

**SMART**  
**NRG**

## Battery Operated Chlorine Analyzer



**BLUE i**  
TECHNOLOGIES



**SMART  
NET**

# SMART NRG

## Measure Where It Counts - Anywhere, Anytime

Measuring across the distribution network is more challenging than in production sites since infrastructure elements such as power, communication, buildings and drains are typically not available. With its robust casing (IP65), battery operation and compact footprint, the SMART NRG facilitates easy water quality measurement throughout the distribution network. It learns chlorine behavior and residuals, monitors the efficiency of disinfection processes, tracks flushing activities and, most importantly, detects water quality events in real-time.

## Reduce the Cost of Monitoring Station Infrastructure in Urban Areas and Remote Locations

Battery operation, an IP65 casing and a built-in communication modem allow the SMART NRG to be installed anywhere throughout the water distribution network. Whether it is in urban areas or remote and isolated locations, the SMART NRG saves time and reduces costs by eliminating the need for infrastructure preparation. All that is required is a 1/4-inch feed tube and a 1/4-inch drain.

## Customized Multi-Parameter Analyzer for Water Quality, Pressure and Flow

Each SMART NRG analyzer can measure up to 6 water quality parameters - including free or total chlorine, pH, temperature, ORP, conductivity and turbidity, as well as 2 operational parameters, including pressure and flow. High and low limits can be set for each parameter, and alerts can automatically be sent to engineers and operators whenever those limits are breached.

## Connect Better, Know Better, Operate Better, Protect Better

SMART NRG includes an internal data logger, as well as an internal 3G modem for 2 way communication, giving the operator full remote access to the measured data as well as to the operation and maintenance interface. The operator can also access real-time assistance and troubleshooting from an authorized representative, ensuring optimal service and saving time, energy and money.



**SMART  
INSIGHT**

# Features



Battery operated chlorine analyzer, no need for grid connection



Ideal for solar panel connection (built-in 12 VDC input)



Amperometric reagent-less chlorine measurement



Free chlorine 0-10 ppm (standard range); 0-2 ppm (low range)



Total Chlorine 0-20 ppm



Multi-parameter analysis of free or total chlorine, turbidity, pH, ORP, temp, EC, pressure and flow



Built-in data logger and 3G modem



RS485- digital output (MODBUS)



Robust enclosure (IP65 rating) suitable for outdoor installations

▼ Best solution for urban places and remote locations (distribution network)

▼ Measure chlorine behavior and decay along the distribution network, end of pipes and low-flow zones

▼ Multi-parameter analysis of water quality to alert about significant changes and potential pollution

▼ Semi-continuous operation mode to reduce power consumption and minimize drain flow-rate

▼ Full remote access to view data, as well as modify settings, thresholds and alarms

▼ Real-time text messages and email alerts

▼ Multi-parameter monitoring and smart analytics available





# Technical Specification



## CHLORINE MEASUREMENT (FREE OR TOTAL CHLORINE ELECTRODE)

Free Chlorine Electrode	Passive-operated Chlorine sensor with gold cathode & silver/silver chloride anode
Free chlorine measurement range	0-10 ppm (standard) or 0-2 ppm (optional)*
Accuracy	± 2 % or ± 0.01 ppm whichever is greater
Minimum Detection Limit	0.03 ppm
Resolution	0.01 ppm
Repeatability	1% span
Body material	PVC
Membrane material	PTFE
Membrane cap material	PBT (GF30), PVDF
pH operation range	4 to 8
Total Chlorine Electrode	Chlorine sensor with membrane-covered, amperometric 3-electrode system, with greatly reduced pH-dependence
Total chlorine measurement range	0-20 ppm
Accuracy	± 4 % or ± 0.01 ppm whichever is greater
Minimum Detection Limit	0.05 ppm
Resolution	0.01 ppm
Repeatability	1% span
Body material	PVC-U
Membrane material	Microporous hydrophilic membrane
Membrane cap material	Stainless steel 1.4571
pH operation range	4 to 12

## pH MEASUREMENT

Electrode	Ceramic diaphragm and gel filling
Measurement Range	0 to 12
Input impedance	0.5 x 1.12k Ω
Resolution	0.01 pH
Repeatability	0.01
Body material	Glass

## TEMPERATURE MEASUREMENT

Sensor	PT-100
Measurement range	1.5°C to 50°C (35°F to 122°F)
Resolution	0.1°C (0.1°F)
Repeatability	0.01

## TURBIDITY MEASUREMENT

Sensor	LED light (90° and 180°)
Measurement range	0-20 NTU
Accuracy	2-4% FS
Resolution	0.001
Colorimeter body material	PP
Bubble removal	Automated internal mechanism
Cell cleaning	Automated internal mechanism

## CONDUCTIVITY MEASUREMENT

Sensor	k=1 cell constant conductivity
Measurement Range	20-5000 µS/cm
Accuracy	2-4% FS
Resolution	1 µs
Repeatability	0.01
Measuring surface	Graphite or similar
Body material	Plastic
Temperature compensation	NTC and PT 100

## ORP (REDOX) MEASUREMENT

Sensor	Ceramic diaphragm and gel filling
Measurement range	0 to 2000 mV
Resolution	1 mV
Repeatability	1%
Body material	Glass or plastic

## PRESSURE SENSOR

Type	Pressure membrane
Measurement range	0 -10 bar (0 -145 psi)
Accuracy	3% FS
Resolution	0.05 bar (0.72 psi)

## INTEGRATED FLOW SWITCH

Sensor	Inductive proximity sensor
Output	Volt free contact
Minimum flow	35 l/h ( 9.5 GPH )

## MECHANICAL DATA

Dimensions	(L x W x D )
Electronics enclosure	280 x 380 x 180 mm / 11.0 x 15.0 x 7.1 inch
Lab enclosure	560 x 380 x 180 mm / 22.0 x 15.0 x 7.1 inch
Complete enclosure	840 x 380 x 180 mm / 33.0 x 15.0 x 7.1 inch
Weight	16 kg (35.2 lbs.)
Enclosure rating	IP 65 (Polycarbonate)
Cable entries	PG 7 and PG 9 cable glands
UV resistance	UL 508

## POWER

Power supply	12 x 3.6 V batteries, Size D
Battery type	Lithium-thionyl chloride
Power button	On/Off

## COMMUNICATION

Maintenance & calibration port	USB
Internal Communication Protocol	Modbus
Communication Modem	Low Power GSM/GPRS
Communication Frequency	Adjustable
Antenna	SMA

## DATA LOGGING

Capacity	65,000 readings
Mode	Count and event
Event logging	Yes
Alarms	SMS/Email

## INSTALLATION REQUIREMENTS

Inlet Pressure	1 bar (14.5 psi)
Feed Tube	6 mm (1/4 inch) feed tube
Drain Tube	6 mm (1/4 inch) drain tube

## ENVIRONMENTAL CONDITIONS

Ambient temperature	2°C to 55°C (32°F to 131°F)
Storage temperature	2°C to 60°C (32°F to 140°F)
Operation Humidity	Up to 90% at 40°C ( 104°F)

## CERTIFICATIONS

USEPA Accepted method	Yes
CE Certified	Yes
UL Certified	Yes