Nemos N200+WMSi Remote Water Management System



No power.... No problem



ABN 54 095 023 975

Nemos N200+ WMSi Quick Setup & Programming

This is designed as a basic setup guide to commission your Nemos N200+WMSi as a 2, 6(+MV) or 7 station (No MV) battery operated management system complete with soil sensor and utilizing your existing water meter with pulse output for flow Print it with wiring guide to take to site. management and reporting.

BEFORE GOING TO SITE- What you need

You **MUST** have Zeus Access (see also ZeusMobile Setup below) 1

Before commencing, you will require a web enabled PC/Smart device, firewall access to www.zeus.wateresource.com.au, a Zeus username and password. (If firewall issues refer your IT Department for access permission)

2 **Equipment**

- 1. Nemos N200+WMSi Device, complete with Identifier Number 61.........(Quote if require initial setup support)
- 2. Mounting Bracket
- 3. Thor 2 or 7 Latch Driver (refer wiring instructions)
- 4. Nemos main cable
- 5. IP68 Junction box with spare gland.
- SMT-100 Soil Moisture Sensor (if ordered) 6.
- 7. Wire connectors and (Refer wiring instructions)
- 8. Programming magnet & bracket screws
- 9. Remote Wakeup Sensor (to install in Valve box lid)



Wiring Diagram 3

Print and have with you (in Help/Setup section of Synoptic)

4 Connection to water meter

Via an appropriate pulse output (reed switch) with 2 wire connection to location of Nemos, preferably PE39 shielded cable. Max distance typically 50-100m, however may vary based on type of pulse output, refer QR.

5 Solenoid Valves with DC LATCHING COILS (red & black wires)

Suitable for Hunter, RainBird and Irritrol/Toro Latching coils. Other brands refer Wateresource regarding wattage and voltage.

Site Details 6

Site Name **GPS** location For Flow Water meter number

7

Tools

(Main St Roundabout) (-34.1234 138.3241) (L002312301)

(note **negative** Latitude) (5Lpp =0.005m3/pulse) (M3 per pulse of the water meter)

Recommended Tools

These are the recommended tools to have at hand. When stripping any outer sheaths, be careful not to cut through the insulation of the inner wires.



Common water meter connections

ABN 54 095 023 975



ABN 54 095 023 975

Infield Installation of Hardware

WARNING: Flooded valve boxes are a severe environment for ANY electronic equipment.

Whilst the Nemos and equipment are IP68 rated, one poorly tightened cable gland, junction box seal etc can expose the Nemos to water intrusion, electronic shorting and failure.

Such damage/failure caused by incorrect or unprofessional installation will void all warranty.

Do all wiring before connecting the Nemos main cable to the Nemos and strictly follow wiring connections including recommended connectors (supplied)

Wire Thor to DC Latching Solenoid Coils Step1 Use supplied and recommended Distances above 20m-100m use 1.5mm2 nuts/connectors If retrofitting, remove any Scotchlok connectors from the wire path. Represents WHITE Always pre-twist cables before putting supplied gel filled wire nuts. **Special Configuration** Thor₂ Valves 12vDC Where the Nemos/Thor2 has been Green Thor2 to Valves configured for 1 station + Master valve V1 Black Valve1 Yellow Thor2 Valves DC V2 Black White THOR₂ Green M/1/ D Valve2 MV Black-Yellow x4 White V1 Black Thor7 to Valves 6+MV x7 THOR7 Thor7 Valves 12vDC White MV Red+ V1 Red+ V2 Red+ Green Yellow V3 Red+ Grey V4 Red+ V5 Red+ Pink V6 Red Black **Special Configuration** Where the Nemos/Thor7 has been configured for 7 stations no Master valve Valves 12vDC Thor7 White V1 Red+ V2 Red+ Green V3 Red+ Protect the joins with tape. Grey

Pink

Black

V6 Red

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Step 2 Nemos Main Cable to Devices: Prepare Cables

Trim to acceptable length and then use self-adjusting strippers to remove approx. 6-7cm of sheath.





