



DB-SECC-AC-605A

Product Specification

1.0.6

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[DB-xxxxxxx] ([Development Status][x]), ref [DB-yyyyyyy] ([Development Status][y])

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U.S. Patent No. x,xxx,xxx, y,yyy,yyy. Canadian Patent No. xx,xxx,xxx, and so on. Other relevant patent grants may also exist.

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1 OVERVIEW

The **DB-SECC-AC-605A** is designed to upgrade conventional AC EV chargers into fully ISO 15118-compliant smart chargers.

It consists of two main components: the DB2605 EV Charging Controller, which manages ISO 15118-2/20 digital communication and charging sessions, and a baseboard, which provides the necessary circuitry including Control Pilot/PE interfaces, RS232 communication with other system units, and essential power management. Together, these components enable seamless integration of smart charging capabilities into existing IEC 61851(SAE J1772/IEC 62196-2) PWM signal chargers, ensuring interoperability, automation, and compliance with international standards.

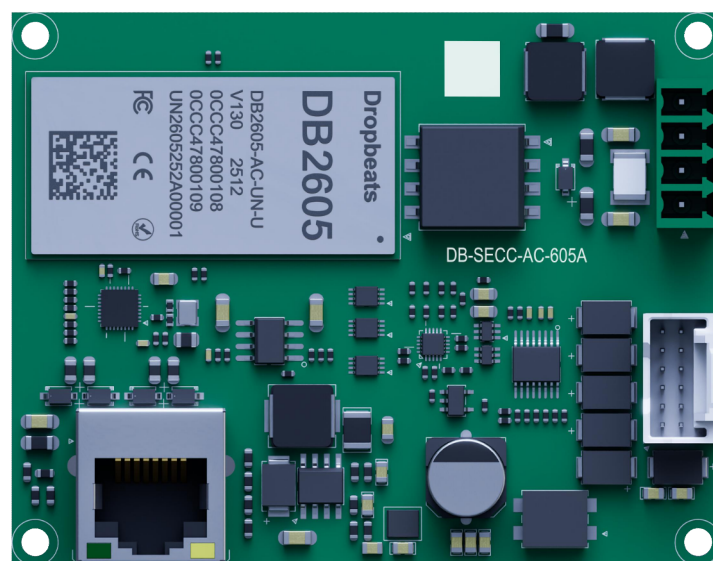


Figure 1: Image of DB-SECC-AC-605A

The baseboard additionally converts the DB2605's TTL signals to RS232 for system communication, provides controlled power management functions including enabling and disabling the DB2605 via predefined commands, and offers an RJ45 connector reserved for future expansion. The Control Pilot and PE interfaces ensure proper signaling and safety compliance, while the integrated circuitry supports reliable and efficient power delivery throughout the charging process.

As the DB-SECC-AC-605A integrates the DB2605 EV Charging Controller, the communication protocol between the DB-SECC-AC-605A and the Charging Control Unit(CCU) shall follow the specifications defined in the DB2605 technical documentation. For implementation details related to sleep mode and power-consumption management, please refer to the dedicated DB-SECC-AC-605A power-management documentation.

References:

- [1]. DB2605 EV Charging Controller Communication Matrix
- [2]. DB2605 EV Charging Controller Communication Protocol
- [3]. DB2605 EV Charging Controller Firmware Upgrade Programming Guide
- [4]. DB-SECC-AC-605 Communication Protocol Extension

For detailed communication protocol documents, please contact Dropbeats Technology.

1.1 DB2605 Features

The DB2605 is the core unit supporting ISO 15118-2/20 charging.

- Compatible with ISO 15118-3
- Support ISO 15118-2 AC charging, including both EIM (External Identification Means) and PnC (Plug & Charge)
- Support ISO 15118-20 AC discharging(BPT, Bidirectional Power Transfer), including both EIM (External Identification Means) and PnC (Plug & Charge)
- Security certification: CC EAL4+ (HW + JCOP), FIPS 140-2 L3
- ECC crypto curves: ECC NIST (192 to 521 bit)/ed448
- Secure key storage: up to 50k bytes

1.2 Baseboard Features

The baseboard implements ISO 15118 charging circuitry, CP/PE signaling, RS232 system interfacing, and power management.

