

Product Specification



- Ultra Low Profile
- One, two, or three axes
- Wide variety of knobs
- High EMC immunity
- Optional 'at centre' & 'internal fault' detection
- 18 month warranty
- IP65 above panel
- Contactless sensing
- Infinite resolution
- Extremely long service life
- Consistent performance



Developed from the proven 7000 Series, the OCS 9000 Series employs the same, highly proven, inductive sensing and circuitry.

With radically reconfigured mechanics, the below-panel depth is reduced to a world class 35.4 mm, mounted sub-panel, or 31 mm mounted drop-through, making the 9000 Series ideal for those applications that demand lowest possible below-panel profile, as well as providing the most cost optimised joystick for applications which are subject to a typical lifetime of 10,000,000 cycles.

This joystick offers self-centering, omni-directional functionality, and utilises the exclusive 'locking cam' system to rigidly secure the highly repeatable mechanism around the precision ground and polished steel operating shaft. High precision air wound coils are mounted directly onto the SMT circuitry, delivering enviable accuracy whilst further minimising the installed depth of the joystick.

Circuitry

The 9000 SERIES joystick operates by passing an oscillating current through a drive coil, directly mounted at the lower end of the operating lever, and immediately above four sensing coils. When the shaft, and hence the coil, moves away from centre the signals detected in each opposing pair of coils increase nominally in proportion to deflection; with phase depending on direction of deflection. Synchronous electronic switches followed by integrating amplifiers provide DC signals directly equivalent to those of potentiometer joysticks, but with fixed output impedance and free of wiper noise and track wear.

Dual Decode

Designed for use in the most safety-critical applications, the 9000 SERIES incorporates comprehensive internal monitoring circuitry whereby output signals are

continually compared with separately generated 'mirror signals'. In the unlikely event of an internal fault, the Dual Decode system will generate a separate fault signal, enabling the controller to fail-to-safe.

The Dual-Decode system is a complete internal self-monitoring system, providing a far higher standard of protection than 'add-on' circuitry as used on some currently available 'Hall Effect' joysticks. An additional, 'away from centre' signal is also available whenever required.

Although the monitoring of the joystick is fully internal, the inverse 'mirror signals' can be made available as external outputs where the monitor function is incorporated within the controller circuitry.

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Functional options.

The 9000 SERIES can be configured in three different modes -

Orthogonal, standard signals

Replicating that of a potentiometer

Deliberate signal mixing

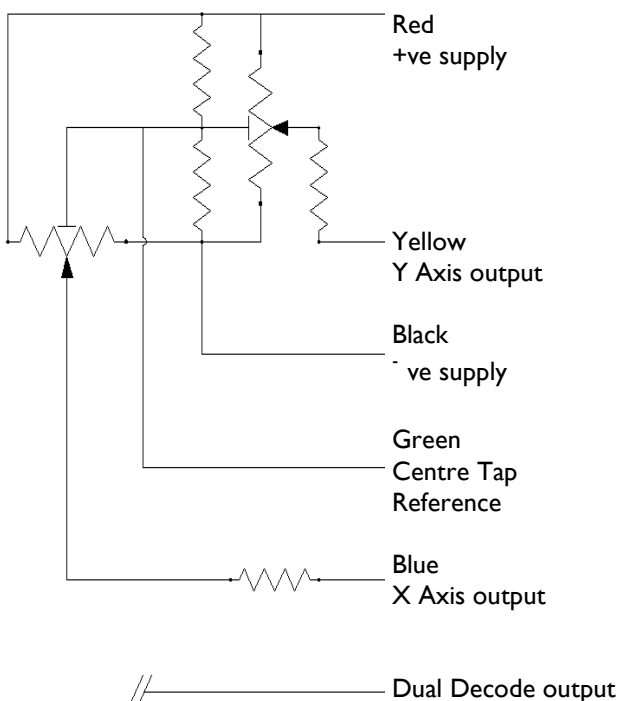
Signals orientated at 45 degrees.
e.g. – For twin propeller, tracked vehicles, or wheelchairs

Deliberate signal interaction

Enables reduction in one signal as the other increases.
This option is particularly beneficial where it is undesirable to maintain full forward speed while turning and vice versa

The 9000 SERIES is designed to provide maximum versatility to the user, with a wide range of operating knobs and user specifiable output configurations ensures that your joysticks are fully customised to your exact requirements.

EQUIVALENT CIRCUIT



ELECTRONIC SPECIFICATION

*Supply voltage (Vs)	4.75V min - 15V max
*Signal swing (from centre)	+/- 10% to +/- 50% Vs
*Output signal tolerance	+/- 10% of specified output
Output impedance	1.8kΩ +/- 1%
Signal ripple	<1% of output
*Supply current	Typically 10 mA
*ESD Immunity	> 12kV (correctly installed)
*RFI rejection (Base specification)	> 20V/m (bare joystick)
*RFI rejection - (typical)	> 40V/m - (installed)
Preferred load	> 10K
*Operating temperature range	-20°C - +55°C

MECHANICAL SPECIFICATION

Body	Glass re-enforced ABS
*Shaft - Material	A303 Stainless steel
*Shaft diameter	5mm typical
*Washer plate	Brass or Acetal
Gimbal pivot	Acetal
*Centering cone	Brass or Acetal
Spring	Stainless steel
Pivot pins	Hardened steel
Limiter plate	Glass re-enforced Nylon
Bezels	Glass re-enforced Nylon
*Gaiter	Specification dependent
*Knob	Duraplast -Phenolic-Nylon
*Operating lever deflection	+/- 18°
Output leads insulation	Soft PVC
Output leads	14/0076 tinned copper
Max load to Shaft - Horizontal	30 Kg typical
Max load to Shaft - Vertical	75 Kg typical
Environmental	IP 65 above panel (installed)
*Weight	70g typical
*Service life.	10,000,000 cycles typical
* Data may vary with joystick specification - Refer to OCS	

