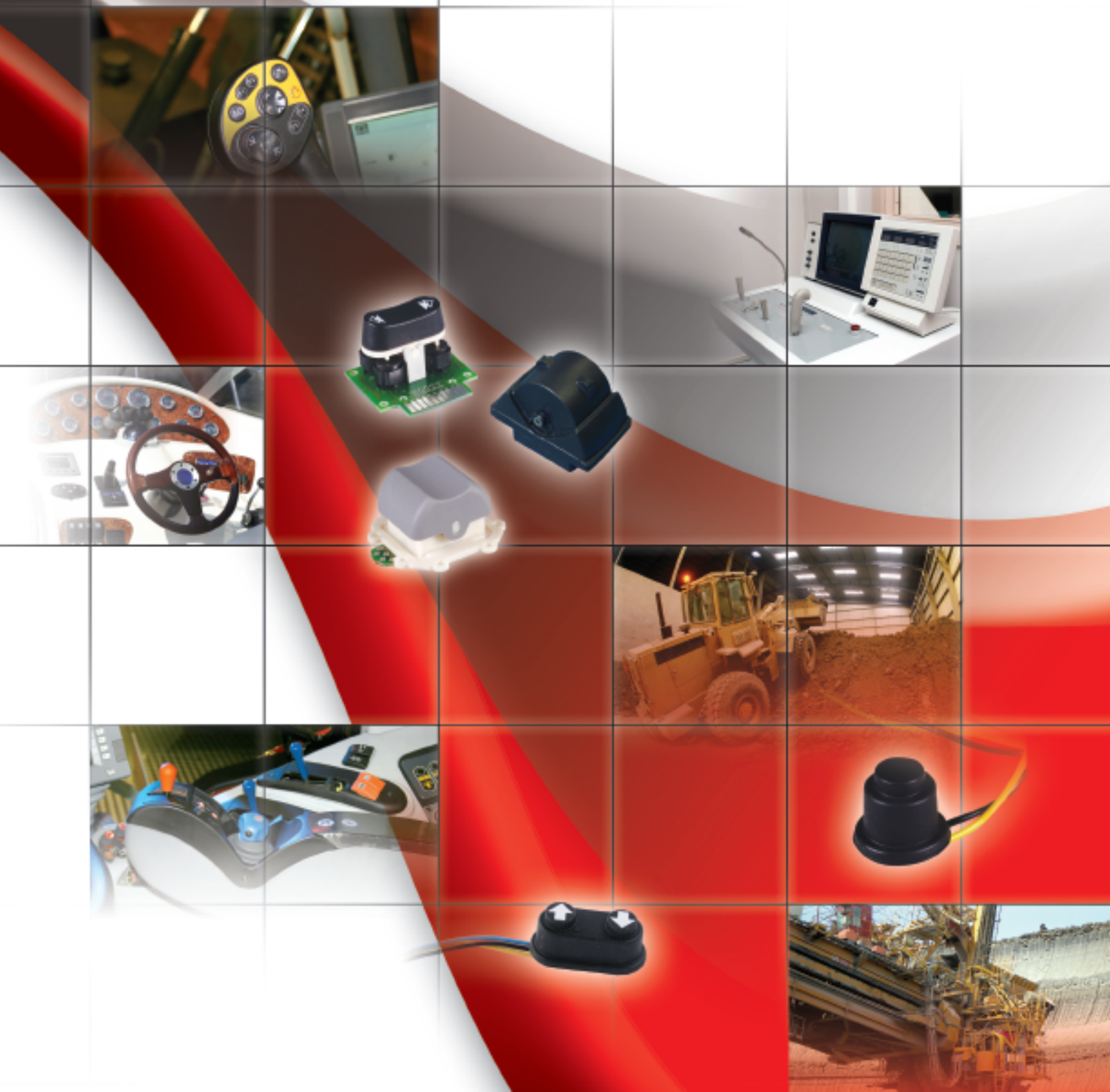
Switch Modules and Analog Sealed Switch Rockers

Industrial Controls, Marine and Transportation Markets



Analog Rocker – AR3

AR3 Analog Rockers were developed to provide the reliability required in demanding environmental conditions such as multifunction grips, dashboards or armrest controls for robust industrial applications.

The unique sensing design makes the rocker module an ideal proportional function solution for rugged environments.

AR3 have been designed to be integrated in to standard and custom designed grips, panels and electronic controls.

Main Features

- Contactless sensing – Hall effect
- Life greater than 2 million cycles
- One sensor – optional second sensor for redundancy
- Integrated temperature compensation
- Short circuit protection

Electrical Data

Supply Ratings	Voltage range DC current	8.5V…30V or 5 .0 V ± 10% 50 mA at 24V
Voltage Output	Output 1 Output 2*	0.5V…4.5V 4.5V…0.5V
Total error		< 10%
Output current		max. 1 mA
Other electrical Characteristics	EMI	> 100 V/m

Mechanical Data

Life	> 2 million cycles
Operating temperature - Storage - Working	 -40°C to 85°C -35°C to 70°C
Operating force	4-6 N
Vertical load maximum	30 N
Protection Level	IP65 (from above when mounted)
Rocker deflection angle	± 30°

* for redundant version

Analog Rocker – AR5

AR5 Analog Rocker was developed to provide the reliability required in demanding environments – such as dashboards or armrest controls – for heavy duty industrial and rugged applications.

