

TECHNICAL SPECIFICATION TRAFFIC SIGNAL CONTROLLER

DESCRIPTION : -

Technical Specifications of Envoys Traffic Signal AREA TRAFFIC CONTROLLER– CENTRALLY CONTROLLED

MODEL : E. M. T .C. 08

INTRODUCTION : -

Envoys ATC intersection controller EMTC 08 is designed keeping in View all Safety / technical Features ensuring Smooth Flow of Traffic – This model is Modular in design, Consisting many add On features for Up gradation, which allows it to work as Intelligent Intersection controller & Centrally controlled with CCTV Surveillance, RED Light Violation etc, using extra peripherals / interface Cards. This Model has Ethernet, GSM connectivity & USB support port & Specially Ports for Digital Count down Timers Ports which can also Work in Actuated or demand dependent Mode, Other Basic Features Like Multiple day plan, Day of the week programming, Specific sates (Holiday) etc are also Available.

STANDARDS :-

Traffic Controllers have been designed to conform to Indian Standard specification IS: 7537 – 1974 and British Standard Specification No. BS: 505 – 71 wherever applicable and standard international practices.

CAPABILITY :-

The basic controller is capable of being operated in any of the following modes:-

1. Automatic Mode (Isolated Intersection controller with Multiple day Plan)
2. Vehicle Actuated (DEMAND DEPENDENT - Isolated intersection controller)
3. Blinking Mode
4. Manual Mode
5. Synchronized Mode (Corridor controller)
6. Centrally controlled (ATC - offset time Based)

TECHNICAL SPECIFICATIONS: -

- Micro Controller based circuitry – 16 / 8 -bit Atmel Microcontroller
- Non-volatile EEPROM memory for storage of signal control parameters
- Battery backed Real Time Clock Dallas RTC 12C887.
- 16x2 LCD display interface
- 16 Keys - Keyboard interface (Hand Held terminal (HHT) for on site programming)
- RS232C interface, RS 485 for count down timer, Ethernet port.

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- **USB Comm. Port for PC interfaces ONLY.**
- **Supports Auto/Manual, Step, Flash mode, Lamp Test, Reset switches**
- **Up to 16 sets of Stage Indicators to show respective phases & will glow in parallel with respective phase Green traffic Light**
- **48 programmable outputs in Terms of 16 Phases - 3 outputs for each phase**
- **16 inputs - one input sensing for each of 16 phases**
(for Vehicle / pedestrian actuated mode)
- **Synchronized master & slave facility (lead-time / GPRS / cabled as per option.)**
- **Conflict signal I/p port (Conflict Software + Hardware locking of O/P switching Ckt.)**
- **GSM modem connectivity.**

Add - On Features of GSM : -

(A) SMS feature

(a.1) On Demand Query – Reply

(a.2) Predefined Status Update – with Location code, Time & type of Update.

(Types of Update, Power ON, change in operation Mode, Power failure, Memory corrupt, RTC failure, Forced Blinking)

(B) Data Transfer Online Programming Send & retrieve – (2-way comm.) From Remote Control Room with Windows based software

SELF DIAGNOSTIC FEATURES :-

- 1) Conflicting signal
- 2) Time Based Errors (RTC)
- 3) Memory corruption / checksum error
- 4) Power supply faults.
- 5) Special Interface Lock provided to switch over to Predefined automatic Mode in case connection to Central control room is Lost due to any reason .

DESIGN :-

The basic controller is designed to provide for control of vehicular and Pedestrian traffic having control of 16 phases maximum & each phases have 3 outputs (1 red, 1 amber, 1 green) i.e 48 outputs, as per requirement. The Controller will be capable of providing any required o/p signal sequence. And 16 Input sensing channel which can be used as Pedestrian actuated or vehicle actuated or BOTH.

The controller will have 24 cycle plans (including one for night flashing). Multiple day plans , Week days programming , Holiday Programming can And can select multiple day plans including Actuated mode / Demand dependent Mode , peek hours timing , off peak hours , any scheme as and when required in the day Plan , With help of Suitable Interface it will be possible to bring the controller on demand dependent Mode & controlled centrally – during this INTERVAL Controller will work as Slave unit and will switch outputs Timing for Phases as per the commands of duration from Control Unit (Master unit) , Vehicle sensing Inputs of desired phases will be also communicated through Special Protocol to Master Unit For real time Offset Time calculations which can be connected either by Ethernet or GSM modem as desired .

