Data converters

WAGENCONTROL

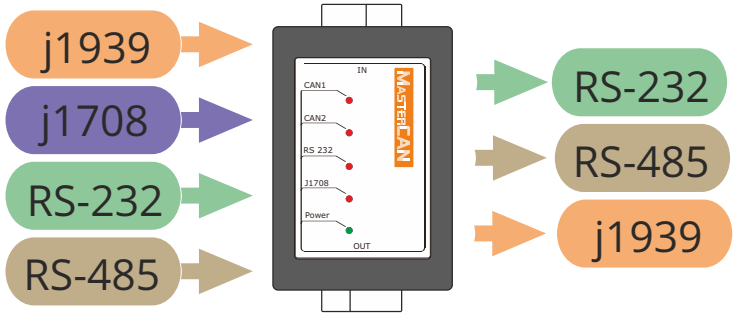
MASTERCAN

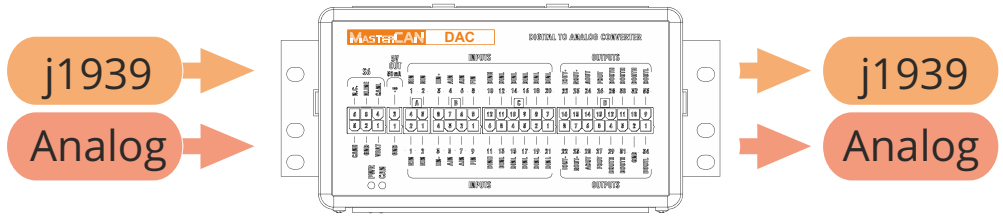
S6

IoT BURGER

wagencontrol.eu

Purpose





MasterCAN data converters transform and transmit digital and analog signals of standard and additional equipment of vehicle or stationary object into a telematic system.

Tasks

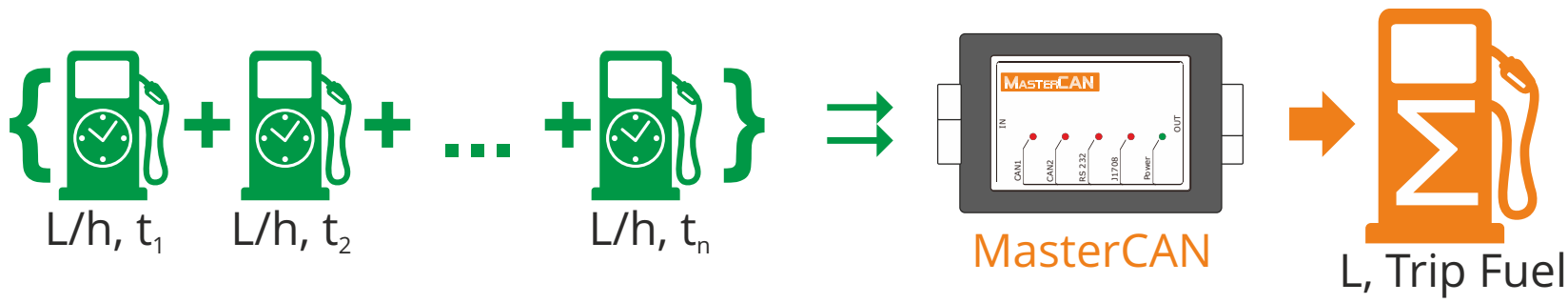
- ✓ Messages converting between CAN j1939/71, SAE j1587, Modbus RTU protocols.
- ✓ Integration into a combined telematics system:
  – on-board CAN j1939 and j1708 data buses;
  – additional equipment with CAN j1939, RS-232, RS-485 interfaces;
  – analog sensors, lamps, relays.
- ✓ Combining data of two CAN j1939 buses: FMS messages are gathered from the first bus, Telematics messages from the second; data from both information buses is simultaneously transmitted to telematics unit.
- ✓ Automation of operation of analog devices (relays, executive mechanisms) using CAN messages of the terminal, sensors, j1939 bus.

Tasks/ Fuel counter

In information buses, usually, there is data **only on instant fuel consumption**.

MasterCAN data converter receives this data from information bus of vehicle and calculates total fuel consumption from the time of engine start.

