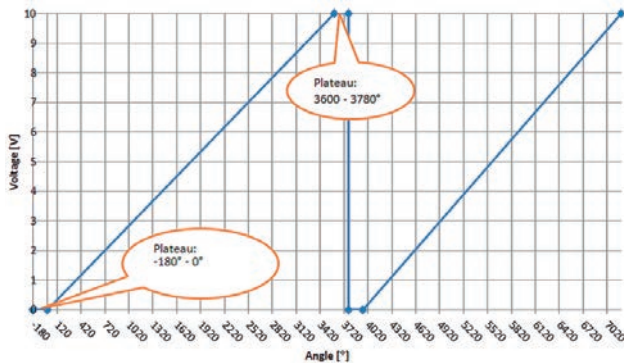


At the state of delivery there is an electrical angle of 20 turns adjusted (7200°). The signal is increasing if you turn the shaft clockwise while you view on the shaft end.



Picture 1. Signal output multi-turn encoder state of delivery

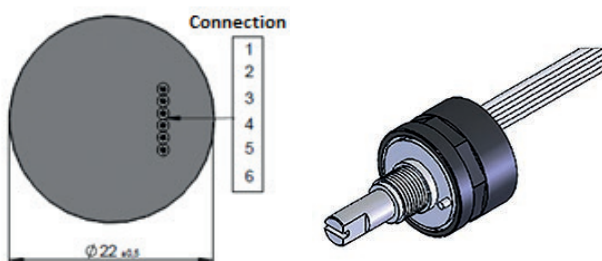
Before the starting point and after the end of the signal transition there is a plateau of a half turn each side (180°). That means the signal has a periodicity of 11 turns.

There are 3 different adjusting modes of the encoder CM26M:

- 1. ANGLE adjust mode.** With the angle adjust you can define (teach in) the start and end position and the turning sense in accordance with the sensor shaft movement.
- 2. REFERENCE adjust mode.** This adjustment moves the zero position to the current position of the shaft. The programmed angle is not affected.
- 3. RESET adjust mode.** This adjustment moves the zero position to the current position of the shaft. The sense rotation is programmed according to the input signal (DIR, pin 6). The output signal is set to 10-turns with plateaus.

## 1. ANGLE ADJUST MODE

To set the Angle adjust mode the encoder must be connected according the following pictures and steps defined below.



Picture 2. Pins identification with the encoder seen from the shaft side.

1. GND (Identified with blue mark)
2. OUTPUT SIGNAL (0...5V or 0...10V)
3. POWER SUPPLY (16...30VDC)
4. SET START
5. SET END
6. DIR (change direction to CCW)

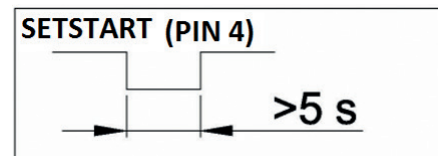
**⚠ Previously to programming, please take care to connect the DIR input (pin 6) accordingly. We should connect DIR input to GND to set a counterclockwise turn sense. DIR input no connected set the encoder with a clockwise sense.**

### Connections:

- Pin 1 (blue): GND
- Pin 2: OUTPUT SIGNAL
- Pin 3: POWER SUPPLY (Vcc 16...30VDC)
- Pin 4: SET START (Programming cable)
- Pin 5: SET END (Programming cable)
- Pin 6: DIR (change direction to a CCW). **Connect to GND, meanwhile programming, if turn sense desired is counter clockwise. Otherwise no connect it (clockwise turn sense).**

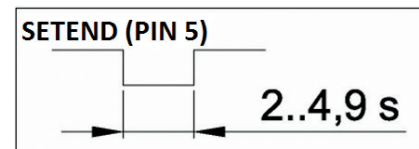
**⚠ Ensure that there is no contact between pins. It could damage the encoder.**

**Step 1.** To activate the angle adjust mode please switch the input pin SETSTART according to the below picture. At the same time you set the START position. That means the beginning of the signal transition is adjusted at the current shaft position.



**Step 2.** The sensor should be moved to the end position, turning the shaft. Please take care to do this in accordance with the signal input DIR. At the beginning of the movement away from the START position (0V) the sensor does not know the correct slope. Because of this the output signal slope is based on the maximum number of turns 10V/200rev.

**Step 3.** Then setting of the END position and closing the angle adjustment mode, connecting SETEND pin to GND according to the picture below. When you set the END position the maximum signal level (5V or 10V) is set at the current shaft position.



**Step 4.** Ensure that the encoder is right now programmed according with the turn sense and adjusted angle.

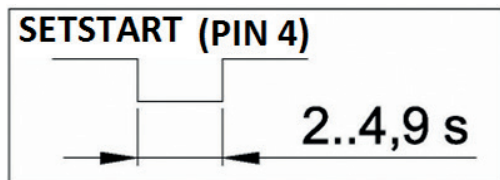
**⚠ Please take care**

If you program start and stop, the turning sense has to be conform with the DIR input signal. That means in case of DIR signal input not connected you should turn the shaft clockwise to adjust the end position afterwards. If you need a counter clockwise signal output you have to tie the DIR input down to ground. If you do not stick to this rule your sensor does not function correctly. Please note that the start and end position is stored in a flash memory. Because of this you should not do more than 10 000 adjusting cycles.

## 2. REFERENCE ADJUST MODE

This function is helpful if the sensor was moved without power supply more than  $\pm 179^\circ$  and due to this lost the reference to the zero point of the multiturn information.

**Step 1.** Tie the pin 4 SETSTART input to a GND according to the below time interval. After that, the zero point (minimum signal level) is moved to the current shaft position. The electrical signal angle and the turning sense are not affected. The signal input DIR is not considered.

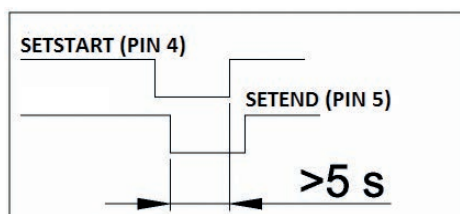


**Step 2.** Check the readjustment and that the encoder works correctly according to the ZERO position.


## 3. RESET ADJUST MODE

This adjustment reset the encoder electrical angle.

**Step 1.** If you switch both control inputs SETSTART and SETEND according to the below picture, the electrical angle will be reseted to 10 turns. Furthermore the zero position of the signal will be moved to the current shaft position and the turning sense is set according to the state of the DIR input. That means if DIR is not connected you will get a clockwise signal characteristic.



**Step 2.** Check the output signal according adjustments of this programming mode.

-  - After programming the encoder in any of three modes, hold the SET START, SET END and DIR pins unconnected.
- The encoder adjustments are safely stored, regardless of whether the device loses the power supply, until one of programming mode is started again.