Strip Nemos black, blue, yellow, grey



Thor strip and use grey nuts



Remote wakeup strip black common



Soil Sensor strip white common.

Fit extra gland



Elster T-Probe strip blue common. Refer link for other water meter cable colours

Step 3 Insert cables into junction box.





Tighten ALL glands and ensure yellow seal is set correctly and screws firm.

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Step 5 Remote wakeup sensor



Remote wakeup sensor into lid. Minimise height above box to help avoid mowers. (Put at "hinge" end)

Step 6 SMT-100 Soil Sensor Installation

The SMT-100 is to be installed as per the following.

Location

- For Turf Preferably away from and between rotors where there is 'typical' irrigation coverage that represents the coverage across the field, and away from edges.
- For Drip Under the area covered by a dripper emitter and next to the roots of one of the plants.

Depth

• The sensor should be installed at the root depth, i.e. the depth at which the plants absorb water. For lawns, this is typically at a depth of approx. 5-10 cm (For sandy soils, if you may be irrigating shorter and more frequently, locate the sensor more to the 5cm depth.)

Orientation

 The SMT-100 to be installed horizontal and 'on edge' and where possible the blade is 'poked' horizontally into undisturbed soil careful not to snap it.

Finish

• Compact the soil around and above the sensor to represent that of the surrounding soil. We do not want to create the 'bucket effect' where all water drains into the sensor location.

Step 7 Water meter pulse output connection

Ensure water meter pulse output is installed correctly and wired as per manufacturer's instructions, see QR code.



Step 8 Finish hardware setup

Mount Nemos only stainless-steel bracket if required and connect Nemos cable to Nemos.

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NOTE: Water meter pulse output, soil moisture sensor & Remote Wakeup share BLACK ground of Nemos. Strip back 10mm, pre-twist and trim, and use grey wire nut provided.

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Configuration of the Nemos to the Site

Step 9 Site Details

On your Smart device, open Zeus Mobile, log in and you will be taken to the Overview page.





This will take you to the 'Home' screen of the device in portrait mode.

Rotate phone from Portrait to Landscape for best use. If after rotating, the bottom buttons are covered by the phone menu bar, return to Portrait, and rotate back to landscape again to fit the screen.



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Step 10 Site Setup & Personalization

Help & I	letter .		2 Site Set	ID .
			Initialize	· • 📋
ZeusMobile Setup	Set and Forget Principles		Site Name	Set
Principles & Data	Global OFF & AUTO	1	Latitude (-xx.xxxx)	Set
Nemos Installation & Setup	Creating a Hierachy	1	Longitude (xxx.xxxxx)	Set
numero de la composición de la composicinde la composición de la composición de la composición de la c		1	Meter Numberfidentifier	Set
Thor2 & Thor7 Wiring Guides	Creating Reports		Bet Number of Active Stations	
Programming & Manual Operations	Flow Alarms & Shutdown		1 2	
Troubleshooting Flow Alarms	Motor Pulse Weights 7	1	Soil Sensor Status	ON OFF
		-	Set Meter Pulse	wegee
			Set Meter Value	Set
			Set Timezo	ne .

When first setting up the Nemos "Initialization" must be the first action, as it takes the device out of dormancy.

To Setup the Nemos, follow the buttons in strict order from top to bottom starting with "Initialize" and ending with "Set with 15minute Refresh then Magnet.

Each time a parameter is entered, a spinning pending wheel will appear.