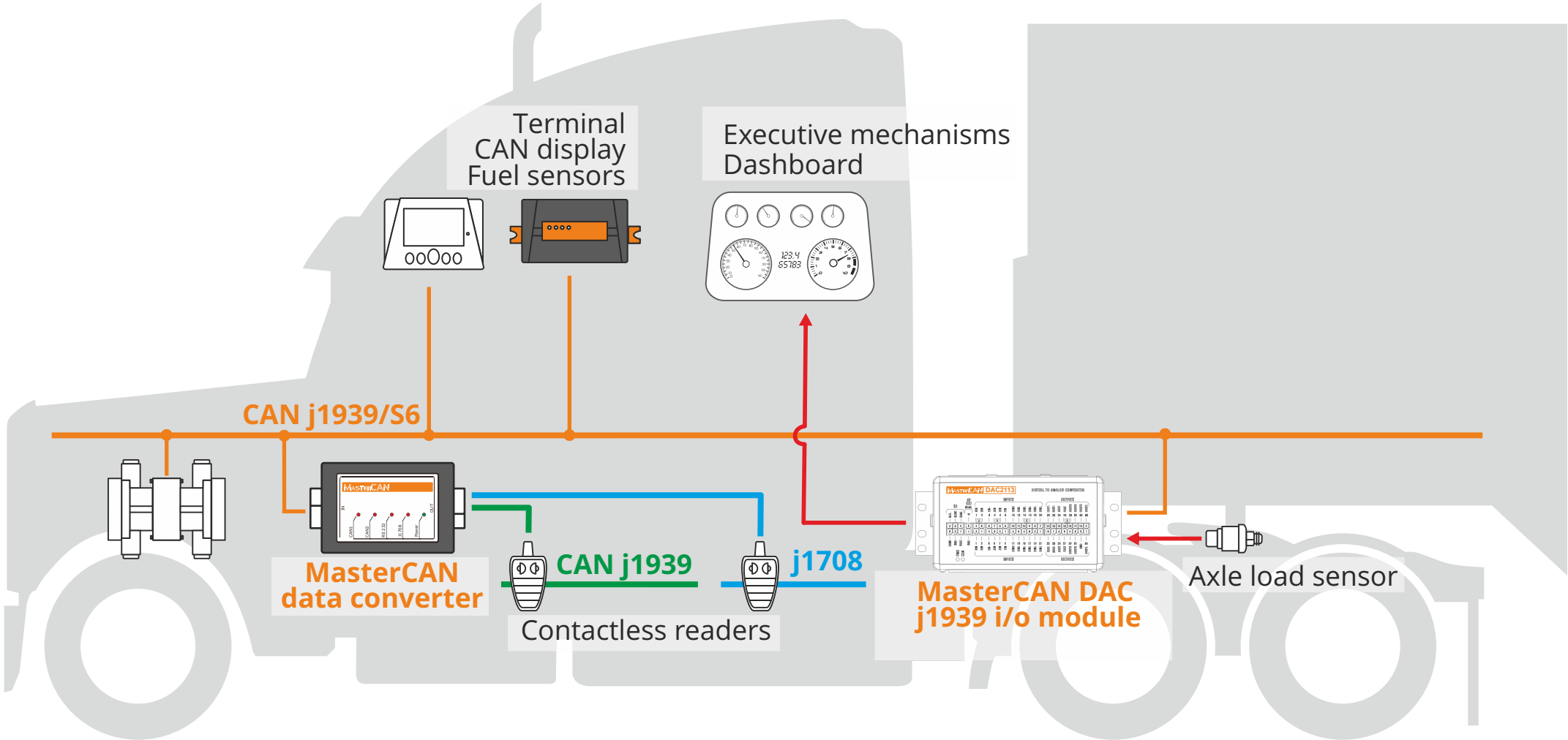
Ready-made data on fuel consumption for a trip are transmitted to telematics unit.



