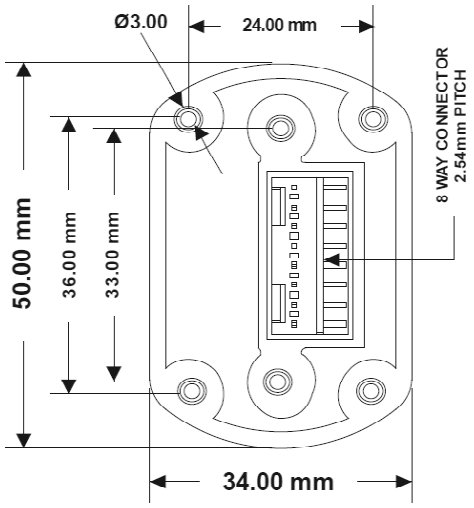
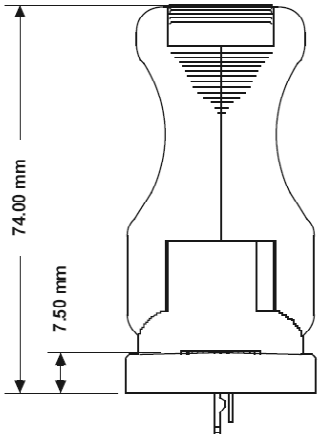
846 – 1 Axis Joystick with Hall Sensor

- Newest hall effect sensor technology
- Ergonomiclly design
- 5 V supply
- Standard redundant dual outputs
- Protection class P67
- Variously-coloured handle inserts
- EMV and magnetically shielded
- Center return or friction with detends

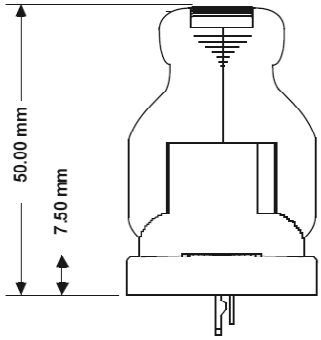
The series 846 is the very latest generation in high precision contactless controls. It combines the features of a contactless single axis joystick and a switch in one control. A long trouble-free life is assured with the latest hall effect technology, providing a range of analogue, switched or custom PWM output options.
The all-new design with its innovative mechanism and ergonomic styling is specifically designed for robustness, strength and performance - suited for industrial applications.

Dimensioned Drawing





Handle Height 74mm
Option “1“



Handle Height 50mm
Option “2“

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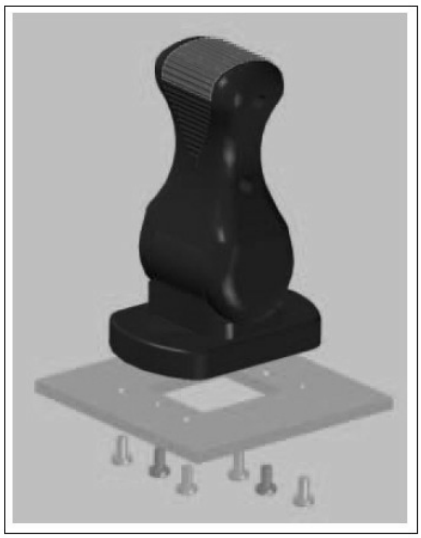
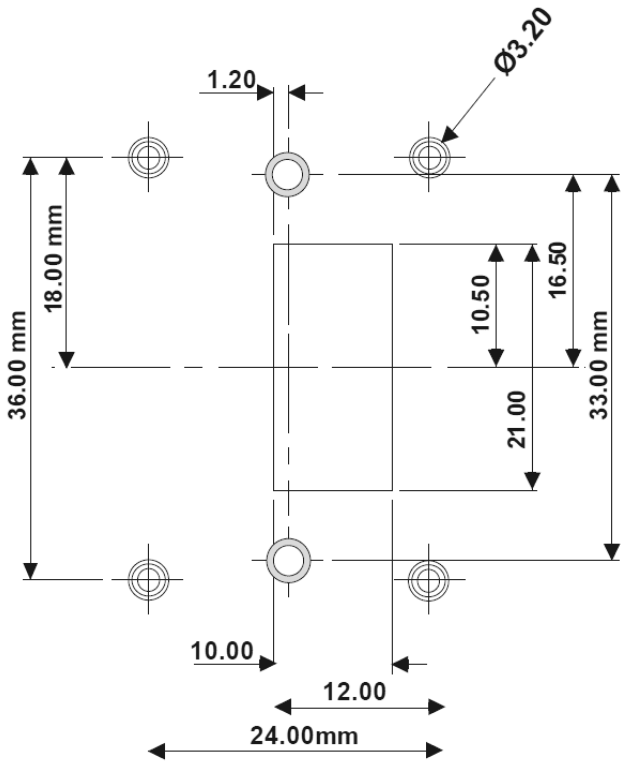
Mounting

