

# ATS CONTROLLER WIRING DIAGRAM PDF

FOLLOW OUR ATS CONTROLLER WIRING DIAGRAM TO MAKE COST-EFFECTIVE  
ATS PANELS



Get the most from an automatic transfer switch! Follow our recommended ATS controller wiring diagram. The big picture is a backup system that includes a power generator. The logic is grounded on a solid rock ATS controller BeK3. You will install the transfer switch and the ATS controller in a suitable metal cabinet. The result will be an easy-to-connect and cost-effective ATS panel. You can connect the ATS panel to diverse generators, including the refurbished ones. In this ATS controller wiring diagram, you will see how the ATS controller automatically governs all functions by managing the connection assignment of the LOAD to MAINS or GENERATOR. There are two options for connecting the LOAD to MAINS or GENERATOR: via contactors and motorized transfer switches.

## THE TWO BASIC ATS CONTROLLER WIRING DIAGRAMS

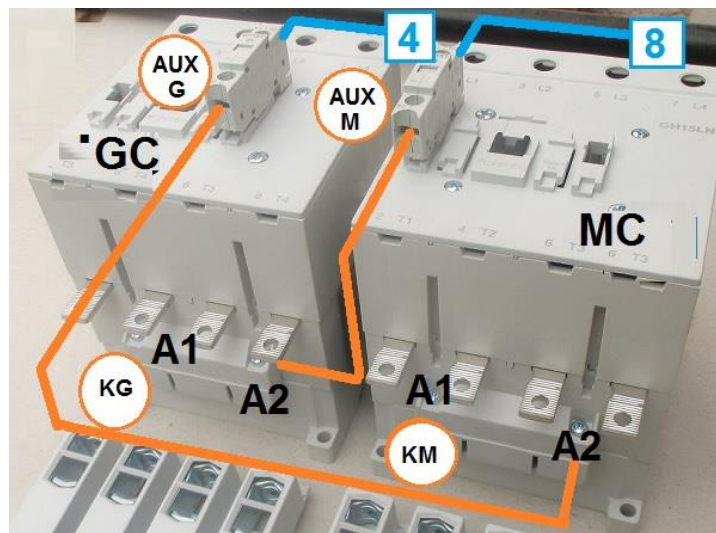
Even though the final goal is to build a backup power system, there are two basic configurations: CONTACTORS-CHANGEOVER and MOTORISED-CHANGEOVER, These are based on the technology used to transfer the LOAD from MAINS to GENERATOR and vice versa. Let us see an overview before diving into the schematics wiring diagram. The ATS controller governs the system and transfers the load to the GENERATOR or MAINS smoothly and with short downtime. A delay time between the switching it is mandatory. Advanced ATS controllers like BeK3 and Be242 feature an adjustable delay time. It will avoid dangerous sparks on the contactors or transfer switches. The ATS controller adds a delay before activating a LOAD. A fast switching from GENERATOR to LOAD, for example, could be dangerous in case of inductive loads. In general, the ATS connect the LOAD only if the primary (call it MAINS) and secondary sources (call it GENERATOR) are stable within appropriate settings,

## CONTACTORS-BASED SOLUTION

A transfer switch made with contactors requires 2 contactors of suitable size. The two devices are mechanically interlocked. In other words, it is not possible to energize both. An electrical interlock is also added using auxiliary contacts. We can say that there are two levels of protection. This prevents backfeeding. Concerning the WIRING DIAGRAM 1, the terminals involved in the control of the contactors are **(KG)**, **(KM)**, **(PHASE L3)**, **(PHASE T)**, **(4)**, and **(8)**.

