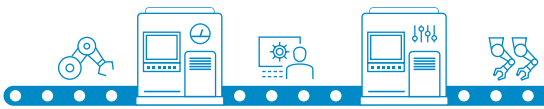# NOVOSENSE

NOVOSENSE
Industrial Control 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**
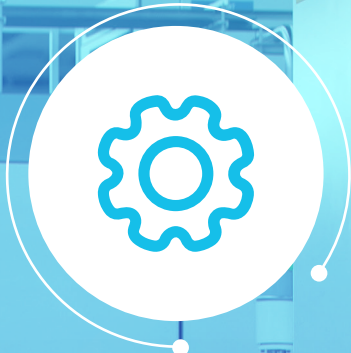
NOVOSENSE Products for Industrial Control Applications

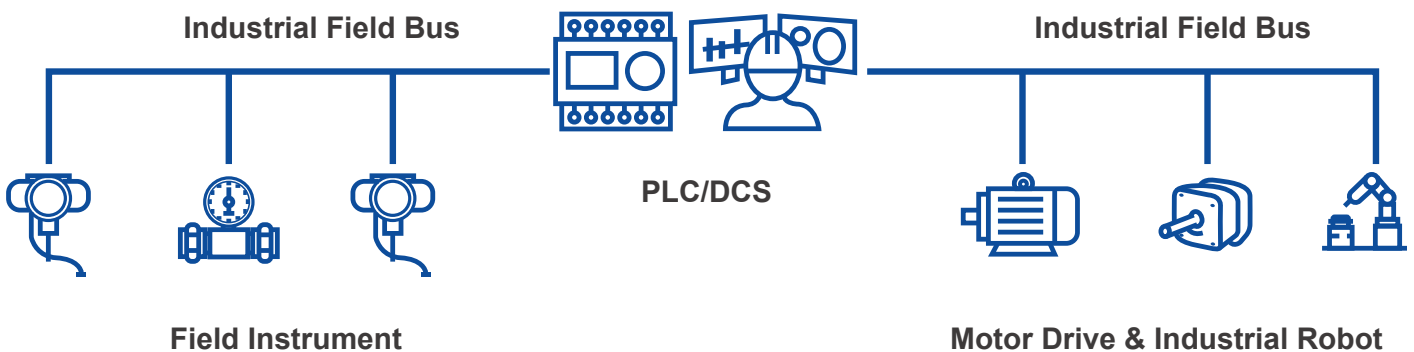| Industrial Control System	Energy Control Unit	Smart Wattmeter	Concentrator	FTU	DTU	PDU	PLC	Stepper Motor	Industrial Frequency Converter	Servo	BTS Battery Component Capacity
Hall Current Sensor	√	√	√	√	√	√	√	√	√	√	√
Operational Amplifier	√	√	√	√	√	√	√	√	√	√	√
ADC							√				
Pressure Sensor							√	√			
Temperature Sensor			√		√	√	√	√	√	√	√
CAN Transceiver	√		√	√	√	√	√		√	√	√
RS485 Transceiver	√	√	√	√	√	√	√	√	√	√	√
I/O Expander	√		√								√
I²C											√
Buffer							√	√	√	√	√
Digital Isolator	√	√	√	√	√	√	√	√	√	√	√
Isolated Current/Voltage Sensing	√	√	√	√	√	√	√	√	√	√	√
Isolated Power	√	√	√	√	√	√	√	√	√	√	√
Isolated Driver							√	√	√	√	
Non-isolated Driver							√				√
High & Low-side Switch							√				
AC-DC Switching Converter	√		√	√	√		√	√	√	√	√
DC-DC Switching Converter	√	√	√	√	√		√	√	√	√	√
LDO			√	√	√	√		√	√		
Voltage Reference				√	√	√	√		√		
Supervisor & Reset IC									√	√	

CONTENTS

NOVOSENSE Industrial Control Solution

Industrial Control Solution Overview

Field Instrument

- 4~20mA industrial transmitter ASIC
- Industrial field bus interface IC
- Digital isolator/Isolated power
- Temperature sensor /MEMS pressure sensor/ Magnetic position sensor
- Buck/LDO/Voltage supervisor
- General operational amplifier
- High-precision voltage reference

PLC/DCS Controller

- Analog input/output AFE
- ISO digital input and output
- Back plane board interface: mLVDS, eFuse, Hot swap
- Industrial field bus interface IC
- Digital isolation & power isolation
- Temperature sensor
- Buck/LDO/Voltage supervisor
- General operational amplifier

