

Smart Tachograph EFAS-4.11 V05.10 Universal

**Brief introduction to Annex 1C-approved
Universal EFAS for the approved fitter**



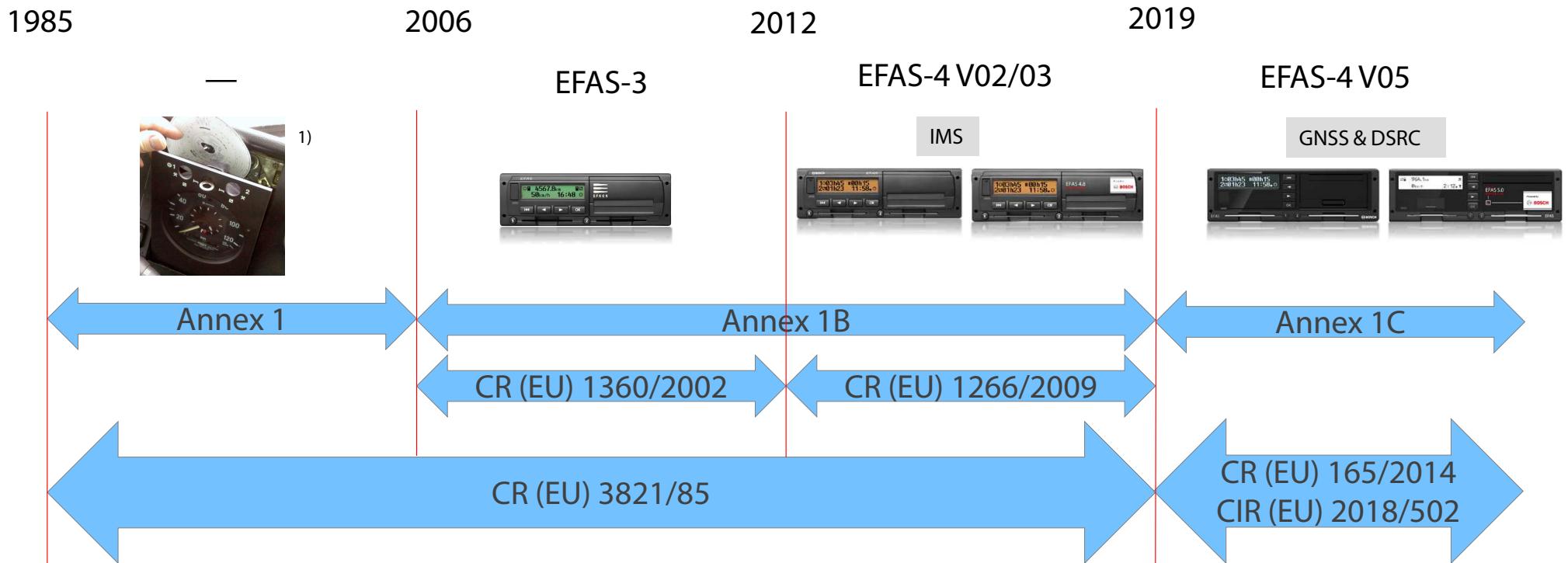
e1*165/2014*2018/502*222*01

Smart Tachograph EFAS-4.11 “Universal” — Contents in a nutshell

- ▶ Identification
- ▶ Handling
- ▶ Maintenance / Battery replacement
- ▶ Calibration
- ▶ Calibration Tools and Testers
- ▶ Installation
- ▶ General connectivity
- ▶ Connecting RDD devices CAN /D8
- ▶ Extended Configuration options
- ▶ Extended Test options
- ▶ Resources (Downloads)
- ▶ Getting further help



Legislation and Device Generations



1) Image source: Von Paettchen (Patrick Seidler) - Eigenes Werk, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=6387688>

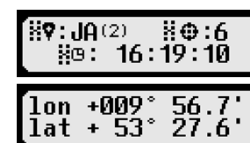
Smart Tachograph EFAS-4.11 “Universal” — What’s new

► EFAS Universal 1C-model

- Merges capabilities of EFAS-4.10 (1C) and EFAS-4.8 (Universal)
- **Fully featured, supports all pulse outputs** (like EFAs-4.8)
 - B6, B7, B8, D6
- **External GNSS-antenna** (by blue FAKRA connector)
 - With phantom power supply 3V to antenna
- Infos menu
 - GNSS, DSRC, Tachograph, Cards, Sensor, Driving times, Locks, Activities
- **Installation** menu
 - Automatic Parameter Detection
 - Test functions GNSS & DSRC
- Unique printouts
 - **RDI** reports settings, active errors, DSRC state, GNSS state
 - **SrVIDs** reports error message log
- Improved **printer** module
- Optimized compatibility with 3rd-party **RDD/RDL with V05.10**
 - Works on 3 and 8 bytes session initialization.
 - Improved handling of Gen2 certificates

► EFAS SW versions and product codes

- EFAS-4.11 V05.10: E5T020 (road use)
- EFAS-4.11 V05.10: E5T019 (training)



Smart Tachograph EFAS-4.11 “Universal” — Rear Connector Panel (Connectivity)

D-Connector

- ▶ Status and Warning Output
- ▶ Speed Output (conf.)
- ▶ Serial Outputs (k-Line, Info)

C-Connector

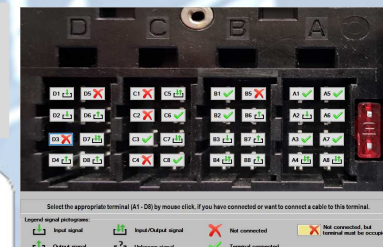
- ▶ Second CAN-Bus (CAN-C)
- ▶ CAN-C Termination Y/N
- ▶ RPM Output

B-Connector

- ▶ Motion Sensor Interface
- ▶ Speed Output
- ▶ Impulse Output

A-Connector

- ▶ Power & Ignition
- ▶ Illumination
- ▶ Primary CAN-Bus (CAN-A)

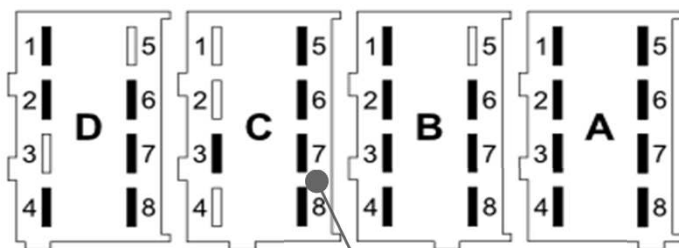


D1: Status 1	D5: not connected
D2: Status 2	D6: V-Imp. (conf.)
D3: not connected	D7: Serial D7
D4: Warning OUT	D8: Serial D8

C1: not connected	C5: CAN High (C)
C2: not connected	C6: CAN Gnd. (C)
C3: Engine RPM	C7: CAN Low (C)
C4: not connected	C8: CAN Term. (C)

B1: Sensor +	B5: not connected
B2: Sensor -	B6: V-Impulse
B3: Sensor Pulse	B7: V-Impulse
B4: Sensor Data	B8: 4 Imp./m

A1: Battery + (30)	A5: Battery - (31a)
A2: Illum. (58)	A6: Ground (31)
A3: Ignition (15)	A7: CAN Gnd. (A)
A4: CAN High (A)	A8: CAN Low (A)



**DO NOT DISCONNECT
WITHOUT WORKSHOP
CARD!**

**PLEASE SEE SERVICE
MANUAL FOR DETAILS.**

Motion Sensor Power Supply
 U_o : 10V, I_o : 31,2mA, P_o : 0.31W
 L_o : 10mH, C_o : 29nF

INTELLIC

www.intellic.com
 intellic GmbH
 A-8071 Hausmannstätten

**CAN-C Termination 120 Ω
if bridged C7 – C8**

**CAN-A Termination 120 Ω
If fuse inserted**

Smart Tachograph EFAS-4.11 “Universal” — Identification

- ▶ Printed type labels with serial number
 - Info at body and printer bay must match electrical serial number

- ▶ Electronical type label tachograph:

Menu: Infos▶	Infos: Tachograph	Serial number 006.0390001004
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Must match printed serial

- ▶ Electronical type label and info DSRC module:

Menu: Infos▶	Infos: DSRC Info	Version 0 2.16.1 0.6.16
Serial number 481	Status 2	connected to CAN Aux.

Must be: Status 2 = OK

CAN Aux = C5 & C7 (C8)

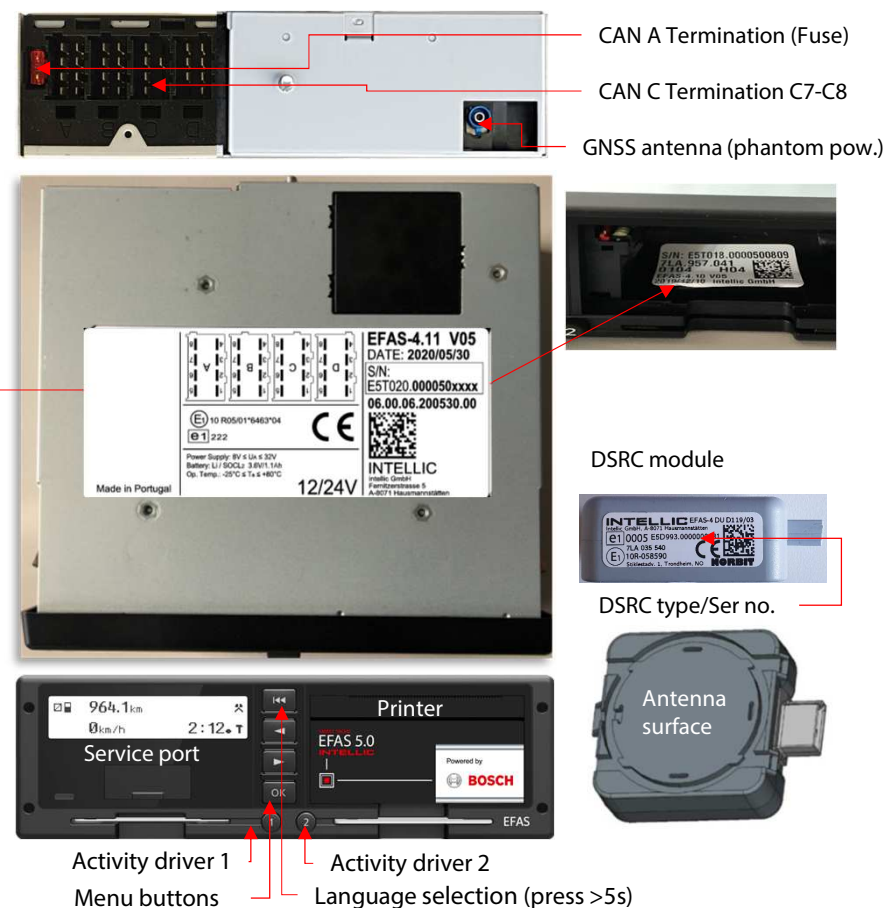
- ▶ Electronical info GNSS module:

Menu: Infos▶	Infos: GNSS Info	HDOP: YES (2) HDOP: 9 Time: 12:27:58	lon +009° 56.7' lat + 53° 27.6'
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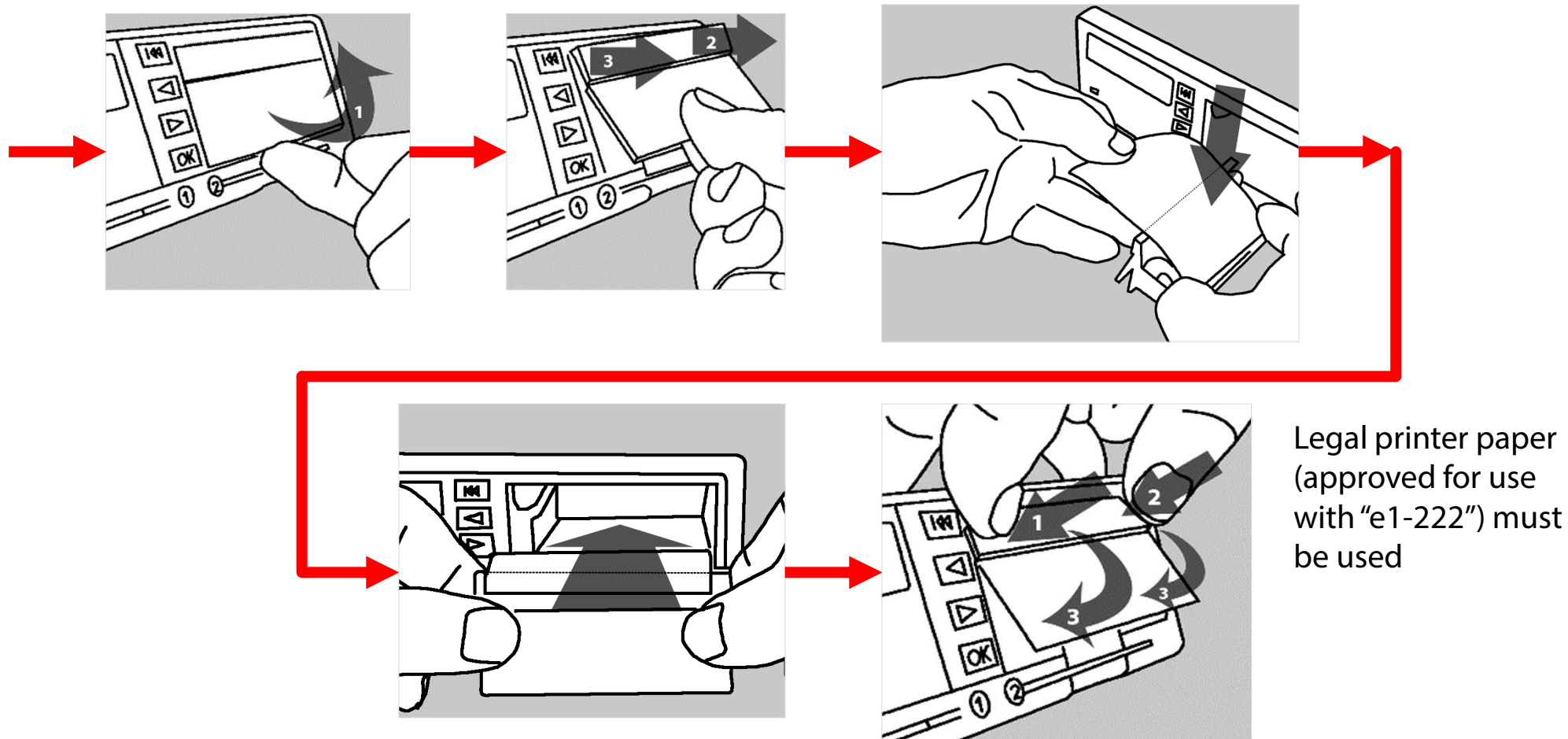
Page 1 must show: Status = Yes [(1),(2)], HDOP = Low, Time = recent UTC

- ▶ Electronical info Motion Sensor:

Menu: Infos▶	Infos: Motion Sensor	Serial number 385
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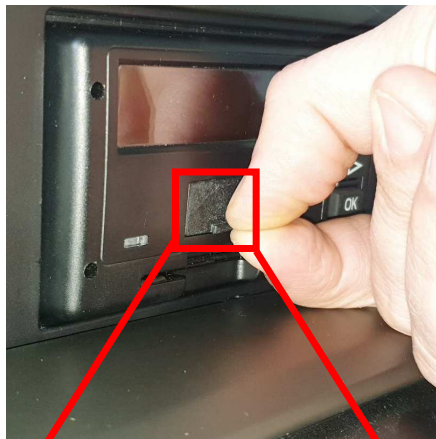


Smart Tachograph EFAS-4.11 “Universal” — How to handle the printer



Smart Tachograph EFAS-4.11 “Universal” — How to open the port cover

1)



2)



3)



Assignment (view from front)	Pin	Meaning
	1	Ground (GND)
	2	K-line data interface (bidirectional)
	3	RS232 data interface (RxD → receive)
	4	I/O signal for calibration (bidirectional)
	5	EFAS supply voltage less max. 3 V
	6	RS232 data interface (TxD → transmit)

Note: 6-pin interface is supporting
all standard download and tester tools,
since interface is standardized by EU.

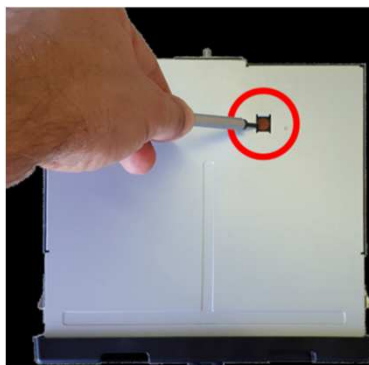
Smart Tachograph EFAS-4.11 “Universal” — How to change the buffer battery

Only if EFAS is *activated* a workshop card with **PIN** must be applied prior to lifting the cover.

- 1) Insert Workshop Card and enter valid PIN



- 3) Break the seal



- 5) Remove old battery



- 2) Connect EFAS to external battery power



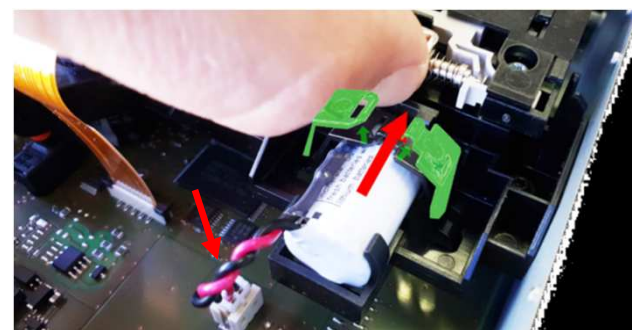
- 4) Lift the cover



- 6) Insert new battery

- 7) Close the cover

- 8) Seal it with your workshop seal

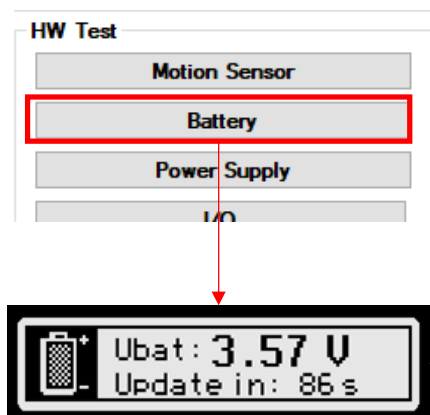
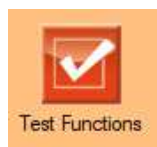


Be careful not to tear the socket off the printed circuit board!

Tachograph EFAS-4 V03/V05 — Diagnosis of internal buffer battery

12.6.13 Testing the internal back-up battery.

This test function performs a check of the internal back-up battery. The display shows the voltage measured for the back-up battery. Measurement is conducted at an interval that avoids placing unnecessary load on the battery.



Ubat < 3.3V

With WC

Without WC

SrVID ¹ dec ²	EFT ³ hex ⁴	DTC ⁵	Symbol ⁶ Display-text ⁷	Description-and-trouble-shooting ⁸
S105 ¹	31 ²	40-00-000139 ⁵	×A → Internal-device ⁶ malfunction ⁷ and-finally ⁷ ×A → Service! ⁶ SrVID:105 ⁷	Meaning-/Cause: The voltage of the buffer battery built into the recording equipment is too low. Measure: Replace the internal back-up battery. Carry out a recalibration.
S108 ¹	31 ²	40-00-000139 ⁵	×A → Internal-device ⁶ malfunction ⁷ and-finally ⁷ → Service! ⁶ SrVID:S108 ⁷	Meaning-/Cause: The data of the battery backup memory has been lost. The possible causes are: • → Failure or malfunction of the internal buffer battery. The voltage of the battery is inadequate to feed the real-time clock and the data that is saved in the battery backup RAM. • → In case of malfunction, the data in the battery backup RAM is deleted. • → If the cause for this malfunction is a weak battery then this malfunction is displayed if the device was previously isolated from the vehicle battery, otherwise the service ID S105 is displayed. Measure: • → Replace the internal back-up battery. • → Carry out a recalibration.
S66 ¹	81 ²	— ⁵	!B → Manufacturer ⁶ specific-Event ⁷	Meaning-/Cause: The tachograph was opened with authorization using a workshop smartcard. Measures: The opening must be marked in the repair protocol and protocol must be archived.
S73 ¹	17 ²	— ⁵	!Q → Security ⁶ violation ⁷	Meaning-/Cause: The recording equipment has been opened "without authorization". Measures: The tachograph must be replaced if the device is damaged or has been tampered with or if the seals have been removed by unauthorized persons.

Smart Tachograph EFAS-4.11 “Universal” — What buffer battery may be used

- ▶ Replacing the internal buffer battery is a legal requirement
 - **Every two years** for installed units
 - **1 year after production date** of EFAS for stocked units

EFAS operates only according to its approval, while an internal buffer battery of type “Primary Lithium Thionyl Chloride (**Li-SOCl₂**) battery, **3,6V, 1100mAh**, size **½ AA**, with **current limiter** and **connector**” with sufficient capacity is installed.

Intellic recommends the use of original equipment type Intellic part no. 10155122

Alternative solutions **must be certified** for use in Smart Tachographs according to **Annex 1C of CR (EU) 2018/502** and may be based on:

- MINIMAX ENERGY , 3.6V, 1200mAh, ER14250H
- VITZRO CELL, 3.6 V, 1200 mAh, SB-AA02
- Tekcell 3.6V, 1200mAh, SB-AA02
- Tadiran Batteries, 3.6 V, 1100 mAh, SL750



Smart Tachograph EFAS-4.11 “Universal” — Tester Tools

2020 - 08

Model	Manufacturer	Smart EFAS-4 V05 (1C)
CD-3	Phelect sprl	OPTIMO2 V6 with Phelect SW
Workshop Tablet	Continental Automotive GmbH	Tab 4 SW V4.4: Calibration, Test ²⁾
Optimo 2	STONERIDGE Electronics Ltd.	OPTIMO2 SW V6, CITO2 SW V3: Calibration"
MTT 2000	NTS GmbH	Calibration and Installation
CD400/RTTS150/CORA1	CD Concept sprl	Calibration and Installation
TC-NET	Tacho Control Semmler	Calibration and Installation
UTP-10 / UTP-10 NX	MATT automotive	Calibration and Installation
EFAS Service Tool (EST)	Intellic GmbH	Installation, self test, trouble shooting, documentation, input of extra seal numbers, no calibration

1) Use EFAS Service Tool as a companion tool for full access to EFAS parameters

2) Requires Options 2910002304900 (Smart Extended Lizenz) A2C59507497 (WorkshopLink Adapter)

