

General Purpose Actuator

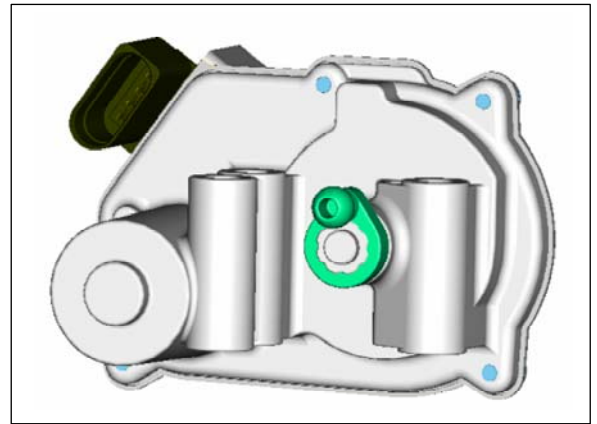
Description

The drive module serves for the adjustment of mechanical flaps or levers.

Through its rugged design, the SMART GPA is applicable within the engine and can be used for the adjustment of turbocharger bypass or throttle actuator

Features

- _ Rugged DC Engine
- _ Integrated Electronics, therefore simple control by PWM Signal
- _ Contactless nonwearing Sensor
- _ High reliability



Design

Within the SMART GPA, Hybrid – Electronics are being used. This concept allows the specification of the maximum environmental temperature of +130° for a trouble-free operation. Electronics and connectors are placed within the cap. The connector pins are bonded directly on top of the hybrid. The 4-pin connector for all the signals from and to the actuator is integrated within the casing. For dimensions and position see customers' draft.

The electronic interface of the SMART GPA allows the integration of the device into the existing engine management systems. The SMART GPA is to be connected with the engine control unit via a 4-pin connector.

Two contacts are used for the supply of the required electric power.

There is a connector contact designed for the feedback of the drive shaft position (PWM-OUT) to the engine management system, another contact receives the setpoint setting of the engine management as a PWM-Signal (PWM-IN).

Technical Data

Nominal voltage:	12 VDC
Operating Voltage:	9 to 17 VDC
Maximum Voltage	24 VDC (120 sec. max.)

Reverse-polarity of the operational voltage does not cause the destruction of the actuator.

Demand of power for electronics:

Actuator integrated electronic requires power of <100mA at $U_{Supply} = 13,5V$, Temperature = +23°C

Specification of nominal value (PWM-IN)

A PWM-Signal serves as input signal

Nominal frequency:	250Hz \pm 3%
Admissible Range:	3% - 97%

The levels of the input signal are defined as follows:

High – level:	$>0,8 \times U_{Supply}$ (>7,2 V)
Low – level:	< 2 V

Feedback of actual value (PWM – OUT)

Apart from the linear actual value range of 20% to 80%, additional discrete PWM-values are defined as feedback signals to the engine control unit and released.

A PWM-Signal serves as output signal.

Nominal frequency:	250Hz \pm 3%
Admissible range:	3% - 97%

The levels of the output signal are defined as follows:

High-Pegel: $> 0,8 \times U_{\text{Supply}}$ but at least 7,2V
Low-Pegel: 0V...1,2V

Mechanical Interface

Forms of gears

Two-tiered spur gear

The surplus moment is valid for the component without external load. Measuring point 10° before the end of the internal adjusting range against the spring load.

Cold start, undervoltage: 0°C; 6V of the actuator	> 17 Ncm
Nominal conditions: RT; 12V of the actuator	> 94 Ncm
Hot start: 120°; 9V of the actuator	> 15 Ncm