Motor Driver & Industrial Robot
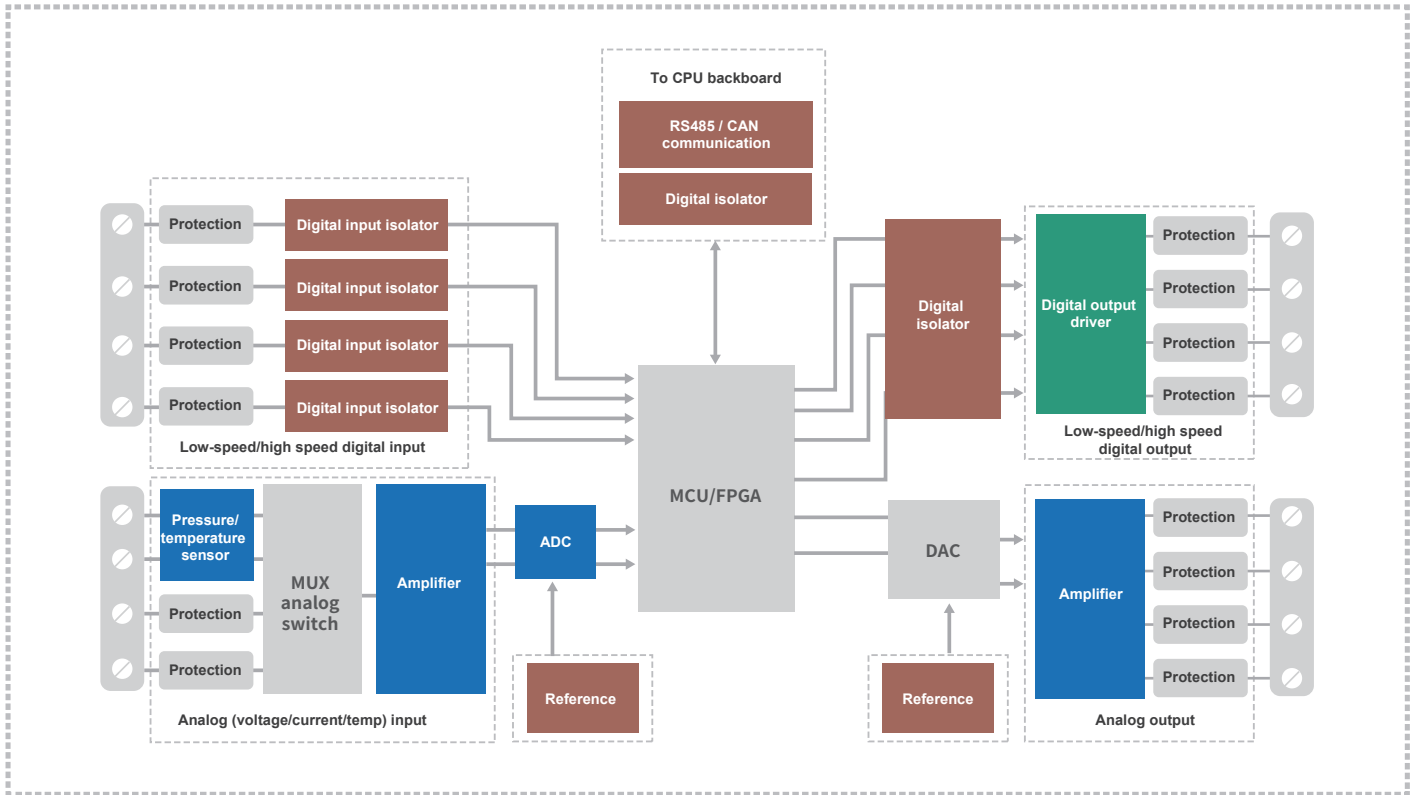
- IGBT & MOSFET gate driver
- ISO voltage & current sensing (ISO operational amplifier & ISO ADC)
- High-speed digital isolator
- Industrial field bus and encoder bus interface IC
- General operational amplifier
- High-precision voltage reference
- Analog input/output AFE
- ISO digital input and output
- Temperature sensor
- Magnetic encoder sensor & TMR switch
- Buck/LDO/Voltage supervisor

PLC

As an important electronic device in the field of industrial control, programmable logic controller (PLC) is widely used in automatic production control, flow control, logistics control, data processing and other fields. With its various advantages such as high reliability, efficient automation and high flexibility, it plays an irreplaceable role in the field of industrial automation.

Temperature & pressure sensing

- Temperature sensor (NST1001, NST1002)
- Pressure sensor (NSC2860x, NSA2860x, NSA2862x)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- ADC (NSAD124x, NSAD114x)

Motor driver & low side switch

- Digital output driver (NSD56008)
- Low side switch (NSE11409, NSD11416, NSD12416)

Reference & Buffer

- Reference (NSREF30xx, NSREF31xx)
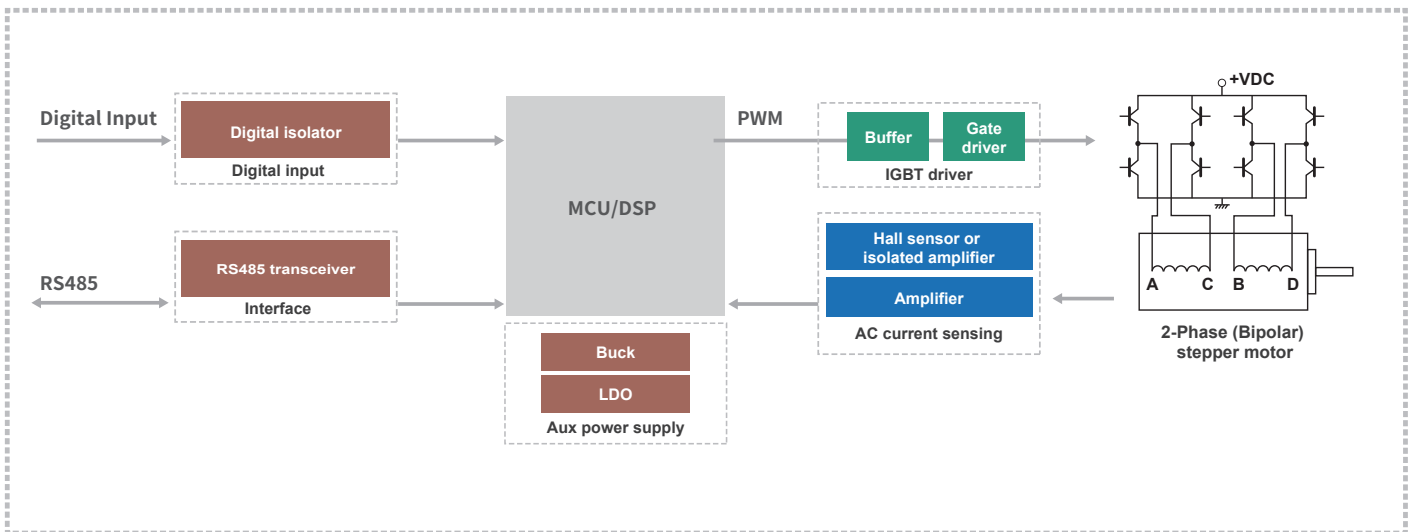- Buffer (NCA8244, NCA8245)

Interface & digital isolation

- Digital isolator (NSI82xx)
- Digital input isolator (NSI8608)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Stepper Motor

As an important component of the stepper motor, the stepper motor controller is a precise control system which can accurately control the movement of the stepper motor within a tiny time interval to achieve the precise control required by the user.

