Raphael
Beyond Valves



SMART SOLUTIONS

HERMES

GSM Remote Terminal Unit

Smart Solutions Product Catalog

HERMES M100 Series

GSM Remote Terminal Unit





YEARS WARRANTY 5

DESCRIPTION

Designed for the remote monitoring of industrial installations, the Hermes M100 series stands out for its flexibility and ease of deployment. Along with the free Zeus monitoring platform, it offers a comprehensive solution for managing unattended installations.

The series includes the Hermes M103 master module, which features 4G cellular, Ethernet, and Wi-Fi communication, and a range of expansion modules that allow the system to support up to 128 additional inputs/outputs.

Main Funcionalities

Alarm Transmission

- Advanced alarm detection logic by threshold, out-of-range time, logical combinations, and more.
- Alarm transmission via SMS, voice call, or PUSH notification to the ZeusMobile app.

Data Logger

- Memory for more than 150,000 records of input/output values/events.
- Transmission to the Zeus platform via 4G mobile communication or Ethernet/Wi-Fi.

Automation

- Powerful and intuitive programming language for automation with logic modules for pump control, inter-station communication sunrise/sunset algorithm, and more.



ZEUS 6 PLATFORM

ZEUS 6 allows to monitor the installation via the ZeusWeb portal and the ZeusMobile application for iOS and Android.

FEATURES

- Integrated 4G and Ethernet/Wi-Fi communication.
- Expandable up to 128 inputs/outputs.
- MODBUS RTU and MODBUS TCP interface.
- Memory for 150,000 data logging points.
- Logic module for pump control.
- 1-year warranty.

Applications

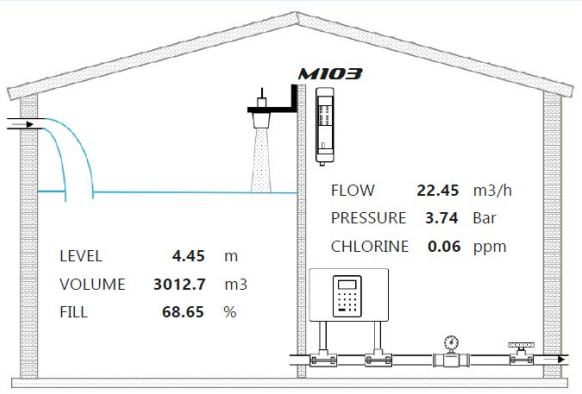
- Water network tanks and pumping stations.
- Unattended industrial installations.
- Industrial and commercial refrigeration installations.
- Lighting and energy efficiency.
- Agricultural and livestock operations

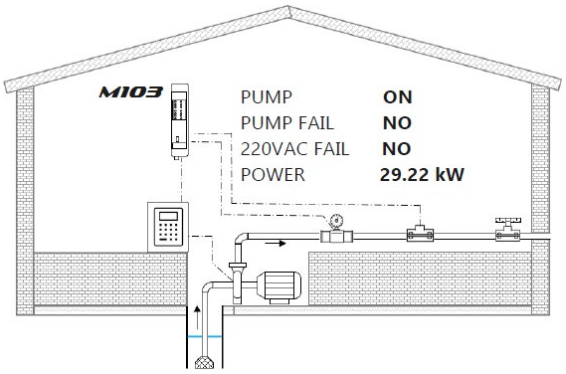
USE CASES

DRINKING WATER STORAGE

The system enables remote monitoring and alarm notification for multiple parameters, including level, fill percentage, flow rate, pressure, chlorine, pH, and more.

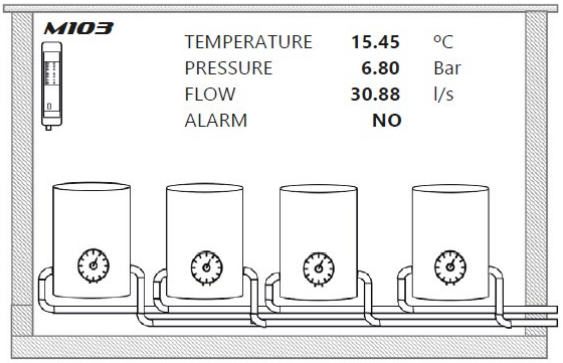
The Publish/Subscribe functionality facilitates data exchange between different HERMES and NEMOS stations via the Zeus platform. This way, the station controlling the pumping has access to the tank level data. With this information, the pumps can be automatically activated to maintain the tanks within the established levels.





