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VEGA is a new generation traffic controller designed for large or multiple junctions.

VEGA is able to manage 2 junctions with separated security control or up to 4 different junctions inserting a second CPU card.

A series of plug-in modules connected via a double bus system, allows to realize a processors network with distributed intelligence, high reliability and security.

The controller firmware, based on Linux operating system, makes it a peripheral unit suitable for any kind of applications, assuring also high performance levels.

The controller is able to act as a peripheral of an UTC system or as a stand alone unit, capable of executing an accurate monitoring of its plant, managing also:

- Statistical and log file archive generation (traffic data, emergency and activities).
- Automatic remote message dispatch, via GSM or dial-up telephone line.
- Access for remote configuration, diagnostics and file transfer operation managed by an integrated Web Server.

VEGA is equipped with several COM ports (RS232, RS485, USB, ETHERNET) and with the following embedded com devices:

- GPRS/GSM module for remote control.
- Bluetooth for local wireless communication.
- GPS for real time clock automatic setup.



# VEGA

## TRAFFIC CONTROLLER



### GENERAL CHARACTERISTICS

VEGA has been designed:

- To act as a traffic control unit able to manage the crossing with autonomous decisions affected by traffic flow variations.
- To be an information collector and therefore to control, monitor and transmit the information to the devoted Corporate Body.
- To be used as a PLC in many and different applications.

For such a purpose, the controller realizes the following main functions:

- Management of a single plant, or of a network of plants, by means of a programmable control algorithm that generates in real time the green times according to the traffic status.
- Monitoring of all the connected signal-head lamps in order to verify the correct functionality so to signal the failure of a single lamp.
- Signal Head Dimming facilities.
- Traffic data management, by volume or by class of vehicles, through traditional loop sensors or non invasive sensors such as infrared or microwaves.
- Archive of: Traffic data-Alarms-Activities.
- Automatic alarm messages dispatch to remote sites by means of GSM/GPRS cellular network.
- Automatic adjustment of the CPU real time clock through a GPS interface, assuring the necessary high precision to realize wireless Green Wave systems.

### CONTROLLER CAPABILITIES

VEGA can manage a maximum of:

- 64 Phases (192 power outputs).
- 64 Loop detectors.
- 96 Digital inputs.
- 20 Relay outputs.
- 128 Digital outputs.
- 32 Plans, selectable by remote or internal weekly and annual calendar.

### DIAGNOSTICS

VEGA is equipped with a resident diagnostics on-line and off-line software to facilitate trouble-shooting in case of failure, identifying:

- The kind of failure.
- The faulty card.
- The involved outputs.
- Loop failure.
- Input failure.

The diagnostic allows also to access the inside registers for examining in details the unit working condition. User configurable log file as well as automatic message dispatch will help trouble-shooting.



## SECURITY

**VEGA security functions are based on a redundant control circuit system structured on diversified hardware/software modules.**

The system is managed by several processors and hardware circuitry as follows:

- Analogue sensors to measure the voltage applied to the traffic light driven by each controller output (redundant sensor on green lamp).
- Analogue sensors to measure the current flowing into the traffic light driven by each controller outputs.
- Independent hardware and software conflict monitoring security function for green and red output performed by a specific processor.
- Each I/O card processors performing:
  - Light diagram congruence control.
  - Current check.
  - Automatic lamp monitoring that notifies lamp failure of any colour and any signal group.
- Hardware and software watch dog.
- CPU processors performing:
  - Programmed data check.
  - Hardware configuration check.
  - Redundant congruence control of output status.
  - Filter action on logic command to respect the Intergreen matrix.
  - Time out control.
  - Main supply voltage measuring and control.
  - Site ID protection.



The occurring of the above said security control will put the controller into an emergency condition where all amber outputs can be flashing.



## SOFTWARE CONFIGURATION

**VEGA can be on site or remotely programmed via a friendly GUI (Graphic User Interface) either by a resident keyboard, 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.



## APPLICATIONS

**VEGA can be used in many applications:**

- Stand alone unit capable to manage independently up to 4 junctions.
- Master of a Controller network.
- Variable Green Wave cycle, connecting an indefinite number of controllers via a serial line (star system).
- Wireless Green Wave, with synchronisation granted by GPS communication set up.
- Dynamic plan generation for a local intersection network.
- Peripheral unit of an UTC system using TCPIP protocol.

A series of protocols has been developed to be connected to the following UTC system:

- OMNIA from SWARCO MIZAR
- SIGMA+ from ELSAG DATAMAT
- STCWEB from SCAE.





## MODULARITY

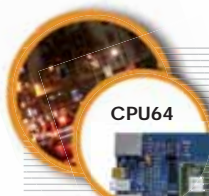
VEGA is fully modular and it can be equipped with the following basic and optional cards:

### MMI INTERFACE

The MMI interface is based on a customized keyboard and on a 3.5" graphic display managed by an interactive software that can perform:

- Controller Command
- Controller Configuration
- Controller Diagnostics

The MMI is available in different languages.

