



CALSCAN

reliable
temperature pressure
& flow measurement

HYBRID WOLVERINE

200°C HYBRID QUARTZ DOWNHOLE TOOL

The most expensive tool is the tool that fails on a test. With the Hybrid Wolverine Calscan has incorporated its many years of experience to help address the main failure modes in downhole pressure loggers.

Hybrid Electronics: The Wolverines uses a custom high temperature package and electronic components that works up to 200°C. As a result the logging assembly does not need to be replaced after every run.

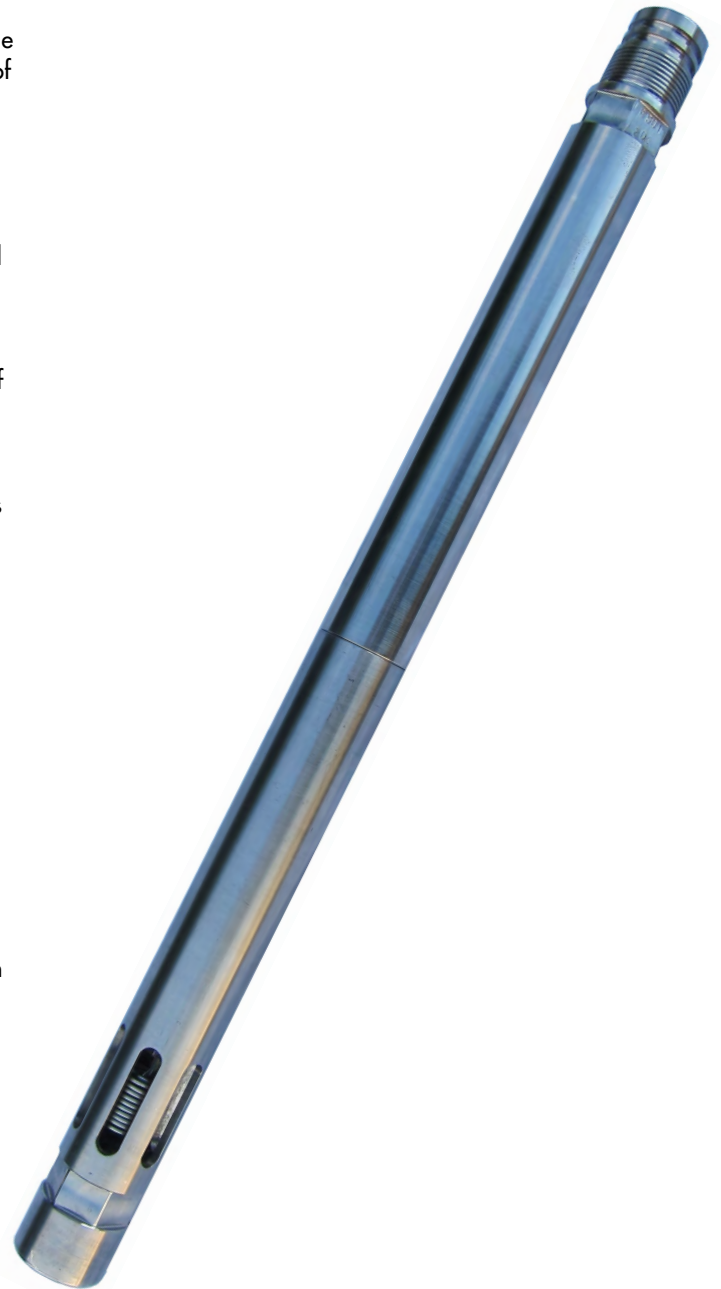
Fault Tolerant Memory Design: The failure of one memory chip or block of memory will not result in the complete loss of a section of data.

Seals: All welded construction except the battery barrel connection. The battery barrel uses a triple seal: Two O-rings and an interference thread. The interference thread uses a pipe sealant/lubricant that protects the o-ring against chemical attack as well as reduces the pressure to the o-ring.

Shock Resistant Design: Hot deep wells are a difficult environment for a wireline operator to work on. Mistakes happen and the Wolverine is designed to maximize the chance of its survival.

Memory Size: There are 996200 samples available for temperatures below 180°C. For temperatures above 180°C there are 111400 samples available.

Field Reporting: Calwin our windows interface software allows the operator to make quick field gradients and custom graphing with annotation. Graphs can be saved for later editing and exported to PDF.



