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Quality Management System
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The STC 4012 Traffic Controller is a competitive apparatus dedicated to medium size semaphoric plant. The technological characteristics, based on a distributed intelligence realized via a microprocessors network, joint to a customized firmware that allows it to be a peripheral unit suitable for any kind of applications, assures high performances.

As a matter of fact it is able to be, either a peripheral of an UTC system, or a Stand Alone Unit capable of executing an accurate monitoring of its plant with management of:

- Statistical and Log file archive generation (Traffic data, Emergency and Activities).
- Automatic remote message dispatch, via GSM or Dial-up telephone line.
- Remote configuration, control and diagnostics access via dial-up telephone line.

The standard hardware configuration with three serial RS232 communication ports and one RS422/485 port, makes it easy to interface the STC4012 with various types of communication network and also with other kind of apparatus.

GENERAL CHARACTERISTICS

The traffic controller STC4012 has been designed to act as a traffic control unit able to manage the crossing with autonomous decisions effected by traffic flow variations.

To be an information collector and to allow anyway the control, the monitoring and transmission of the information to the devoted corporate body.

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 burning of a single lamp.
- Traffic data management, by volume or by class of vehicles, through traditional loop sensors or non invasive sensors such as infrared or microwaves types.
- Archive of:
 - Traffic data
 - Alarms
 - Activities
- Automatic alarm messages dispatch to remote sites by means of GSM cellular telephone or by dial up modem and telephone line.
- Automatic adjustment of the CPU real time clock through a GPS interface, guaranteeing the necessary high precision to realize wireless Green Wave systems.

CONTROLLER CAPABILITIES

The STC4012 controller is structured to manage:

- 12 Phases (36 power outputs)
- 44 Digital Inputs for Detector and other
- 8 Plans, selectable by remote or by internal weekly and annual calendar.

CPU FEATURES

16 bit Industrial Microprocessor

- Memory:
- 1 Mb static RAM with battery back-up
 - 1 Mb EEPROM FLASH
 - 1 Mb static RAM

Communication port:

- n°1 Serial port RS485
- n°3 Serial port RS232

STC4012

TRAFFIC CONTROLLER



Control Panel Pro40



SECURITY

Taking into consideration the particular importance of safety conditions in a semaphoric plant, the controller has been equipped with a series of control circuits, structured in a redundant way and on diversified hardware, formed by microprocessors independent from the managing one, and voltage and current sensors that monitor all the controller outputs. The unit is equipped with the following standard safety controls:

- Green lights conflict monitoring according to a programmable compatibility matrix.
- Inter-Green Time conflict monitoring according to a programmable matrix.
- Control of all outputs for the correct correspondence to the programmed diagram.
- Current checks on outputs for detecting the burning of red lamps.
- Watch-dog control on the microprocessors function.
- Communication control between the microprocessors.

The occurring of the above said controls sets the plant in emergency condition (Flashing mode), sectioning the power supply between green and red lamps. Beyond the emergency controls the equipment also effects the following actions:

- Filter action according to a programmed compatibility matrix, so to prevent that the CPU could transfer incompatible orders to the I/O modules.
- Amperometric check with auto detection of the current load on all outputs in order to signal the burning of a single lamp.

DIAGNOSTICS

A resident diagnostics on-line and off-line software facilitate the trouble shooting in case of failure into the controller or in the plant, such as for instance:

- Memories
- Communication ports
- Outputs
- Inputs
- Detectors

The diagnostic allows furthermore to enter the inside registers for examining in details the apparatus working condition.

MMI INTERFACE

The controller is equipped with:

- A CONTROL PANEL by which can be selected the following controller functions:
 - Automatic
 - Centralized
 - Manual
 - Blinking
 - All Red
- AN INTERACTIVE SOFTWARE CONTROL PANEL realized by Controller Configuration Software on a PC screen by which performs the controller configuration and diagnostic. The same function can be obtained by an external hardware optional unit (PRO40) that is composed by:
 - LCD Display with 80 characters for displaying the functional state, the alarm and diagnostic messages
 - Customized Keyboard for management and programming.

The MMI interface takes particularly care of the diagnostics and programming aspects, in fact on the panel are clearly shown all messages indicating the functional status of the controller, the alarm conditions, the results of the diagnostics tests and the programming data.

CONFIGURATION SOFTWARE

The controller configuration can be realized through PC with a dedicated software running under WINDOWS, or as an option, through an external control panel (PRO40).

The Upload and Download functions of the programs could be realized without service interruptions.

All the operations related to the controller configuration are submitted to passwords for safety purposes.

Configuration data and firmware are resident on FLASH EPROM memories. The programming software allows furthermore to collect the statistic and diagnostic data file stored in the controller memories.

MODULARITY

The basic cards of the equipment are:

- CPU4012 Central Unit + Power supply
- AL 24 Auxiliary Power supply
- I/O 4012 Output Interface (12 Outputs)

EXTENSIONS

The controller can be extended up to 12 phases (36 outputs) by simply adding I/O 4012 modules.

The controller outputs upgrade can be easily done also in field because the I/O 4012 modules are complete also with signal head terminal points. To install a new card is enough to mount it on the rear panel of the cabinet and connect it to the existing card with a flat cable.

OPTIONAL CARDS

The controller can be equipped with a series of optional modules, they are:

- PIG 16 I 16 digital input extension
- PRO 40 Programming and diagnostic Control Panel
- A1102B Two Channel Detector unit
- GPS 40 GPS Interface
- TEL 40 Modem GSM

STRUCTURAL CHARACTERISTICS

Cabinet

Material: Fibreglass reinforced Polyester

Dimensions: H = 1090 mm L = 590 mm W = 320 mm

Protection degree: IP55

Standard Equipment and Wiring:

4 Phases (12 Outputs)

8 Digital inputs

TECHNICAL CHARACTERISTICS

Main Supply: 230V -20% +15%

Consumption (lamps excluded): 50 VA

Maximum controller charge: 5000 W

Max. charge for each output: 800 W

Output fuse: 4A type EF

Hold-up time: = 100 ms

Operating temperature : -20 +70°C