### The MAINS to LOAD connection

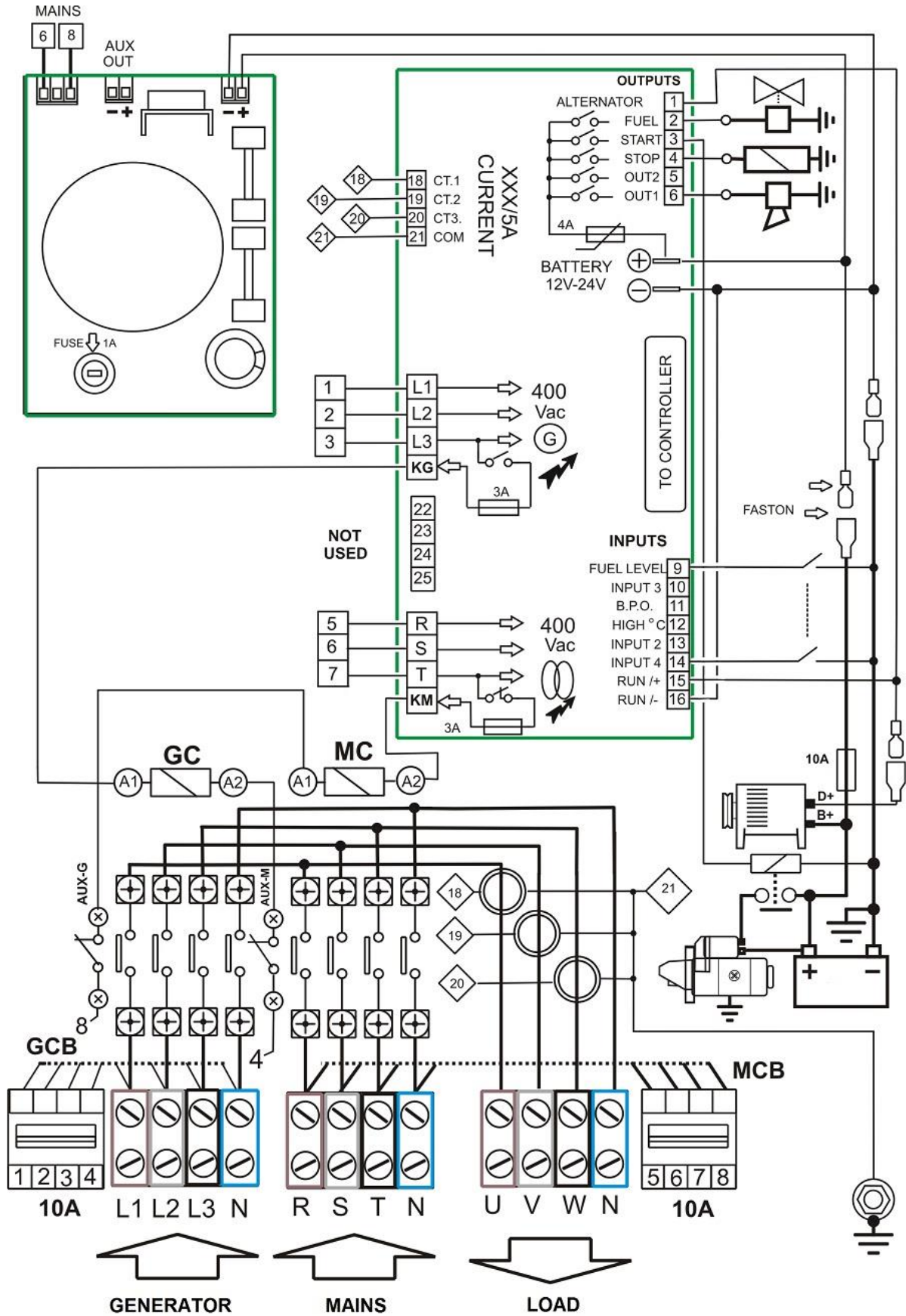
The four-pole **MC** contactor connects the LOAD to MAINS. The **MC** coil energizes via the output **(KM)** and auxiliary contacts **(AUX-G)**. The COIL of the **MC** is supplied via terminal **(4)** on one side and phase **(T)** of the MAINS via the **(KM)** terminal. When the utility power fails, the ATS controller deactivates the output **(KM)**; the **MC** consequently disconnects the LOAD. Once the **MC** is open, the auxiliary contacts **(AUX-M)** close to pre-enables the **GC** contactor. The following picture visually shows the connections of the auxiliary contacts. In the pictures, the symbols **(A1)** and **(A2)** indicate the connection points for the coils of the contactors.



### The MAINS to GENERATOR connection

When the ATS controller activates the output **(KG)**, the **GC** will energize to transfer the LOAD to the generator. This is possible because the **MC** contactor is in its open status. The contacts **(AUX-M)** on the body of the **MC** contactor are closed. The **GC** can energize only when the **KM** is in its open status. The Neutral terminal **(8)**, and phase **(L3)**, wires of the generator supply the coil of the **KG**. When switching the generator to MAINS, the user observes a short 'power outage'. This is normally 2 seconds. This is the typical behaviour of the automatic transfer switch based on contactors: BREAK-BEFORE-MAKE.

