

7.1 Calibration

All 255-100 gauges need to be field calibrated by the user. Field calibration will provide the multiplier and offset for use in the datalogger program to provide data in units of inches or centimetres. The **FieldCal()** instruction may be used to perform the calculations automatically and preserve the results in the datalogger. Refer to the **FieldCal()** help in *CRBasic Editor* for more information on its use. The following provides instructions on performing a manual field calibration.

Calibration Procedure:

1. Partially fill the evaporation pan. Measure the depth with a ruler.

2. Measure the voltage using the gauge and the **BrHalf()** or **ExDelSE()** instruction with a multiplier of 1.0 and an offset of 0.0.

3. Add more water to the evaporation pan and measure the depth in the pan using the ruler.

4. Measure the voltage at that depth using the gauge and the **BrHalf()** or **ExDelSE()** instruction with a multiplier of 1.0 and an offset of 0.0.

5. Calculate the multiplier using the following equation:

$$m = (D_2 - D_1) / (V_2 - V_1)$$

   Where,
   m = multiplier
   D_1 = initial depth measurement (inches or cm)
   D_2 = second depth measurement (inches or cm)
   V_1 = initial voltage measurement (mV)
   V_2 = second voltage measurement (mV)

6. Calculate the offset using the following equation:

$$b = D_1 - m \cdot V_1$$

   Where,
   b = offset
   m = multiplier
   D_1 = initial depth measurement (inches or cm)
   V_1 = initial voltage measurement (millivolts)

Example

This example calculates the multiplier (m) and offset (b) for a specific evaporation gauge. Because the multiplier and offset vary with each gauge, your numbers will be different than this example.

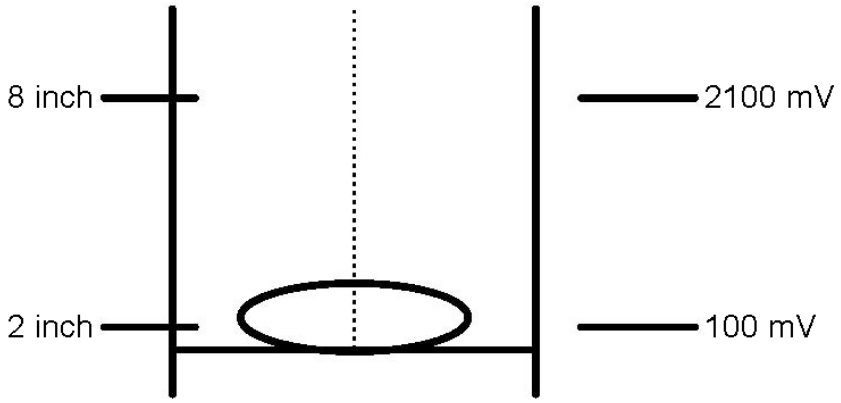

FIGURE 7-1. Multiplier and Offset Calculation Example

In this example, the pan is filled to a depth of 2 inches and the datalogger reads 100 mV on the gauge. The pan is then filled to a depth of 8 inches and the datalogger reads 2100 mV. This provides data for a two point calibration (FIGURE 7-1).

Therefore the multiplier is:

$$m = (8 \text{ in} - 2 \text{ in}) / (2100 \text{ mV} - 100 \text{ mV}) = 0.003 \text{ in/mV}$$

The offset is:

$$b = 2 \text{ in} - (0.003 \text{ in/mV} \bullet 100 \text{ mV}) = 1.7 \text{ in}$$

7.2 Automatically Refilling the Evaporation Pan

A simple solution for automatic refilling of the evaporation pan is provided by the 255-620A Evaporation Pan Automatic Refill System. The 255-620A consists of an electronic water timer powered by 2 AAA batteries and an automatic float valve. The 255-620A must be connected to a user-provided water supply. The water supply can be a pressurized system or a storage tank that sits higher than the evaporation pan. The automatic float valve will stop tank filling between 21.6 cm (8.5 in) and 24.1 cm (9.5 in), depending on water pressure. The electronic water timer will enable tank filling at a user-set time and interval.

If more precise fill control is wanted, program the datalogger to control a solenoid valve in a fill line that's connected to a water supply. A second solenoid may be used for draining the pan in areas of high rainfall. Power requirements need to be taken into consideration when using a solenoid valve.

TABLE 7-1 provides the recommended solenoids for the different water types

TABLE 7-1. Recommended Solenoids

Water Type	Part Number	Description
Clean water only	ASCO pn #8210G94	0.5 inch, 12 Vdc
Acidic water	ASCO pn #SC827012E	0.5 inch, 12 Vdc solenoid with a plastic valve that can handle up to 40% sulfuric acid. Acidic water also requires plastic pipes.

