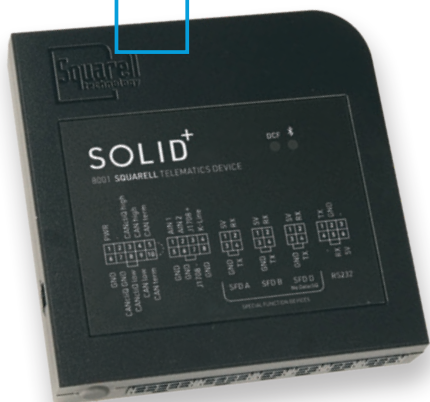


reliable vehicle data



SOLID+
Vehicle Data Collection Device



SOLID⁺

8001 SQUARELL TELEMATICS DEVICE

DCF



SPECIAL FUNCTION DEVICES

RS232



What is the SOLID+?

A state of the art One Box Solution **designed for automotive use** according to ISO 7637-2.

The SOLID+ is a small box equipped with RTC. It can handle all vehicle networks and has three Special Function Device ports (SFD) available.

Reliable Vehicle Data

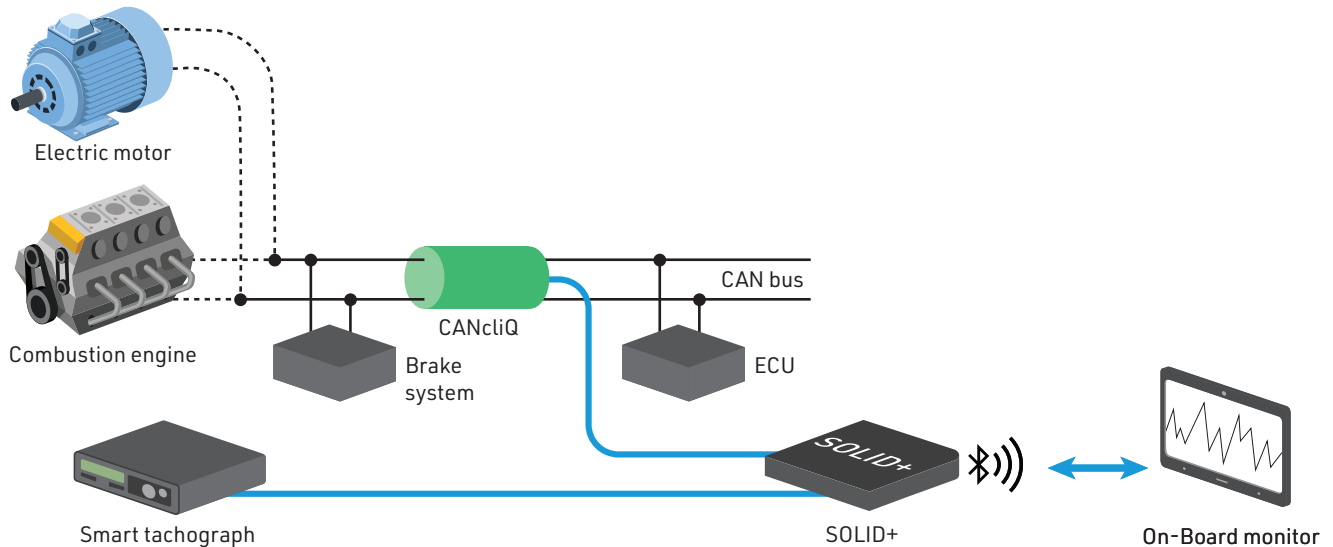
For more than 20 years Squarell has been the Vehicle Data Specialist. Our Engineers unravel CAN bus **protocols of all vehicle brands**.

We currently have more than 450 parameters available, found on the networks in vehicles or developed for customer application.

The SOLID+ generates data that can be used for vehicle **Performance, Maintenance, Safety, Liability, Environment** and **Diagnostics**.

Application Area

Our devices are used in different market segments such as: Trucks and Trailers, Vans, First Response Vehicles, Military Vehicles, Money Transport, Garbage Trucks and many other areas of application.