- Offers Control Pilot and PE interfaces for charging communication.
- Offers RS232 signals for communication with other system units.
- Offers power management, allowing the DB2605 to be turned on or off through predefined commands.
- Includes an RJ45 connector designated for future expansion.

2 DESCRIPTION

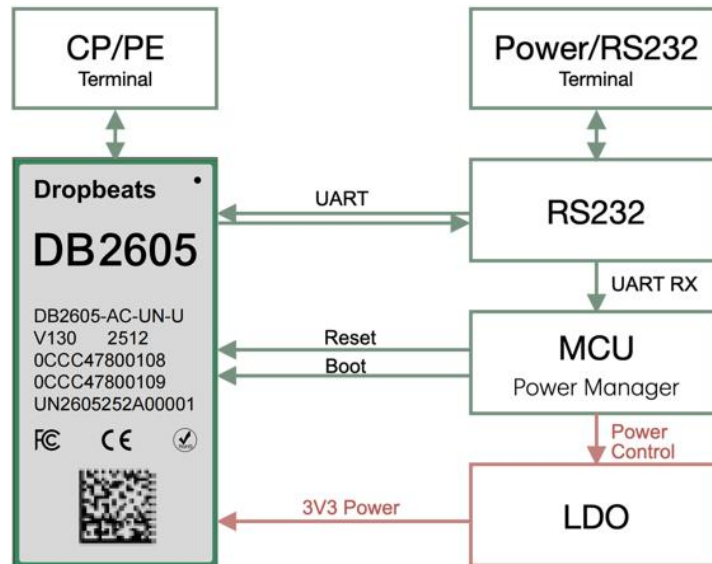


Figure 2: Function Block Diagram of DB-SECC-AC-605A

The DB-SECC-AC-605A has two terminals, JP1 and JP2, for interfacing with external signals.

JP1 provides power and serial communication interfaces. It includes one power input group (9 – 16 V), one RS232 communication port for interfacing with the user’s charging control board (CCU), and one RS232 port for debugging purposes.

JP2 carries the CP/PE signals, consisting of four wires: CP_IN, PE_IN, CP_OUT, and PE_OUT. Each IN and OUT wire is equipped with a LISN (Line Impedance Stabilization Network) to ensure PLC signal integrity. During use, the CP wire from the user’s existing charging board should be connected to CP_IN, and CP_OUT should be connected directly to the CP wire of the charging cable. For the PE wires, it is recommended that PE_IN remain unconnected, while PE_OUT should be connected to the grounding point of the charging cable.

The DB-SECC-AC-605A features power management functionality. When the low-power MCU receives a specific sleep command (via RS232), it shuts down the LDO output to reduce power consumption. When operation is required, the MCU receives an activation command (via RS232), restarts the LDO output, and powers the DB2605, allowing it to operate normally.

Notes:

RS232 Setting (Default): 115200, N, 8, 1.

3 INTERFACE

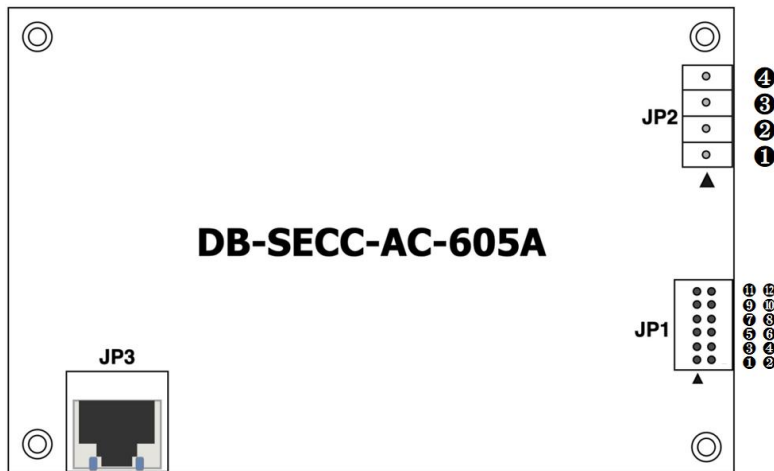


Figure 3: Interfaces of DB-SECC-AC-605A Product

3.1 JP1 Connector

Pin	Name	Description
1	DC+	12VDC Power Supply, input
2	GND	Power GND
3	/	Reserved
4	/	Reserved
5	DBG_RS232_TX	Debugging, RS232 Data Transmitter
6	DBG_RS232_RX	Debugging, RS232 Data Receiver
7	GND	Digital Ground
8	GND	Digital Ground
9	COM_RS232_TX	Charging Communication , RS232 Data Transmitter
10	COM_RS232_RX	Charging Communication , RS232 Data Receiver
11	GND	Digital Ground
12	GND	Digital Ground