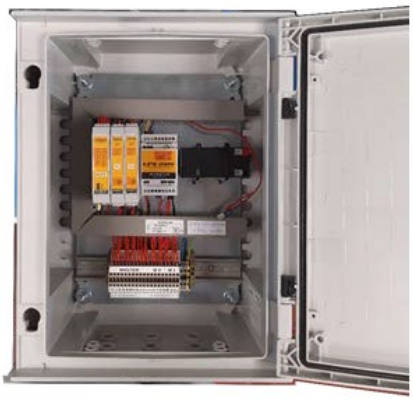
PUMPING STATION

Remote manual and automatic operation based on tank levels and hourly rates.the established levels.



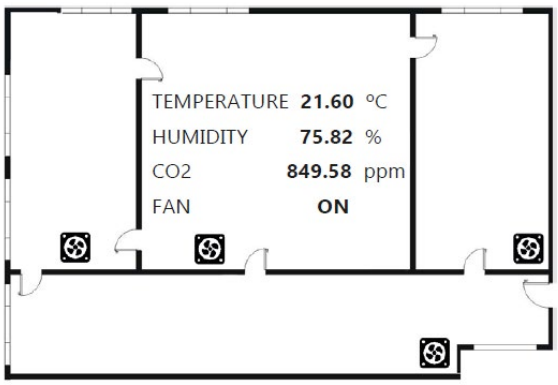
REFRIGERATION, HVAC, AND HEAT PRODUCTION INSTALLATIONS

Monitoring and automatic temperature control to ensure service continuity and optimize energy efficiency.



UNINTERRUPTED SUPERVISION IN UNATTENDED CONTROL CENTERS

Real-time visualization and logging of alarms and sensors in remote installations.



INDOOR ENVIRONMENT QUALITY

Sensor logging and manual/automatic control of heaters, air extractors, lighting groups, etc., in offices and livestock operations.

MASTER MODULE

HERMES M103

+8 DIGITAL INPUTS, 4 ANALOG INPUTS, 2 DIGITAL OUTPUTS, MODBUS RTU/TCP, 1-Wire sensors



GENERAL SPECIFICATIONS

Power Supply: ..... 9 to 30 VDC
Nominal power: ..... 1,8 W
Maximum power: ..... 7,2 W
Radio Modem: ..... 2G/3G/4G (standard)
2G/NB-IoT/LTE-M (optional)
Data Logging Capacity: ..... > 150.000 records
Operating Temperature: ..... -10 to +75 °C
Configuration & Diagnostics: ..... USB C port
Dimensions (without antenna): ..... 115 x 25 x 115 mm
Mounting: ..... DIN rail 35 mm

DIGITAL INPUTS

Quantity: 8
Interface: ..... IEC 61131-2 Type 1/3
Sampling Frequency: ..... 200 Hz

DIGITAL OUTPUTS

Quantity: 2
Type: ..... Open collector
Maximum Voltage/Current: ..... 30 VDC / 500 mA

ANALOG INPUTS

Quantity: 4
Type: ..... 4 - 20 mA
Accuracy: ..... 0,25 %
Resolution: ..... 12 bits
Impedance: 125

ETHERNET INTERFACE

Type: 10/100Mbps
Protocols: ..... TCP/IP and MODBUS-TCP
Security: ..... TLS 1.2/1.3

WIFI RADIO

Type: ..... 802.11b/g/n (2.4 GHz)

FIELD BUS 1

Protocol: ..... MODBUS RTU / RS-485
Maximum Number of Signals: 128

FIELD BUS 2

Protocol: ..... MODBUS-TCP
Maximum Number of Signals: 128

Communication Options

Model	Supported Technologies	Region	Ethernet/ Wifi	Comments
M103.E4G.E	2G/3G/4G	Europe, Middle East, and Asia	Yes	* Maximum compatibility with mobile networks in Europe, Middle East, and Asia
M103.L4G.E	2G/3G/4G	Latin America and Australia	Yes	* Maximum compatibility with mobile networks in Latin America and Australia
M103.E4G.X	2G/3G/4G	Europe, Middle East, and Asia	No	* Maximum compatibility with mobile networks in Europe, Middle East, and Asia
M103.L4G.X	2G/3G/4G	Latin America and Australia	No	* Maximum compatibility with mobile networks in Latin America and Australia.
M103.W2G-NB.E (Made to order)	2G/NB-IoT/LET-M	Worldwide	Yes	* Low cost and excellent coverage. * Network deployment not completed. * SMS support not guaranteed. * Voice call alerts not supported
M103.W2G-NB.X (Made to order)	2G/NB-IoT/LET-M	Worldwide	No	* Low cost and excellent coverage. * Network deployment not completed. * SMS support not guaranteed. * Voice call alerts not supported

