Product Specifications

Revision History:

Date	Version No.	Revisor	Description

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1 Overview

1.1 Purpose

This document describes the product specifications of ECARX DHU-NA-006 (hereinafter referred to as DHU).

This document covers the complete set of all the basic functions that DHU-NA-006 needs to implement.

1.2 Scope of Application

It is an in-vehicle product that is only applicable to Volvo vehicles

2 Terms and Abbreviations

Abbreviation	English original
ACC OFF	ACC hardwire signal is low. (Crank, ACC hardwire signal is also low.)
ACC ON	ACC hardwire signal is high.
AC	Air Conditioning
AM	Amplitude Modulation
AMP	Amplifier
APA	Assit
AVM	All View Monitor
BSD	Blind spot vehicle Discern System
BLE	Bluetooth Low Energy
BT	Bluetooth
CAN	Controller Area Network
CVBS	Composite Video Broadcast Signal
DLNA	DIGITAL LIVING NETWORK ALLIANCE
DVR	Digital Video Recorder
ENT	Entertainment
FM	frequency modulation
GPS	Global Position System
HMI	Human Machine Interface
HUD	Head Up Display
IHU	Infotainment Head Unit
IME	Input Method Editor
IPK	Instrument Pack
LIN	Local Interconnect Network
LVDS	Low Voltage Differential Signal
MCU	Microcontroller Unit
MIC	Microphone
MMI	Multi-Media Infotainment
PPM	Play Position Memory
RSE	Rear Seat Entertainment

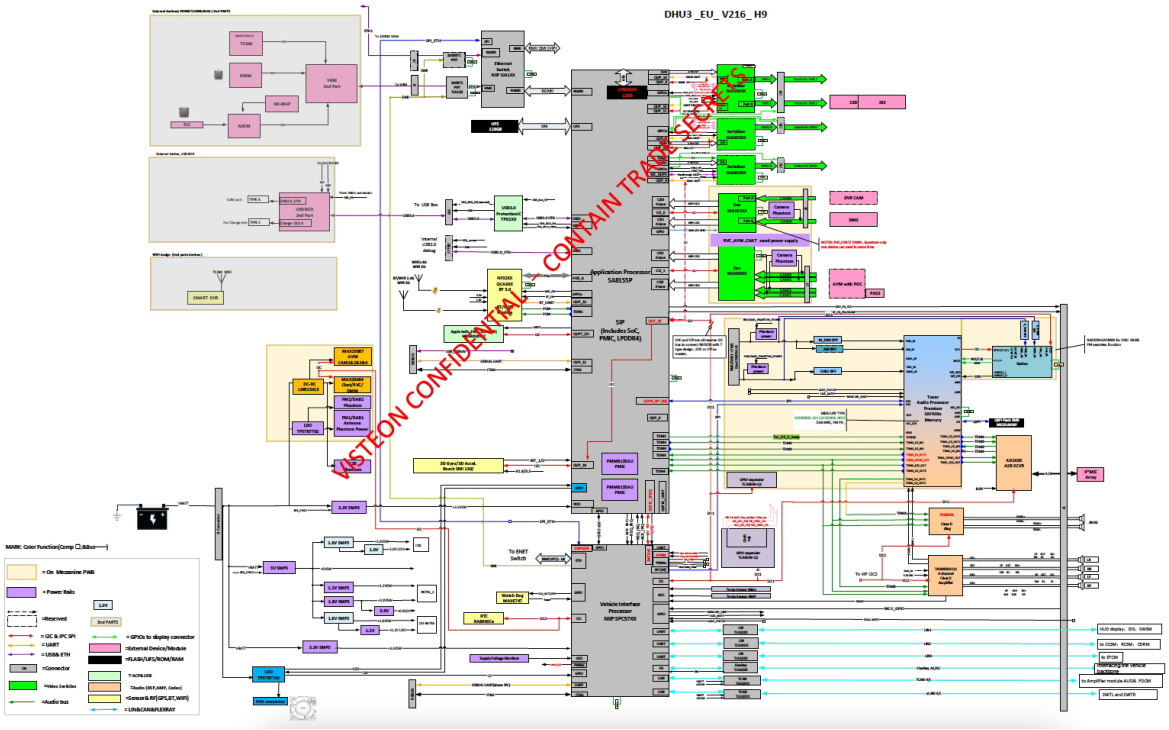
Abbreviation	English original
RVC	Rear View Camera
CPU	Central Processing Unit
SVC	Surround View Camera
SWC	Steering Wheel Control
TCP	Transmission Control Protocol
TTS	Text To Speech
USB	Universal Serial Bus
VR	Voice Recognition
T-BOX	Telematics Box
RRS	Reverse Radar System
PAC	Parking Assist Control
PEPS	Passive Entry/Passive Start
BCM	Body Control Module
E-CALL	Emergency Call
B-CALL	Breakdown Call

