bürkert
FLUID CONTROL SYSTEMS

Electronic Controller for vapour recovery

- Input fuel impulse
- Input diesel detection
- PWM-outputs for control of proportional valve

Type 1094EV can be combined with…

Type 2832
Proportional valve

Type 1094
Manual control unit

Power supply Traco Power

When a vehicle is filled with petrol, the petrol flowing into the tank displaces an equal volume of petrol vapour out of the tank. To prevent this petrol vapour escaping into the atmosphere, it must be siphoned off. In the solution offered by Bürkert this vapour extraction is achieved by applying a vacuum via an upstream proportional valve in the petrol pump reservoir tank. A suction pump transports the petrol vapour out of the vehicle tank and compresses it in the petrol pump feed tank. To prevent an overpressure in the feeder tank, the volume of petrol drawn and the sucked back petrol vapour must be balanced. The petrol quantity dispensed into the vehicle tank is measured using the calibrated piston meter of the petrol pump, the output signal of which is converted by a petrol pump computer into pulsed signals that are transmitted to the control unit. The control unit is fitted with a (SUB-D) port so that it can communicate (calibration, measurements) with the manual control unit.
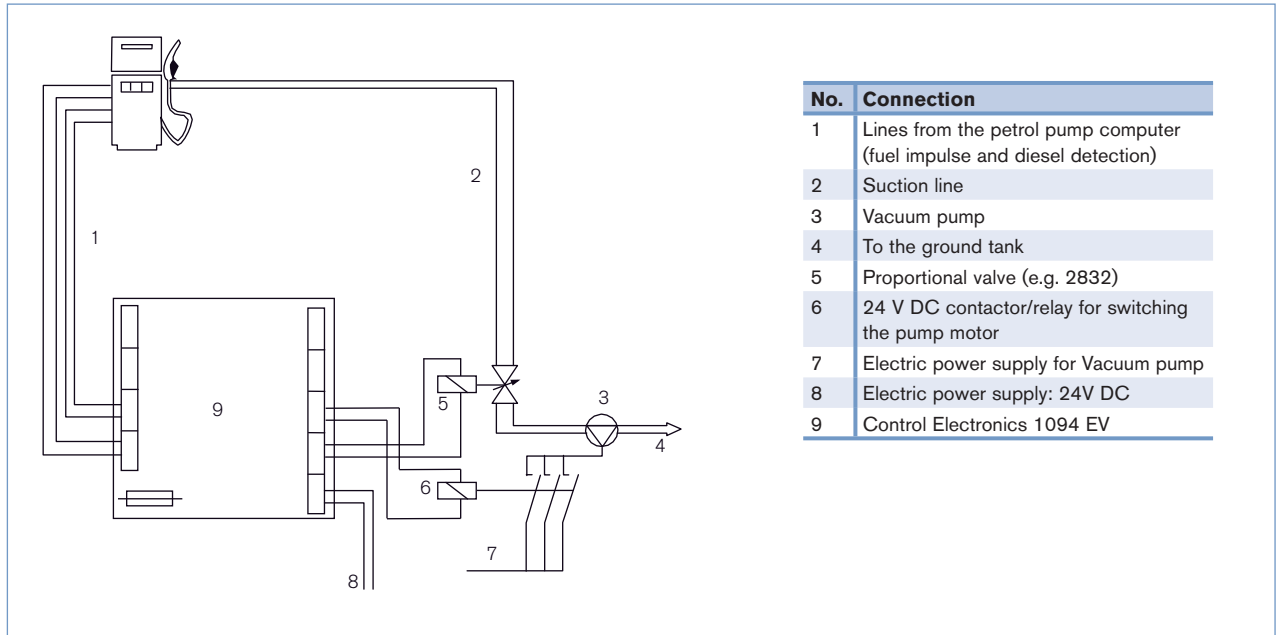
Technical data	
Operating voltage	24V
Voltage tolerance	± 10%
Ambient temperature	-25 to 55 °C (no icing)
Relative humidity	5% to 85% (no condensation allowed)
Input signal Fuel impulses	Frequency input 0-51l/min. Pulse rate is adjustable with the help of the manual control unit between 31……200 impulses/l
Input signal Diesel detection	0-26V (0V to +0,9V: Low; 3,4V to 26V: High
Output signal Proportional valve	PWM (250Hz, 24V, 0-100%) Outlet current: 0-250mA
Output signal Motor contactor	24V Outlet current: 0-150mA
Protection class	IP 00

