1 Content

2 Introduction

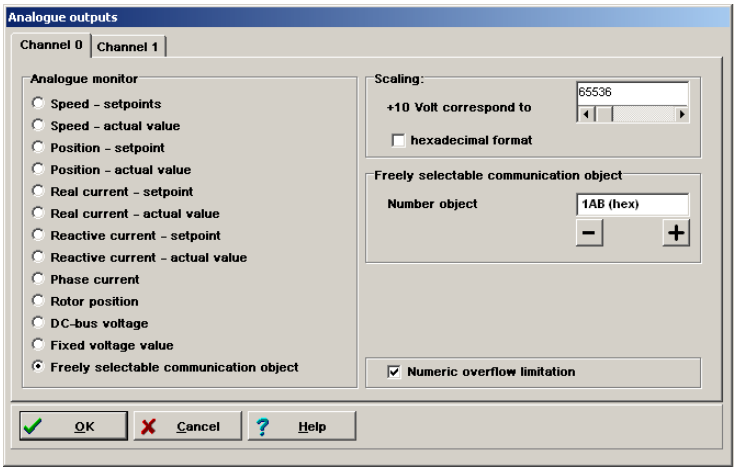
In a lot of applications the ARS 2000 family servo positioning drives are controlled by using analogue input values. Therefore analogue set-point values are fed into the analogue inputs of the ARS 2000. As return value the actual values of the ARS 2000 drives can be put out of the analogue outputs. In most cases the actual position value is put out here on the analogue output 0 (AOUT0).

Using the standard functionality of the ServoCommander™ software a minimum scaling of +10V comply to 1 revolution can be used. In applications, where the drive only moves in a position range smaller than 1 revolution, possible resolution of the AOUT0 is lost using this standard parameters.

This application note shall describe a possible way, the scaling of the AOUT0 can be parameterised in a way, that +10V comply to a actual position value smaller than 1 revolution.

3 Settings in the ServoCommander™ software

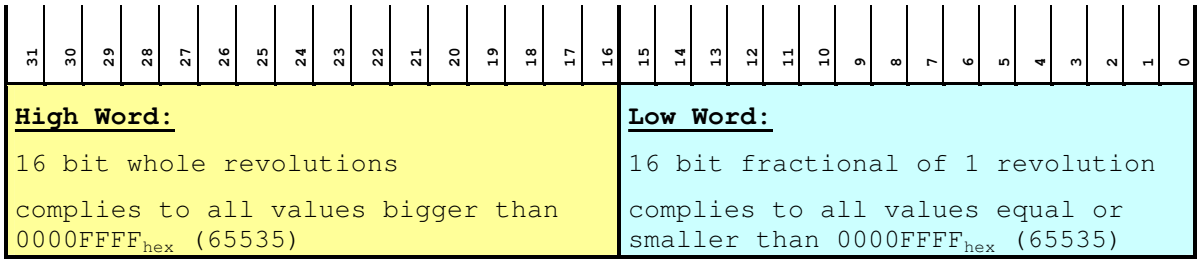
The scaling und the data source for the analogue output value has to be set in the window “Analogue outputs” of the parametrizing software ServoCommander™.



In this window as data source for the analogue output not the “Position – actual value” is chosen, but the “Freely selectable communication object”. By choosing this option, a new input field “Freely selectable communication object – Number object” occurs. In this input field the number $01AB_{hex}$ has to be entered. By doing this, the data source for the analogue output is switched to the communication object $01AB_{hex}$.

By the use of this communication object, the actual position value can be read as a 32 bit wide data value. In this object the upper 16 bit comply to the complete revolutions of the actual position, while the lower 16 bit comply to the parts of one revolution of the actual position value.

The communication object has the following structure:



Now the scaling of the analogue output can be set in a way, that the maximum output voltage range of +/- 10V can be used for a position range smaller than 1 revolution. To do this the scaling for the output has to be set in the input field “Scaling” of the window “Analogue outputs” of the ServoCommander™ software.

The following table shall give examples of possible values for the scaling and the resulting resolution on the analogue output.

Scaling decimal	Scaling hex	Output voltage range
131072	00020000_{hex}	+10 Volt comply to 2,00 revolutions
65536	00010000_{hex}	+10 Volt comply to 1,00 revolutions
32768	00008000_{hex}	+10 Volt comply to 0,50 revolutions
16384	00004000_{hex}	+10 Volt comply to 0,25 revolutions
...	...	...

This list can be expanded by the user at will. This way the scaling can directly be adapted to the needs of the specific application.

Caution!

It has to be considered, that all position values, that shall be moved to in the application lie within the position range, that can be displayed by the analogue output using the actual scaling.

If the position value lies outside the displayable position range of the analogue output, there are two possible behaviours of the ARS 2000 drives.

1. The analogue output value stays on the maximum output value (+/-10V), until the drive moves back to a position, that lies inside the position range, that can be displayed by the analogue output. This behaviour is used by the drive, if the option “Numeric overflow limitation“ is active in the ServoCommander™ software.
2. The analogue output value simply overruns from the maximum negative value (-10V) to the maximum positive value (+10V), if the displayable position range is exceeded or vice versa. This behaviour is used by the drive, if the option “Numeric overflow limitation“ is inactive in the ServoCommander™ software.