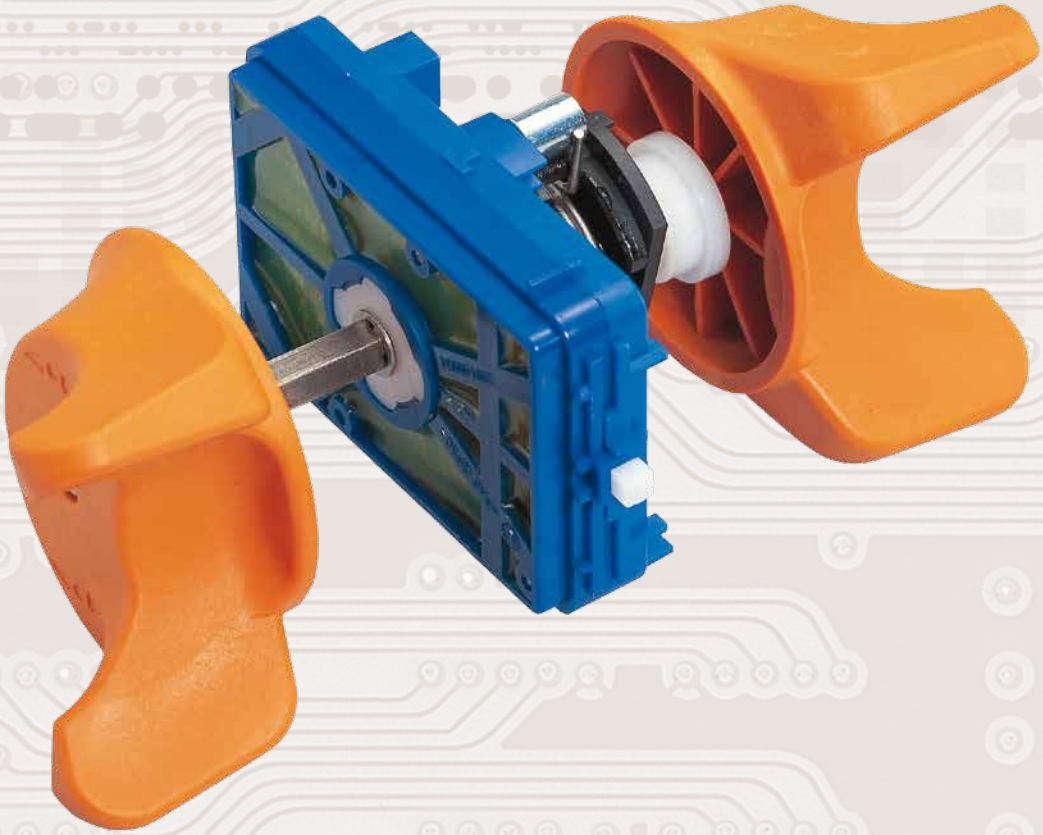


UNIVERSAL TRACTION SWITCH

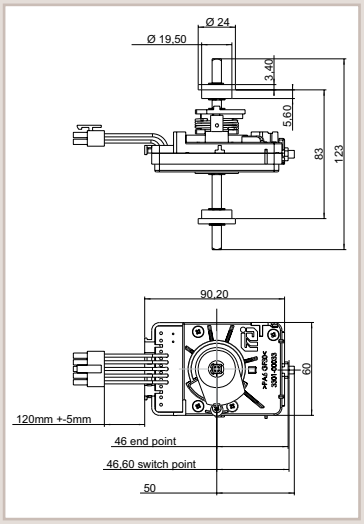
The UNIVERSAL traction switch serves as a setpoint generator for electrically powered vehicles. Besides the analogue signal for the travel speed setpoint, the traction switch also delivers two digital direction signals. Using the integrated microswitch, a body protection switch function can be implemented in the tiller head.
The UNIVERSAL traction switch is available with various analogue characteristic curves as well as active-low and active-high digital outputs. This ensures compatibility with motor controllers from well-known controller manufacturers.

