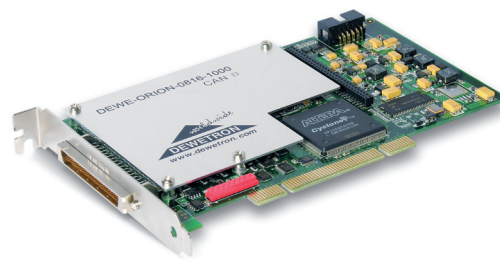


# DEWE-ORION-0816-100X

- 8 simultaneous sampled channels
- 1 MS/s per channel
- 16 bit resolution
- 4 input ranges (from  $\pm 1.25$  V to  $\pm 10$  V)
- Synchronous digital inputs
- 8 digital I/Os, e.g. alarm output
- 32 bit synchronous counter/encoder
- 2 synchronous CAN interfaces



## Model Overview

Model	Analog input channels	Max. sampling rate / channel	Digital input channels	Digital I/O	Ext. Clock	Ext. Trigger	Counter Encoder	CAN
DEWE-ORION-0816-1000	8	1000 kHz	2 (8)*	8	1	1	2	-
DEWE-ORION-0816-1001	8	1000 kHz	2 (8)*	8	1	1	2	2
DEWE-ORION-0816-1002	8	1000 kHz	10 (40)*	8	1	1	10	-
DEWE-ORION-0816-1003	8	1000 kHz	10 (40)*	8	1	1	10	2
DEWE-ORION-0816-1004	8	1000 kHz	10 (40)	8	1	1	10	-
DEWE-ORION-0816-1005	8	1000 kHz	10 (40)	8	1	1	10	2

\* Without using counter inputs

## Analog Input Specifications

Analog input		
<b>Channel characteristics</b>		
Number of channels	8 simultaneously sampled	
Input configuration	single ended with remote sense	
Resolution	16 bit	
Effectiv number of bits	14.3	
Type of ADC	Successive approximation (SAR)	
Sampling rate	1 S/sec to 1 MS/sec per channel	
Sampling rate accuracy	50 ppm	
<b>Input amplifier characteristics</b>		
Input ranges	$\pm 1.25$ , $\pm 2.5$ , $\pm 5$ or $\pm 10$ V	
Typical analog bandwidth (-3 dB)	600 kHz	
Input impedance	10 M $\Omega$ parallel (3.9 k $\Omega$ + 10 pF)	
Overvoltage protection	$\pm 30$ V	
Common mode rejection ratio (CMRR) of AI Sense	> 54 dB, $f_{in} < 1$ kHz	
Channel separation (cross talk)	> 90 dB @ $f_{in}$ 1 kHz	
<b>Transfer characteristics</b>		
DC accuracy		
Range	% of reading	% of range
$\pm 10$ V	$\pm 0.02$ %	$\pm 0.0115$ %
$\pm 5$ V	$\pm 0.02$ %	$\pm 0.013$ %
$\pm 2.5$ V	$\pm 0.02$ %	$\pm 0.016$ %
$\pm 1.25$ V	$\pm 0.02$ %	$\pm 0.022$ %
Gain drift (typ)	$\pm 8$ ppm/K	
Offset drift (typ)	$\pm 5$ ppm/K of Range	
<b>Dynamic characteristics</b>		
Signal to noise	89 dB	
THD ( $f_{in} = 1$ kHz) 0 dB <sub>FS</sub> input	< -90 dB	
THD ( $f_{in} = 1$ kHz) -20 dB <sub>FS</sub> input	< -93 dB	
Typical interchannel gain mismatch	$\pm 0.015$ %	
Inter channel phase mismatch ( $f_{in} < 500$ kHz)	$0.006^\circ * f_{in} \text{ (kHz)} + 0.08^\circ$	
<b>Maximum working voltage</b>		
Channel-to-ground	10 V, installation category I	
Channel-to-channel	10 V, installation category I	