The unique AR5 design makes the rocker module an ideal proportional function solution for fingertip actuation and provides a cost effective custom solution.

AR5 has been designed to simplify the customization of fingertip rockers in an off-road vehicle application.

Main Features

- Design allows for usage of longer levers
- Contactless sensing – Hall effect
- Rocker life > 2 million cycles
- Optional detent / over travel, life > 200K cycles; optional latching, life > 100K cycles
- Single sensor - optional second sensor for redundancy
- Integrated temperature compensation
- Short circuit protection
- Ideal solution for fingertip rocker designs

Electrical Data

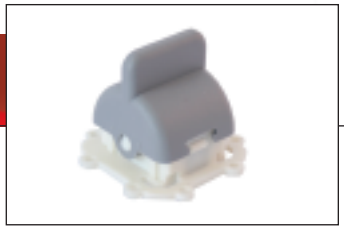
Supply Ratings	Voltage range DC current	9V…30V or 5.0 V ± 5% 50 mA at 24V
Voltage Output	Output 1 Output 2*	0.5V…4.5V at 5Vcc 4.5V…0.5V at 5Vcc Output proportional to Vcc
Total error		< 10%
Output current		1 mA max.
Other electrical Characteristics	EMI	> 100 V/m

Mechanical Data

Life: - rocker - detent / over travel - latching	> 2 million cycles > 200k cycles > 100k cycles
Operating temperature	
- Storage - Working	-40°C to 85°C -40°C to 85°C
Operating force	4-6 N
Vertical load maximum	30 N
Protection Level	IP65
Rocker deflection angle	± 40° max.

* for redundant version

Switch Rocker – SR3



SR3 Switch Rockers were developed to provide the reliability required in demanding environmental conditions such as multifunction grips, dashboards or armrest controls for heavy duty industrial applications.

The switching system is distinguished by its high reliability with a life expectation of at least one million operations.

The rocker modules have been designed for the typical switching function in industrial machinery and other rough environments.

Main Features

- Life greater than 1 million cycles
- Precise tactile feedback of switches
- Protection Class IP65
- K12 switch technology for high reliability

Electrical Data

Switching current max.	Switch 1 S1: 7 mA (1K3 Ohm) Switch 2 S2: 9 mA (680 Ohm)

Mechanical Data

Life	1 million cycles
Operating temperature	
- Storage	-40°C to 85°C
- Working	-35°C to 70°C
Operating force	5 N
Vertical load maximum	30 N
Protection Level	IP65 (from above when mounted)
Rocker deflection angle	± 12°

Single & Double Switch Modules – ESM / DSM

The single switch module ESM and the double switch module DSM are ready-to-install units, consisting of:

- Switches:
  - K12 (for both ESM or DSM)
  - K12G (DSM only with two switching -points)
  - PVA1H4 (ESM only)
- PC board
- Rubber cap
- Optional cable or connector

The rubber cap offers the option to use both switch modules under severe ambient conditions where dust, water, oil, solvents etc. can effect or destroy the function of standard switches.

With the rubber cap the two modules are sealed to IP65 when mounted.

Technical Data

Cap Material		Silicone rubber
Protection Level		IP65 (with cap when mounted)
Cable		FLK/FLY 0.5 mm²
Switches		K12 (both ESM or DSM) K12G (DSM only, two switching-points) PVA1H4 (ESM only)
	Operating force	Travel (mm/inch)
K12	5 N	1 / 0.039
K12G	3.5 / 7 N	1.5 / 0.0591
PVA1H4	3 N	2.2 / 0.087

Switch Modules – RS & QS

RS

The rocker switch modules RS1 and RS2 are designed to be installed into front panels, multifunction grips or other switching units.

RS1
This module is standard rocker switch with a single switch function in both directions.

RS2
With the RS2 a double switch function is available in both directions.

QS

The quadrant switch modules QS1 and QS2 are designed to be installed into front panels, multifunction grips or other switching units.

QS1
This module is a quad switch similar to a “mirror switch” made of four K12 switches, designed for 4 switching functions (e.g. for movements in four directions: up, down, left and right).

QS2
This module is similar to the QS1 but has a double switch function and is made up with eight K12 switches allowing additional functions in each direction.

Technical Data

Types	RS1	two K12 switches, one switching function per direction
	RS2	four K12 switches, two switching functions per direction
	QS1	four K12 switches, one switching function per direction
	QS2	eight K12 switches, two switching functions per direction
Dimensions (length, width, height)	RS QS	43 x 40.7 x 27.55 mm 58.9 x 43 x 27.5 mm
Operating life		> 1 million cycles
Operating temperature		
- Storage		-40°C to 85°C
- Working		-25°C to 85°C
Protection Level		With sealing: IP65 (from above when mounted)
Main features of K12		Tactile feedback, positive snap-point (more technical details see datasheet for K12 switches)

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