The Joystick may be mounted in two different hole patterns:
a) Two screws (shown as yellow srews)
b) Four screws (shown as silver screws)



The mounting screws M3 are not included in delivery.
The appropriate length of fastener is dependent on panel thickness.



Mounting

When mounting the Paddle, care should be taken to site it in a position that does not make it vulnerable to damage when in use. If the Paddle is intended for use in a handheld enclosure then care must be taken to protect the Paddle from damage caused by dropping. Basic precautions such as mounting it at the lightest end of the enclosure so it doesn't hit the ground first or by protecting it with a guard should always be implemented for long term reliability. The body of the Paddle, on the underside of the panel, must not be subject to water spray, excessive humidity or dust.

Magnetic Immunity and EMV Properties

The BF Series incorporates internal magnetic screening to minimise the effect of external magnetic fields.
Mounting or operating the Paddle close to strong magnetic fields is not recommended.
System designers should follow best practice when incorporating the BF Series Paddle into their products.
Care should be taken to decouple the power supply properly and to employ adequate EMC shielding.

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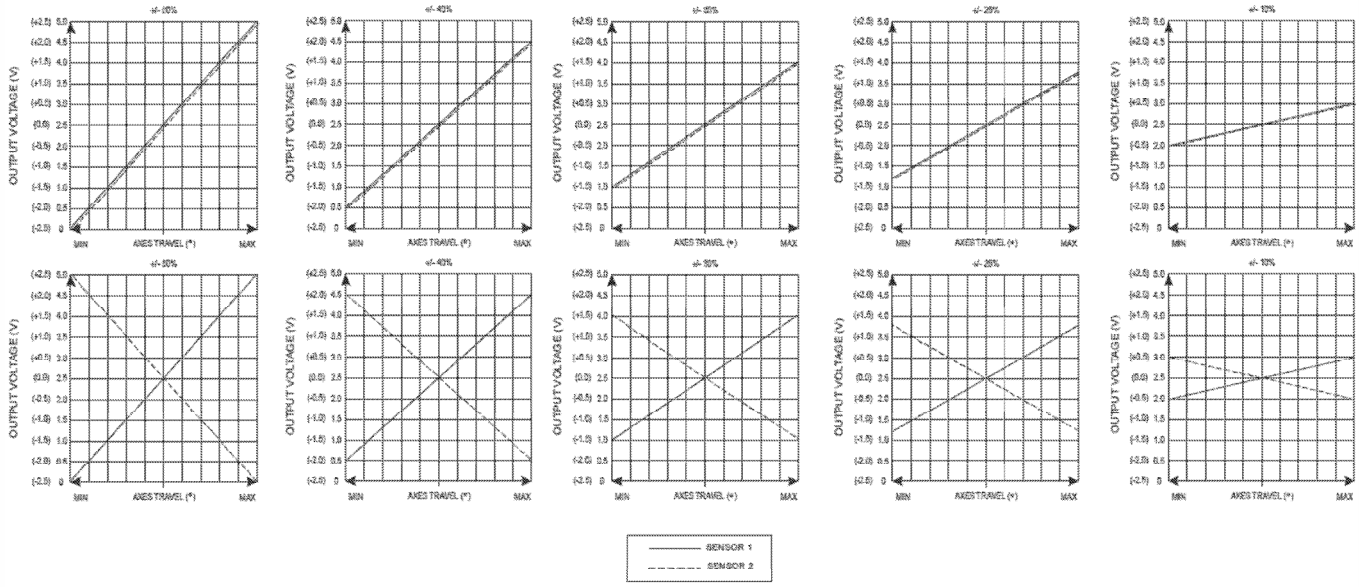
Configuration Analogue Output

