


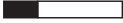




## Display Messages

There are four type of messages that can be seen on the display.

- **Messages** - contains information on processes or reminders to the driver. Messages are not stored and can not be printed. Press the **Back** button to clear the message.
- **Pre-warnings** - appear as early reminders to the warnings. Pre-warnings, except DDS and WTD related, are stored and can be printed. Press the **OK** button twice to clear the Pre-warning.
- **Warnings**- appear in the event of e.g. overspeeding or violations of the law or if tachograph not can be recording. Warnings are stored and can be printed. Press the **OK** button twice to clear the Warning.
- **Faults** - are more critical than warnings and are displayed if there is a fault detected in the tachograph, in the sensor or driver card. In addition faults are presented if tampering with the equipment is detected. Faults are stored and can be printed. Press the **OK** button to acknowledge the Fault.

Display	Description	Action
	Message Entry not possible while driving. Related to the operator.	Stop the vehicle and try the entry again.  If the symbol still is present when vehicle stopped, disconnect and reconnect the tachograph and retry.  If the symbol still is present after reconnect, tachograph must be decommissioned.
 Absence of GNSS pos info	The VU is unable to detect any valid GNSS satellite signal for a long time	Make sure the GNSS antenna is not covered with or close to large metallic parts
 Activation 	Message The tachograph is being activated for use (Workshop card). Related to the tachograph	Wait until the automatic activation is completed.
 ✓ Activation complete	Message The tachograph activation process has been completed (Workshop card). Related to the tachograph	
 × Activation failed	Message The tachograph activation process has failed (Workshop card). Related to the tachograph	Eject the workshop card from the tachograph.  Check system connections.  Re-insert the workshop card to retry the activation.  Disconnect the tachograph for 30 seconds and retry.  If the tachograph will not activate it must be decommissioned and replaced.

## Display Messages

Display	Description	Action
!▣ Already in calibration mode	Message Two workshop cards inserted. The second card will be ejected without being processed (authenticated). Related to the operator.	Insert only one Workshop card.
!▣▣▣ Card auth.failure	Fault The tachograph security check for the card in slot 1 failed. Similar message for slot 2. Related to the tachograph.	Check that the inserted card is valid and correctly inserted.  Check if the card works in another tachograph.  Try to insert another card.
×▣▣ Card fault	Fault The card in slot 1 is defective. Similar message for slot 2. Related to the card.	Eject the card and check it visually.  Check the tachograph with a functional card.
!⌚▣▣ Card time overlap	Warning The last withdrawal time of the inserted driver card is later than the date/time of the tachograph. Related to the tachograph	Check the date/time of the tachograph and change if necessary.  Wait for the overlap period to elapse.
!▣▣ Card conflict	Warning An invalid card combination has been detected. Related to the card.	Withdraw the offending card.
!▣→×▣ Card eject without saving	Message Data could not be stored on the card withdrawn from slot 2 due to an error. Similar message for slot 1. Related to the card.	Clean the card with a soft damp cloth and try again.  In case of a faulty card, contact the responsible authority in the country in which you are located.
⌚▣▣ Card expired	Message The card in slot 1 has expired. Similar message for slot 2. Related to the operator.	Remove the card and replaced it with a valid one.
!⌚▣▣ Card expiry	Message The card in slot 1 will expire (Day/Month) . Similar message for slot 2. Related to the operator.	Contact the responsible authority to get a new card.
!▣▣ Card ins. while driving	Warning A tachograph card is inserted in any slot while driving. Related to the operator.	No further action required.
!⌚+▣▣ Card integrity error	Fault Corrupt data detected when reading data from the card in slot 2 to the tachograph. Similar message for slot 1. Related to the card.	Clean the card with a soft damp cloth and try again.  In case of a faulty card, contact the responsible authority in the country in which you are located.