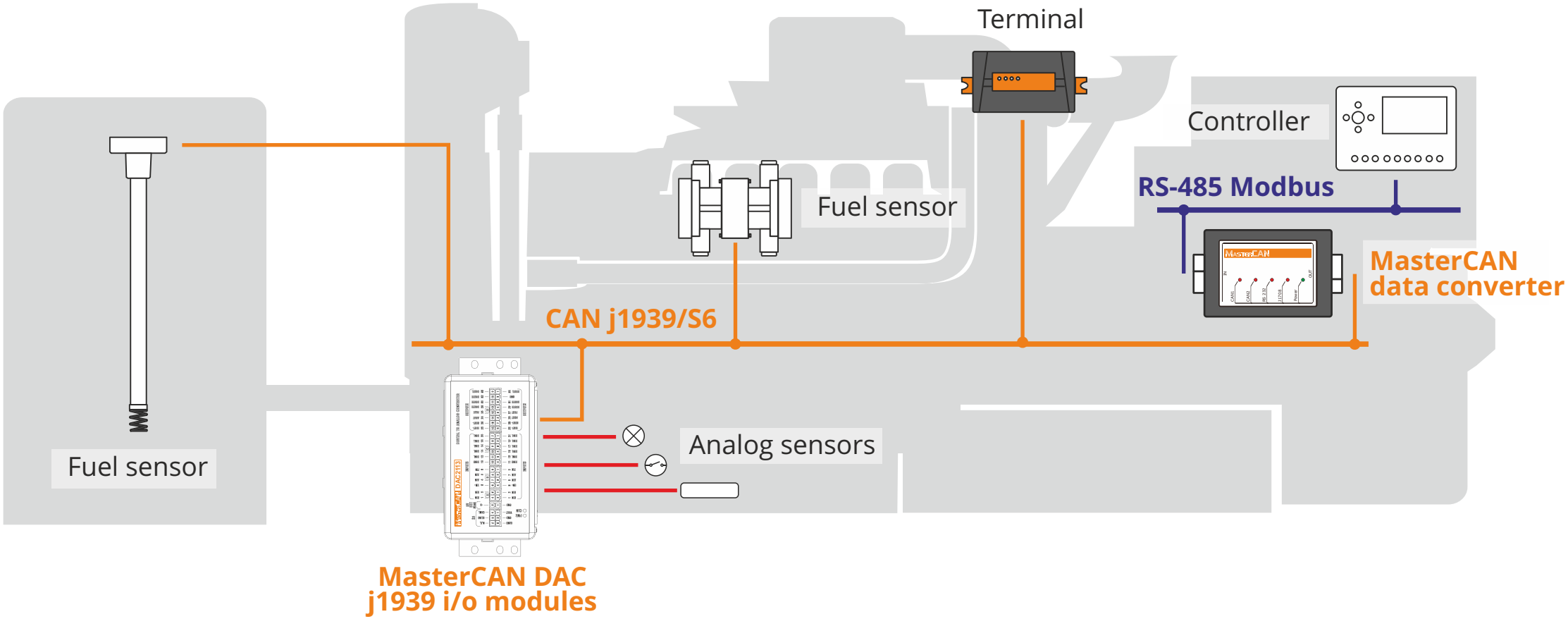
Advantages

- ✓ Versatility – can be used for vehicle telematics, IIoT applications, industrial automation projects.
- ✓ Flexible configuration of input/output SPN, Modbus registers, data baud rate.
- ✓ Conformity with automotive standards of the EU and EAEU.
- ✓ Power supply from on-board automotive electrical network without additional power adapters.

Application/ Vehicle telematics



Application/ Industrial automation



Interfaces (protocols) of MasterCAN data converters

	CC	C 232/485	V-GATE	RS2CAN	CAN2RS
Input interface (protocol)					
CAN (SAE J1939/71)	■	■	■		■
J1708 (SAE J1587)			■		
RS-232 (Modbus RTU)				■	
RS-485 (Modbus RTU)				■	
Output interface (protocol)					
CAN (SAE J1939/71)	■		■	■	
RS-232 (Modbus RTU)		■	■		
RS-232 (ASCII, DUT-E COM)		■	■		
RS-485 (Modbus RTU)		■			■
RS-485 (ASCII, DUT-E COM)		■			

Inputs and outputs of MasterCAN DAC j1939 i/o modules

		MasterCAN DAC15		MasterCAN DAC2113	
Signal types	Signal types	Inputs, pcs.	Outputs, pcs.	Inputs, pcs.	Outputs, pcs.
CAN j1939/S6 interface		1	1	1	1
Resistive	0,015 ... 50 kOhm	–	1	2	1
Voltage	0,5 ... 9 V	1	1	4	2*
Frequency	0,01 ... 10 kHz	1	1	2	2
Pulse	0,5 ... 9 V / 40 ... 250 ms	–	1	–	–
Current	4 ... 20 mA	–	1	1	1
Discrete		–	2	12	7