# WIRING DIAGRAM Nr.1



## ATS CONTROLLER WIRING DIAGRAM Nr.1 LEGEND

**GCB** Generator circuit breaker, usually 10 amps. It protects the internal auxiliary circuit inside the panel.

**MCB** Mains circuit breaker, usually 10 amps. It protects the internal auxiliary circuit inside the panel.

**AUX-G** Auxiliary contacts installed on the body of the GENERATOR CONTACTOR

**AUX-M** Auxiliary contacts installed on the body of the MAINS CONTACTOR

**GC** GENERATOR CONTACTOR, normally in the range of 63 up to 150 amps

**MC** MAINS CONTACTOR, normally in the range of 63 up to 150 amps

**KM** Terminal of the interface board committed to energize the MAINS CONTACTOR

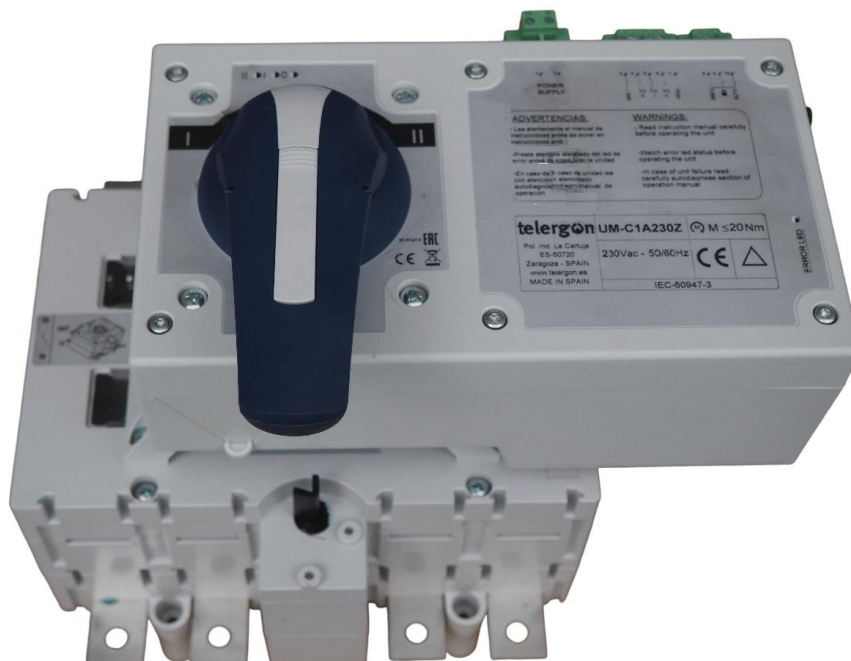
**KG** Terminal of the interface board committed to energising the GENERATOR CONTACTOR