Display	Description	Action
?@▶ daily drive time	Pre-warning - 9h daily drive time Warning - 9h daily drive time Pre-warning - daily drive time Three different warnings for reaching the allowed driving time.	
!@A/A Data integrity error	Fault Corrupted files have been detected in the tachograph. These files will not have a valid signature when downloaded. Related to the tachograph.	Check for evidence of tampering with the tachograph. If there is evidence of tampering the tachograph must be decommissioned and replaced.
!@! d/m download card	Message Indicates the time to next download of the card (Day/Month) in slot 1. Similar message for slot 2	Prepare for download.
!A d/m download vehicle	Message Indicates the time to next download from the tachograph (Day/Month).	Prepare for download.
↓↓ Download complete	Message The tachograph download process has been completed successfully.	No further action required.
↓× Download failed	Warning The tachograph download process has failed and is incomplete. [Workshop card]	Retry the download. Check the connections and the download equipment. Re-insert the card and retry the download. Replace or repair the download equipment if required. If the tachograph is faulty beyond repair it must be decommissioned and replaced.
@!/@x Driving can't open slot	Message An attempt was made to open the slot while the vehicle was in motion. Related to the operator.	Stop the vehicle. The card tray can be opened only when the vehicle is stationary.
!@ Driving w/o valid card	Warning Driving without an appropriate card, or with an inappropriate card combination. Related to the operator.	Stop and remove inappropriate card.
!@▶ end of daily drive	Warning Maximum daily driving time	
!@  end of weekly drive	Warning Maximum weekly driving time	
!*  end of weekly work	Warning The weekly working time is reached according to the 60 h WTD rule.	
!@   end of 2-week drive	Warning Maximum 2-week driving time	
fnx Function not possible	Message The desired function cannot be carried out. Related to the tachograph.	No further action required.
!@A Hardware sabotage	Fault Authenticated card has been removed by force. Related to the operator.	The tachograph must be decommissioned and replaced.

## Display Messages

Display	Description	Action
!■ Insertion of a non valid card	Warning A non-valid card has been inserted to a slot. Related to the operator.	Check that the card has not been inserted upside down or is expired.
!■▲ Last sess. not closed ok	Warning The driver card in tray 1 was ejected incorrectly during the last session.  The previous card withdrawal in tray 1 was not completed correctly by the tachograph. Similar message for slot 2. Related to the card.	Eject the card and check it visually.  Clean the card with a soft damp cloth and try again.  In case of faulty card, contact relevant authority to get it replaced.
M.....! Memory full!	Message Manual entries memory full. Related to the operator.	Modify the manual entries so that the total number of entries is less.
New time? ●Ⓢ 03:01	Message Daylight saving time changes.	Answer <b>YES</b> to start or end daylight saving time.  Answer <b>NO</b> or press the <b>Back</b> button to cancel.
!▲Td/m next calibration	Warning Next mandatory calibration has to be carried out (d/m = Day /Month)	Plan for the calibration.
!Ⓢ/T■ No driver/workshop card	Message A function has been selected that requires an inserted driver or workshop card. Related to the operator.	Insert a driver or workshop card.
!Ⓢ! ? No further details	Fault An unknown type of sensor error occurred. Related to the motion sensor.	Replace the motion sensor.
>> Overspeeding	Warning The vehicle speed has exceeded the speed limit set for 1 minute and will be stored. Related to the operator.	Observe the specified speed limit.  Find out the maximum speed allowed for the vehicle.
>>? Overspeeding pre-warning	Warning The vehicle is exceeding the over speed limit.  After 1 (one) minute of continuous over speeding the warning will be stored. Related to the operator.	Observe the specified speed limit.
!→▲...✓ Pairing complete	Message The motion sensor - tachograph pairing process has been completed successfully. [Workshop card]. Related to the tachograph or motion sensor.	No further action required.

