

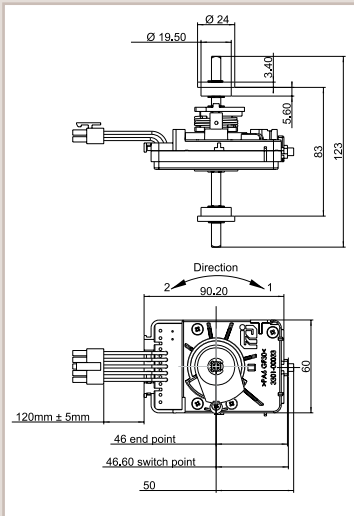
UNIVERSAL TRACTION SWITCH

The UNIVERSAL traction switch serves as a setpoint device for electrically powered vehicles. Besides the analogue signal for the travel speed setpoint, the traction switch also provides two digital direction signals. Using the integrated microswitch, a body protection switch function can be implemented in the tiller head.

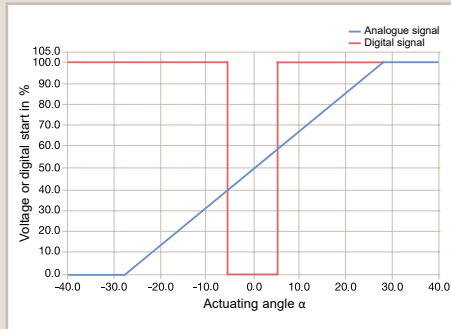
The UNIVERSAL traction switch is available with various analogue characteristic curves as well as active-low and active-high digital outputs. This ensures compatibility with motor controllers from well-known controller manufacturers.

- Angle of rotation: $\pm 45^\circ$
- 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
- Optional separate power supply for potentiometers

Dimensions [mm]

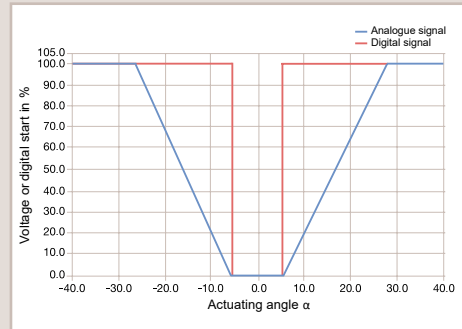


Example of a characteristic curve



Wig-wag signal (without tolerance indication)

Example of a characteristic curve



Single-ended signal (without tolerance indication)

Technical data

Technology	Membrane-sensor technology for potentiometers
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Mechanical data

Dimensions	See drawing
Mechanical angle of rotation	$2 \times 43^\circ \pm 2^\circ$
Actuation force	Square axle of size 6 x 6 mm
Cable and plug-in connector	10-pin Molex Mini-Fit, Jr.™
Cable type	10 x FLRY 0.5 mm ²

Electrical data

Nominal operating voltage	24 VDC (12 to 60 VDC)
Power current	< 40 mA
Operating voltage range	12 V max.
Resistance track potentiometer	$R_{total} 5.875 \text{ k}\Omega \pm 30\%$ for single-ended signal
Max. current, analogue output	0.5 mA

Technical data

Electrical data

Digital signal	
Output	Transistor with open collector
Max. voltage	= +UB
Max. current	100 mA

Body protection 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	
Emergency reverse button	1 million operations
Throttle axis	2 million cycles
Vibration test/shock	DIN EN 60068-2-6/27/29
EMC	DIN EN 12895
Protection class	IP 54 (except for the connector)

Various traction switch types

Accelerator switch	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	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
PIN 1	Emergency reverse button NC active-high	Emergency reverse button NC active-low	Emergency reverse button NC active-low	Emergency reverse button NC active-high	Emergency reverse button NC active-low	Emergency reverse button NC active-low	Emergency reverse button NC
PIN 2	-	-	-	-	-	-	Potentiometer
PIN 3	Digital signal 1 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)
PIN 5	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
PIN 7	+UB (12 – 60 V)	+UB (12 – 60 V)	+UB (12 – 60 V)	+UB (12 – 60 V)	+UB (12 – 60 V)	+UB (12 – 60 V)	Digital IN (signal 1 + 2)
PIN 8	Emergency reverse button NO active-high	Emergency reverse button NO active-low	Emergency reverse button NO active-low	Emergency reverse button NO active-high	Emergency reverse button NO active-low	Emergency reverse button NO active-low	Emergency reverse button NO
PIN 9	Digital signal 2 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 connected with PIN 6	Potentiometer -	Potentiometer -	Potentiometer -	Emergency reverse button IN