Current & voltage & temperature & pressure sensing

- Hall sensor (NSM2011, NSM2013, NSM2015, NSM2017, NSM2019, NSM2113)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Amplifier (NSOPA9xxx, NSOPA8xxx)
- Temperature sensor (NST1001, NST1002)
- Pressure sensor (NSC2860x, NSA2860x, NSA2862x)

Gate driver & Buffer

- Gate driver (NSI6801, NSI6801x, NSI68515, NSI6801M)
- Buffer (NCA8244, NCA8245)

Power management

- Buck (NSR104xx)
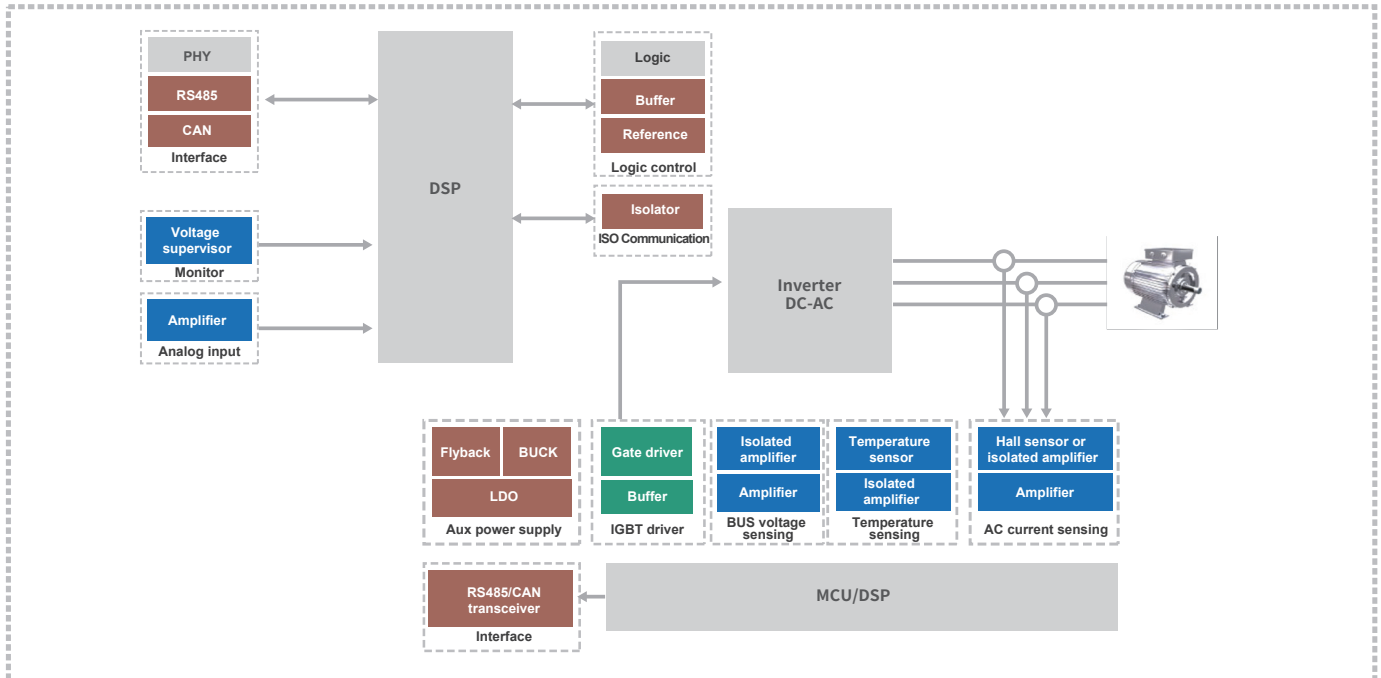- LDO (NSR31xxx, NSR33xxx, NSR35xxx)

Interface & digital isolation

- Digital isolator (NSI82xx)
- Digital input isolator (NSI8608)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Industrial Frequency Converters

As an important power control equipment in the field of industrial automation, frequency converter controls the speed of the motor by changing the frequency and voltage of the motor signal. At the same time, it integrates over-current, over-voltage, overload and other protection functions, and plays an increasingly important role in modern industry.

Current & voltage & temperature sensing

- Hall sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Isolated comparator (NSI22C12, NSI22C11)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)
- Temperature sensor (NST1001, NST1002)

Gate driver & Buffer

- Gate driver (NSI6801, NSI6801x, NSI68515, NSI6801M)
- Buffer (NCA8244)

