SEA NV

EXCLUSIVE DISTRIBUTOR

INSTRUCTIONS MANUAL

AS05180

MADE IN ITALY

Control unit for managing 2 traffic lights with 2 lenses 24 V or 230 V

INDEX

IMPORTANT WARNINGS

The manufacturer reserves the right to make any technical changes to the product without prior notice; It also declines any responsibility for damages to persons or things due to improper use or improper installation of AS05180 control unit.

This instructions manual is intended only for qualified technical personnel in the industry of traffic light installations. No information contained in this manual is intended to end users.
Any maintenance operations must be carried out by qualified personnel only.

The configuration of the control unit must be done when the control unit is not powered.

The control unit has been designed for the management of 2 traffic lights with 2 lights in situations where it's necessary to adjust the driveway access alternately. It can operate 4 traffic lights at a crossroad, through the parallel connection of two pairs of 2-lights traffic lights (see page 11). ***The manufacturer*** declines any kind

of
responsability if the connection is not carried out as per the instructions below.
In case of usage with transit detectors, the inputs of the sensing devices (e.g. photocells, radar, magnetic loops, etc.) will detect only the changes in the status. In case of failure of sensing devices, that will prompt always the busy state, or, in case of a stationary vehicle because broken down, the input will be ignored and the correspondent traffic light (near the sensing device) will show steady red light.
Correct installation of the traffic light system should be carried out in such a way that each of the transit sensors, connected to two separate electric outlets of the control board (entry and exit), should not detect the passage of vehicles coming from the opposite side. It is advisable to place sensing devices so that they are activated only with the transit (or stopping) of cars coming from the correspondent side (entry or exit).
It is suggested to avoid the accidental detection of vehicles coming from the opposite side, which may transition the detector.
Improper installation of traffic lights which do not conform to the specific features of the control unit would cause the voidance of the manufacturer's warranty and liability for any damage.

PRODUCT INTRODUCTION

The DC2SEM2L universal electronic control unit has been devised for the management of 2 traffic lights with 2 lenses, in situations where access driveways are narrow and require alternate transit (garage, parking, residence, etc.).

The control unit can work with two operating logics, depending on the installation:

- ***Installation without vehicle detection devices***

  The alternating times of red/green-green/red and red/red traffic lights are set by the installer and are fixed, cyclic, regardless of the volume of inbound or outbound traffic and the transit order. In this case, the working mode is called "~~cyclic~~".

- ***Operation with vehicle detection devices***

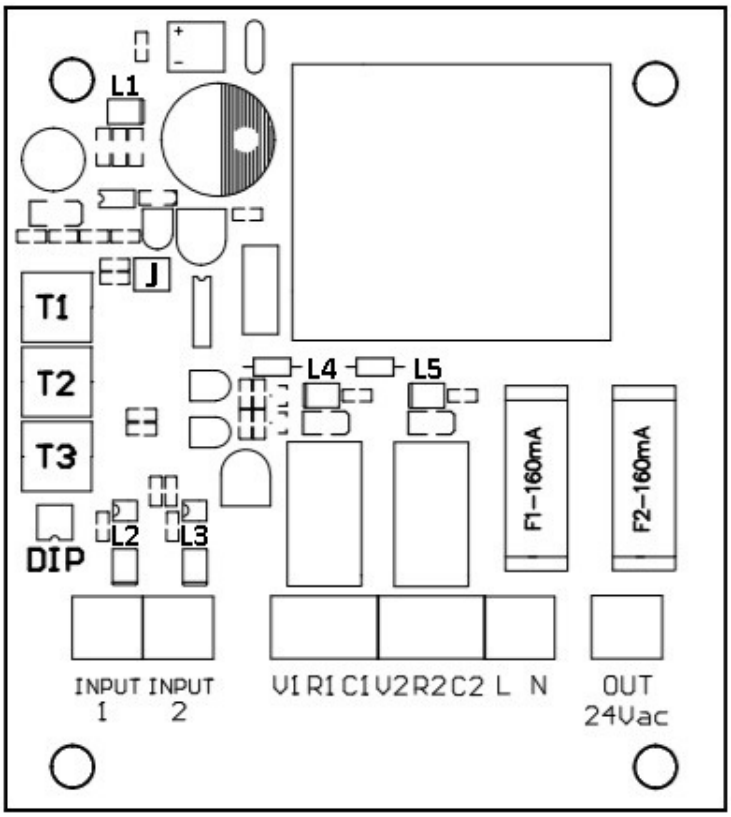
  The alternating times of red/green-green/red and red/red traffic lights are set by the installer, but the phases (red, green, etc.) are triggered by the detection of vehicles, through the devices installed (magnetic loops, photocells, radar, etc.), while transiting. This working mode allows a better management of vehicle traffic and order of arrival.