Method of operation of a filling pump with vapour recovery

The valve flow - gas flow characteristic of a fuel pump system is by nature non-linear. To ensure uniform suction over the entire control range, a linear characteristic curve is required. Accordingly a system calibration is carried out using a control "unit (type MKNE-1904)" in which various points along the characteristic curve are automatically saved in the memory of the control unit. The number of points is dependent on the characteristic curve and is automatically determined by the control unit. Likewise, correction of the characteristic curve takes place automatically by linear interpolation between these points.

At the start of dispensing, the control unit calculates the amount of petrol dispensed from the measured pulse rate. Using the linearised characteristic curve and suction rate K-factor, the setpoint value for the valve flow can now be determined and the proportional valve is controlled accordingly to siphon off the petrol vapour. Upon activation of the proportional valve, the vacuum pump is also started to create a vacuum pressure. Upon completion of petrol dispensing, the petrol pump computer no longer generates any impulses and the vapour recovery proportional valve is closed. Once the shut-off delay has elapsed, the vacuum pump is switched off.

No.	Connection
1	Lines from the petrol pump computer (fuel impulse and diesel detection)
2	Suction line
3	Vacuum pump
4	To the ground tank
5	Proportional valve (e.g. 2832)
6	24 V DC contactor/relay for switching the pump motor
7	Electric power supply for Vacuum pump
8	Electric power supply: 24V DC
9	Control Electronics 1094 EV

Ordering chart

Circuitry	Item no.
Electronic Controller for vapour recovery 1094EV	208 373

Ordering chart for accessory

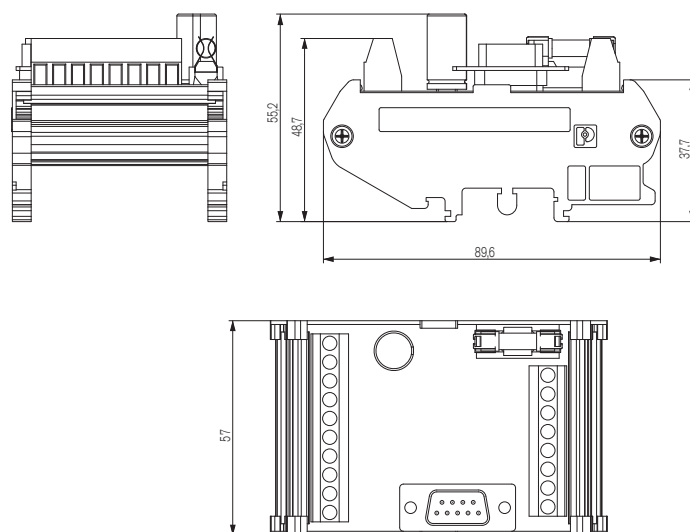| Circuitry	Item no.
Manual control unit german	645 854
Manual control unit english	139 431
Self-adaption set german	137 713
Self adaption set english	704 296
Power supply (Traco Power) 24V TBL30-124	770 156

PIN Connection

Pin	Connection
1	Safety device, F1 Proportional valve
2 (+ Input) 3 (GND)	Frequency input, Fuel impulse, side 1
4 (+ Input) 5 (GND)	Diesel identification, side 1
6 (+ Input) 7 (GND)	Frequency input, Fuel impulse, side 2
8 (+ Input) 9 (GND)	Diesel identification, side 2
10	Switch for side select on communication with manual control unit
11	Jumper C03-C06 for choice of „open collector" or „open emitter" activity of diesel detection and of the frequency input
12	Interface manual control unit
13 (GND) 14 (+ Output)	Control motor contactor, side 2
15 (GND) 16 (+ Output)	Control Proportional valve, side 2
17 (GND) 18 (+ Output)	Control motor contactor, side 1
19 (GND) 20 (+ Output)	Control Proportional valve, side 1
21 (GND) 22 (+24V)	Supply 24V
23	Safety device F2, main fuse control of total current

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Dimensions [mm]

1094EV for 24V version

1094EV for AC (100-240V) version