Display	Description	Action
<p>!→A...× Pairing failed</p>	<p>Message The motion sensor - tachograph pairing process has failed. [Workshop card]. Related to the tachograph or motion sensor.</p>	<p>Remove the workshop card from the tachograph.</p> <p>Check the system connections.</p> <p>Check the sensor cable. Replace sensor cable if required.</p> <p>Re-insert the workshop card to retry pairing.</p> <p>Replace the sensor if required.</p> <p>If the message is shown repeatedly the tachograph might be faulty beyond repair and must be decommissioned and replaced.</p>
<p>PIN?</p>	<p>Message Enter a PIN code to:</p> <ul style="list-style-type: none"> <li>• Activate a tachograph</li> <li>• Enter the tachograph calibration mode</li> </ul> <p>[Workshop card]. Related to the tachograph.</p>	<p>Enter a valid PIN code.</p>
<p>!‡ Power supply interruption</p>	<p>Warning The power supply to the tachograph has been interrupted for more than 200 milliseconds. Cranking voltage should not cause this event. The event is not generated in calibration mode. Related to the vehicle.</p>	<p>Check the vehicle and tachograph power supply levels.</p> <p>Check the power supply cables.</p> <p>Check the vehicle's battery and replace if necessary.</p>
<p>▼↑□ Printer high temperature</p>	<p>Message The printing could not start, or the ongoing printing has been interrupted, because the temperature of the printer is too high. Related to the printer.</p>	<p>Wait until the printer temperature is in allowable range and try to print again.</p>
<p>▼↓‡ Printer low power</p>	<p>Message The ongoing printing has been interrupted because the tachograph input voltage is too low. Related to the vehicle.</p>	<p>Check that the ignition is on.</p> <p>Check the vehicle battery voltage, connections, etc.</p>
<p>▼↓□ Printer low temperature</p>	<p>Message The printing could not start because the temperature of the printer is too low. Related to the printer.</p>	<p>Wait until the printer temperature is in allowable range and try to print again.</p>
<p>▼⊗× Printer out of paper</p>	<p>Message The ongoing printing has been interrupted because the printer is out of paper.</p>	<p>Replace paper.</p> <p>If fault remains active for no apparent reason the tachograph must be decommissioned and replaced.</p>
<p>▼×▼ Printing cancelled</p>	<p>Message The ongoing printing has been cancelled.</p>	<p>No further action required.</p>
<p>&gt;4 1/2h? Quarter left reminder</p>	<p>Message The driver has 15 minutes left until the legal maximum continuous driving time of 4½ hours will be exceeded.</p>	<p>Find a suitable place to take a break in the next 15 minutes.</p>
<p>?*6h reminder break</p>	<p>Pre-warning A reminder for a break according to the 6 h WTD rule.</p>	

## Display Messages

Display	Description	Action
?>lh reminder daily rest	Pre-warning A reminder for the daily rest.	
!>hh reminder weekly rest	Pre-warning A reminder for the weekly rest.	
*T Remote Detection fault	Fault Cannot communicate with the Remote Detection facility (DSRC)	Check the external Remote Detection facility and the cables
!@AX Security violation	Tampering with hardware has been detected	Check for evidence of tampering with the unit. Decommission and replace the tachograph.
!@l Sensor auth. failure	Fault The tachograph does not detect the sensor. Related to the motion sensor.	The tachograph has to be decommissioned and replaced.
!@lA Sensor auth. failure		Check motion sensor operation and all wiring.  Check for evidence of tampering.  Pair the motion sensor and tachograph again.  Perform a new calibration of the tachograph system.  Replace the sensor if found faulty.
!l=0 Sensor cable fault	Warning No pulses received from motion sensor, but encrypted data is received. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.
!l>0 Sensor cable fault	Warning Pulses received from motion sensor, but encrypted data missing or mismatch. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.
*lA Sensor comms error	Fault Motion sensor communication error. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.
!l Sensor data error	Warning Signal failure between motion sensor and tachograph. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.  Check for evidence of tampering.  If the error remains active for no apparent reason, decommission and replace the tachograph.
!@l/l Sensor data integrity error	Fault Internal motion sensor error, stored data integrity failure. Related to the motion sensor	Replace the motion sensor if necessary.
*lA Sensor no acknowledge	Fault Motion sensor communication error. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.
*A<l Sensor no answer	Fault Motion sensor communication error. Related to the motion sensor.	Check the motion sensor operation and wiring.  Replace the motion sensor if necessary.