Smart Tachograph EFAS-4.11 “Universal” — Minimum connections

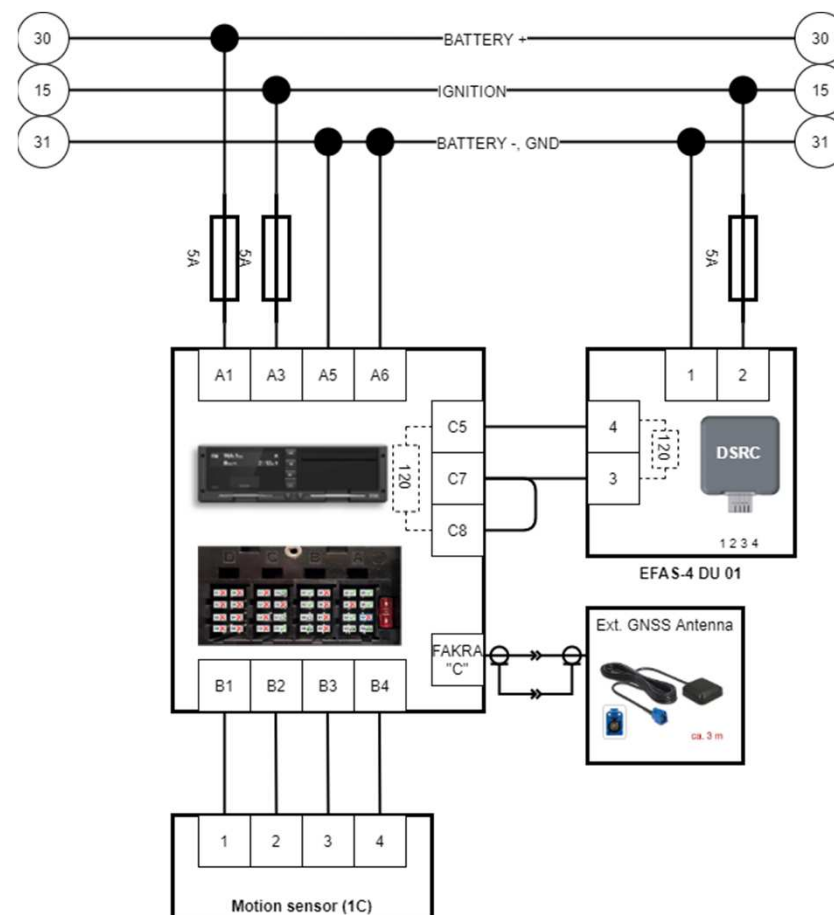
► Minimum system (Stand –Alone)

■ EFAS Power

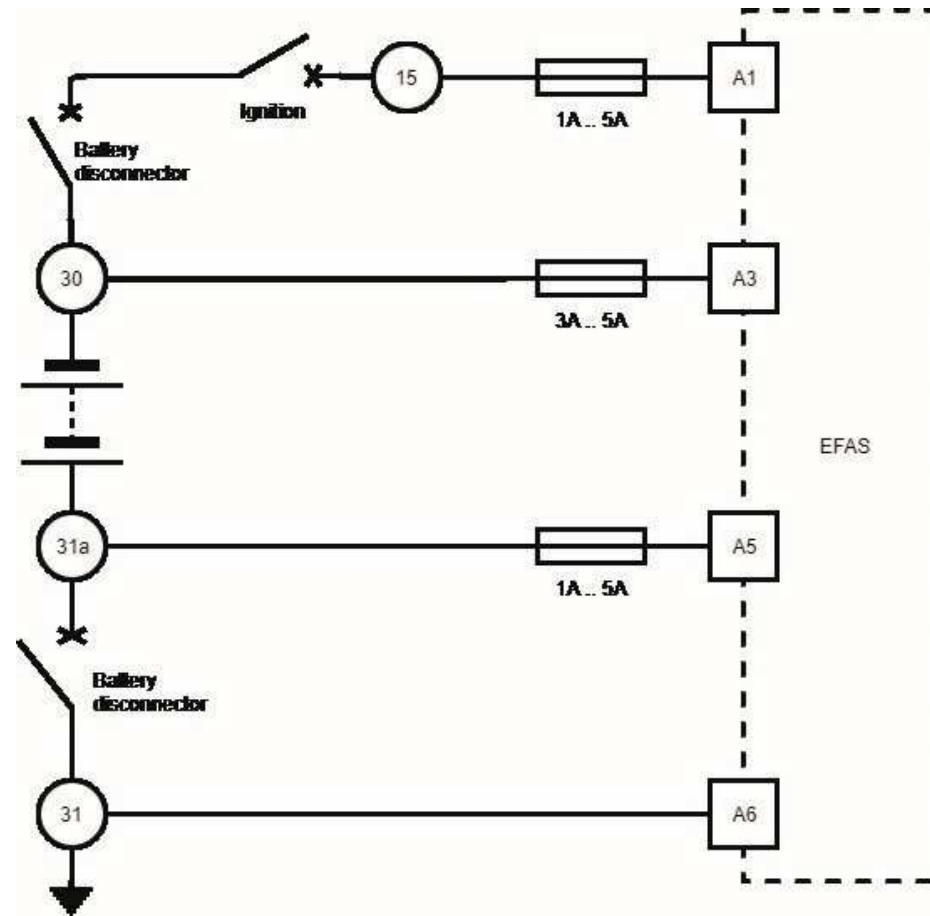
- A1: + Battery (30), fused 5A
- A3: Ignition (15), fused 5A
- A5: - Battery (31a)
- A6: GND (31) = -Battery (31a)
- Configure supply voltage to 12V or 24V
- Motion sensor (1C): B1 – B4

■ DSRC-Module

- Point to Point CAN-Bus (250kbps, 29bits)
- Both sides terminated by 120 Ohm
- Powered via Ignition (15), fused 5A, and - Battery (31a):
- Supply voltage range: 12V to 24V



EFAS-4 V03 / V05 — Power connections



Smart Tachograph EFAS-4.11 “Universal” — Factory Default Parameters

Vehicle type

Vehicle Manufacturer: universal, not specific or unknown

Vehicle type descr.: **Factory Default**

On-board Voltage: 24 V

Code Page: 1

Code Page: 1

CAN Bus MAIN (CAN A)

Activation: ON

Standard protocol selection: Universal Etacho/Combi instrument

Diagnosis protocol: Standard UDS (ISO 14229)

Length of Identifier: 29 [Bit]

Bitrate: 250 [kBit/s]

Transmission Rep. Rate TCO1: 50 [ms]

No. of Pulses per Shaft Rev.: 10000 1/1000

CAN Bus MAIN (CAN A) - Extras

Main CAN bus on plug: A

CAN Bit Sample Point: 87.2 [%]

CAN Frame Timeout Factor: 3 [s]

CAN Sync. Jump Width: 2 [Tq]

CAN Sample Mode: single

Priority Level TCO1 Message: Priority 3 (default)

Error Management Init. Inhibition: 2.0 [s]

Data Sources

Reset Trip Counter: with CAN MAIN message

Engine Speed Configuration: with CAN MAIN message

Illumination Control Configuration: through menu / Pin A2

Illumination Control Mode: A2 Digital

D6 / D7 / D8 - Interface

Interface D6: B6/B7-identical 1/1000

Protocol Selection D7: Standard UDS (ISO 14229)

Protocol Selection D8: Info-Interface-Protocol (IIP) 10 V

Independent Motion Signal (IMS) Source

IMS Selection: None Factor (1/1000): 1000

Configurable Monitoring Functions

Reset Heartbeat Message (CAN): OFF

VOUT (B7) Supervision: ON

D7 / D8 Baudrates, Parity

Baudrates and Parity D7: 10400 None

Baudrates and Parity D8: 10400 None

Accessible also via EFAS Menu>Installation

Accessible also via EFAS Menu>Settings

FMS Configuration

FMS Activation: OFF

CAN Bus AUX (CAN C)

Activation: ON

FMS IMS DSRC

Length of Identifier: 29 [Bit]

Bitrate: 250 [kBit/s]

Transmission Rep. Rate TCO1: 0 [ms]

CAN Bus AUX (CAN C) Extras

CAN Bit Sample Point: 87.2 [%]

CAN Sync. Jump Width: 2 [Tq]

CAN Sample Mode: single

Bus priority level TCO1 message: Priority 3 (default)

Message Selection:

☐ DRTD1 ☐ TCO2

☐ DRTD2 ☐ TCO3

VU wakeup via CAN AUX bus: OFF

DSRC

DSRC via CAN: AUX-Bus

CAN Bus MAIN (CAN A)

Activation: ON

FMS IMS DSRC

Standard protocol selection: Universal Etacho/Combi instrument

Diagnosis protocol: Standard UDS (ISO 14229)

Length of Identifier: 29 [Bit]

Bitrate: 250 [kBit/s]

Transmission Rep. Rate TCO1: 50 [ms]

CAN Bus MAIN (CAN A) - Extras

CAN Bit Sample Point: 87.2 [%]

CAN Frame Timeout Factor: 3 [s]

CAN Sync. Jump Width: 2 [Tq]

CAN Sample Mode: single

Priority Level TCO1 Message: Priority 3 (default)

Error Management Init. Inhibition: 2.0 [s]

Message Selection:

☒ DRTD1 ☒ TCO2

☒ DRTD2 ☒ TCO3

VU wakeup via CAN MAIN bus: OFF

Company Settings

Local time/print out: through menu

Activity/Ignition on: No change

Activity/Ignition off: No change

Activity/Ignition on (2): No change

Activity/Ignition off (2): No change

iCounter

☒ iCounter active

Show warnings

☒ for driver cards

☐ for driver and workshop cards

Show warning type:

☒ Nine hour daily driving time

☒ Maximum daily driving time

☒ Weekly driving time

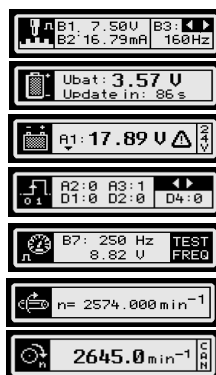
☒ Two-weeks driving time

☒ New rest period

Smart Tachograph EFAS-4.11 “Universal” — Unit Selftest Options

EFAS Service Tool offers a large number of test options without requiring special tools¹⁾, e.g. for

- ▶ HW components, like
 - Buffer battery voltage
 - Printer
- ▶ Modules, internal and external
 - GNSS
 - DSRC
- ▶ Interfaces, like
 - CAN A
 - CAN C
 - Motion sensor, Pulse interface,



The screenshot displays the EFAS Service Tool interface with several test modules:

- Test ISO 16844, Printer:** Includes buttons for 'Test Printout', 'Printer Temperature', and 'Printer Charset' (set to ISO-8859-1).
- HW Test:** A list of hardware components (Motion Sensor, Battery, Power Supply, I/O, Pulses, Shaft, Engine Speed, Buzzer and LED Test) each with a 'Stop' button.
- Test ISO 16844 Display:** Shows '4 Tests' with checkboxes for Test 1, Test 2, Test 3, and Test 4.
- GNSS Test:** Displays status for Error State (0), Data Valid (NO), Satellites (0 of 0), Accuracy (231), Fix Mode (1), Latitude (0° 0' 0.0" N), and Longitude (0° 0' 0.0" E). Includes 'Test' and 'Check Position' buttons.
- Keyboard Test:** Simple 'Test' and 'Stop' buttons.
- CAN A Test:** Shows 'Activated' status, Rx Error (0), and Tx Error (0). Includes a 'Test' button.
- CAN C Test:** Shows 'Activated' status, Rx Error (0), and Tx Error (0). Includes a 'Test' button.
- KWP Test Routines:** Includes 'IMS Test Start', 'GNSS Test Start', and 'DSRC Test Start', each with a 'Stop' button.
- Training Box:** Includes a checkbox for 'intellic Training Box' (3) and an 'Activation' section (4) with a 'Deactivate' button.

