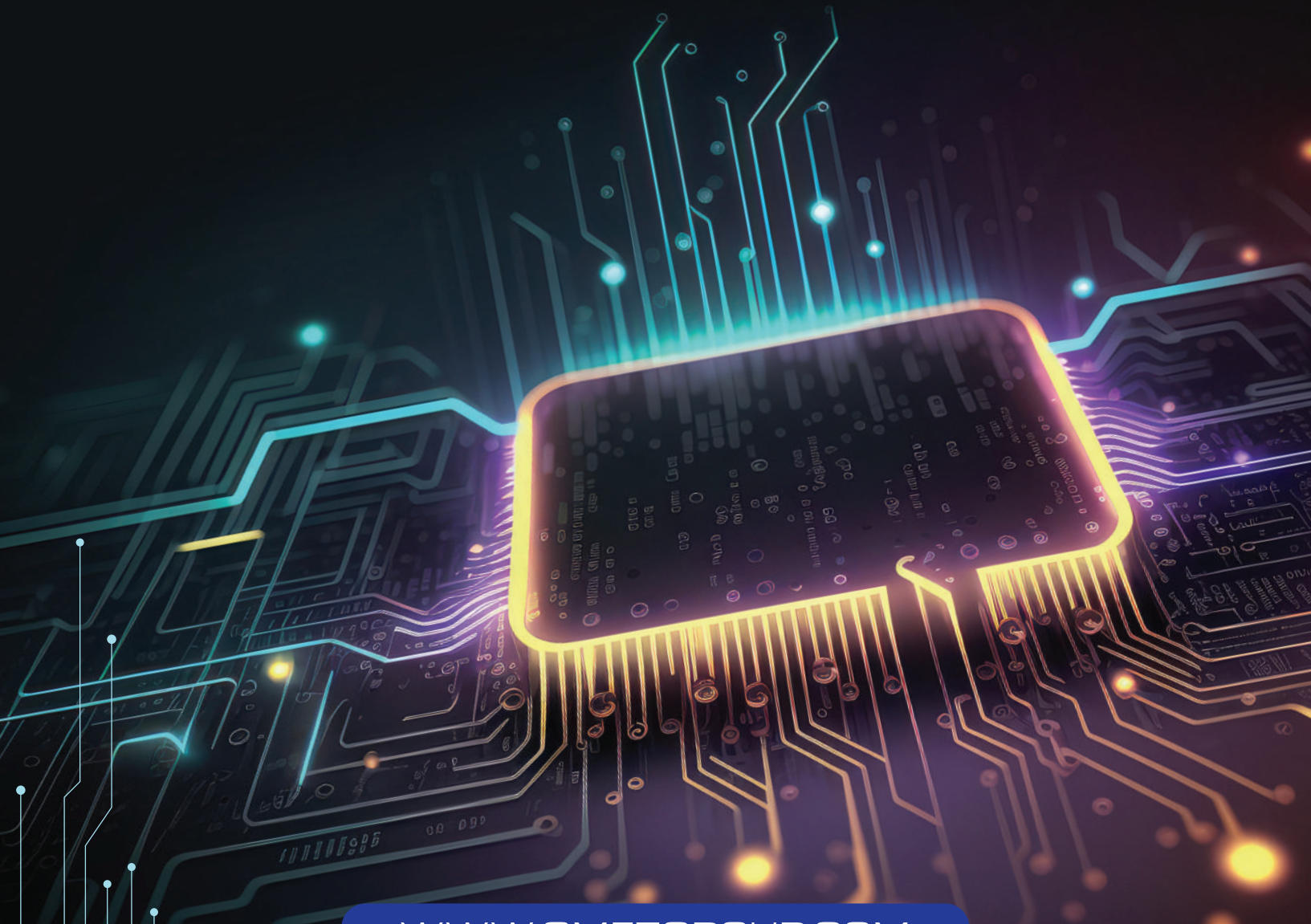




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OVERVIEW

ABOUT US

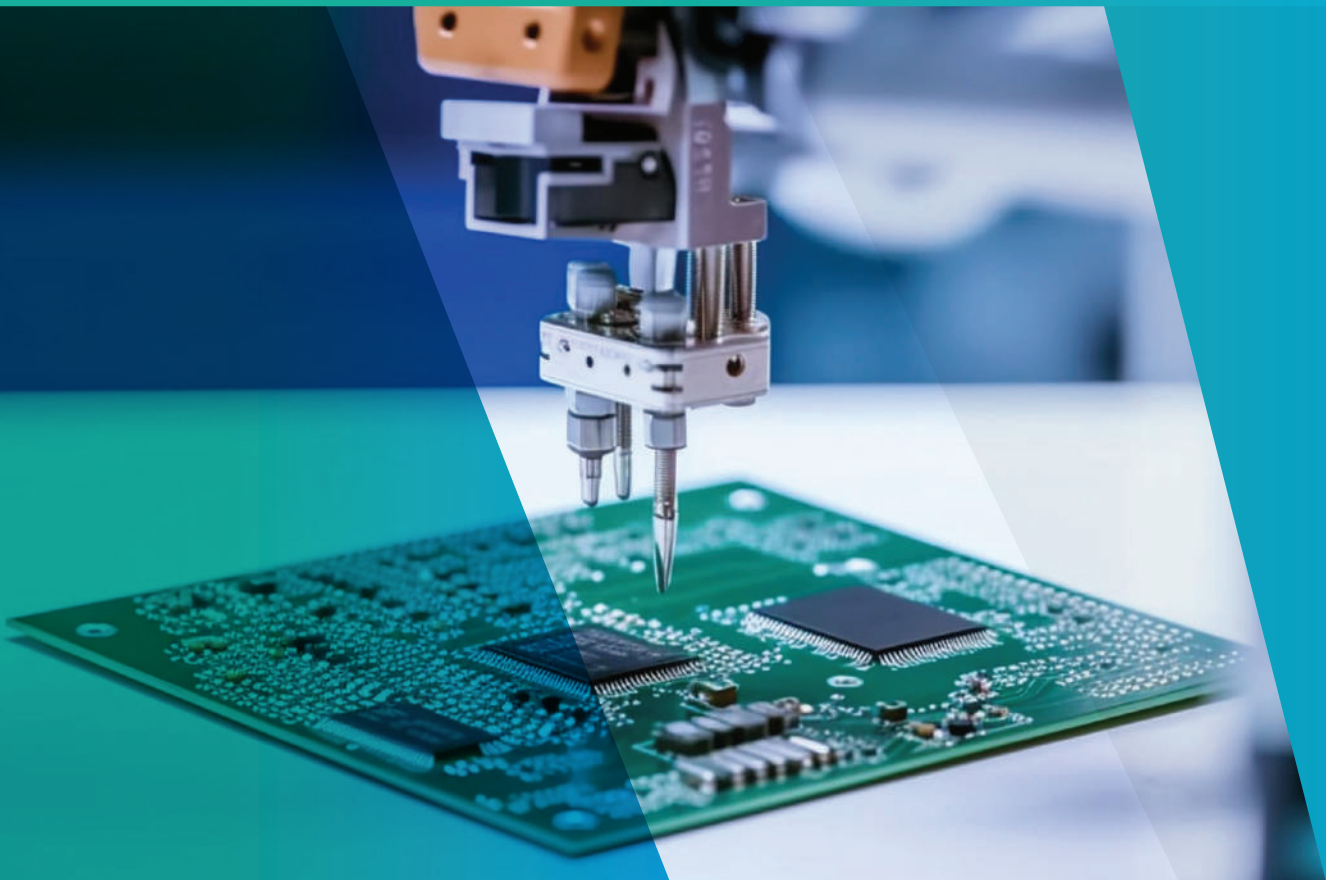
INNOVATION IS A CHANGE THAT UNLOCKS VALUE.

We understand that innovation lies at the heart of our customers. By the time you have the idea and move it on paper, we support you to make it a product with all components, ready at your doorstep. Started out in 1990, we are a family of enthusiastic team members and are a leading distributor in electronic industry. We are now a joint venture company with Satori Electric, Japan who is a global distributor, listed in Japan (TSE Code JP3322300009).



Headquartered in Bangalore and present at 7 locations, we cater to customers in India and ASEAN.

We understand customer and market needs and bring to them new technologies and solutions from leading electronic manufacturers across the world.



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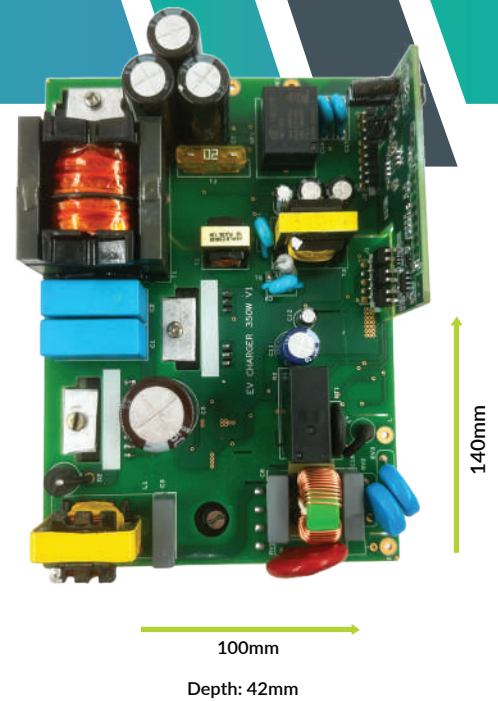
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EV CHARGER- AC-DC 350W

Description

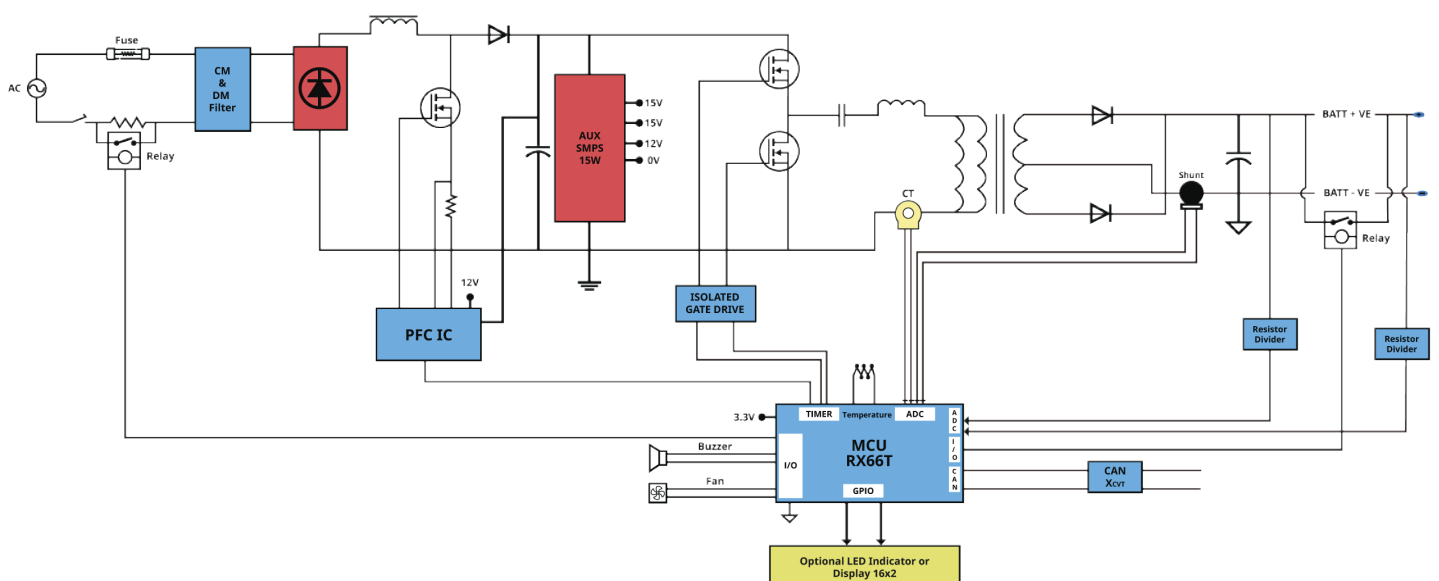
The Off-Board EV Charger with Digital Half Bridge LLC topology uses mathematical modelling to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with AIS156 standards. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, or Power exchange on CAN Command.



Features

- Charge Voltage Cut-off To Prevent The REESS From Being Overcharged
- Whenever REESS is Connected For Charging Soft-start Function Is Activated
- Deep Discharge Condition Of REESS is Detected By Pre-charge Function
- Protects Against Input Supply Variation 120v ~ 270v **output de-rating feature**
- Earth Leakage Detection: Input RCD 30mA at Plug Input To Meet AIS156
- On-board/portable Charger Have CAN, UART To Communicate With BMS

Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE	SPECIFICATIONS	VALUE
Max. Output Power	120W~350W	Nominal Default Voltage	51.8VDC
Rated Power	290W	Voltage Tolerance	±0.1VDC
Nominal Input Voltage Range	230VAC	Current Tolerance	±0.5A
Operating Range	120V-270VAC	Efficiency @ >30% load	>=90%
Input Current To The Charger	<3A	Peak Efficiency	>=96%
Input Frequency	45 - 65Hz	THD	<5%
Output Voltage Range	33 - 60VDC	Power Factor (active PFC) , LLC	>=0.99
Rated Output DC Current	7A	No Load / Standby Power Consumption	<1W
Max Output Current (33-60V I/P, Continuous)	8A	Inrush Current (AC side)	<5A
Minimum Current Output	0.1A	Leakage Current	<30mA
		Ramp Up/Down Time for 1V change	<100ms
		Cold Start Time	<5s

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection : Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Cut Back: Based On Customer Housing Design	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 3000 VAC , 50 Hz, 1 min , <10 mA	INPUT - CASE 1500 VAC, 50 Hz, 1 min , <10 mA	OUTPUT - CASE 500 VDC , 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby Power Off	Yes

Display

2 LED's	Multi-colored LED Indicator for - Battery Status - Error and Fault Indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CANBus. LED Lights Warning and Fault Handling Logic Can Be Implemented	REMARK Can be customized as per the customer spec

Test Procedure

PROCEDURE	REMARKS	PROCEDURE	REMARKS
LPS	Tested	Soft Start Time	1 Sec
Power Factor Of PFC at Universal Operating Range	120-270	Current And Voltage Protection	Tested
Constant Voltage Minimum And Maximum Range	35-60	CAN Communication	Tested
Constant Current Minimum And Maximum Range	0.2 ~ 7A	Overall Efficiency	95%

EV 350W Variants	48V, 7A	60V, 5A	72V, 4A
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EV CHARGER-AC-DC 750W

