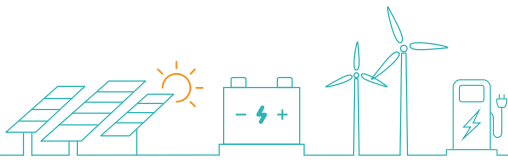# NOVOSENSE

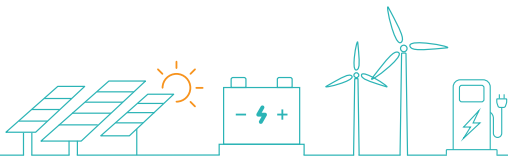# Renewable Energy & Power Supply Application Solution

NOVOSENSE: Highly Robust and Reliable Analog and Mixed Signal Chip Company

NOVOSENSE Microelectronics (NOVOSENSE, SSE Stock Code 688052) is a highly robust & reliable analog and mixed signal chip company. Since its establishment in 2013, the company has been focusing on sensor, signal chain, and power management, providing comprehensive semiconductor products and solutions, which are widely used in automotive, industrial, information communication and consumer electronics markets.

With the mission of "Sense & Drive the Future, Build a Green, Smart and Connected World with Semiconductors", the company is committed to providing chip-level solutions to link the digital world and the real world.

For more information and sample application, please visit: **www.novosns.com**

Renewable Energy & Power Supply Application overview

Renewable Energy and Power Supply Application	Digital Isolator	CAN	Isolated Driver	Non-isolated Driver	Isolated Power	Motor Driver	LDO	Isolated Sensing	Hall Current Sensor	Operational Amplifier	Temperature Sensor	Volatge Reference	Supervisor & Reset IC	Power Device
String Inverter	√	√	√	√			√	√	√	√	√	√	√	√
Micro Inverter	√	√	√	√	√		√	√	√	√				√
Residential Storage Inverter	√	√	√	√			√	√	√	√	√	√	√	√
PCS	√	√	√	√		√	√	√	√	√		√	√	
Portable Power Station	√	√	√	√			√	√	√	√	√			√
Control Panel Solution of DC Charger	√	√			√		√	√		√				
Power Module	√	√	√	√	√	√	√	√	√	√	√	√	√	√
UPS	√	√	√	√			√	√	√	√	√	√		√
AC-DC Power Supply (Communication and Server Power Supply)	√	√	√	√			√	√	√	√	√	√	√	√
DC-DC Power Supply (Industrial Power Supply, Power Module)	√	√	√	√			√	√	√	√	√			√
Adapter Power Supply	√		√	√										

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NOVOSENSE
PV System Solution
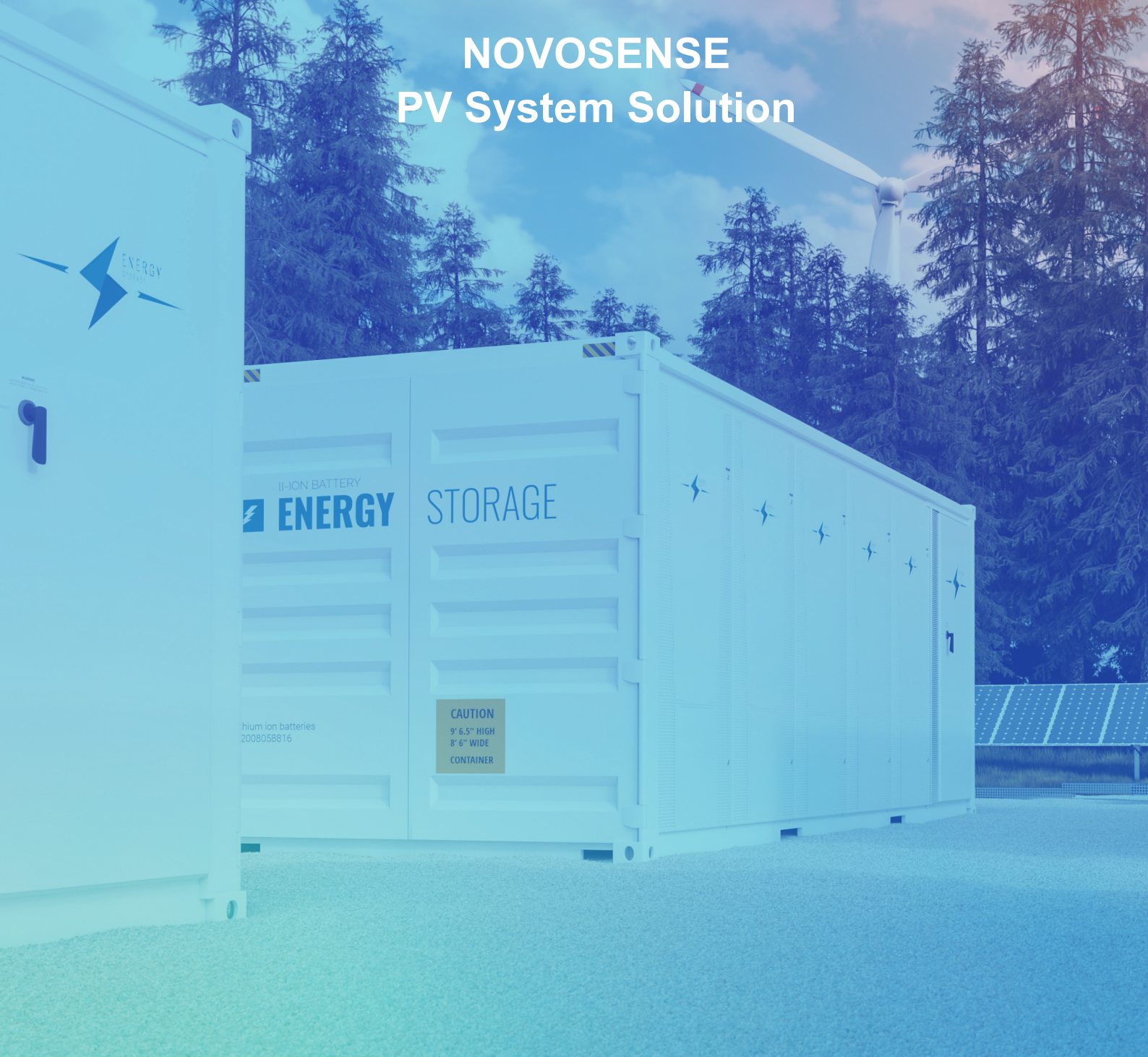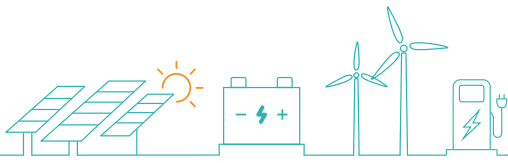
String Inverter