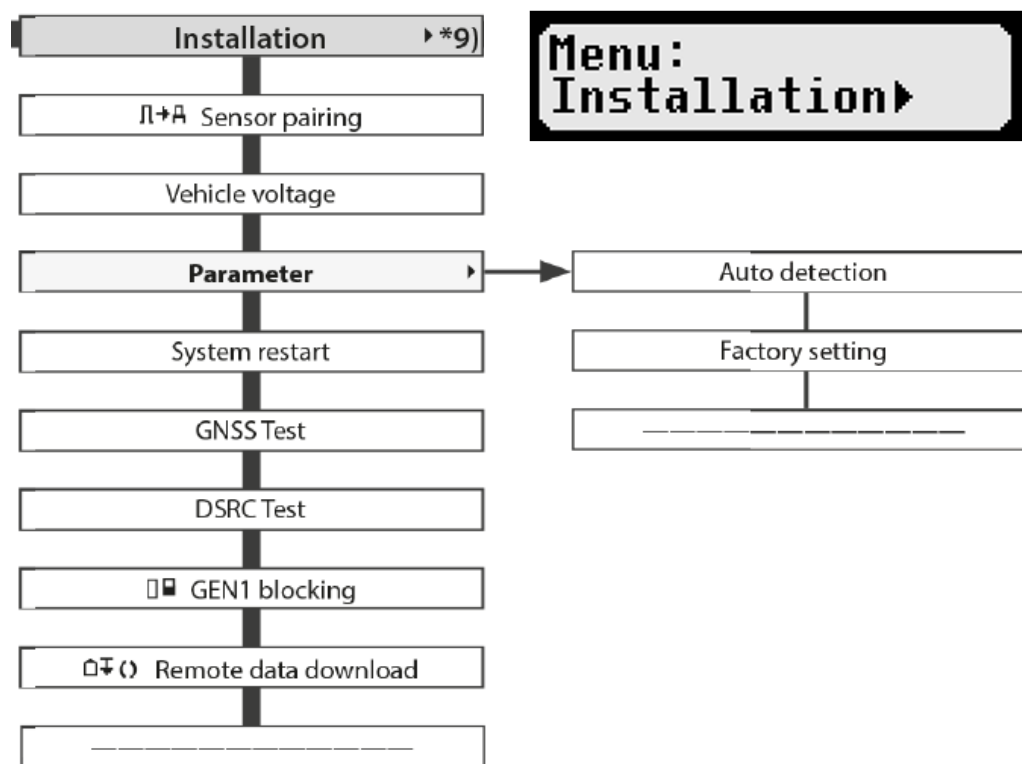
¹⁾ Requires a Windows®- PC and the EFAS Connection cable OC2513

^{3), 4)} Only available for test units

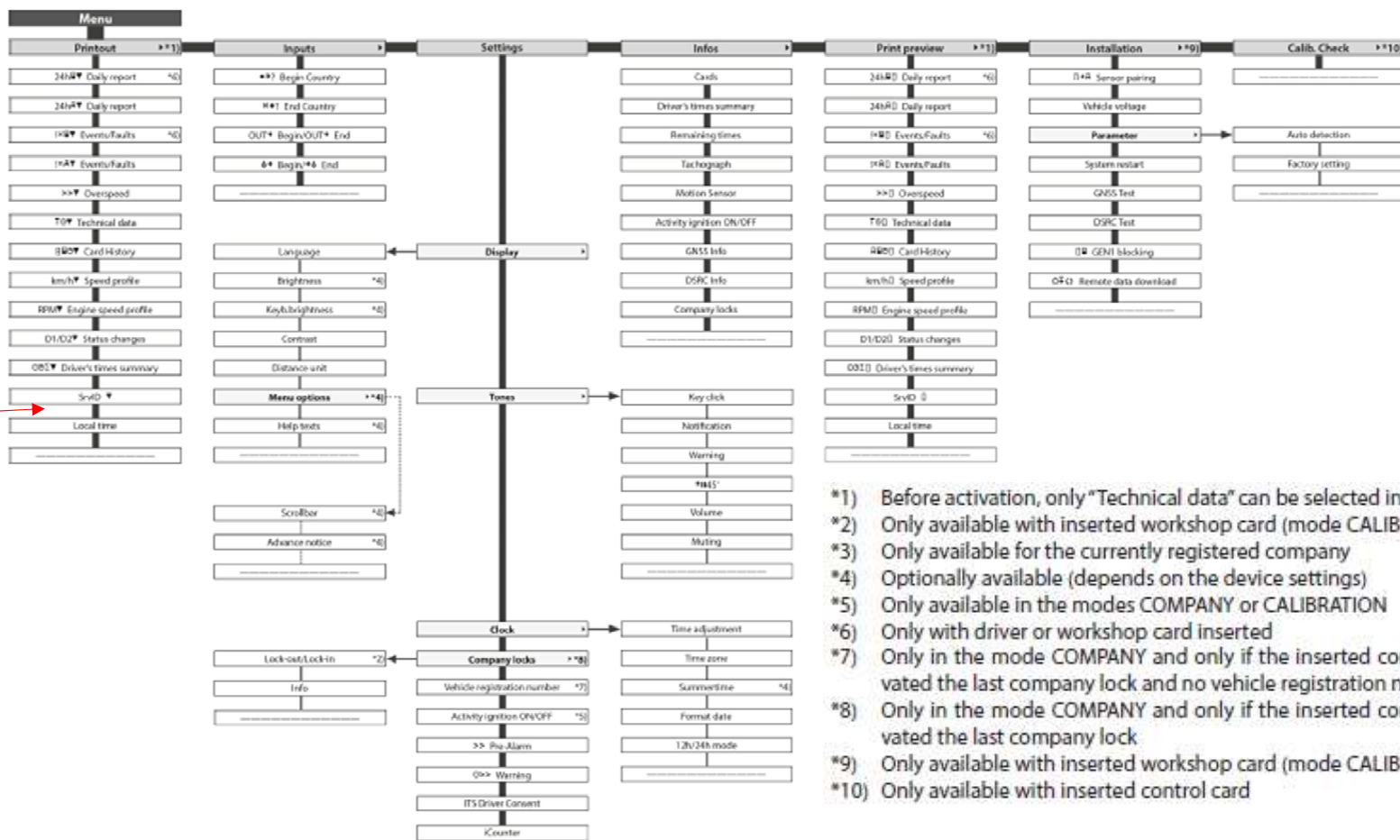


Smart Tachograph EFAS-4 V05 “Universal” — Installation support by Menu

- ▶ EFAS supports installation options via menu
- ▶ Requires valid workshop card
- ▶ **Sensor pairing** allows pairing of motion sensor
- ▶ Parameter allows to change basic system parameters
 - **Auto detection** tweaks system settings.
 - **Factory setting** restores ex-works system settings.
 - Only use if instructed by Intellic support.
- ▶ **GNSS Test** allows test of GNSS module
- ▶ **DSRC Test** allows test of DSRC module
- ▶ **Gen1 blocking** will disable support for Gen1 cards. **Once and for ever!**
- ▶ **Remote data download**
 - Allows to configure FMS protocol stack:
 - CAN MAIN (A) | CAN AUX (C) | OFF



Smart Tachograph EFAS-4 V05 — Comprehensive Menu Map



*1) Before activation, only "Technical data" can be selected in the menu "Printout" or "Print preview".

*2) Only available with inserted workshop card (mode CALIBRATION)

*3) Only available for the currently registered company

*4) Optionally available (depends on the device settings)

*5) Only available in the modes COMPANY or CALIBRATION

*6) Only with driver or workshop card inserted

*7) Only in the mode COMPANY and only if the inserted company card belongs to the company which activated the last company lock and no vehicle registration number has yet been entered.

*8) Only in the mode COMPANY and only if the inserted company card belongs to the company which activated the last company lock

*9) Only available with inserted workshop card (mode CALIBRATION) or EFAS is not activated.

*10) Only available with inserted control card

Digital Tachograph EFAS-4.11 V05.10 — Execute the Wizzard for Automatic Detection

► How do I start the Automatic Detection?

- Insert Workshop Card and apply PIN
- Select from EFAS Menu
Installation → Parameter → Auto Detection →
Start? No <> Yes

► What will EFAS do?

- EFAS will restart, then probe its parameters for about 30 seconds



- After probing finished EFAS will print a special print out, called „RDI+*“.

INTELLIC	
Digital Tachograph EFAS	
▼ 26/04/2015 15:15 (UTC)	
-----▼-----	
RDI+*▼	

-RDI:-Data----- 1 2	
FD34: 00	- - - - - X X
FD3A: 00	- - - - - X
FD00: 01	- - - - -
FD01: 00010100	- -
FD02: 00010100	- -
FD6E: 00	- - - - -
F90C: 00	- - - - -
F920: 01	- - - - -
FDA5: 02	- - - - -
FD26: 00000000	- -
FD9E: 01	- - - - -
FDA3: 01	- - - - - X

Printing time

Start of section: printout type

Printout type: RDI

„Data“ in the next line will be printed independently of the configured user language.

Column |1| shows whether the signal related with the parameter has been detected and stored

Column |2| shows whether the signal related with the parameter has been changed if compared with the previous setting

IlluminationControlSource

EngineSpeedConfiguration

TripDistanceResetConfiguration

CANConfigurationMainVehicleBus

CANConfigurationAuxiliaryBus

CANMainVehicleBusSelection

ResetHeartbeatMessage

TransmissionRepetitionRateOfTCO1Message

IndependentMotionSignalSourceConfiguration

ExtSerialInterfaceConfiguration

FMSConfiguration

PowerSupplyNominalOperatingVoltage

Smart Tachograph EFAs-4.1 1 V05.10

[EN] Printout RDI

► Informs about important settings

RDI	Meaning
FD34	Illumination Control Source
FD3A	Engine Speed Configuration
FD00	Trip Distance Reset configuration
FD01	CAN Configuration Main Vehicle
FD02	CAN Configuration Auxiliary
FD6E	CAN Main Vehicle Bus Selection
F90C	Reset Heartbeat Message
F920	Transmission Repetition Rate
FD26	Ext Serial Interface Configuration
FD9E	FMS Configuration
FDA3	Power Supply Nominal Operation
FDC6	DSRC via CAN
FD52	Standard Protocol Selection
FD53	Diagnosis Protocol Selection
FD69	?
FDA5	<i>Independent Motion Source is no longer supported!</i>

```

INTELLIC
Smart Tachograph EFAS
Powered by BOSCH

▼ 26/04/2020 15:20 (UTC)
-----▼-----
RDI:▼
-----A-----
A XAD1117483A
D/B-M 4711
-RDI:-Data-----
FD34: B1
FD3A: B1
FD00: B1
FD01: B1 B2 B3 B4
FD02: B1 B2 B3 B4
FD6E: B1
F90C: B1
F920: B1
FD26: B1 B2 B3 B4
FD9E: B1 B2
FDA3: B1
FDC6: B1 B2
FD52: B1
FD53: B1
FD69: B1 B2 B3 B4
      B5 B6 B7 B8
-----Y-----
Status: 2 / CAN Aux.
Serial Number:
      1234567890ABCDE
Version: 0 2.16.1 0.6.16
Date: 04/2020
-----X-----
Fix Mode: 2
Precision: 14
Lat: + 52° 34.7'
Lon: +013° 18.5'
-----
S32, S33, S34, S88, S89,
S176, S177, S178, S179,
S48

```

Time of printout

Type of printout

Start of section: Vehicle ID ¹

VIN (Vehicle identification number)

RMS / VRN

Byte 1 to byte 4

Byte 1 to byte 2

Byte 1 to byte 8

DSRC - Remote Communication Facility ²

DSRC Status / connected via CAN

Serial Number ³Hardware Version ⁴

Production Date;

GNSS

Fix Mode ⁵

Accuracy := HDOP*10

Latitude ⁶Longitude ⁶List of active Svids that are important for error analysis
for the intellic support team.

- 1 If the data for block 4 does not exist, question marks are printed instead of the data.
- 2 If there is no connection to the DSRC module, „DSRC Facility: not available“ is printed.
- 3 If the serial number plus description is longer than one print line, the text is printed in two lines.
- 4 If the version plus description is longer than one print line, the text is printed in two lines.
- 5 1 -> Fix not available
2 -> 2D-Fix (< 4 SVs used)
3 -> 3D-Fix (>= 4 SVs used)
- 6 If FixMode =1, there is no GNSS position available. In this case, "unknown" is printed in the current setting of the local language.

