

AP80 Display Controller

Suitable for:

- **Displaying position and velocity**
- **Signal conversion**
- **Cam control**
- **Under/over speed monitoring**
- **Display for non-linear position and velocity**



For sensors with:

- **SSI - interface**
- **Incremental encodersignals**
- **Start/Stop signals**
- **Bit-parallel output**

General

The AP80 is designed to display position and velocity, to be used as an electronic camshaft, to convert signals and has the abilities to solve complex and unusual applications.

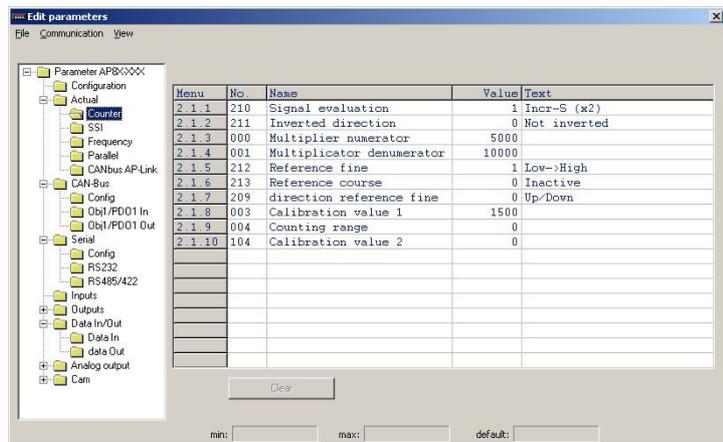
For this, the AP80 uses a sensor input that can handle various kinds of position signals. The position and velocity values can be adjusted through a set of parameters.

Main features:

- 8 digit display, digit height 14mm
- CAN bus, RS232, RS485 communication
- Inputs and outputs optically isolated
- 24 (dynamic) cams

Programming

The AP80 can be programmed by using the front keys. Another possibility is to use the PC-program DST80. This software allows easy access to and overview of all parameters. The settings of the display controller can be stored on your harddrive. The communications with the AP80 are ASCII based RS232; it is possible to connect the AP80 to other PC-software.

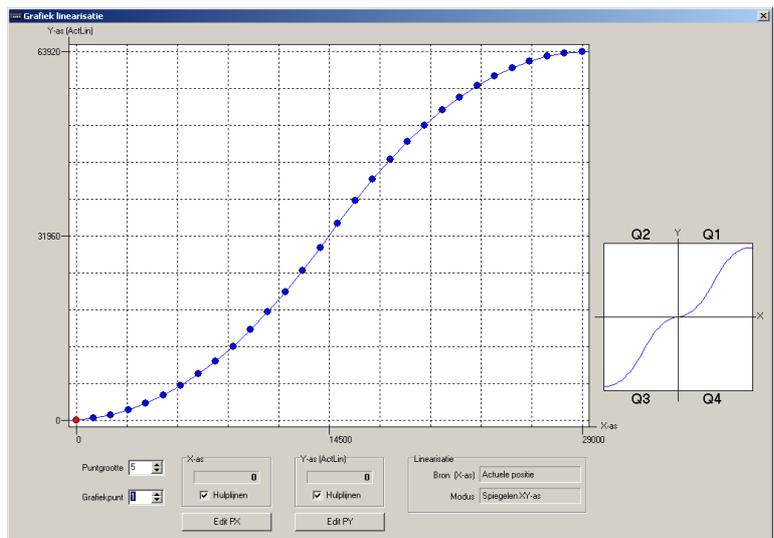


Display for position and velocity

The sensor value is adjusted by the programmable parameters. The value can be converted to any desired unit, e.g. mm, meters or mm/sec. This value can be displayed on the 8 digit display of the AP80. Based on the actual display limit values or cams can be programmed.

Linearization function

The AP20 has a very powerful linearization function and allows to display and process nonlinear motions. The actual display position or speed value is converted into an additional value "actual linearization". Interpolation takes place between these (max. 30) points. This additional value can also serve as a source for the cams function, analog output or data output.



Signal conversion

One of the unique possibilities of the AP80 is to convert the display value to an analog value or a bit-parallel output code. This feature makes it easy to convert for example the value of a SSI-encoder to an analog value or to a parallel BCD-code.

Cam controller

It is possible to freely program a total of 24 cams. These cams can be assigned to 9 different outputs and can be compensated dynamically for dead-time. It is also possible to program the cams with a hysteresis.

The response time for the AP80 is no more than 250 microseconds (1 cycletime).

Other features

Many applications can be solved by using the display controller AP80. A few possibilities:

- Circumference measurement
- Programmable counting range
- Cam generator
- Positioning with relative cams
- Product length measurement
- Linearization functions
- Monitoring speed and position
- Etc.

Overview connections

Sensors:

SSI input

Input for sensors with SSI. The number of clock pulses and number of databits can be programmed, as well as the code (Gray, binary).

Incremental input

Different types of signals can be connected to the input:

- 5 VTTL with marker pulse and inverted signals
- 5 VTTL without inverted signals
- 24 VHTL (A, B, N)
- S-signal: 24V blockpulse (1 channel) with a separate directional signal

Start/Stop

The start-stop input is used for the linear displacement sensors from MTS Sensor Technologie. These sensors are easily connected to the AP80.

Bit-parallel input

Encoders with a parallel output like Gray, Binary code or BCD can be read by the AP80 using the parallel data-inputmodule.

CAN bus and AP-link

Multiple AP80 units can be connected to a CAN-bus. The AP-link protocol takes care of the communication between the units. This way the position and velocity data can be transmitted to other units.

