



Netshield NGSMPPM-PH2

Inline GSM Power Monitor

User Manual for the SMS Version



Description:

Netshield's next generation Netshield Inline GSM Power Monitor, the ideal accompaniment for service businesses looking for a cost effective and easy way to deploy a means to remotely monitor for business disruptions, such as power, temperature, humidity and flooding on their client's sites. The device is particularly relevant for business-critical environments where the delivery of services is dependent on third party facilities like utility power and building HVAC systems for cooling.

This next generation device includes kettle type connectors (C13/C14), at both ends, making it easier to through feed power to critical devices.

Once deployed inline, through feeding, this enables the power to be fed to critical networking devices such as remote equipment ATM's and cabinets. It will then dynamically alert administrators via SMS, when there is a power disruption, spike in temperature, flooding or changes in humidity.



With its onboard Lithium-ion polymer backup battery with up to two days battery life, it's able to continue to send alerts if the power goes down. It also has status indicators and front-mounted LED indicators to show network and functional statuses.

Features:

- Integrated panel mount C14 with externally accessible fuse holder, power input with 1.2-meter C13 to South African Red Plug power cord.
- Leaded Power output, 1.2-meter, C14 connector for connection to appliance.
- Utility mains power failure detector.
- Integrated Surge protection Metal Oxide Varistor.
- GSM unit with Micro SIM socket.
- External GSM Antenna.
- Internal Lithium-ion polymer rechargeable backup battery and Charger.
- Simple and quick installation and setup procedure.
- Status LED indicators.
- Optional temperature, humidity and fluid sensors.

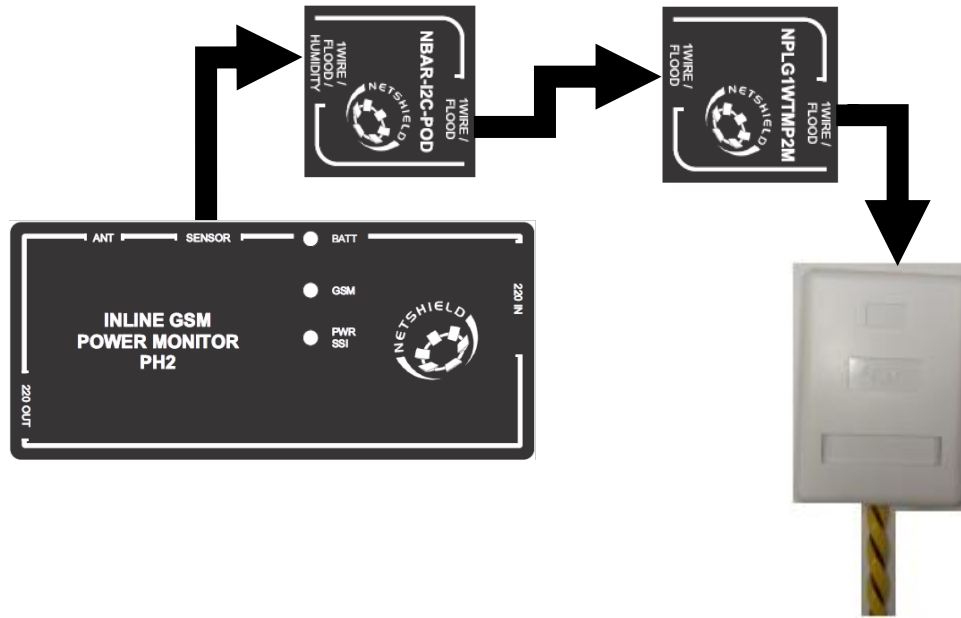


LED indicators:

- Red LED (*PWR ON/OFF and Weak GSM Signal Indicator*)
 - 50ms on / 50ms off: GSM signal is too weak, (CHECK Blue LED for registration on network).
 - 250ms on / 250ms off: The Power is OFF.
 - 1000ms on / 1000ms off: The Power is ON.
- Yellow LED (*Battery Charging ON/OFF*)
 - OFF: Battery fully charged.
 - ON: Battery is charging.
 - LED Flickering: Battery not Present or Faulty.
- Blue LED (*GSM Network Indicator*)
 - OFF: GSM module is OFF
 - 64ms ON / 800ms OFF: Not registered on GSM network.
 - 64ms ON / 3000ms OFF: Registered on GSM network.
 - 64ms ON / 300ms OFF: GPRS communication is established.

Unit Configuration:

- Connect the optional sensors to the unit using the UTP cables. The humidity sensor (NBAR-I2C-POD) needs to be connected using the short 50cm cable first, with the “1WIRE/FLOOD/HUMIDITY” facing the unit. The temperature sensor (NPLG1WTMP2M) can be connected after the humidity sensor and the flood sensor is connected last.