Digital Tachograph EFAS-4 V03 — — Reading the printout „RDI“ (1/2)

Parameters for vehicle adaptation	Settings/value ranges	RDI hex	AUTO
Configuration of lighting control	0: Set brightness of EFAS by menu and PIN A2 1: Set via the CAN bus	FD34	✓
Nominal voltage of the vehicle (on-board power supply)	0: 12 V 1: 24 V 2: 12 - 24 V	FDA3	✓
Source to reset the trip distance	0: Reset via the CAN bus 1: Reset via the tachograph menu (keypad)	FD00	✓
CAN-bus configuration for Main vehicle bus	- Activation status (ON/OFF) - Transfer rate: 250 or 500 kbps - ID mode: 11 bit or 29 bit	FD01	✓
CAN-bus configuration for expansion bus	- Activation status (ON/OFF) - Transfer rate: 250 or 500 kbps - ID mode: 11 bit or 29 bit	FD02	✓
Selects the CAN main vehicle bus	0: CAN main vehicle bus on plug A 1: CAN main vehicle bus on plug C	FD6E	✓
CAN Heart beat monitoring of a connected bus subscriber	0: deactivated 1: activated	F90C	✓

Digital Tachograph EFAS-4 V03 — — Reading the printout „RDI“ (2/2)

Parameters for vehicle adaptation	Settings/value ranges	RDI hex	AUTO
Transmission interval of the TCO1 message	0: 20 ms 1: 50 ms	F920	✓
Configuration of Independent Motion Source (IMS)	0: Disabled 2: CAN(MAIN,WSI) 3: CAN(AUX,WSI) 4: CAN(MAIN,HRW) 5: CAN(AUX, HRW)	FDA5	✓
Configuration of the serial interface on D7	Activation status (ON/OFF) Protocol (IIP/ISO 14229/ISO 14230 optional)	FD26	✓
Configuration of the serial interface on D8	Activation status (ON/OFF) Output level (10 V/vehicle nominal voltage) Protocol (IIP/ISO 14229/ISO 14230 optional)	FD26	✓
Configuration of FMS service	00xx: deactivated 0101: FMS activated on CAN main 0102: FMS activated on CAN aux. 0103: FMS activated on both CAN	FD9E	✓
Selection of engine-speed data source	0: Via PIN C3 1: Via CAN-bus EEC1 message	FD3A	✓

Digital Tachograph EFAS-4 V05 — Protocol options

► Main Protocol

29 Bit:

- 1: ISO 16844-4, Standard/universal mit allgemeinen Anpassungen (Default)
- 2: ISO 16844-4 mit Anpassungen nur für *DaimlerChrysler*
- 3: ISO 16844-4 mit Anpassungen nur für *MAN*
- 4: ISO 16844-4 mit Anpassungen nur für *IVECO Stralis*
- 5: ISO 16844-4 mit Anpassungen nur für *DAF*
- 6: ISO 16844-4 mit Anpassungen (wie 1) nur für *VOLVO mit TCO2/TCO3-Nachricht*
- 7: ISO 16844-4 mit Anpassungen nur für *SCANIA (reserviert)*
- 8: ISO 16844-4 mit Anpassungen nur für *RENAULT (reserviert)*
- 128: ISO 16844-4, Standard/universal ohne Anpassungen (rein ISO 16844-4)

11 Bit:

- 1: „TCO-906_V1_M_Bus“, Daimler Chrysler (Default)

9: "Variante 8", ISO16844-4 mit Anpassungen nur für VWN

► Diagnosis Protocol

29 Bit:

- 1: 29 Bit UDS - Universal 29 Bit UDS nach ISO 15765 / ISO 14229 (Default)
 - 2: Angepasste Diagnosefunktionen für *DaimlerChrysler* ohne ROE-Light- Nachricht (z.Zt. identisch zu 1)
 - 3: Angepasste Diagnosefunktionen für *DaimlerChrysler* und ROE-Light-Nachricht (z.Zt. 29 Bit UDS + ROE-Light-Nachricht)
 - 4: (ohne 29 Bit UDS) Diagnosefunktionen für *MAN* (DM1-, DM4-Nachrichten)
 - 5: 29 Bit UDS + erweiterte Diagnosefunktionen für *Daimler Trucks* (DM1-light-Nachricht)
- Diese Einstellung gilt auch für Volvo

11 Bit:

- 1: 11 Bit UDS nach ISO 15765 / ISO 14229 (Default)
- 2: 11 Bit UDS nach ISO 15765 / ISO 14229 mit Anpassungen für *DaimlerChrysler* ohne ROE-Light- Nachricht
- 3: 11 Bit UDS nach ISO 15765 / ISO 14229 mit Anpassungen für *DaimlerChrysler* und ROE-Light-Nachricht

6: "Variante 5", ISO16844-4 mit Anpassungen nur für VWN

Tachograph EFAS-4 V05 — Activation and Installation / First Calibration

- ▶ The EFAS comes in Manufacturer state and needs to be activated and initially calibrated by workshop:
 - Prepare EFAS:
 - All known data may be entered before activation, except for the tyre circumference and w/k factor.
 - UTC date and time should be checked and corrected before activation.
 - The right VIN and the right odometer reading (including the decimal number) should be entered before activation.
 - The vehicle related parameters should be configured before activation and their matching with the vehicle's requirement must be checked prior to activation.
- ▶ Activate EFAS and pair with the sensor
 - Enter Workshop card and PIN
- ▶ Eject the workshop card
 - The printout "Technical Data" will show the calibration reason (1).
- ▶ Enter workshop card and PIN
 - Complete the calibration, including – but not limited to - measurement of tyre circumference "l" and way pulse factor "w/k".
- ▶ Eject the workshop card
 - The printout "Technical Data" will show the calibration reason (1) and (2)

```

T Workshop 1
A Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 26.02.2020 (1)
A INTELLIC123456789
/????????????
w 5 432 Imp/km
k 5 432 Imp/km
l 3 456 mm
o 315/70 R22.5
> 90 km/h
123 - 123 km

T Workshop 1
A Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 01.04.2020 (2)
A INTELLIC123456789
/EF-AS410
w 5 432 Imp/km
k 5 432 Imp/km
l 3 456 mm
o 315/70 R22.5
> 90 km/h
127 - 127 km

```

- ▶ According to 2016/799:
 - (1) = Activation
 - (2) = First installation / First calibration
 - (3) = First calibration in the new vehicle (New VIN&VRN)
 - (4) = Periodic Inspection
 - (5) = Entry of VRN by company
 - (6) = Time adjustment without calibration
 - (128)* = Seal information has changed (Manufacturer specific)

*) (128) indicates in printout TD that seal information has changed. The seal number itself is not printed on printout TD.

Smart Tachograph EFAS-4.11 “Universal” — Re-Calibration

- ▶ During a regular re-calibration the **sensor seal** must be **replaced** and the **new seal number** must be **entered**. A workshop card and a tester device are required.
- ▶ As a result
 - The **Technical Data** print taken **after end of calibration and removal of workshop card**, will show two specific blocks (4) & (128), **together** denoting a **lawful** re-calibration with replaced Motion Sensor seal number.
 - Block **(4)** showing the recent values determined during **re-calibration**
 - Block **(128)** indicating the **replacement** of the Motion Sensor **seal number**.

(Note: (128) is a manufacturer specific calibration purpose in accordance with CR (EU) 165/2014).



```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 26.02.2020 (1)
A INTELLIC123456789
/????????????
w 5 432 Imp/km
k 5 432 Imp/km
l 3 456 mm
o 315/70 R22.5
> 90 km/h
123 - 123 km
```

```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 02.04.2020 (128)
A INTELLIC123456789
A /EF-AS410
w 5 469 Imp/km
k 5 469 Imp/km
l 3 421 mm
o 315/70 R22.5
> 90 km/h
128 - 128 km
```

```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 01.04.2020 (2)
A INTELLIC123456789
A /EF-AS410
w 5 432 Imp/km
k 5 432 Imp/km
l 3 456 mm
o 315/70 R22.5
> 90 km/h
127 - 127 km
```



```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 02.04.2020 (4)
A INTELLIC123456789
A /EF-AS410
w 5 469 Imp/km
k 5 469 Imp/km
l 3 421 mm
o 315/70 R22.5
> 90 km/h
128 - 128 km
```

```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 02.04.2020 (128)
A INTELLIC123456789
A /EF-AS410
w 5 469 Imp/km
k 5 469 Imp/km
l 3 421 mm
o 315/70 R22.5
> 90 km/h
128 - 128 km
```

```
T Workshop 1
Address and postnumber
*1
TWA / 2 0 0 0 0 0 0 0 0
26.10.2029

T 02.04.2020 (4)
A INTELLIC123456789
A /EF-AS410
w 5 469 Imp/km
k 5 469 Imp/km
l 3 421 mm
o 315/70 R22.5
> 90 km/h
128 - 128 km
```

E
x
a
m
p
l
e

v
a
l
u
e
s

Tachogrph EFAS-4 V05 — Workshop: calibration related actions

- ▶ Check the vehicle for calibration suitability
 - Vehicle fault-free
 - Allowed tyres with correct pressure and tread depth
- ▶ Check the DSRC module
 - Echo test
 - RTM test (recent time stamp, updating; right vehicle)
- ▶ Check the GNSS module
 - Menu > Infos > GNSS Infos:
Update of correct UTC time every second
- ▶ Check the recording equipment (EFAS, sensor, cable) for manipulation
- ▶ Enter workshop card at EFAS
- ▶ Replace EFAS's buffer battery if older than 1 year
- ▶ Check sensor using reference cable.
Print out "Technical Data" before and after, compare serial numbers.
- ▶ Replace sensor seal
 - Update its serial number at EFAS
- ▶ Measure l, w; check L, VIN, VRN, UTC
- ▶ Check speedometer
 - 20km/h, 80km/h, end of scale
- ▶ Check odometer
 - Drive 1km
- ▶ Check speed limiter function and threshold
- ▶ Finally pair the sensor
- ▶ Check and reset Diagnostic Trouble Codes (DTC)
 - C.f. Service manual chapter "Fault diagnosis"
- ▶ Generate 24h Daily Reports
- ▶ Remove workshop card
- ▶ Read and archive calibration data
- ▶ Replace calibration label

Smart Tachograph EFAS-4 V05 — Card History

INTELLIC
Smart Tachograph EFAS

Powered by


BOSCH

22.06.2019 16:40 (UTC)

EFAS

EFAS

 EFAS /CT24220FL0170
- GEN 1

 Smith
John

 EFAS /ZZZZZZZZ9S0TJ5 1 1
07.02.2024 - GEN 2

 GEN2 V1.0 163
EFAS /ZZZZZZZ74K3NC1 1 1
2477284700 0219 03 A3
17.06.2019 09:42

 GEN2 V1.0 163
EFAS /ZZZZ9088WK0041 1 1
1528864348 0319 02 A3
21.06.2019 14:37

GEN1 V0.0 129

 GEN1 V0.0 129
EFAS /DR24220FL0023
0436207632 0108 80 81
21.06.2019 21:52

 GEN2 V1.0 163
EFAS /ZZZZ8253CY0021 1 1
3292108379 0918 04 A3
22.06.2019 16:25

 GEN1 V0.0 129
EFAS /CP24220FL0173
1745616960 0108 80 81
22.06.2019 16:26

 GEN1 V0.0 129
EFAS /DR24220FL0060
1056964624 0108 80 81
22.06.2019 16:27

 GEN1 V0.0 129
EFAS /DR24220FL0037
0671088656 0108 80 81
22.06.2019 16:28

 GEN1 V0.0 129
EFAS /CT24220FL0170
2902458416 0108 80 81
22.06.2019 16:35

 GEN2 V1.0 163
EFAS /ZZZZZZZZ9S0TJ5 1 1
2896649564 0219 01 A3
22.06.2019 16:38

INTELLIC

Smart Tachograph EFAS

Powered by

BOSCH

▼ 24.06.2019 16:40 (UTC)