Calscan's hybrid electronics provide long life at 200°C unlike traditional packaging techniques like SMT

Hybrid Wolverine Specifications

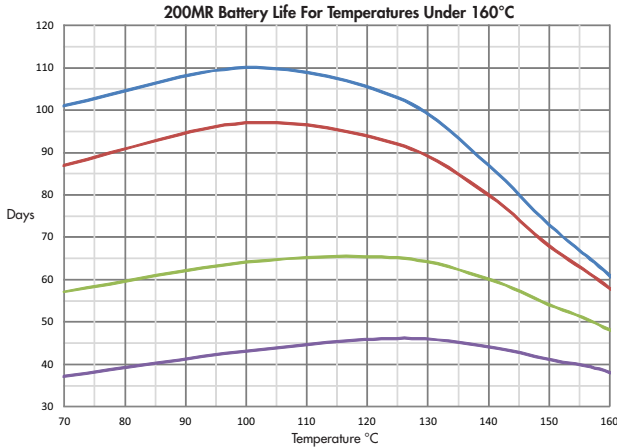
Battery

200MR Sub CC Lithium Cell for 70°C to 200°C

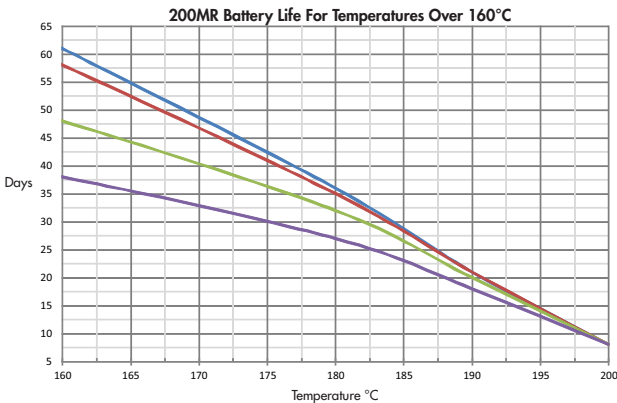
180LR Sub CC Lithium Cell for 50°C to 180°C

Battery Life 200MR

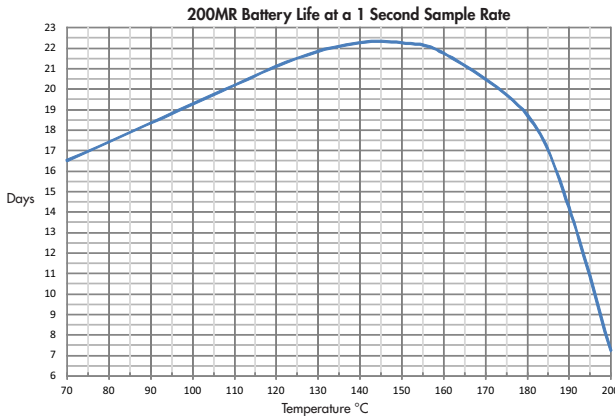
The life on a battery is temperature and sample rate dependent. Battery chemistry and downhole temperature are the dominant factors above 120°C on long term tests due to battery self discharge.



Battery self discharge increases rapidly above 160°C, limiting the length of your test even at slow sample rates.

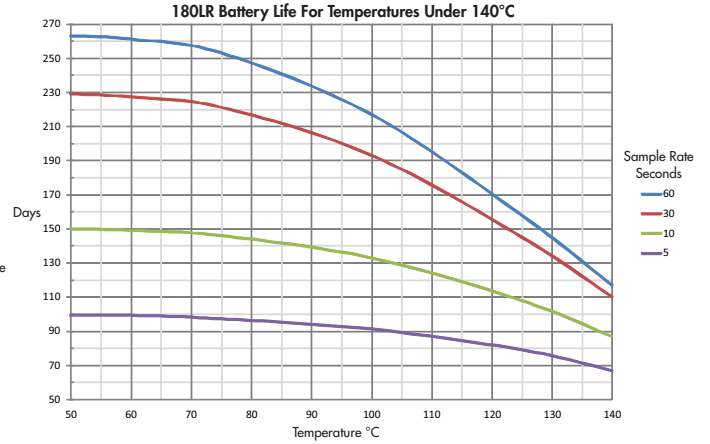


Fast samples fill the memory quickly, consider using smart sampling to extend memory capacity.

