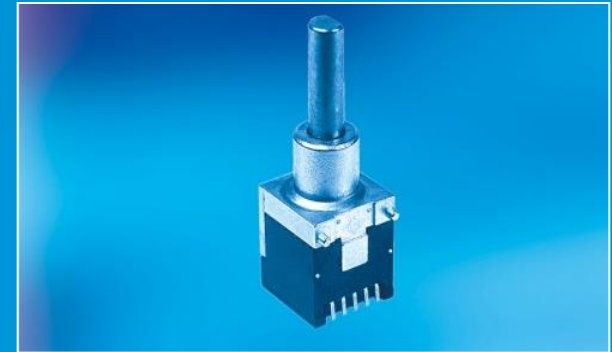
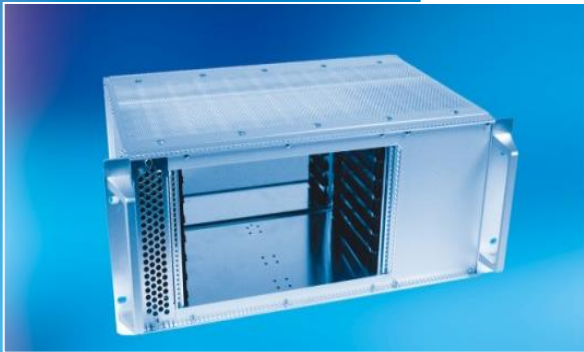


**ELMA**  
Your Solution Partner

# HMI & Audio Solutions



## X4 – Hall-Effect Switch Product Presentation

3 Sep 2013

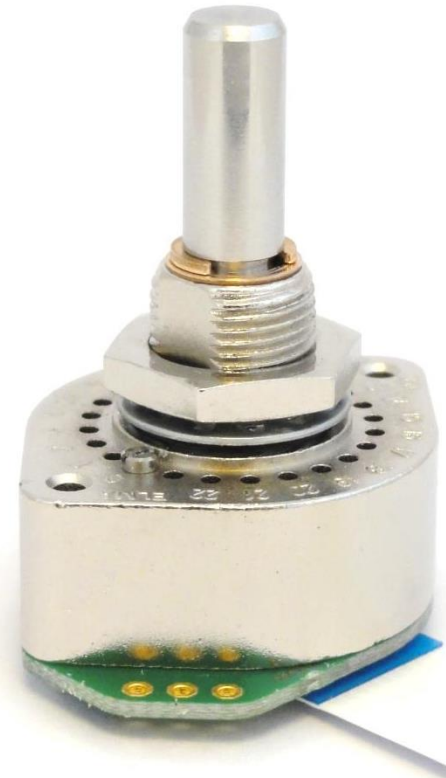
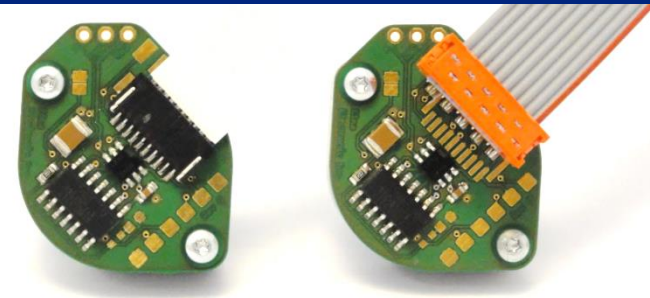
*Property of Elma Electronic Inc.*

## X4 in Brief

The new X4 boasts an extremely robust rotary switch platform with an optional push button function. The switch incorporates a unique magnetic, Hall effect (contactless) sensing system to ensure maximum ruggedness, reliability and life expectancy.

The micro controller based circuitry provides absolute code (Gray) with analog and PWM, or encoder output. Different standard connectors are available.

Shaft shapes, indexing feels, connectors and electrical interfaces can be easily customized and are available even in small quantities.

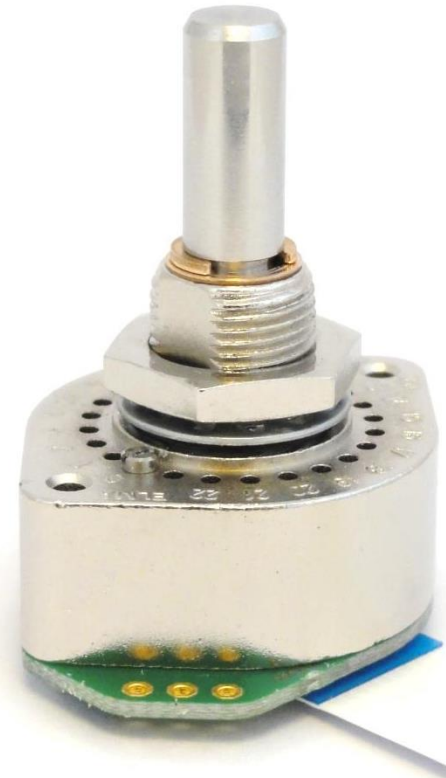
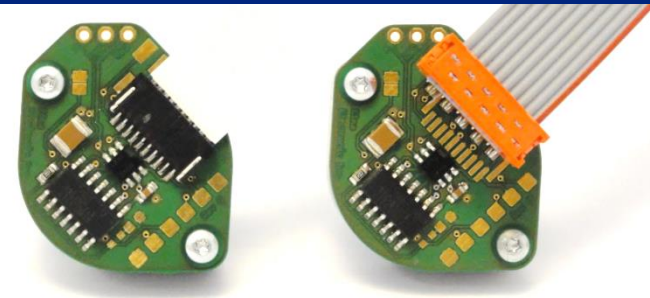


## The Functionality

X4 provides 12, 24 or 47/48 switch positions with selectable end-stops, with switching torques selectable from 1.5 to 20 Ncm, and an optional push button function (shaft push).