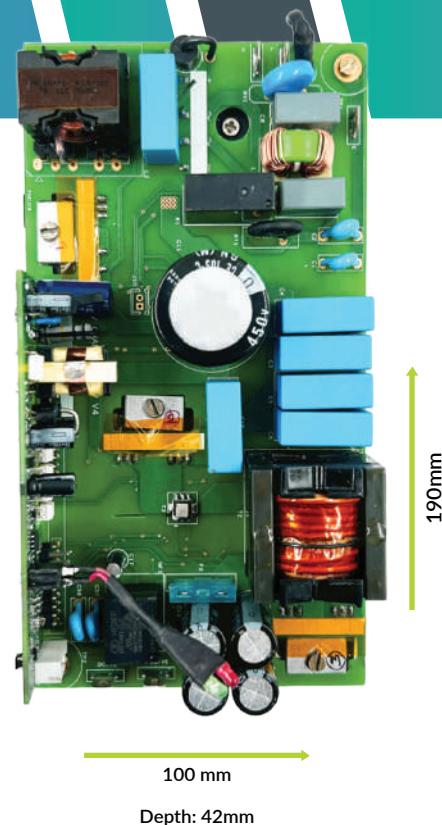
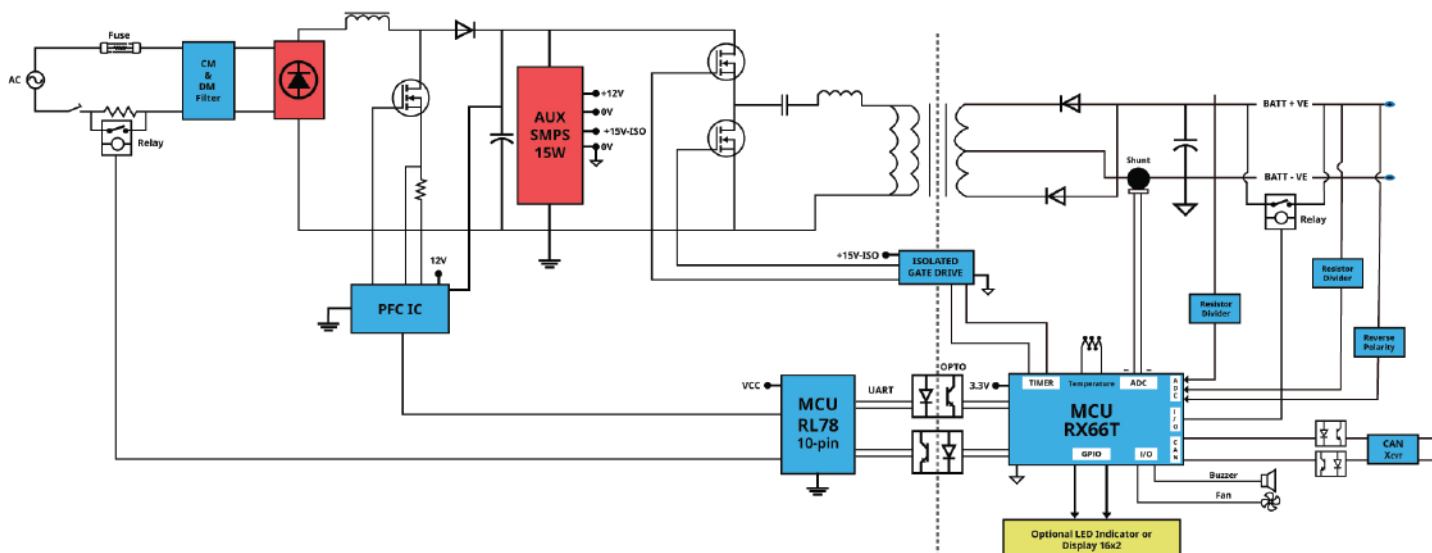
Description

The Off-Board EV Charger with Digital Half Bridge LLC topology uses mathematical model to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with AIS156 standards. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, or Power exchange on CAN Command.

Features

- Charge voltage cut-off to prevent the REESS from being overcharged
- Whenever REESS is connected for charging soft-start function is activated
- Deep discharge condition of REESS is detected by pre-charge function
- Protects against wide input supply 120V~270V with **output de-rating feature**
- Earth leakage detection: Input RCD 30mA at plug input to meet AIS156
- On-board/portable charger have CAN, UART to communicate with BMS

Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE	SPECIFICATIONS	VALUE
Max. output power	560W-750W	Nominal Default Voltage	51.8VDC
Rated Power	750W	Voltage Tolerance	±0.1VDC
Nominal Input voltage range	230VAC	Current Tolerance	±0.5A
Operating Range	120V-270VAC	Efficiency @ >30% load	>=90%
Input Current to the charger	<5A	Peak Efficiency	>=96%
Input Frequency	45 - 65Hz	THD	<5%
Output voltage range	33 - 60VDC	Power Factor (active PFC) , LLC	>=0.99
Rated Output DC Current	12A / 15A Max	No Load / Standby Power Consumption	<1.5W
Max output Current (33-60V I/P, Continuous)	015A	Inrush Current (AC side)	<8A
Minimum Current Output	0.5A	Leakage Current	<30mA
		Ramp Up/Down Time for 1V change	<100ms
		Cold Start Time	<5s

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection : Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Cut Back: Based On Customer Housing Design	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 3000 VAC , 50 Hz, 1 min , <10 mA	INPUT - CASE 1500 VAC, 50 Hz, 1 min , <10 mA	OUTPUT - CASE 500 VDC , 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby power off	Yes

Display

2 LED's	Multi-colored LED Indicator for - Battery status - Error and fault indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CANBus. LED Lights Warning and Fault handling logic can be implemented	REMARK Can be customized as per the customer spec

Test Procedure

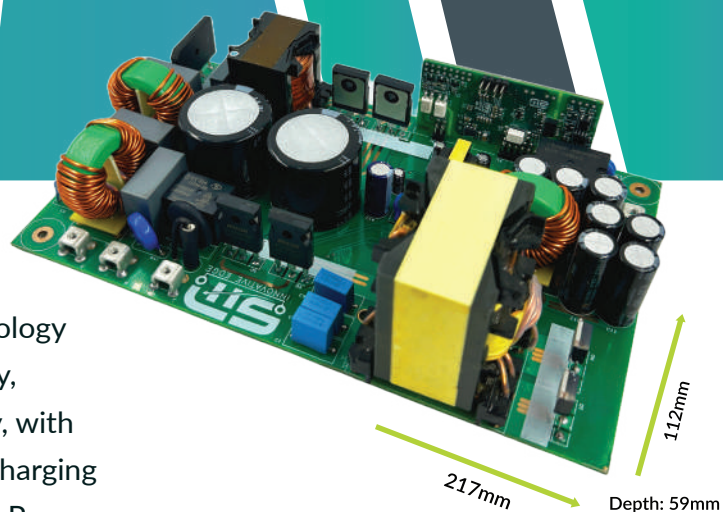
PROCEDURE	REMARKS	PROCEDURE	REMARKS
LPS	Tested	Soft start time	1 Sec
Power factor of PFC at universal operating range	120-270	Current and voltage protection	Tested
Constant Voltage Minimum and Maximum Range	35-60	CAN communication	Tested
Constant Current Minimum and Maximum Range	1 to 14	Overall efficiency	95%

EV 750W Variants	48V, 16A	60V, 12.5A	72V, 10.5A
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EV CHARGER-AC-DC 1.5KW

Description

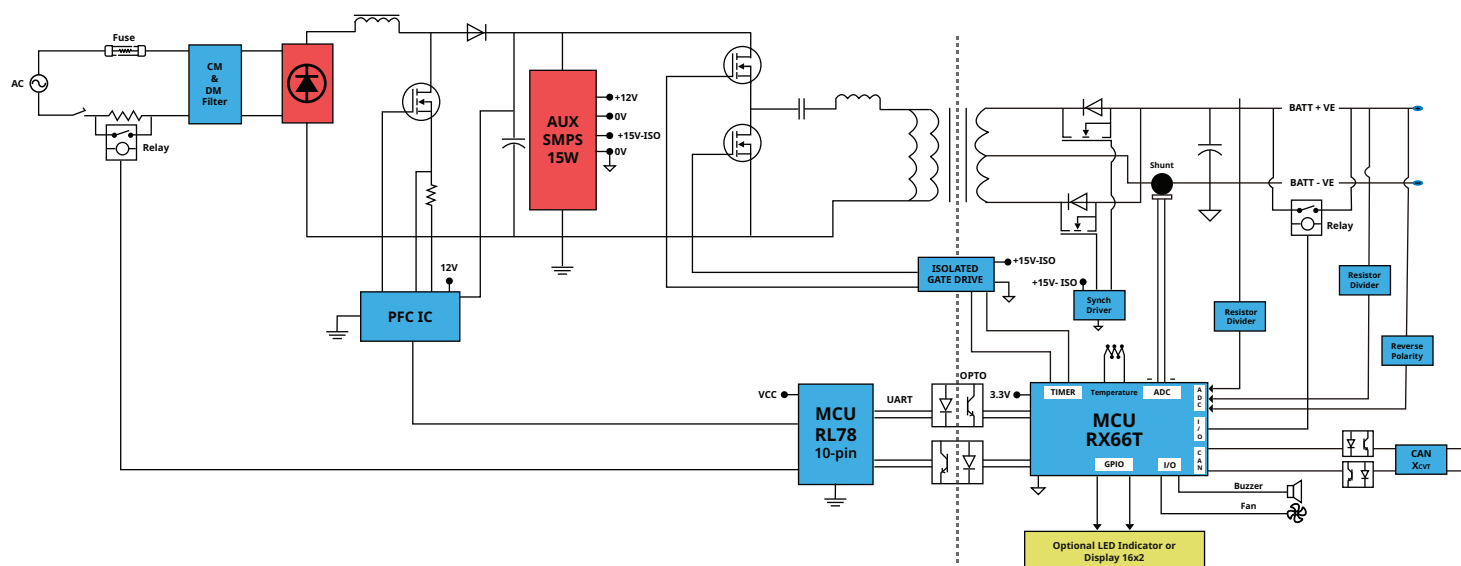
The Off-Board EV Charger with Digital Half Bridge LLC topology uses mathematical modelling to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with AIS156 standards. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, or Power exchange on CAN Command.



Features

- Charge Voltage Cut-off To Prevent The REESS From Being Overcharged
- Whenever REESS is Connected For Charging Soft-start Function Is Activated
- Deep Discharge Condition Of REESS is Detected By Pre-charge Function
- Protects Against Input Supply Variation 120v ~ 270v with **output de-rating feature**
- Earth Leakage Detection: Input RCD 30mA at Plug Input To Meet AIS156
- On-board/portable Charger Have CAN, UART To Communicate With BMS

Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE	SPECIFICATIONS	VALUE
Max. Output Power	1500W	Nominal Default Voltage	60VDC
Rated Power	1500W	Voltage Tolerance	±0.1VDC
Nominal Input Voltage Range	230VAC	Current Tolerance	±0.5A
Operating Range	120V-270VAC	Efficiency @ >30% load	≥94%
Input Current To The Charger	<15A	iTHD	<5%
Input Frequency	45 - 65Hz	Power Factor	≥0.99
Output Voltage Range	35 - 60VDC	No Load / Standby Power Consumption	<1.5W
Rated Output DC Current	24A	Ramp Up/Down Time for 1V change	<100ms
Max Output Current @ 3-60V	4A ~ 24A	Cold Start Time	<3s
Minimum Current Output	4A @ Pre charge		

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection: Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Shutdown: Calibrate based on Housing	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 2500 VAC , 50 Hz, 1 min , <10 mA	INPUT – Heatsink 1500 VAC, 50 Hz, 1 min , <10 mA	OUTPUT – Heatsink 500 VDC , 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby Power Off	Yes

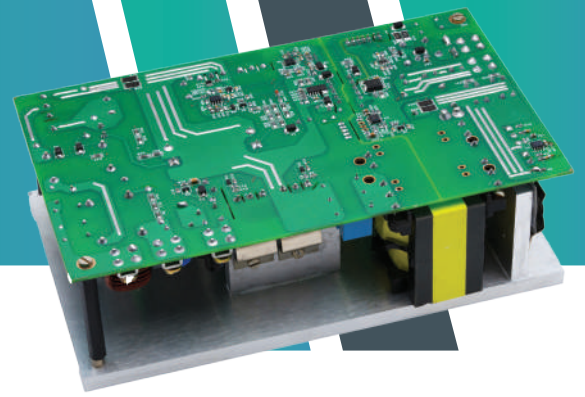
Display

2 LED's	Status Indications - Battery Status - Error and Fault Indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CAN Bus. LED Indications Warning and Fault Handling Logic Can Be Implemented	REMARK Can be customized as per the customer spec

Test Procedure

PROCEDURE	REMARKS	PROCEDURE	REMARKS
LPS	Tested	Soft Start Time	1 Sec
Power Factor Of PFC at Universal Operating Range	120-270	Current And Voltage Protection	Tested
Constant Voltage Minimum and Maximum Range	35-60	CAN Communication	Tested
Constant Current Minimum and Maximum Range	4 to 24	Overall Efficiency	95%

EV CHARGER - AC-DC 2.2KW



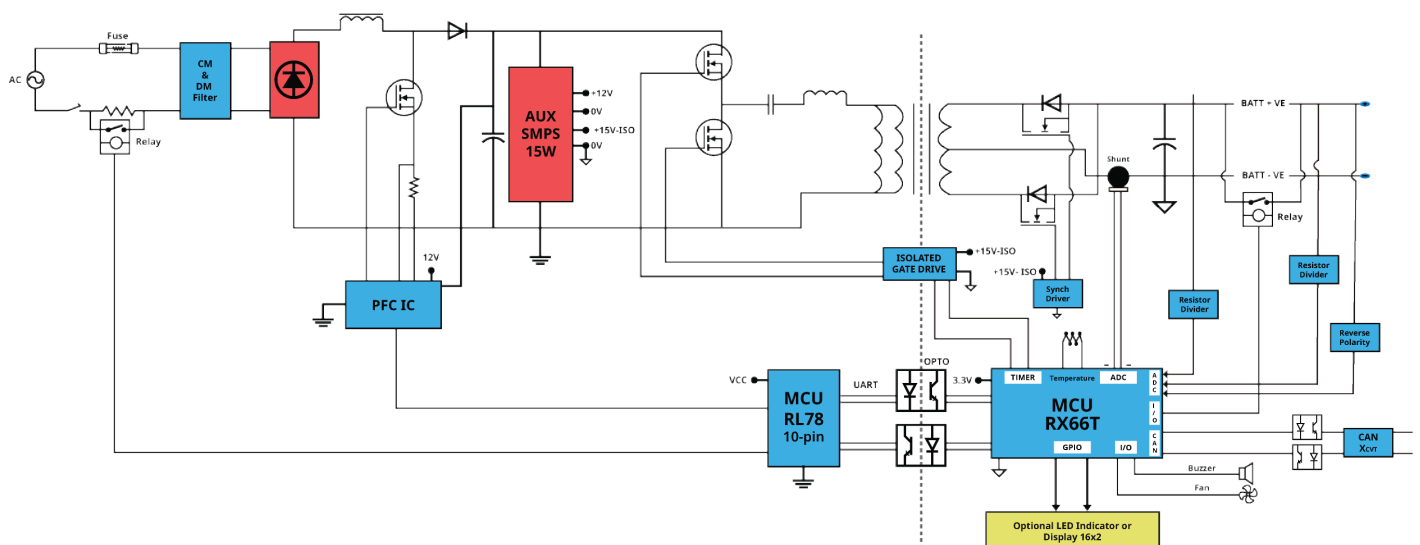
Description

The Off-Board EV Charger with Analogue Boost PFC and Digital Half Bridge LLC topology uses mathematical modelling to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with precise control over output power. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, and Power exchange on CAN Command.