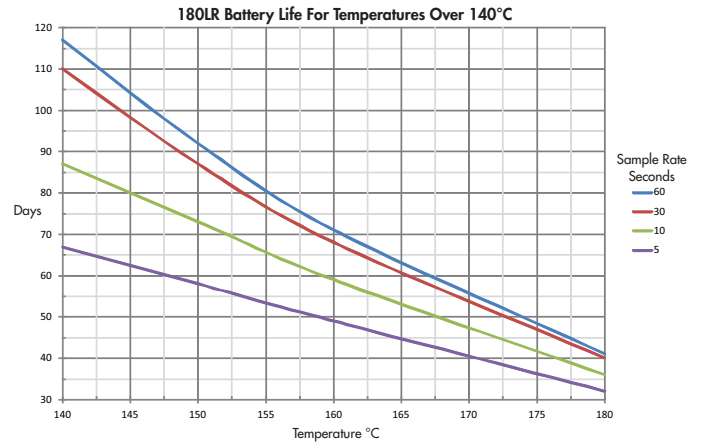


Battery Life 180LR

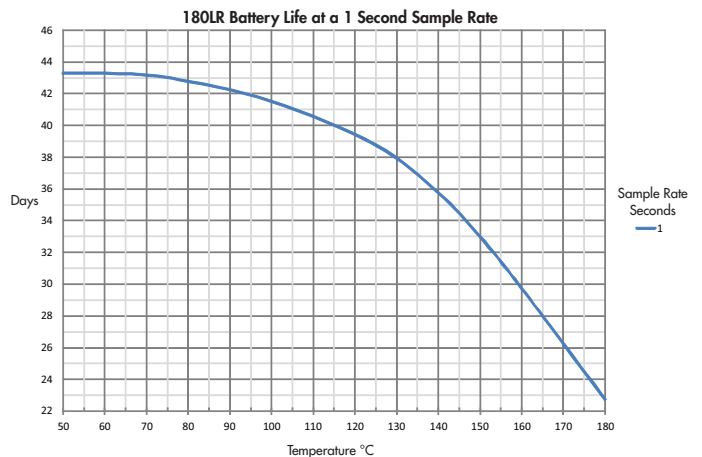
The life on a battery is temperature and sample rate dependent. Battery chemistry and downhole temperature are the dominant factors above 120°C on long term tests due to battery self discharge. The 180LR has a larger capacity than a 200MR allowing longer tests at lower temperatures.



Battery self discharge increases rapidly above 160°C, limiting the length of your test even at slow sample rates.



Fast samples fill the memory quickly, consider using smart sampling to extend memory capacity.



Hybrid Wolverine Specifications

Memory

Temperatures 0°C to 180°C: 996200 samples
Temperatures 180°C to 200°C: 111400 samples

Sample Rate

Minimum Rate : 1 sample /second

Environmental

Operating Temperature: 0°C to 200°C

Sensor

Quartzdyne DXB012 Series Quartz Sensor
Pressure Range: 10000,16000,20000,25000,30000 psia

Accuracy

Pressure: $\pm 0.02\%$ Full Scale ($\pm 0.015\%$ FS Typical)
Pressure Resolution: $\pm 0.0002\%$ Full Scale
Temperature: ± 0.5 °C (± 0.15 °C typical)

Housing

Housing Material: 718 Inconel™ (UNS N07718)
Housing Diameter: 1.25 inches (31.75mm)
Housing Length: 24.125 inches (609.6mm)

Communication:

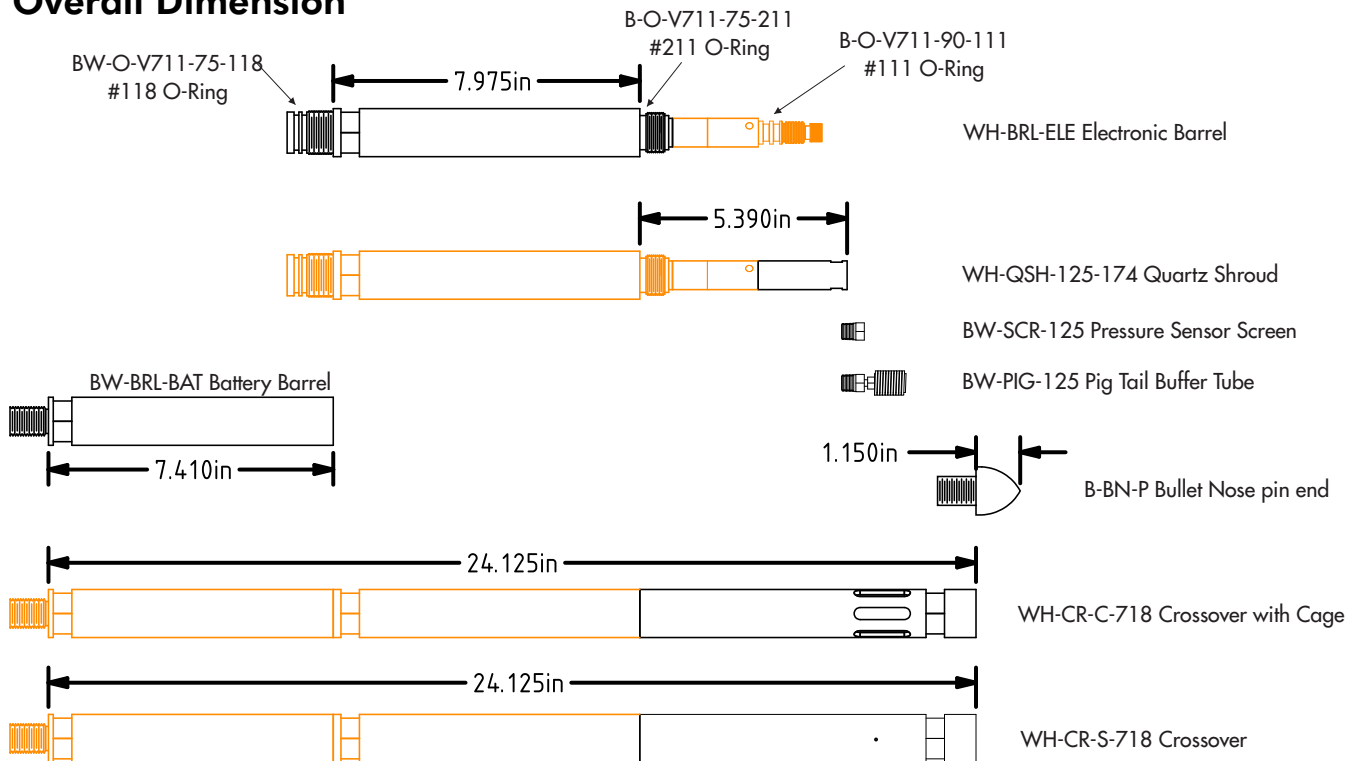
USB via Interface Box

Programming and Reporting

Calwin for Windows Vista/Win7/Win8

Hybrid Wolverine Specifications

Overall Dimension



All box and pin thread connections 3/4" Amerada (3/4" - 16 TPI UNF)
Barrel Diameter 1.25in

Part Numbers

Hybrid Wolverine max temp 177°C	WH-Pxxxxx-177	Battery 21-100-180LR Sub CC cell	BAT-SCC-180LR
Hybrid Wolverine max temp 200°C	WH-Pxxxxx-200	Battery 21-97-200MR Sub CC cell	BAT-SCC-200MR
	Pressure Range: xxxxx in PSI	SRO GO E-Line adapter 1 7/16"	BW-SRO-GO-144
		SRO Transmitter	B-SRO-TRAN-180
Battery Barrel	BW-BRL-BAT-S	Sensor/Thread Grease 142g	WH-GR-104SYNEU-S
Electronic Barrel	WH-BRL-ELE	Sensor/Thread Grease 454g	WH-GR-104SYNEU-L
Bullet Nose with Pin End	B-BN-P	Battery Barrel O-ring 50 pack Dupont Viton V711 75-118	BW-O-V711-75-118-Q50
Crossover Sub with Cage	WH-CR-C-718	Base Plug O-ring 50 pack Dupont Viton V711 75-211	B-O-V711-75-211-Q50
Crossover Sub	WH-CR-S-718	USB Interface and Battery Tester	I-USB-BAT
Quartz Shroud	WH-QSH-125-174	Carrying Case	WH-CASE
PigTail Buffer Tube	BW-PIG-125		
Pressure Sensor Screen	BW-SCR-125		



For warranty, calibration, replacement battery, and local distributor information contact:

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