The string PV inverter is currently the most popular inverter type.Its composition is as follows: the first DC-DC stage converts the DC voltage from the PV module to a fixed DC voltage while doing Maximum Power Point Tracking (MPPT), and the second DC-AC stage converts the DC power supply to an AC power supply.
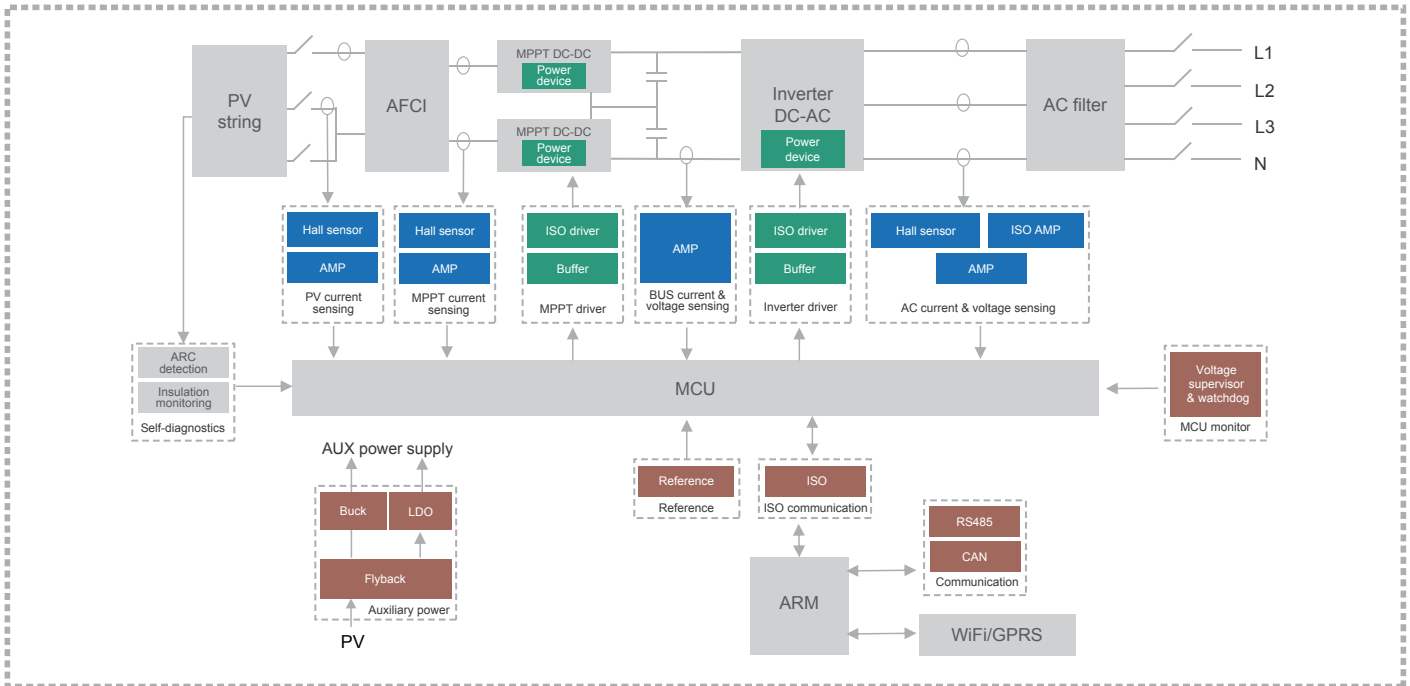
Current & voltage & temperature sensing
- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)
- Temperature sensing (NST235, NST20, NST1001, NST1002)

Gate driver & Buffer
- Isolated single-channel driver (NSI6601, NSI6601M, NSI6801, NSI6801M)
- Buffer (NCA8244)

Power device
- 1200V family of SiC Diode (NPD0x0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0x0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73mohm)

Power management
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Interface & digital isolation
- CAN transceiver (NCA1043(B), NCA1042B, NSI1050, NSI1042)
- Digital isolator (NSI824x)
- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)

Protection & reference & others
- Reference (NSREF30xx, NSREF31xx)
- Voltage supervisor (NSR7808, NSD7850)

NOVOSENSE
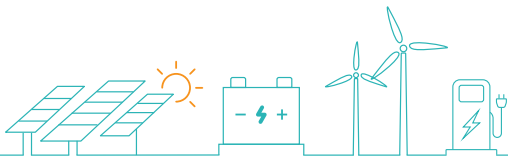
Micro Inverter

Micro inverter performs maximum power point tracking at the module level. It directly integrates the individual PV module with the inverter. The AC/DC conversion and maximum power tracking functions of each module can be performed independently, thus maximizing the overall output power.
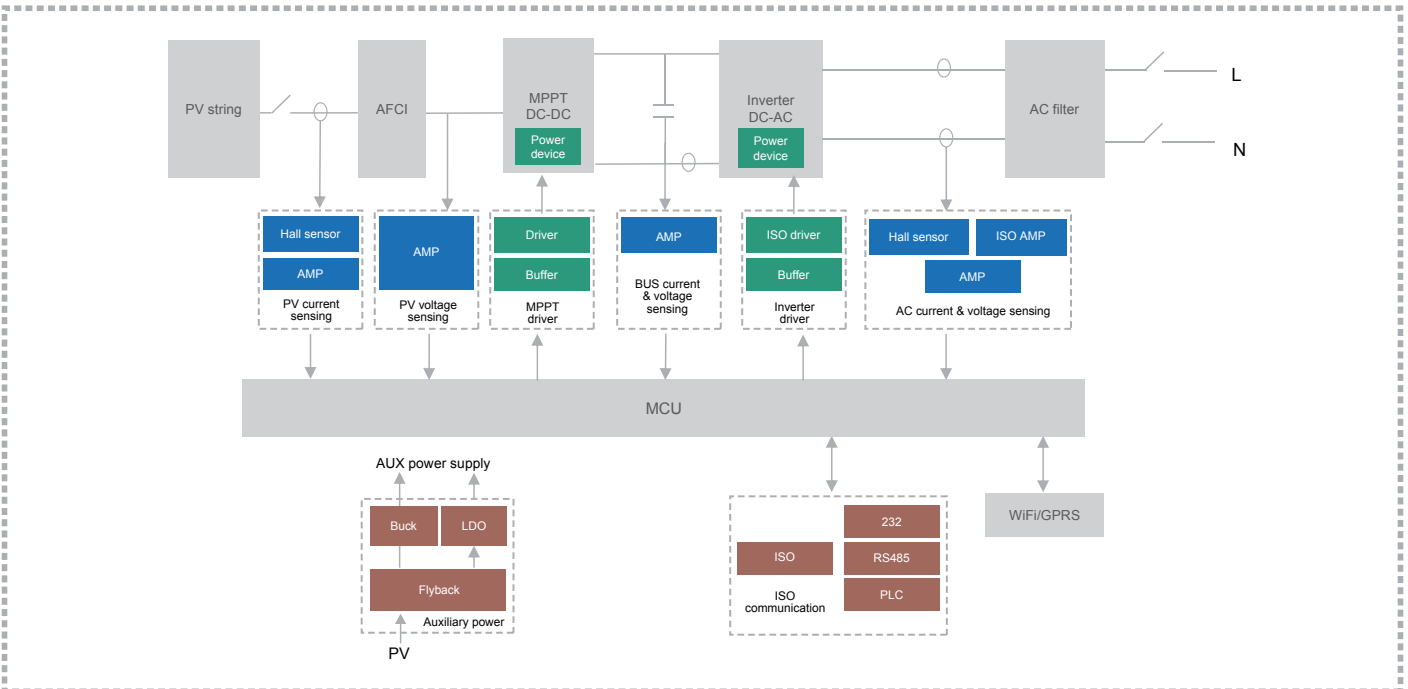
Current & voltage sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)

Gate driver & Buffer

- Isolated driver (NSI6602V, NSI6601, NSI6601M, NSI6801, NSI6801M)
- Non-isolated driver (NSD1026V, NSD1624, NSD262x, NSD1224)
- Buffer (NCA8244)