Features

- Charge Voltage and current Cut-off To Prevent The REESS From Being Overcharged.
- Whenever REESS is Connected For Charging Soft-start Function Is Activated.
- Deep Discharge Condition Of REESS is Detected By Pre-charge Function.
- Protects Against Input Supply Variation 120v ~ 270v with **output de-rating feature**
- On-board/portable Charger Have CAN, UART To Communicate With BMS.
- Over temp protection and added de-rating to prevent over heating
- Output short circuit and reverse protection.
- Additional GPIO's to interface LED or Display.

Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE	SPECIFICATIONS	VALUE
Max. Output Power	2200W	Nominal Default Voltage	60VDC
Rated Power	2200W	Voltage Tolerance	±0.1VDC
Nominal Input Voltage Range	230VAC	Current Tolerance	±0.5A
Operating Range	120V-270VAC	Efficiency @ >30% load	≥94%
Input Current To The Charger	<18A	iTHD	<5%
Input Frequency	45 - 65Hz	Power Factor	≥0.99
Output Voltage Range	35 - 60VDC	No Load / Standby Power Consumption	<1.5W
Rated Output DC Current	35A	Ramp Up/Down Time for 1V change	<100ms
Max Output Current (33-60V I/P, Continuous)	4A ~ 35A	Cold Start Time	<3s
Minimum Current Output	4A @ Pre charge		

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection: Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Shutdown: Calibrate based on Housing	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 2500 VAC , 50 Hz, 1 min , <10 mA	INPUT – Heatsink 1500 VAC, 50 Hz, 1 min , <10 mA	OUTPUT – Heatsink 500 VDC , 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby Power Off	Yes

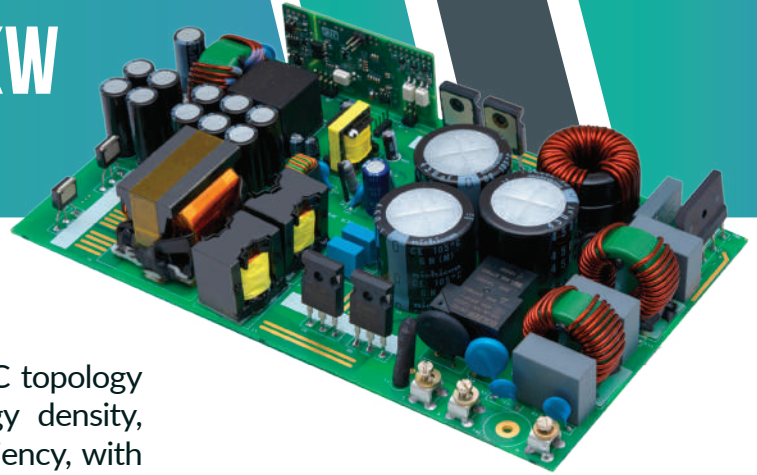
Display

LED's	Status Indications - Battery Status - Error and Fault Indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CAN Bus. LED Indications Warning and Fault Handling Logic Can Be Implemented	REMARK Can be customized as per the customer spec

Test Procedure

PROCEDURE	REMARKS	PROCEDURE	REMARKS
LPS	Tested	Soft Start Time	1 Sec
Power Factor Of PFC at Universal Operating Range	120-270	Current and Voltage Protection	Tested
Constant Voltage Minimum And Maximum Range	35-60	CAN Communication	Tested
Constant Current Minimum And Maximum Range	4 to 35	Overall Efficiency	95%

EV CHARGER - AC-DC 3.3KW



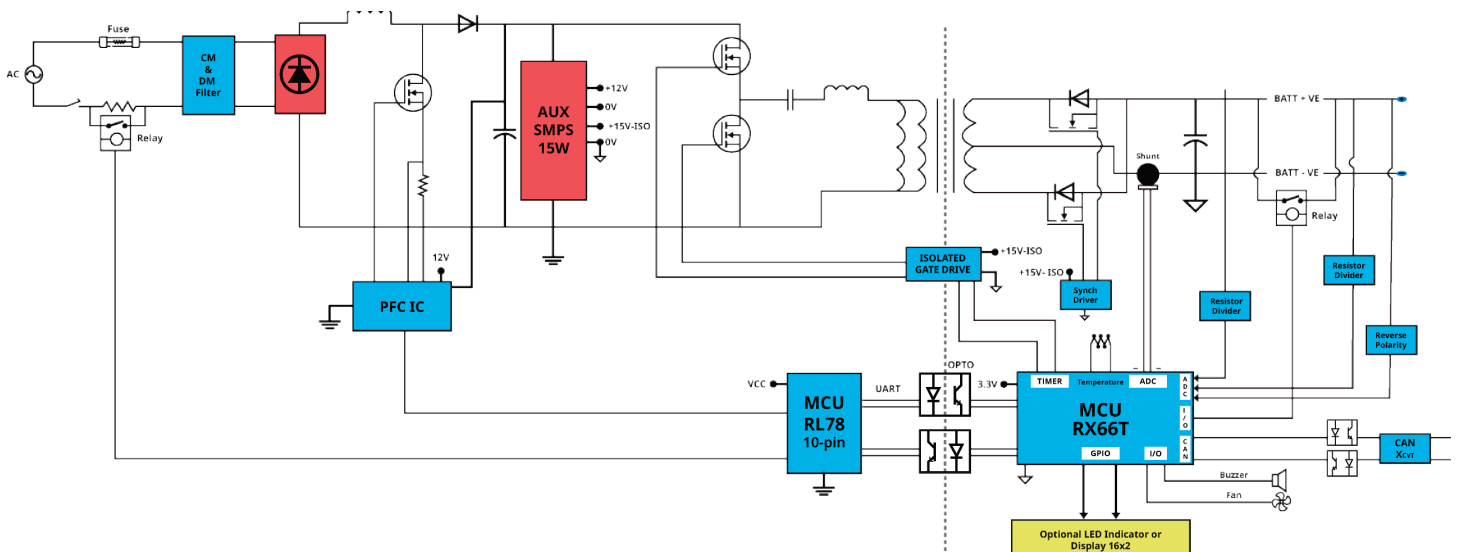
Description

The Off-Board EV Charger with Digital Half Bridge LLC topology uses mathematical modelling to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with AIS156 standards. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, or Power exchange on CAN Command.

Features

- Charge Voltage and current Cut-off To Prevent The REESS From Being Overcharged.
- Whenever REESS is Connected For Charging Soft-start Function Is Activated.
- Deep Discharge Condition Of REESS is Detected By Pre-charge Function.
- Protects Against Input Supply Variation 120v ~ 270v with **output de-rating feature**
- On-board/portable Charger Have CAN, UART To Communicate With BMS.
- Over temp protection and added de-rating to prevent over heating
- Output short circuit and reverse protection.
- Additional GPIO's to interface LED or Display.

Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE	SPECIFICATIONS	VALUE
Max. Output Power	3300W	Nominal Default Voltage	60VDC
Rated Power	3300W	Voltage Tolerance	±0.1VDC
Nominal Input Voltage Range	230VAC	Current Tolerance	±0.5A
Operating Range	120V-270VAC	Efficiency	≥94%
Input Current To The Charger	<25A	iTHD	<5%
Input Frequency	45 - 65Hz	Power Factor	≥0.99
Output Voltage Range	35 - 60VDC	No Load / Standby Power Consumption	<1.5W
Rated Output DC Current	51A	Ramp Up/Down Time for 1V change	<100ms
Max Output Current @ 3-60V	4A ~ 51A	Cold Start Time	<3s
Minimum Current Output	4A @ Pre charge		

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection : Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Cut Back: Based On Customer Housing Design	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 2500 VAC, 50 Hz, 1 min, <10 mA	INPUT - CASE 1500 VAC, 50 Hz, 1 min, <10 mA	OUTPUT - CASE 500 VDC, 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby Power Off	Yes

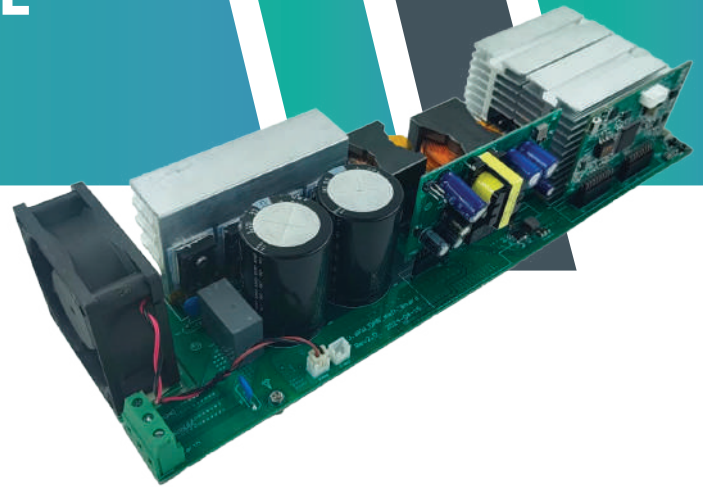
Display

LED's	Status Indications - Battery Status - Error and Fault Indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CAN Bus. LED Indications Warning and fault handling logic can be implemented	REMARK Can be customized as per the customer spec

Test Procedure

PROCEDURE	REMARKS	PROCEDURE	REMARKS
LPS	Tested	Soft Start Time	1 Sec
Power Factor Of PFC at Universal Operating Range	120-270	Current And Voltage Protection	Tested
Constant Voltage Minimum And Maximum Range	35-60	CAN Communication	Tested
Constant Current Minimum And Maximum Range	4 to 51	Overall Efficiency	95%

DC-DC BIDIRECTIONAL DIGITAL POWER (DAB) SOLUTION

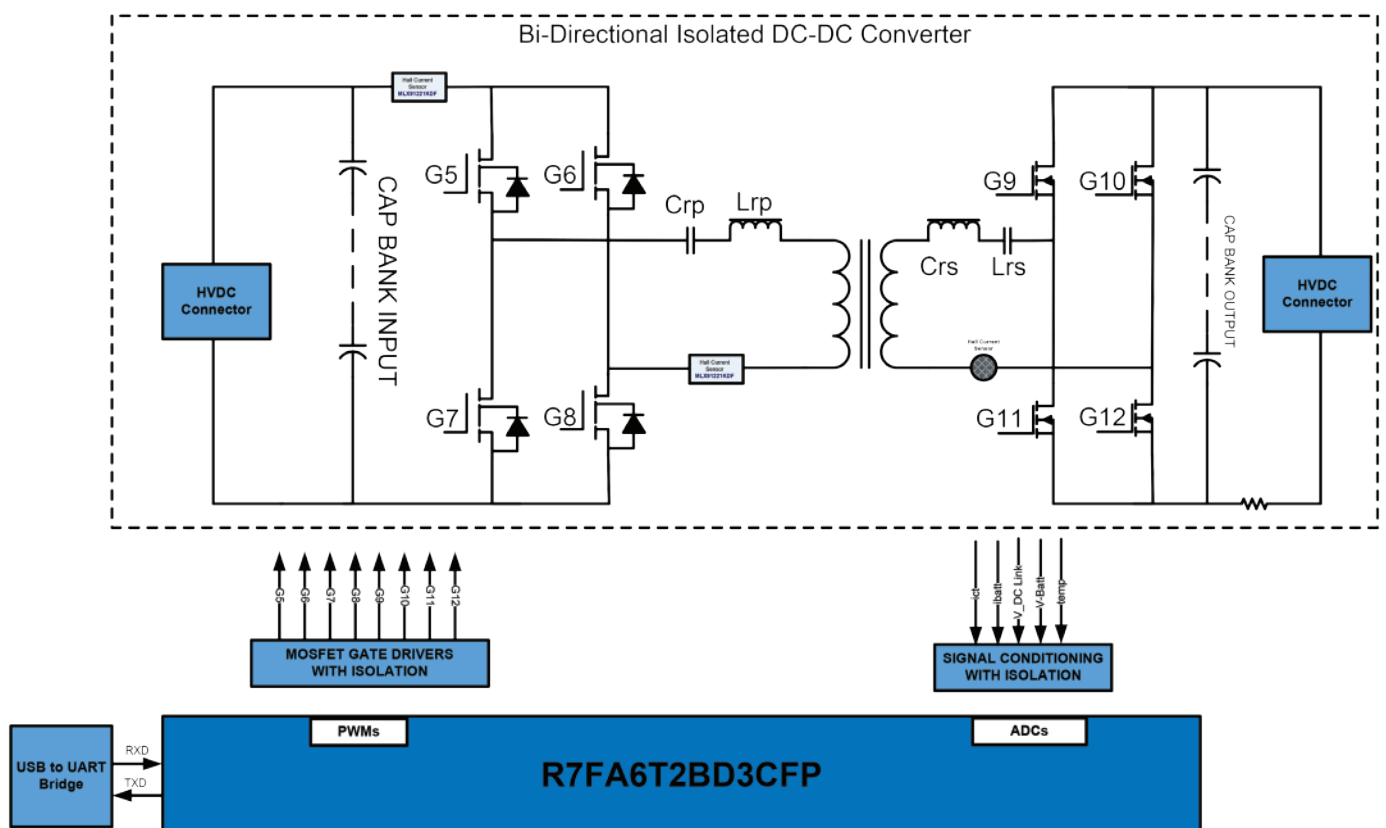


Description

This POC is a 3.6kW bidirectional isolated DC/DC power supply based on digital control technology, employing a Dual Active Bridge (DAB) topology and advanced Triple Phase Shift (TPS) control algorithm, with soft switching across the entire voltage range and optimized modulation for minimum reverse power flow.