TECHNICAL FEATURES

- Power supply: 230 Vac - 50/60 Hz (5 VA) (protection fuse 160 mA);
- Auxiliary output: 24 Vac, 160 mA max. (protection fuse 160 mA);
- Absorption max. supported by relays using 24 V traffic lights: 5 A;
- Absorption max. supported by relays using 230 V traffic lights: 10 A;
- Operating temperature: -20 ÷ +70 ° C;
- IP grade of box (ABS V-0): IP 55;
- Box measure: 167 x 116 x 73 mm;

COMPONENTS DESCRIPTION

- 1 230 Vac power input;
- 1 auxiliary voltage output 24 Vac 160 mA max (OUT 24 Vac);
- 1 fuse (F1) for inlet line protection (230 Vac) 160 mA;
- 1 fuse (F2) for auxiliary output protection (24 Vac) 160 mA;
- 2 inputs for NO or NC adjustable control devices (INPUT 1, 2);
- 2 DIP switches to select the type of NO or NC (DIP) control inputs;
- 1 trimmer T1;
- 1 trimmer T2;
- 1 trimmer T3;
- 1 Power indicator LED L1;
- 2 inputs LED indicators L2, L3;
- 2 relay activation LED indicators L4, L5:
- 1 output V1 to be connected to green light of traffic light 1;
- 1 output R1 to be connected to red light of traffic light 1;
- 1 output C1 to be connected to power supply of traffic light 1
- 1 output V2 to be connected to green light of traffic light 2;
- 1 output R2 to be connected to red light of traffic light 2;
- 1 output C2 to be connected to power supply of traffic light 2
- 1 jumper (J) for programing the firmware at the factory. **DO NOT REMOVE**.



DIP SWITCHES DESCRIPTION

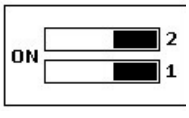


Fig. 1

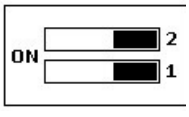


Fig. 2

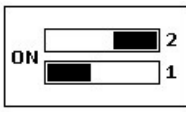


Fig. 3

The control unit has DIP switches that allow you to choose one or the other operating mode. In case of selecting the operating logic with detection devices, it is possible to select the contact type for the connected control devices: NO or NC.

N.B.: DIP switches must be selected while control board is NOT powered.

DIP 1	***DIP 2***	***Working mode***
OFF	irrelevant	Cycle
ON	OFF	Sensing devices **NO**
ON	ON	Sensing devices **NC**

TRIMMERS DESCRIPTION

The control unit has 3 trimmers, which, depending on the type of the chosen working mode, allow you to adjust the length of red/green-green/red and red/red sign and maximum waiting time at red light.

Trimmer T1, T2, and T3 works as follows:

- Trimmer T1 for adjusting the fixed length, set by the installer, while both traffic lights must be showing red sign (min. 8 seconds, max. 120 seconds);
- Trimmer T2 for adjusting length of green light and, at the same time, red light sign at the opposite traffic light (min. 8 seconds, max. 120 seconds);
- Trimmer T3, only functioning in detection devices working mode, for adjusting maximum waiting time at red light, in case of heavy traffic (min. 8 seconds, max. 120 seconds).