The 846 is designed to be powered by a regulated 5V+/- 0.5V power supply. The outputs are ratiometric, making a stable, noise free, power supply essential. The power supply to the joystick should be carefully regulated to be within tolerance. Should the power supply change outside of the specified tolerances, permanent damage may occur.
Row 1 shows a parallel configuration, row 2 shows an inverted configuration.



Calibration

The series 846 ist calibrated in the factory therefore no subsequent adjustments are required.

Additional Ouput Information

Selectable Switching Points (Option „Switch“)
The Paddle incorporates two Hall Effect switches. The angle of the lever at the switch trigger point can be selected when ordering.
If no switches are specified then the output on pins 2 and 7 will be unused.
The outputs are configured as ‘open drain’ type with a 1K5 pull up resistor to 5V..

Gain Option
The voltage output on the wiper, at full scale deflection is determined by the gain. The gain is expressed as a percentage of the voltage supplied. Therefore (assuming a 5V supply) a Paddle specified with +/- 25% gain would yield 1.25V at South, 2.5V at centre and 3.75V at North. A range of gain options are available as standard. All controls are supplied pre-set and no further calibration is needed throughout the lifetime of operation.

Output Impendance
Voltage output is calibrated at position –Defelction, Center and +Deflection for a minimum load.
Please find the recommended output impedance at table „Technical Speifiations“ below.

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Mechanik und Anschluss

Mechanism
The brand new mechanism design has been developed for strength and long life whilst retaining a superb feel.

Sprung to Centre
The lever springs back to the centre position when released.

Detend Positions
The lever 'clicks' into a number of preset positions. The internal switches can be configured to trigger at two of these points.

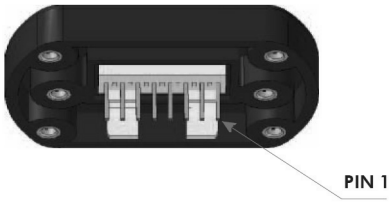
0° 0° & ±12,5° 0° & ±12,5° & 25° 0° & ±25°

Detend Positions with Sprung to Centre
The lever 'clicks' into a number of preset positions and springs back to its centre position when released..

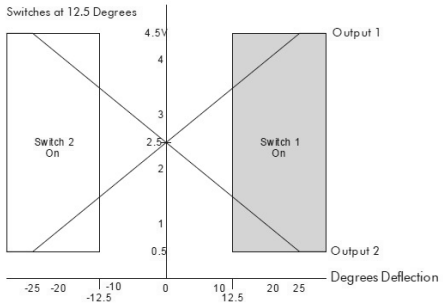
Connection
The Paddle is fitted, as standard, with an industry standard 2.54mm pitch 8 way connector.

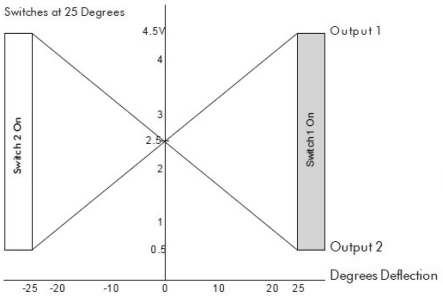
PIN 1: 5V
PIN 2: Switch 1(+)
PIN 3: 0V
PIN 4: Analogue / PWM output 1