Power device

- 1200V family of SiC Diode (NPD0x0N120A,1200V, 20/30/40/50A)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 73/190mohm)
- 650V family of IGBT (NPI0x0N065A 650V, 30A)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114XX, NSR1103x)

Interface & digital isolation

- Digital isolator (NSI824x, NIRS31, NIRS21)
- Isolated power ((NSIP884x, NSIP894x)
- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)
- CAN transceiver (NCA1051A, NCA1042B, NSIP1042, NSI1050, NSI1042)

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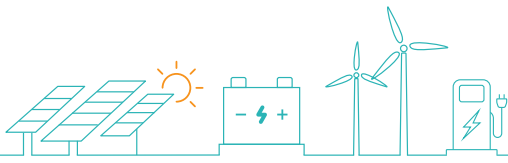
Residential Storage Inverter

The energy storage inverter is the core equipment of the residential energy storage system. It realizes the AC-DC conversion between the battery and the grid as well as the load side, enabling not only the charging and discharging control of the energy storage battery but also the control of power transmission to the grid. In addition, the energy storage inverter is also the information processing control center of the residential energy storage system. It needs to process various information from the rooftop photovoltaic power generation side, the residential energy-consuming load side, and the storage battery power side, and formulates control strategies according to different application scenarios.
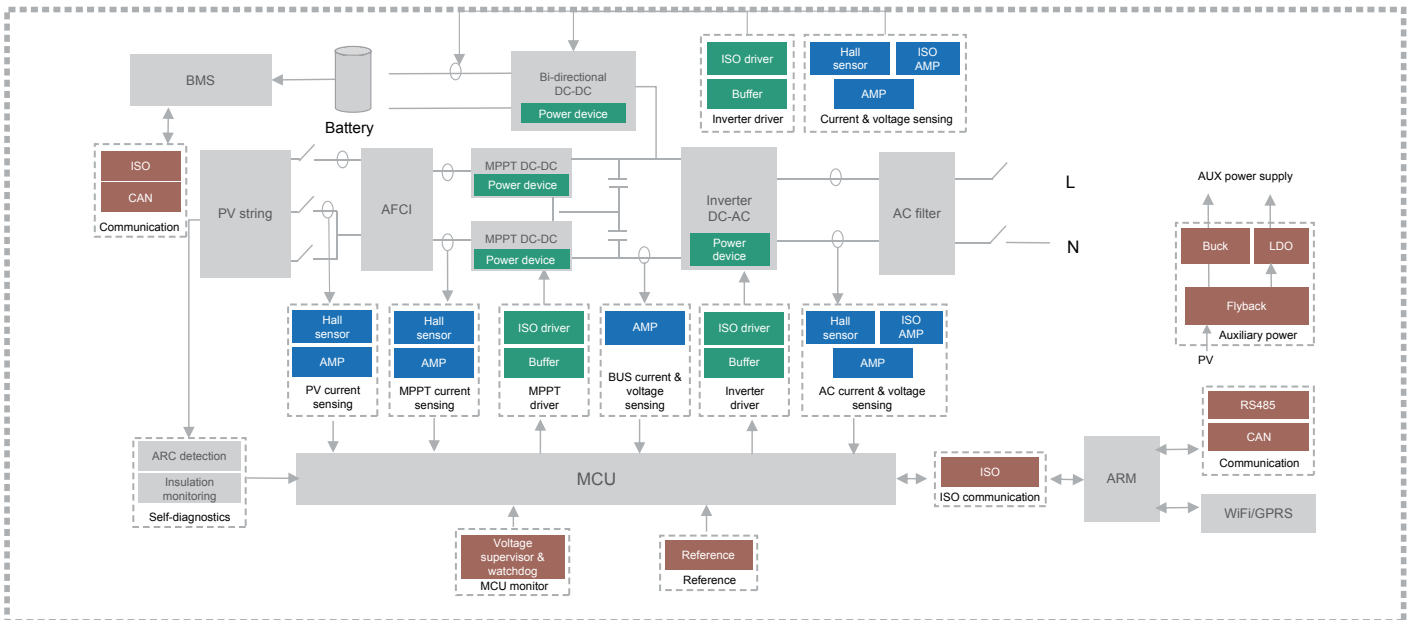
Current & voltage & temperature & humidity sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- Temperature & humidity sensor (NST1002, NSHT3x）

Gate driver & Buffer

- Isolated single-channel driver (NSI6601, NSI6601M, NSI6801, NSI6801M)
- Isolated half bridge driver (NSI6602V)
- Buffer (NCA8244)

Power device

- 1200V family of SiC Diode (NPD0x0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0x0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73mohm)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Protection & reference

- Reference (NSREF30xx, NSREF31xx)
- Voltage supervisor (NSR7808, NSD7850)

Interface & digital isolation

- Digital isolator (NSI824x)
- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)
- CAN transceiver (NCA1043(B), NCA1042B, NSI1050, NSI1042)
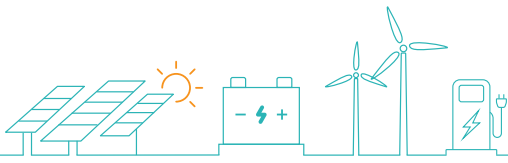
PCS

PCS is the core device of the energy storage system. It is a bidirectional energy conversion device that can control the charging and discharging process of the energy storage system and also realize the bidirectional conversion of AC and DC. It can directly supply power to the load when there is no grid, and also can adjust the active power and reactive power of the grid in the case of grid connection.
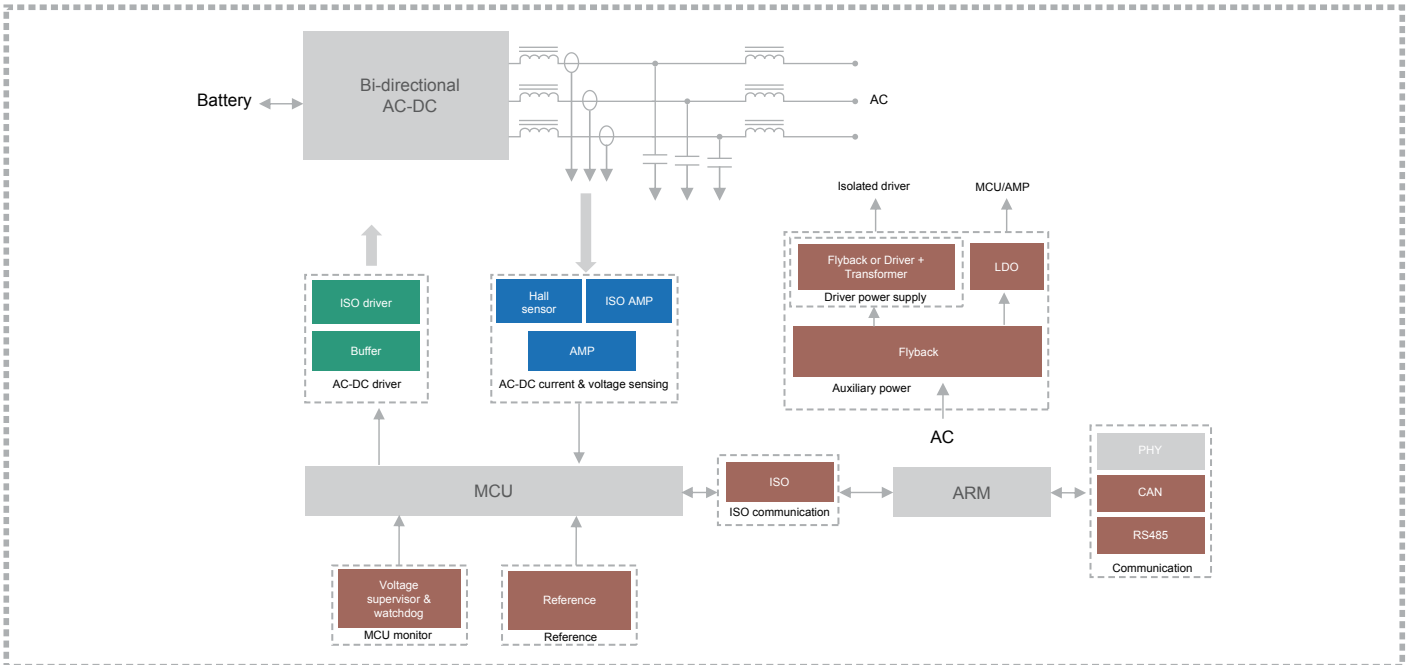
Current & voltage & temperature sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)