Protection & reference

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

Power management

- Flyback (NSR284x/NSR28C4x)
- DC-DC (NSR104xx)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
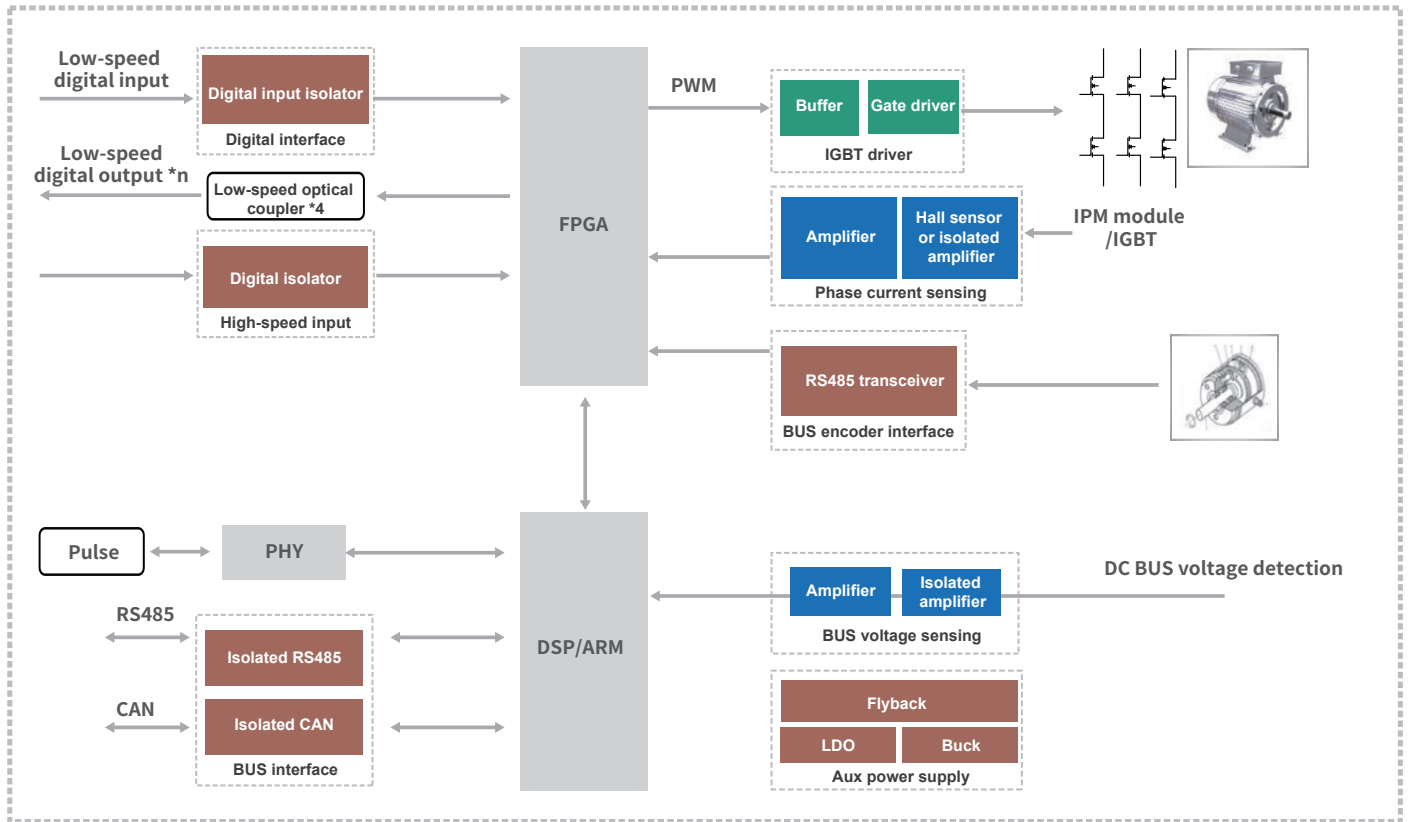- BUCK (NSR104xx, NSR106xx, NSR114xx, NSR1103x)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Servo

In industrial automation applications, the servo system serves as a feedback control system that accurately follows or reproduces a given process, so that the output such as the object's position, orientation and other status will change by a given value. It can control the device closed-loop according to the instruction requirements, so that the torque, speed and position control of the output of the driving device are more flexible and convenient.

Current & voltage & temperature sensing

- Hall sensor (NSM201x, NSM211x)
- Isolated amplifier (NSI1400, NSI1300, NSI1200C, NSI1312, NSI1311)
- Isolated ADC (NSI1306, NSI1305, NSI1303)
- Isolated comparator (NSI22C12, NSI22C11)
- Amplifier (NSOPA9xxx, NSOPA8xxx, NSOPA084)
- Temperature sensor (NST1001, NST1002)

Gate driver & Buffer

- Gate driver (NSI6801, NSI6801x, NSI68515, NSI6801M)
- Buffer (NCA8244)

Interface & digital isolation

- Digital input isolator (NSI8608)
- Digital isolator (NSI82xx, NSI8260, NSI8266)
- CAN transceiver (NSI1050, NSI1042)
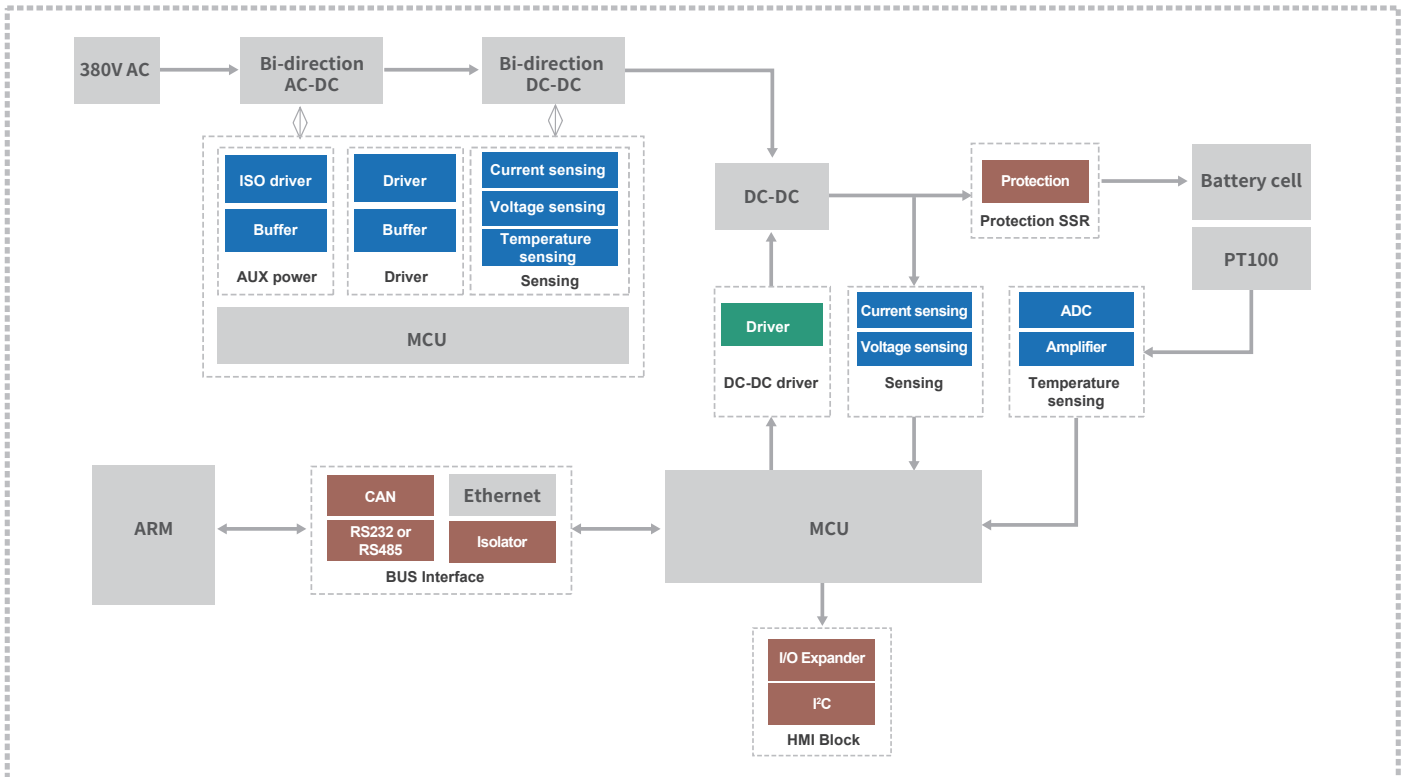- Isolated RS485 (NSI83085, NSI83086)
- RS485 (NCA3176, NCA3485)