When the 'Set with 15minute Refresh' button is pushed, followed by Magnet, Zeus will update the device. This process may take 2-5 minutes to complete and indicated by the spinning arrows disappearing.

lps	Alarms	Help / Setup	
?	Site Set	up	
	Initialize	- + ü	
Site F	iame	Set	
Latits	de (-xx.xxxx)	Set	
Long	itude (xxx.xxxxx)	Set	
Meter	Numberildentifier	Set	
1	Bet Number of Act	ive Stationa	
Soil 1	lensor Status	ON OFF	
	Set Meter Pulse	Weight	
0.51	PP 10PP 50PP	10 LPP 100 LPP	
Set M	leter Value	Set	
	Set Times	one	
5	A AET WA	Qid NT	
	iet with 15 minute refr	esh + ݩ	
	Go new to Alarma		

Initialize activates all logging and refresh timers and must be done first.

Latitude (in decimal degrees) and MUST be prefixed with - (ie -34.12345)

Meter Number/Identifier. Identifies the Meter in any reports.

Active Stations. Displays only connected stations on program page AND defines number of stations in "Test all 1min"

<u>Soil Sensor Status</u> activates the logging function of an attached soil sensor.

<u>Water Meter Pulse Weight</u>. If unsure refer link. MUST be done before setting current meter reading.

Meter Value is current meter reading in kL.

<u>Set with 15minute Refresh, followed by Magnet</u> automatically refreshes to the server to allow for several actions to be done in that period.

Note, sometimes when the timezone is set it aborts the 15min refresh. If you think that things are not being updated after 2-3 minutes, set with 15min refresh and magnet again.

Once this part is completed, it is necessary to set the Alarm parameters. These are found via the Alarms tab..

ABN 54 095 023 975

				-
Flow	Alarms Notifications	Soil Moisture Alarms &	"Set & Forget" Control	a
Flow Alarms ON	YES NO	Low Soil Moisture	Nvme Click to Set	
12 Hr Unscheduled Flow Alar	m Override ? Click to Set			
		"Set and Forget" Irrigation Co	ntrol YES NO	
High Flow Alarm (10 minute settle time)	Limin Click to Set	Disable Programs (High %vmc)	%vmc Click to Set	
System Shutdown on High Fl	w YES NO	Enable Programs (Low %vmc)	%vmc Click to Set	
WARNING: After Shutdown Pro	rams and S&F will need to be re-enabled.	Moisture at last refresh	Norme	
	Set with 15 m	ninute refresh 🛛 + 🝅		

There are 3 flow Alarms that are enabled by the Flow Alarms ON -YES button.

1 Zero Flow – When any station is active and the Nemos gets no flow reading from the water meter for a persistence of 10 mins it will post an alarm and send a notification via the Zeusmobile APP.

The Alarm will remain in "Alarm State" for 12 hours, after which it will reset automatically, or if it is acknowledged by the operator.

2 Default Unscheduled Flow – When no programming is active and the Nemos detects flow for a persistence of 60 minutes, the Nemos will post an "Unscheduled Flow Alarm". The Alarm will restore after flow has returned to zero for a persistence of 60mins. Common causes are leaks due to faulty or obstructed valves, or manual bleeding.

12Hr Unscheduled Flow Override is recommended when there are other flow demands off the same meter such as toilet blocks, powered irrigation etc. This minimizes "false alarms" and turns the function into a chronic leak alarm.

High Flow – After a settling time of 5-10 mins, a high flowrate condition with a persistence of 10mins will trigger and post an alarm and send a notification via the Zeusmobile APP.
The Alarm will remain in "Alarm State" for 12 hours, after which it will reset automatically, or if it is acknowledged by the operator.

If "System Shutdown is chosen, all valves will be closed, programs disabled and Set & Forget deactivated, and must be restored by the operator.

Note don't set High Flow value too fine, but make sure it is less than the system capacity. You want it to resemble a blown off dripper fitting or kicked off rotor.

Once entered, if the initial 'Set with 15min Refresh' is still active the values will update, otherwise set again.

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Step 10 Programming and Manual Operation

On-site Operations

For "on-site" operations, please remember that the Nemos is communicating with you via the Zeus Server and not directly, so the following operations may take upto 60 seconds or so to activate. **Be patient, DO NOT keep pushing buttons!**

Manual Ops.