Gate driver & motor driver & Buffer

- Isolated single-channel driver (NSI6601, NSI6801, NSI6611, NSI6851)
- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1026V)
- Motor driver (NSD7312)
- Buffer (NCA8244)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Interface & digital isolation

- Digital isolator (NSI82xx)
- RS485 (NSI83008xE, NCA3176, NSI83086)
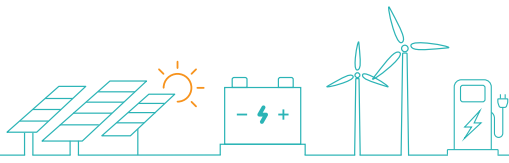- CAN transceiver (NCA1051A, NCA1042B2, NSI1042)

Protection & reference & others

- Reference (NSREF30xx, NSREF31xx)
- Voltage supervisor (NSR7808, NSD7850)

NOVOSENSE Portable Power Station Solution

Portable Power Station

Portable Power Station is a small energy storage system that uses built-in lithium-ion batteries with high energy density to provide a stable AC and DC output. Equipped with AC, DC, Type-C, USB, PD and other interfaces, it can be matched with mainstream electronic devices in the market. It can also be used in combination with solar panels, suitable for applications that require portable power.
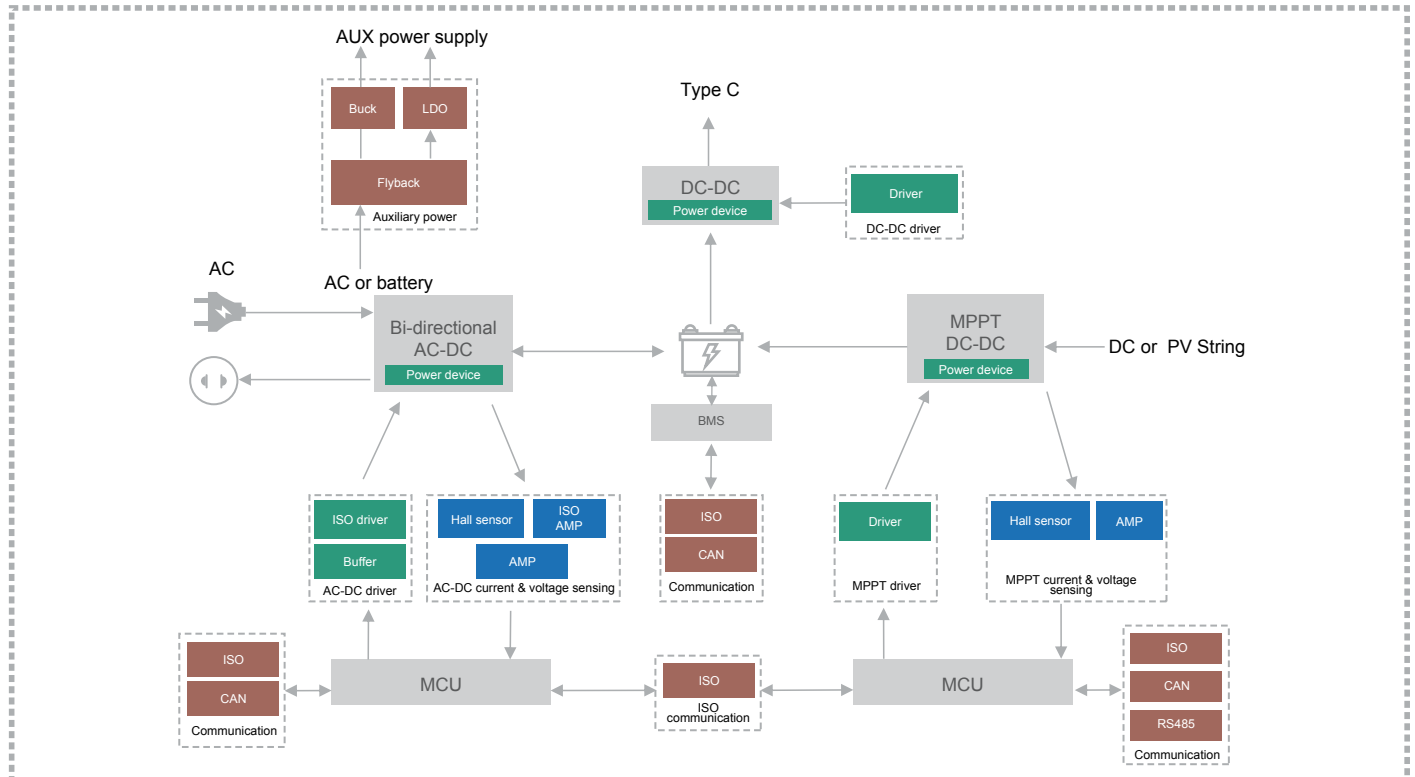
Current & voltage & temperature & humidity sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- Temperature & humidity sensor (NST1002, NSHT3x)

Gate driver & Buffer

- Isolated single-channel driver (NSI6601, NSI6801, NSI6601M, NSI6801M)
- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1624, NSD1026V, NSD262x)
- Buffer (NCA8244)

