

Charging Batteries Reliably

Fire Brigades Always at the Ready

High requirements are placed on vehicles in emergency services. They are also equipped with a wide range of electronic devices that require special care. For safety reasons, some of these, such as radio equipment, are kept permanently in standby mode, even if the vehicle is in not use. The standby operation for these devices requires an intact vehicle electrical power supply system and a perfectly functioning starter battery, since these vehicles can receive an emergency call within a short space of time. Rescue vehicles are therefore connected immediately to a battery charger after use and after being returned to the equipment area, and this must ensure correct battery charging. However, connection cables and plug-in devices are often a weak link in the safety chain.

Jörg Brendel, chief fireman at the Kirchentellinsfurt volunteer fire brigade and full-time owner of the company Elektro Brendel, had for a long time needed a device that monitors the charging process with simple battery chargers. Brendel developed a monitoring unit that was special developed for rescue vehicles. As this device is designed to meet the particular needs of emergency services, several people in authority are now taking a lot of interest in it.

In other situations a standby mode is considered as an avoidable waste of electricity. However, this is not the case with rescue vehicles – where several electrical consumers are switched in standby mode. After all, in order to use emergency vehicles at any time, the trickle charging of the vehicle battery is indispensable. After an emergency callout, every vehicle is connected immediately to a battery charger in the equipment area to ensure the full availability of all electronic equipment. A standard battery charger is normally used for the correct charging of the vehicle battery. Plug connectors are used to connect it to the vehicle. However, these plug connectors do not always ensure accurate charging. Moisture that has penetrated the plug system or dirty contacts may prevent reliable charging even though the connection is made. This mostly stays unnoticed as the battery charger may incorrectly indicate charging on the measuring instrument. The result is that the availability of the vehicle is no longer ensured after a long period between callouts.

This is exactly where Elektro Brendel's monitoring device shows its benefits. Like all other impressive devices, it has a simple design. The device monitors the current that flows from the consumer outgoer to the battery charger. As the soon as the battery charger is connected to the vehicle battery, a significant charging current flows at first, which then rapidly drops off according to the charge state of the battery, until only the trickle charge current is present. This is only slightly different



EATON

Powering Business Worldwide

MOELLER 

An Eaton Brand

INFO

Products: easy control relay
SL signal indicator

Quicklink ID: MS1913 [www.moeller.net]

Elektro Brendel, is located in Kirchentellinsfurt (near Tübingen) and has had several years of success in the electrical installation business. The owner of the company, Jörg Brendel, has been a volunteer member of the Kirchentellinsfurt fire brigade for twenty-five years and has been

a senior fireman for over five years. In order to ensure that his fire brigade has the highest level of operational readiness, Jörg Brendel has been researching the monitoring of vehicle battery charging for a long time.



Everything in the green zone

The automatic charge monitoring system analyses the charging current and indicates directly any battery failure.

An instrument transformer is used to feed the charging current to the control relay for evaluation. Up-to-date information, such as the correct charging process, interruption or other information is indicated via the control relay outputs using SL signal indicators. All SL signal indicators come from Moeller's range of control circuit devices. If required, defined messages can be switched to a phone which notifies the device service personnel, fire chief or commander in the event of a fault or emergency. Other options such as fault indications via SMS can also be implemented.

Elektro Brendel has recently applied for a patent for its Meskon monitoring unit. If required, Meskon can also monitor several rescue vehicles with only one unit.

to the intrinsic consumption of the battery charger. The charging unit however detects this difference and derives from the current measured the information about whether a correct charge is present.

easy control relay monitors charging

The monitoring unit therefore checks the current flow into the battery charger. The current present with a trickle charge is only slightly different to the current for the intrinsic consumption of the battery charger: The distinction between and measuring of charging and intrinsic consumption are essential, and this is handled by an easy control relay. The monitoring and evaluation are handled by the analog input of the EASY 719-DC-RC. The relevant signal values are compared inside the control relay. Their evaluation then allows the early detection of a potential battery failure. The digital inputs of the control relay can also be used to include other functions in the monitoring process, such as the triggering of the upstream protective device, as well as smoke detectors for monitoring the vehicle garage, or the monitoring of the compressed air system. A monitored compressed air system – for the necessary system pressure of a truck – allows the vehicles to drive away immediately to the rescue operation, without having to fill up the system beforehand via the vehicle compressor.

The system is designed as a pluggable unit in an insulated housing. It consists of a power supply cable, monitoring unit and socket connection for the battery charger. A 230VAC/ 24VDC easy-POW400 power supply unit is used to feed the easy control relay.



CONCLUSION

Jörg Brendel, owner of the electrical engineering company, had this to say: "Thanks to our charging unit, the EASY719-DC-RC control relay and a measuring transformer, we can at last charge the vehicle batteries of our rescue vehicles reliably and safely. This considerably increases the operational readiness of the vehicles. The perfectly matched and extensive easy product family, as well as the excellent support from Moeller in every stage of the project made the easy control relay a clear choice for our requirements."