Display	Description	Action
!L‡ Sensor no power signal	Fault Motion sensor has no power. Related to the motion sensor.	Check the vehicle battery voltage, wiring, etc. Replace the motion sensor if necessary.
L→A... Sensor pairing	Message The motion sensor and tachograph is in the process of pairing. Related to the motion sensor	
xA‡‡↑ Sensor power high	Fault Motion sensor power too high. Related to the motion sensor.	Check the vehicle battery voltage, wiring, etc. Replace the motion sensor if necessary.
xA‡‡↓ Sensor power low	Fault Motion sensor power too low. Related to the motion sensor.	Check the vehicle battery voltage, wiring, etc. Replace the motion sensor if necessary.
A→T? Service pre-warning	Message Next calibration, pre-warning.	Perform a calibration.
!⊙ Time conflict GNSS versus VU	Message The internal clock and the GNSS clock differs more than 1 minute	Make sure the GNSS antenna is not covered or that the GNSS signal is distorted.
>4 1/2h Time for break	Message The legal maximum continuous driving time of 4½ hours has elapsed.	
!*6h time for break	Warning Take a break according to the 6 h WTD rule	Minimum break 15 min
!▷h time for daily rest	Warning A warning for start of daily rest.	
!A→T Time for service	Message The tachograph is out of calibration.	Perform a calibration.
!▷hh time for weekly rest	Warning A warning for start of weekly rest.	
■→⊙ Timeout no key pressed	Message The tachograph is waiting for input. Timeout 1 min or 20 min.	Press the appropriate buttons and complete the process. Timeout can be changed in Settings menu.
×⊙/⊙Z× Unable to open slot	Message The card tray concerned cannot be opened. Related to the tachograph.	
!⊙‡‡ Unauth. change of sensor	Fault The sensor has been changed since last pairing. Related to the motion sensor.	Check the motion sensor operation and all wiring. - replace sensor if faulty  Check for evidence of tampering.  Pair the motion sensor and the tachograph again.  Perform a new calibration of the tachograph system.  Replace the sensor if found faulty.
!A‡ Vehicle Motion Conflict	Message GNSS motion sensor and primary motions sensor data contradicts. Related to the motion sensor.	Check second source sensor operation and primary sensor and its wiring.  Check for evidence of tampering. Use reference cables.
!⊙ 12/10 VU expiry	Warning The tachograph (VU) will expire at the displayed date.	The tachograph has to be decommissioned and replaced.
×A VU internal fault	Fault The tachograph has detected an internal fault. Related to the tachograph.	The tachograph has to be decommissioned and replaced.

## Display Messages

---

Display	Description	Action
! Wrong PIN! Attempts left:2	Message Wrong PIN entered but still attempts left. [Workshop card].Related to the card	Press <b>OK</b> and try again.
× Wrong PIN! Card locked !	Message Wrong PIN entered too many times. [Workshop Card] Related to the card	Eject the card and replace it with a valid one.



## Event, Fault and Diagnostic Trouble Codes

A list of all DTCs that are stored in the Stoneridge smart tachograph is presented below. A check should be made to determine whether the DTC is still active or not. The cause of the DTC should be determined and appropriate action taken as described in the table that follows. The Code will be seen on the Event & Fault printout as well as on the Daily printout. The DTC will be seen on a test instrument.