Power device

- 1200V family of SiC Diode (NPD0x0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0x0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73/190mohm)
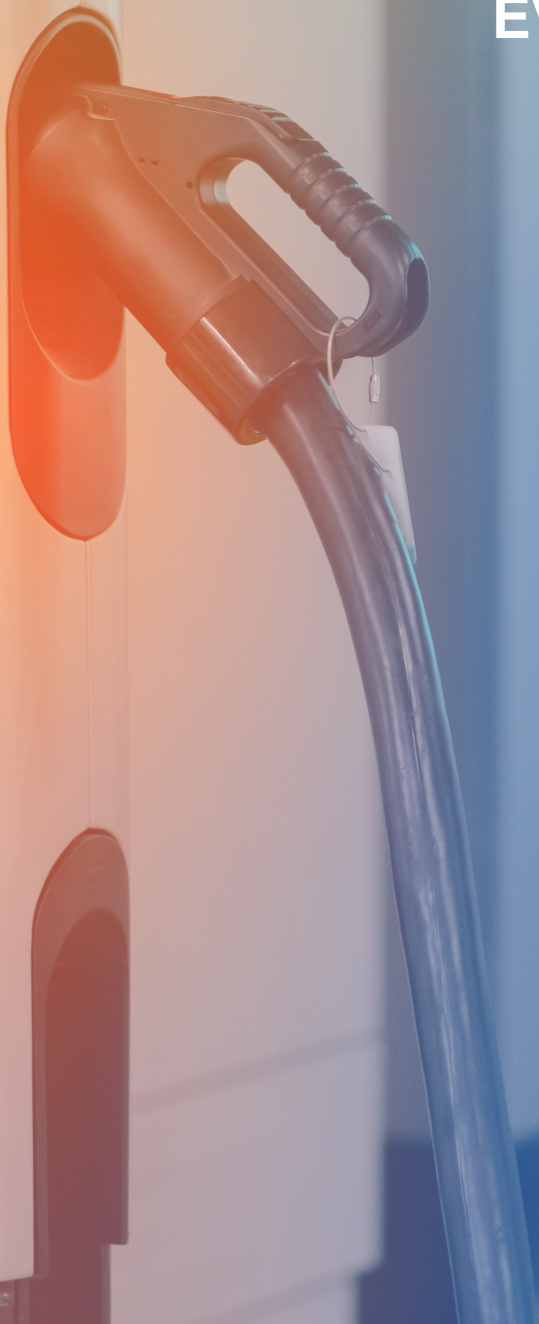
Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)
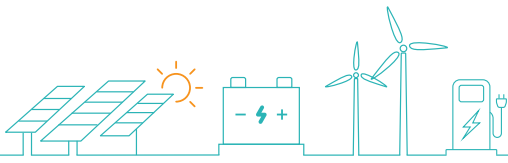
Interface & digital isolation

- Digital isolator (NSI824x)
- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)
- CAN transceiver (NCA1043(B), NCA1042B, NSI1050, NSI1042)
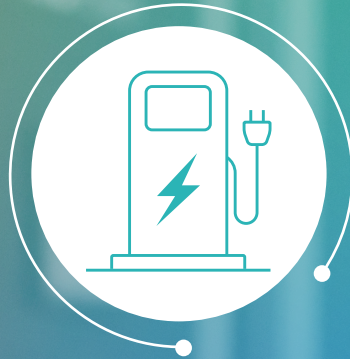
NOVOSENSE
EV Charger Solution

Control Panel Solution of DC Charger

The control system is the brain of the DC charger, controlling the operation and data of the entire charger. It manages the charging process, monitors the operating status, and reports any malfunction or damage. It also records usage logs to help maintenance personnel analyze problems and optimize the performance of the charger.
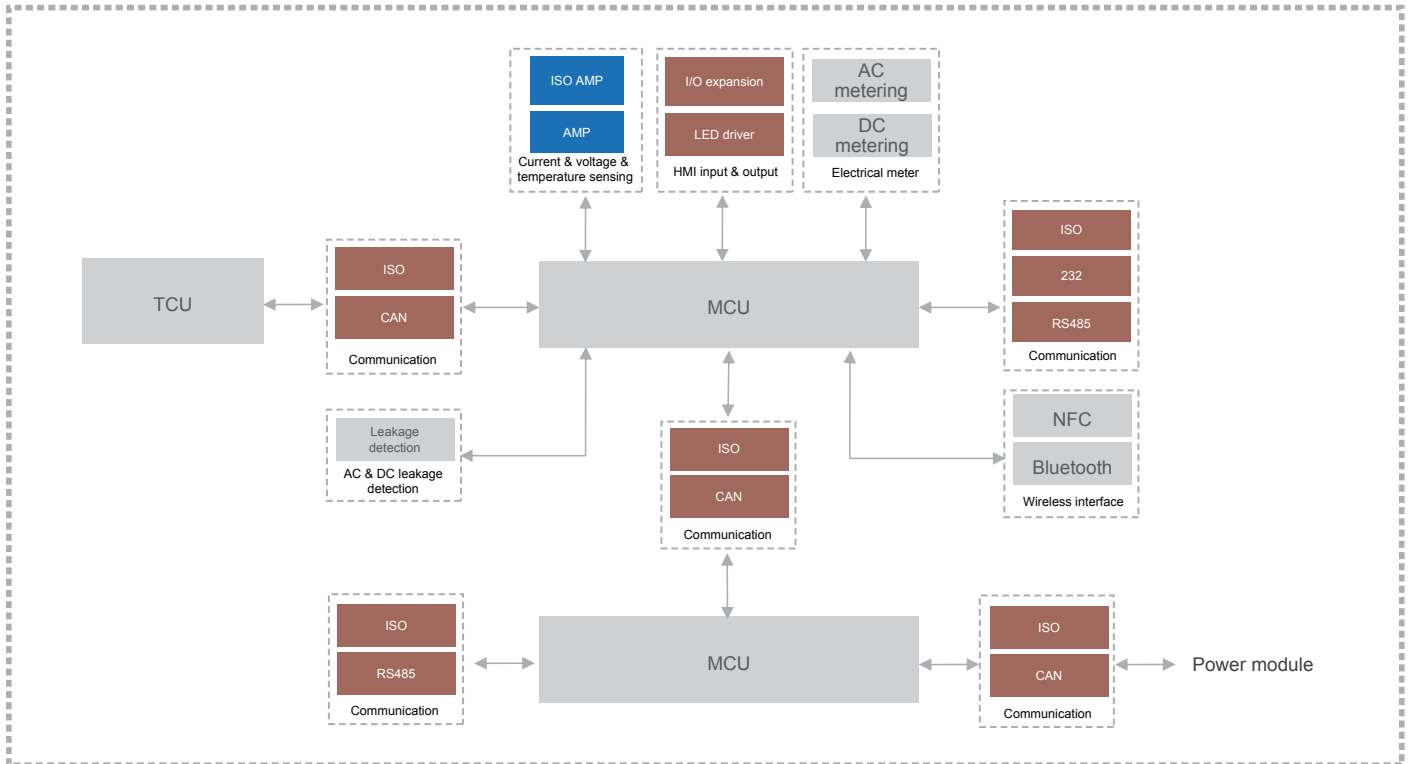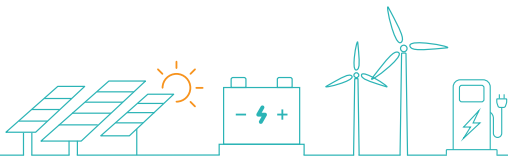

Current & voltage sensing
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)