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## MOTORIZED TRANSFER SWITCH-BASED SOLUTION

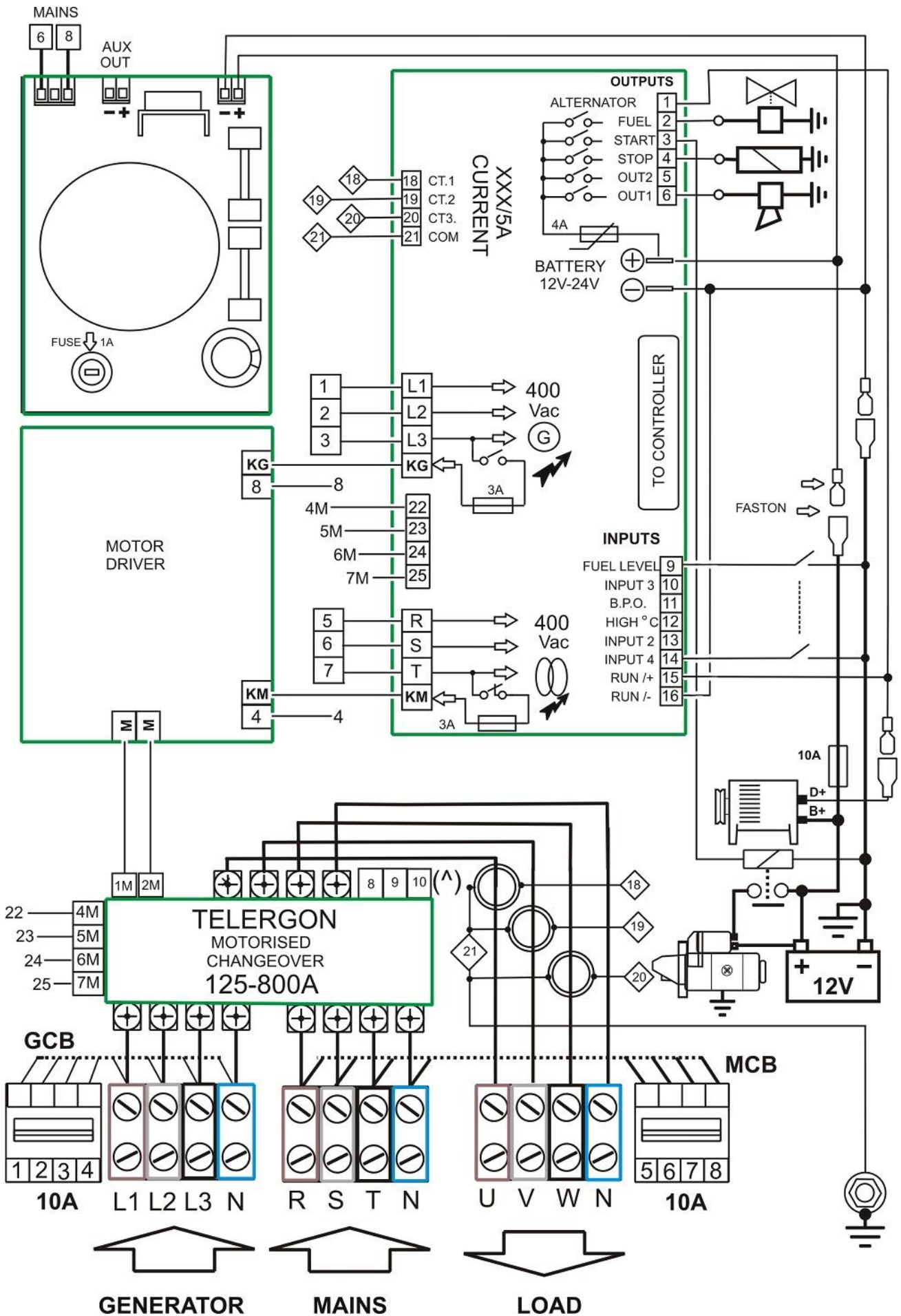
### AUTOMATIC TRANSFER SWITCH: MAINS-LOAD

The motorized changeover consists of a motorized switch with 3 positions: GENERATOR, OFF and MAINS. An electric motor drives the switch to move in a particular position. The motorized changeover has several advantages. Firstly, it can manage big currents if compared with a contactor-changeover. Secondly, it does not require power to hold the position. Thirdly, it is a cheap and safe solution for high-power switching. On the other hand, the system is not so granular when you need flexibility of operation.



[READ MORE ABOUT MOTORIZED ATS PANELS](#)

# WIRING DIAGRAM Nr.2

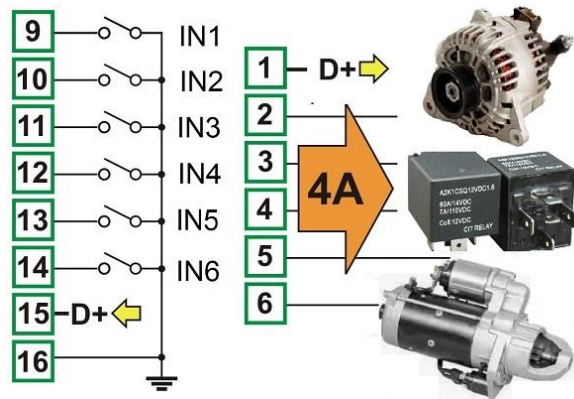


The interface board connects the changeover with 4 wires. The board sends electric pulses for about 200ms to instruct the changeover. The MOTOR DRIVER board supplies the electric motor only when necessary.