It can achieve extremely high conversion efficiency at high switching frequencies. It features a simplified resonant network (requiring only one resonant inductor), wide voltage regulation range, seamless switching of bidirectional power operation, easy design of magnetic component for fixed frequency control and effective EMI handling. It has four working modes: Primary Side CV, Primary Side CC, Secondary Side CV, and Secondary Side CC, and can be widely used in scenarios that require unidirectional or bidirectional DC/DC power conversion, such as energy storage, on-board charger (OBC), grid-connected renewable energy generation, battery formation

Block Diagram



Specifications

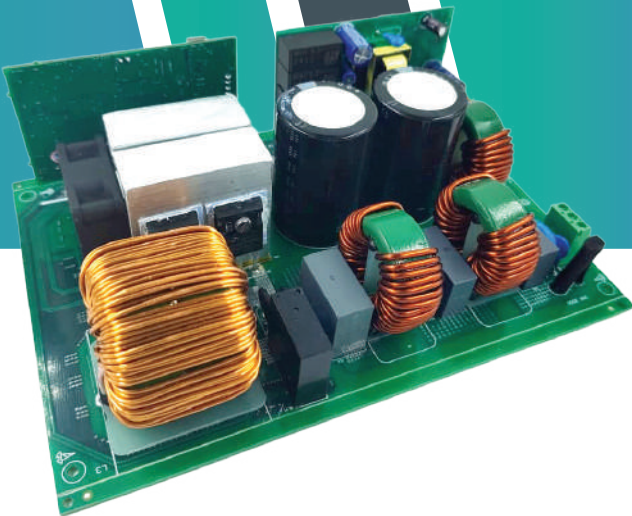
Key System Specifications

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
Primary HVDC Voltage		400		420	V
Secondary LVDC Voltage		48		60	V
Output Power				3600	W
Primary Max Current				±9	A
Secondary Max Current				±75	A
Peak Efficiency	400VIN, 46VOUT, 920W load, without fan consumption	98.94			%
Switching Frequency		66			kHz

Protection Specifications

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
HW Over Current	Primary DC Current		>±26.1		A
	Transformer Primary Side Current		>±22.5		A _{PEAK}
	Secondary DC Current		>±185		A
SW Over Current	Primary DC Current		>±15		A
	Secondary DC Current		>±120		A
HW Secondary DC Over Voltage	-		>62		V
SW Over Voltage	Primary Side		>430		V
	Secondary Side		>62		V
DC Under Voltage	Primary Side		<370		V
	Secondary Side		<38		V
Over Temperature			>70		°C
Overload			>4000		W

AC-DC BI-DIRECTIONAL DIGITAL POWER (PFC) SOLUTION

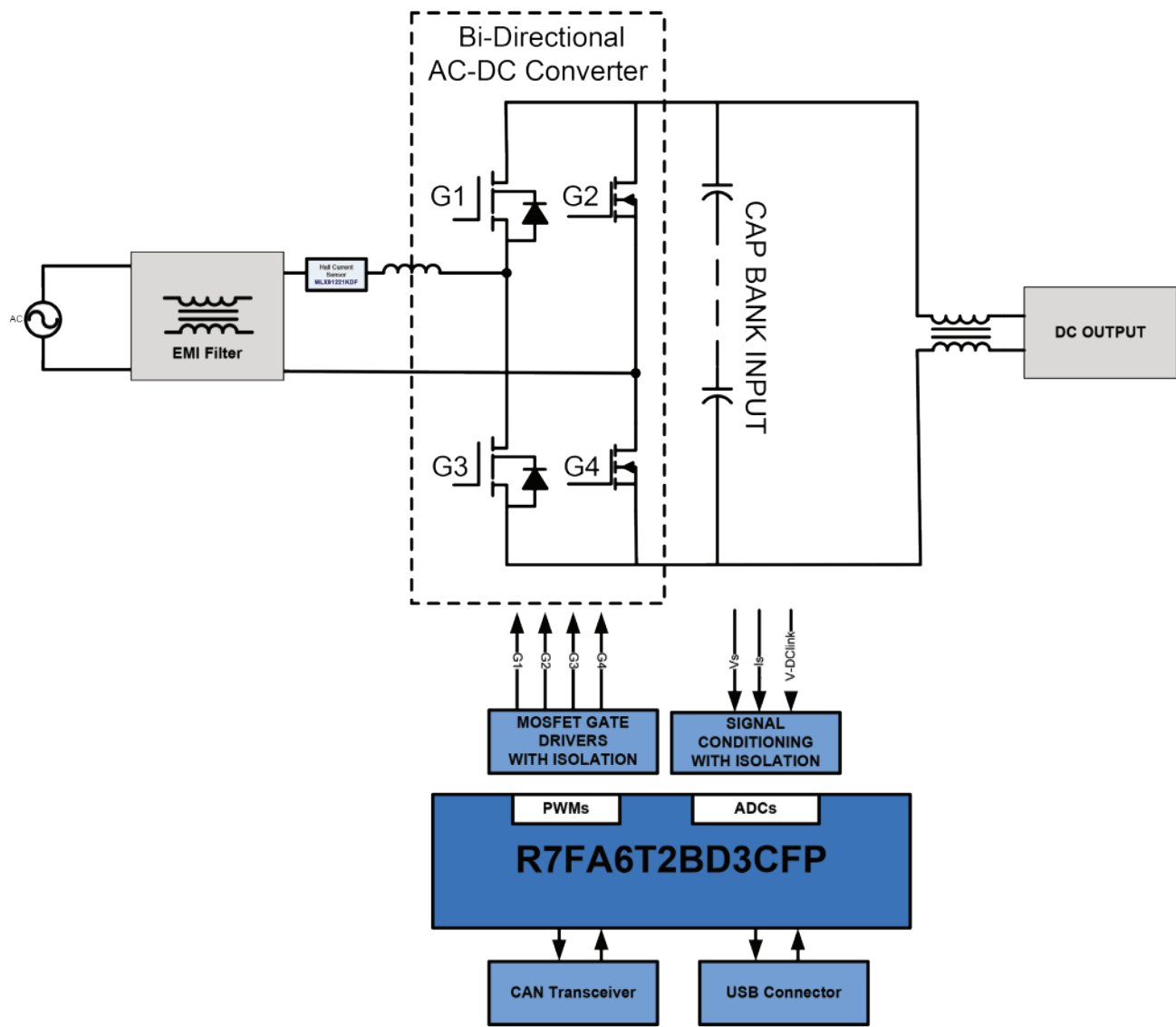


Description

This POC is a 3.6kW bidirectional AC/DC power supply, based on digital control, using a totem pole bridgeless PFC topology and a combination of SiC and Si MOSFETs to operate in continuous conduction mode (CCM) at high switching frequency, easily achieving efficient bidirectional power conversion.

It has three working modes: PFC, Grid-tied Inverter, and Grid-off Inverter, and can be widely used in scenarios that require single or bidirectional AC/DC power conversion, such as energy storage, on-board charger (OBC), grid-connected renewable energy generation, battery formation.

Block Diagram



Specifications

Key System Specifications

PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
AC Input Voltage		80		264	V _{RMS}
AC Line Frequency		45		65	Hz
AC Line Current				16.2	A _{RMS}
Output Power	220V AC line / 110V AC line			3600	W
DC Output Voltage				400	V _{DC}
iTHD	230VIN, 3600W load		1.15		%
PF	230VIN, 3600W load		0.9994		
Peak Efficiency	230VIN, 1610W load, with aux power consumption		98.7		%
Switching Frequency			66		kHz
Input Inductor			440		μH
Output Capacitor			1640		μF

Protection Specifications

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
HW Over Current			>38.7		A _{PEAK}
SW Over Current			>30		A _{PEAK}
HW DC Over Voltage			>445		V _{DC}
SW DC Over Voltage			>430		V _{DC}
DC Under Voltage			<350		V _{DC}
AC Voltage Error		<65		>270	V _{RMS}
AC Frequency Error		<40		>70	Hz
PLL Error	Difference between PLL and CMP calculation		>2		%
Over Temperature			>60		°C
Overload			>4000		W

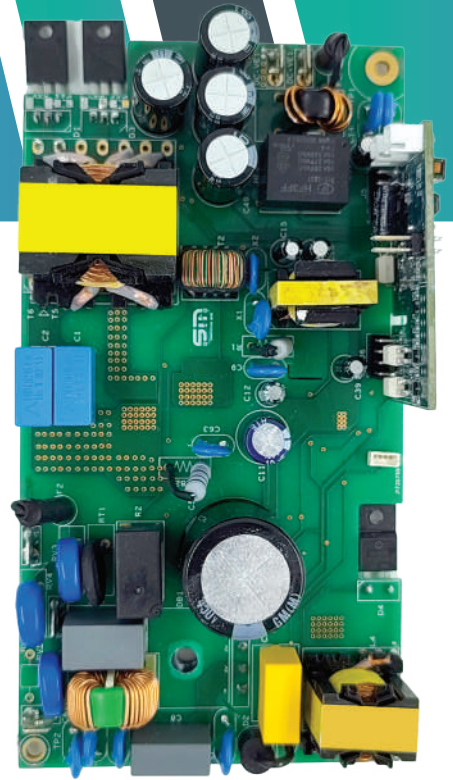
GaN EV CHARGER-750W

Description

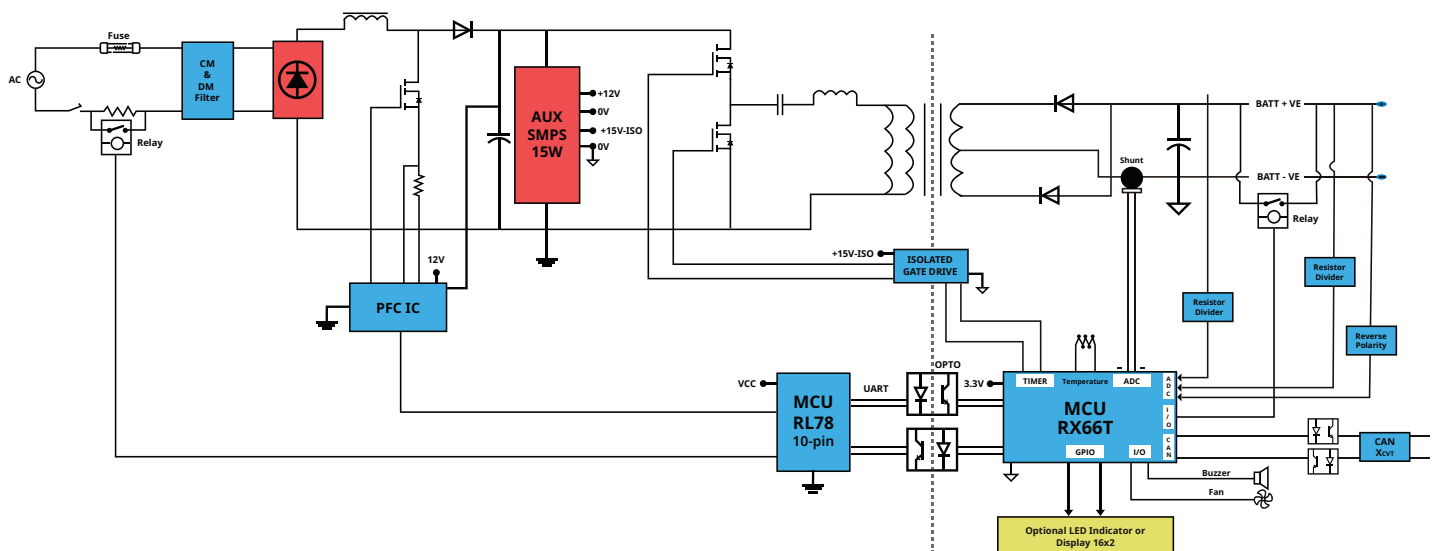
The Off-Board EV Charger with Digital Half Bridge LLC topology uses mathematical model to achieve high energy density, increasing safety, reducing weight, and improving efficiency, with AIS156 standards. It supports different battery types, and charging methods include Pre-charge, CC, CV, CP, floating/trickle, or Power exchange on CAN Command.

Features

- Charge voltage cut-off to prevent the REESS from being overcharged
- Whenever REESS is connected for charging soft-start function is activated
- Deep discharge condition of REESS is detected by pre-charge function
- Protects against wide input supply 120V~270V
- Earth leakage detection: Input RCD 30mA at plug input to meet AIS156
- On-board/portable charger have CAN, UART to communicate with BMS



Block Diagram



Electrical Characteristics

SPECIFICATIONS	VALUE
Max. output power	560W-750W
Rated Power	750W
Nominal Input voltage range	230VAC
Operating Range	120V-270VAC
Input Current to the charger	<5A
Input Frequency	45 - 65Hz
Output voltage range	33 - 60VDC
Rated Output DC Current	12A / 15A Max
Max output Current (33-60V I/P, Continuous)	015A
Minimum Current Output	0.5A

SPECIFICATIONS	VALUE
Nominal Default Voltage	51.8VDC
Voltage Tolerance	±0.1VDC
Current Tolerance	±0.5A
Efficiency @ >30% load	>=90%
Peak Efficiency	>=96%
THD	<5%
Power Factor (active PFC) , LLC	>=0.99
No Load / Standby Power Consumption	<1.5W
Inrush Current (AC side)	<8A
Leakage Current	<30mA
Ramp Up/Down Time for 1V change	<100ms
Cold Start Time	<5s

Safety

PROTECTION	
Under Voltage & Overvoltage Without Jitter	Over Current & Short Circuit Protection
Surge Protection Type 3 Inbuilt TVS 6kV B72220S0301K101	O/P Reverse Polarity Protection
O/P Overvoltage Protection : Cut off after 59 ± 1 V	Automatically Shut Down After Full Charge
Charger Thermal Cut Back: Based On Customer Housing Design	Residual Current Protection through RCD: Optional in Adaptor Mounting

GALVANIC ISOLATION		
INPUT - OUTPUT 3000 VAC , 50 Hz, 1 min , <10 mA	INPUT - CASE 1500 VAC, 50 Hz, 1 min , <10 mA	OUTPUT - CASE 500 VDC , 50 M ohm (min)

Communication Features

Communication Interface	CAN2.0B 500Kbps / Isolated CAN UART	Automatic Shutdown	Yes
		Standby power off	Yes

Display

2 LED's	Multi-colored LED Indicator for - Battery status - Error and fault indication - SOC Indication in terms of % - 25%,50%,75% & 100%	REMARK Can be customized as per the customer spec
Faults and Alerts	Alarms over CANBus. LED Lights Warning and Fault handling logic can be implemented	REMARK Can be customized as per the customer spec

Test Procedure

PROCEDURE	REMARKS
LPS	Tested
Power factor of PFC at universal operating range	110-240
Constant Voltage Minimum and Maximum Range	35-60
Constant Current Minimum and Maximum Range	1 to 14

PROCEDURE	REMARKS
Soft start time	1 Sec
Current and voltage protection	Tested
CAN communication	Tested
Overall efficiency	95%

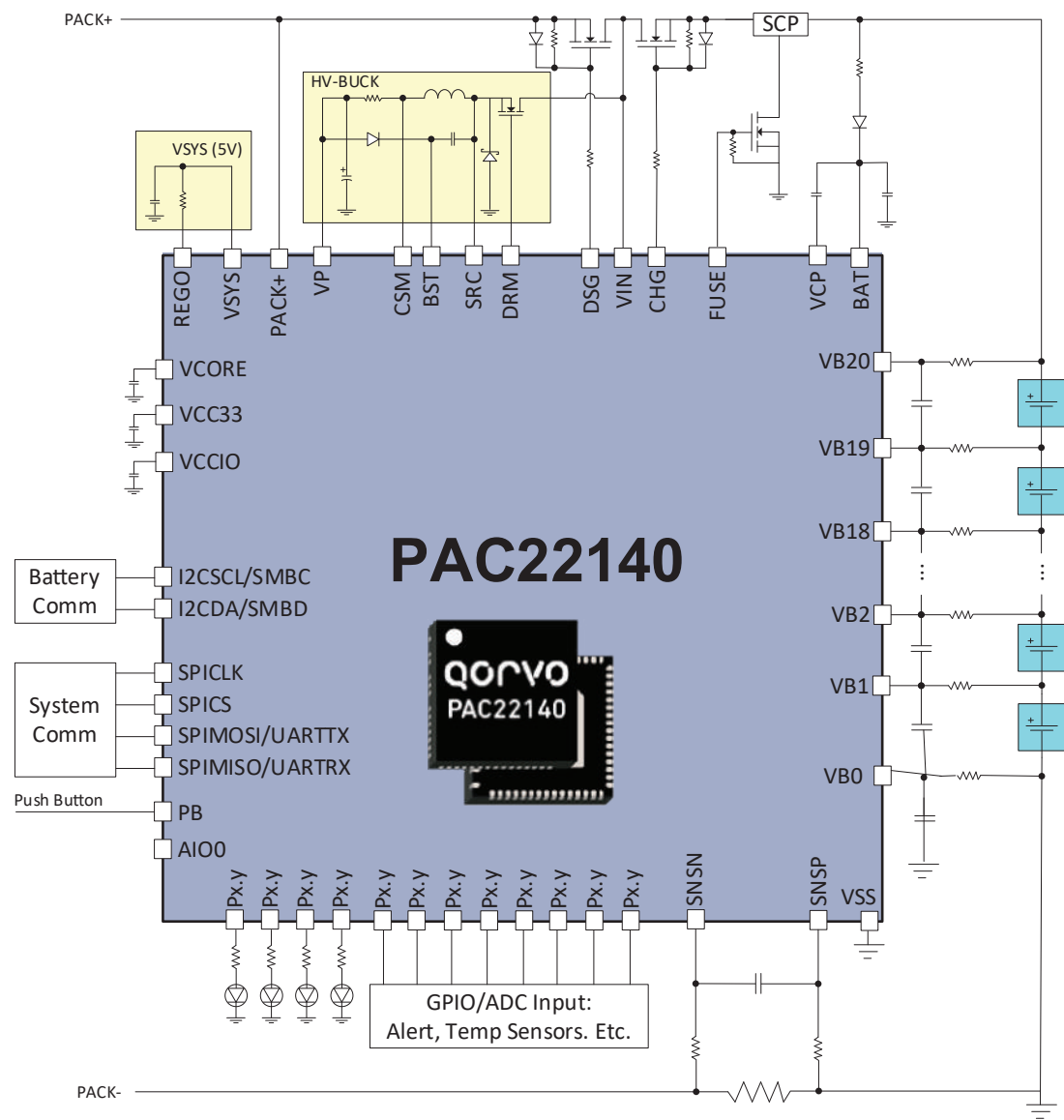
EV 750W Variants	48V, 16A	60V, 12.5A	72V, 10.5A
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BATTERY MONITORING SYSTEM (BMS)

Description

The Qorvo® PAC22140 is a Smart Battery Monitoring System (BMS) that can monitor 10-series to 20-series Li-Ion, Li-Polymer and LiFePO4 battery packs. The PAC22140 integrates a FLASH-programmable MCU, Power Management, Current/Voltage/Temperature Sense and drive circuits for charge/discharge FETs and protection fuses. It can communicate using UART/SPI or I2C/SMBus serial interfaces.

