

AP90 Display Controller

Suitable for:

- **Displaying position and velocity**
- **Signal conversion**
- **Cam control**



For connecting 2 sensors with:

- **SSI – interface and/or**
- **Incremental encodersignals**

General

The AP90 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.

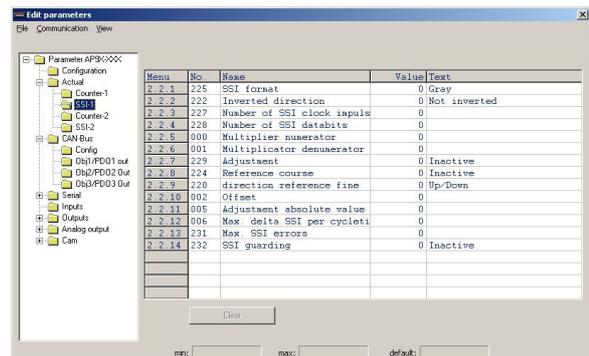
For this, the AP90 uses **two** sensor inputs that can handle various kinds of position signals. The position and velocity values can be adjusted through a set of parameters.

Main features:

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

Programming

The AP90 can be programmed by using the front keys. Another possibility is to use the PC-program DST90. 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 AP90 are ASCII based RS232; it is possible to connect the AP90 to other PC-software.



Display for position and velocity

The sensor values are adjusted by means of 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 AP90. The difference between the two sensors can be displayed as well. Based on the actual display value (position, velocity or difference), limit values or cams can be programmed.

Signal conversion

One of the unique possibilities of the AP90 is to convert the display value to an analog value. This feature makes it easy to convert for example the value of a SSI-encoder to an analog value. The difference value can be converted to an analog value as well.

Cam controller

It is possible to freely program a total of 40 cams. These cams can be assigned to 16 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 AP90 is no more than 500 microseconds (1 cycletime).

Other features

Many applications can be solved by using the display controller AP90. A few possibilities:

- Difference measurement
- Cam generator

Overview connections

Sensors:

The AP90 has two inputs to connect a sensor. Both SSI and or incremental sensors can be connected.

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

CAN bus and AP-link

Multiple AP90 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 AP90. The PC-software DST90 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

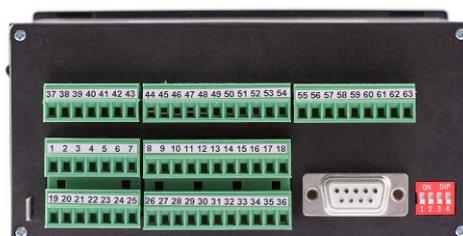
The AP90 has 8 digital inputs and 16 digital outputs.

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

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

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

- Cams
- Error
- Cams active
- Etc.

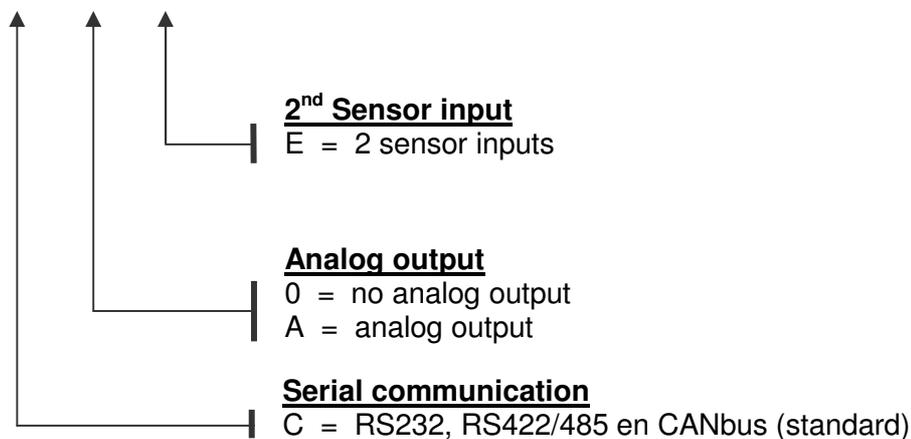


Technical data

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	500 µs (fixed)
Incremental input 1,2	Optically isolated
<i>Input frequency</i>	Max. 150 kHz
<i>Impulswidth K0</i>	Min. 2 µs
SSI 1,2	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...8	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...16	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 ... +10 V; 16 bit; 5ms refresh
Current output	Galvanically isolated; max. -20 mA ... +20 mA; 16 bit; 5ms refresh
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

AP90 - C X E



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

Scope of delivery

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

Sales

Netherlands and Belgium

t s b - bescom b.v.
Sporallee 8
6921 HZ Duiven
Netherlands

telefoon: +31 (0)316 250 800
e-mail: info@tsb-bescom.nl

telefax: +31 (0)316 250 819
internet: www.tsb-bescom.nl