PIN 5: Analogue / PWM ouptut 2
PIN 6: 0V
PIN 7: Switch 2 (-)
PIN 8: 5V

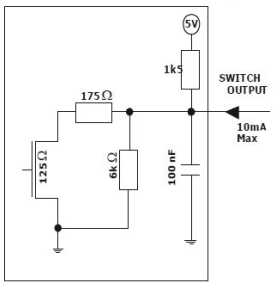


Output Characteristics Example 40% Gain

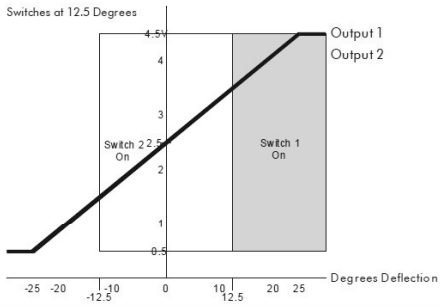


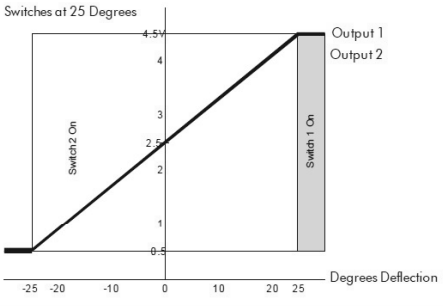


Equivalent circuit for the switch output



40% GAIN DUAL OUTPUTS





The two switch outputs are configured as 'Open Drain' with a 1K5 pull-up to the 5V.

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Technische Daten

Electrical Data	
Gain (Output Voltage Span)	±10% .. 50% x V_{Supply}
Output at Centre	V_{Supply} / 2 ± 5% x V_{Supply}
Power Supply	5VDC ±0,5V transient free
Swith Outputs	Open drain with pull-up resistor 1K5 zu 5VDC
Sensor Type	Hall Effect
Current Consuption	<20mA
Load	minimum 10K, recommended >100K
Mechanical Data	
Materials employed	Stainless Steel, Polyetherimide; Polycarbonate
Weight	50 Gramm
Mechanical Operating Angle	± 25°
Maximum Load to Mechanism	Vertical: IK08 (BSEN62262:2002) Horizontal: 75 N
Environmental Conditions	
Storage Temperature Range	-40 .. +70°C
Operating Temperautre Range	-25 .. +70°C
Seal Above Panel	IP67 (Gasket fitted as standard)
EMV Emission	complies with EN 61000-6-3:2001 CISPR 22:2005 Class B 30MHz -11GHz
EMV Immunity	100V/m, 80MHz-2.7GHz, 1KHz; 80% Sine wave modulation, EN 61000-4-3 (extended)
ESD	complies with EN61000-4-2 (extended) +/-8KV (20 contacts) & +/-15KV (20 air discharges)
Vibration	100Hz - 200Hz @ 0.13g /Hz, total 3.6gRMS (1 Hour in each of the three mutually perpendicular axes)

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Ordering Description (Code)

		Design	Function	Insert Colour	Output	Gain	Switching Point
Description	**846**	**X**	**X**	**X**	**X**	**X**	**X**
74 mm Height		1					
50 mm Height		2					
Sprung to Centre = 0°			1				
Sprung to Centre + Detent 0°			2				
Sprung to Centre + Detent 0° & ±12,5°			3				
Sprung to Centre + Detend 0° & ±25°			4				
Sprung to Centre + Centre Detent & ±12,5° & ±25°			5				
Friction with Detent 0°			6				
Friction with Detent 0° & 12,5°			7				
Friction with Detent 0° & 25°			8				
Friction with Detent 0° & 12,5° & 25°			9				
Insert Colour: Black				A			
Insert Colour: Red				B			
Insert Colour: Blue				C			
Insert Colour: Yellow				D			
Insert Colour: Green				E			
Standard Dual Output					1		
Inverse Dual Output					2		
PWM Output					3		
Gain 2,5V +/- 0,5V (±10% Vsupp)						1	
Gain 2,5V +/- 1,25V (±25% Vsupp)						2	
Gain 2,5V +/- 1,5V (±30% Vsupp)						3	
Gain 2,5V +/- 2V (±40% Vsupp)						4	
Gain 2,5V +/- 2,5V (±50% Vsupp)						5	
without Switch							0
Switching Point ±5°							1
Switching Point ±12,5°							2
Switching Point ±25°							3

The specifications and information in this datasheet cannot consider all special demands that are caused by the application. Because of this, they are no general description of the properties of the product.

02.12.2010. All specifications are subject to change without notice.

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