Power management

- Flyback (NSR284x/NSR28C4x)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)
- BUCK (NSR104xx, NSR106xx, NSR114xx, NSR1103x)

BTS Battery Component Capacity

Battery test system (BTS) provides high-precision voltage and current control for charging and discharging test of the battery, it is an important production equipment in the battery manufacturing process, providing necessary test conditions for formation and capacity grading stations, and is also an important equipment for R&D department to study performance of batteries.

Current & voltage & temperature sensing

- Current sensing (NSM2011, NSM2013, NSM2015, NSM2017, NSM2019, NSM2113, NSI1300, NSI1200, NSCSA21x, NSCSA24x, NSCSA199)
- Voltage sensing (NSOPA9xxx, NSOPA8xxx, NSI1311, NSI1312)
- Temperature sensor (NST235, NST20)
- Temperature sensing ADC (NSAD124x, NSAD114x)

Gate driver

- Isolated driver (NSI6602V)
- Non-isolated driver (NSD1026V, NSD1624, NSD1224, NSD262x)
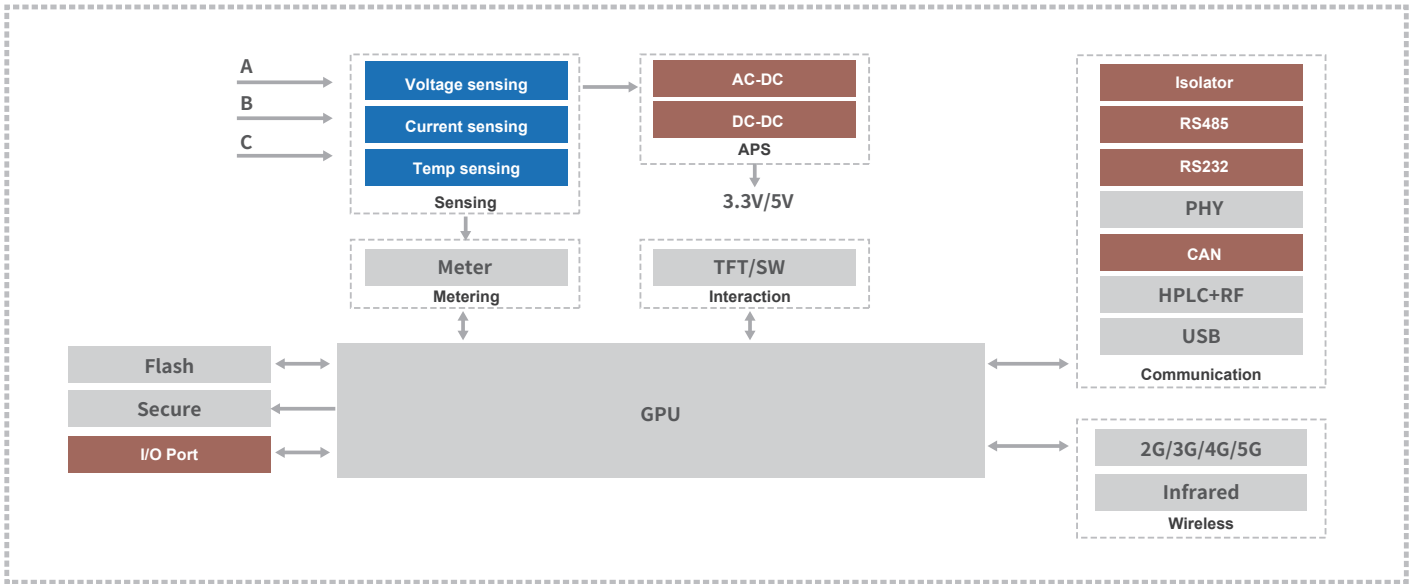
Interface & digital isolation

- Digital input isolator (NSI8608)
- Isolator (NSI824x)
- CAN transceiver (NSI1050, NSI1042, NCA1051A,
- NCA1042B)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)
- I/O expand (NCA9555)
- I²C (NSI8100, NSI8200)

Energy Control Unit

As an important device of industrial automation field, the energy controller usually installed in the public or special transformer area, which can realize the flexible access of metering and sensing devices on both customer side and distribution side, and has functions such as data collection, clock synchronization, accurate metering, energy consumption management, and fault reporting etc.

