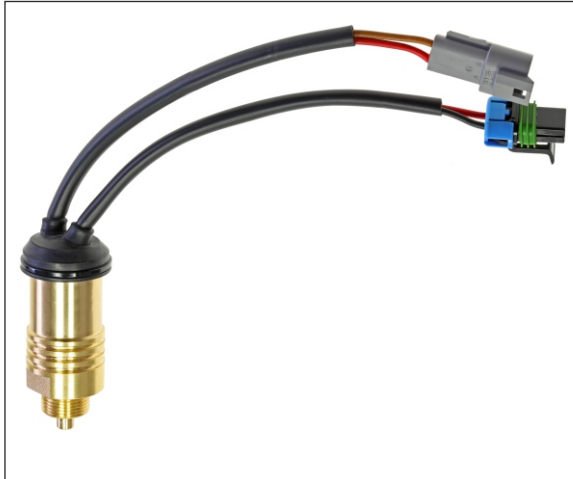


## ● Characteristics

1710 - VENTILATOR CONTROL - CONTROL SYSTEMS -



- Input:	12...30 VDC
- Output:	0...16 A (PWM)
- Application areas:	oil cooling, water cooling
- Medium temperature:	max. 120 °C
- Operating temperature:	-40...85 °C
- Connection ventilator:	Delphi Metri-Pack 280 (female)
- Connection supply:	DT04-3P (male)
- Protection class:	IP67
- Supply:	12...30 VDC
- Dimensions:	see page 4
- KBA-Approval:	ECE-No. E1*10R06/01*9229*00

## ● Technical Data

### Input

Connectable elements: ventilating fan for oil cooling, water cooling  
 Input voltage: 12...30 VDC

### Output

Current output: 0...16 A (PWM)  
 Supply voltage: 12...30 VDC (supply voltage = input voltage)  
 Diagnostic output: Open collector max. 100 mA (frequency output 500...4000 Hz)

### Environmental Conditions

Working temperature: -40...85 °C  
 Medium temperature: max. 120 °C  
 Humidity: no influence

### Mechanics

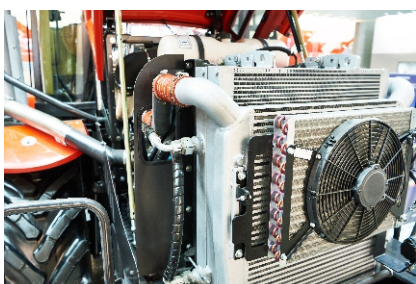
Connection ventilating fan: Delphi Metri-Pack 280, female  
 Connection supply: DT04-3P, male  
 Dimensions: see page 4  
 Thread: M20x1,5  
 G 1/2" (others on request)  
 Material: Body: Brass  
           Cable: PVC  
 Weight: approx. 307 g  
 Protection class: IP67

### Approvals

KBA: ECE type-approval certificate No. E1\*10R06/01\*9229\*00  
 (KBA = Federal Motor Transport Authority)

## ● Applications

The ventilator control MEFC is suitable for connection to oil and water coolers. The MEFC control features a range of diagnostic and control functions for a connected ventilator, e.g. an integrated monitoring system.



## ● Safety and Function

### Safety

Safety fuse: none (a safety fuse has to be connected externally)  
Reverse voltage protection: none

Note: Please ensure the supply voltage has the right polarity!

### Initialization

Switch the MEFC on.

For a few seconds, the ventilator will be set to 100%. Do not interrupt operation! The device is being calibrated to the ventilator. After approx. 10 seconds, the ventilator will switch off and restarted.

Afterwards, the ventilator will run in standard operation with the rotational speed as set by the temperature.

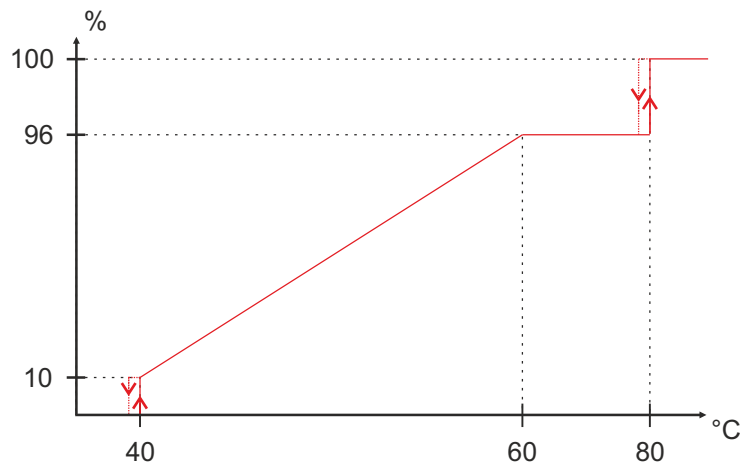
Initialization should not last longer than approx. 15 seconds. If the initialization phase does not end after approx. 15 seconds, there is a fault. Consult the table *Status Messages* (see page 3) for fault recovery.

