Roylls Roce Ghoul VII CAN Bus Interface Control Document

04/07/2018

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Introduction

Interface Control Document

An Interface Control Document (ICD) provides a record of all interface information (such as drawings, diagrams, tables, and textual information) generated for a project. The underlying interface documents provide the details and describe the interface or interfaces between subsystems or to a system or subsystem.

Roylls Roce

Roylls Roce, the esteemed luxury vehicle manufacturer, is an epitome of opulence and sophistication in the automotive industry. Situated in the KU, our company sets new standards in crafting extraordinary automobiles that exude elegance and exclusivity. With a legacy spanning decades, we are committed to delivering unparalleled craftsmanship, meticulous attention to detail, and uncompromising quality. Our esteemed engineers and artisans, handpicked from around the world, employ their exceptional skills to create masterpieces on wheels that leave an indelible impression on discerning customers. From the meticulously handcrafted interiors adorned with the finest materials to the powerful and refined engines, every Roylls Roce vehicle represents the pinnacle of luxury. Our unwavering dedication to perfection is reflected in our timeless designs, harmonizing artistry with engineering precision. As a result, Roylls Roce vehicles embody the perfect fusion of unparalleled comfort, performance, and prestige, captivating the hearts of connoisseurs worldwide.

Ghoul VII

Introducing the highly anticipated 7th edition of the legendary Roylls Roce Ghoul, a pinnacle of automotive excellence. This extraordinary luxury vehicle sets new standards in opulence and refinement, captivating all who experience its splendor. Every journey becomes an unparalleled experience, courtesy of the meticulously crafted interior, where both front and rear occupants can indulge in the utmost comfort with sumptuous, massaging seats. The epitome of entertainment and connectivity, the Ghoul boasts cutting-edge infotainment technology, seamlessly integrating Bluetooth and USB connections, ensuring effortless access to your favorite media. Stay charged and connected at all times with the convenience of wireless charging capability. Safety is paramount, with advanced features such as lane and speed assist providing a cocoon of protection, inspiring confidence on every road. From its meticulously engineered performance to its unmatched array of luxurious features, the Roylls Roce Ghoul VII is an unparalleled testament to our unwavering commitment to creating automotive masterpieces that transcend expectations.

Controller Area Network

The Controller Area Network (CAN) bus network is a robust and widely used communication protocol employed in various industrial and automotive applications. It serves as a reliable and efficient means of connecting multiple electronic control units (ECUs) within a system. The CAN bus network facilitates real-time transmission of data and commands between interconnected devices, enabling seamless integration and coordination. It utilizes a two-wire bus architecture, consisting of a twisted pair of wires for transmitting differential signals. With its decentralized and multi-master nature, the CAN bus allows simultaneous communication among different ECUs without requiring a centralized

controller. This distributed approach enhances fault tolerance, scalability, and flexibility. The CAN bus network defines standardized communication protocols, including message identifiers, data formats, error detection, and error handling mechanisms, ensuring compatibility and interoperability between devices from different manufacturers.

Message Definitions

Radio Control

Arbitration ID: 1A0
Length: 6 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	Infotainment	Radio	Frequency Char #1	See note 1	ASCII Characters
01	Infotainment	Radio	Frequency Char #2	See note 1	
02	Infotainment	Radio	Frequency Char #3	See note 1	
03	Infotainment	Radio	Frequency Char #4	See note 1	
04	Infotainment	Radio	Frequency Char #5	See note 1	
05	Infotainment	Radio	Modulation	See note 2	Boolean

Note 1: Frequency is stored as 5 bytes of ASCII characters. Any unused characters are stored as 00
Note 2: FM is stored as 00. AM is stored as 01

RPM/Fuel Data

Arbitration ID: 1A1
Length: 8 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	ECM	Infotainment	RPM byte #1	See note 3	RPM
01	ECM	Infotainment	RPM byte #2	See note 3	
02	ECM	Infotainment	RPM byte #3	See note 3	
03	ECM	Infotainment	RPM byte #4	See note 3	
04	Fuel Sensor	Infotainment	Fuel byte #1	See note 4	Percentage
05	Fuel Sensor	Infotainment	Fuel byte #2	See note 4	
06	Fuel Sensor	Infotainment	Fuel byte #3	See note 4	
07	Fuel Sensor	Infotainment	Fuel byte #4	See note 4	

Note 3: RPM stored as a 4 byte integer. Little endian.
Note 4: Fuel is stored as: percentFull * 100 and truncated to an integer. Little endian.

Speed/Gear Data/Control

Arbitration ID: 1A2
Length: 6 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	ECM	Infotainment	Speed byte #1	See note 5	MPH
01	ECM	Infotainment	Speed byte #2	See note 5	
02	ECM	Infotainment	Speed byte #3	See note 5	
03	ECM	Infotainment	Speed byte #4	See note 5	
04	Infotainment	TCM	Gear byte #1	See note 6	Gear
05	Infotainment	TCM	Checksum byte #1	See note 7	None

Note 5: Speed is stored as: speed * 100 and truncated to an integer. Little endian
Note 6: Gear: 0=park, 1=reverse, 2=neutral, 3=drive, 4=low
Note 7: Checksum must be correct for message to be accepted

Latitude Data

Arbitration ID: 1A3
Length: 8 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	GPS	Infotainment	Latitude byte #1	See note 8	Degrees Latitude
01	GPS	Infotainment	Latitude byte #2	See note 8	
02	GPS	Infotainment	Latitude byte #3	See note 8	
03	GPS	Infotainment	Latitude byte #4	See note 8	
04	GPS	Infotainment	Latitude byte #5	See note 8	
05	GPS	Infotainment	Latitude byte #6	See note 8	
06	GPS	Infotainment	Latitude byte #7	See note 8	
07	GPS	Infotainment	Latitude byte #8	See note 8	

Note 8: Latitude is stored as a 64 bit double in IEEE 754 floating point format

Longitude Data

Arbitration ID: 1A4
Length: 8 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	GPS	Infotainment	Longitude byte #1	See note 9	Degrees Longitude
01	GPS	Infotainment	Longitude byte #2	See note 9	
02	GPS	Infotainment	Longitude byte #3	See note 9	
03	GPS	Infotainment	Longitude byte #4	See note 9	

04	GPS	Infotainment	Longitude byte #5	See note 9	
05	GPS	Infotainment	Longitude byte #6	See note 9	
06	GPS	Infotainment	Longitude byte #7	See note 9	
07	GPS	Infotainment	Longitude byte #8	See note 9	

Note 9: Longitude is stored as a 64 bit double in IEEE 754 floating point format

Temperature Control

Arbitration ID: 1A5

Length: 8 bytes

Byte #	Source	Destination	Description	Notes	Unit
00	Infotainment	A/C	Temperature byte #1	See note 10	Degrees Fahrenheit
01	Infotainment	A/C	Temperature byte #2	See note 10	
02	Infotainment	A/C	Temperature byte #3	See note 10	
03	Infotainment	A/C	Temperature byte #4	See note 10	
04	Infotainment	A/C	Temperature byte #5	See note 10	
05	Infotainment	A/C	Temperature byte #6	See note 10	
06	Infotainment	A/C	Temperature byte #7	See note 10	
07	Infotainment	A/C	Temperature byte #8	See note 10	

Note 10: Temperature is stored as a 64 bit double in IEEE 754 floating point format