3.2 JP2 Connector

Pin	Name	Description
1	PE_OUT	Protect Earth, from charging cable.
2	CP_OUT	PLC Control Pilot Output
3	CP_IN	PLC Control Pilot Input
4	PE_IN	Protect Earth, Input, from charging cable.

3.3 JP3 Connector

Pin	Name	Description
1	ETH	Reserved, Ethernet for Charging Communication, 10/100M

4 MECHANICAL DIMENSIONS

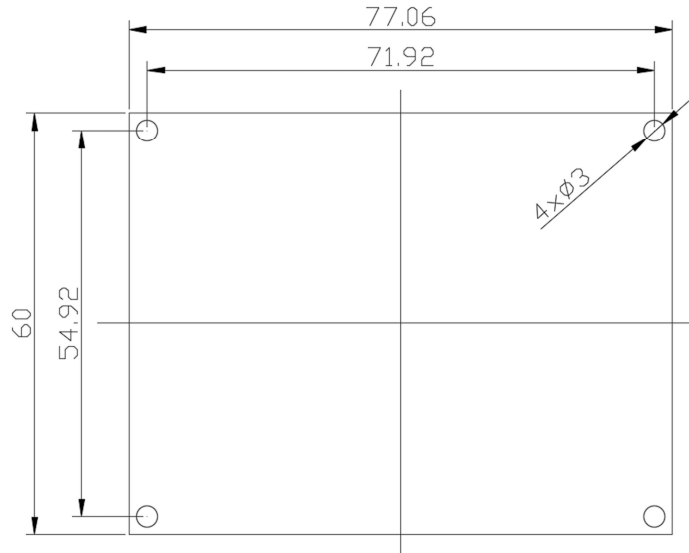


Figure 4: DB-SECC-AC-605A product Dimensions

Notes:

1. All dimensions are in mm.
2. The four mounting screws are standard M3 screws.

5 ELECTRICAL CHARACTERISTICS

5.1 Recommended operating condition

SUPPLY PARAMETER	MIN	TYP	MAX	UNIT
DC supply voltage	+9	+12	+16	V
Power Consumption(max)	500mA@12V			

5.2 Physical Feature

Feature	Description	
Operation Temperature	-40 ⁰ C +85 ⁰ C	
Dimensions (L*W*H)	77mm*60mm*19mm	
Protection Class	Housing IP40	
Assembly	PCB mounted	
Header and Connectors	JP1	PCB Header: Molex 501645-1220, 12pin.
		Connector: Molex 501646-1000, 12pin.
	JP2	PCB Header: KF2EDGV-Y-3.81mm-04P
		Connector: KF2EDG-Y-3.81mm-04P
JP3	RJ45 Ethernet Connector	

6 APPLICATION EXAMPLE

6.1 Typical wiring with a AC Charging Control Unit

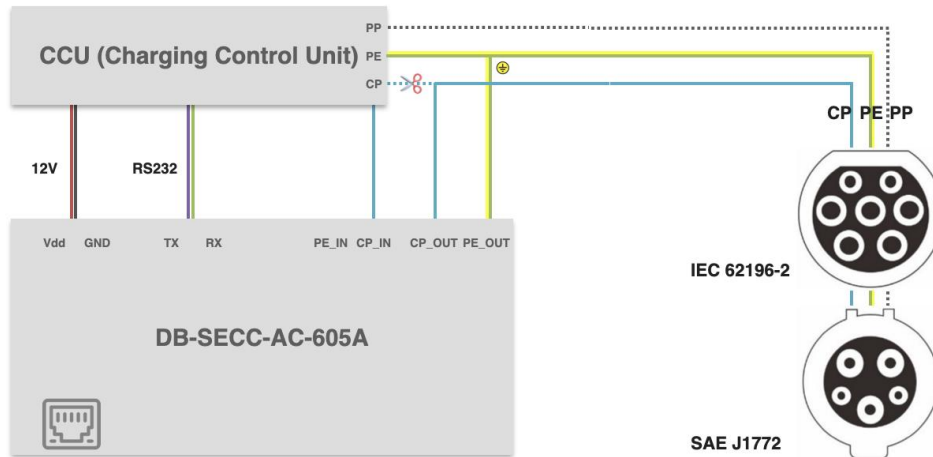


Figure 5: Typical wiring with a AC Charging Control Unit

Notes:

1. The IEC 61851-1 Functionality is enabled in the CCU.
2. The CP (Control Pilot) wire from the charging cable is directly connected to the CP_OUT terminal on the DB-SECC-AC-605A, rather than to the CP terminal on the CCU; The CP_IN terminal on the DB-SECC-AC-605A is connected to the CP terminal on the CCU using an additional CP wire.
3. The RS232 interface is the main communication way between DB-SECC-AC-605A and the CCU.
4. The CCU supplies 12 V / 500 mA power to the DB-SECC-AC-605A.
5. The reserved Ethernet port does not need to be connected.

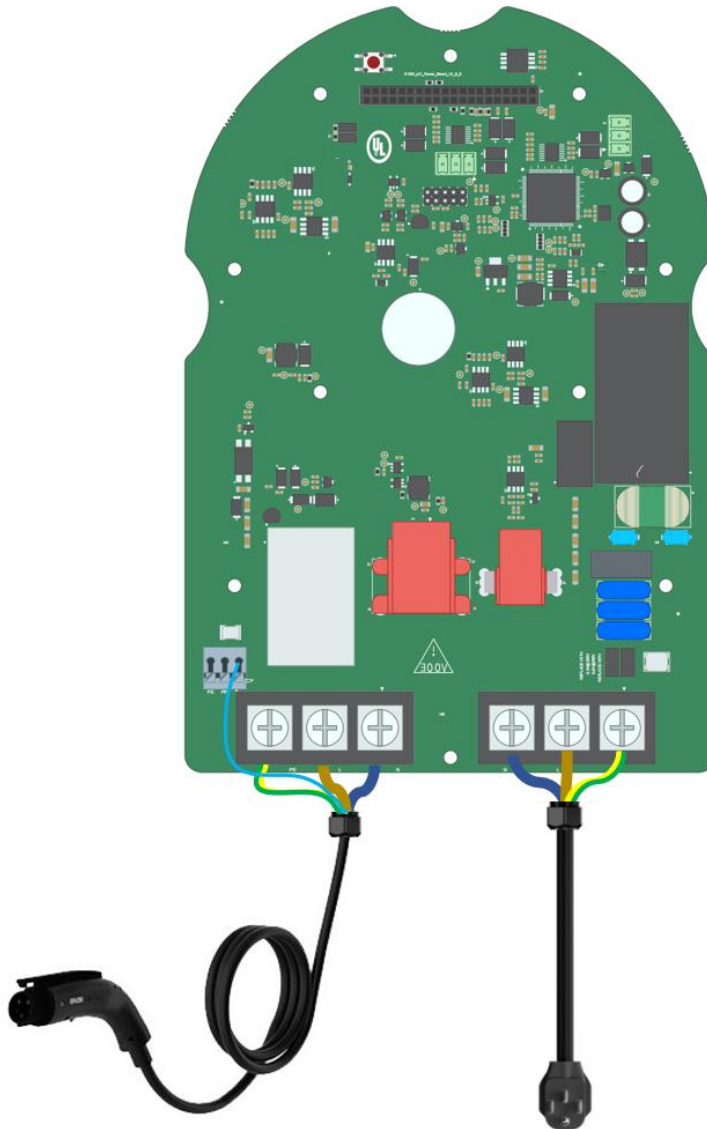


7 ORDER INFORMATION

Order Code	HW	SW
DB-SECC-AC-605A	1.1.0	ISO15118-2/20 AC

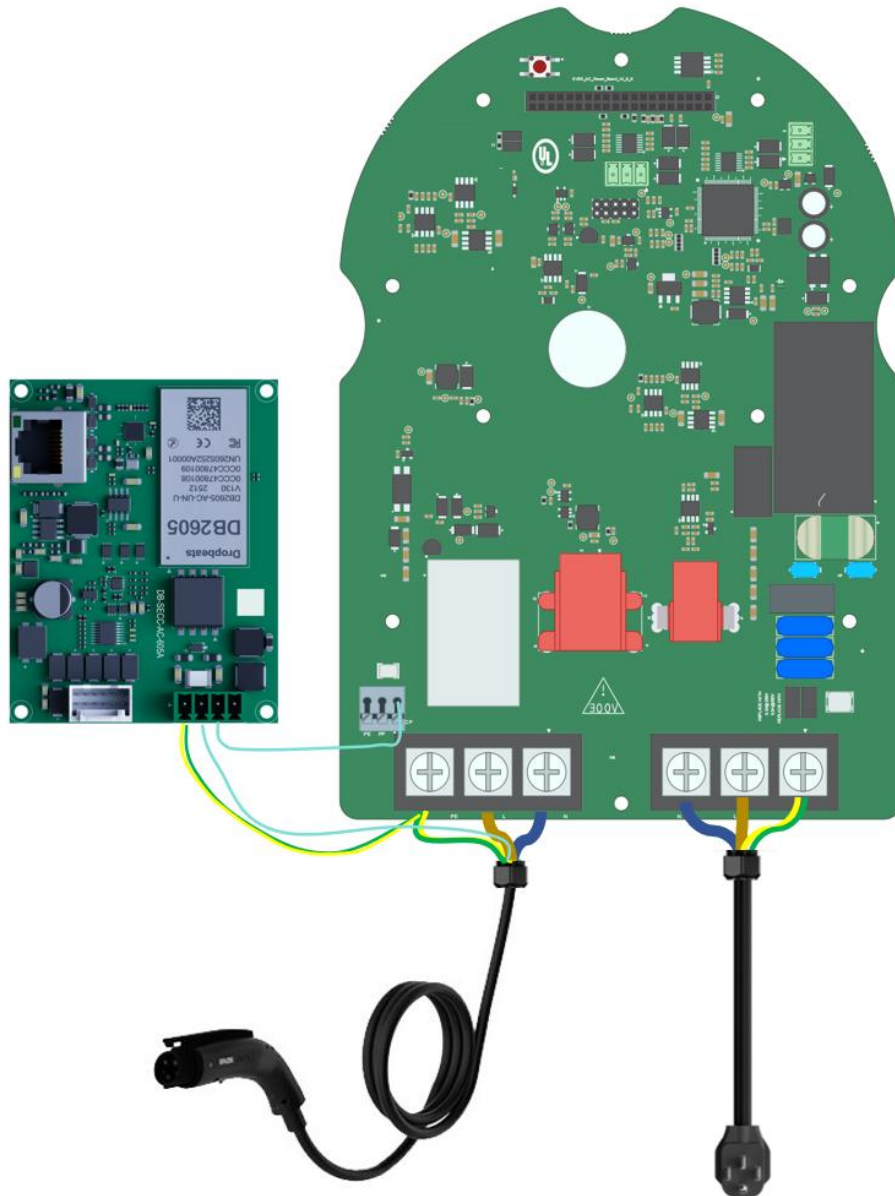
Appendix A CP/PE Wiring

A: The typical AC Charger without ISO 15118 digital communication support



Notes

- 1: The CP wire of the charging gun cable is directly connected to the CP terminal on the charging control unit.
- 2: The PE wire is connected to the PE terminal on the charging control unit.

B: AC Charger with ISO 15118 digital communication support**Notes**

- 1: The CP wire of the charging gun cable is connected to the CP_OUT terminal on the DB-SECC-AC-605A.
- 2: The CP wire from the CP_IN terminal on the DB-SECC-AC-605A is connected to the CP terminal on the charging control unit.
- 3: The PE wire of the charging gun cable is connected to the PE terminal on the charging control unit and at the same time to the PE_OUT terminal on the DB-SECC-AC-605A.

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Revision History

Revision	Date	Descriptions
1.0.0	2025.4.24	Initial
1.0.1	2025.5.31	Updated Image.
1.0.2	2025.6.31	Updated Image.
1.0.3	2025.7.31	Updated form factor.
1.0.4	2025.10.31	Updated Descriptions.
1.0.5	2025.11.08	Added Communication Protocol Information.
1.0.6	2025.11.16	Added CP/PE Wiring (Appendix A).