Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature: EV Trip Information on Demand (Global)

Subsystem Part Specific Specification (SPSS)

Version 1.1

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FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
January 23, 2019	**0.1**	**Draft**	
January 31, 2019	**1.0**	**Initial Release**	
May 8, 2019	**1.1**		
	MD-REQ-342495/B-VehElAvgTrip1_Eff_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342496/B-VehElAvgTrip2_Eff_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	ETRIP-SR-REQ-342515/B-Trip Miles per kWh HMI Data		rpaquet2 - Updated signal name to match database
	MD-REQ-342498/B-Trip1SumDrvE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342499/B-Trip2SumDrvE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342501/B-Trip1ClimE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342502/B-Trip2ClimE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342504/B-Trip1BattULoE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342505/B-Trip2BattULoE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342507/B-Trip1ExtFctrE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom
	MD-REQ-342508/B-Trip2ExtFctrE_Pc_Dsply		rpaquet2 - Updated signal name to match reduced length from Netcom

Table of Contents

1 Architectural Design

1.1 Overview

The Trip IoD (information on demand) displays the driver information Trip data on the Centerstack HMI. See the HMI Spec for details of how this is displayed.

1.2 TRIP-CLD-REQ-318899/A-Trip Driver Information Server

The Trip Driver Information Server is responsible for sending the status of the Trip Driver Information

1.3 TRIP-CLD-REQ-318901/A-Trip Driver Information HMI Client

The Trip Driver Information HMI Client is responsible for displaying the Trip HMI data from the Trip Driver Information Server

1.4 Interface Requirements

See the individual functions for the method description used by each function.

2 Functional Definition

2.1 ETRIP-FUN-REQ-342510/A-Trip Miles per kWh Data for display

2.1.1 MD-REQ-342494/A-VehElEffAvg_No_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate wattHr/km for current trip.

Logical Signal Name	Literals	Value	Description
VehElEffAvg_No_Dsply	-100 wattHr/km	0x0	Resolution: 10 Offset: -100
	…	…	
	1150 wattHr/km	0x7D	
	NoDataExists	0x7E	
	Faulty	0x7F	

2.1.2 MD-REQ-342495/B-VehElAvgTrip1_Eff_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate wattHr/km for Trip 1.

Logical Signal Name	Literals	Value	Description
VehElAvgTrip1_Eff_Dsply	-100 wattHr/km	0x0	Resolution: 10 Offset: -100
	…	…	
	1150 wattHr/km	0x7D	
	NoDataExists	0x7E	
	Faulty	0x7F	

2.1.3 MD-REQ-342496/B-VehElAvgTrip2_Eff_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate wattHr/km for Trip 2.

Logical Signal Name	Literals	Value	Description
VehElAvgTrip2_Eff_Dsply	-100 wattHr/km	0x0	Resolution: 10 Offset: -100
	…	…	
	1150 wattHr/km	0x7D	
	NoDataExists	0x7E	
	Faulty	0x7F	

2.1.4 ETRIP-SR-REQ-342511/A-Converting Input Signal to Mi/kWh from Wh/km

The Trip Driver Information HMI Client will receive signal VehElEffAvg_No_Dsplay that presents the data as Wh/km. The Trip Driver Information HMI Client is responsible for converting the data to Mi/kWh or any other format the HMI defines for display.

2.1.5 ETRIP-SR-REQ-342515/B-Trip Miles per kWh HMI Data

The signals VehElEffAvg_No_Dsply, VehElAvgTrip1_Eff_Dsply and VehElAvgTrip2_Eff_Dsply are used to display the distance per power. See HMI for details on how displayed.

2.2 ETRIP-FUN-REQ-342516/A-Trip Energy Usage Data for display

2.2.1 MD-REQ-342497/A-TripSumDrvE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for drive for current trip.

Logical Signal Name	Literals	Value	Description
TripSumDrvE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.2 MD-REQ-342498/B-Trip1SumDrvE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for drive for Trip 1.