24hA▼

EFKON

DUUK /CT24220FL0170
- GEN 1

Smith

John
oP /Z2222229SOTJ5 1 1
07.02.2024 - GEN 2

A WF6BT2019062106D
D /EF-AS410

Intellie GmbH
EST017
GEN 2

T Motor Workshop
TWFF /Z2229088HK0041 1 1
T 21.06.2019

DUUK /CT24220FL0170
o 21.06.2019 14:32 ▼

22.06.2019
813 - 1 411 km

TESTFAHRER_0023
TIMO

DUUK /DR24220FL0023
GEN 1

A+D /EF-AS410
21.06.2019 21:51

643 km M
o 00:00 05h52 oo
h 05:52 09h13 oo
h 15:05 01h20 oo
1 404 km; 761 km

1 404 km
* 16:25 00h01
* 16:26 00h01
1 404 km; 0 km

TESTFAHRER_0060
TIMO

DUUK /DR24220FL0060
- GEN 1

A+I /?????????????
06.12.2018 12:35

1 404 km M
* 16:27 00h01
* 16:28 00h02 oo
o 16:30 00h05 oo
1 411 km; 7 km

1 411 km
* 16:35 00h05
km; km

-2-
o Smith
John
oP /Z2222229SOTJ5 1 1
07.02.2024 - GEN 2
A+D /EF-AS410
21.06.2019 21:51

643 km M
o 00:00 05h53 oo
h 05:53 09h12 oo
h 15:05 01h20 oo
1 404 km; 761 km

1 404 km
o 16:25 00h01
o 16:26 00h02
1 404 km; 0 km

TESTFAHRER_0037

TIMO
DUUK /DR24220FL0037
- GEN 1

A+I /VR123YR
13.06.2019 10:09

1 404 km M
o 16:28 00h07 oo
o 16:35 00h02
1 411 km; 7 km

1 411 km
o 16:37 00h01
1 411 km; 0 km

Smith

John
oP /Z2222229SOTJ5 1 1
07.02.2024 - GEN 2

A+D /EF-AS410
22.06.2019 16:25

1 411 km M
o 16:38 00h02
km; km

1 404 km
o 00h00 0 km
* 00h07 00h00
h 00h00

20h
o 00h00 00h04
h 00h00

TESTFAHRER_0023

TIMO

DUUK /DR24220FL0023
16:25 D

lon +009° 56,7'
lat + 53° 27,6'
16:25 22.06.2019
1 404 km

00:02:49
lon +009° 56,4'
lat + 53° 27,6'

02:49 22.06.2019
1 040 km

00:05:49
lon +009° 56,4'
lat + 53° 27,6'

05:49 22.06.2019
1 282 km

o 07h12 591 km
* 00h00 00h00

h 09h13
oo 16h25

TESTFAHRER_0060

TIMO

DUUK /DR24220FL0060
16:25 D

lon +009° 56,7'
lat + 53° 27,6'
16:35 22.06.2019
1 411 km

o 00h05 7 km
* 00h03 00h00
h 00h00
oo 00h07

Smith

John

oP /Z2222229SOTJ5 1 1
16:25 D

lon +009° 56,7'
lat + 53° 27,6'
16:25 22.06.2019
1 404 km

00:02:49
lon +009° 56,4'
lat + 53° 27,6'

02:49 22.06.2019
1 040 km

00:05:49
lon +009° 56,4'
lat + 53° 27,6'

05:49 22.06.2019
1 282 km

o 00h00 591 km
* 00h00 07h15
h 09h12
oo 16h25

TESTFAHRER_0037

TIMO

DUUK /DR24220FL0037
16:25 D

lon +009° 56,7'
lat + 53° 27,6'
16:37 22.06.2019
1 411 km

o 00h00 7 km
* 00h00 00h09
h 00h00
oo 00h07

16:37 22.06.2019
1 411 km

o 00h00 7 km
* 00h00 00h09
h 00h00
oo 00h07

16:37 22.06.2019
1 411 km

16:37 22.06.2019 10:50
00h17

() 00h00

DUUK /CT

GEN1

Smart Tachograph EFAS-4 V05 — 24h card (G2) usage

Only 1C:
Location info (GNSS) from card
data (GEN2 only)

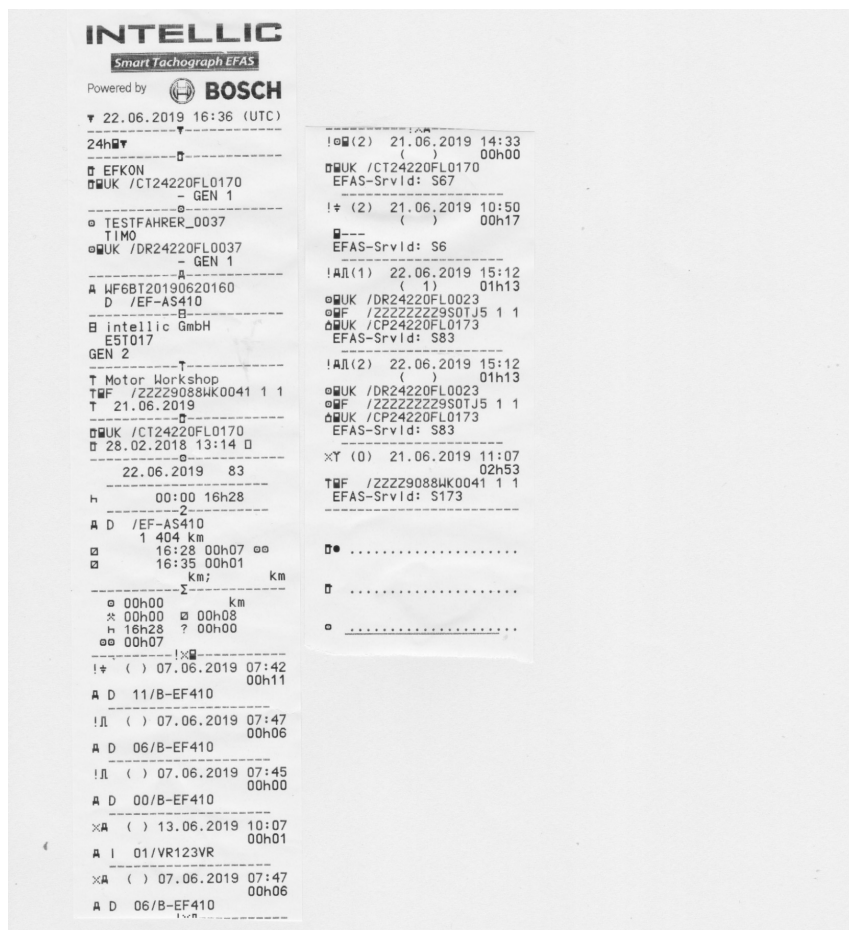
GEN2

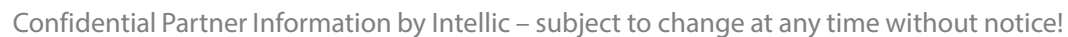
INTELLIC	
Smart Tachograph EFAS	
Powered by	BOSCH
▼ 22.06.2019 16:39 (UTC)	
24h▼	
EFKON	
DUK /CT24220FL0170	
- GEN 1	
Smith	
John	
F /Z2222229S0TJ5 1 1	
07.02.2024 - GEN 2	
A WFBT20190620160	
D /EF-AS410	
B Intellic GmbH	
EST017	
GEN 2	
T Motor Workshop	
TF /Z2229088WK0041 1 1	
T 21.06.2019	
22.06.2019 76	
A D /EF-AS410	
813 km	
00:00 05h53 00	
05:53 09h12 00	
15:05 01h20 00	
16:25 00h13	
A D /EF-AS410	
16:38 00h01	
km;	
16:25 D	
lon +009° 56.7'	
lat + 53° 27.6'	
16:38 22.06.2019	
km	
16:25 D	
lon +009° 56.7'	
lat + 53° 27.6'	
16:38 22.06.2019	
km	
02:49	
lon +009° 56.0'	
lat + 53° 27.6'	
02:49	
1 040 km	
05:49	
lon +009° 56.0'	
lat + 53° 27.6'	
05:49	
1 282 km	
00h00 km	
00h13 07h14	
09h12 ? 00h00	
16h25	
02.04.2019 08:25	
00h01	
A D 01/B-Berk	
!A() 22.06.2019 15:12	
01h12	
A D 12/EF-AS410	
!A() 21.06.2019 22:00	
07h52	
A D 52/EF-AS410	
!A() 21.06.2019 21:52	
00h00	
A D 00/EF-AS410	
!A() 21.06.2019 14:59	
06h52	
A D 52/EF-AS410	
!A(2) 21.06.2019 14:33	
00h00	
DUK /CT24220FL0170	
EFAS-Srvid: S67	
!+ (2) 21.06.2019 10:50	
00h17	
EFAS-Srvid: S6	
!A(1) 22.06.2019 15:12	
01h13	
DUK /DR24220FL0023	
F /Z2222229S0TJ5 1 1	
DUK /CP24220FL0173	
EFAS-Srvid: S83	
!A(2) 22.06.2019 15:12	
01h13	
DUK /DR24220FL0023	
F /Z2222229S0TJ5 1 1	
DUK /CP24220FL0173	
EFAS-Srvid: S83	
X(0) 21.06.2019 11:07	
02h53	
TF /Z2229088WK0041 1 1	
EFAS-Srvid: S173	

Smart Tachograph EFAS-4 V05 — 24h card (G1) usage

No location info (GNSS) via card
data of **GEN1**

GEN1





Smart Tachograph EFA-4.11 “Universal” — GNSS system / antenna

- ▶ EFAS-4.11 requires an **external antenna** to be connected to the rear **FAKRA “C”-type** socket.
- ▶ EFAS-4.11 provides supply power **3,3V@20mA** to the antenna on this FAKRA socket.
- ▶ EFAS offers **info menu**:
- ▶ EFAS offers **test function**:
- ▶ EFAS reports related Service IDs S170 & S171:
- ▶ EFAS Service Tool offers extra **test function** “GNSS Test”



ca. 3 m

Infos: GNSS Info	JA (2) 6 16:19:10	lon +009° 56.7' lat + 53° 27.6'
Installation: GNSS Test	21 0 OK SU: 32 km/h	YES (2) 6 OK 12/11 14:06:07

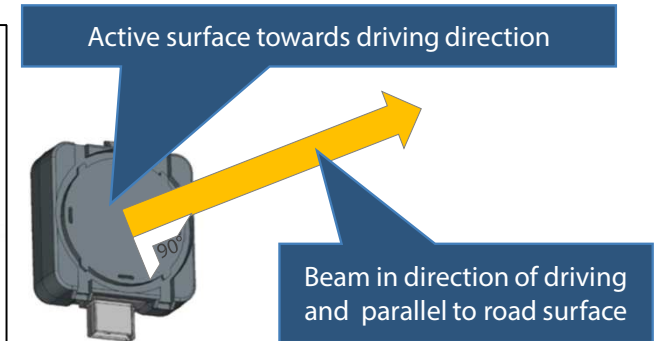
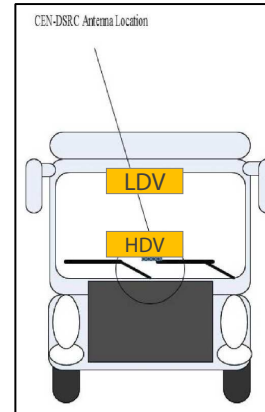
SrvID hex	EFT hex	DTC	Symbol Display text	Description and trouble-shooting
S170	36	--	GNSS error	Meaning / Cause: The tachograph receives no data from the internal GNSS receiver. Measure: If the error is still displayed after several ignition cycles, the GNSS receiver is not functioning properly and the tachograph must be replaced.
S171	0D	40 00 C46B00	No position	Meaning / Cause: Missing position data of the GNSS receiver • This event is triggered, if the VU is not in CALIBRATION mode, if position data from the GNSS receiver for more than 3 hours cumulated driving time are missing during the journey. Measure: Ensure the possibility of GNSS reception, e.g. is the tachograph covered by a shielding object?