3 Product Definition

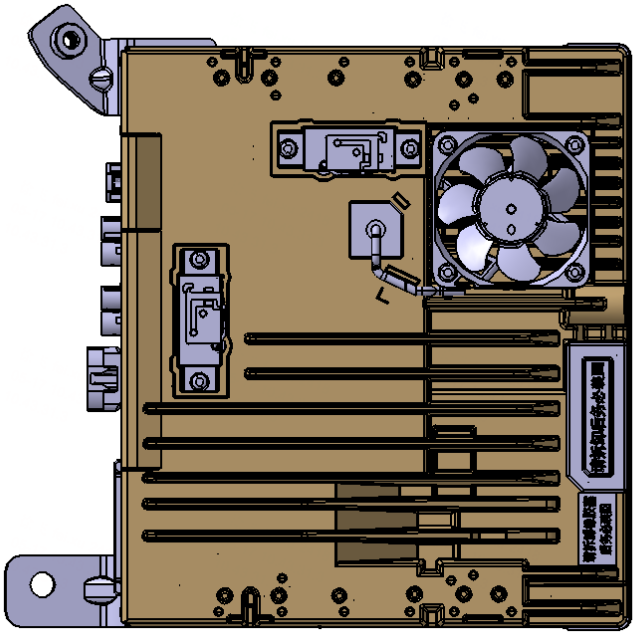
The in-vehicle multi-media infotainment system is mainly composed of DHU, central control display, radio antenna, Bluetooth antenna, speakers (bass, mid-range, treble, subwoofer, etc.), external power amplifier, microphone. There are switch keys and interfaces related to the system on the steering wheel.

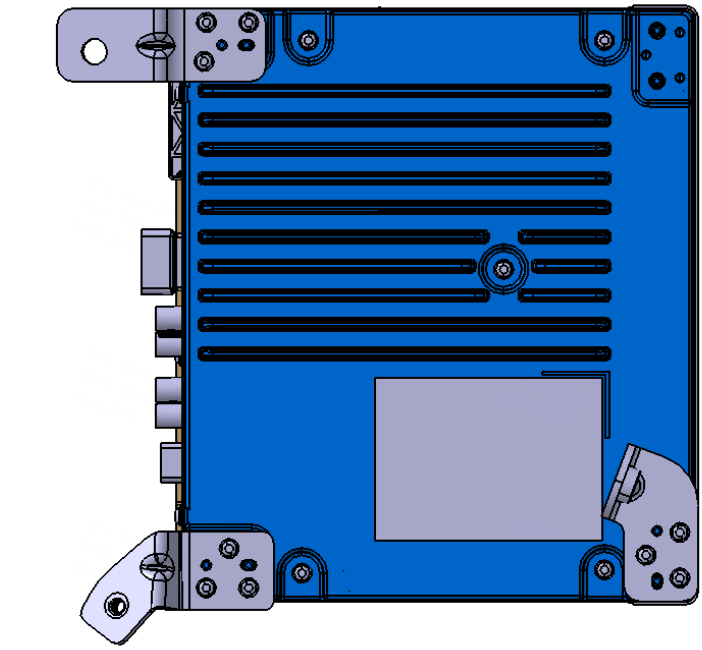
DHU mainly allows you to access radio, USB audio and video playback, clock display, Bluetooth phone connection, GPS navigation, information display, vehicle settings, voice control function requirements, reversing video/dynamic Park Assist/panoramic video/reversing radar icon display, DVR video display and controls, air conditioning information display and settings, and other functions.

