

DEWE-ORION-0424-200

- 4 simultaneous sampled channels, BNC connection
- Voltage or IEPE® mode (4 mA or 8 mA source)
- 4 input ranges (from ± 0.1 V to ± 10 V)
- Input coupling DC or AC (0.15 Hz or 3.4 Hz)
- 204.8 kS/s per channel
- 24 bit resolution, anti-aliasing filter
- TEDS (IEEE 1451) sensor support



Model Overview

Model	Analog input channels	Max. sampling rate / channel	Digital input channels	Digital I/O	Ext. Clock	Ext. Trigger	Counter Encoder TTL	Counter Encoder ADJ	CAN
DEWE-ORION-0424-200	4	204.8 kS/s	-	-	-	1	-	1	-

Analog Input Specifications

Analog input				
Channel characteristics				
Number of channels		4, simultaneously sampled		
Input configuration		Symmetric, differential or single ended		
Resolution		24 bit, nominal		
Type of ADC		Delta-sigma		
Sampling rate		204.8 kS/s per channel		
Data throughput		1.6 MS/s		
Oversampling, for sample rate (f_s)				
Frequency accuracy		± 25 ppm		
$1 \text{ kS/s} \leq f_s \leq 51.2 \text{ kS/s}$		$256 f_s$		
$51.2 \text{ kS/s} < f_s \leq 102.4 \text{ kS/s}$		$128 f_s$		
$102.4 \text{ kS/s} < f_s \leq 204.8 \text{ kS/s}$		$64 f_s$		
Input signal range		± 10 V, ± 2 V, ± 0.5 V, ± 0.1 V peak		
FIFO buffer size		4096 samples		
Data transfers		DMA		
Transfer characteristics				
DC accuracy		% of reading	% of range	
Range	± 10 V	± 0.05 %	± 0.01 %	
	± 2 V	± 0.05 %	± 0.012 %	
	± 0.5 V	± 0.05 %	± 0.02 %	
	± 0.1 V	± 0.05 %	± 0.06 %	
Gain drift		± 15 ppm/K		
Amplifier characteristics				
Input impedance (ground referenced)				
Positive input to negative input		1 M Ω each with 60 pF to GND		
Positive input to GND		7.8 M Ω in parallel with 60 pF		
Negative input to GND		10 M Ω in parallel with 60 pF		
Overvoltage protection				
Positive input		± 30 V		
Negative input		± 30 V		
Common mode rejection (CMR)				
Range		± 10 V	± 2 V	± 0.5 V
$f_{in} < 1$ kHz		> 60 dB, typ.	> 74 dB, typ.	> 86 dB, typ.
				> 100 dB, typ.

Flatness digital filter					
1 kS/s $\leq f_s \leq 51.2$ kS/s		-0.035 dB to +0.01 dB, DC to $0.475 f_s$			
51.2 kS/s $< f_s \leq 102.4$ kS/s		-0.035 dB to +0.01 dB, DC to $0.45 f_s$			
102.4 kS/s $< f_s \leq 204.8$ kS/s		-0.035 dB to +0.01 dB, DC to $0.246 f_s$			
-3 dB Bandwidth digital filter					
1 kS/s $\leq f_s \leq 51.2$ kS/s		$0.494 f_s$			
51.2 kS/s $< f_s \leq 102.4$ kS/s		$0.49 f_s$			
102.4 kS/s $< f_s \leq 204.8$ kS/s		$0.38 f_s$			
Analog bandwidth					
Range	± 10 V	± 2 V	± 0.5 V	± 0.1 V	
-1 dB Bandwidth	225 kHz	225 kHz	200 kHz	80 kHz	
-3 dB Bandwidth	360 kHz	360 kHz	320 kHz	150 kHz	
Maximum working voltage					
Channel-to-ground, channel-to-channel	10 V, installation category I				
Max. working voltage refers to the signal voltage plus common-mode voltage.					

