Digital Module ADN 407

Outline description: ADN 407

The **ADN 407** has been developed as a digital controller for actuation of servo and proportional valves in which the valve output stage is mounted on the valve. The controller is of dual type for operation of, for example, two axes synchronously as a CNC control system.
To make allowance for an environment possibly containing faults, the output signal is low impedance at ±20 mA or can be jumper-selected to 12 mA ±8 mA.

The **ADN 407** is extremely suitable, with high-speed servo valves, for control tasks in the 0–150 Hz frequency range. In combination with the add-on module (MD15), the **ADN 407** can also be operated as a two-axis CNC control system. As a digital controller for one axis, the cascade controller for three control loops provides sufficient hardware for performance of a large number of control tasks.

The input sensor system is equipped with interchangeable sensor modules, signifying that the module can be operated using the widely used input signals, such as 4–20 mA or ±10 V, for example, or other similar signals. A medium-frequency generator with demodulator is possible for operation with inductive position encoders. The sensor input modules are equipped with a second-order low-pass filter. Phase shift at 150 Hz is approx. 13°, damping at 10 kHz approx. ca. 45 dB.

The sensors can be secured against vibration, in order to permit mobile applications. The line of action (sign) of the individual sensor modules can be selected using the **ADN configurator**. This permits rapid start-up of the entire system at rational cost. Fine matching to various valve currents is possible using level limitation.

The external sensors can be supplied with 24 V DC from the device. A PTC thermistor assures full thermistor-type protection against external short-circuits. Any faults are signalized via a separate output, which can be loaded to 24 V/100 mA.

The **ADN 407** is equipped with six opto-decoupled inputs. These are, in standard configuration, one Enable input, one Ramp OFF input, and four setpoint inputs. Other input configurations are also possible in special cases. The ramps are assigned to the four internal setpoints and can be set from 0.01 s to 30 s in increments of 10 ms. The module can, in addition, also be actuated externally via an analog input or via the CAN bus. The three controllers are P, I and DT1 controllers, with a sample time for all controllers of approx. 0.1 ms, including the necessary monitoring functions.

An internal function generator, the frequency of which can be selected from 0.1 to 50 Hz, is available for controller optimization. The generator supplies sinusoidal, triangular and square waves. Amplitude and offset can be entered at ±10 V.

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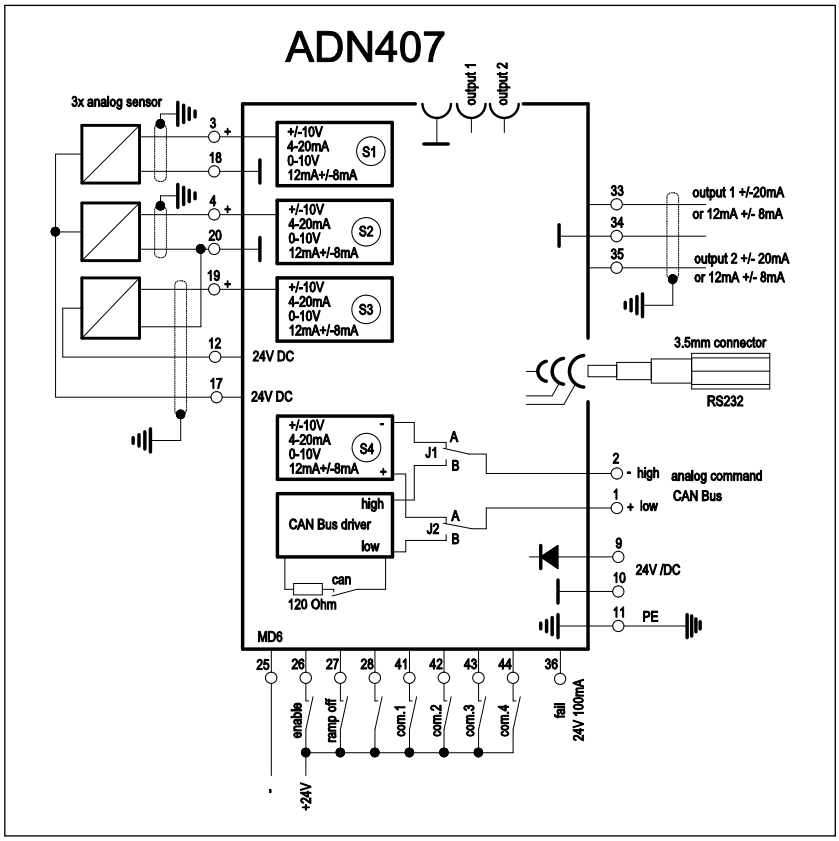
COMPONENTS

Digital Module ADN 407

All settings on the **ADN 407** are effected using the **ADN configurator** via an **RS232** interface linked to a PC or laptop computer.

The input software **ADN configurator** is available on the Internet.



Technical data:

Supply voltage	24V DC, nominal (22 to 28V) DC
Bias current (idling)	approx. 70mA
Auxiliary voltage	22 to 28V DC for supply of the sensors; sustained short-circuit-proof via 0.5A resettable fuse
Output signal	2 x ±20mA to 1kOhm or (jumper-selectable) 12mA ±8mA to 100 to 500 Ohm
Inputs	6, opto-decoupled, of which 1 x Enable, 1 x Ramp OFF and 4 x setpoint (internal)
Alarm output	1 x 24V/100mA. The inputs may possibly be differently used.
Measuring sockets	The output signal of ±10V can be measured at full deflection on Measuring Sockets M1 and M2. This signal is equivalent to ±20mA or 12mA ±8mA
Ambient temperature	–20 to +60°C
Microprocessor	16 bit signal processor with a processing speed of 40 MIPS
Program cycle time	9.7kHz for the entire computer program, approx. 0.1ms
Controller setting range	1 to 32000 for P, I, DT1
Function generator	Sinusoidal, triangular and square-wave generator, with offset and amplitudes Setting from ±10V; frequency range 0.1 to 50Hz
Sensor modules	±10V, 12mA ±8mA, 4–20mA, 0–10V, 7.5V ±4V
Fault signalization	Wire breakage in 12mA ±8mA 4–20mA 7.5V ±4V in case of short-circuit in the sensor supply. Signalization via a 24V/100mA output, flashing red LED and display on the **ADN configurator**
Parametering	Parameters are entered on the **ADN configurator**. This input software is available via the Internet.

An USB-to-RS232 adapter is required for use with laptops with a USB interface.