Logical Signal Name	Literals	Value	Description
Trip1SumDrvE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.3 MD-REQ-342499/B-Trip2SumDrvE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for drive for Trip 2.

Logical Signal Name	Literals	Value	Description
Trip2SumDrvE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.4 MD-REQ-342500/A-TripClimE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Climate Control for current trip.

Logical Signal Name	Literals	Value	Description
TripClimE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.5 MD-REQ-342501/B-Trip1ClimE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Climate Control for Trip 1.

Logical Signal Name	Literals	Value	Description
Trip1ClimE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.6 MD-REQ-342502/B-Trip2ClimE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Climate Control for Trip 2.

Logical Signal Name	Literals	Value	Description
Trip2ClimE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.7 MD-REQ-342503/A-TripBattULoE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Accessories for current trip.

Logical Signal Name	Literals	Value	Description
	0 Percent	0x0	Resolution: 0.1
	…	…	

TripBattULoE_Pc_Dsply	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.8 MD-REQ-342504/B-Trip1BattULoE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Accessories for Trip 1.

Logical Signal Name	Literals	Value	Description
Trip1BattULoE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.9 MD-REQ-342505/B-Trip2BattULoE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Accessories for Trip 2.

Logical Signal Name	Literals	Value	Description
Trip2BattULoE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.10 MD-REQ-342506/A-TripExtFctrE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Outside Temp for current trip.

Logical Signal Name	Literals	Value	Description
TripExtFctrE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.11 MD-REQ-342507/B-Trip1ExtFctrE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Outside Temp for Trip 1.

Logical Signal Name	Literals	Value	Description
Trip1ExtFctrE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.12 MD-REQ-342508/B-Trip2ExtFctrE_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate percent of energy used for Outside Temp for Trip 2.

Logical Signal Name	Literals	Value	Description
Trip2ExtFctrE_Pc_Dsply	0 Percent	0x0	Resolution: 0.1
	…	…	
	100 Percent	0x3E8	
	102.1 Percent	0x3FD	
	NoDataExists	0x3FE	
	Faulty	0x3FF	

2.2.13 ETRIP-SR-REQ-342518/A-Trip Energy Usage HMI Data

The signals in this Function are used to display where (Drive Route, Climate Control, Accessories or Outside Temperature) the energy went. See HMI for details on how displayed.

2.2.14 ETRIP-SR-REQ-343003/A-Signal Handling over 100 Percent

The signals defined in Trip Energy Usage Data for Display function are in percent. Any percentage value above 100 percent shall be treated as NoDataExists.

2.3 ETRIP-FUN-REQ-342519/A-Trip Behavior Coaching Data for display

2.3.1 MD-REQ-342487/A-EcoCochA_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated acceleration coaching score for key cycle.

Logical Signal Name	Literals	Value	Description
EcoCochA_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.2 MD-REQ-342485/A-EcoCochATrip1_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate acceleration coaching score for Trip 1.

Logical Signal Name	Literals	Value	Description
EcoCochATrip1_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.3 MD-REQ-342486/A-EcoCochATrip2_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate acceleration coaching score for Trip 2.

Logical Signal Name	Literals	Value	Description
EcoCochATrip2_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.4 MD-REQ-342488/A-EcoCochDecel_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate Deceleration coaching score for current key cycle.

Logical Signal Name	Literals	Value	Description
EcoCochDecel_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.5 MD-REQ-342489/A-EcoCochDecelTrip1_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated deceleration coaching score for Trip 1.

Logical Signal Name	Literals	Value	Description
EcoCochDecelTrip1_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.6 MD-REQ-342490/A-EcoCochDecelTrip2_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated deceleration coaching score for Trip 2.

Logical Signal Name	Literals	Value	Description
EcoCochDecelTrip2_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.7 MD-REQ-342491/A-EcoCochCrus_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated vehicle speed cruising coaching score for current key cycle.

Logical Signal Name	Literals	Value	Description
EcoCochCrus_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.8 MD-REQ-342492/A-EcoCochCrusTrip1_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated vehicle speed cruising coaching score for Trip 1.