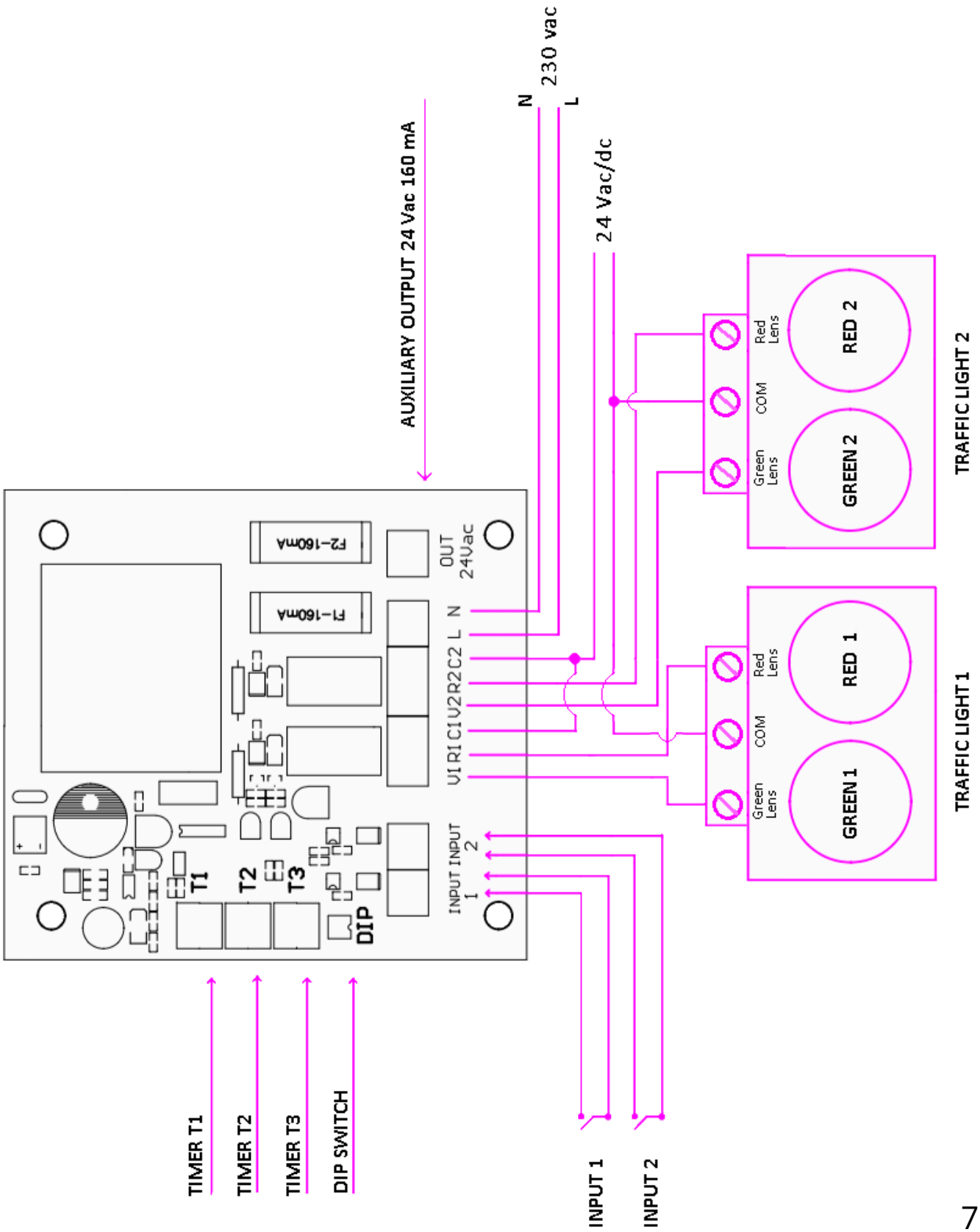
Adjusting of trimmers is made by turning clockwise to increase the value, counter clockwise to decrease its value.