RS232/RS485 communication

The ASCII-protocol is used to communicate with the AP80. The PC-software DST80 uses this protocol to enable easy programming with the PC.

Analog output

The optional analog output has a 16 bit D/A convertor. Both current or voltage are possible. The analog output is freely adjustable within the entire range of -20..+20mA or -10V..+10V.

Parallel datamodule

The optional parallel data-output (option P or F) enables the output of a BCD, Gray, Binary or Petherick-coded value. The parallel data-input (option P) can be used to read a parallel encoder or to connect an external thumbwheel switch to realize relative cams.

Logical inputs and outputs

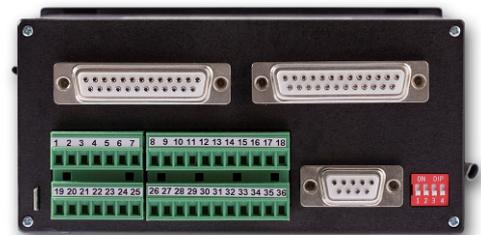
The AP80 has 6 digital inputs and 9 digital outputs.

For example the following functions can be assigned to the **inputs**:

- Reset error
- Keylock
- Start / stop cams
- Enable data-output
- Etc.

The following functions can be assigned to the **outputs**:

- Cams
- Error
- Cams active
- Etc.



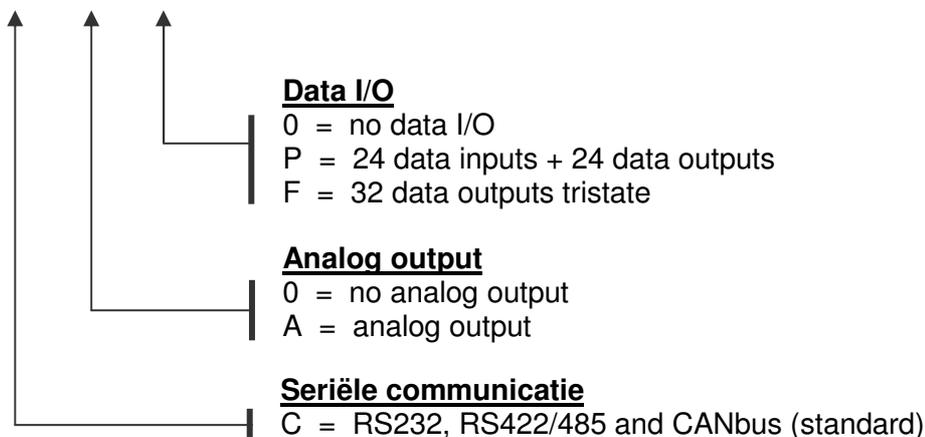
Technical data

Supply voltage	10...35 V DC (without power failure) 16...35 V DC (with power failure)
<i>consumption</i>	< 150 mA (without sensor-consumption)
Output voltage	For external sensor
+ Ud	Max. 400 mA depending on supply voltage
+5V	Max. 400 mA
Max. counting range	-9999999...+99999999
Cycle time	250 µs (fixed)
Incremental input	Optically isolated
<i>Signal level</i>	Low (5V): 0...+0,8 V High (5V): +2,8...+5 V Low (24V): 0...+5 V High (24V): +15...+35 V
<i>Input resistance</i>	appr. 3K Ohm at 24 V appr. 0,35 Ohm at 5 V
<i>Input frequency</i>	Max. 150 kHz
<i>Impulswidth K0</i>	Min. 2 µs
SSI	Optically isolated
<i>clock-output</i>	driver according to RS422
<i>clock-frequency</i>	125 KHz (138,9 kHz if > 26 bit encoder signal)
Digital inputs 1...6	Optically isolated; low: 0...+5 V; high: +10 V...+35 V
<i>Input resistance</i>	Appr. 1.8 kΩ at 24 V
Digital outputs 1...9	Optically isolated, N FET, short-circuit proof; I _{max} 500 mA
<i>Supply voltage</i>	35 V max.
Voltage output	Galvanically isolated; max. -10 V ... +12 V; 16 bit
Current output	Galvanically isolated; max. -20 mA ... +20 mA; 16 bit
Data-input (P)	Optically isolated; 24 bit
Data-output (P)	Optically isolated, NPN transistor, 24 bit, open emitter with PTC
<i>I_{max}</i>	50 mA
<i>Supply voltage</i>	35 V DC max.
Data-output (F)	Optically isolated, push-pull with tri-state control and short-circuit proof
<i>I_{max}</i>	50 mA
<i>Supply voltage</i>	35 V DC max.
<i>Output voltage</i>	Supply voltage -1 V max
Serial ports	Ser-1 RS232 C Ser-2 RS422/485
Display	8 digit 7-segment LED; digit-height 14 mm

Temperature range	0...50°C
EMC	According to EMC directive 89/366/EEC emission EN 50081-1 immunity EN50082-2
Weight	< 0.7 kg
Sealing	front IP50; rear IP20

Typekey

AP80 - C X X



Accessories

- CDS-B01 transparant protective DIN-hood with lock - IP54
- CDS-B21 transparant cover made from soft plastic - IP65 (keys accessible)
- EMC-B01 EMC-bracket to connect cables and shielding
- EM1016 USB/RS232 converter
- KBL006-002 RS232 cable 2m with 2x 9P sub-D connector

Scope of delivery

Connectors, 2 fixings and EMC-bracket are within the scope of delivery.
 A CD with manuals and software is included.

Sales

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