Block Diagram



Benefits

- 10s to 20s support (40V-100V).
- Fully programmable BMS SOC.
- Smallest solution size.
- Minimized external components count.
- Low power hibernate mode.

Features

MCU	50MHz Arm® Cortex®-M0 32kB FLASH, 8kB SRAM 10-bit 1MSPS SAR ADC and Dual 8-channel ADC sequencer
IO	Up to 17 x 3.3V/5V IO
SERIAL COMMUNICATIONS	UART or SPI and I2C/SMBus SWD FLASH programming
POWER MANAGEMENT	145V Input Buck DC/DC Controller High-Voltage Charge Pump for gate drive 5V/225mA Regulator Integrated LDOs for MCU Core and IO, Analog Integrated high-accuracy AOC VREF
GATE DRIVERS	CHG/DSG FET Gate Drivers External FUSE FET Driver 20S Cell Balancing FETs (50mA)
SIGNAL CONDITIONING	16-bit SD ADC for current sense with Differential PGA 16-bit SD ADC for voltage sense, cell balance 12-bit SAR ADC for voltage/temperature sense Integrated power supply monitoring using ADC Programmable 3-level OCP
PHYSICAL	T _a = -40° C to 105°C 9x9mm, 60-pin package

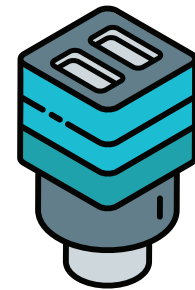
USB PD CHARGER 18W-26W

Description

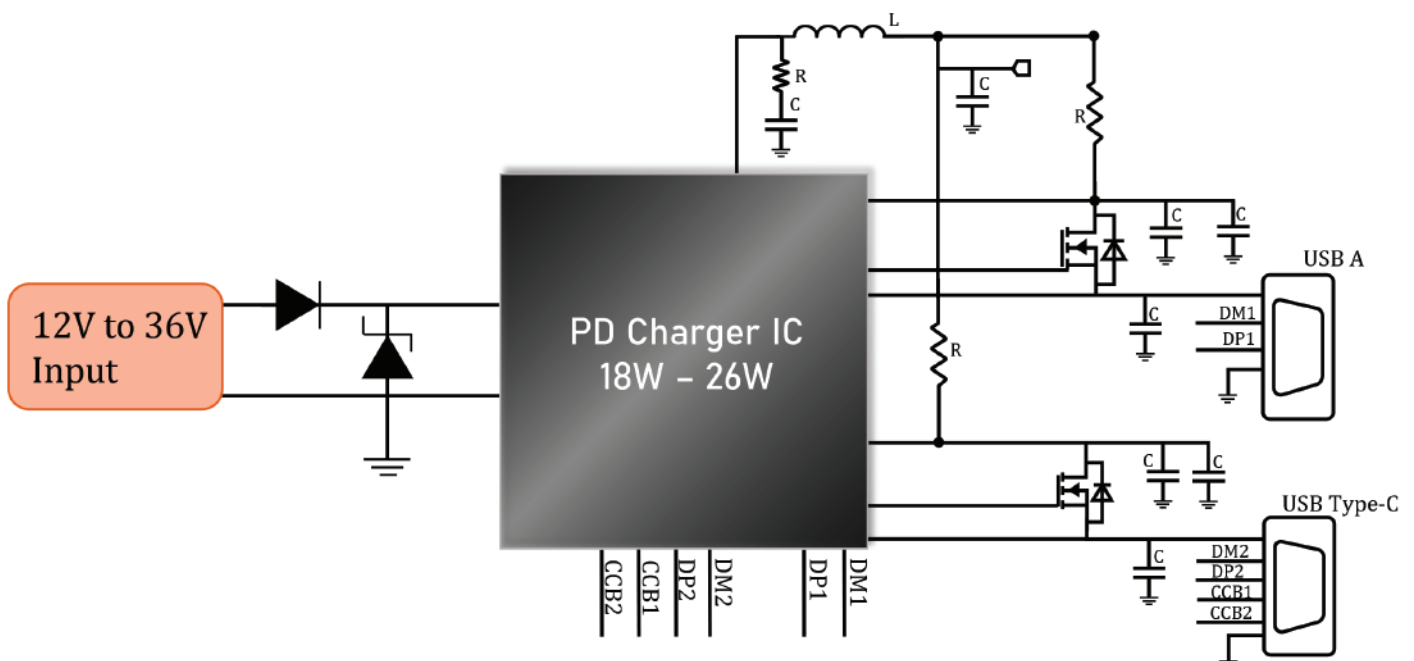
It is a PD charger Which Supports Multiple fast charge protocol Standards with Dual Type-C Output Ports and Dual USB Type-A Output Ports.

Features

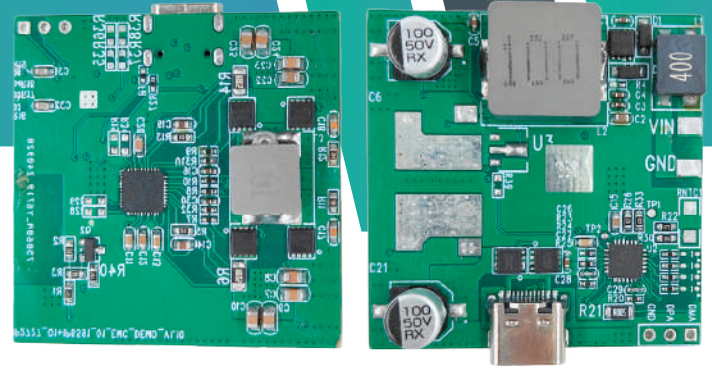
- **Input Voltage:** 8.3V~31V
 - Operating Range: 3V~20V
 - Line Compensate: 50mV/A
 - Supports CV/CC Output Mode
 - Efficiency: 96.4%
 - Support Dual Ports: Type-C or Dual Type-A
- **Protocol Supports**
 - Fast Charging, Samsung, Oppo, Apple, FCP, UFCS and SCP,
 - Support Type-C PD output
 - Support BC1.2 and Apple
 - Support QC2.0, QC3.0 and QC3+
 - Support Huawei Fast charge FCP
- **Support Type-C Output and PD Protocol**
 - Support 5V, 9V, 12V,15V,20V output
 - Support PD2.0/PD3.1 output protocol
 - PPS support 3.0V to 21V adjustable voltage with 20mV/step output



Block Diagram



USB PD CHARGER 65W

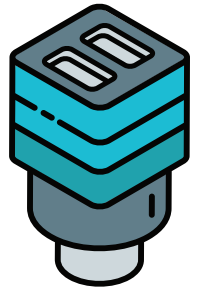


Description

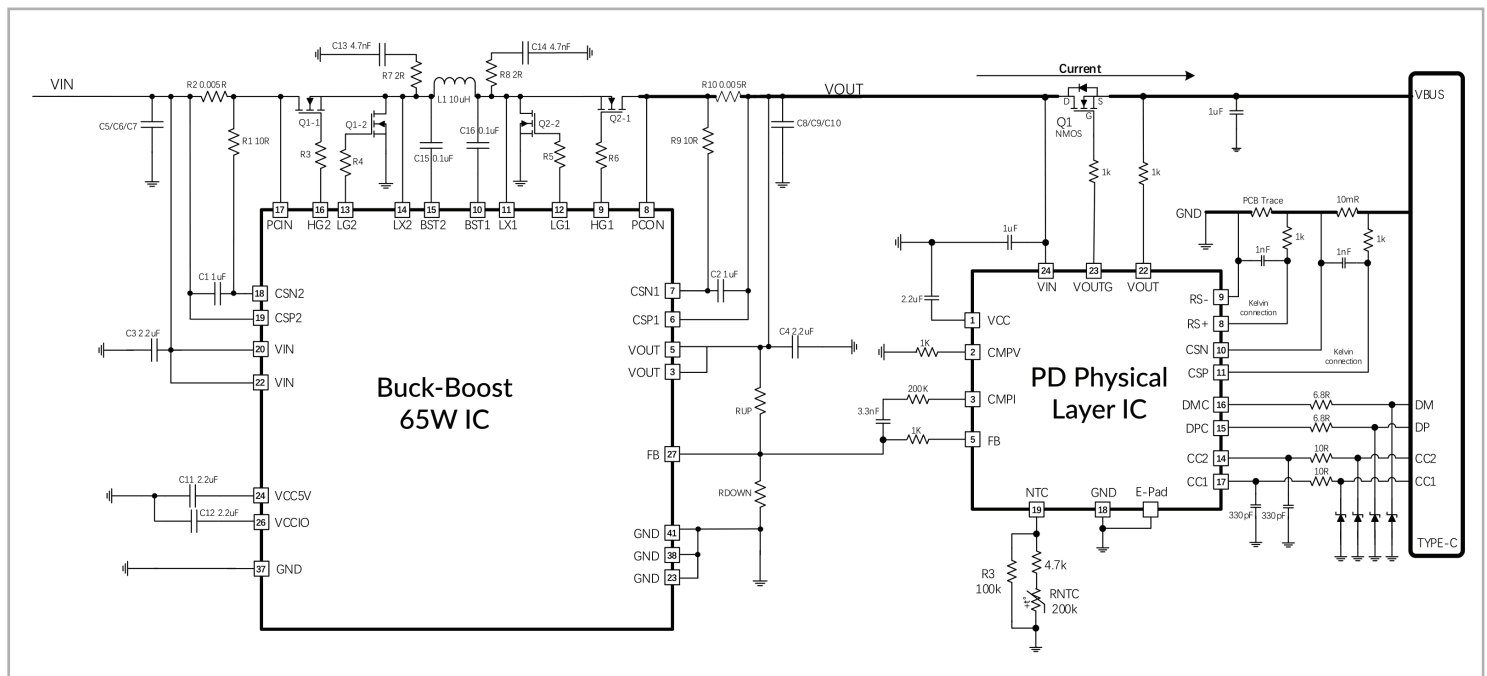
65W Buck Boost is a high-efficiency synchronous Buck-Boost controller with IIC/FB. It allows the realization of a Buck-Boost converter with only one inductor and power MOSFETs.

It supports an input voltage range of 5V~36V and an output voltage range of 3V~21V, and the output voltage can be regulated by IIC or FB.

It has a fully integrated Type-C / PD and DPDM fast charge controller. It complies with the latest Type-C and PD 3.1 standards and supports the most popular high voltage fast charge protocols with DPDM interface, and targets for automotive charger applications



Block Diagram



Applications

- Car USB charger
- Automotive power charging applications

Features

- AEC-Q100 Qualified for Automotive Applications:
 - » Temperature Grade 2: -40°C~+105°C
- Integrate USB Power Delivery (PD2.0/PD3.1):
 - » USB Type-C/PD protocol
 - » Auto-detect Type-C attach and detach
 - » Support USB PD2.0/PD3.1/PPS
 - » VCONN and SDO/P supported for e-mark

- Private Protocols
 - » Xiaomi's private charging protocol
 - » OPPO's private charging protocol
- Fast Charge
 - » Support QC2.0/QC3.0/QC4/QC4+
 - » Support AFC and Class B
 - » Support Huawei FCP protocol
 - » Support Huawei SCP protocol
 - » Support MTK PE1.1/2.0 protocol
 - » Support MTK's AFC fast charge protocol
 - PE 2.0: 5V/9V/12V/15V
 - PE+ 11: 5V, 9V, 12V
 - » Support BC1.2, Apple 2.4A, Samsung* 2.0A
- Auto detection Voltage and Signals on CC1, CC2 and DP, DM For Different Fast Charge
 - » Support USB-A and Type-C dual port output
 - » Fast charge single port output and 5V for dual port output
- Power Management
 - » A DC port 5V output
 - » Support ADOE mode
 - » Built-in power path management
 - » Dynamic port priority function
 - » Support auto detecting low mode
- Multiple Protection, High Reliability
 - » OVP overvoltage protection and short circuit protection
 - » NTC temperature protection
 - » DPDM/CC1/CC2 overvoltage protection
 - » DPDM short circuit with OVP delay protection
 - » DP/DM input OVP to 30V
 - » CC1/CC2 input voltage up to 30V
- Built-in 2kbit OTP-ROM
 - » Flexible customization: software, supporting up to three upgrades
- Working voltage: 3V~30V
- Package QFN24 (4mm4mm0.75mm)

WIRELESS CHARGER (15W)

Description

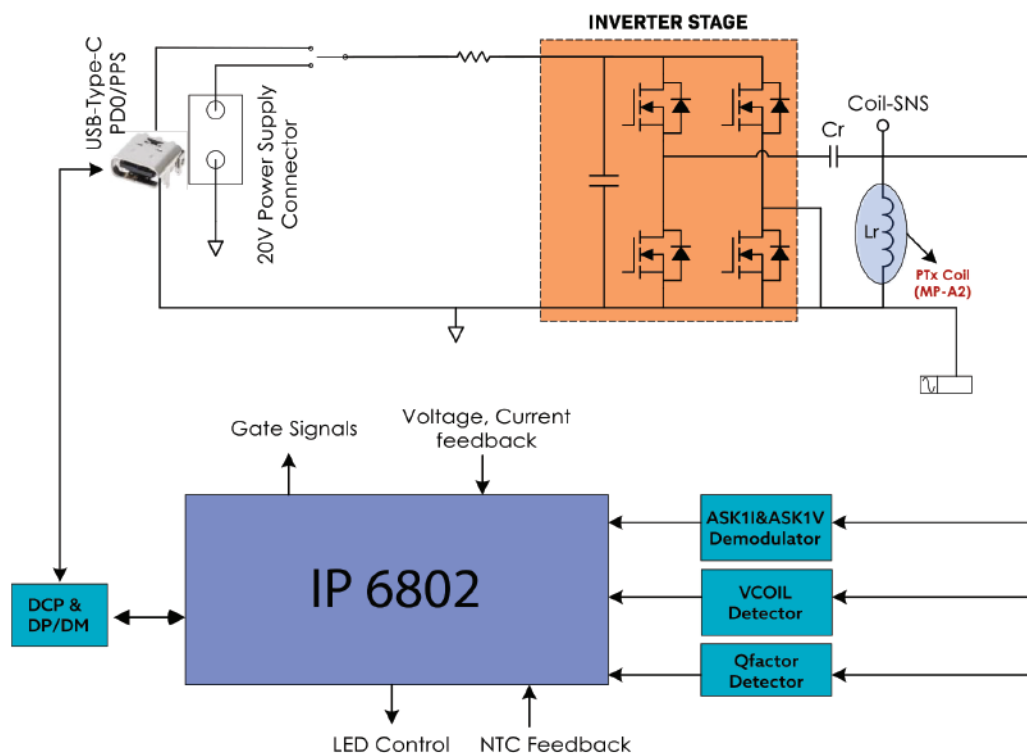
Wireless charger integrates multiple charging head fast charging protocols, can automatically apply high voltage, and supports wireless charging fast charging protocols, is a wireless charging transmitter control SOC chip with internal integration of 32-bit MCU, ADC, Timer, I2C, H-bridge driver, ASK demodulation & decoding and rich IO resources, which can customize various Qi protocol wireless charging solutions and pass certification tests, integrates rich IO resources and supports customization of indicator effects, and users can also customize the indicator through the PC upper computer.