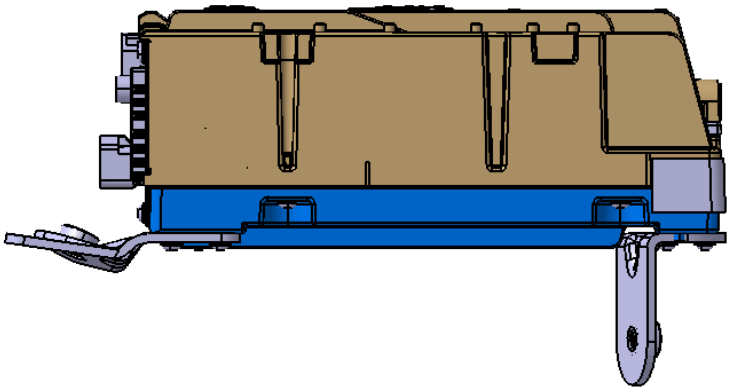
3.1 System Block

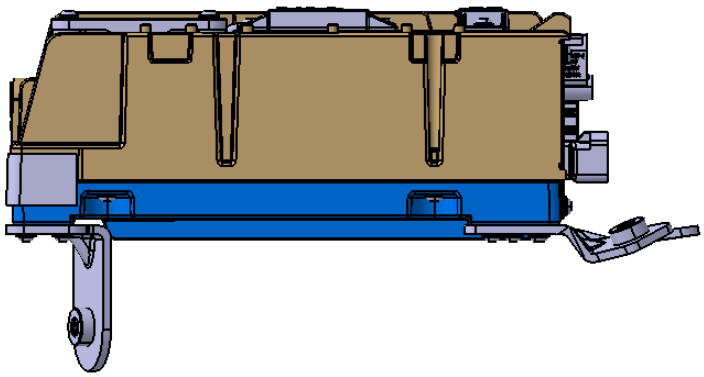


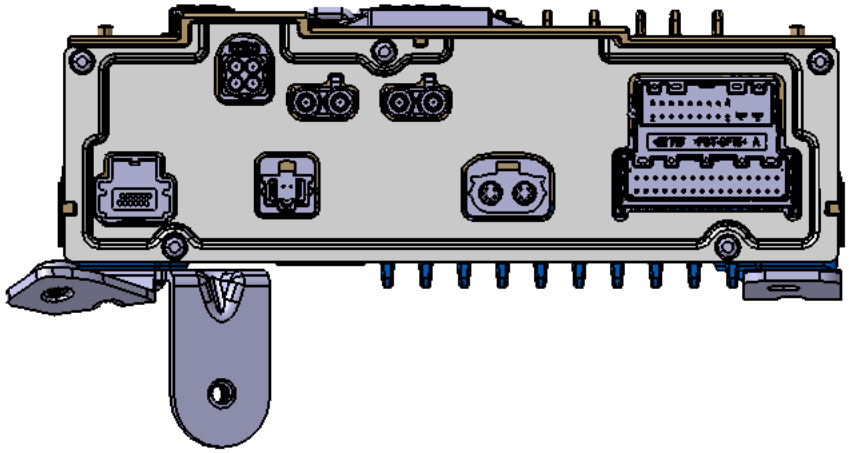
3.2 Architecture Design

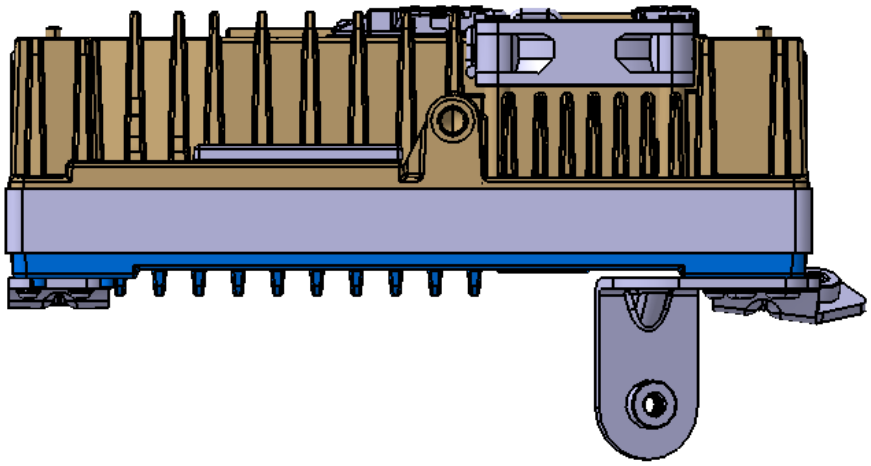


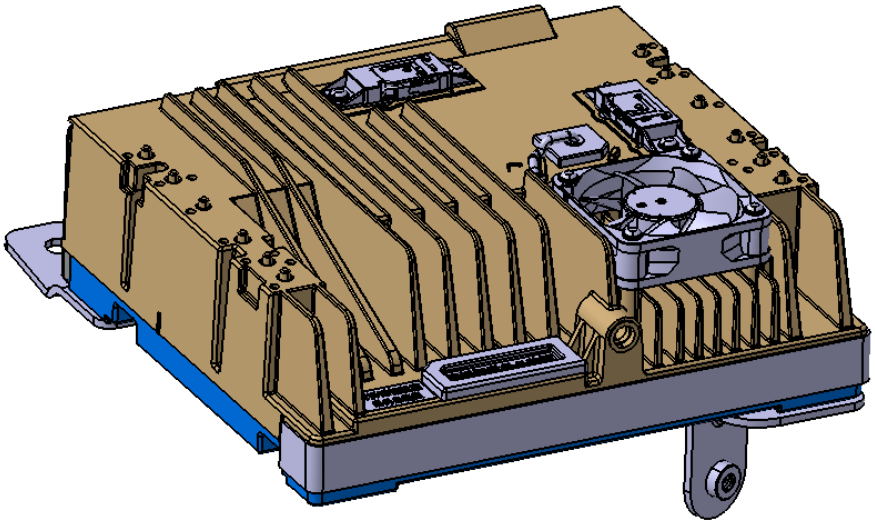


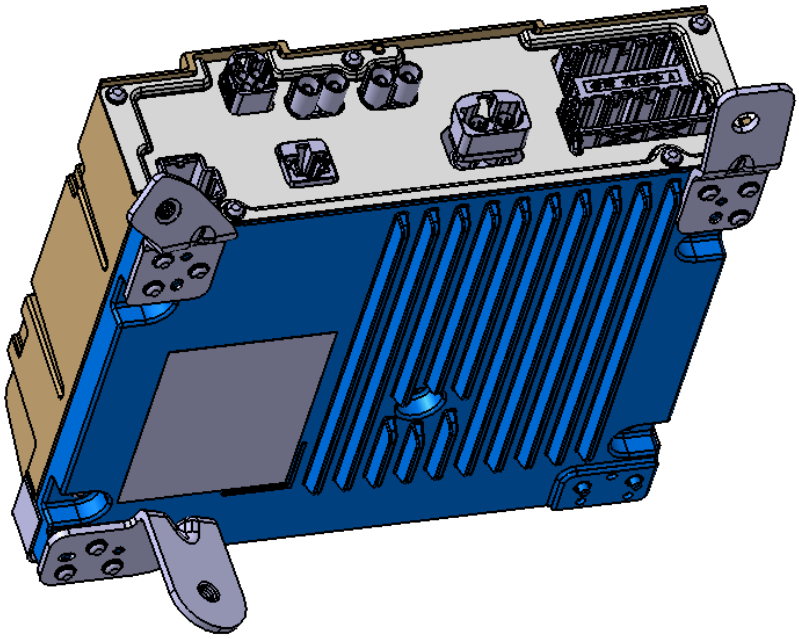




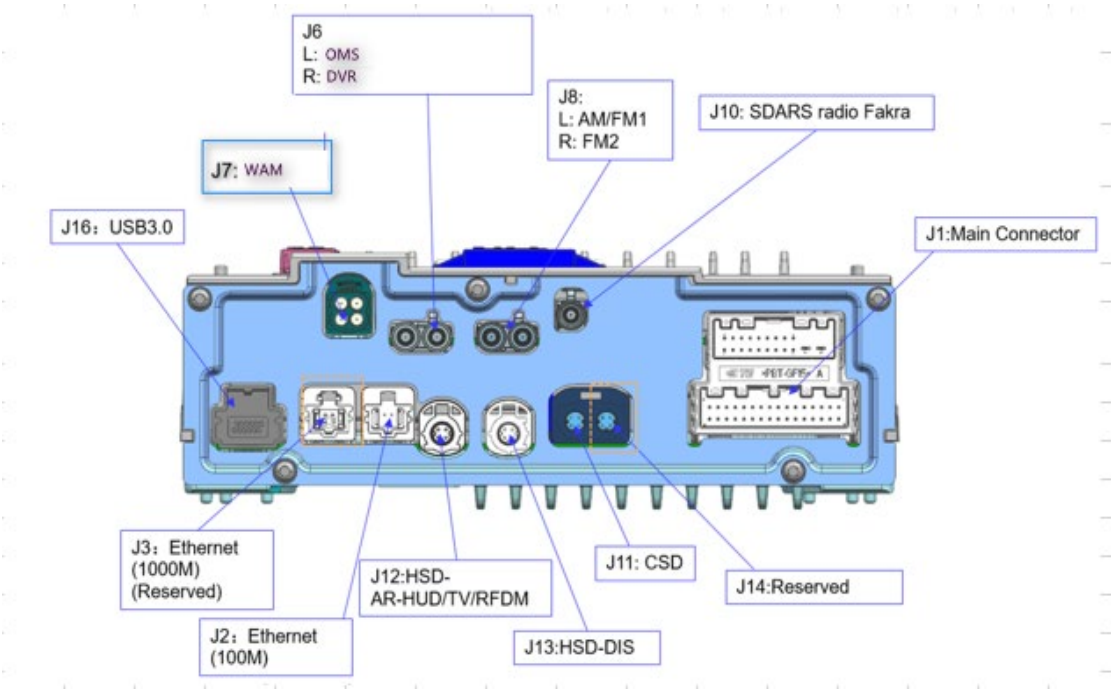








3.2.1 Interface Definition Description



3.2.2 Product Size

Size: 197.1mm*196.8mm*103.6mm (including bracket);

Weight: 1236 ± 50g

3.2.3 Installation Requirements

- Keep the BT/WIFI antenna side at least 50 mm away from the metal parts of the body.
- Keep an operating space of at least 50 mm on the connector side to facilitate the bending of the wire harness.
- Keep at least 35 mm of natural convection space on both sides of the host to ensure enough space for heat dissipation. If the requirements cannot be met, be sure to use a convection vent.
- To ensure the effect of the cooling fins, make sure that the intersecting angle between the Z' axis of the host and the Z axis of the car remains square, no more than ±90°.
- It is recommended to keep the host away from the air conditioning duct, as the size of the cooling hole is 2.6mm and has three side openings. There is no way to guarantee it will not be damaged by water.
- This device should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

4 Electrical Characteristics