- Connect the external antenna to the unit.



- Ensure that the number of the unit’s MICRO SIM is available.
- Insert the Micro SIM into the slot with the gold-plated contacts facing upwards and ensure it is embedded into place. A non-metallic sharp object can be used if required.



- Plug the unit into a power socket outlet, preferably where a good GSM signal is available.
- Connect the C13 connector to the appliance that is to be monitored.



- If the battery is completely drained, allow the battery to charge for at least 30 minutes before using.
- Wait for the Blue LED to blink 64ms ON / 3000ms OFF (Indicating: Registered on GSM network).
 - If the RED LED blinks 50ms ON / 50ms OFF: the GSM signal is too weak.
- SMS the following message string to configure the unit's destination number and name:
 - **SMSDNO "0823456789" SNAME "MyHouse"**
 - The quotation marks must be included in the messaging string.
 - The value encapsulated in the quotation marks are the user variables or identifiers.
 - **SMSDNO:** Command for the default SMS destination number.
 - ❖ The destination number being the recipients cell number used for alert SMS's on power ON and OFF transitions.
 - ❖ The destination number can include +27 or 0 dialling prefix.
 - **SNAME:** command for the user definable site name, use a name that differentiates sites if you have multiple sites.
 - The site name may not exceed 10 characters.
 - The transmission of confirmation SMS's may take up to a maximum of two minutes.
 - The destination number and site name are saved on the SIM.
- To set the time and date on the unit, send any single character SMS to the unit.
 - No reply SMS will be sent.
 - The time and date must be set when the battery is completely discharged or replaced.



- SMS the following message string to configure the unit's temperature settings:
 - **HTEMP "32" LTEMP "20" HYTEMP "1" HYTIME "300"**
 - The quotation marks must be included in the messaging string.
 - The value encapsulated in the quotation marks are the user variables.
 - **HTEMP:** Command for the high temperature value.
 - ❖ The value when temperature sensor is mounted internally is in degrees from 1 to 84°C and when mounted externally from -55 to +124°C.
 - ❖ When the temperature is above this value a warning SMS will be sent.
 - **LTEMP:** Command for the low temperature value.
 - ❖ The value when temperature sensor is mounted internally is in degrees from 1 to 84°C and when mounted externally from -55 to +124°C
 - ❖ When the temperature is below this value a warning SMS will be sent.
 - **HYTEMP:** Command for temperature hysteresis.
 - ❖ The value is degrees from 1 to 5°.
 - ❖ When the temperature is restored to within the allocated range the temperature and time hysteresis variables are considered, if rules are adhered to a restored SMS is sent.
 - **HYTIME:** Command for time hysteresis.
 - ❖ The value is in seconds from 1 to 3600.
 - ❖ When the temperature is restored to within the allocated range the temperature and time hysteresis variables are considered, if rules are adhered to a restored SMS is sent.



- SMS the following message string to configure the unit's humidity settings:
 - **HHUMID "90" LHUMID "5" HYHUMID "1" HYHUMIDTIME "300"**
 - The quotation marks must be included in the messaging string.
 - The value encapsulated in the quotation marks are the user variables.
 - **HHUMID:** Command for the high humidity value.
 - ❖ The value for humidity sensor is in % (relative humidity) from 0 to 100%.
 - ❖ When the humidity is above this value a warning SMS will be sent.
 - **LHUMID:** Command for the low humidity value.
 - ❖ The value for humidity sensor is in % (relative humidity) from 0 to 100%.
 - ❖ When the humidity is below this value a warning SMS will be sent.
 - **HYHUMID:** Command for humidity hysteresis.
 - ❖ The value is % from 1 to 5.
 - ❖ When the humidity is restored to within the allocated range the humidity and humidity time hysteresis variables are considered, if rules are adhered to a restored SMS is sent.
 - **HYHUMIDTIME:** Command for humidity time hysteresis.
 - ❖ The value is in seconds from 1 to 3600.
 - ❖ When the humidity is restored to within the allocated range the humidity and humidity time hysteresis variables are considered, if rules are adhered to a restored SMS is sent.
 - **SMSDNO1 "0823456781"**
 - **SMSDNO2 "0823456782"**
 - **SMSDNO3 "0823456783"**
 - **SMSDNO4 "0823456784"**
 - **SMSDNO5 "0823456785"**
 - The quotation marks must be included in the messaging string.
 - The value encapsulated in the quotation marks are the user variables or identifiers.
 - There is space for 5 extra numbers.
 - Five numbers can be updated at a time
- SMS the following message string to delete extra destination numbers:
 - **SMSDNO1 ""**
 - **SMSDNO2 ""**
 - **SMSDNO3 ""**
 - **SMSDNO4 ""**
 - **SMSDNO5 ""**
 - The quotation marks must be included in the messaging string.
 - SMS **SMSDNOx** of the number to be removed, replace x with the corresponding number.