combined voltage/frequency input

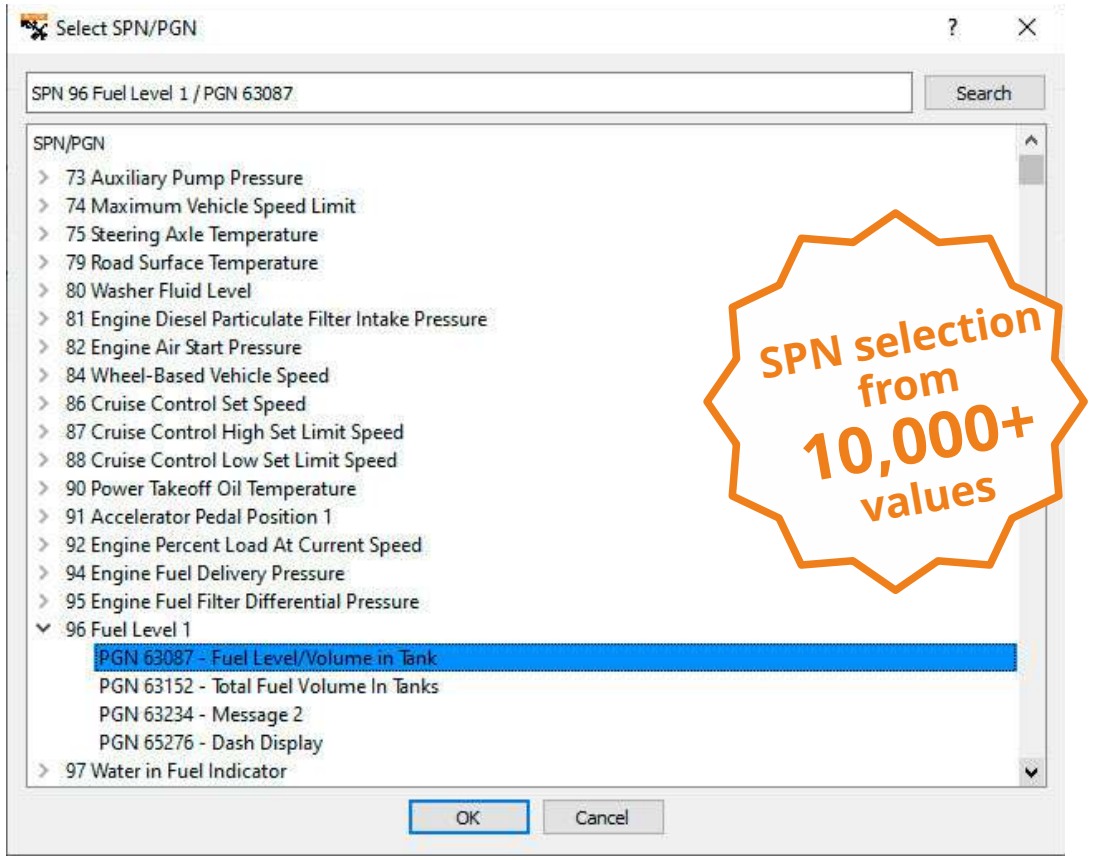
combined voltage/frequency/pulse output

* voltage value 0.5 ... 10 V

Examples of collected and converted data

- ✓ Fuel – the current volume in the tank, refuelling and draining, hourly consumption.
- ✓ Engine operation - RPM, current moment, engine operating time.
- ✓ Oils, coolant and other technical fluids - temperature, level, pressure.
- ✓ Axle load, weight of the cargo.
- ✓ Work parameters of additional and attached equipment of vehicles.
- ✓ Electrical parameters of the diesel power plant alternator.
- ✓ Parameters of the industrial equipment.

MasterCAN service sofwtare



The MasterCAN converters are configured using the S6 SK service adapter and Service S6 MasterCAN software (for Windows).

CAN j1939 parameters (SPN) or RS-232/485 parameters (Modbus register map) are configurable with maximum flexibility.

Configuration/ MasterCAN CC, C232/485, V-GATE

J1939/S6 input/output setup:

- ✓ permission to send FMS and Telematics messages;
- ✓ permission to send active requests to the CAN bus.

RS-232/485 input/output setup:

- ✓ selecting output protocol type – Modbus, text (ASCII), DUT-E COM;
- ✓ setting the interval and other parameters for messages transfer using the ASCII protocol;
- ✓ selection of the baud rate via RS-232/485;
- ✓ automatic calculation of trip fuel consumption (by input SPN 183).