Temperature and humidity requirements

Temperature range:

Operating temperature: -40°C ~ 85°C

Storage temperature: -40°C ~ 85°C

Low temperature storage: 24 hours at -40°C

High temperature storage: 504 hours at 85°C

Relative humidity: 5% ~ 80%

4.1 Product Operating Voltage and Power Consumption

Product operating voltage	Static power consumption	Normal power consumption
9-14V	≤0.2 mA	＜5 A

5 RF

5.1 Bluetooth Module

Equipped with Bluetooth v4.2, compatible with 1.X, 2.X+EDR, BT 3.X. BT4.0 and BT4.1, with an operating frequency bandwidth of 2.4G. Supporting GFSK π/4-DQPSK and 8-DPSK in modulation mode. See the figure below for the

parameters (The test data is the actual test value):

Bluetooth (2402–2480 MHz): 9.05 dBm
Bluetooth Low Energy (2402–2480 MHz): 5.06 dBm

5.2 WIFI Module

Dual frequency; 2.4G and 5G; frequency bandwidth: 2400–2483.5 MHz; 5725-5850 MHz. Allowing 802.11a/b/g/n/ac protocol; supporting CCK/OFDM/BPSK/QPSK/64QAM/QPSK in modulation mode. See the table below for details: (The test data is the actual test value)
WLAN RF Characteristics:

Wi-Fi 2.4 GHz (2412–2472 MHz): 19.83 dBm
Wi-Fi 5 GHz (5745–5825 MHz): 13.93 dBm

6 Statement

FCC	**FCC Statement** Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)This device may not cause harmful interference, and (2)this device must accept any interference received, including interference that may cause undesired operation. RF Exposure Information: The radiated output power of this device meets the limits of FCC/ISED radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm between the equipment and a person's body.

ISED	**ISED Statement** This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: (1)This device may not cause interference. (2)This device must accept any interference, including interference that may cause undesired operation of the device. This equipment complies with Industry Canada radiation exposure limits set forth for an uncontrolled environment. Le présentappareilestconformeaux CNR d'IndustrieCanada applicablesaux appareilsradio exempts de licence. L'exploitationestautoriséeaux deuxconditions suivantes: (1)l'appareilne doitpas produirede brouillage. (2)l'utilisateurde l'appareildoitaccepter tout brouillageradioélectriquesubi, mêmesile brouillageestsusceptible d'encompromettrele fonctionnement. The radiated output power of this device meets the limits of FCC/ISED radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm between the equipment and a person's body. La puissance de sortie rayonnée de cet appareil est conforme aux limites de la FCC/ISED limites d'exposition aux fréquences radio. Cet appareil doit être utilisé avec une distance minimale de séparation de 20 cm entre l'appareil et le corps d'une personne.