- Angle of rotation: ±45°
- Membrane-sensor technology for potentiometers and direction switches
- Integrated microswitch for the body protection switch function
- Ideal for use in TEMO 600 and TEMO 200
- Two digital direction signals
- One analogue signal for travel speed
- Various analogue output characteristics available
- Optional separate power supply for potentiometers
- Compatible with a large number of motor controllers
- Rated voltage: 24/36/48 VDC
- Protection class: IP 54

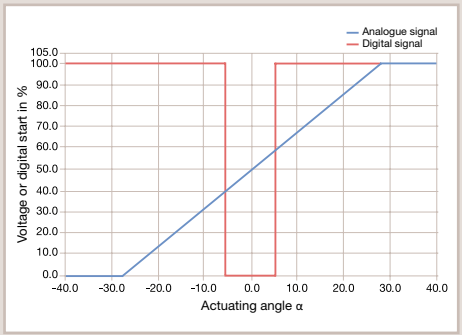
Traction switch

www.frei.de

Dimensions [mm]

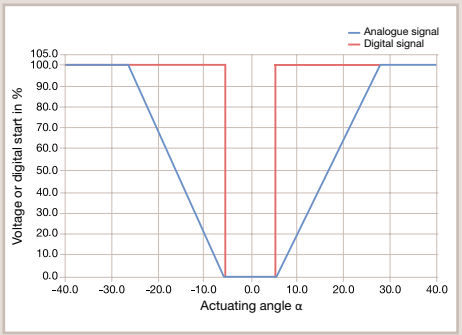


Example of a characteristic curve



Wig-wag signal (without tolerance indication)

Example of a characteristic curve



Single-ended signal (without tolerance indication)

Technical data	
Mechanical data	
Dimensions	See drawing
Mechanical movement	2 x 43°± 2°
Actuation	Square axle of size 6 x 6 mm
Contact system 39-01-2100	Cable with 10-pin Molex Mini-Fit, Jr.™
Cable type	10 x FLRY 0.5 mm²
Electrical data	
Rated operating voltage	24 VDC (14 to 60 VDC)
Power consumption	< 40 mA
Supply voltage potentiometer	12 V max.
Resistance track potentiometer	R_{total} 5.875 kΩ for single-ended signal
Max. current, analogue output	0.5 mA

Technical data	
Electrical data	
Digital signal	
Output	Transistor with open collector
Max. permissible voltage	35 VDC
Max. permissible current	10 mA
Belly button switch for external supply	
Max. voltage	48 VDC
Max. current (resistive load)	70 mA
Operating conditions	
Operating temperature range	-30°C to +50°C
Max. actuation force	12 Nm
Service life	2 million cycles
Vibration test/shock	DIN EN 60068-2-6/27/29
EMC	DIN EN 12895
Degree of protection	IP 54 (except for the connector)

Various traction switch types

Accelerator switch	3105-00136-00	3105-00136-01	3105-00136-03	3105-00136-04	3105-00136-05	3105-00136-06	3105-00136-07	3105-00136-08
Characteristic curve	Single-ended	Single-ended	Single-ended	Single-ended	Wig-wag	Wig-wag	Single-ended	Wig-wag
Rated operating voltage	24/36/48 V	24/36/48 V	24/36/48 V	24/36/48 V	24/36/48 V	24/36/48 V	24/36/48 V	24/36/48 V
PIN 1	Belly NC active-high	Belly NC active-high	Belly NC active-low	Belly NC active-low	Belly NC active-high	Belly NC active-low	Belly NC active-low	Belly NC
PIN 2	–	–	–	–	–	–	–	Potentiometer
PIN 3	Digital signal 2 active-high	Digital signal 2 active-high	Digital signal 2 active-low	Digital signal 2 active-low	Digital signal 2 active-high	Digital signal 2 active-low	Digital signal 2 active-low	Digital signal 2
PIN 4	–	Potimeter + (max. 12 V)	–	Potimeter + (max. 12 V) (	Potimeter + (max. 12 V)	Potimeter + (max. 12 V)	Potimeter + (max. 12 V)	Potimeter + (max. 12 V)
PIN 5	Analogue output 0 – 5 V	Potentiometer out	Analogue output 0 – 5 V	Potentiometer out	Potentiometer out	Potentiometer out	Potentiometer out	Potentiometer out
PIN 6	GND	GND	GND	GND	GND	GND	GND	GND
PIN 7	+UB (14 – 60 V)	+UB (14 – 60 V)	+UB (14 – 60 V)	+UB (14 – 60 V)	+UB (14 – 60 V)	+UB (14 – 60 V)	+UB (14 – 60 V)	Digital IN (signal 1 + 2)
PIN 8	Belly NO active-high	Belly NO active-high	Belly NO active-low	Belly NO active-low	Belly NO active-high	Belly NO active-low	Belly NO active-low	Belly NO
PIN 9	Digital signal 1 active-high	Digital signal 1 active-high	Digital signal 1 active-low	Digital signal 1 active-low	Digital signal 1 active-high	Digital signal 1 active-low	Digital signal 1 active-low	Digital signal 1
PIN 10	–	Potentiometer-	–	GND bridged from PIN 6	Potentiometer -	Potentiometer -	Potentiometer -	Belly IN