Via the "Manual Ops" tab, firstly set the "Comms Open 15minutes" function followed by the magnet.

"Test ALL 1 minute" to test all valves sequentially. This will start at the next top of the clock after being refreshed so may take up to 59 seconds plus communication time with server. Be patient!

Note: Make sure that "Active Stations" are set (indicated in red) during the Setup stage or the test ALL function will not work.



"Manual Station" - Click desired station button, enter minutes, and OK.

To stop before end of time, click the corresponding Stop button.

Programs via the Programs Tab

Standard Irrigation principles apply with 4 programs.

Program A	Program B	Program C	Program D
Programs Enabled	Save	Save	Save
Start time 00 : 00	Start time 00 : 00	Start time 00 : 00	Start time 00 : 00
Station 1 0 min	Station 1 0 min	Station 1 0 min	Station 1 0 min
Station 2 0 min	Station 2 0 min	Station 2 0 min	Station 2 0 min
Station 3 0 min	Station 3 0 min	Station 3 0 min	Station 3 0 min
Station 4 0 min	Station 4 0 min	Station 4 0 min	Station 4 0 min
Station 5 0 min	Station 5 0 min	Station 5 0 min	Station 5 0 min
Station 6 0 min	Station 6 0 min	Station 6 0 min	Station 6 0 min
Battery in good condition Last m	afresh: 14/12/2023 07:38:56 Refreshes 09:00 1	2:00 17:00 Set Multiple Programs	AUTO Programs OFF Programs ?

After entering a program, finish by clicking its corresponding "Save" button. The pending wheel will appear and will go in at the next scheduled refresh, or if at site, apply the magnet to refresh.

When more than 1 program is being changed at the same time, after clicking each corresponding Save button, follow with clicking the "Set Multiple Programs button then followed by the magnet.

"Disabling /Enabling Programs", click Disable/Stop Programs (once accepted the blue tick will disappear.) Same to enable again.

If anytime the connection has closed, simply use your magnet again to send any submitted updates, otherwise they will go in at the next scheduled wakeup at 09:00, 12:00, 17:00

Note: AFTER ANY MANUAL OPERATION, THE PROGRAMS WILL RETURN TO THE ENABLED STATE

ABN 54 095 023 975

Set & Forget

The principles are that the Nemos logs the soil moisture value every hour and if a level above your determined "Disable" point persists for 1 hour, the programs will be suspended until the moisture level drops below the "Enable" level for a persistence of 1 hour. At that point the programs will be re-enabled and allowed to run at the next programmed run time.

Programs Enabled

This is indicated on the programs page by a blue tick.

Once the soil sensor has been correctly installed as per Step 6, Set & Forget can be initiated as follows.

It's best to let the soil 'settle' around the sensor and allow several standard irrigation events to take place to get an understanding of where the Enable and Disable programs set points should be.

Once you are ready to proceed, here are some recommendations.

Irrigation program set to irrigate every night except those nights where it must not be.

- On the Alarms page, Activate "Set & Forget".
- Set both Disable and Enable points.
- Set a low Soil Moisture Alarm (below the Enable point) as a backup.

Here is an example of how settings may look, but remember your soil type, sensor depth and location will determine what your settings may be, and you may have to 'tweak' them over the following weeks.

Soil Moisture Alarms & "Set & Forget" Control				
Low Soil Moisture	10	%vmc	Click to Set	
"Set and Forget" Irrigation C	Control	YES	NO	
Disable Programs (High %vmc)	30	%vmc	Click to Set	
Enable Programs (Low %vmc)	20	%vmc	Click to Set	

Programs Enabled

The Ideal Outcome

Here is a playground with 2 stations irrigating with rotors.

The graph is for all of February 2023, typically the peak of Summer in Adelaide.

Programmed to irrigate every night at 1am but irrigated **only 7 times in 29 days** and the soil moisture never dropped below 17%.

A great result!



Note: Please also refer to the Synoptic help notes for important information regarding the enabling/disabling functions and alarms.

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