GNSS Test	
Error State:	0
Data Valid:	YES
Satellites:	22 of 33
Accuracy:	6
Fix Mode:	3
Latitude:	53° 27' 36.0" N
Longitude:	9° 56' 42.0" E
Deviation from workshop location:	245450 m
<input type="button" value="Test"/> <input type="button" value="Check Position"/>	

Smart Tachograph EFAS-4.11 “Universal” — DSRC mounting / cabling / configuration / test

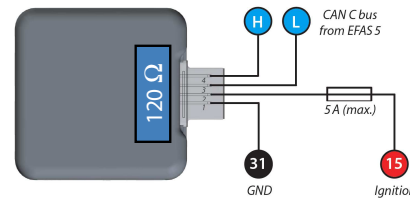
► Mounting:

- Mount **centered** to the wind screen in one of the preferred locations (**HDV / LDV**)
- Maintain **free view** to the assumed REDCR position in use case 1 and use case 2:
 - Avoid coating, metal foil, wiper in parking position, etc.
- Adjust **beam parallel** to the surface of the road and the driving direction. Use adaptors if need be.
- Use **glue tape** released by the vehicle manufacturer.



► Connector (Type: TE 1-1355397-3)

- GND (31)
- IGN (15), via fuse 5A (8V – 32V, 350mW typ.)
- CAN_L (CAN_AUX_L)
- CAN_H (CAN_AUX_H)



► Configuration:

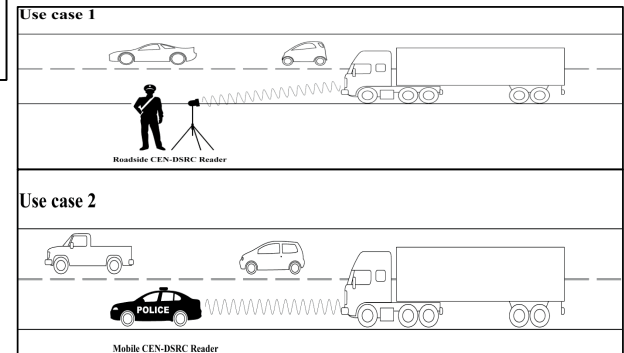
Length of Identifier: [Bit]

Bitrate: [kBit/s]

DSRC via CAN:

► Test options:

- Quick Test: DSRC Status = 2 ➔ OK!
- Via Menu > Installation > DSRC Test
- Via EST:



S173	38	40 00 C25900	X Y	DSRC error	<p>Meaning / Cause: The connection to the remote communication equipment is faulty. (Three times in a row no response or negative response to RTM data transmission)</p> <p>Measure: Check connection to DSRC module.</p>
S174	0C	40 00 C25900	1 Y	DSRC facility	<p>Meaning / Cause: Communication error with the remote communication equipment (The DSRC flash data of the RTM message are different to those in the tachograph - corrupt data / erroneous data)</p> <p>Measure: Change DSRC module, or check for transmission errors.</p>

Smart Tachograph EFAS-4.11 V05 “Universal” — Retrofitting RDD via CAN

► The goal:

- Connecting a retrofitted Remote Data Downloading (RDD) Device via CAN AUX (CAN C) to a Smart Tachograph system EFAS-4 V05 “Universal” while keeping the DSRC module operational.

► Initial conditions Smart EFAS-4 V05:

- Smart EFAS-4.10 V05 and DSRC module (both from the manufacturer Intellic) are connected via CAN AUX (250 kbps, 29 bits).
- DSRC module has built-in termination, which cannot be changed.
- EFAS termination resistor for CAN AUX is enabled by the wire bridge C7 – C8.
- Thus CAN AUX is terminated on both sides with 120 ohms each, resulting termination impedance = 60 Ohms.
- RDD-Protocols (FMS, UDS) are enabled for CAN AUX at EFAS.

► Assumed initial condition of RDD device:

- RDD device is configured for CAN connection via FMS / UDS at 250 kbps / 29 bits.
- RDD device has a built-in termination resistor of 120 Ohm.

► Required changes (requires Workshop Card):

- Additional** connection of RDD device at **CAN AUX (C5, C7) at EFAS**.
- The resulting termination impedance = **60 ohms** of the CAN AUX **must be retained**.
- If **RDD device** comes with own **termination 120 Ohms**, then the termination on the EFAS must be deactivated. In this case, the **bridge wire** between C7 and C8 on the EFAS must be **opened**.

► Mandatory check

Menu: Infos▶	Infos: DSRC Info	Serial number 481	Status 2	connected to CAN Aux.
-----------------	---------------------	----------------------	-------------	--------------------------

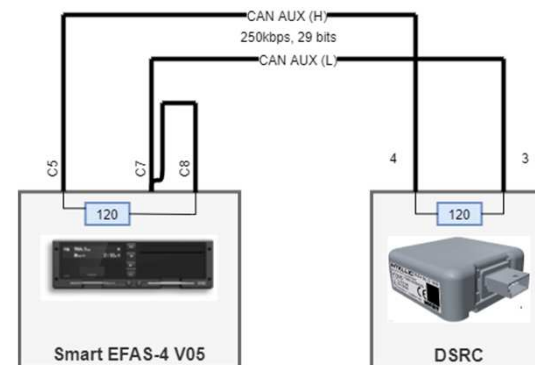
- DSRC Status = 2

Legal tachometer operation requires a working DSRC module!

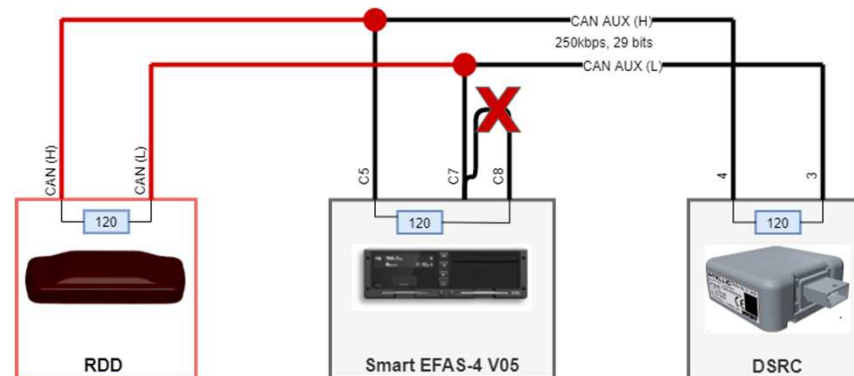
► Recommended settings

- Remote Data Download = On:**
(Requires Workshop Card)
- ITS Consent = Yes:**
(Requires Driver Card)

Menu: Installation▶	Installation: C7 Remote data	C7 Remote data >ON
Menu: Settings▶	Settings: ITS Driver Conse	ITS Driver Conse >YES



Initial condition “Universal” & DSRC



Desired condition “VWN” plus RDD

Supply and general connections are not shown!!

Smart Tachograph EFAS-4 V05 — Retrofitting RDD via D8

► The goal:

- Connecting a retrofitted Remote Data Downloading (RDD) Device via D8 to a Smart Tachograph system EFAS-4 V05 “VWN” (Crafter, T6).

► Factory delivery condition Smart EFAS-4 V05 “VWN”:

- Info-Interface-Protocoll (IIP) with 10V enabled

► Factory delivery condition of RDD device :

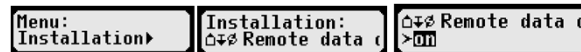
- The RDD device is designed to receive a serial data stream according to “Info-Interface-Protocol” with the identifier “EFAS”.

► Required changes (requires **Workshop Card**):

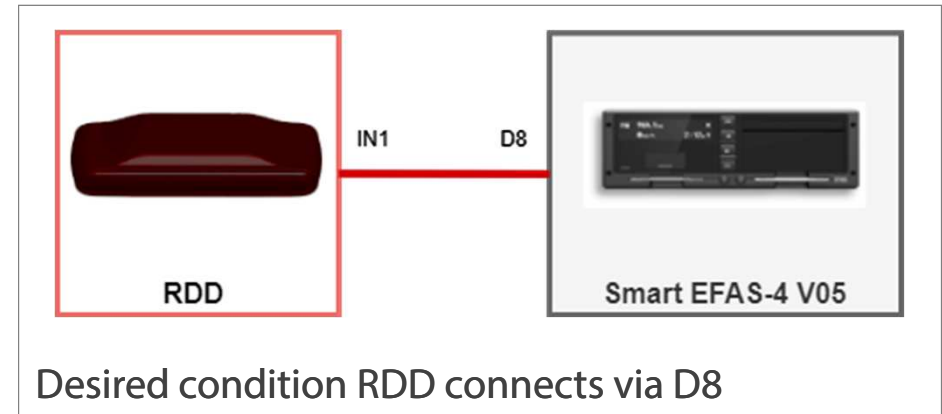
- Establish** electrical connection between serial input of RDD device and serial output D8 of EFAS.
- If necessary, update the firmware of the RDD device so that the “EFAS” identifier is accepted.

► Recommended checks:

- Remote Data Download = On:**
(Requires Workshop Card)

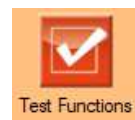


- ITS Consent = Yes:**
(Requires Driver Card)



CAN — Testing CAN bus function

- ▶ Test CAN basic functions with the help of EST
“**Test functions**”
- ▶ Run **CAN Tests** for CAN A and CAN C (if used) and make sure
 - Status is “**Activated**” and colour is **Green**
 - Rx Error = **0**
 - Tx Error = **0**
 - If not = 0 and Active/Green:
 - If CAN Tests not OK, then measure bus **impedance** = **60 Ohms** with EFAS connected to the vehicle , while **main battery disconnected!**
 - Check DTCs and make sure **no DTC is active**.
 - Solve problem by the help of **Workshop Manual**.
 - **Repeat Sequence until Active and Green**
- ▶ **Test applications**
 - **IMS**: Run IMS test function (if applicable)
 - **DSRC**: Run DSRC-test solution
 - **Reset Trip**: EFAS trip follows cluster trip reset and vice versa?
 - **Cluster Speedometer/Odometer**: Values synced?
 - **Cluster Clock**: Value synced?
 - **Illumination**: EFAS follows cabin illumination?



Test Functions

CAN A Test

Activated

Rx Error:

Tx Error:

Test

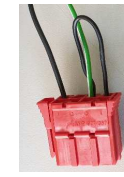
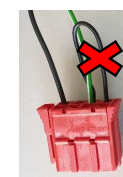
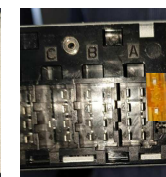
CAN C Test

Activated

Rx Error:

Tx Error:

Test



16	40 00	000A70	CAN bus on the A connector faulty	S32
17	40 00	000B78	CAN bus on the A connector in “Bus Off” status	S33
18	40 00	001177	Communication to the instrument panel / E-tachometer faulty	S34



Diagnosis



Device Parameters

KWP Test Routines

IMS Test Start

Trip Distance:

[km]

☒ Sync.