Features

- Operating Range: 3V~20V
- Support Qi protocol BPP, EPP certification.
- Supports 5~15W multiple applications.
- Support PD3.0, as well as a variety of DP&DM fast charging protocols.
- Integrated H-bridge drive.
- Integrated internal voltage and current demodulation.
- Support FOD foreign object detection function.
 - Static FOD detection.
 - Dynamic FOD detection.
- Support external passive crystal oscillator.
- Support CBB/NPO capacitors.
- Support Q value detection.
- Dynamic Power Management (DPM) for USB power supply with insufficient power supply.
- Input overvoltage, overcurrent, undervoltage, NTC overtemperature protection function.
- Integrated 32KB MTP to support repeated firmware upgrades.

Block Diagram



TPMS



Description

A Tire Pressure Monitoring Systems (TPMS) Supplies The Driver With Immediate Real Time Data On The Pressure And Temperature Within The Tires. TPMS Alerts You When The Tire Pressure Of Your Vehicle Is Low Or If There Is A Risk Of A Flat Tire. The Objective Of A TPMS Is To Prevent Traffic Accidents, Reduce Fuel. Inefficiency, And Minimize Tire Damage Caused By Low Tire Pressure By Promptly Identifying Potentially Dangerous Tire Conditions.

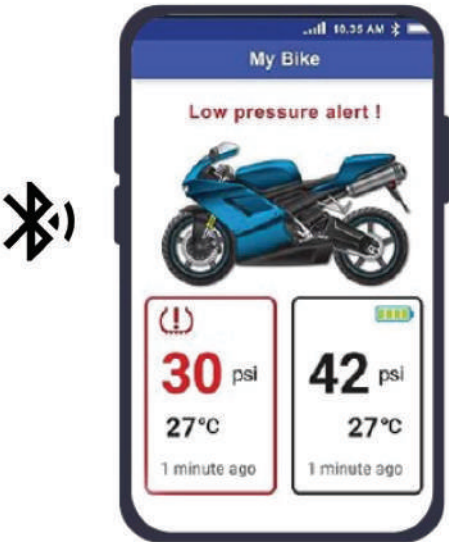
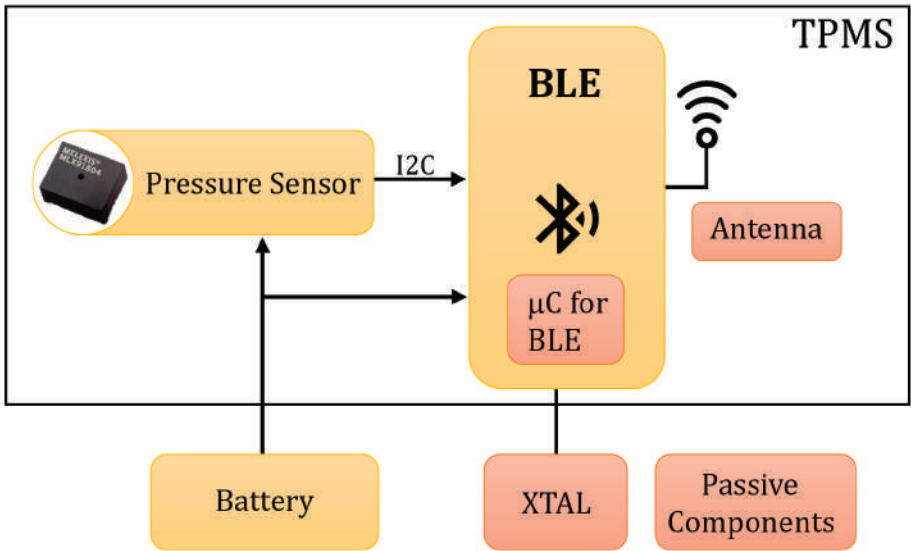
Applications

- Automotive Safety
- Off-Road Vehicles

Specifications

OPERATING VOLTAGE	3.3V
OPERATING HUMIDITY	90% Max
INTEGRATED MULTI-FUNCTION SENSING	Pressure, Acceleration, Temperature And Voltage
DIFFERENT PRESSURE RANGES UP TO 1,400 KPA	Down To ± 4 Kpa Accuracy And 0.2 kpa Resolution
OPERATING FREQUENCY	Bluetooth Low Energy 5.0, 2400MHz-2483.5MHz
TRANSMISSION POWER	2.5dBm Max
RECEIVER SENSITIVITY	< -85dBm
INTEGRATED MULTI-AXIS ACCELEROMETER (X, Z OR XZ)	Up To 700g Measurement Range
BATTERY LIFE	2-3 Years

Block Diagram



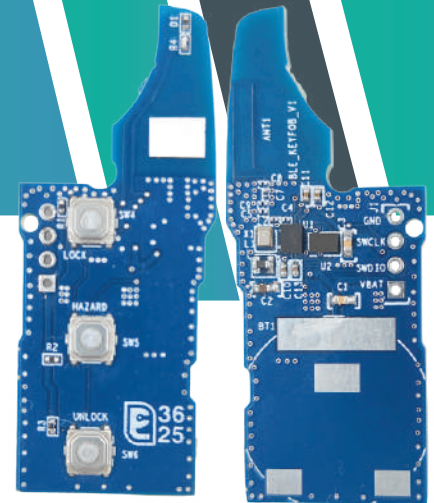
KEY FOB

Description

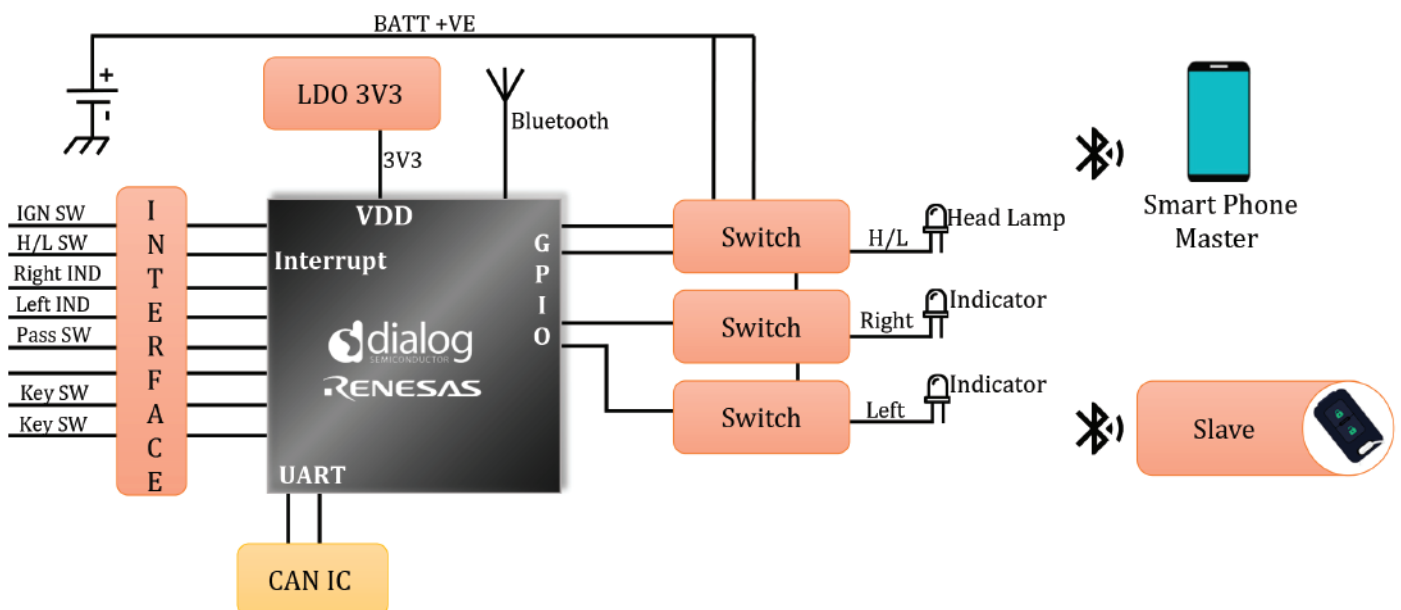
One of the primary functions of a ble key fob is to remotely lock and unlock the two-wheeler's ignition or steering lock, providing a convenient way to secure the vehicle without needing to insert a physical key.

Features

- Dialog DA14531 Low Energy BLE5.0 module
- Battery: CR2032
- Lifetime: more than 2 years
- Frequency: 2402/2426/2480 Mhz
- Broadcasting Protocol: iBeacon
- Broadcasting Interval: Programmable
- Broadcasting Power: 0DBm As Default, Programmable
- Antenna: PCB
- Distance: <50meter
- Working Power Supply: 1.7 ~3.6V DC



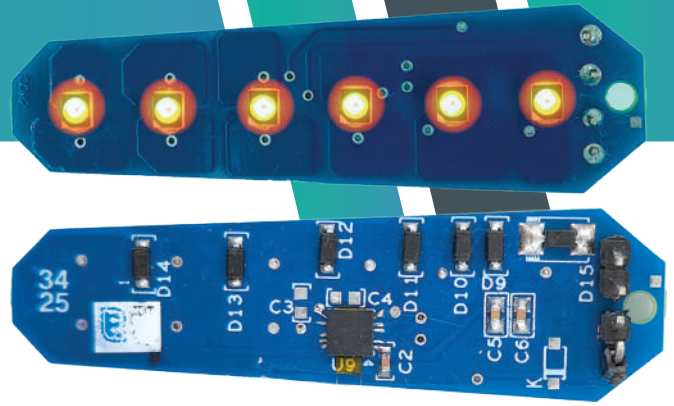
Block Diagram



SEQUENTIAL LED INDICATOR

Description

Sequential LED Indicator Demonstrated Here Is Built Around Renesas RL78-F12 Microcontroller, and Taiwan Semiconductor CCR For Individual Light Control.



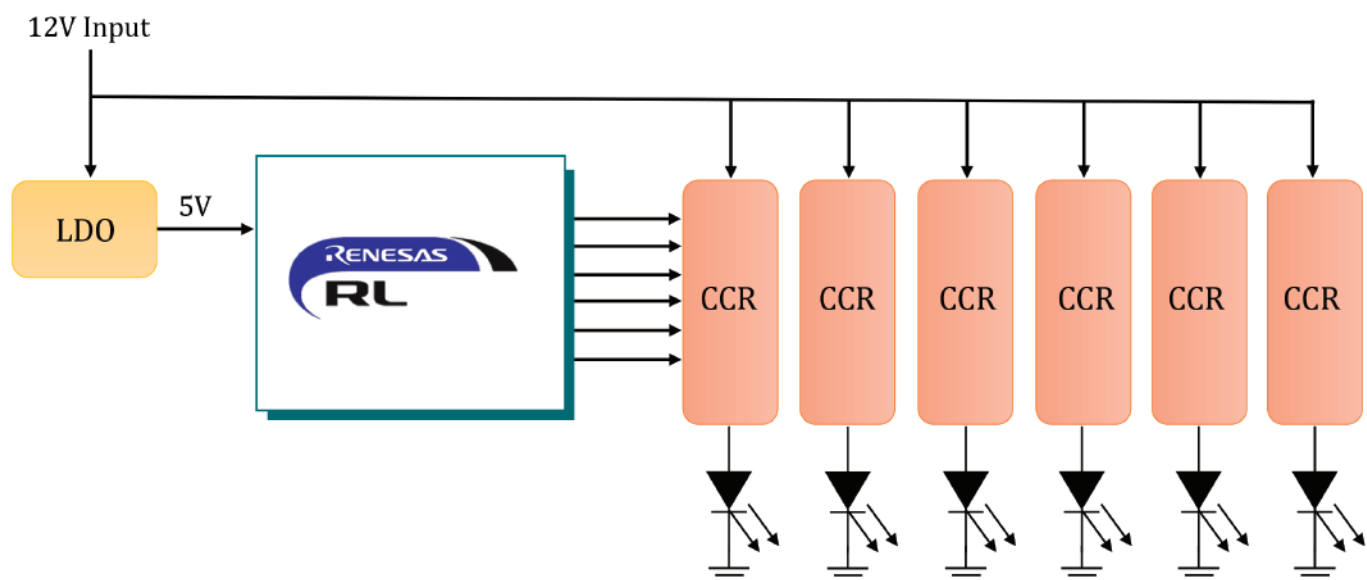
Features

- Simple & robust design
- Operating voltage: 10v–21v
- Led current upto 200ma
- Battery reverse protection
- Sequential time can be adjusted easily
- Production friendly compared to analog sequential to match the sequence time
- No of sequence can be added upto 16
- Sequential animation can be altered easily
- Synchronise can be done for front and rear indicator

Applications

- Automotive Lighting
- Safety and Warning Systems

Block Diagram



AMBIENT LIGHTING



Description

The MLX81123 is a fully integrated LIN responder for automotive ambient light applications. It drives RGB LEDs via LIN bus. (according to LIN 2.x as well as SAE J2602). The MLX81123's integrated physical layer LIN transceiver, LIN protocol controller, and current-controlled outputs enable rapid development of straightforward yet effective and economical ambient light modules for LIN bus systems

