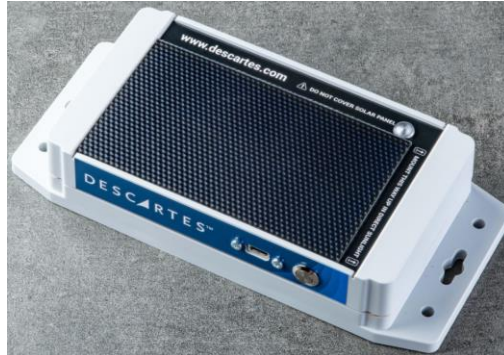


DSR002 (Descartes Solar Reader) Hardware Specification



Name of the Product:	DSR (Descartes Solar Reader)
Model:	DSR002
Revisions:	DSR002v1
Description:	The DSR is a Mini Descartes IoT Reader used to monitor movement of goods and equipment with attached Descartes IoT Tags.
Size:	201mm long by 91mm wide by 38mm deep
Case Rating:	IP65
External Power:	The device is normally powered from an integrated solar panel, but it can also be charged or powered via USB Type-C connector; this uses a 5V supply and can draw up to 1A.
Battery Power Supply:	The main power source is a battery of two rechargeable 18650 lithium polymer (Li-Po) cells. Each has a nominal capacity of 3400mAh and can be recharged through the USB port or from the solar panel.
Solar panel:	Solar charging provided by a 1.3W 6V Monocrystalline solar panel

Power Consumption:	~4mA – Idle ~20mA – Max
Temperature Range:	-20 to +70C
DSR001 Weight:	240g

Cellular

Module:	DSR uses the nRF9160 System-in-Package (SiP). Integrated low power LTE cellular technology, onboard processing and built in GPS.
CPU:	64 MHz Arm® Cortex®-M33 CPU (TrustZone) with 1 MB Flash & 256 KB RAM
Modem:	Multimode LTE-M/NB-IoT modem with integrated RF front-end
Modem Frequency range:	700-2200 MHz LTE
Supported LTE Frequencies:	Cat-M1: B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B28, B66 Cat-NB1/NB2: B1, B2, B3, B4, B5, B8, B12, B13, B17, B19, B20, B25, B26, B28, B66
Cellular Sensitivity:	LTE-M: -108 dBm NB-IoT: -114 dBm
Cellular Max Power Output:	+23 dBm output power
Modem Throughput (DL/UL)	LTE-M: 300/375 kbps NB-IoT: 30/60 kbps
Cellular Antennas:	Integrated LTE-M/NB-IoT/GPS chip antenna
SIM Card Size:	Nano/4FF Subscriber Identity Module (SIM) card slot
Cellular SIMS supported:	Supports SIM and eSIM with an ETSI TS 102 221 compatible UICC interface
GPS Sensitivity:	GPS: -155 dBm

Bluetooth

Module:	nRF52840
Bluetooth Type:	Bluetooth Low Energy 5.1
Bluetooth Sensitivity	-98dBm
Bluetooth Max Power Output:	+4 dBm
Bluetooth Antenna:	Integrated BLE chip antenna

Other Features:

Indication LEDs:	RGB for status indication
Sensors:	Temperature, humidity, air quality, air pressure, Low-power accelerometer, High-G accelerometer, colour and light sensor
Additional Features:	Magnetic buzzer

Certifications:

DSR001 (Descartes Solar Reader)	CE / RoHS	Complies
	FCC Intentional radiator Part 27 (TNB equipment class)	Passed Intentional radiator Part 27 (TNB equipment class)
	FCC Unintentional radiator Part 15B (Class B Digital Device: JAB equipment Class)	Passed Unintentional radiator Part 15B (Class B Digital Device: JAB equipment Class)
	FCC Unintentional radiator Part 15B (Receiver working in frequency range 30-960 MHz)	Passed Unintentional radiator Part 15B (Receiver working in frequency range 30-960 MHz)
	CE nRF9160 SiP EU declaration of Conformity	Passed nRF9160 SiP EU declaration of Conformity
	CE nRF9160 SiP certificate	Passed nRF9160 SiP certificate
	CE nRF9160 DK EU declaration of Conformity	Passed nRF9160 DK EU declaration of Conformity
	CE nRF9160 DK certificate	Passed nRF9160 DK certificate
	CE Nordic Thingy:91 EU declaration of Conformity	Passed Nordic Thingy:91 EU declaration of Conformity
	UKCA (United Kingdom)	Passed UKCA (United Kingdom)
	ISED (Canada)	Passed ISED (Canada)
	ACMA RCM (Australia)	Passed ACMA RCM (Australia)
	NCC (Taiwan)	Passed NCC (Taiwan)
	IMDA (Singapore) B3	Passed B3
	IMDA (Singapore) B8	Passed B8
MIC (Japan) Radio	Passed Radio	
MIC (Japan) Telecommunication	Passed Telecommunication	
MIC (Japan) Antenna usage declaration	Passed Antenna usage declaration	

MSIP (South Korea)	Passed PDF
IFT (Mexico)	Passed IFT (Mexico)
ICASA (South Africa)	Passed ICASA (South Africa)
NBTC (Thailand)	Passed NBTC (Thailand)
GCF	Certified GCF
PTCRB	Certified PTCRB
CE / RoHS	Complies