- SMS the following message string to set Momentary Power Outage Time:
 - **MPOTV "10"**
 - The quotation marks must be included in the messaging string.
 - The value encapsulated in the quotation marks are the user variables.
 - **MPOTV**: Command for the Momentary Power Outage Time value.
 - ❖ The value is in seconds from 10 to 254.
 - ❖ If the Power Outage is less than the time set, and the mains power is back ON a Momentary Power Outage SMS message will be sent.
 - ❖ If the Power Outage is longer than the time set, and the mains power is OFF, a Power is OFF SMS message will be sent.

Other SMS Commands:

- **HELP**: Returns the list of valid commands.
- **STATUS**: Returns the current status and available air time.
 - Status SMS will be sent to the cell number where the request came from.
- **TINFO**: Returns the list of temperature values. (Optional extra)
- **HINFO**: Returns the list of humidity values. (Optional extra)
- **LIST**: Returns the list of extra numbers.
- **AIRTI**: Returns the last Air Time info message from USSD.
- **VERSION**: Returns the firmware date and number.
- **USSD SETTINGS**: Returns the current USSD settings on current cellular network.

Status SMS explained:

- **Time**: Current time and date.
- **PWR**: Indicates mains power ON or OFF.
- **Last PWR OFF**: Time and date of last mains power failure.
- **SSI**: GSM Signal Strength Indicator as a percentage.
- **Vbat**: Battery Voltage.
- **AirT**: Air time available (Prepaid only).
- **SMS**: Available SMS's bundle.
- **Dest**: Destination number used to send SMS when mains power status changes.
- **Name**: Site name.
- **T**: Temperature in Degree Celsius. (Optional extra)
- **H**: Humidity in percent. (Optional extra)
- **W**: Water detected. (Optional extra)



Temperature SMS explained: (Optional Extra)

- **HTEMP:** High temperature value in degrees from 1 to 84°C or -55 to 125°C.
- **LTEMP:** Low temperature value in degrees from 1 to 84°C or -55 to 125°C.
- **HYTEMP:** Temperature hysteresis in degrees from 1 to 5°.
- **HYTIME:** Time hysteresis in seconds from 1 to 3600.

Humidity SMS explained: (Optional Extra)

- **HHUMID:** High Humidity value in % from 0 to 100.
- **LHUMID:** Low Humidity value in % from 0 to 100.
- **HYHUMID:** Humidity hysteresis in % from 1 to 5.
- **HYHUMIDTIME:** Humidity time hysteresis in seconds from 1 to 3600.

Examples:

- If the following SMS message was sent:
 - **SMSDNO "0833456780" SNAME "MyOffice"**
 - The site name will be set to MYOFFICE.
 - When a power failure occurs, the notification will be sent to 0833456780.
- If the following SMS message was sent:
 - **HTEMP "30" LTEMP "21" HYTEMP "2" HYTIME "10"**
 - A temperature warning SMS is sent when the temperature goes above 30°C
 - The temperature back in range SMS will be sent when the temperature goes below 28°C (30 - 2) and the temperature is below 28°C for at least 10 seconds.
 - A temperature warning SMS will be sent when the temperature goes below 21°C
 - A temperature back in range SMS will be sent when the temperature goes above 23°C (21 + 2) and the temperature is below 23°C for at least 10 seconds.



USSD Settings explained:

USSD (Unstructured Supplementary Service Data) is used to obtain the Airtime information. Each cellular network uses different commands and the return message may change from time to time.

The following commands can be used if the Airtime and SMS value is not correctly displayed. All the commands are not used if the unit is configured as a SMS unit.

Only 160 characters can be sent to the unit via SMS, the commands can be sent in batches, the commands and settings are case sensitive.

If no correct value was received "NA" will be displayed meaning the value was not available at that time.

The following networks is preprogramed into the unit: MTN, Vodacom, Cell C and Telkom. If a different Network is used the Network name will be displayed as Unknown and custom settings will be used, follow the same steps as one of the existing networks.

- **GATS:** Get Airtime USSD String
- **GONS:** Get Own Number USSD String
- **ONP:** Own Number Place
- **ONSTR:** Own Number String to Replace
- **ONSTRW:** Own Number String to Replace With
- **MC:** USSD Menu Count
- **MO1:** USSD Menu Options 1
- **MO2:** USSD Menu Options 2
- **MO3:** USSD Menu Options 3
- **MO4:** USSD Menu Options 4
- **MO5:** USSD Menu Options 5
- **ATP:** Airtime Place
- **ASTCF:** Airtime String to Clear Front
- **ASTCL:** Airtime String to Clear Last
- **SMSP:** SMS Place
- **SMSSTCF:** SMS String to Clear Front
- **SMSSTCL:** SMS String to Clear Last
- **MBP:** MB Place
- **MBSTCF:** MB String to Clear Front
- **MBSTCL:** MB String to Clear Last



USSD Settings example for MTN:

The USSD return message will appear as follows:

R3.37 airtime, R0.00 reserved for data, **172** SMS and **12.89** MB of data. Dial *141*1# for details.