EXPANSION MODULES

HERMES M110
+8 DIGITAL INPUTS



GENERAL SPECIFICATIONS
Operating Temperature: ..... -10 to +75 °C
Dimensions: ..... 110 x 18 x 115 mm

DIGITAL INPUTS
Quantity: 8
Activation Range: .....5 to 30 VDC
Sampling Frequency: ..... 256 Hz
Input Impedance: ..... 2200 Ω

HERMES M120
+4 ANALOG INPUTS



GENERAL SPECIFICATIONS
Operating Temperature: ..... -10 to +75 °C
Dimensions: ..... 110 x 18 x 115 mm

DIGITAL INPUTS
Quantity: 4
Type: ..... 4 - 20 mA / 0 - 10 V
Accuracy: ..... 0.1 %
Resolution: ..... 16 bits
Input Impedance:. 4/20mA: 125 / 0-10V: 1 MΩ

HERMES M121
+4 PT100 INPUTS



GENERAL SPECIFICATIONS
Operating Temperature: ..... -10 to +75 °C
Dimensions: ..... 110 x 18 x 115 mm

DIGITAL INPUTS
Quantity: 4
Type: ..... PT100 DIN 43760 / 3 wire
Excitation Current: ..... < 1 mA average
Range: ..... -200 to 800 °C
Accuracy: ..... 0.1 °C
Resolution: ..... 24 bits
50 Hz Rejection: ..... -81 dB

HERMES M130
+6 RELAY OUTPUTS



GENERAL SPECIFICATIONS
Operating Temperature: ..... -10 to +75 °C
Dimensions: ..... 110 x 18 x 115 mm

DIGITAL INPUTS
Quantity: 6
Type: ..... Relay. Potential-free contact
Maximum Voltage/Current: ..... 250 VAC / 3 A

HERMES M140
+4 ANALOG OUTPUTS



GENERAL SPECIFICATIONS
Operating Temperature: ..... -10 to +75 °C
Dimensions: ..... 110 x 18 x 115 mm

DIGITAL INPUTS
Quantity: 4
Type: ..... 4 - 20 mA
Accuracy: ..... 0.2 %
Resolution: ..... 12 bits
Galvanic Isolation: ..... Yes

ACCESSORIES



UPS-2415
24VDC/15W Uninterruptible power supply.



PROBE F100-U
Intelligent capacitive sensor for reliable overflow detection.



VEGAPULS C11 / C21 / C22
Radar sensor for level measurement of liquids and bulk solids.



STDV01 / STDV02
Sensors for measuring ambient temperature and humidity.



PROBE Y201 / Y203
Ultrasonic sensor for non-contact liquid level measurement.



PROBE HLM-25S
Submersible hydrostatic sensor for measuring the level of non-aggressive liquids in non-pressurized tanks, wells, tanks, etc.



ANTENNAS AND EXTENDERS
Antennas with different gains and extension cables.

MICRO PLC II

MicroPLC-II, the new automation programming language from Raphael, stands out for its unparalleled ease of use and efficiency in the sector. Its simplified syntax and set of logical modules that solve common problems are key to this usability. The language's mathematical-logical engine supports a complete set of arithmetic, trigonometric, and logical operators, providing significant computational power.

```
#INIT
REM INPUT / OUTPUT DEFINITION
AI0 : TANK_LEVEL
DO0 : PUMP_ON
#END_INIT

REM PUMP AUTOMATION
IF TANK_LEVEL >= 3.5 ; PUMP_ON = 0
IF TANK_LEVEL <= 1.5 ; PUMP_ON = 1
```

INITIALIZATION CODE
.Executed once.
.Initialize and dene objects.

REGULAR CODE
.Executed cyclically.
.Implements automation logic.

FEATURES

Pump Control Module
Logical module for managing up to 6 pumps, handling pump alternation, runtime counter, start counters, maximum continuous operation time, and pump inhibit inputs.

Inter-Station Communication Module
Redundant system for variable exchange between stations. If the main GPRS/TCP-IP channel fails, a secondary channel via SMS is established.