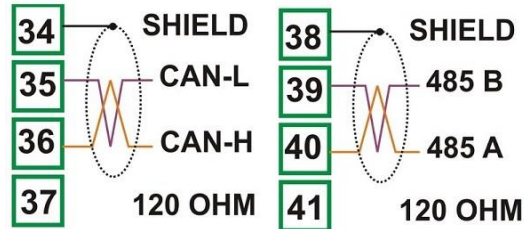
## ATS CONTROLLER ADDITIONAL CONNECTIONS

The additional connections consist of all wires necessary to interface with the generator. In particular start and stop commands for the engine. The universal ATS interface board does include protection fuses. In general, you have to connect the following items.

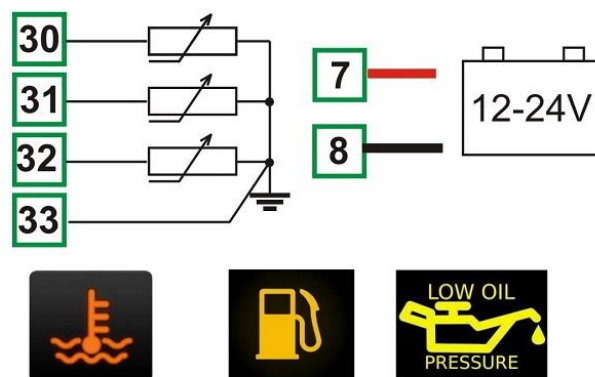
### ENGINE INPUT-OUTPUT TERMINALS



### CANbus and MODbus CONNECTIONS

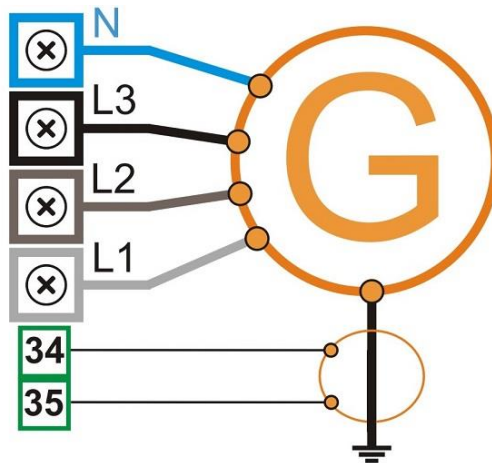


### ENGINE SENSOR CONNECTIONS

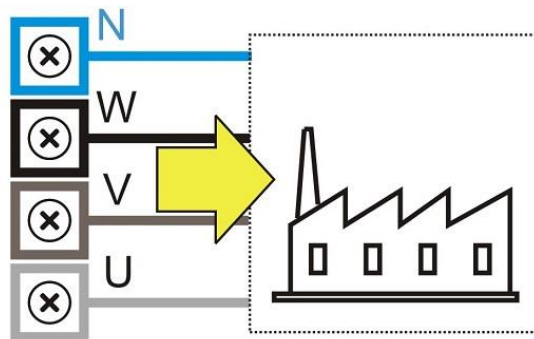


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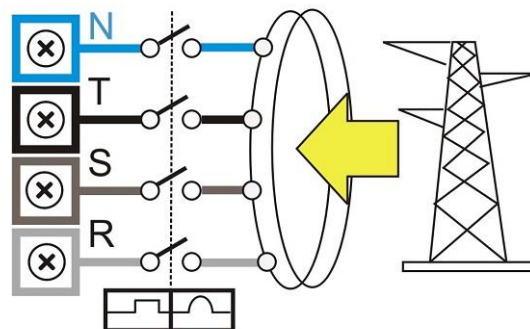
## ALTERNATOR CONNECTION



## LOAD CONNECTION



## UTILITY POWER CONNECTION



READ MORE ABOUT ATS CONTROLLERS AND HOW TO MAKE COST-EFFECTIVE  
ATS PANELS

[THE BE242 ATS CONTROLLER](#)

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**BERNINI DESIGN SRL**

ITALY Industrial Park 46035 OSTIGLIA

[BERNINI@BERNINI-DESIGN.COM](mailto:BERNINI@BERNINI-DESIGN.COM) SUPPORT +39 335 70 77 148