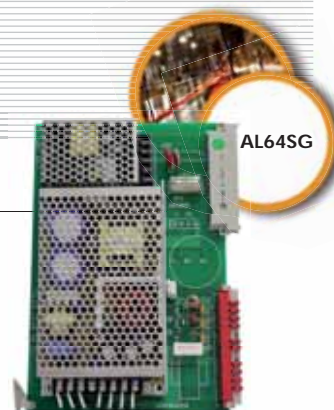


CPU64

### CPU CARD

Mono eurocard size equipped with:

- 1 Industrial Processor 32 bit ARM9.
- 64 Mb RAM.
- 128 Mb EEPROM FLASH.
- 2 Industrial Processor 32 bit ARM7.
- 1 ETHERNET port.
- 2 USB port.
- 3 RS232/RS485 port.



AL64SG

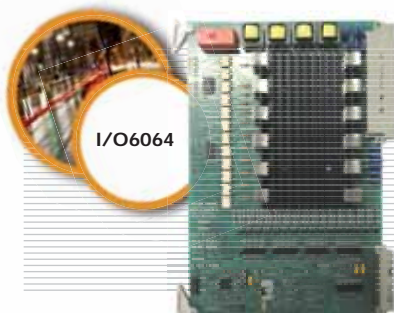
### POWER SUPPLY CARD

Double eurocard size furnishing: • 5Vdc • +12Vdc • -12Vdc • 24Vdc.

Fully protected against:

- Short circuit
- Overload
- Over voltage
- Over temperature.

With automatic start-up after the failure removal.



I/O6064

### OUTPUT CARD

Double eurocard size performing:

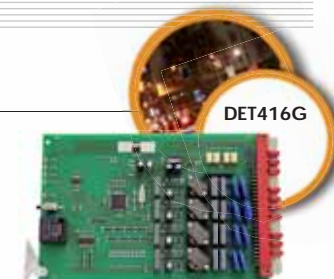
- 4 Signal groups (12 single outputs) capable of driving either Led or Bulb.
- Signal groups status display.
- 4 Digital inputs interface circuits.

### DETECTOR

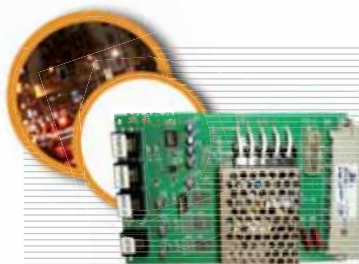
Mono eurocard size: • Self-tuning 4 channels loop detector.

Fully software configurable via serial port or controller parameters.

Connected to the CPU with a separate Bus.



DET416G



### OPTIONAL CARDS

The controller can be equipped with a series of optional cards:

- PIG16I: 16 digital input extension.
- PIG10U: 10 Relay.
- OUT32D: 32 Static digital output.
- AUX64: where are integrated – GPS Interface – GPRS/GSM module – Bluetooth module.
- PS240: Interface card for Wireless VSN240 vehicle detecting system.



## STRUCTURAL CHARACTERISTICS

VEGA is available in two standard cabinets.

### STANDARD CABINET (up to 28 signal groups):

- Material: Polyester with fibreglass
- Dimensions: 1150x650x350 mm
- Protection degree: IP55
- Colour: RAL 7032



### STANDARD CABINET (up to 64 signal groups):

- Material: Polyester with fibreglass
- Dimensions: 1115x1245x320 mm (double door)
- Protection degree: IP55
- Colour: RAL 7032



## RACK

VEGA can be realized with one standard 19" rack or with multiple 19" racks.

Each rack is complete of a pcb back panel for the logic signal connection between cards. The connections between the racks are done via connectors and flat cables.

### MAIN RACK



#### SLOT

- N° 7 • I/O-6064
- N° 1 • AL64 SG
- N° 4 • DET416G/OUT32N
- N° 1 • CPU64
- N° 1 • AUX64
- N° 1 • CPU64

#### CARD TYPE

- Output cards
- Power supply card
- Detector/Digital Out cards
- Main CPU card
- Communication card
- Secondary CPU card



### SECONDARY RACK

#### SLOT

- N° 9 • I/O-6064
- N° 8 • DET416G/OUT32D

#### CARD TYPE

- Output cards
- Detector/Digital Out cards



### EXTENSION RACK

#### SLOT

- N° 12 • DET416G/OUT32D

#### CARD TYPE

- Detector/Digital Out cards



## TECHNICAL CHARACTERISTICS

- Main Supply: 230V/110 Vac -20% +15% (42 Vac available on request)
- Consumption (lamps excluded): 80 VA
- Maximum controller load: 6000 W
- Output lamp switching: 800 W
- Output fuse: 4A type EF
- Hold-up time: 100 ms
- Operating temperature: -25 +70°C



## CONFORMITY STANDARDS

VEGA complies with the following standards: • CENELEC HD638 S1 • CEN EN 12675 • CEI EN 214\_9

### SEMAFORI • CONTROLLI • AUTOMAZIONE • ELETTRONICA

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