Logical Signal Name	Literals	Value	Description
EcoCochCrusTrip1_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.9 MD-REQ-342493/A-EcoCochCrusTrip2_Pc_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate accumulated vehicle speed cruising coaching score for Trip 2.

Logical Signal Name	Literals	Value	Description
EcoCochCrusTrip2_Pc_Dsply	0 percent	0x0	Resolution: 100/255
	…	…	
	100 percent	0xFF	

2.3.10 ETRIP-SR-REQ-342520/A-Trip Behavior Coaching HMI Data

The signals in this Function are used to display driving behavior (Acceleration, Deceleration and Average Speed (Cruise)). See HMI for details on how displayed.

2.4 TRIP-FUN-REQ-319942/B-Trip Timer Data for display

2.4.1 MD-REQ-319943/A-TimerTrip1_T_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate how many seconds has passed since the Trip 1 started

Logical Signal Name	Literals	Value	Description
TimerTrip1_T_Dsply	Second 0	0x0	Note: this supports 9999 hours, 59 minutes, 59 seconds… HMI team to decide what to display when over limit
	Second 1	0x1	
	Second 2	0x2	
	Second 3	0x3	
	Cont.		
	Second 67,108,863	0x3FFFFFF	

2.4.2 MD-REQ-319944/A-TimerTrip2_T_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate how many seconds has passed since the Trip 2 started

Logical Signal Name	Literals	Value	Description
TimerTrip2_T_Dsply	Second 0	0x0	Note: this supports 9999 hours, 59 minutes, 59 seconds… HMI team to decide what to display when over limit
	Second 1	0x1	
	Second 2	0x2	
	Second 3	0x3	
	Cont.		
	Second 67,108,863	0x3FFFFFF	

2.4.3 MD-REQ-333088/A-TimerTripCurnt_T_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal to indicate how many seconds has passed since the Current Trip started

Logical Signal Name	Literals	Value	Description
TimerTripCurnt_T_Dsply	Second 0	0x0	Note: this supports 9999 hours, 59 minutes, 59 seconds… HMI team to decide what to display when over limit
	Second 1	0x1	
	Second 2	0x2	
	Second 3	0x3	
	Cont.		
	Second 67,108,863	0x3FFFFFF	

2.4.4 TRIP-SR-REQ-319946/B-Trip Timer HMI Data

The signals TimerTrip1_T_Dsply, TimerTrip2_T_Dsply and TimerTripCurnt_T_Dsply are used to display the time elapsed since the trip began. See HMI for details on how displayed.

2.5 TRIP-FUN-REQ-320000/B-Trip Electric Distance Data for Display

2.5.1 MD-REQ-320006/A-ElDistTrip1_No_Dsply

Message Type: Status

The Trip Driver Information Server sends this signal with the number to display for the Electric Distance for Trip 1.

Logical Signal Name	Literals	Value	Description
ElDistTrip1_No_Dsply	0.0	0x0	This signal is sent as a number without a unit (ex no unit Kilometers, Miles…)
	0.1	0x1	
	0.2	0x2	
	0.3	0x3	
	Cont.		
	13107.1	0x1FFFF	

2.5.2 MD-REQ-320021/A-ElDistTrip2_No_Dsply

The Trip Driver Information Server sends this signal with the number to display for the Electric Distance for Trip 2.

Logical Signal Name	Literals	Value	Description
ElDistTrip2_No_Dsply	0.0	0x0	This signal is sent as a number without a unit (ex no unit Kilometers, Miles…)
	0.1	0x1	
	0.2	0x2	
	0.3	0x3	
	Cont.		
	13107.1	0x1FFFF	

2.5.3 MD-REQ-333087/A-ElDistTripCur_No_Dsply

The Trip Driver Information Server sends this signal with the number to display for the Electric Distance for the Current Trip.

