



# LEC Smart Telemetry - Technical Data Sheet

Technical data for pressure, temperature, strain, bending and torsional moment, acceleration and component movement measurements using "LEC Smart Telemetry":

Technical data	Min.	Max.
<b>Sampling rates:</b>		
Sampling rate of A/D converter for high-speed measurements:	16 bit @ 64 kHz	
Sampling rate of A/D converter for temperature measurements:	24 bit @ 2 kHz	
Sampling rate of pressure, acceleration, strain gauge sensors:	1 kHz	50 kHz
Sampling rate of temperature sensors (Thermocouple, RTD):	1 Hz	50 Hz
<b>Resolution of ADCs:</b>		
Resolution of ADC for temperature measurements:	16 bit	24 bit
Resolution of ADC for pressure measurements:	16 bit	
Resolution of ADC for acceleration, strain measurements:	8 bit	16 bit
<b>Number of channels:</b>		
Possible number of simultaneous p-, T-, strain-, acceleration-channels:	143	
Max. number of temperature channels:	128	
Max. number of pressure, strain channels:	6	
Max. number of acceleration channels:	3	
<b>Latency:</b>		
Response time for pressure, acceleration and strain gauge sensors:	Dependent on sample rate	
Response time for temperature sensors (Thermocouple, RTD):	Dependent on sensor, typical 500 ms	
<b>Interfaces:</b>		
Real-time data acquisition and transfer with customizable bandwidth, implemented through standardized technologies:	Analog voltage output, CAN, UART/RS232, Bluetooth 5.2	



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<b>Range:</b>		
Typical range between receiver and antenna:	0.01 m	5 m
<b>Minimum bore diameters:</b>		
d <sub>min</sub> temperature sensors:	0.5 mm	3 mm
d <sub>min</sub> pressure sensors:	1.9 mm	2.6 mm
d <sub>min</sub> acceleration sensors:	10 mm x 10 mm	
<b>Minimum space requirement:</b>		
Minimum space requirement for acceleration, strain gauge sensors:	For PCB, typ. 20 x 60 mm	
<b>Maximum temperatures:</b>		
Operating temperature of temperature sensors:		1270 °C
Operating temperature of pressure sensors:		235 °C
Operating temperature of strain gage sensors:	Dependent on sensor: 120 - 200 °C	
Operating temperature of acceleration sensors:		
Operating temperature of circuit boards:	125 °C (kHz sampling), 140 °C (Hz sampling)	
<b>Average battery life:</b>	40 h (Hz sampling), 2 h (kHz sampling)	
<b>Maximum speed:</b>		
Maximum engine speed (reciprocating combustion engine):	Depends strongly on temperature and other boundary conditions. Typical forces up to 400 G are allowable.	
Maximum engine speed (rotary combustion engine):		
Maximum shaft speed:		
<b>Permissible test bench ambient boundary conditions (temp. for cold test bench, humidity for air conditioning)</b>		
Relative humidity (non-condensing):	5%	95%
Ambient temperature:	-10 °C	60 °C