### Ventilator Output

The rotational speed of the ventilator is set based on the measured oil / water temperature.

Temperature (oil):	40 °C	10% rotational speed
	60 °C	96% rotational speed
	>80 °C	100% rotational speed

The jumps and on/off switch points have a hysteresis of 2 K.



### Ventilator Monitoring

The MEFC has an internal monitoring system for the connected ventilator and supply voltage.

If the current supply goes into overload during operation, e.g. due to a blockage, the ventilating fan will switch off for 5 minutes. Afterwards, the ventilating fan will try to start again. If the current supply has fallen back into a valid range, e.g. by removing a blockage, standard operation will resume. The MEFC also expects a minimum current, too. This value is defined as a very low limit value near zero. If the current supply falls below this expected minimum current, the device will interpret this as a cable break and will switch off for 5 minutes, too.

Note: During the switch-off time, the status is transmitted by a corresponding frequency to the diagnostic output.

If the voltage of the MEFC during operation falls below 10,5 V, the ventilating fan will be switched off, too. As soon as the voltage rises back into the valid range, the ventilating fan will be switched on again. A delay will not take place.

## ● Safety and Function (Continued)

### Diagnostic Output

The diagnostic output transmits some basic information about control and ventilating fan status. The status signal is sent as a square wave signal (pulse duty factor 50%) with variable frequency.

The output is designed as open collector output. An internal transistor switches the output on ground to allow for an externally connected pull-up resistor to define the signal level. The output is internally protected with a 100 mA safety fuse and is permanently short-circuit resistant.

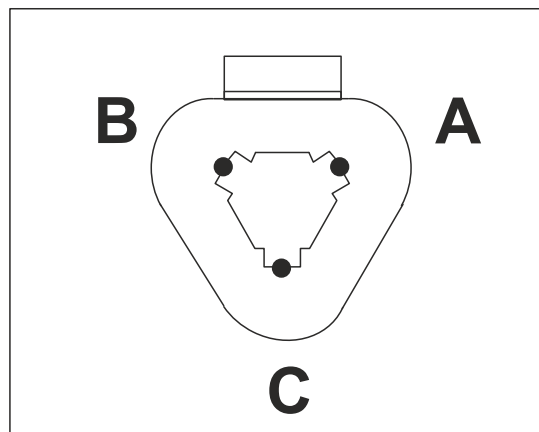
The pull-up resistor used and at a supply of 24 V must have approx. 5k...10k  $\Omega$ . The diagnostic output allows a read-out of information concerning medium temperature, ventilating fan and device status.

**Table Status Messages**

Status	Hz	Solution
Temperature $\leq -20$ °C	500	Heat oil / water, check ventilating fan
Temperature $-20...+120$ °C	500...3300	Standard operation, no error
Temperature $\geq +120$ °C	3300	Cool oil / water, check ventilating fan
Initialization	3500	Standard operation, no error
Initialization $\geq 15$ s duration	3500	Switch off over downstream vehicle control
Ventilating fan overload	3700	Check ventilating fan for possible blockage and remove it
Undervoltage	3800	Check battery and supply voltage
Sensor defect	3900	MEFC is defect, please replace
Ventilating fan cable break	4000	Check for loose connections or severed cables

## ● Electrical Connection

Pin	Function
A	12...30 VDC
B	Ground (GND)
C	Diagnostic Output



### Notes

The ventilator control MEFC is designed for connecting to a 24 VDC cooling ventilating fan or a 24 V vehicle ventilating fan. The MEFC control alone is not a complete machine as per machine directive 2006/42/EG.

The MEFC is equipped with a Delphi Metri-Pack 280 plug (female) for connection to a ventilating fan. For further information about how to connect a ventilating fan please consult the documentation of your chosen ventilating fan.

A Deutsch plug (DT04-3P, male) is available for MEFC voltage supply and diagnostic output.

● **Order Code**

K	H	X	X	X	X	X	X
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<b>Input:</b>	12...30 VDC	0					
<b>Output:</b>	0...16 A (PWM)	0					
<b>Connection Supply:</b>	Deutsch DT04-3P (male)	0					
<b>Connection Fan:</b>	Delphi Metri-Pack 280 (female)	0					
<b>Thread:</b>	M20x1,5					0	
	G 1/2"					1	
	Other (please specify)					2	
<b>Special model:</b>	No						0
	Yes (please specify)						1

● **Dimensions (in mm)**