Sunrise / Sunset calculator
Calculates sunrise and sunset times based on configured geographic coordinates.

Timers
Native support for five types of timers: on, off, accumulator, pulse, and weekly.

Application Library

Raphael offers a comprehensive set of libraries for the most common cases. Some examples include:

DRINKING WATER PUMPING



Communication between pump and tank via GPRS/TCP-IP with SMS redundancy. Manages pump alternation, start/stop thresholds based on hourly rates, and control of failure signals and pump inhibition inputs.

WASTEWATER PUMPING



Manages pump alternation, start/stop thresholds according to hourly rates, and control of failure signals, pump inhibition inputs, and low/high-level float switches

PUBLIC LIGHTING



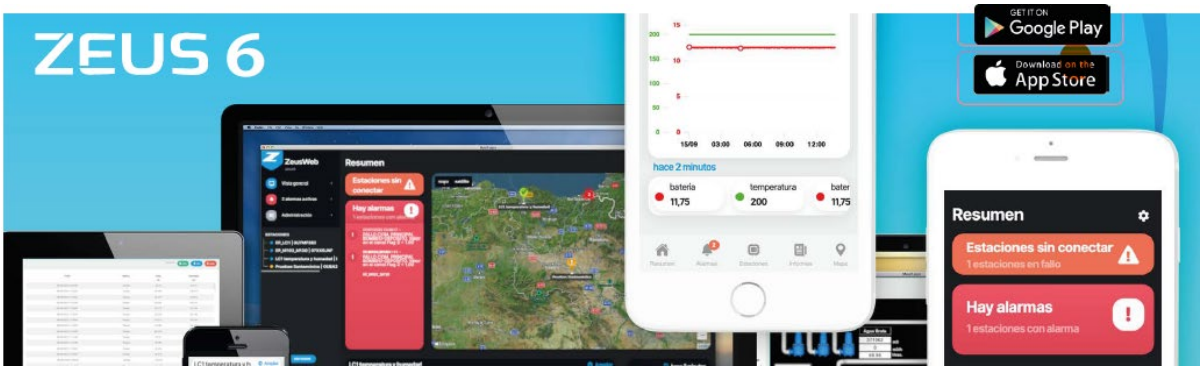
Switches on luminaires based on the solar time calculator with configurable offsets for working days and weekends.

ZEUS 6

The ease of use and implementation of the latest web technologies are the standout features of ZEUS, the online SCADA system that Raphael offers to its customers at no cost. With an intuitive and secure interface on par with online banking services, ZEUS allows users to manage their installations via a simple web browser from anywhere.

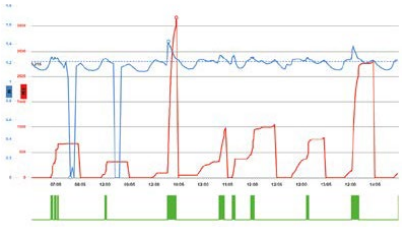
For those away from the office, the ZEUSmobile app, available for iOS and Android, provides optimized access for phones and tablets, as well as receiving alarms through PUSH technology, replacing traditional SMS in most cases.

ZEUS not only enables visualization but also allows for remote station reconfiguration, sending commands, and managing users and stations, all without the need for on-site visits. Additionally, its integration with other platforms is ensured through common standards like OPC UA and REST API.

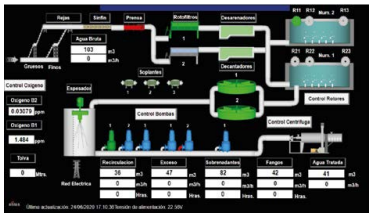


Tools & Features

Display of historical data in graphic format



Real-time supervision through synoptics



Geolocated map of stations



- Comprehensive report generation tool.
- Maximum security thanks to the most advanced web standards: HTTPs / SSL.
- Advance user and privilege management.
- Easy integration of data into other platforms through OPC UA and REST API
- Reception, management, and forwarding of alarms.
- Remote configuration of Hermes and Nemos devices.
- Availability of the Zeus Synoptic Builder tool for the creation of synoptics

Providing advanced solutions to customers around the world

North America | South America | Europe | Africa | Asia | Australia

RAPHAEL, founded in 1949, is the first Israeli manufacturer of water control valves.

RAPHAEL's research department constantly strives to introduce new and innovative products and solutions for water control systems including water works, fire protection and irrigation systems.



Raphael

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