Control Systems Winter Conditions Machinery

Sheet 16

Electronic on-board control systems for winter conditions machinery

Automation systems for on-board control of winter conditions machinery which allow a complete and effective control of the machines.
The systems can be composed by:
- various Esagon standard products, in the most appropriate overall configuration;
- various Esagon customized products, specially developed by Esagon for that client, in the most appropriate overall configuration;
- Esagon standard products and Esagon customized products, in the most appropriate overall configuration.

Besides the targeted development of the electronic boards, it is always necessary to assure the certainty of a system designed and developed for use in any condition, even the harshest. Boxes, wirings and connectors must be chosen with care, in order to properly protect the system.
In particular, with regard to salt spreaders, two different versions of automation system are available for on-board control: one for small size machines and one for large size machines.
The difference between the first and second version is mainly due to the presence of some drives normally absent on the smaller vehicles.
The automation system consists of an on-board control unit, placed near the hydraulic distributor, and a dedicated operator panel, placed in the vehicle cabin. The connection between control unit and operator panel is via a cable with 6-pin connector. The electronic control unit provides the engine management of the salt spreading unit (start, stop, oil and battery alarms), the pilotage of hydraulic dispenser valves (proportional valves for conveyor belt and disc rotation and on-off valves for crusher, duct lifting, symmetry and other) and the activation of other auxiliary commands (blinker, lighthouse and so on). It is also possible to connect a sonar to get an indication of the amount of salt inside the feeding hopper.



Operator panel for small size machines

The operator panel allows to start and stop the engine, drive the salt spreading unit (with possibility to adjust the spreading width and salt amount) and operate the auxiliary commands (lights, blinker and duct lifting). The display shows settings, external temperature and (in case of sonar presence) also the hopper filling level. With the most evolved version of the operator panel it is possible to adjust the symmetry, independently drive the crusher, connect the tachometer signal of the vehicle or use the built-in Gps to adjust the amount of salt according to the vehicle speed.



Operator panel for large size machines

It is possible to use a software tool to download from the control unit some information (alarms, worki hours and other) or to set up notices of scheduled maintenance at prefixed intervals of worked hours.



Screenshot of software tool

- Quality electronic systems tailored to specific needs of the customer.
- Sustems designed and developed for use in harsh conditions.
- Customer support for the choice or direct supply of boxes, wirings and connectors, suitable for use.

Working conditions

Operational supply voltage:	**12V - 24V DC**
Working temperature:	**-20°C - +85°C**
Maximum working temperature:	**-40°C - +105°C**

Communication door

Communication door:	**USB**
Maximum data speed:	**115.2 Kbit/sec.**

CAN-Bus

CAN-Bus channel:	**FULL CAN 2.0 A e B**
Protocol standard:	**SAEJ1939**
Maximum speed:	**500 Kbit/sec.**

Inputs and outputs

Inputs protected against false contacts and outputs protected against over current, over temperature and short circuit.

Processing

Microprocessor:	**16 bit**
Operational rate:	**56 MHz**
Flash memory program:	**256 + 32 Kbytes**

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