Possible Vehicle Network Connections

- 2 Hardwired/CANcliQ's and 2 DatacliQ **CAN bus** connections with automatic baud rate detection, up to 1000 Kbaud (including 667 Kbaud), Internal 120R terminator connection for CAN port 2.
- 1 Hardwired and 1 DatacliQ **J1708** Vehicle Network connection.
- 1 Hardwired **K-line** Vehicle network connection with Slow and Fast initialisation.

We read directly from the vehicle networks and OBD, a brand specific FMS device is not required.

CAN networks and Power are accessible via one 10-pole Molex Micro-fit connector, the K-line, J1708 and the analogue inputs are available via one 8-pole Molex Micro-Fit connector on the front of the device.

Vehicle Protocols

For CAN bus we support J1939, ISO11992, NMEA 2000 and **all manufacturer** specific communication protocols.

For J1708 the J1587 and J1922 protocols are available.

For K-line the ISO 9141 and ISO 14230 variants are available.

Connect the ISO11992 Trailer CAN bus via a DatacliQ on SFD port A or B.

Analogue Input Ports

2 analogue inputs can measure analogue signals up to 30 VDC with a 1 mV resolution or can be used to read **2 digital input signals**. The sample rate is 10 ms.

Bluetooth

The SOLID+ has integrated Bluetooth.

Real Time Clock

The Real Time Clock has its own battery that keeps the RTC active during power off or sleep mode. The SOLID+ can be **woken** at a time or a **time interval**. The RTC will synchronise on Google NTP.

Special Function Devices (SFD)

On the 3 SFD ports several Special Function Devices can be connected like the DatacliQ, the Driver Awareness Panel (DAP), the Power Output Module (POM). The SFD ports A, B and C are accessible via 3 Molex Micro-Fit 4-pole connectors on the front of the device.

Power Supply acc. to ISO 6737-2

The Power Supply of the SOLID+ is designed according to the automotive power supply standard ISO 6737-2.

The supply voltage range is 10 – 30 Vdc. The average power consumption is at 24Vdc **50mA**, during deep sleep mode the power consumption is 24Vdc 5mA.

Certificates

CE, **E4**, UKCA, RoHS. According to the regulations, the SOLID+ is tested once a year by a **certified body** for the E4 certificate and is therefore allowed to communicate on vehicle networks.

Physical characteristics

The device is 100 x 100 x 20 mm and weighs 110 grams.

Due to the high requirements, -40...85 deg C, the components are **long life** and **automotive grade**, the housing is UL94 V-0 flame retarded and has an IP40 protection rate.

Country of origin

The device is entirely designed and produced in the Netherlands.

Support

A group of highly educated automotive engineers support the SOLID+ with an extended manual and diagnostic. We provide a standard 2-year warranty on the SOLID+.

The manual and configuration is available by reading the **QR code** on the back side of the device.





SOLID+

With the SOLID+ Squarell wants to offer the most complete vehicle data collection device possible and simplify installation as much as possible.

This comprehensive device is equipped with bluetooth and can be non-intrusively connected to various vehicle networks such as a tablet in the vehicles cabin.

Due to the differences between the major brands, we supply DCF software according to the latest rFMS standard with totals for the following brands:

- DAF
- Iveco
- MAN
- Mercedes
- Renault
- Scania
- Volvo

The software for the following subscriptions is installed and can be turned on remotely:

- Remote Tacho Download (RTD), get your DDD files from our server
- Remaining Driving Time (RDT)
- Live Tacho Data and K-line port on (LTD)
- Advanced Generated Tell-tales Solution (TTS)
- SW Driver Awareness Panel, needs BT2.1 (DAP)
- Squarell Event Data Recorder (EDR)
- Dual Inputs and AIN ports on (AIN)
- ISO 11992 Data (ISO)
- CleANopen (CLO)
- rFMS (remote FMS)
- Exhaust
- Safety
- Maintenance

The software for the following SFD devices is already installed:

- Hardware Driver Awareness Panel (DAP) for savings up to 14%
- Power Output Module (POM) for direct vision cameras
- DatacliQ for non-intrusive connection

The 3 types of cables are:

- Power with CANcliQ
- Power with CANcliQ and K-line (Iveco, Mercedes, Scania)
- Power with CANcliQ, K-line and DatacliQ (Volvo, Renault, DAF, MAN)

Think of Squarell when vehicle data becomes important!



