# M401-01 - Frequency Generator and Meter, RS422



## **General Features**

- 2 explicit RS422 input units with 4 input channels
- One unit configurable to be either input or output
- with 3 input or output channels
- Input and output levels RS422 compliant
- Galvanic isolation of each unit against each other and against system supply
- Jitter (peak to peak): 10ns

#### Signal Input Features

- The inputs of each unit can be configured as
  - Independent frequency meters
  - Quadrature decoder with signal "A", "B" and "REF" and an additional independent frequency meter (Unit 2 has no 4th input channel)
- Binary inputs
- 32bit signal edge counter
- Measuring principle: For each edge a time stamp is stored within a circular buffer
- Immediate detection of missing pulses and rapid slowing down of the frequency
- Quadrature decoding offers measuring of the following quantities
- Absolute angle
- Referenced angle measuring with zero-point detection
- Simultaneous frequency & angle measurement

# Signal Output Features

- The output channels of unit 2 can be configured as
- Independent frequency generators
- Quadrature encoder with signal "A", "B" and "REF"
- Binary outputs
- Continuous frequency range from 0 up to 25MHz.
- Accuracy and range of values meets 40bits
- 2 frequency update modes:
- Immediate frequency change within the current period by integrating the angular velocity
- New frequency values get active at the beginning of the next period
- 3 pulse width modes:
- Fixed high duration (independent from the period time)
- Fixed low duration (independent from the period time)
- Pulse width proportional to period time

#### **Use Cases**

- Measuring dynamic rotation speeds in dyno test systems
- Aquiring torque sensors outputs in dyno applications

### **Block Diagram**



# **Technical Data**

Channels	
Number of channels	2 units with 4
	1 unit configu

Input Channels	
Working voltage range	+/-0.2V <= V
Save voltage range	-20V 20V
Frequency range	0 2MHz
Sample rate	100MHz
Circular buffer size	512 x 32bit w
Input modes:	<ul><li>Binary inp</li><li>Frequency</li><li>Quadratur</li></ul>

Output Channels	
Output voltage	+/-4V <= Udiff
Output frequency range	0 25MHz
Frequency resolution	10ns
Pulse width resolution	10ns
Jitter (peak to peak)	10ns
Output modes	<ul><li>Binary outp</li><li>Frequency</li><li>Quadrature</li></ul>

General Features	
Address space	A08 and A24
Available connectors	25 Pin SubD

# **Order Information**

Order Number	IO-M401-01
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1 input channels each

urable as input or output with 3 channels

/diff,in <= +/-5V RS422 compliant

words for each channel

out mode (12 channels)

y meter mode (12 channels)

re decoder mode (3 channels)

ff,Out <= +-5V

put mode (6 channels) generator mode (6 channels) e encoder mode (3 channels)

connector, female