

CITY OF SUFFOLK
SPECIFICATIONS FOR EIGHT PHASE
TRAFFIC SIGNAL CONTROLLER -

**Sole Source Specification for IQ ATC Controller
by Quixote Traffic Corporation**

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General Specifications

1.0 SCOPE

This Specification outlines the minimum acceptable requirements for actuated traffic signal Controller Assemblies. The Controller Assembly shall meet, as a minimum, all applicable sections of the NEMA Standards Publications No.TS 2-2003. Where differences occur, this specification shall govern.

2.0 ENVIRONMENTAL AND OPERATING STANDARDS

The Controller Assembly shall meet the minimum standard requirements as set forth in Section 2 of the NEMA Standards Publication No.TS 2-2003.

3.0 CONTROLLER UNITS

Controller Units shall be available to comply with NEMA TS 2 type 2. Any Bit or I/O terminal that is designated as reserved or undefined shall only be redefined by NEMA.

4.0 TESTING

Testing shall be as follows: When purchased with a controller cabinet, controller and cabinet shall be tested as a unit connected to a Quixote Traffic IQ Central System to ensure compatibility. When purchased separately, controllers shall be tested connected to a Quixote Traffic IQ Central System.

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1. Physical Characteristics

1.1. The controller shall at a minimum meet NEMA TS 2-2003 plus the following:

- 1.1.1. It shall utilize the QNX® Real Time Operating System with memory management for process isolation and to ensure operational integrity.
- 1.1.2. It shall use a x86 based processor with minimum 100MHz clock
- 1.1.3. Non-volatile Memory shall be 8MB Flash
- 1.1.4. 32MB RAM
- 1.1.5. 256KB SRAM
- 1.1.6. It shall include Port 1 high speed SDLC communication port per NEMA TS 2-2003 requirements
- 1.1.7. It shall include 3 built-in front panel RS232 serial ports (one jumper selectable for RS-485)
- 1.1.8 . It shall include a 2070 compatible modem slot with full modem flow

control support

- 1.1.9. Two high speed USB ports
- 1.1.10. 10Mb Ethernet port
- 1.1.11. The controller shall be available in three I/O configurations
 - 1.1.11.1. CBD configuration
 - 1.1.11.2. TS 2, Type 1 as defined by TS 2-2003
 - 1.1.11.3. TS 2, Type 2 as defined by TS 2-2003
- 1.1.12. The controller shall be shelf mounted and conform to the following dimensions:
 - 1.1.12.1. CBD configuration – 8” H x 10” W x 10” D
 - 1.1.12.2. TS 2 configuration – 8” H x 13” W x 10” D

1.2. User Interface

1.2.1. CBD Configuration

- 1.2.1.1. The display shall be 40 character by 4 line, alpha-numeric, heated LCD
- 1.2.1.2. 4 key keypad limiting front panel data entry to time/date update. These keys shall be labeled: PGUP, PGDN, ESC, and ENT
- 1.2.1.3. All menus and data screens shall be accessed in a “read only” mode via key pad and LCD

1.2.2. TS2 Configuration

- 1.2.2.1. 40 character by 16 line full matrix LCD
- 1.2.2.2. 16 key keypad allowing all data to be entered via the front panel

1.3. Controller clock

- 1.3.1. The controller shall not use a battery backup for memory storage or the real time clock. All static memory (SRAM) and the real time clock are powered by 2 super capacitors, which provide sufficient power to operate the SRAM and clock functions of the controller for up to 7 days without AC power. Programs and operation database information is stored in non-volatile flash and this data will be preserved in the flash memory indefinitely.

2. Operational Characteristics

- 2.1. The controller shall operate in two distinct modes based upon a user defined software setting. These modes are pre-timed and actuated.
- 2.2. Both operational modes shall provide for controller addressing by IP of MAC address.
- 2.3. The controller’s firmware shall be stored in non-volatile Flash RAM.
- 2.4. Both operational modes shall provide for data transfer via USB data drive
 - 2.4.1. The USB data drive shall be of sufficient capacity to store complete data bases for all intersections
 - 2.4.2. This data transfer shall be subject to the addressing scheme utilized by the controller and cabinet to ensure that the proper data is loaded to the controller
 - 2.4.3. Data that is available for transfer in this manner will include:
 - 2.4.3.1. Controller database
 - 2.4.3.2. Controller event logs
 - 2.4.3.3. Conflict monitor logs
 - 2.4.3.4. Controller firmware updates

2.4.4. Datakey is not allowed

2.5. Pre-timed Operation

2.5.1. The controller shall operate in pre-timed control operation as defined by TS 2-2003, section 3.4 with the following:

2.5.1.1. All I/O shall operate across 1 or 1 BIUs to allow for operation in a CBD cabinet

2.6. Actuated Operation

2.6.1. The controller shall operate in actuated control operation as defined by TS 2-2003, section 3.4 with the following:

2.6.1.1. The controller shall provide for a minimum of 16 phases, 16 pedestrian and 8 overlaps

3. Communications

3.1. The controller shall provide the following communications ports:

3.1.1. Port 1 – SDLC Defined by TS 2-2003. Additionally, this port shall have the capability to sample the BIU at a rate of 60 Hz

3.1.2. Port 2, 4 – RS-232 communications

3.1.3. Port 3 – jumper selectable for either RS-232 or RS-485 communications

3.1.4. Port 5 – 10/100 Base-T Ethernet

3.1.4.1 This port shall support SNMP, TCP/IP and NTCIP protocols

3.1.5. A slot shall be provided for the use of 2070 communication modules

3.2. The controller must comply with NTCIP 1201 and 1202. No proprietary objects may be used in lieu of mandatory objects.

4. General

4.1. The controller must be fully NTCIP compliant

4.2. The controller must be fully operational to interface with Quixote Traffic Corporation's "IQ Central" Traffic Management System.

4.3. The controller must be fully compatible with the City's existing Multisonic 820A, OSAM Traffic Control System and be able to fit into an existing OSAM on street control/Communications System.