### General events

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!02		Card conflict	An invalid card combination has been detected. For example a company and a workshop card.	Withdraw the offending card.
!03		Time overlap	The last withdrawal time of the inserted driver card, as read from the inserted card, is later than the UTC time of the tachograph.	Check the UTC time of the tachograph. Wait for the overlap period to elapse. If UTC time differs more than 20 minutes, a calibration has to be performed.
!04	001260	Driving without an appropriate card	Driving without a valid card or with an invalid card combination.	Stop and insert a valid card and/or remove inappropriate card.
!05		Card inserted while driving	A tachograph card is inserted in any slot while driving.	No further action required.
!06		Last card session not correctly closed	The card (inserted in slot 1 or 2) has been withdrawn before all relevant data have been stored on the card. It is caused at withdrawal but detected at the next insertion.	No further action required.
!07		Overspeeding	The speed of the vehicle has exceeded the highest speed allowed for the vehicle. This has been active during at least 60 seconds.	Get information on the maximum speed allowed is for the vehicle.
!08	000004	Power supply interruption (VU)	The power supply to the tachograph has been interrupted for more than 200 milliseconds. The event is not generated in calibration mode.	Check the vehicle and tachograph power supply levels. Check the power supply cables.
	002004	Power supply interruption (MS)	Power supply to motion sensor has been interrupted for more than 200 ms.	Check the vehicle and motion sensor power supply levels. Check the motion sensor operation and all the wiring, replace the sensor if faulty.
!09	002180	Motion data error (No CNTR)	Motion sensor data incorrect. Tachograph receives speed value from motion sensor without receiving any pulses.	Check motion sensor operation and all wiring. Check for evidence of tampering.
	002280	Motion data error (CNTR)	Motion sensor data incorrect. Tachograph receives speed counter value from motion sensor that differs from value calculated by the tachograph.	Pair the motion sensor and tachograph again. Perform a new calibration of the tachograph system.
	002452	Motion data error (Event)	Motion data incorrect. Tachograph signature mismatch.	Replace the sensor if found faulty.
!0B	002B80	Time conflict (GNSS versus VU internal clock)	Internal and GNSS clock differs more than 1 minute at 12 hours after time settings	Check internal clock setting. Check GNSS received clock.
!0C	002D80	Communication error with the remote communication facility	VU cannot communicate properly with the DSRC-VU facility	Check the remote DSRC-VU unit Check cabling to DSRC-VU facility

## Event, Fault and Diagnostic Trouble Codes

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!0D	002C80	Absence of position information from GNSS receiver	No valid GNSS signal received during three hours of accumulated driving	Check that GNSS signal can be received Check if external objects obstruct the GNSS signal

### VU Security breach attempts

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!11	002452	Motion sensor authentication failure	An unsuccessful authentication attempt of the motion sensor has been detected.	Check motion sensor operation and all wiring.  Check for evidence of tampering.  Pair the motion sensor and tachograph again.  Perform a new calibration of the tachograph system.  Replace the sensor if found faulty.
!12		Tachograph card authentication failure	The inserted card cannot be authenticated by the tachograph.	Check that the inserted card is valid and correctly inserted.  Check that the card works in another tachograph.  Try to insert another card.

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!13	002452	Unauthorised change of motion sensor	The sensor has been changed since last pairing.	<p>Check motion sensor operation and all wiring.</p> <p>Check for evidence of tampering.</p> <p>Pair the motion sensor and tachograph again.</p> <p>Perform a new calibration of the tachograph system.</p> <p>Replace the sensor if found faulty.</p>
!14		Card data input integrity	The cryptographic communication with the card inserted (in slot 1 or 2) is unsuccessful.	<p>To check the card, insert it in another tachograph.</p> <p>Try to insert another card.</p>
!15		Stored data integrity error	The stored data in the 365 day memory is erroneous.	Decommission and replace the tachograph.
!18		Hardware sabotage	Card has been removed by force	<p>Check for evidence of tampering with card reader.</p> <p>Decommission and replace the tachograph.</p>
!18		Security violation	Tampering with hardware has been detected.	<p>Check for evidence of tampering with the unit.</p> <p>Decommission and replace the tachograph.</p>

