

## **AP20 Counter**

### **Suitable for:**

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



### **For sensors with incremental interface 5V TTL or 24V HTL**

- **90° shifted signals (A and B)**
- **One channel blockpulse with separate directional signal**

**General**

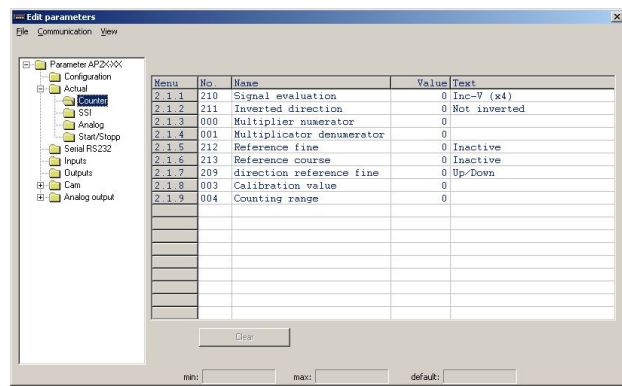
The AP20 is designed to display position and velocity, to be used as an electronic camshaft, to convert signals and has the abilities to solve complex and unusual applications. For this, the AP20 uses a sensor input that can handle various kinds of incremental signals. The position and velocity values can be adjusted through a set of parameters.

Main features:

- 8 digit display, digit height 10mm
- RS232-communication
- Analog output (optional)
- 2 digital Inputs and 4 (optional) digital outputs
- All inputs and outputs are optically isolated
- 12 programmable cams

**Programming**

The AP20 can be programmed by using the front keys. Another possibility is to use the PC-program DST2. 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 AP20 are ASCII based RS232; it is possible to connect the AP20 to other PC-software.

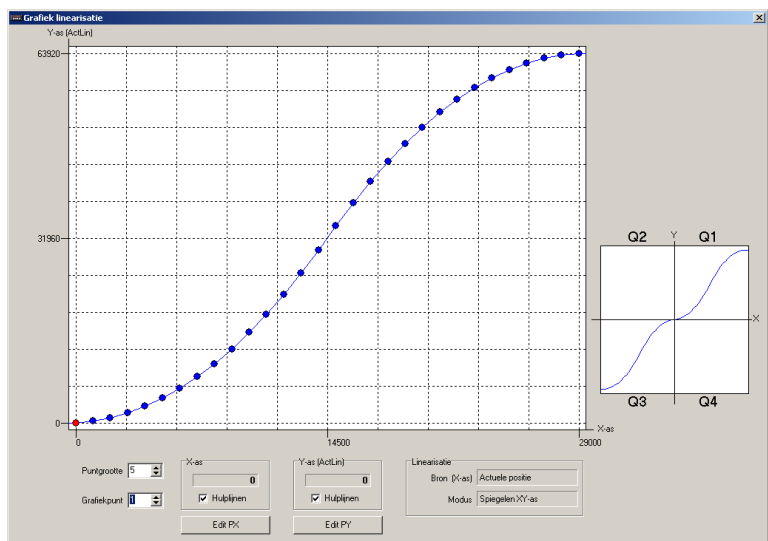


**Display for position and velocity**

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 AP20. 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 or analog output.



**Signal conversion**

One of the unique possibilities of the AP20 is to convert the display value to a current or voltage. The range of the analog output is fully adjustable from -20..+20 mA or -10V..+10V. This feature makes it easy to convert a position or velocity to an analog value. The analog output is available as an option.

**Cam controller**

It is possible to freely program a total of 12 cams. These cams can be assigned to 4 different outputs. It is possible to program the cams with a hysteresis. The outputs are available as an option. The response time for the AP20 is no more than 250 microseconds (1 cycletime).

**Other features**

Many applications can be solved by using the display controller AP20. A few possibilities:

- Programmable counting range
- Velocity measurement
- Under-/overspeed monitoring

## Overview connections

### Sensor:

#### **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

### RS232 communication

The ASCII-protocol is used to communicate with the AP20. The PC-software DST2 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.

### Logical inputs and outputs

The AP20 has 2 digital inputs and 4 (optional) digital outputs.

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

- Preset counter
- Store
- Start / stop cams
- Etc.

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

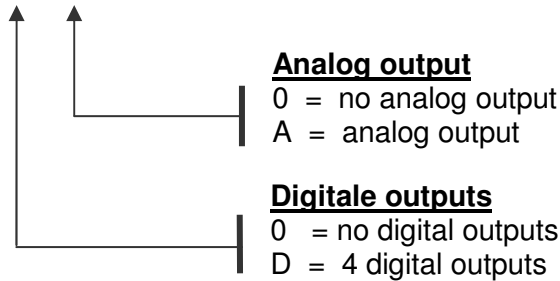
- Cams
- Counting direction
- Cams active
- Etc.

## Technical data

<b>Supply voltage</b>	10...35 V DC (without power failure) 16...35 V DC (with power failure)
<i>consumption</i>	< 150 mA (without sensor-consumption)
<b>Output voltage</b>	For external sensor
+ Ud	max 400 mA depending on supply voltage
+5V	max 400 mA
<b>Max. counting range</b>	-9999999...+99999999
<b>Cycle time</b>	250 µs (fixed)
<b>Incremental input</b>	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 Ref fine (K0)</i>	Min. 2 µs
<b>Digital inputs 1...2</b>	Optically isolated; low: 0...+5 V; high: +10 V...+35 V
<i>Input resistance</i>	Appr. 1.8 kΩ at 24 V
<b>Digital outputs 1...4</b>	Optically isolated, N FET, short-circuit proof; I <sub>max</sub> 500 mA
<i>Supply voltage</i>	35 V max.
<b>Voltage output</b>	Galvanically isolated; max. -10 V ... +10 V; 16 bit; I <sub>max</sub> ± 12 mA
<b>Current output</b>	Galvanically isolated; max. -20 mA ... +20 mA; 16 bit; R <sub>max</sub> 550 Ω
<b>Serial ports</b>	RS232 C
<b>Display</b>	8 digit 7-segment LED; digit-height 10 mm
<b>Temperature range</b>	0...50 °C
<b>EMC</b>	According to EMC directive 2004/108/EC emission NEN-EN-IEC61000-6-3:2007 immunity NEN-EN-IEC61000-6-3:2005
<b>Weight</b>	< 0.25 kg
<b>Sealing</b>	front: IP50; rear: IP20

Typekey

AP20 – X X



Accessories

- CDS-B02 transparant protective DIN-hood with lock - IP54
- CDS-B22 transparant cover made from soft plastic - IP65 (keys accessible)
- EMC-B02 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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