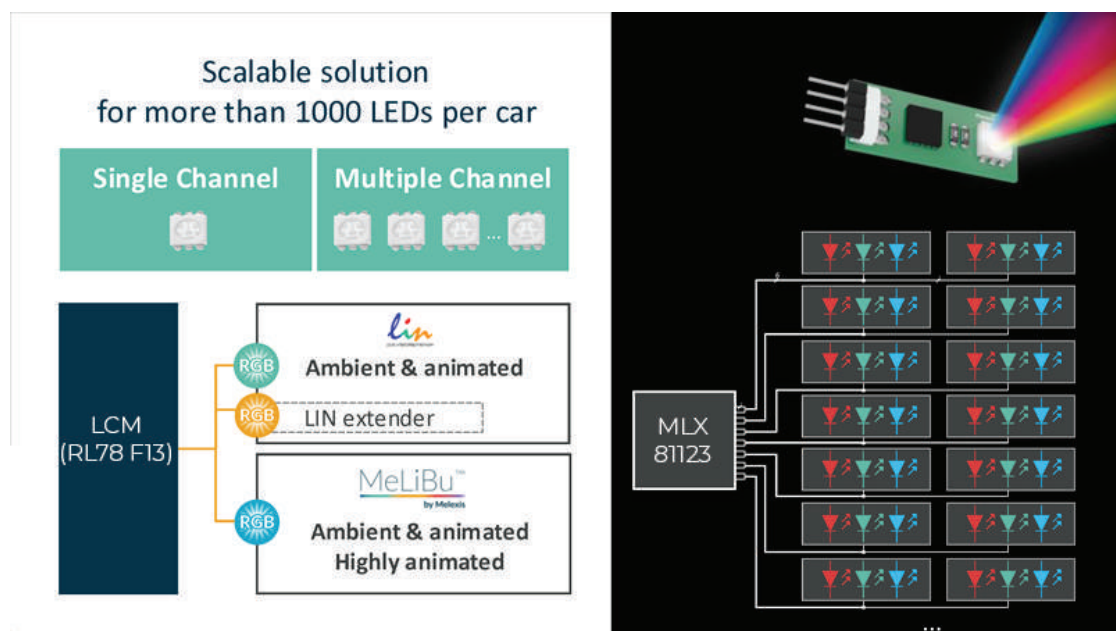
Features

- Application controller
- 16-bit microcontroller:
 - 32 KB Flash, System ROM, 2 KB RAM, 512 B EEPROM
- Math co-processor for 32-bit MUL/DIV operations
- Two Watchdog timers with independent clocks
- Internal RC oscillator (max 32 MHz)
- Transceiver compliant to ISO 17987-4 and SAE J2602
- LIN physical Layer
- LIN protocol controller
- Support for auto-addressing
- Voltage regulator
- Standby current of typ. 25 μ A (max 50 μ A) in sleep mode
- Integrated battery
- 12 bit ADC with DMA
- Low Side Current Source
- 4x high voltage I/Os with free configurable current sources (up to 60 mA) for RGB+W
- 4x 16-bit PWM outputs with configurable resolution
- Automotive standard
- Temperature range of -40 $^{\circ}$ C to 125 $^{\circ}$ C
- 28 V jump start
- Integrated temperature sensor
- ASIL compliant (ISO 26262), supporting up to ASIL B
- Diagnostic for connected LED (short, open, threshold)
- AECQ-100 qualified
- Package RoHS compliant
- SOIC8 (DC) package with exposed pad
- DFN8 (LW) 3x3 package with exposed pad

Applications

- Automotive ambient lighting
- Connected interior light

Block Diagram



RL78 SMART CLUSTER



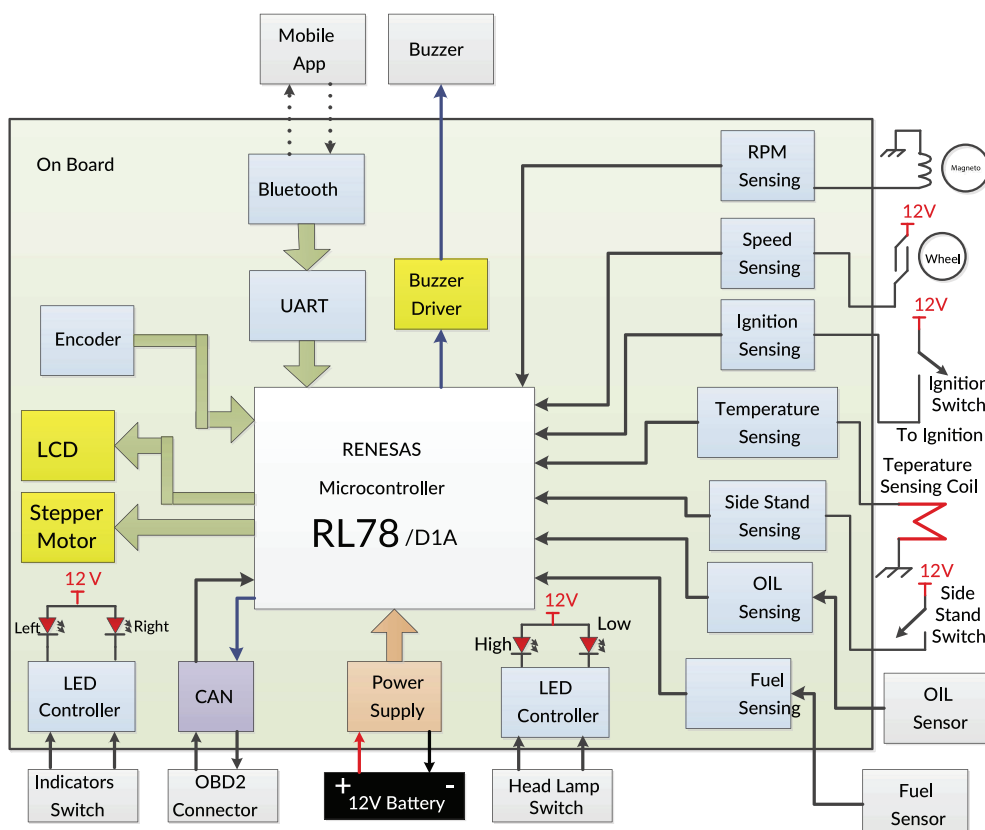
Description

Renesas's reference solution for Smart Cluster includes a full cluster functionality with additional features for dashboard market segments. There are various key features such as stepper motor for RPM & Segmented LCD display for Speed. Renesas's automotive grade RL78/D1A 16-bit microcontrollers series contains flash memory from 24K-512K and possess a wide range of packages that supports 48-128 pins. The reference solution possess CAN bus interface, sound generator interface, stepper motor with ZPD and LCD segment. Renesas provides easy hands on development tools, making development process easier than you have ever imagined.

Features

- Addition Bluetooth wireless modules to communicate with smart phone for functionalities such as Diagnosis, Navigation, etc
- Stepper motor RPM & LCD for Speed & other indications like odometer, trip, RTC, Fuel, etc. are available
- Provision for connecting ZigBee wireless modules
- Wide range of interface support: CAN bus interface, sound generator, stepper motor, etc
- RL78/D1A 16-bit True Low Power microcontroller
 - 32 MHz flash memory/RAM up to a maximum of 512 KB/24 KB
 - CAN or LIN interface
 - Stepper motor controller/driver
 - Up to 216 segment LCD controller/drive

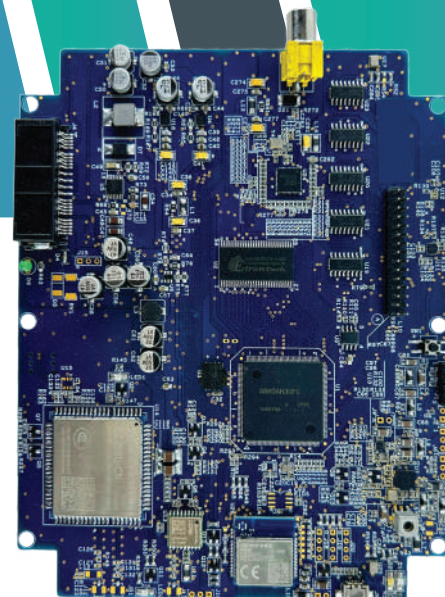
Block Diagram



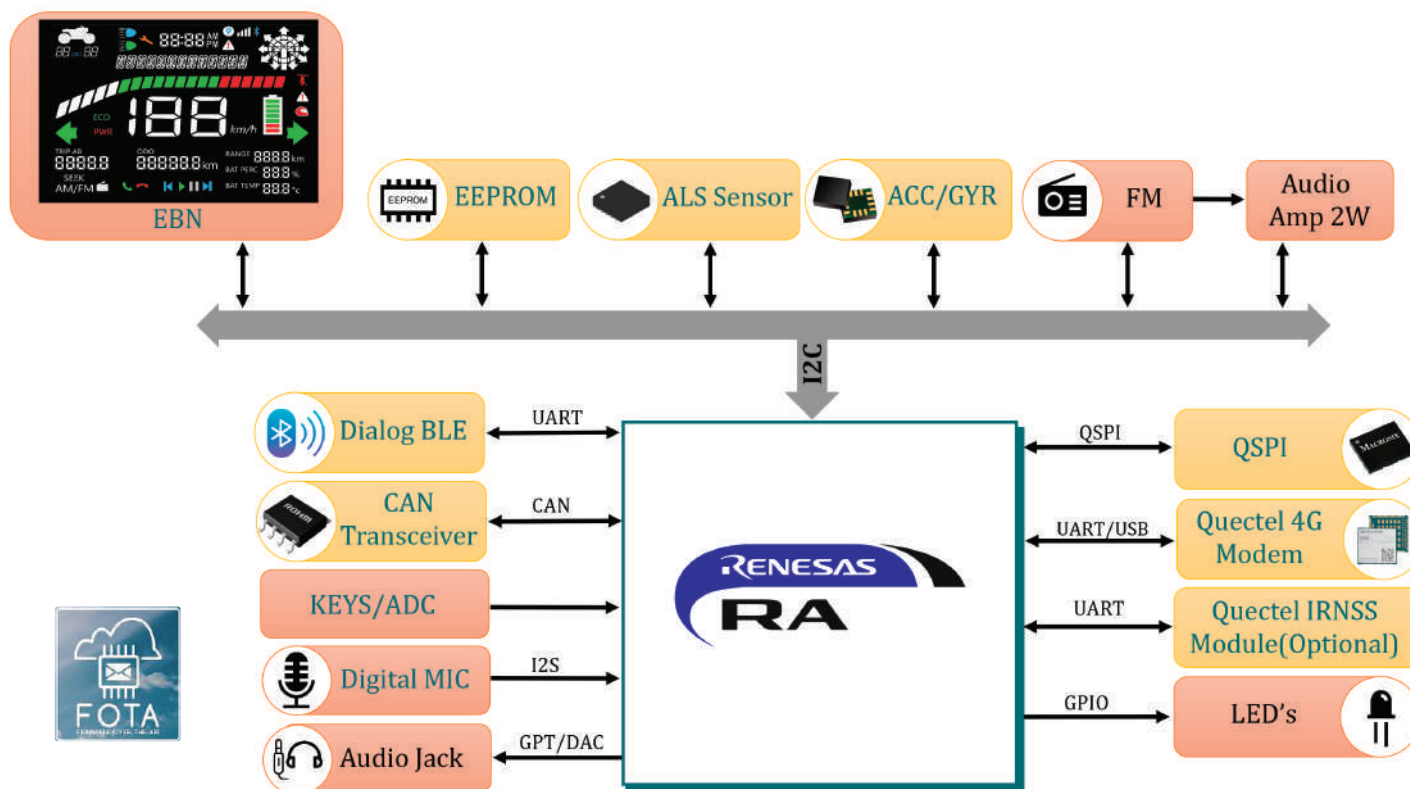
RA6M4 MCU / EBN CLUSTER

Description

The 2-wheeler smart cluster integrates technology, connectivity, and intelligent functionalities to deliver an enriched riding experience. This design has wireless module for communicating with smartphones. It provides essential data, connectivity choices, and safety elements, all within a streamlined and user-friendly interface tailored specifically for motorcycles. With these features it transforms a traditional cluster into a smart one.



Block Diagram



MCU

MCU	Renesas RA6M4 - 100Pin 1MB Flash/256KB RAM / 8KB Data Flash
CORE	Cortex M33

Connectivity

BLUETOOTH	Dialog DA14531 - BT 5.1
GSM	Quectel LTE Module
GNSS	GPS GLONASS or GPS IRNSS

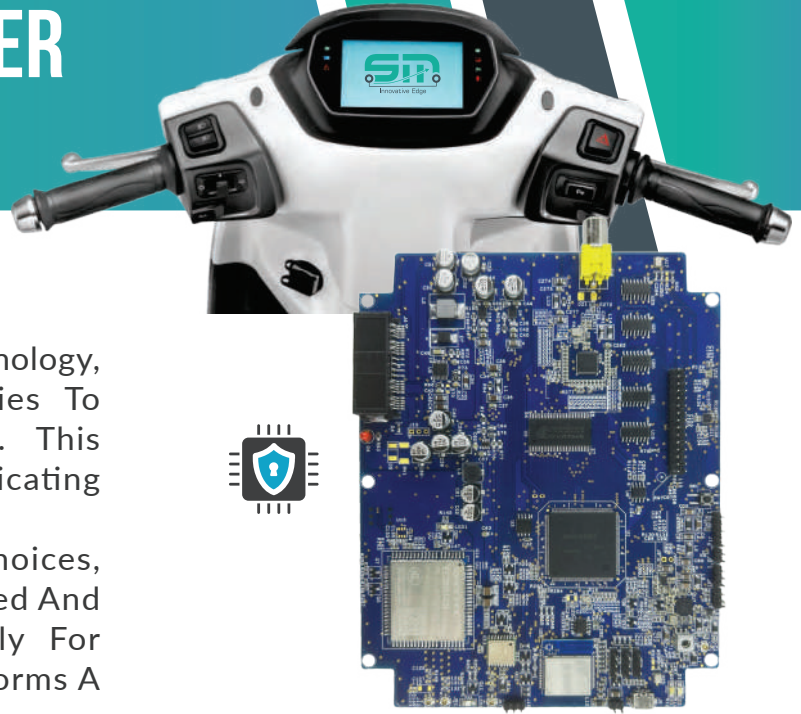
Hardware

LCD	5"/7" EBN Display
MEMORY	QSPI Flash 64MB
DISPLAY	EBN Module with I2C Interface
GSM INTERFACE	UART
CAN (BD41041FJ)	AEC-Q100 Qualified Transmission Rate of 40kbps to 1Mbps
BLUETOOTH (DA14531)	UART Interface
ALS	Ambient Light Sensor with IR LED
USIM	x2, Support 1.8/2.95V (U)SIM Cards, with (U)SIM Card Detection Function
GYRO & ACCELEROMETER (LSM6DS3TR)	16-bit Digital Triaxial Accelerometer And Gyro Sensor