## Digital and Counter Input

<b>Digital and Counter input</b>	
Counter resolution	32 bit
Counter time base	80 MHz
Time base accuracy	25 ppm
Maximum input frequency	40 MHz
<b>Input signal characteristic main board</b>	
Compatibility	TTL/CMOS
Configuration	Pull-up with 100 kOhm
Input low level	-0.7 V to 0.8 V
Input high level	2 V to 5 V
Input low current	< -50 $\mu$ A
Input high current	< 10 $\mu$ A
Input capacitance	< 5 pF
Overvoltage protection (DI 0 to DI 15)	-1 to 6 V
<b>Input signal characteristic CLK and Trigger</b>	
Compatibility	TTL Schmitt trigger
Configuration	Pull-up with 100 kOhm
Input low level	-0.7 V to 2 V
Input high level	3 V to 5 V
Input low current	< -50 $\mu$ A
Input high current	< 10 $\mu$ A
Input capacitance	< 5 pF
Overvoltage protection	-1 to 6 V
<b>Input signal characteristic expansion board with TTL input (used on ORION-0816-1002 and -1003)</b>	
Compatibility	TTL/CMOS
Configuration	Pull-up with 100 kOhm
Input low level	-0.7 V to 0.8 V
Input high level	2 V to 5 V
Input low current	< -50 $\mu$ A
Input high current	< 10 $\mu$ A
Input capacitance	< 5 pF
Overvoltage protection	$\pm$ 25 V continuous
<b>Input signal characteristic expansion board with adjustable input (used on ORION-0816-1004 and -1005)</b>	
Compatibility	Adjustable trigger levels
Configuration	Symmetric differential
Input coupling	DC / AC (1 Hz)
Input impedance (ground referenced)	1 MOhm / 5 pF
Bandwidth (-3dB)	5 MHz
Trigger adjustment range	0 to 40 V
Trigger resolution	40 mV
Trigger level accuracy	$\pm$ 100 mV $\pm$ 1% of trigger level
Common voltage range	-35 to 50V
Common mode rejection ratio	>40 dB
Overvoltage protection	$\pm$ 100 V continuous
Max. DC level @AC coupling	$\pm$ 50 V continuous
<b>Input signal characteristic with isolated inputs (optional external cards)</b>	
Compatibility	CMOS
Configuration	Isolated input
Input low level	$U_{IN} < 1.8$ V
Input high level	$U_{IN} > 3.2$ V
Input high current @ 5 V $U_{IN}$	< 3.5 mA
Input high current @ 30 V $U_{IN}$	< 7 mA
Propagation delay	< 160 nsec
Bandwidth	3 MHz
Overvoltage protection	35 V continuous (65 V peak)
Isolation voltage (channel to channel)	100 V
Isolation voltage (input to output)	250 V

## Digital and Clock Divider Output

Digital and clock divider out	
Compatibility	TTL/CMOS
Characteristic	
Low voltage level	< 0.4 V @ 4 mA load
High voltage level	> 3 V @ 4 mA load
Output current	
Sink (low level)	-20 mA
Source (high level)	20 mA
Output impedance	50 Ohm

## CAN Interface

CAN interface	
Specification	CAN 2.0B
Physical layer	High speed
Listen only mode	Supported
Galvanic isolation	Not isolated
Bus pin fault protection	±36 V
ESD protection	12 kV (HBM)
CAN transceiver	SNHVD235
PCI data transfere mode	DMA with SW pooling

## Power Requirements

ORION Type	I <sub>12V</sub> [mA]	I <sub>5V</sub> [mA]	I <sub>3.3V</sub> [mA]	P <sub>tot.</sub> [Watt]
ORION-0816-1000	---	710	240	4,3
ORION-0816-1001	---	780	240	4,7
ORION-0816-1002	---	730	340	4,8
ORION-0816-1003	---	800	340	5,1
ORION-0816-1004	---	840	430	5,6
ORION-0816-1005	---	910	430	6

## General Specifications

General Specifications	
<b>Interface</b>	
PCI	Rev. 3.0
Transfer Mode	DMA/Scatter-Gather
Transfer Speed	40 Mbyte/sec max.
<b>Environmental</b>	
Operating temperature	0 to 50 °C
Storage temperature	-20 to 70 °C
Relative humidity	10 to 90%, non condensing
Maximum altitude	2000 m
Pollution degree (indoor use only)	2
<b>Physical</b>	
Dimensions (not including connectors)	17.5 x 10.7 cm (6.9 x 4.2 in.)
Analog input connector (main board)	68-pin SCSI male (AMP 174341-5)
Analog input connector (expansion)	68-pin SCSI male (Honda PCS-68LMD)
Counter input connector (expansion)	68-pin SCSI male (Honda PCS-68LMD)
CAN input connector	
SUBD	2 x D-Sub 9-pin male
Lemo	7-pin Lemo connector female (Type: EPG.0B.307.HLN)