### Motion sensor related events

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!0A	002780	Vehicle motion conflict	Speeds from motion sensor and GNSS contradict	Check that GNSS can receive satellite signals
!20	002508	No further details	Motion sensor internal error, but no further fault cause.	Replace the motion sensor.
!21	002508	Authentication failure	Motion sensor internal error, authentication failure.	Replace the motion sensor.
!22	002508	Stored data integrity error	Motion sensor internal error, stored data integrity failure	Replace the motion sensor
!35	002508	No further details	Motion sensor unknown internal error	Replace the motion sensor

### Recording equipment faults

Code	DTC	Type of event or fault	Description	Suggested action to be taken
X31	000139 000800 002007 000C31	VU internal fault	Internal fault in the tachograph	If DTC remains active, it is a non-recursive error. Decommission and replace.

## Event, Fault and Diagnostic Trouble Codes

Code	DTC	Type of event or fault	Description	Suggested action to be taken
	002280	Sensor fault Error response or acknowledge	Motion sensor communication error.  Content of acknowledge or response is not correct.	Check motion sensor operation and all wiring.  Check for evidence of tampering.  Pair the motion sensor and tachograph again.
	002003	Sensor fault (MS Power to Low)	Motion sensor power supply too low. DTC is activated 4 sec after low power is detected.	Perform a new calibration of the tachograph system.  Replace the sensor if found faulty.
	002380	Sensor fault (No acknowledge)	Motion sensor communication error. No acknowledge received when expected.	Check motion sensor operation and all wiring. Replace the sensor if found faulty.
	002380	Sensor fault (No response)	Motion sensor communication error. No response received when expected	Check motion sensor operation and all wiring. Replace the sensor if found faulty.

### Card faults

Code	DTC	Type of event or fault	Description	Suggested action to be taken
!01		Insertion of a non-valid card	A non-valid card has been inserted in the VU	Make sure that only valid tachograph cards are used.
X40		Card fault		Withdraw the card and check it.
	000200	Card fault - Slot 1	Error detected on inserted card in slot 1.	Insert the card into another tachograph and verify functionality.
	000300	Card fault - Slot 2	Error detected on inserted card in slot 2.	Insert another card and verify functionality.

### Manufacturer specific events and faults (pop-ups)

Code	DTC	Type of event or fault	Description	Suggested action to be taken
	000660	Printing stopped, out of paper	Printer is out of paper.	Insert a new paper roll.
	0001C0	Overspeeding pre warning	The speed of the vehicle has exceeded the highest speed allowed for the vehicle. This has been active during less than 60 seconds and the overspeeding event is not yet activated.	Driver related message.
	000D40	Calibration error	Calibration error, time for periodic inspection. Two years has passed since last calibration.	Perform a calibration.
	000B78	CAN bus off, TCO CAN	CAN bus off, A connector, also named TCO-CAN or A-CAN.	Check cables, especially A connector at the back of the tachograph.
	00FD0B	CAN bus off, FMS CAN	CAN bus off, C connector, also named FMS-CAN or C-CAN.	Check cables, especially C connector at the back of the tachograph.
	000007	VU power supply high	Tachograph power supply voltage is higher than maximum value.	Check vehicle power supply levels.  Check power supply input to tachograph.  Check all connections and tachograph operation.

## Event, Fault and Diagnostic Trouble Codes

Code	DTC	Type of event or fault	Description	Suggested action to be taken
	000003	VU power supply low	The power supply to the tachograph has been lower than minimum value for more than 4 seconds. Cranking voltage should not cause this event	<p>Check vehicle power supply levels.</p> <p>Check power supply input to tachograph.</p> <p>Check all connections and tachograph operation.</p>
	000900	No ignition but speed pulses present	Ignition off, but speed pulses are present.	<p>Investigate if the vehicle has been under environmental disturbances like vibrations etc.</p> <p>Check motion sensor operation and all wiring – replace sensor if faulty.</p> <p>Check speed pulses are not being injected through front connector.</p>