Interface & digital isolation
- Digital isolator (NSI824x, NIRS31, NIRS21)
- Isolated power ((NSIP884x, NSIP894x)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
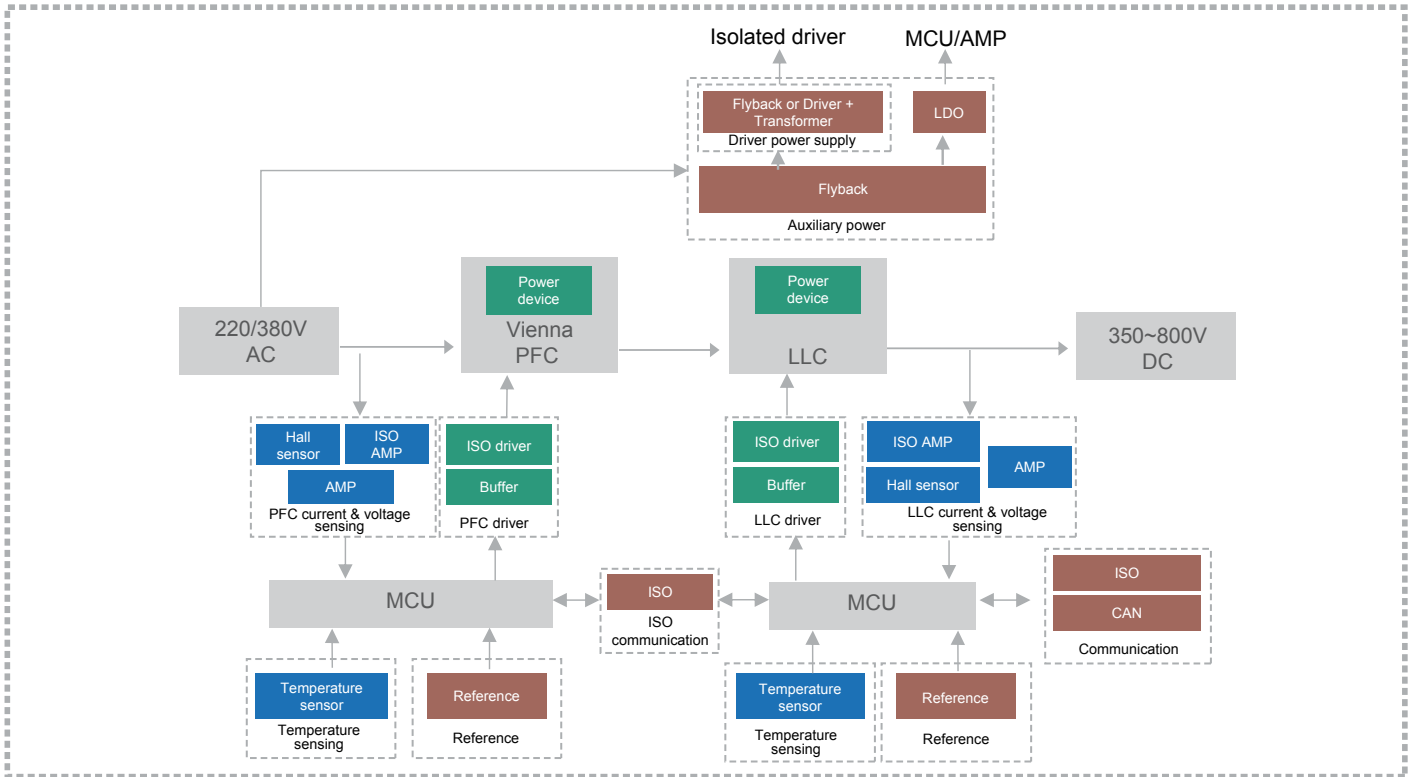- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)

Others
- I/O expander (NCA9555)

Power Module

The main role of the charger power module is to convert the AC utility power to DC power, and at the same time, deliver the specified current and voltage to the automotive battery according to the BMS.

Current & voltage & temperature sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)
- Temperature sensor (NST235, NST20)

Gate driver & motor driver & Buffer

- Isolated single-channel driver (NSI6601, NSI6801, NSI6601M, NSI6801M)
- Non-isolated driver (NSD1026V)
- Buffer (NCA8244)

Power device

- 1200V family of SiC Diode (NPD0X0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0X0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0X0N065A, 650V, 37mohm)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
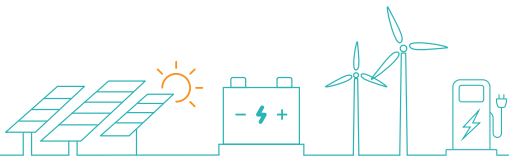
Interface & digital isolation

- Digital isolator (NSI824x, NIRS31, NIRS21)
- Isolated power ((NSIP884x, NSIP894x)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
- RS485 (NSI83086, NSI83085, NCA3176, NSIP83086)

Reference & others

- Reference (NSREF30xx, NSREF31xx)

NOVOSENSE Digital Power
Supply Solution

UPS

The uninterruptible power system (UPS) is a power conversion system with rectifier, inverter and energy storage device. It can provide pure AC power and also backup time if utility power is failure, mainly used in financial, data center, medical and industrial equipment applications that required high power quality.
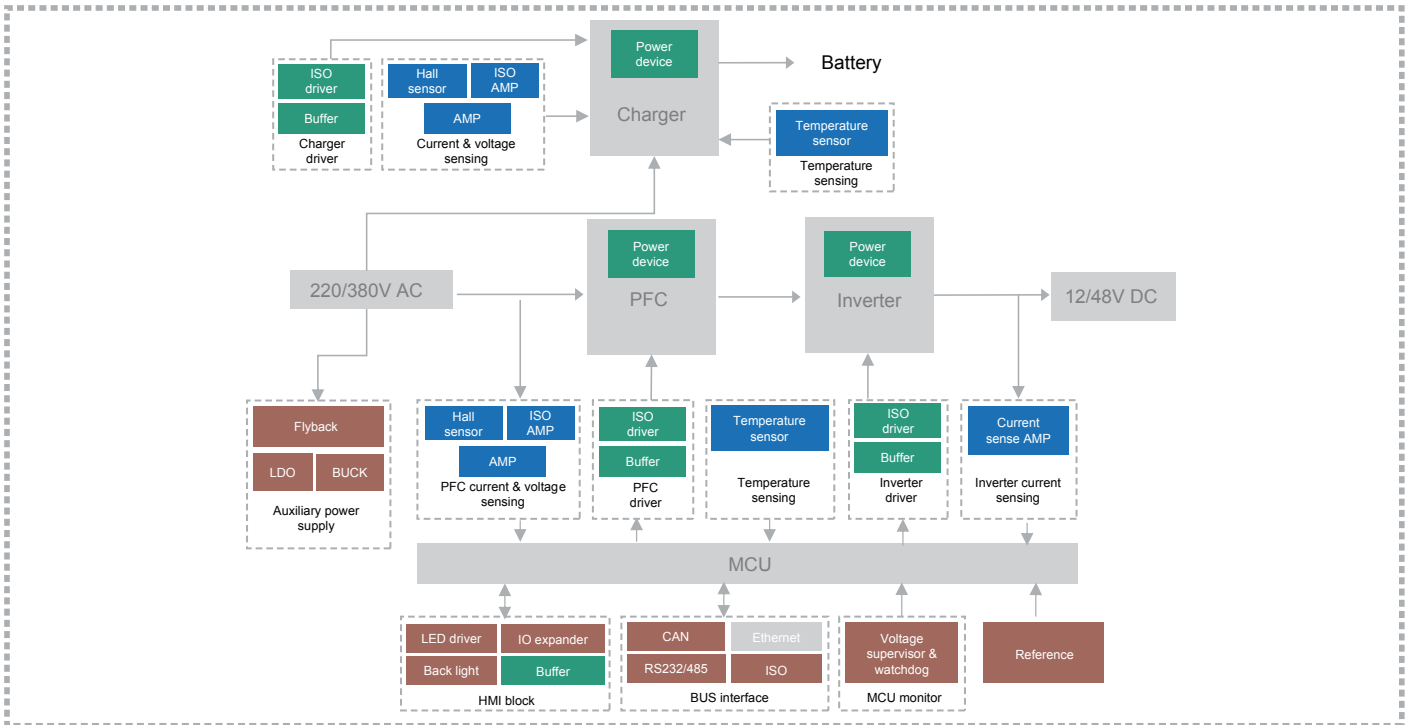
Current & voltage & temperature sensing
- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)
- Current sensing (NSCSA21x, NSCSA24x)
- Temperature sensor (NST235, NST20)

Gate driver & Buffer
- Isolated single-channel driver (NSI6601, NSI6601M, NSI6801)
- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1624, NSD1026V)
- Buffer (NCA8244)