Special Interface Lock Will be provided to switch over to Predefined automatic Mode in case connection to Central control room is Lost due to any reason .

It will be possible to buildup a 24 hours day plan from the combination of Cycle plans such that a particular cycle plan is in operation during any desired period of the day. It will be possible to provide max 24 cycle plans in a day.

With the help of Hand held Terminal or through pc windows based software, system can be programmed or edited at site by operator / police man even without knowledge or training of electronics or software programming.

Controller can be programmed for weekdays of the month and holidays (any special day of the year.) and multiple day plans for Routine.

Remote Control Feature :-

Data to the controller can be retrieved or send to or from Control Room - Online or off line Mode through special software provided by Envoys - communication can be done via GSM, Ethernet, PSTN Line as desired

CONTROLLER FUNCTIONS / OPERATIONS :-

- **FIXED TIME MODE** As an independent fixed time independent controller is fully flexible and can be edited or programmed at site with help of hand held terminal or Laptop / PC. It works as Independent isolated Multi Day plan controller, can be programmed for any day plan / duration or timings of Peek / Off peek – Night flashing – Can Be programmed for Multiple Day Plans, Week days , Date of the Year (Holidays)
- **MANUAL MODE:** - At any time of requirement controller can be switched to manual mode. It will be possible to bring the controller under manual control by operation of auto manual switch in police box. The operation of the switch would result in transfer control over the duration of each stage from the electronic timing unit of the controller through a push button only manual control switch. The sequence of stages preset on the electronic unit will remain undisturbed .Each time push button is pressed, the current stage will changeover to the next stage in the controller. The duration of the stage in manual control is determined by the interval between successive operations of the push button. A separate over-riding switch is also provided in the police box such that the operation of the switch puts the controller to flashing Amber mode. Explanation for manual / demand dependent Mode: -

There are further 2 modes in Manual operation

- **Sequential manual operation:** - in this mode the signal operates in the same current pattern and Green signal timings run by the manual Push button – with reference to the minimum green time pre set.

- **Right of the way DEMAND:** - This mode is operational from Hand Held terminal or Police panel (as per requirements). In this mode when the demand is requested for Right of the way for traffic on a phase which has no right of the way at the time request is made, will change the sequence and give the way and will wait for next demand is Recorded.
- **Vehicle actuated Mode (VA input sensing 16 Ports)**
There are further 2 different modes in Vehicle actuation (Demand).
 - i) **Sequential VA mode** – In this minimum and maximum time for each phase is programmed and The sequence is forwarded in the predefined sequence for Minimum time to all the phases which are programmed irrespective of any Actuation (Demand) from that phase has been requested or not and stay till maximum time pre defined .
 - ii) **Right of The way – VA (demand)** – In this mode signal remains open for the Phase from where the demand is requested for Minimum time and stay open till any demand from other phase is recorded. This works on First come first Served basis irrespective of the sequence and in case there is no Demand from any other phase current phase will remain open for indefinite time – In case there is demand from all phases like in peek Hours then the respective phases will remain open till Maximum time allotted to that phase.

“Min” is the Minimum Green time for which the signal is made green to allow the vehicle to enter into the Intersection. to clear at least five vehicles, which may be waiting between the signal Stop line and the Detection loop in the controlled lane max is the maximum green time. In case there are vehicles waiting at some other road lane, the Total Green time including the extensions is limited to this Time limit.
- **Flash Mode (Blinking Mode)** A separate over-riding switch is also provided in the police box such that the operation of the switch puts the controller to flashing Amber mode. The controller is equipped with a reliable electronic flashing unit that would flash Amber signals in the following conditions:
 1. When the day plan provides for it.
 2. When fault monitor alarm has detected a fault in the signaling system.
 3. When switched to this mode by manual control.
 4. CONFLICT MONITORING UNIT SEND COMMAND

The flashing unit will confirm with A solid state blinker will be provided for flashing Amber signal lights. The flashing rate will be within the range of 30 flashes per minute when this applied voltage varies in the range between +15% and –20% of its nominal values ±4% of its nominal frequency over an ambient temperature range of 0 to 55c.
- **Synchronized mode (master & Slave – Lead Time)** as part synchronized green wave system with neighboring intersection. (cable linking or GPRS or RTC) System can

work as green wave synchronized corridor vehicle moving in one direction at a pre defined speed will get Green signal through out the corridor.

CONFLICT MONITOR UNIT : -

Green Signal Conflict Monitor is electronic equipment, which enables the signal controller to turn on blinking mode during conflict condition for Different Green Phase.