Reset

CAN — Checking/Selecting parameters CAN A

- ▶ Proper **physical parametrization** lays the basis:
 - Proper **termination** 60 Ohms with EFAS connected (powered down!)
 - CAN A: Measure between A4 and A8
 - CAN C: Measure between C5 and C7
 - **Bitrate, Length of Identifier:** like required by the rest of the ECUs on the bus: Rely on Automatic Configuration or change CAN settings and run CAN Tests until everything is green.
 - Leave “**Extras**” as they are.
- ▶ Proper **protocol settings** (typical values)
 - **Standard protocol:** Universal
 - **Diagnosis protocol:** Standard UDS
 - **TCO1** rate: usually 50ms (MB: 20ms)
 - **No of pulses per shaft revolution:** depending on the vehicle’s gear box
 - **Reset Heartbeat:** Off
 - Data Sources (Optional features)
 - **Reset Trip** Counter: Try CAN or leave at Menu
 - **Engine Speed** Configuration: Only used for Additional Data Recording
 - **Illumination Control** Configuration: Auto Detection will select value.
 - **IMS:** “with CAN MAIN message” if truck supports IMS

TCO1-rate (CAN C) =
0, 100ms ... 2500ms

CAN Bus MAIN (CAN A)

Activation: ON

FMS IMS DSRC

Standard Protocol: Universal E4tacho/Combi instrument

Diagnosis protocol: Standard UDS (ISO 14229)

Length of Identifier: 29 [Bit]

Bitrate: 250 [kBit/s]

Transmission Rep. Rate TCO1: 50 [ms]

CAN Bus MAIN (CAN A) - Extras

Main CAN bus on plug: A

CAN Bit Sample Point: 87.2 [%]

CAN Frame Timeout Factor: 3 [s]

CAN Sync. Jump Width: 2 [Tq]

CAN Sample Mode: single

Priority Level TCO1 Message: Priority 3 (default)

Error Management Init. Inhibition: 2.0 [s]

No. of Pulses per Shaft Rev.: 5000 1/1000

Configurable Monitoring Functions

Reset Heartbeat Message (CAN): OFF

Data Sources

Reset Trip Counter: with CAN MAIN message

Engine Speed Configuration: with CAN MAIN message

Illumination Control Configuration: Auto Detection

Independent Motion Signal (IMS) Source Factor (1/1000):

IMS Selection: with CAN MAIN message 1000

Smart Tachograph EFAS-4 V05 — RDD solutions supporting EFAS #1

Rev. 2020-11

Product	Manufacturer	Web link	Min. SW release	Remark
TuckLinc, GPL1000	Astrata	https://www.astrata.eu	—	Refer to the manufacturer
TCO4HCV, HCV5	Ruptela	https://www.ruptela.com	2020-11	Refer to the manufacturer
C4 Max	Frotcom	http://www.frotcom.com	—	Refer to the manufacturer
RDU GPRS2	TachoSafe	https://tachosafe.ro	—	Refer to the manufacturer
Fleetbox	Buyond	http://www.buyond.de	—	Refer to the manufacturer
TX-Go, TX-Sky	Transics GmbH	https://www.transics.com	—	Refer to the manufacturer
Link 510/710	TomTom	https://telematics.tomtom.com	9.2.5036 ¹⁾	D8(10V), CAN AUX(250, 29, 120) ¹⁾
Card Hotel	Dako	https://telematics.dako.de	2020-09 ¹⁾	D8(10V), CAN AUX(250, 29, 120) ¹⁾
Scania C300	Scania	https://www.scania.com	—	CAN AUX(250,29,—)

¹⁾ For more details refer to the manufacturer.

Smart Tachograph EFAS-4 V05 — RDD solutions supporting EFAS #2

Rev. 2020-11

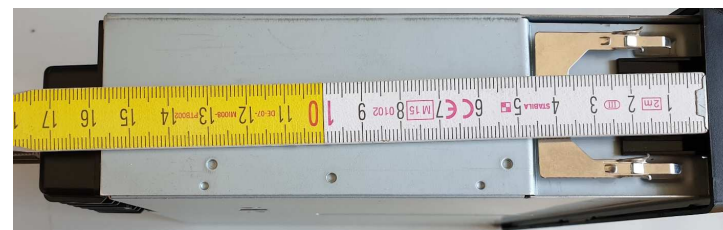
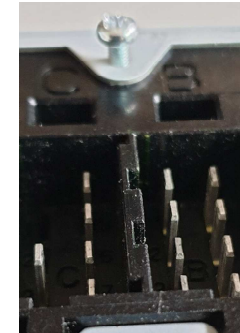
Product	Manufacturer	Web link	Min. SW release	Remark
MiX Telematics	MiX Telematics	http://www.mixtelematics.co.uk	—	Refer to the manufacturer
TACHOfresh RDL	Tachofresh	https://www.tachofresh.com	2020-09 ¹⁾	D8(10V), CAN AUX(250, 29, noR) ¹⁾
Telematik	Aplicom	https://www.aplicom	2020-09 ¹⁾	D8(10V), CAN AUX(250, 29, noR) ¹⁾
CubiQ	Fleetgo	https://www.fleetgo.com	—	Refer to the manufacturer
FM6300	Teltonika	https://teltonika-gps.com	—	Refer to the manufacturer
FMB640	Teltonika	https://Teltonika-gps.com	2020-09 ¹⁾	CAN AUX(250, 29, noR) ¹⁾
TachoComplete	YellowFox	https://www.yellowfox.de	Standard	YellowTracker600: D8(10V), CAN AUX(250, 29, noR) ¹⁾
Locatel Fleet Solution	Locatel	http://www.locatel.es	—	Refer to the manufacturer
SYRFM10	SEYiR	https://www.seyirmobil.com	—	Refer to the manufacturer
Sistem iTac, uReaderGPS/FMS	Intendia	https://www.intendia.com	0.5.25 ¹⁾	CAN AUX(250,29,120), EFAS-4.2/5/8 ¹⁾
TruckBox	Spedion	https://www.spedion.de	2020-08 ¹⁾	D8(10V), CAN AUX(250,29,120/-) ¹⁾

¹⁾ For more details refer to the manufacturer.

Smart Tachograph EFAS-4 V05 — Connector Panel Cover

- ▶ All relevant backplane connections of EFAS-4 V05 are electronically monitored. Any break will be recorded by EFAS.
- ▶ Although the using a Connector Panel Cover is no longer mandatory, you may use with EFAS-4 V05 the one, which is known from earlier EFAS versions:
 - Prepare it by **cutting off the top hooks** from the connector panel cover
 - use **Thread Rolling Oval Head screws M2,5x5 DIN 7500CE stainless steel V2A TX-drive** to screw the cover directly into the existing hole in the extension lid of EFAS body.
 - Protect the screw head by a standard bowl seal

Note: Attaching a cable cover will **increase the depth** which EFAS requires for mounting to about 17,5cm.

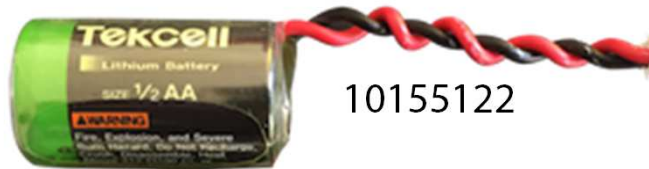


Smart Tachograph EFAS-4 V05 — Trouble shooting — Common problems

- ▶ EFAS does not accept card
 - Is ignition turned on?
 - Is the right battery voltage configured to EFAS?
 - Menu > Installation > Vehicle voltage > 12V | 24V
 - Is card inserted in right orientation?
 - Is card valid (type, date, generation?)
- ▶ EFAS does not release card
 - Is ignition turned on?
 - Is the right battery voltage configured to EFAS?
 - Menu > Installation > Vehicle voltage > 12V | 24V
- ▶ EFAS does not print
 - Is ignition turned on?
 - Is the right battery voltage configured to EFAS?
 - Men > Installation > Vehicle voltage > 12V | 24V
 - Is paper available?
 - Is printer tray/module inserted?
- ▶ Vehicle shows (serious) faults after some kms
 - Is CAN bus configured and terminated properly? Check the state of the rear “fuse”.
 - S34: Is ResetHeartBeat turned ON? Set it OFF.
 - S48: Is B7 overloaded and VOUT_Supervision(B7) turned ON? Solve overload problem on pin B7.
 - S173/S174: Is DSRC module working properly? Check Info, run CAN-tests, check termination impedance, check cable, run DSRC-test.
- ▶ Cluster does not accept EFAS' odometer setting
 - Set EFAS's odometer setting to exactly (to the 100m) that value, which the vehicle has stored in its cluster/ECU.
 - Try to retrieve the stored value from cluster and write exactly this value to EFAS.
- ▶ Gear switching / display has problems (also: speed limiter, cruise control, etc.)
 - Make sure you configured the right gearbox constant to “OutputShaftFactor”.

Check workshop manual, chapters 10 to 14 for details. | Run unit self tests | Contact support: support@intellic.com; +49 30 46407 222

Smart Tachograph EFAS-4 V05 — Accessories and Spares: Order numbers



10154913



Smart Tachograph EFAS-4 V05 — Resources / Downloads

- ▶ Download link for **free** EFAS Service Tool
 - http://portal.intellic.com/download/dms/EFAS%20Service%20Tool/SetupEFAS_ServiceTool_Recent.exe
- ▶ Download link for **free** User Manual
 - EU: <http://portal.intellic.com/download/dms/EFAS-4.11/1250-130-SEC-EU01.zip>
 - EN: <http://portal.intellic.com/download/dms/EFAS-4.11/1250-130-SEC-EN01.pdf>
 - DE: <http://portal.intellic.com/download/dms/EFAS-4.11/1250-130-SEC-DE01.pdf>
 - FR: <http://portal.intellic.com/download/dms/EFAS-4.11/1250-130-SEC-FR01.pdf>
- ▶ Download link for **free** Workshop manual
 - EN: http://portal.intellic.com/download/dms/EFAS-4.11/1250-131-SEC-EN02_WHB_E4_10.pdf
 - DE: http://portal.intellic.com/download/dms/EFAS-4.11/1250-131-SEC-DE02_WHB_E4_10.pdf
- ▶ Download link for free Approval Certificate e1*165/2014*2018/502*222*00
 - EU: http://portal.intellic.com/download/dms/EFAS-4.11/BAG_E4.10_11_V05.10_165_2014_222_01.pdf

Smart Tachograph EFAS-4 V05 – Help line

► Here you'll get further help (English/German)

- Email: support@Intellic.com
- Office phone: +49 30 46407 - 222
- Mobile phone (WhatsApp/Telegram):
 - Thomas: +49 171 2043 757
 - Frank: +49 163 7679 502

► What you should provide :

- Print Technical Data

Menu:
Printout▶

Printout:
Technical da

- Print SrvID

Menu:
Printout▶

Printout:
SrvId▼

INTELLIC	
Digital Tachograph EFAS	
26/04/2016 15:15 (UTC)	
SrvId▼	

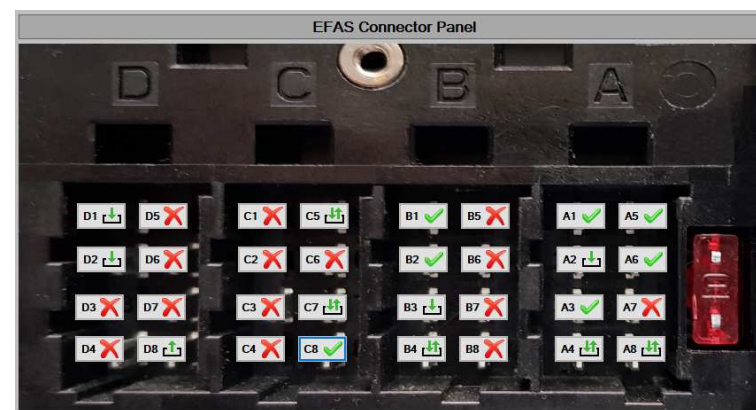
XA	17/02/2016 10:34
X31	S41 00h01
=====	
17/02/2016 10:33	
=====	
IA	17/02/2016 10:32
X31	S41 00h02

IA	17/02/2016 10:04
I11	S124 --h--

IO	17/02/2016 09:02
I03	S10 --h--

- List of external devices connecting to EFAS, like RDD or ITS devices

- List of used connection on the A-D connectors, including fuse state:



- Or simply send a comprehensive installation report via email to EFAS Technical Support using EFAS Service Tool



Technical support...