Fig. 4

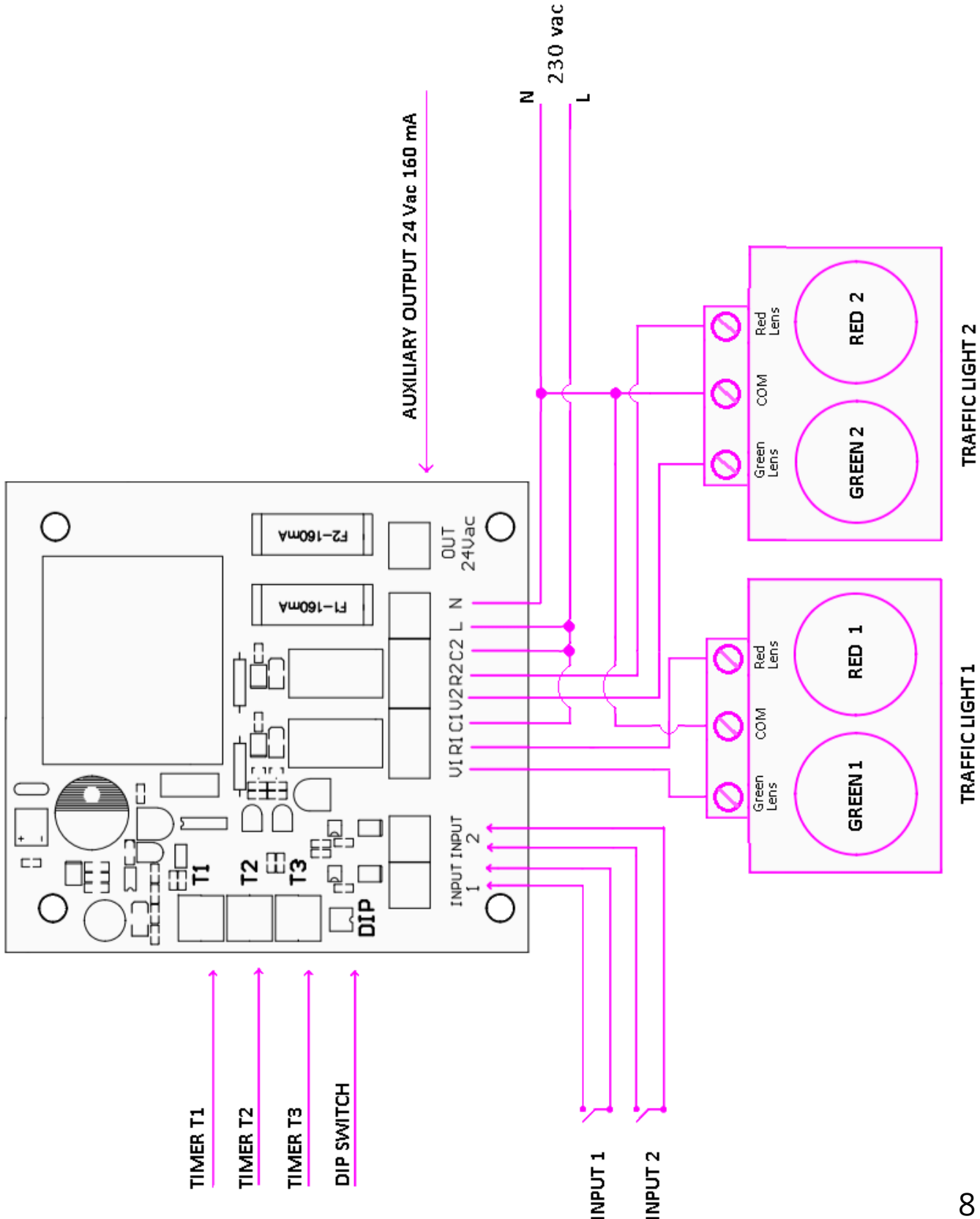
ELECTRIC CONNECTION DIAGRAM

The AS05180 control unit can manage both 24 V and 230 V LED traffic lights through relays of support. These relays work with clean contacts such as "V1, R1 and C1" - "V2, R2 and C2", and doing so both versions of traffic lights (24 V and 230 V) can be managed. Both versions of traffic lights are connected to the control unit in the same way; they differ only in the electrical tension of wiring. Specifically, the traffic lights are all managed through the clean contacts of the relays. The only difference is the connection to C1 and C2 (inputs for powering traffic lights) and the return cable of traffic lights. In case of powered 24 V traffic lights, return cable will be connected to the auxiliary output; in case traffic lights are powered at 230 V, they can be connected directly to the power inputs: L to phase and N to neutral.