Current & voltage & temperature sensing

- Current sensing (NSM201x, NSM211x, NSOPA9xxx, NSOPA8xxx)
- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)
- Temperature sensor (NST235, NST20, NST1001, NST1002)

Power management

- AC-DC (NSR28C4x, NSR104xx)
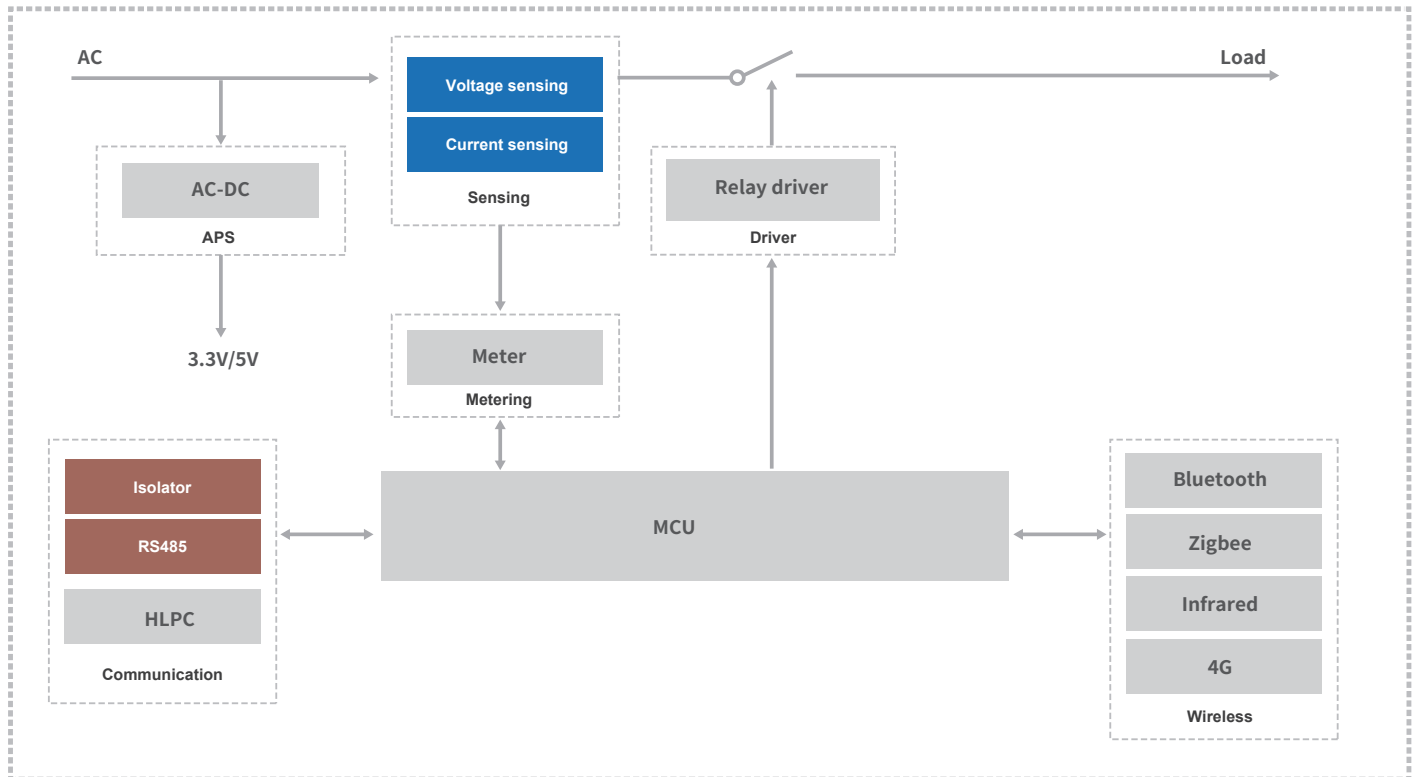- DC-DC (NSR104xx, NSR31xxx, NSR33xxx, NSR35xxx)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NCA1044, NSI1050, NSI1042)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)
- I/O expander (NCA9555)

Smart Meter

Smart meter has the functions of electric energy measurement, information storage and processing, real-time monitoring, automatic control, and information interaction etc. As an important measuring device, it enables automated and intelligent collection of electric energy information.

Current & voltage sensing
- Current sensing (NSM201x, NSM211x, NSOPA9xxx, NSOPA8xxx)
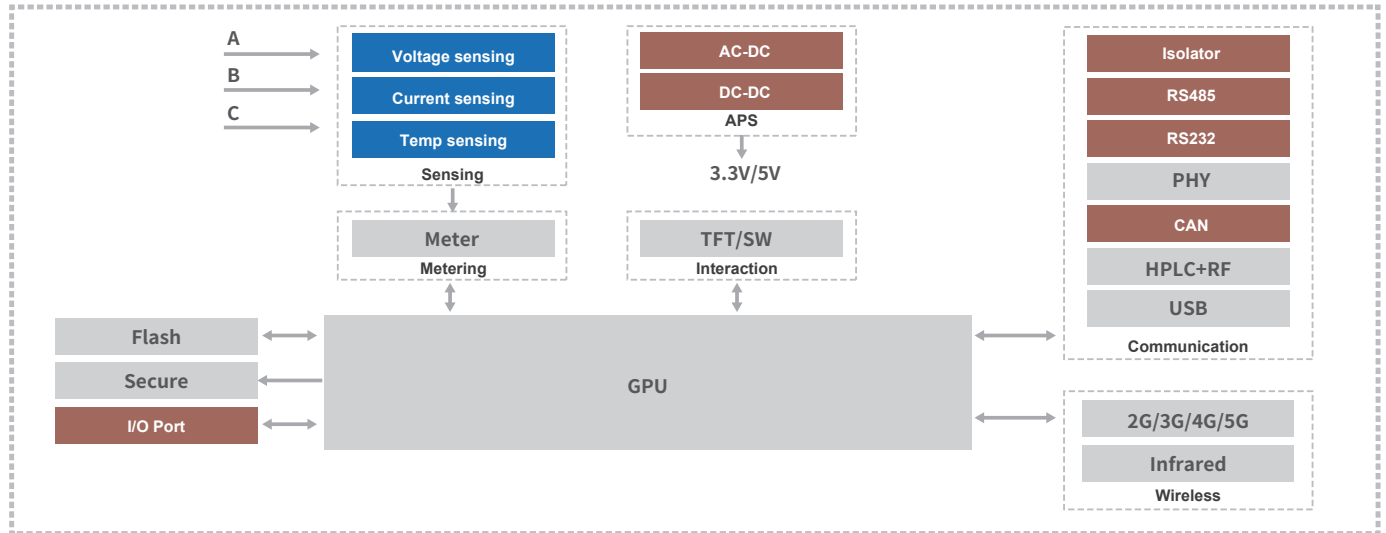- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)

Interface & digital isolation
- Digital isolator (NSI82xx, NIRS21, NIRS31)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Concentrator

The concentrator is a key device of the centralized meter reading system, and also an effective device for line sharings and improving line utilization. In terminal dense areas, it is usually connected to a concentrator in order to reduce the number of communication lines, and then the concentrator is connected to the computer's communication controller via a high-speed line.