SOLID+ properties

DEVICE CONFIGURATION FILE (DCF)

Configuration system	For data processing and parameter enhancement
DCF memory	320 kB

CAN BUS

Hardwired ports	2
Hardware protocol	CAN V 2.0a, CAN V 2.0b
Internal terminator	CAN port 2 only
Via additional CANcliQ or DatacliQ	4
Baud rate	Selectable: 10 - 1000 kBd
Automatic baud rate detection	Yes
Supported protocols	J1939, ISO11992, NMEA 2000, Proprietary
Default device address	240

J1708

Hardwired port	1
Via DatacliQ	1
Baud rate	9600 Bd
Protocols	J1587, J1922, Proprietary

K-LINE

Hardwired port	1
Via DatacliQ	1
Baud rate	1200 - 20000 Bd
Protocols DCF selectable	ISO 9141 (FAKRA)/ISO 9141-2 (OBDII/CARB) ISO 14230-2 (KWP 2000) ISO 14230S (Swedish)
Initialisation	Slow/Fast
Message timing	Configurable, with extended response time

SPECIAL FUNCTION DEVICE PORTS (SFD)

Ports	3
SFD supply	4.75 - 5.25 V
SFD load	100 mA per SFD, 300 mA max to all SFDs
Default baud rate	9600 Bd
Port type	UART
Signal level	CMOS

OPTIONAL SFDs

DatacliQ	CAN (port 1, 2, autobaud), ISO11992, J1708
Driver awareness	Driver Awareness Panel (DAP)
Power Output Module	6 high side drivers, 2 inputs

BLUETOOTH

Bluetooth	2.1 and 4.0 LE
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ANALOGUE INPUTS

Hardwired	2
Input level	0 - 30 VDS, resolution 1 mV
Sample rate	10 ms

APPLICATIONS

RTD	Remote Tachograph Download
RDT	Tachograph Remaining Driving Time
EDR	Squarell Event Data Recorder (SQ-EDR)
TTS	Squarell Advanced Tell-tales Solution

And many others

LEDS

DCF	Red: wrong DCF. Green/short red: 1 CAN port not connected. Green: OK
Bluetooth	Blue led

POWER

Input voltage range	10 - 30 VDC (power, ground)
Electrical isolation	No
Power consumption	1.2 W average normal operation (49 mA at 24 VDC, 98 mA at 12 VDC)

REAL TIME CLOCK (RTC)

RTC	included battery
Time synchronisation	CAN bus message

CERTIFICATION

Regulations	E4, CE, UKCA, RoHS
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SOLID+ properties

PHYSICAL CHARACTERISTICS

Dimensions	100 x 100 x 20 mm
Weight	110 g
Material	PC-ABS
Flammability rating	UL 94 V-0
Operating temperature range	-40 to 70 °C
Storage temperature range	-40 to 85 °C
Operating humidity range	10 - 90% (non-condensing)
Ingress Protection Rating	IP40
Designed and produced	In the Netherlands
Tie-wrap mounting slots	2

SUPPORT

Product info	Scan QR code
Diagnostic and upload program	iControl
Reusable for other vehicles	Yes
Warranty	24 months

BASIC SET

Recommended	SOLID+, CANcliQ, power cable
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SOLUTIONS

Advanced Tell-tales
Environment
Event Data Recorder
Maintenance
Safety
Tachograph



PRODUCTS

BE
CANcliQ and DatacliQ
Driver Awareness Panel
Power Output Module
REMOTE +
SOLID+
Trailer Box



VEHICLES

Buses and Coaches
Electric Vehicles
First Response Vehicles
Trailers
Trucks



INFORMATION

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