Use NPT fittings with a 0.5 inch inside diameter. Mount the solenoid next to the tank (0 psi) or next to the pan (1 psi). Use a solenoid that requires 0 psi differential pressure.

CAUTION Do not use the datalogger switched 12 V terminal to power the solenoid. Campbell Scientific offers an SPST single-channel solid-state relay for this purpose. Mount the relay in the enclosure and run the control voltages and lines (+12 V and ground) to the solenoid. Refer to *www.campbellsci.eu/p7321* for more information.

CAUTION Campbell Scientific recommends that the solenoid valves have a power supply independent of the weather station. If the fill tank runs dry, the solenoid could remain open for an extended period, draining the battery.

7.3 Storage Tank Size

If a storage tank is used, you need to determine the best size of tank for your application. You determine this by estimating the amount of water you'll use and deciding the number of trips to refill the tank you're willing to make. You can estimate the amount of water you'll use by multiplying the pan's surface area by the evaporation rate of the worst case condition (hot dry summer day).

Example

If you're using a 48 inch diameter evaporation pan, the surface area is:

$\pi R^2 = \pi(24 \text{ in})^2$

$= 1{,}809.56 \text{ in}^2$ or $11{,}674.56 \text{ cm}^2$

Assuming you refill the pan once a day and the evaporation rate is 10 mm (1 cm) per day, the amount of water you'll use is:

$(1 \text{ cm/day})(11{,}674.56 \text{ cm}^2) = 11{,}674.56 \text{ cm}^3\text{/day}$ or

11.675 litres/day or 3.1 gallons/day

If you use a 125 gallon tank, you will need to refill the tank in approximately:

(125 gallons)/(3.1 gallons/day) » 40 days

8. Maintenance

Prevent algae from growing in the pan by adding 5 to 10 mg/litre of copper sulphate to the water. Copper sulphate is available at many farm and garden supply stores. If algae is already in the pan, the pan will need to be thoroughly cleaned.

NOTE In severe situations, spa chemicals may be used, but they may influence the evaporation process.

Keep plants from growing over the edges of the pan.

Regularly rinse the pan to prevent dirt and debris from accumulating in the pan.

During the winter months when the water may freeze, drain and clean the pan and then store both the pan and evaporation gauge indoors. If the evaporation pan must be left outside, turn it upside down and secure it to the platform using a stout rope.

9. Attributions and References

For details on site selection, installation, and maintenance refer to the Cooperative Station Observations section of the National Weather Service Observing Handbook No. 2 currently available at:

www.nws.noaa.gov/om/coop/Publications/coophandbook2.pdf

Troubleshooting and other information is also available in the Novalynx Manual available at:

www.novalynx.com

Appendix A. Example Programs

A.1 CR1000X Program

This CR1000X program makes five measurements then averages the readings to reduce error from ripples in the water.

CRBasic Example A-1. CR1000X Program for the 255-100 Novalynx Evaporation Gauge

```
'CR1000X Series Datalogger
'Example program for 255-100 Novalynx evaporation gauge
Public PTemp, batt_volt
Public PanLevel
Dim  Leveltemp(5)
Const PanMultiplier = 1  'Adjust Pan Multiplier and PanOffset
Const PanOffset = 0  'according to sensor calibration

Units PanLevel = Inches

DataTable (Hourly,1,-1)
  DataInterval (0,60,min,10)
  Sample (1,PanLevel,FP2)
  Minimum (1,batt_volt,FP2,0,False)
  Sample (1,PTemp,FP2)
EndTable

BeginProg
  Scan (60,Sec,0,0)
    PanelTemp (PTemp,60)
    Battery (Batt_volt)
    'Make five measurements then average the readings to reduce error from ripples in the water
    'The SE Chan parameter uses a negative sign "-1" to force all 5 reps to be read on channel 1.
    BrHalf (Leveltemp(),5,mV5000,-1,Vx1,5,2500,True ,20000,60,PanMultiplier,PanOffset)
    AvgSpa (PanLevel,5,Leveltemp(1))
    'Call data tables
    CallTable Hourly
  NextScan
EndProg
```

A.2 CR200(X)-Series Program

CRBasic Example A-2. CR200X Program to Measure the 255-100 Evaporation Gauge

```
'CR200X Program to measure 255-100 Evaporation Gauge
Public Batt_volt
Public PanLevel
Const PanMultiplier = 1  'Adjust Pan Multiplier and PanOffset
Const PanOffset = 0  'according to sensor calibration

DataTable (Hourly,1,-1)
  DataInterval (0,60,min)
  Sample (1,PanLevel)
  Minimum (1,Batt_volt,0,0)
EndTable

BeginProg
  Scan (60,Sec)
    Battery (Batt_volt)
    ExDelSE (PanLevel,1,1,Ex1,mV2500,0,PanMultiplier,PanOffset)
    CallTable Hourly
  NextScan
EndProg
```

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