Power device
- 1200V family of SiC Diode (NPD0x0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0x0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73mohm)

Power management
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)
- Voltage supervisor (NSR7808)

Interface & digital isolation
- Digital isolator (NSI822x, NSI823x, NSI824x, NIRS21, NIRS31)
- CAN transceiver (NSI1042, NSI1050, NCA1051A, NCA1042B)
- RS485 (NSI83085, NSI83086, NCA3485)
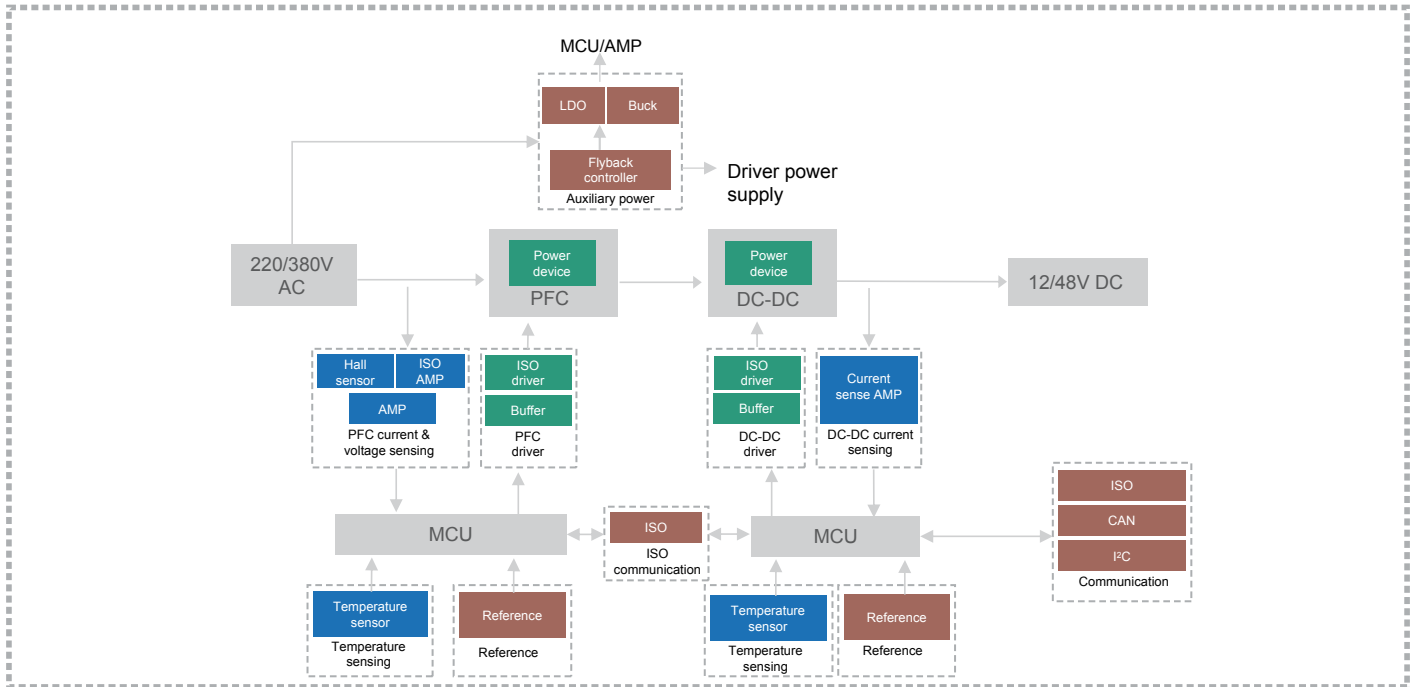
Protection & reference & others
- Reference (NSREF30xx, NSREF31xx)
- I/O expander (NCA9555)
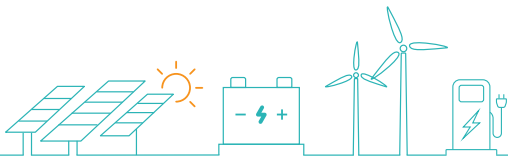
AC-DC Power Supply

Communication and Server Power Supply

The AC-DC Power Supply (communication and servers) converts utility AC power to DC power. It usually includes a PFC part and a DC power conversion part.

Current & voltage & temperature sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- Current sensing (NSCSA21x, NSCSA24x)
- Temperature sensor (NST235, NST20)

Gate driver

- Isolated single-channel driver (NSI6601, NSI6601M)
- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1624, NSD1026V, NSD1224, NSD262x)
- Buffer (NCA8244)

Power device

- 1200V family of SiC Diode (NPD0x0N120A, 1200V, 20/30/40/50A)
- 1200V family of SiC MOSFET (NPC0x0N120A, 1200V, 40/60/80mohm)
- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73mohm)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Interface & digital isolation

- Digital isolator (NSI822x, NSI823x, NSI824x, NIRS21, NIRS31)
- Digital isolator with integrated power supply (NIRSP31)
- CAN transceiver (NSI1042, NSI1050, NCA1051A, NCA1042B)
- RS485 (NSI83085, NSI83086, NCA3485)
- I²C (NSI8200, NSI8100)
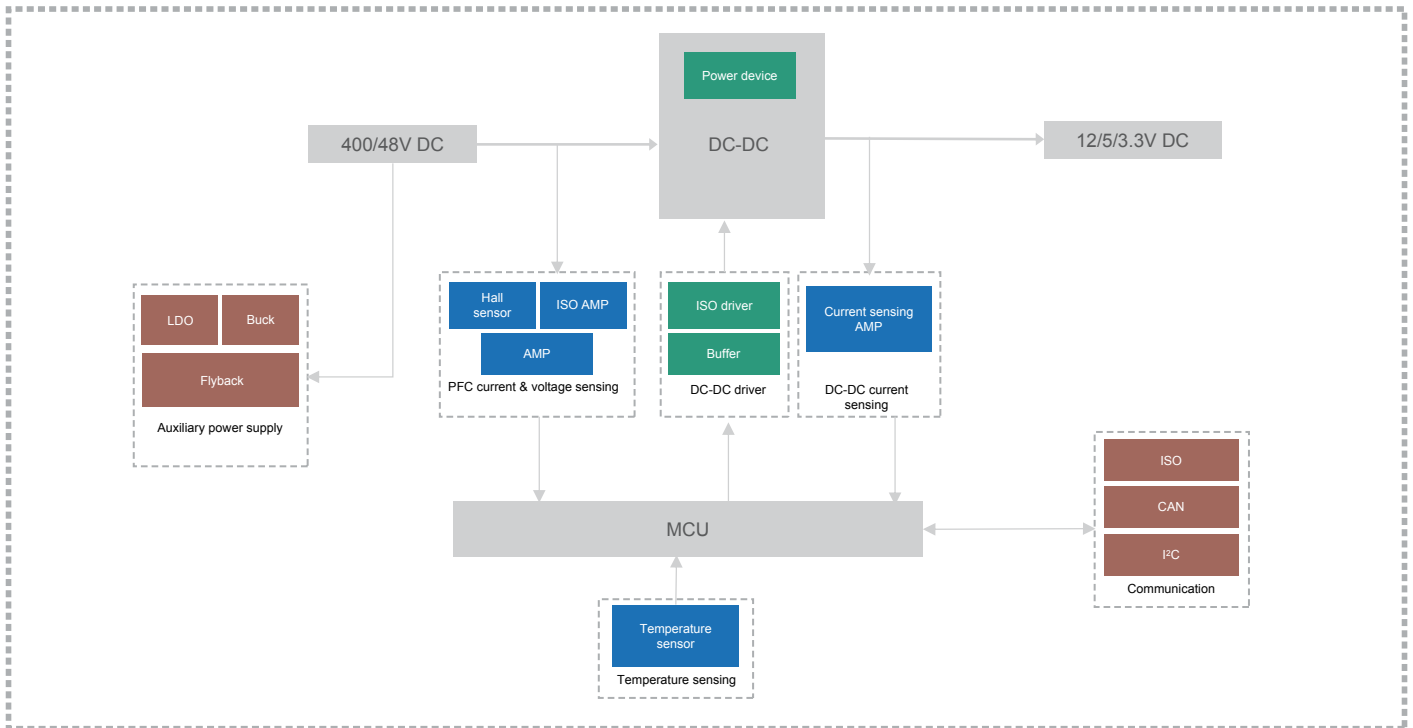
Protection & reference & others