Current & voltage & temperature sensing

- Current sensing (NSM201x, NSM211x, NSOPA9xxx, NSOPA8xxx)
- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)
- Temperature sensor (NST235, NST20, NST1001, NST1002)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)
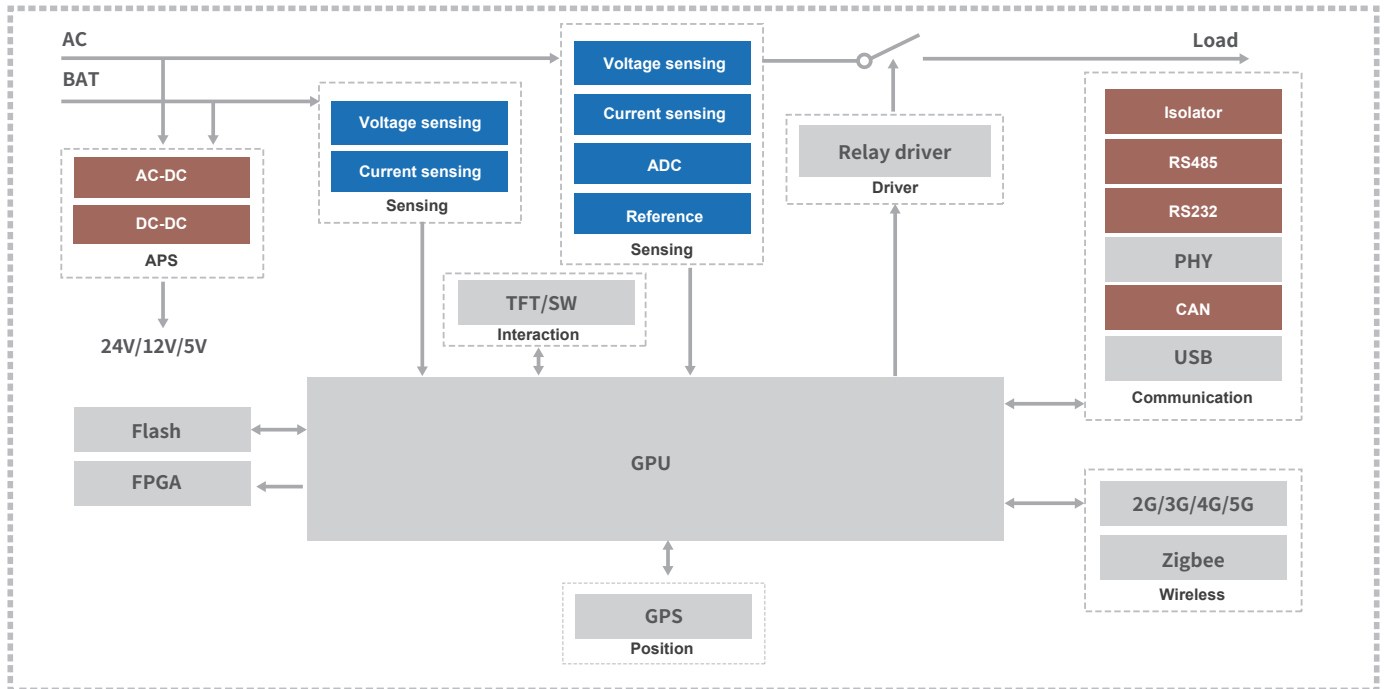- I/O expander (NCA9555)

Power management

- AC-DC (NSR28C4x)
- Buck (NSR104xx)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)

FTU

The feeder terminal unit (FTU) is a switch monitoring device installed next to the feeder switch, which is generally composed of a main control unit, a battery management unit (responsible for charge and discharge management) and the battery. FTU supports feeder automation function for automatic fault isolation and to reduce the impact of accidents.

Current & voltage sensing

- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)
- Current sensing (NSM201x, NSM211x, NSOPA9xxx, NSOPA8xxx)
- Reference (NSREF30xx, NSREF31xx)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
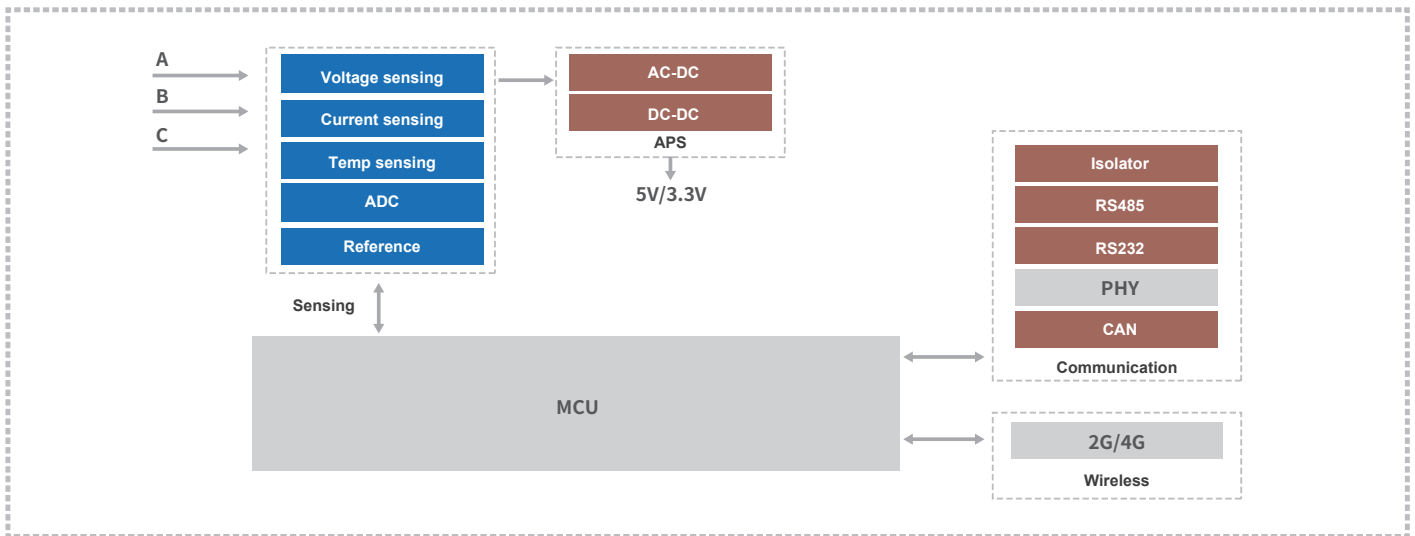- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Power management