ELECTRIC CONNECTION DIAGRAM FOR 24 Vac TRAFFIC LIGHTS



ELECTRIC CONNECTION DIAGRAM FOR 230 Vac TRAFFIC LIGHTS



DESCRIPTION OF “CYCLE” WORKING MODE

(Withoutdevicesforsensingvehicles)

In cycle working mode the length of red and green signs are fixed and set by the installer. The green and red signs alternate in a constant cyclic sequence.

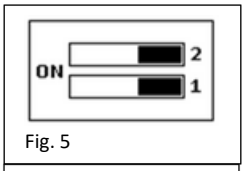


Fig. 5

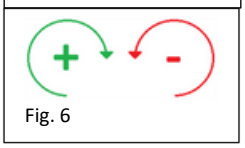


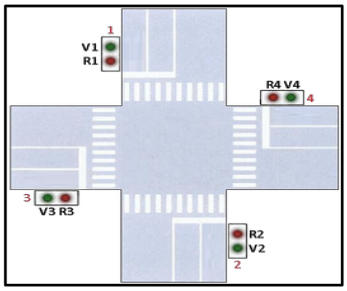
Fig. 6

Setting and programming the control unit:

- Set DIP 1 to off position as shown in Figure 5. Position of DIP 2 is
- irrelevant;
- Adjust T1 trimmer to set length of time when both traffic lights must be
- red at the same time (Fig. 6);
  Adjust T2 trimmer to set length of time when traffic lights must be one red and the other one green at the same time (Fig. 6);
  T3 trimmer is irrelevant in cycle working mode.

