
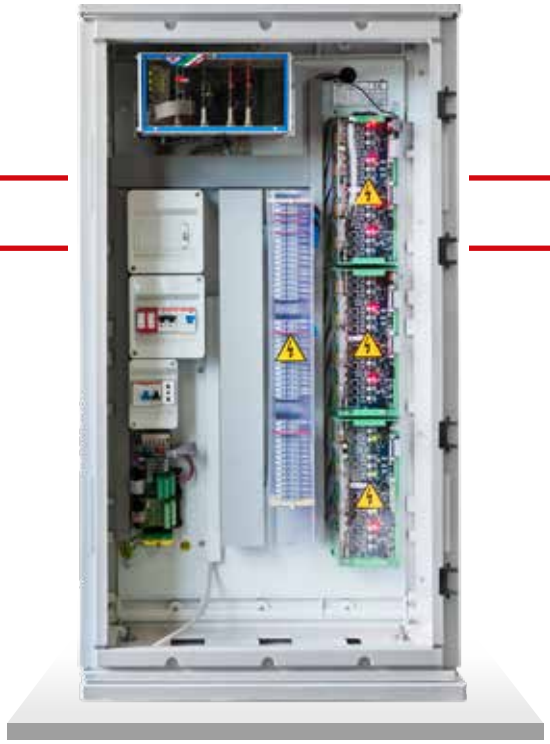

# ORIONE

## Intelligent Traffic controller

ORIONE is a traffic controller designed with latest technologies for medium-small size signalized intersections and predisposed for future complex software updates thanks to its structure using reliable standard industrial modules. Configuration and monitoring is made easy thanks to the integrated web-interface. A series of protocols has been developed to be connected to the following UTC system:

• OMNIA from SWARCO MIZAR • SIGMA+ • PASPA
• STCWEB from SCAE • NTCIP1202

Orione can also communicate via Modbus or RESTful Web API (an easy and secure point of access to traffic controller configurations and state).
All the cards are connected via dedicated I2C bus allowing creating a connection network between distributed intelligence type processors.

### GENERAL FEATURES

The controller is developed on Linux operating system, providing the following main operating features:

- Control of stand-alone junction with fixed or changing times through micro regulation loops.
- Control of junction in a dynamic way by calculating the cycle times and single phase in function of the traffic volume detected within the area of macroregulation.
- Control of a junction linked to a central remote control system.
- Perform functions of master / slave within synchronized management with other systems in order to obtain the green wave through wired or wireless GPS connection.
- Automatic adjustment / synchronization by GPS of its system clock and of time base.
- Collect, monitor and send traffic information to competent offices.
- Automatically send alarm messages and/or warnings via mobile/cellular network.
- Be programmed in guided mode typically by semaphoric parameters or in free mode as PLC.
- Collection and storage of traffic data by volume, classification.
- Timestamp of all events and functional alarms.

Orione is therefore a controller that can manage any traffic situation according to the selected functional mode: Stand-alone, coordinated, dynamic centralized or remote.
In addition, by simply replacing the power supply board the controller can drive a system operating at 42Vac with the utmost electrical safety.

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**MAX CAPACITY**

- 12 signal groups
- 8 loops
- 64 digital inputs
- 20 relays
- 80 digital outputs
- 32 semaphoric plans

## OUTPUT SIGNALS
Orione output groups are realized using the same characteristics of I/O64 boards so to provide functional and safety guarantees in a format suitable for standard DIN rail supports.
The main characteristics of the output groups are:
- Possibility to drive the traffic lights in dimmer mode by light adjustment
- Continuous control and monitoring of voltage and current of all traffic signal lights and of a single light.
- Management (as option) of double red control for providing one controlled red output and one uncontrolled red output.

## DIAGNOSTICS
Orione is equipped with an in-built diagnostic software that can facilitate the failure identification and troubleshooting by providing important information, such as:
- Type of failure
- Board and relevant defective output
- Faulty loop and / or detector
- Faulty input

Diagnostics also allows to access the different internal memory archives for examining in details the equipment condition during failures. A log file is available within diagnostic information.