BASIC CONTROLLER FEATURES : -

4.1. The operation of all signals will be positive without dark intervals or flickering lights. The signal light switching wiring is interlocked to prevent simultaneous display of conflicting green signals.

Cyclic Operation

A control scheme in which the stages are given in a fixed order.

Demand

A request for right of way for traffic on a phase which has no right of way when the request is made

Early Cut-off

A condition in which one or more traffic streams are permitted to move after the stoppage Of one or more of the traffic streams which during the preceding stage have been permitted to run with them.

Inter-Green Period

The period of time between the termination of the green signals for one phase and the beginning of the green signal for the next phase to receive right of way.

Maximum (or Fixed) Green Period

The time that a green signal can continue after a demand has been made by traffic on another phase.

Phase

The sequence of conditions applied to one or more streams of traffic which during the cycle, receive identical signal light indications

Signal Plan (or timing OR Program)

The sequence of stages and their duration and the mode of operation that governs the operating of a controller at a selected time. In linked systems, the plan also defines the offsets.

Stage

A condition of the signal lights which permits a particular movement of traffic.

The controller will have facility to set any stage / Phase time for duration from 1 to 999 seconds. (Can switch on / off / Blink any output)

The change from one cycle plan to the next cycle plan will occur at the end of a cycle and not halfway through a cycle. Similarly the first cycle of the new plan will start with stage one and not midway through a cycle- in fixed time / Multiple day plan Mode

In any day plan, it will be possible to repeat the same cycle setting for multiple cycle plans.

INDICATIONS & CONTROL : -

The traffic control unit will incorporate the following Controls (Only interfaces are to be supported by PCB): -

- ON / OFF Switch
- Control circuit fuse
- Control Circuit Supply Indicator
- LAMP TEST SWITCH
- Phase Stage Indicators
- LCD DISPLAY 2 LINE 16 DIGIT WITH BACK LIGHT
- HAND HELD TERMINAL / serial comm. / USB / ETHERNET (as per options)

- **AUTO / MANUAL SWITCH**
- **Police man control box**
- **Flash MODE switch.**

PROGRAM SCHEDULE :-

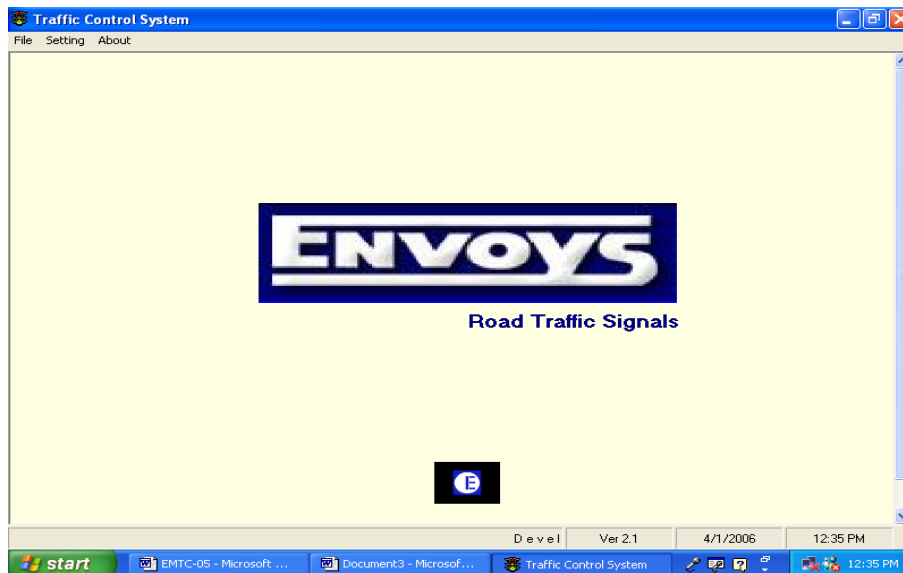
Sr. No.	Parameter	Min.	Max
a.	Minimum Green	PRG .	199 Sec
b.	Minimum Green Per Group	PRG	299 Sec.
c.	Amber Time	01 Sec.	199 Sec.
d.	Amber Time Per Group	01 Sec.	299 Sec.
e.	Pedestrian Flash Time	01 Sec.	20 Sec.
f.	Start Up All Red Time	01 sec	.
g.	Start Up Flash Time	01 Sec.	.
h.	Cycle Time	01 Sec	299 Sec.
i.	Cycle Time Per Plan	01 Sec.	299 Sec.
j.	Cycle Monitoring Time	01 Sec.	299 Sec.

