VAYERON

DATA SHEET

Smart-Idler®

Integrated intelligent conveyor monitoring

General

- Real-time 24/7 autonomous monitoring of key conveyor roller conditions
- Predicts and detects conveyor roller failure modes including bearing failure and shell-wear
- Completely wireless design requires no special conveyor wiring
- Quick and easy installation within a conveyor roller
- Seamless integration within the conveyor, requires only one gateway per 5,000 Smart Rollers
- Functional within steel and composite conveyor rollers
- Low cost, high-performance design
- Consumable/replaceable item (OPEX)
- Remote firmware download capable (via network) facilitates future upgrades
- Designed to meet IP67 Requirements

Barcode
Barcode is used to identify Smart Roller and assign it to the network.

Temperature
Independent left and right bearing temperature monitoring.

Rotational Count Sensing
Counts rotations to exactly determine mileage.

Mechanical
Easily adapts to various conveyor roller designs with minimal design and assembly process modifications.

Vibration
Automatic notification on exceeding vibration spectral analysis fault indicators.

Rotational Velocity Sensing
Automatic notification on erratic conveyor roller rotational.

Power
Energy harvesting, powered directly from conveyor roller rotation.

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Parameter	Conditions	Min	Typ	Max	Units
General Characteristics					
Operating Temperature		-40		85	°C
Storage Temperature		-20		100	°C
Supported shaft sizes	Outside Diameter	30		60	mm
No. of Idler per Gateway				5000	
Life Rating				10	years
Logging/Display Rate	Normal Mode			1	day
Rotational Velocity Measurement Characteristics					
Range		350		1500	RPM
Accuracy				1	RPM
Sampling Rate				4	per rotation
Temperature Sensing Characteristics					
Range		-20		150	°C
Accuracy		1			°C
Sampling Rate				0.1	s
Ambient Calibration Rate	Normal Mode			2	hours
Vibration Measurement Characteristics					
Range	Mode 1	-2		2	g
Resolution	Mode 1			0.004	g
Range	Mode 2	-16		16	g
Accuracy	Mode 1			0.032	g
Spectral Resolution			1		Hz
Sampling Rate				1399	Hz
Focused Spectral Analysis Time				5	min
Radio Frequency Characteristics					
Range	Idler to Idler		30		m
Frequency			433		MHz
Data Rate			250	500	Kbps
Channel Spacing			200		KHz
Tx Power				10	mW
Rx Sensitivity	At antenna		-93		dBm
Transaction Time	From Idler to Idler			10	ms
Bandwidth			1.74		MHz
Power Output (max)			10		mW
Power Characteristics					
AC Voltage Generated (max)				30	VAC
Generated Power (max)				3	W
Rotational Velocity Limit (max)				1000	RPM

Parameter	Domain	Per Alert*	Per Hr	Per Day	Units
Data Types					
Mechanical					
Rotational Count	Time	4		4	Bytes
Rotational Velocity	Time	2		2	Bytes
Temperature					
Left Bearing Temperature	Time	1		1	Bytes
Right Bearing Temperature	Time	1		1	Bytes
Vibration					
RMS	Time	2			Bytes
BPFI (Inner race defect frequency)	Frequency	2			Bytes
BPFO (Outer race defect frequency)	Frequency	2			Bytes
BSF (Ball spin frequency)	Frequency	2			Bytes
FTF (Cage defect frequency	Frequency	2			Bytes
Alters and Status					
Count Alert		1		1	Byte
Velocity Alert		1		1	Byte
Temp\Alert (left and right)		1		1	Byte
Vibration Alert		1		1	Byte
Radio Status		1		1	Byte
Power Status		1		1	Byte
Power					
System Voltage	Time			1	Byte
Total					

Note: Only data relevant to each type of alert is sent within the alert packet.