Logical Signal Name	Literals	Value	Description
ElDistTripCur_No_Dsply	0.0	0x0	This signal is sent as a number without a unit (ex no unit Kilometers, Miles…)
	0.1	0x1	
	0.2	0x2	
	0.3	0x3	
	Cont.		
	13107.1	0x1FFFF	

2.5.4 MD-REQ-320022/A-ElDistTripUnit_D_Stat

Message Type: Status

The Trip Driver Information Server sends this signal with the unit to display for Electric Trip Distance.

Logical Signal Name	Literals	Value	Description
ElDistTripUnit_D_Stat	Inactive	0x0	
	Kilometers	0x1	
	Miles	0x2	
	Reserved	0x3	

2.5.5 TRIP-SR-REQ-320023/B-Electric Trip Distance HMI Data

The signal ElDistTripUnit_D_Stat shall be used to display the trip electric distance units (ex Miles, Kilometers) on the HMI with the numbers in signals ElDistTrip1_No_Dsply, ElDistTrip2_No_Dsply and ElDistTripCur_No_Dsply.

- Ex ElDistTrip1_No_Dsply = 33.6 and ElDistTripUnit_D_Stat = Kilometers then the HMI would show 33.6 Kilometers.

The ElDistTrip1_No_Dsply, ElDistTrip2_No_Dsply, ElDistTripCur_No_Dsply and ElDistTripUnit_D_Stat signals must all be placed in the same message so the HMI can update simultaneously.

2.6 TRIP-FUN-REQ-320024/A-Trip Reset

2.6.1 MD-REQ-320036/A-ResetTrip1_B_Rq

Message Type: Status

The Trip Driver Information HMI Client sends this signal to reset the Trip 1 HMI

Logical Signal Name	Literals	Value	Description
ResetTrip1_B_Rq	Null	0x0	
	Reset	0x1	

2.6.2 MD-REQ-320039/A-ResetTrip2_B_Rq

Message Type: Status

The Trip Driver Information HMI Client sends this signal to reset the Trip 2 HMI

Logical Signal Name	Literals	Value	Description
ResetTrip2_B_Rq	Null	0x0	
	Reset	0x1	

2.6.3 TRIP-SR-REQ-320040/B-Trip Timer Reset

When the reset HMI (HMI team define how shown) is activated on the Trip Driver HMI Client the Trip Driver HMI Client shall set ResetTrip1_B_Rq = Reset and then set back to Null.

- Reference "IFS-MMCAN-REQ-015114-Sending of Request and Response" requirement for setting a Request back to Null. For this requirement (015114) the Null encoding shall be treated the same as inactive in meeting the requirement.

The Trip Driver HMI Client shall only show the reset values when the Trip Driver HMI Client receives the Trip 1 status signals in this SPSS back with the reset values (ex. ElDistTrip1_No_Dsply, DistTrip1_No_Dsply…).

The Trip Driver information Server shall reset Trip 1 and the applicable Trip 1 status signals when ResetTrip1_B_Rq = Reset.

Note: above showed the ResetTrip1_B_Rq operation for Trip 1. The requirements would apply for Trip 2 with ResetTrip2_B_Rq and the corresponding Trip 2 status signals.

The Current Trip signals (ex TimerTripCurnt_T_Dsply, ElDistTripCur_No_Dsply) are not reset by ResetTrip1_B_Rq or ResetTrip2_B_Rq signals.

2.6.4 IFS-MMCAN-FUR-REQ-015114/D-Sending of Request and Response (TcSE ROIN-66252-1)

Unless noted otherwise request and response signals shall only be sent once and when they have been sent it is important that they are set to inactive/null again. The signals should be set back to inactive/null as soon as FNOS has reported that the signal has been transmitted unless noted otherwise.

- Example of an exception: an event-periodic signal going across network gateway and encoding value may need to be held until other bus wakes up. Reference the feature specs for exceptions.

For event based signals this has to be done in order to keep FNOS from accidentally sending out the signal twice when another signal in the same frame is to be transmitted, either by a change of another signal or by a periodic transmission.

3 Appendix: Reference Documents

Reference #	Document Title
1	Trip IoD HMI specifications
2	
3	
4	
5	
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7	
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