Operating over a wide supply voltage (2.7 to 5.5 VDC), the basic interface offers a 5 bit Gray code, with analog and PWM outputs available at the same time or an Encoder output, all with optional push button function.

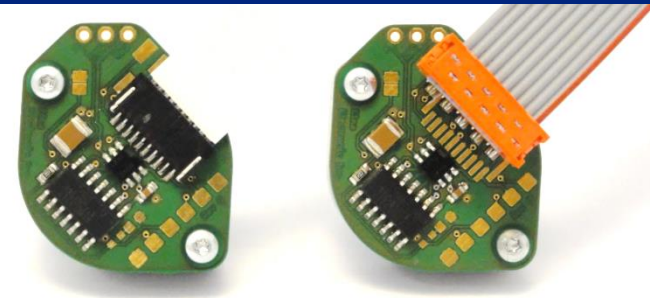
The standard cable connection is either FFC (flat flex cable) or MicroMaTch (ribbon cable); see picture. The analog output is also available on the 3-wire, solder eyelets connection.



## Ruggedness & Performance

X4 is ready-made for rugged applications and is resistant against environmental stress factors like shaft load, shock, vibration, heat, cold, humidity, salt fog, water pressure, fire and many more. Some of these criteria are qualified against MIL-STD-202 and MIL-STD-810.

The indexing mechanism provides excellent tactile feedback that lasts over the exceptional rotational life of up to 500'000 cycles while offering switch torque levels from 1.5 to 20 Ncm.

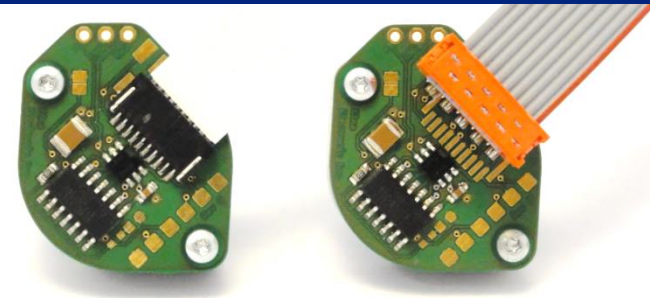


## Customization

Our in-house design and manufacturing capabilities enable us to quickly and reliably react to customer-specific modification requests.

X4 offers many customization possibilities ranging from shaft shapes and materials to indexing feels and connectivity, including specific interfaces, like SPI, I<sup>2</sup>C or CAN.

We have recently created a custom version for a transportation application with very demanding environmental and EMI conditions; 6 to 32 VDC operating voltage with load dump, surge and transient exposure.



## Markets & Applications



### Tool Machines

Benefit: Consistent high quality and reliability over an extreme rotational life.



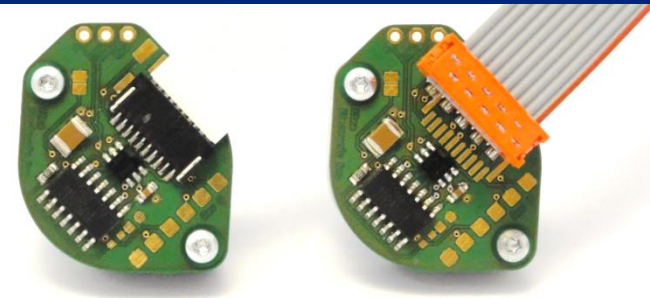
### Mining & Construction Machinery

Benefit: Extreme robustness, dust and water proof, gas and fine dust resistance, life.



### Defense

Benefit: Robustness, reliability, life



## Availability

## Samples

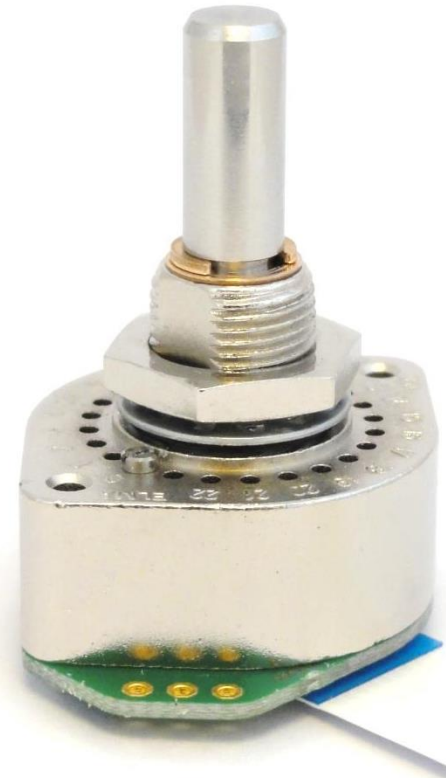
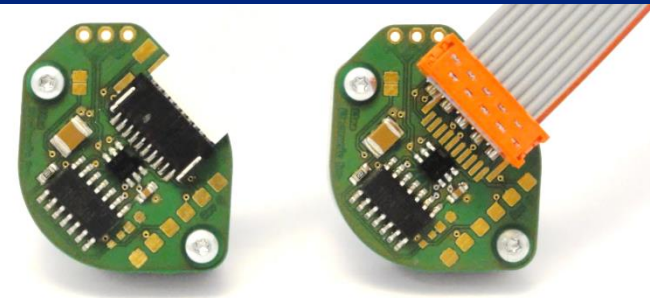
Some types are available within 1 week.

## Budgetary Pricing

Please contact your local sales representative

## Lead times

Stock to approximately 8 weeks.



Thank You