The USSD service number for MTN is *141# (GATS "*141#").

There are no menu options on MTN (MC "0").

If a setting is not used, we send a black character to clear the old setting (MO1 "").

The Airtime value is the first word (ATP "1") and we want to remove the letter R (ASTCF "R").

The SMS value is word number 7 (SMSP "7") and there is no need to remove any letters.

The data value is word number 10 (MBP "10") and there is no need to remove any letters.

SMS the following message string to set the MTN USSD Settings:

```
GATS "*141#"
MC "0"
MO1 ""
MO2 ""
MO3 ""
MO4 ""
MO5 ""
ATP "1"
ASTCF "R"
ASTCL ""
SMSP "7"
SMSSTCF ""
SMSSTCL ""
MBP "10"
MBSTCF ""
MBSTCL ""
```



USSD Settings example for Vodacom:

The USSD return message will appear as follows:

Airtime is R1.09; data is 30.00 MB; Night Owl 0.00 MB; 21 SMS's; 0 MMS's Buy more Airtime using debit/credit card Reply 1

The USSD service number for Vodacom is *111# (GATS "*111#").

There are 2 menu options on Vodacom (MC "2").

Both Menu options are 1 (MO1 "1") and (MO1 "2").

The Airtime value is word number 3 (ATP "3") and we want to remove the letter R (ASTCF "R") and the character ; (ASTCL ";").

The SMS value is word number 12 (SMSP "12") and there is no need to remove any letters.

The data value is word number 6 (MBP "6") and there is no need to remove any letters.

SMS the following message string to set the Vodacom USSD Settings:

```
GATS "*111#"
MC "2"
MO1 "1"
MO2 "1"
MO3 ""
MO4 ""
MO5 ""
ATP "3"
ASTCF "R"
ASTCL ";;"
SMSP "12"
SMSSTCF ""
SMSSTCL ""
MBP "6"
MBSTCF ""
MBSTCL ""
```



USSD Settings example for Telkom:

The USSD return message will appear as follows:

Your current balance is R10.25.

The USSD service number for Telkom is *188# (GATS "*188#").

There are no menu options on Telkom (MC "0").

If a setting is not used, we send a black character to clear the old setting (MO1 "").

The Airtime value is word number 5 (ATP "5") and we want to remove the letter R (ASTCF "R"), The . after the Airtime value cannot be removed because the . for the cent value will also be removed.

The SMS value and data values are not returned in the USSD Message.

SMS the following message string to set the Telkom USSD Settings:

GATS "*188#"
MC "0"
MO1 ""
MO2 ""
MO3 ""
MO4 ""
MO5 ""
ATP "5"
ASTCF "R"
ASTCL ""
SMSP "0"
SMSSTCF ""
SMSSTCL ""
MBP "0"
MBSTCF ""
MBSTCL ""



USSD Settings example for Cell C:

The USSD return message will appear as follows:

Available Balance: R **1.84** .SMS: **71**.Data: **100.00** MB. You are on the EasyChat tariff

The USSD service number for Cell C is *101# (GATS "*101#").

There are no menu options on Cell C (MC "0").

If a setting is not used, we send a black character to clear the old setting (MO1 "").

The Airtime value is word number 4 (ATP "4") and there is no need to remove any letters.

The SMS value is word number 6 (SMSP "6") and we want to remove the letters .Data:
(SMSSTCF ".Data: ").

The data value is word number 7 (MBP "7") and there is no need to remove any letters.

SMS the following message string to set the Cell C USSD Settings:

```
GATS "*101#"
MC "0"
MO1 ""
MO2 ""
MO3 ""
MO4 ""
MO5 ""
ATP "4"
ASTCF ""
ASTCL ""
SMSP "6"
SMSSTCF ".Data:"
SMSSTCL ""
MBP "7"
MBSTCF ""
MBSTCL ""
```



Specifications:

- Minimum input voltage: 85VAC. (Battery will operate below this voltage)
- Maximum input voltage: 264VAC.
- Enclosure dimensions: 184mm x 81mm x 45mm (L x B x H).
- Operating temperature: +1 to +85 Degrees Celsius.
- The mains power will detect as OFF when below ± 46 VAC.

Extra information:

- The unit will send a SMS message just after 09h00 on the 01st of every month. This is to keep the SIM active. This message will be sent to the default destination number as well as all the extra destination numbers.