- Reference (NSREF30xx, NSREF31xx)
- Buffer (NCA8244)
- Voltage supervisor (NSR7808)
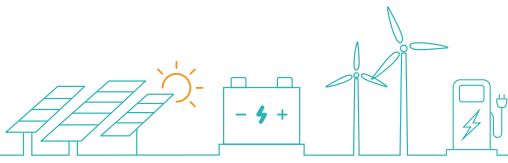
DC-DC Power Supply
Industrial Power Supply, Power Module

DC-DC Power Supply converts voltage between DC and DC. The output voltage can be higher or lower than the input, and also it can be inverted.

Current & voltage & temperature sensing

- Hall current sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- Current sensing (NSCSA21x, NSCSA24x)
- Temperature sensor (NST235, NST20)

Gate driver

- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1026V, NSD1224, NSD262x, NSD1624)
- Buffer (NCA8244)

Power device

- 650V family of Super Junction MOSFET (NPS0x0N065A, 650V, 37/73/190mohm)

Power management

- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- Flyback (NSR284x, NSR28C4x)
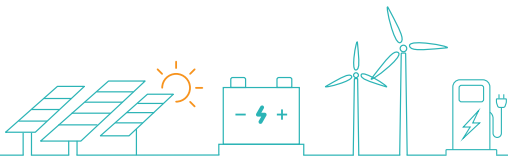- Buck (NSR10Axx, NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Interface & digital isolation

- Digital isolator (NSI822x, NSI823x, NSI824x, NIRS21, NIRS31)
- Digital isolator with integrated power supply (NIRSP31)
- CAN transceiver (NSI1042, NSI1050, NCA1051A, NCA1042B)
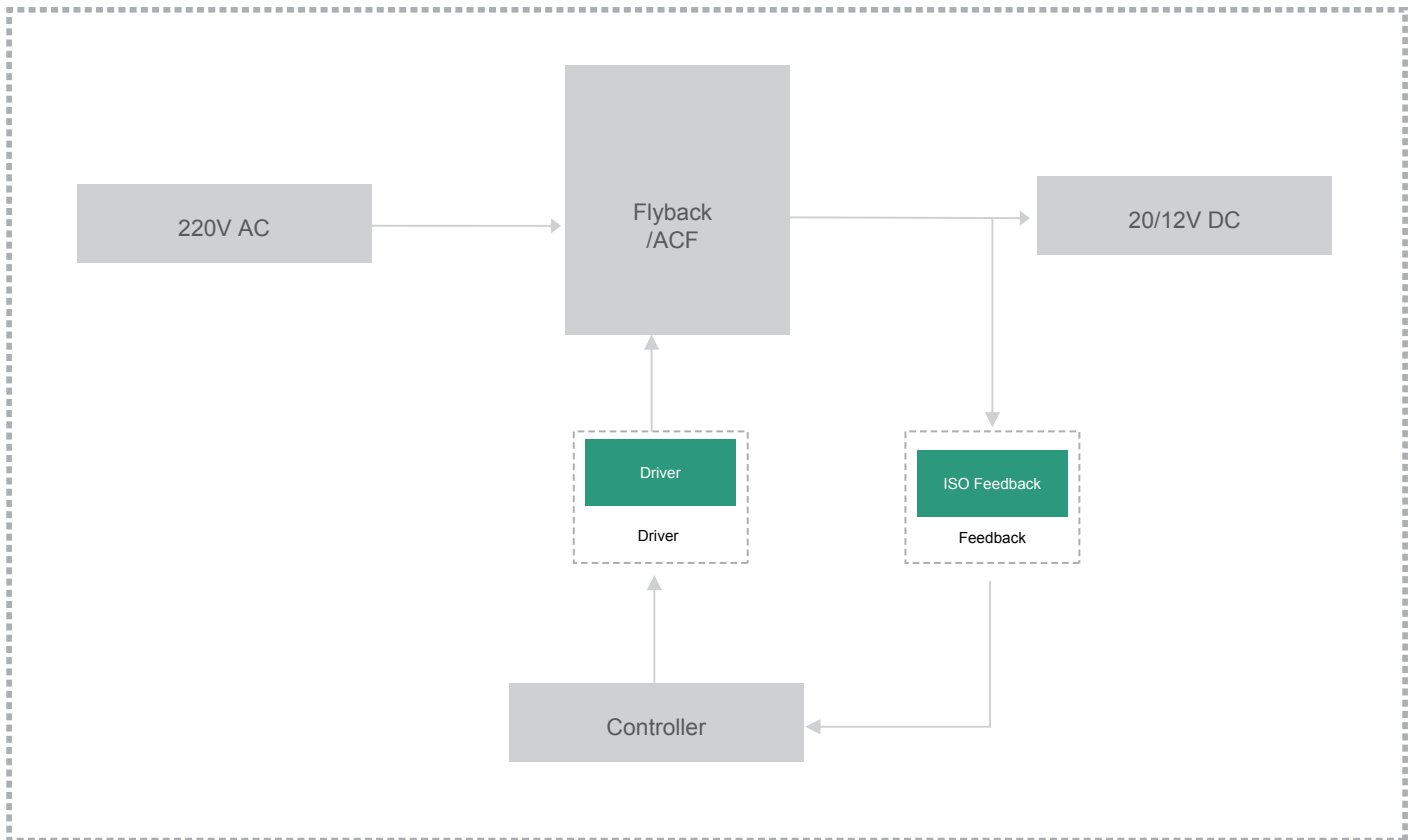- I²C (NSI8200, NSI8100)
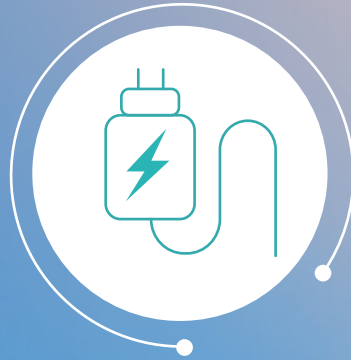
NOVOSENSE Adapter Power Supply Solution

Adapter Power Supply

An adapter power supply is a portable power conversion device that converts AC utility power to low voltage DC for using in consumer electronics. It's usually required to be small, light,and high efficiency.That means the power consumption need be high level controlled.

Gate driver

- Isolated half bridge driver (NSI6602V)
- Non-isolated driver (NSD1624, NSD2621)

Digital isolation

- Isolated Feedback (NSI3190)

NOVOSENSE

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Company Brochure

NOVOSENSE
Product Selection Guide

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Power Supply Application
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