Dynamic Characteristics

Dynamic characteristics				
Alias-free bandwidth (passband)				
1 kS/s $\leq f_s \leq 51.2$ kS/s		DC (0 Hz) to $0.42 f_s$		
51.2 kS/s $< f_s \leq 102.4$ kS/s		DC (0 Hz) to $0.32 f_s$		
102.4 kS/s $< f_s \leq 200$ kS/s		DC (0 Hz) to $0.22 f_s$		
Alias rejection				
1 kS/s $\leq f_s \leq 51.2$ kS/s		-95 dB		
51.2 kS/s $< f_s \leq 102.4$ kS/s		-92 dB		
102.4 kS/s $< f_s \leq 200$ kS/s		-97 dB		
Signal to noise				
Range	± 10 V	± 2 V	± 0.5 V	± 0.1 V
1 kS/s $\leq f_s \leq 51.2$ kS/s	108 dB	107 dB	104 dB	93 dB
51.2 kS/s $< f_s \leq 102.4$ kS/s	105 dB	104 dB	101 dB	90 dB
102.4 kS/s $< f_s \leq 200$ kS/s	78 dB	78 dB	78 dB	78 dB
Spurious free dynamic range				
Range	± 10 V	± 2 V	± 0.5 V	± 0.1 V
1kS to 51.2 kS/s	140 dB	140 dB	138 dB	125 dB
51.2kS to 102.4 kS/s	137 dB	133 dB	132 dB	122 dB
102.4kS to 200 kS/s	103 dB*	103 dB*	103 dB**	103 dB***
THD (1kS/s $\leq f_s \leq 102.4$ kS/s)				
Range	± 10 V	± 2 V	± 0.5 V	± 0.1 V
0 dB _{FS} input	< -92 dB	< -96 dB	< -96 dB	< -88 dB
-20 dB _{FS} input	< -100 dB	< -97 dB	< -88 dB	< -78 dB
-60 dB _{FS} input	< -60 dB	< -60 dB	< -60 dB	< -55 dB
Crosstalk (channel separation)				
f_{in} 0 to 10 kHz	120 dB			
f_{in} 10 to 50 kHz	105 dB			
Typical Interchannel gain mismatch	± 0.002 dB			
Typical filter delay through ADC				
1 kS/s $\leq f_s \leq 51.2$ kS/s	$12 / f_s$			
51.2 kS/s $< f_s \leq 102.4$ kS/s	$9 / f_s$			
102.4 kS/s $< f_s \leq 200$ kS/s	$5 / f_s$			
Inter channel phase mismatch	$0.02^\circ * f_{in} \text{ (kHz)} + 0.08^\circ$			
* 133 dB below $0.22 * f_s$				
** 132 dB below $0.22 * f_s$				
*** 119 dB below $0.22 * f_s$				

Power Requirements

ORION Type	I_{12V} [mA]	I_{5V} [mA]	$I_{3.3V}$ [mA]	$P_{tot.}$ [Watt]
ORION-0424-200	150	680	---	7.8

Counter Input

Counter input	
Counter resolution	32-bit
Counter time base	80 MHz
Time base accuracy	25 ppm
Maximum input frequency	40 MHz
Input signal characteristic	
Adjustable Counter	
Compatibility	Adjustable trigger levels
Configuration	Symmetric differential
Input coupling	DC / AC (1 Hz)
Input impedance (ground referenced)	1 MOhm / 5 pF
Bandwidth (-3 dB)	5 MHz
Trigger adjustment range	0 to 40 V
Trigger resolution	40 mV
Trigger level accuracy	± 100 mV ± 1 % of trigger level
Common voltage range	-35 to 50V
Common mode rejection ratio	>40 dB
Overvoltage protection	± 100 V continuous
Max. DC level @AC coupling	± 50 V continuous
Input signal characteristic Trigger	
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 μ A
Input high current	< 10 μ A
Input capacitance	< 5 pF
Overvoltage protection	-1 to 6 V

General Specifications

General Specifications	
Environmental	
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
Physical	
Dimensions (not including connectors)	17.5 x 10.7 cm (6.9 x 4.2 in.)
Analog input connector	BNC
Counter input connector	D-Sub 9-pin male