Configuration/ MasterCAN RS2CAN, CAN2RS

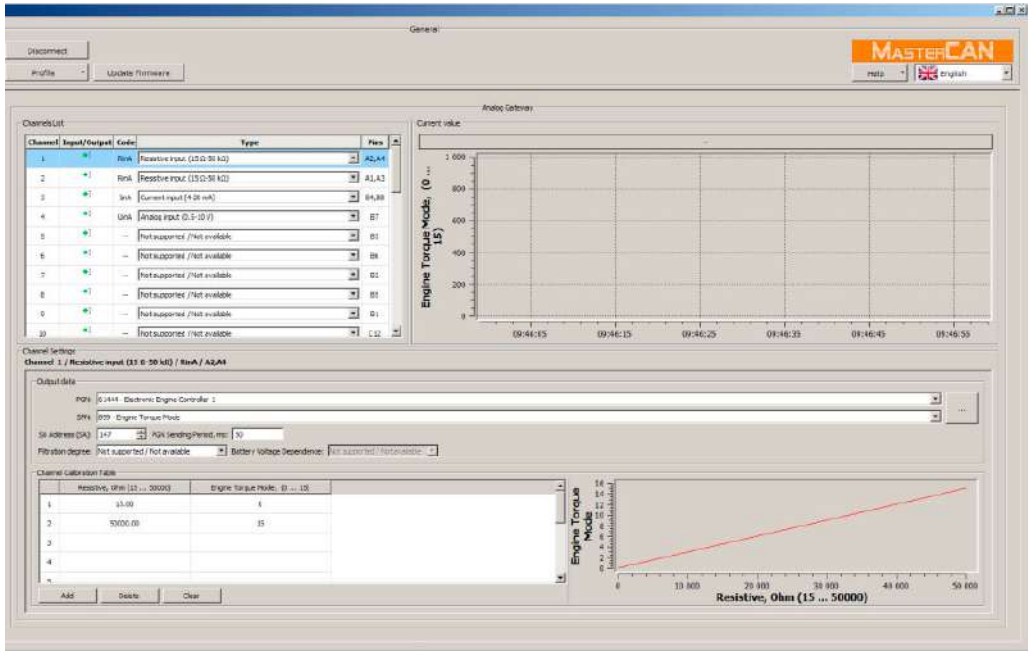
J1939/S6 input/output setup:

- ✓ SPN selection (from 10,000+ values) for input/output data;
- ✓ indication of addresses of devices connected via the S6 interface;
- ✓ selection of data baud rate.

RS-232/485 input/output setup:

- ✓ selection of Modbus register for reading/writing data;
- ✓ selection of data baud rate.

MasterCAN DAC service sofwtare



MasterCAN DAC works simultaneously in two modes: digital-analog, analog-digital.

Service S6 MasterCAN configures both modes: SPN conversion to the desired type of analog signal (voltage, frequency, current, discrete, resistive) and reverse conversion.

Configuration/ MasterCAN DAC 2113, DAC 15

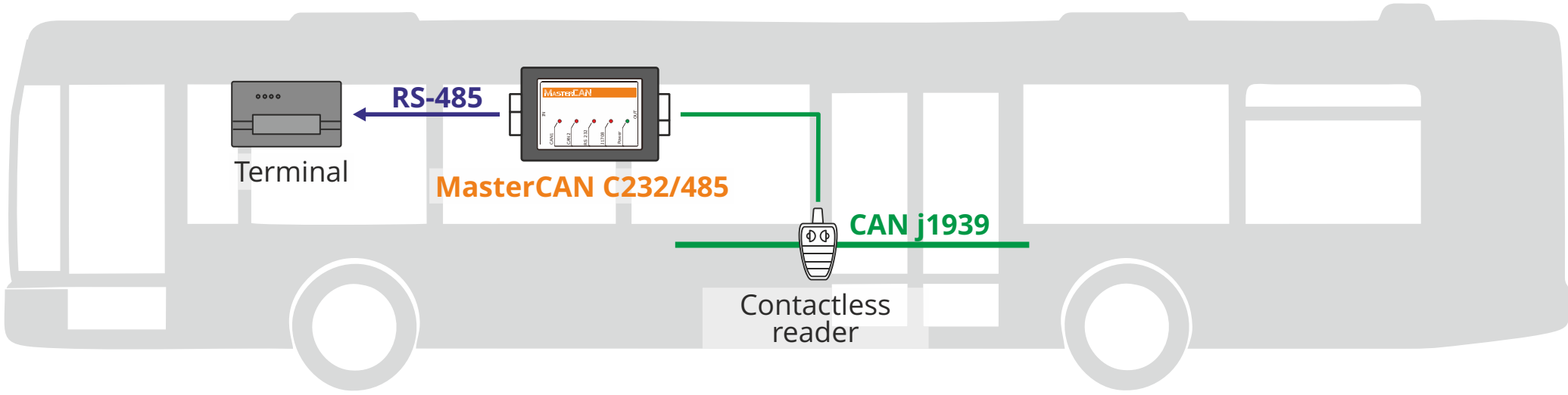
J1939/S6 input/output setup:

- ✓ SPN selection (from 10,000+ values) for input/output data.