- AC-DC (NSR28C4x)
- Buck (NSR104xx)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)

DTU

DTU is a terminal device of a switching station, generally installed in conventional switching station, outdoor small switching station, ring network cabinet, small substation, box-type substation, etc. It completes the acquisition and calculation of position signal, voltage, current, active power, reactive power, power factor, electric energy and other data of a switching station, performs the switching and closing operation of switches, realizes feeder switch's fault identification, isolation, and recovery power supply of non-faulty areas. Some DTUs also have the functions of protection and automatic switching of backup power supply.
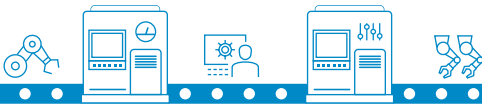

Current & voltage & temperature sensing

- Current sensing (NSM201x, NSM211x, NSOPA9xxx)
- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)
- Temperature sensor (NST235, NST20, NST1001, NST1002)
- Reference (NSREF30xx, NSREF31xx)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
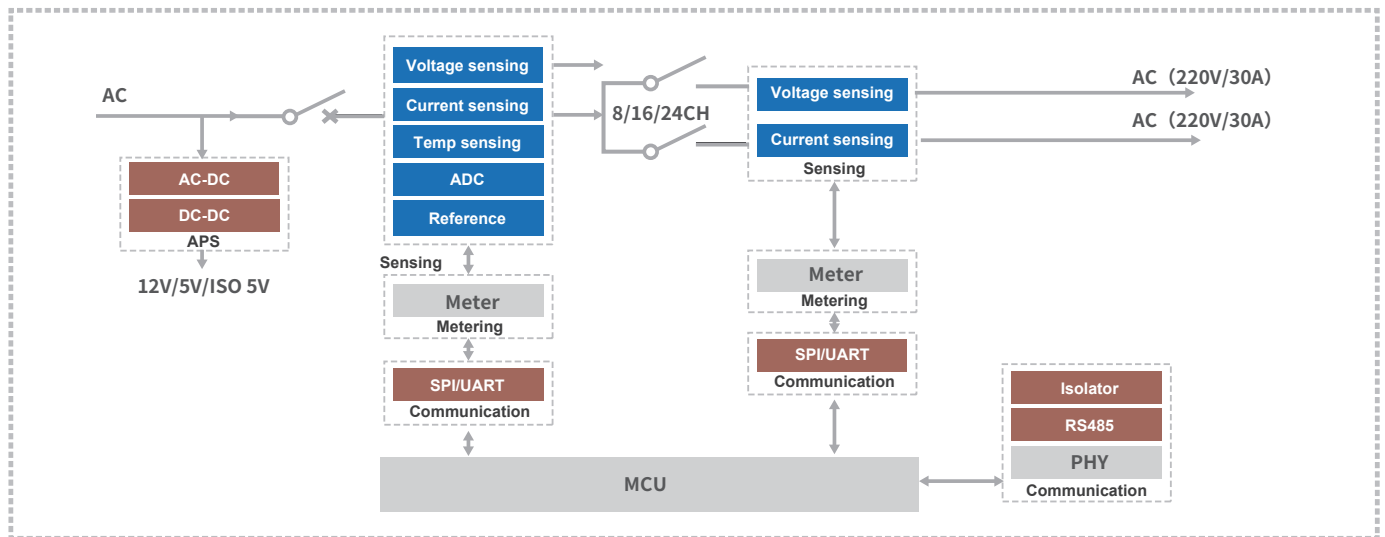- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)

Power management

- AC-DC (NSR28C4x)
- Buck (NSR104xx)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)

PDU

PDU (Power Distribution Unit) is an industry-standard power connection device that distributes power to devices. It is mainly used for the distribution and management of power supply in the server cabinet of the computer room, with monitoring of various electrical parameters and environmental parameters, modular structure and multifunctional integration, to meet the requirements of key equipment in the computer room for safe, stable and reliable, and to realize precise management of terminal power distribution.

Current & voltage & temperature sensing

- Current sensing (NSM201x, NSM211x, NSOPA9xxx)
- Voltage sensing (NSI1312, NSOPA9xxx, NSOPA8xxx)
- Temperature sensor (NST235, NST20, NST1001, NST1002)
- Reference (NSREF30xx, NSREF31xx)

Interface & digital isolation

- Digital isolator (NSI82xx, NIRS21, NIRS31)
- CAN transceiver (NCA1051A, NCA1042B, NSI1050, NSI1042)
- RS485 (NSI83085, NSI83086, NCA3176, NCA3485)
- SPI/UART (NSI82xx, NSI8100, NSI8200)

Power management

- AC-DC (NSR28C4x)
- Buck (NSR104xx)
- LDO (NSR31xxx, NSR33xxx, NSR35xxx)

NOVOSENSE

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