DESCRITPION OF THE ALTERNATION OF THE PHASES

CYCLE OF TRAFFIC LIGHT SIGNS



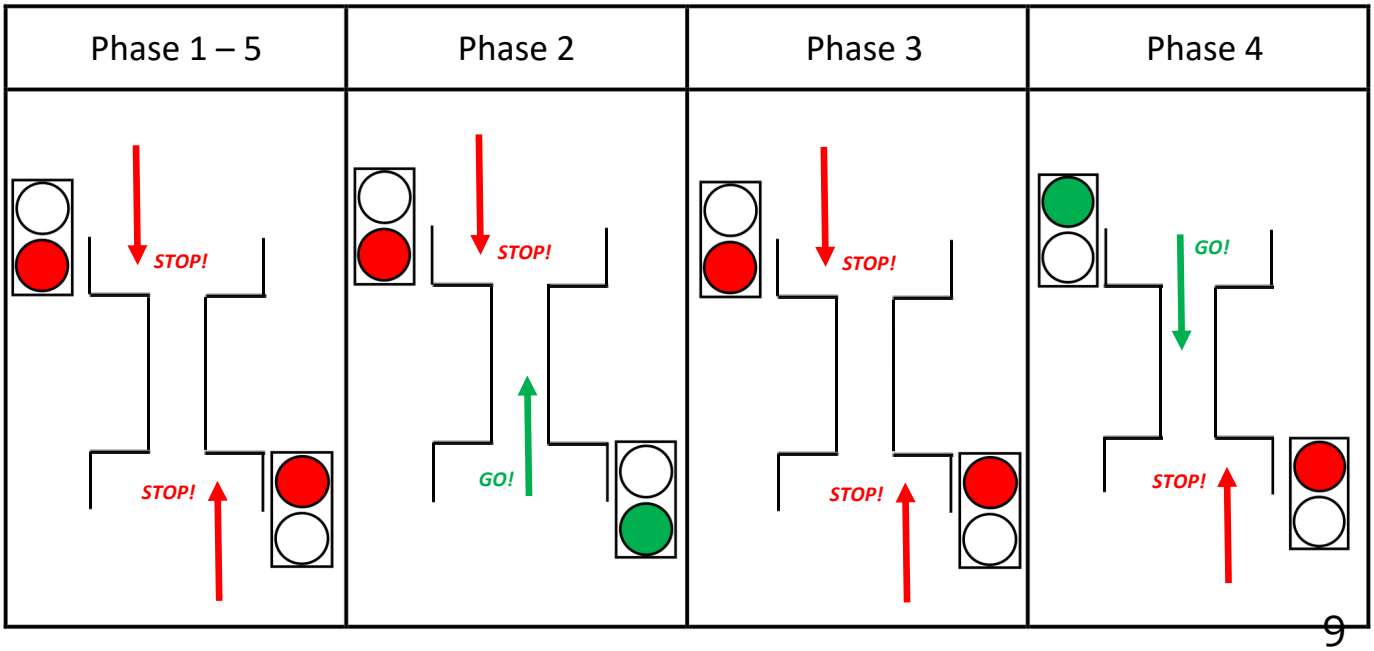
1. After setting the control unit during installation, at the first turning on, the two traffic lights will both show red sign for the preset time (with T1, Red/Red);

2. Once T1 time has expired, one of the two traffic lights will show red light, while, at the same time, the other one will show green light for the preset time (with T2, Red/Green-Green/Red);

3. To make sure latest vehicles have enough time to clear the narrow passage, both traffic lights will now show red light for the pre-set time with T1 (Red/Red);

4. During last phase, same as point 2 but in a reverse way, one of the two traffic lights will show red light, while, at the same time, the other one will show green light for the pre-set time (with T2, Red/Green-Green/Red);

5. Once T2 time has expired, the cycle will start again from point 1.



DESCRIPTION OF OPERATION WITH DETECTION DEVICES

In this workingmode,lengthofredandgreenlightsarepresetbytheinstaller,butthephases (Red/Green, Red/Red,Green/Red)aretriggeredbythepassagesorstoppingsofvehiclesclosetothe traffic lights. The passagesaredetectedbydevicespurposelyinstalled,suchasphotocells,radars,magnetic loops, etc

Setting of working mode with detection devices:

- SetDIP1toON,position,asshowninFigure12;
- SetDIP2toOFFposition,ifinstalleddetectiondevicesareNOtype(Fig.
- 12); SetDIP2toONposition,ifinstalleddetectiondevicesareNCtype(Fig.
- 13); AdjustT1trimmertopre-setMINIMUMlengthwhenbothtrafficlights
- havetoshowredsigns(Fig.14);
  AdjustT2trimmertopre-setMINIMUMlengthwhenonetrafficlighthas to show red sign and the opposite green sign;
  AdjustT3trimmertopre-setMAXIMUMwaitingtimeatredlight,incase theoppositetrafficlightisconstantlygreenduetoheavytrafficpassages (Fig.14).