Analog inputs/outputs setup:

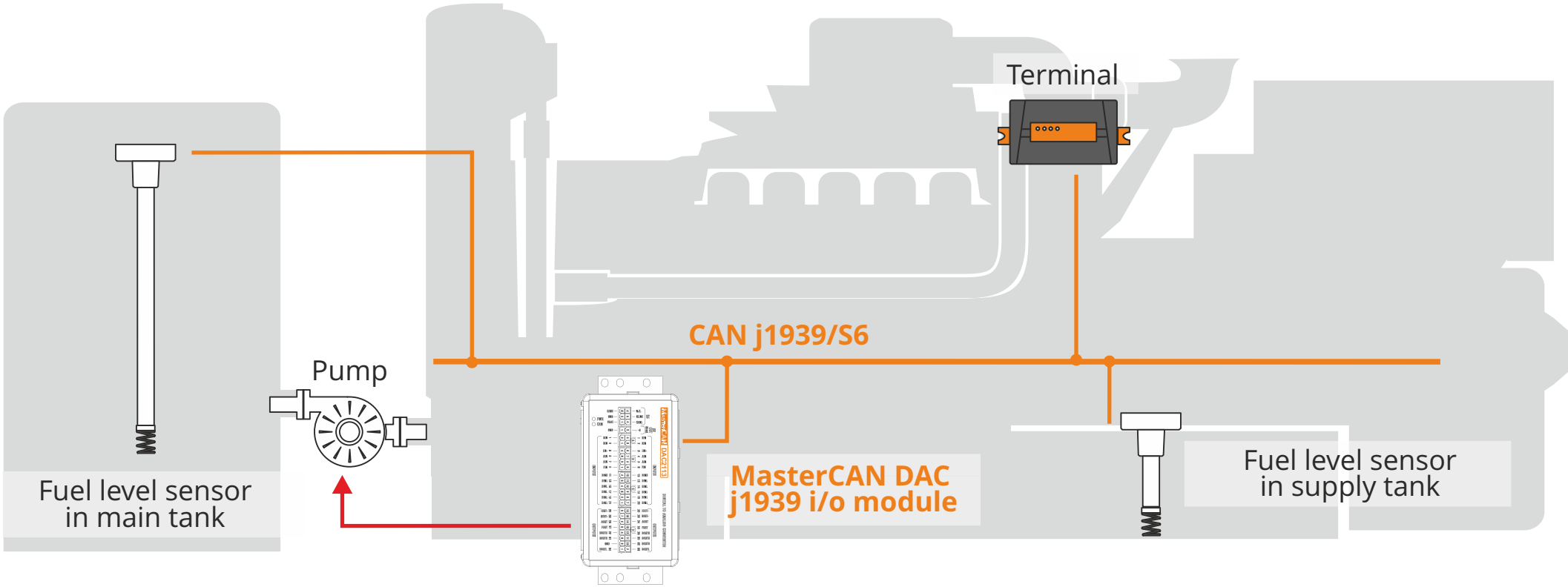
- ✓ selection of the required type of input/output signal (voltage, frequency, pulse, current, discrete, resistive);
- ✓ setting the limit values of the output analog signals.

Business cases/ City buses



Fuel data (consumption, tank fuel level) is read from the CAN bus. They are converted to RS-485 and transmit to the corresponding terminal input.

Business cases/ Fuel pumping automation



The onboard equipment of genset monitoring system exchanges data via CAN j1939/S6 bus. MasterCAN converter turns on/off the pump power relay depending on the data of fuel level sensor about the remaining fuel in the supply tank.

Summary

- ✓ MasterCAN converters – intelligent converters of digital messages and analog signals used in machinery telematics and stationary object monitoring systems (IIoT).
- ✓ The converters combine on-board data buses, analog sensors, and other peripherals with different digital interfaces into a single network.
- ✓ Converters collect data, which are transmitted over various communication protocols, and analog signals for transformation and sending uniformed messages to a telematics service.