## INPUT COMMANDS
The controller is equipped with a control panel that can be accessed by a service door for selecting the following functions: AUTO, MANUAL, FLASH, ALL RED.

## SAFETY
Orione is realized with redundant circuits for traffic light signal control of:
- Congruity of logic commands and incompatibility matrix with eventual corrective action.
- Double sensor for control of green signals.
- Separated bus between control and command signals.
- Cross-check of communication between processors.
- Monitoring of congruence between diagram (logical state) and ON / OFF status of the lights.
- Timeout checking of traffic-light cycle timing.

## SOFTWARE CONFIGURATION
Orione can be on site or remotely programmed via a friendly GUI (Graphic User Interface) either by a resident keyboard, iOS/ Android App or via PC, where a proprietary software, running under WINDOWS, is available for programming support.
The access to the controller memory is managed by an integrated WEB server that allows the use of standard Internet browser. USB memory key facility can be used for memory upload and download operation. The configuration can be done or downloaded during the normal operation of the controller. Controller configuration can be done by a simple parameter insertion to cover standard functions or by writing an user application software to carry out special functions on customer demand. Configuration data and firmware are resident on EEPROM FLASH memories.
The configuration parameters allow to define:
- Type and sequence of signal groups.
- Sequence of the light.
- Type and sequence of the stages.

## USER INTERFACE
The controller is basically equipped with a Police Box by which can be selected the following controller functions:
• Automatic • Centralized • Manual • Blinking • All Red
A Control Panel, composed by a customized keyboard and a 3.5" graphic display managed by an interactive software (available in different languages) is available as option for further configuration and diagnostic purposes.


CONTROL PANEL

## CPU
Mono eurocard size equipped with:
- Industrial Processor CORTEX A8.
- 512 Mb RAM.
- 512 Mb EEPROM FLASH.
- 2 Industrial Processor 32 bit ARM7.
- 1 ETHERNET port.
- 1 USB OTG port.
- 3 RS232/RS485 port.
- 1 USB host.
- 1 Embedded GPS.

## OUTPUT CARD
Realized in 265x107mm format; connections obtained by polarized quick plug-in connections. Each card provides 4 signal groups (R + Y+ G) or 12 protected outputs with 4 fast-blow fuses 4A on-board.

## DETECTOR CARD
Realized in Eurocard format it manages 4 autonomous self-tuning detector channels. The connection to the central CPU is realized via dedicated I2C bus for a complete configurability and a compact integration in command minirack.

## DIGITAL INPUTS AND OUTPUTS
Orione provides the hardware interface using a card with 12 inputs and 4 outputs all optically isolated from the logic of the CPU.

## OPTIONAL CARDS
Orione can be implemented with the following cards and modules:
- AUX64 card with GSM / GPRS, BLUETOOTH, GPS.
- DET416 card (detector 4 channels).
- PIG16I card (for additional 16 inputs).
- PIG10U card (for 10 relay outputs).
- 32Digital-OUT card (for additional 32 digital outputs).
- Interface module for operating status and system restart by GPRS.

## CONSTRUCTION FEATURES
Orione is realized with a cabinet in electrically insulating material:
- Fiber glass reinforced polyester or painted steel
- Size 1150x650x350mm.
- IP55 protection degree.
- Color RAL7032.

Basically equipped with:
- 1xPower supply board.
- 1xCPU board.
- 1xPIG 12in - 4 out card.
- 1x4 signal groups card (12 outputs).

## ELECTRICAL CHARACTERISTICS

| | |
|---|---|
| Main supply: | 230Vac +15% -20 50Hz;<br>42Vac, 110Vac 50Hz (on request) |
| Consumption (load excluded): | 25W max |
| Maximum connected load: | 500W resistive for output |
| Hold-up time: | 150ms max |
| Operating temperature: | from -40°C to +60°C |

## COMPLIANT NORMS
Orione conforms to the following standards:
EN 50556 Road Traffic Signal Systems.
EN 50293 EMC.
EN 12675 Functional Safety.
Certificates and tests reports available on request.

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