Bearing spec **Code Group A**

Cable length is **Code Group D**

Antenna Cover is **Code Group C**
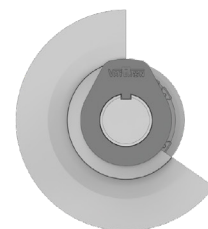
Shaft OD is **Code Group B+**
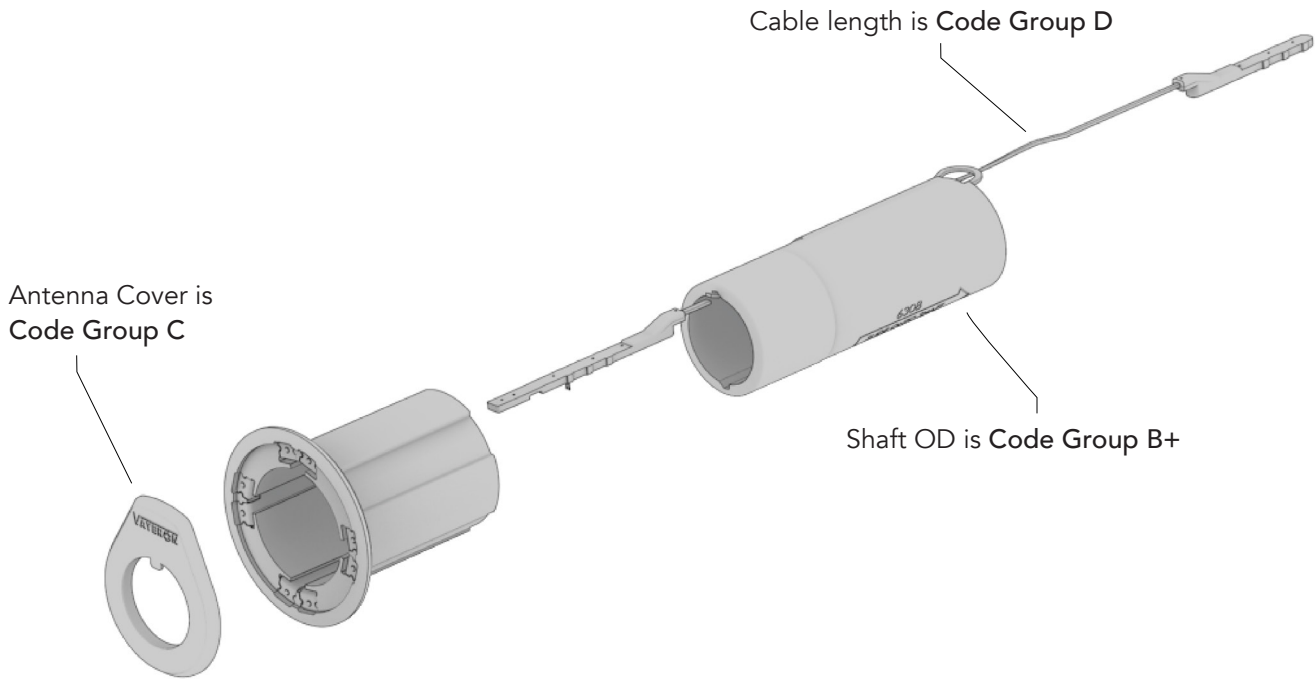
Code Group A, B+						
Shaft OD (Metric/Imperial)						
1 3/16"	1 3/8"	1 37/64"	1 40/64"	2"	2 11/64"	2 3/8"

Bearing Spec	30mm	35mm	40mm	45mm	50mm	55mm	60mm
6306	6306-30						
6307		6307-35					
6308			6308-40				
6309				6309-45			
6310					6310-50		
6311						6311-55	
6312							6312-60

Code Group C	
Antenna Cover Size	Code No.
No cover	00
30mm	30
35mm	35
40mm	40
45mm	45
50mm	50
55mm	55
60mm	60

Code Group D	
Bearing Centres Dist (mm)	Code No.
No Sensor	00
450	02
650	03
850	04
1050	05
1450	06
2250	07

TABLE 1   TABLE 2   TABLE 3

SI – XXBA – XXXX – XX – XX – XX

Example

A roller with the following dimensions:

Bearing = 6309
Shaft OD = 45mm
Antenna cover = 40mm
Bearing centres = 600mm
External mounted Antenna (due to steel tube) = OFBA

Would have the following order code:

SI-OFBA-6309-45-40-03

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