SOFTWARE :-

WINDOWS BASED SOFTWARE FOR PROGRAMMING ENVOYS MAKE TRAFFIC SIGNAL CONTROLLER.

Connection to Pc can be done through:-

1. RS 232 Serial comm. Cable connect PC serial port and Traffic control unit.
2. USB port



DIARGAM 1

1) FILE

Traffic controller Program contains three menus. First of those is file menu. Which contains followings options: -

1) New

This option is used to create new program as required.

2) Open

This option is used to open existing program (already created)

3) Save

We use save option to save current created program so that we can use the same in future if required.

4) Save As

This option helps us to create a duplicate file of any saved program file with a different name.

5) Close

This option is used to close current opened program.

6) Exit

This option is used to exit from Traffic Controller Program.

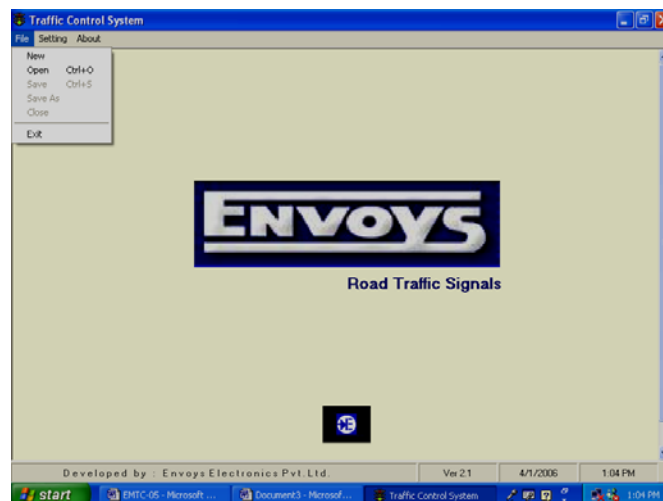
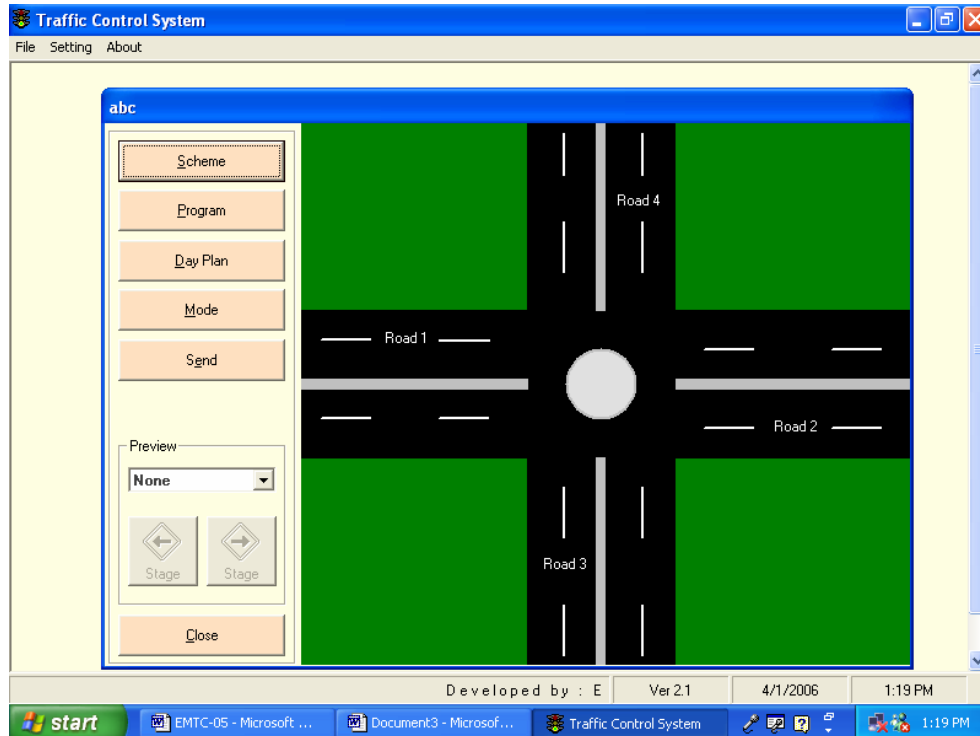


DIAGRAM 2



Any further Information or Technical clarification please contact to our technical support desk Gurgaon Office.

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