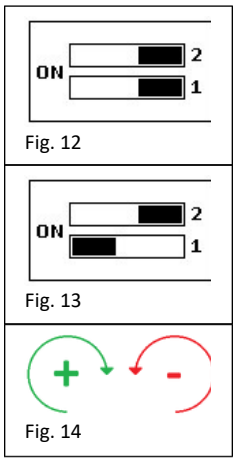


Fig. 12

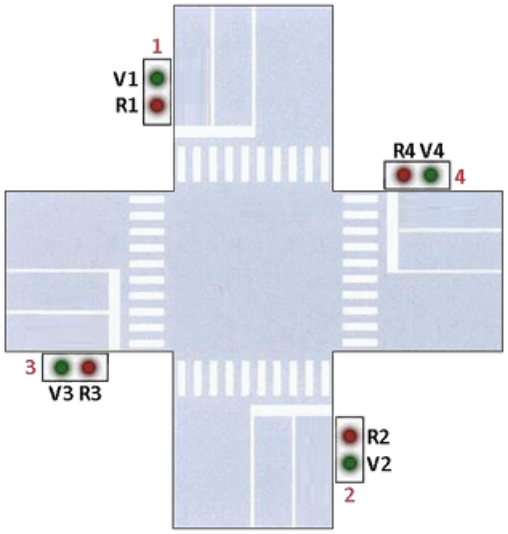
Fig. 13

Fig. 14

DESCRIPTION OF THE ALTERNATION OF THE PHASES

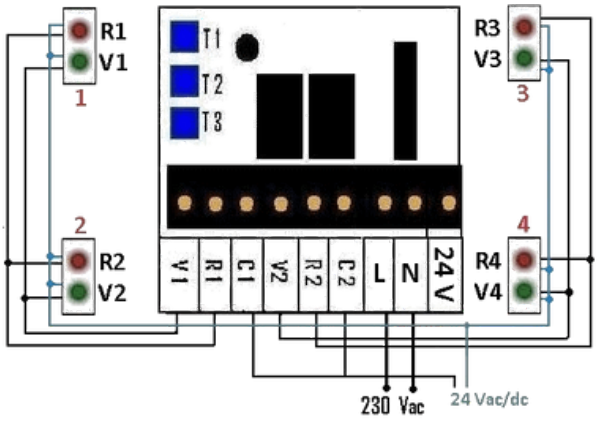
1. Aftersettingthecontrolunitduringinstallation,atthefirstturningon,thetwotraffic lights will both showredsignsforaMINIMUMtimepre-setwithT1trimmer(8-120seconds).Ifno vehicle is around, the twotrafficlightswillremainonredforanindefinitetime;
2. Onceelapsedminimumtimewithbothtrafficlightsonred,thefirsttrafficlighttodetect (by means of the correspondingdetectiondevice)avehiclewillturnongreen,whiletheopposite traffic light will simultaneouslyindicateredlight,foraMINIMUMtime(8-120seconds)pre-setwith T2 trimmer;
3. At thispoint,controlunitcanhandle3differentconditions,whichmayoccur:
   - **3.1.** Onceallvehicleshavepassed,andnoothervehiclesareroundinbothdirections, both traffic lights will switch to red sign. The cycle will start again from point 1.
   - **3.2.** Incase**morevehiclesarepassingatthetrafficlightthatshowsgreenlight,and NO OTHER VEHICLESarewaitingattheoppositetrafficlightshowingredsign**,thepre-set T2 time will be resetateachpassageofavehicle.Onceallvehicleshavepassed,andnoother vehicles are aroundinbothdirections,bothtrafficlightswillswitchtoredsign.Thecyclewill start again frompoint1.
   - **3.3.** Incase**morevehiclesarepassingatthetrafficlightthatshowsgreenlight,but in the meantimeSOMEVEHICLESarewaitingattheoppositetrafficlightshowingred sign**, green lightwillbeonforamaximumlengthsetwithT3(8to120seconds).Thecountdown of maximumtimewillstartthemomentthefirstvehiclewaitingattheredinthe opposite direction is detected. The cycle resumes from step 2.

WORKING WITH TWO COUPLES OF TRAFFIC LIGHTS



The control unit can also pilot 2 pairs of traffic lights in order to manage vehicle traffic in a crossing. In this case, the same colour of the lenses of the opposite traffic lights (V1 - V2, R1 - R2 and V3 - V4, R3 - R4) must be connected to the same output of the control unit. The return cable of each traffic light is a common contact and has to be connected to the neutral for power (C1 and C2 respectively).

The following connection diagram depicts traffic lights powered at 24 V.



The following connection diagram depicts traffic lights powered at 230 V.