Software

Renesas RA6M4: IDE E2 Studio/E2 Studio, Azure RTOS, FREE RTOS
Dialog: Keil, IDE

RA6M3 - SMART CLUSTER

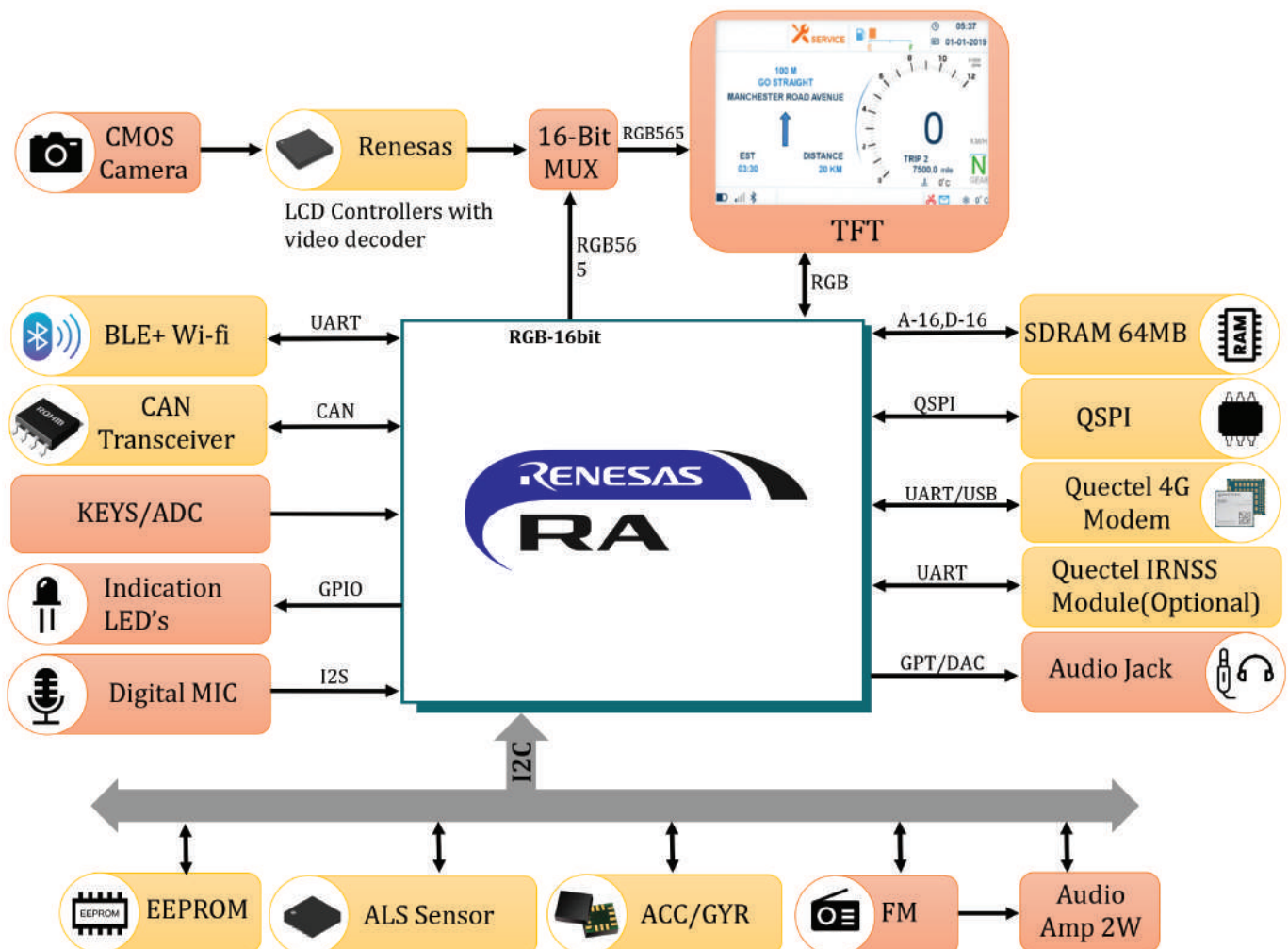


Description

The 2-wheeler Smart Cluster Integrates Technology, Connectivity, And Intelligent Functionalities To Deliver An Enriched Riding Experience. This Design Has Wireless Module For Communicating With Smartphones.

It Provides Essential Data, Connectivity Choices, And Safety Elements, All Within A Streamlined And User-friendly Interface Tailored Specifically For Motorcycles. With These Features It Transforms A Traditional Cluster Into A Smart One.

Block Diagram



MCU

MCU	Renesas RA6M3 - 176Pin 2MB Flash/640KB RAM / 64KB Data Flash
CORE	Cortex M4

Connectivity

BLUETOOTH	Dialog DA14531 - BT 5.1
GSM	Quectel LTE Module
GNSS	GPS GLONASS or GPS IRNSS

Hardware

TFT	5" TFT 800 X 480
MEMORY	SDRAM - 64MBytes, QSPI Flash 64MB
DISPLAY	16bit RGB
GSM INTERFACE	UART
CAMERA	1Ch - Analog Composite Video Inputs
RPS	RPS - Rear Vision Video Display For Reverse Parking
CAN (BD41041FJ)	AEC-Q100 Qualified Transmission Rate of 40kbps to 1Mbps
BLUETOOTH	UART Interface
CYRO & ACCELEROMETER (LSM6DS3TR)	16-bit Digital Triaxial Accelerometer And Gyro Sensor
ALS	Ambient Light Sensor with IR LED
USIM	x2, Support 1.8/2.95V (U)SIM Cards, with (U)SIM Card Detection Function

Software

Renesas: IDE E2 Studio/E2 Studio, Azure RTOS, FREE RTOS
GUI: Sparklite, GUIX, Seggerwin

SMART CLUSTER SC200R

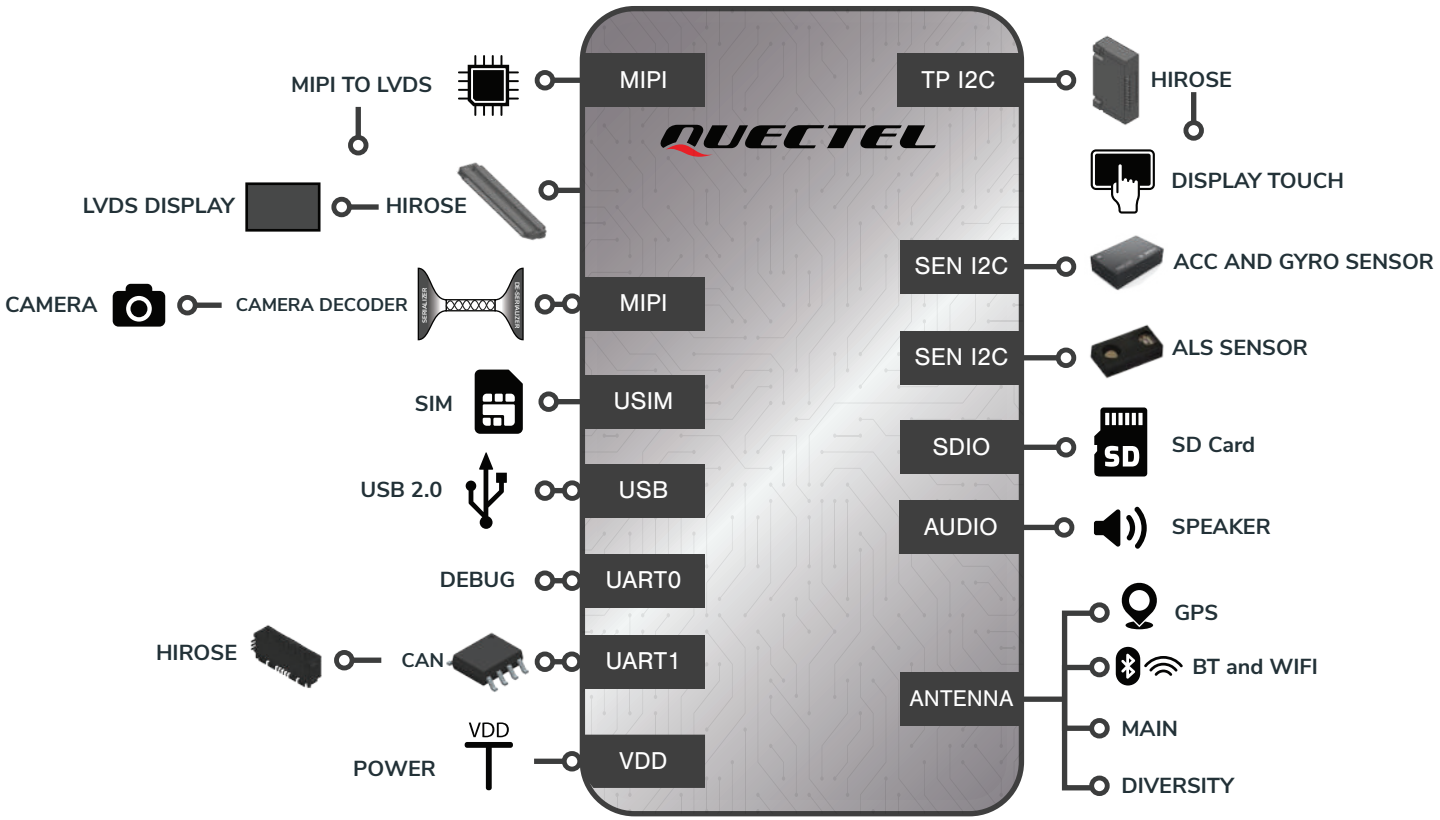
Description

The Smart Cluster reference solution is a complete cluster system featuring a capacitive touch display for quick navigation, an odometer, light indicators, tire pressure readings, maps, and an area for displaying custom logos.

This design has also been upgraded with wireless capabilities for connecting to smartphones, transforming a traditional cluster into a smart one.



Block Diagram



GPU and CPU

GPU	Qualcomm Adreno™ 308 Graphics Processing Unit with 64-bit addressing
CPU	QCM2150, Quad-core ARM Cortex-A53 64-bit CPU @ 1.3 GHz

Connectivity

BLUETOOTH	BT 4.2 (BR/EDR + BLE)
GNSS	GPS/ BeiDou / GLONASS or GPS/ BeiDou /Galileo
WI-FI	2.4/5 GHz dual-band WLAN based on IEEE 802.11a/b/g/n, up to 150 Mbps

Hardware

LCM	× 1, 4-lane MIPI_DSI, HD+ (1440 × 720) @ 60 fps
MEMORY	1 GB LPDDR3 + 8 GB eMMC 2 GB LPDDR3 + 16 GB eMMC
DISPLAY	4 lane MIPI_DSI; HD+ HD+(1440*720) @60fps
TOUCH PANEL	Capacitive touch panel
CAMERA	2 groups of 4 lane MIPI_CSI, up to 2.1Gbps per lane Support 2 or 3 cameras, up to 13 MP with dual ISP
AUDIO	3 analog inputs: MIC1, MIC2, MIC3 3 analog outputs: speaker, earpiece, headphone
VIDEO	Video encoding + decoding: 720p @ 30 fps + 1080p @ 30 fps Encoding up to 1080p @ 30 fps, decoding up to 1080p @ 30 fps
USB 2.0	× 1, compliant with USB 2.0, support USB OTG, USB OTG + charge, etc.
SD CARD	× 1, SD 3.0, support 4-bit SD mode
CAN	AEC-Q100 Qualified transmission rate of 40kbps to 1Mbps
ALS	Optical proximity and ambient light sensor with IR LED
USIM	x2, Support 1.8/2.95V (U)SIM cards, with (U)SIM card detection function
GYRO & ACCELEROMETER	16-bit digital triaxial Accelerometer and Gyro Sensor
SERIALIZER	Supports MIPI CSI-2 data transmission
UART	Support 4Mbps, one of them supports Hardware Flow Control
DIMENSIONS	Module:- 40.5mm*40.5mm

Software

ANDROID	Operating System version 10
LINUX	Kernel version 4.9.218

ANDROID CLUSTER (RZ/G2L)

Description

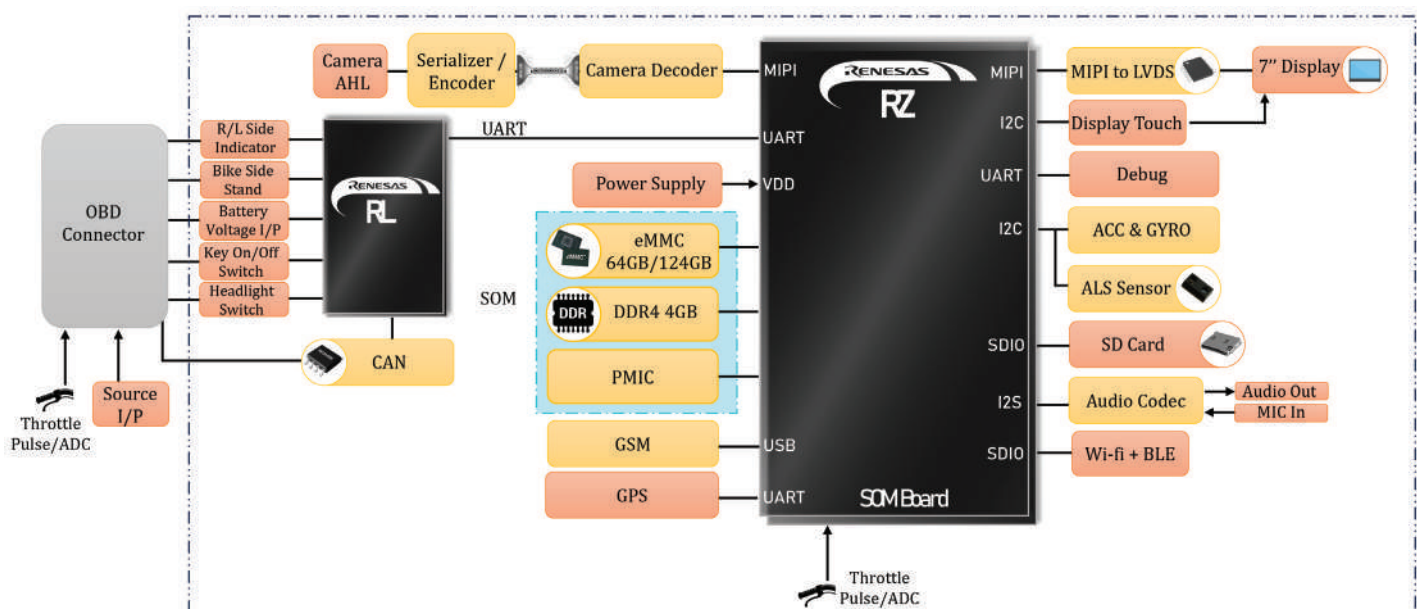
An Android Cluster is a digital dashboard powered by the Android operating system, commonly used in vehicles, including two-wheelers. It provides real-time data such as speed, navigation, diagnostics, and smartphone connectivity, enhancing rider convenience and safety.



Features

- Processor – General-Purpose MPU with Dual-Core Arm Cortex-A55 CPUs and Single-Core Cortex-M33 CPU with 3D Graphics and Video Codec Engine
- eMMC 32GB
- DDR4 2GB (4GB optional)
- SD Card Interface
- 7" TFT LVDS Interface – Touch CTP
- ALS Ambient Light Sensor – RTR-0521RS
- GSM - LTE EC800K
- GPS, BDS, Galileo and GLONASS
- Wifi 5 + BLE BT5.0
- BLE Standalone - DA14531(Optional)
- Audio Codec - DA7218 Stereo Codec with Single ended headphone driver
- Accelerometer and Gyro - SMI230
- MIPI Camera AHL Interface (Encoder RAA279971 and Decoder RAA279972)
- CAN Interface RL78/F14 - UART output for RZ/G2L
- CAN Communication: OBD Interface, BMS, etc...
- Hardware Indicators (Left/Right Turn)
- Side Stand Indicator
- Head Light Switch
- Throttle Pulse/ADC

Block Diagram



LV BLDC FAN 24V

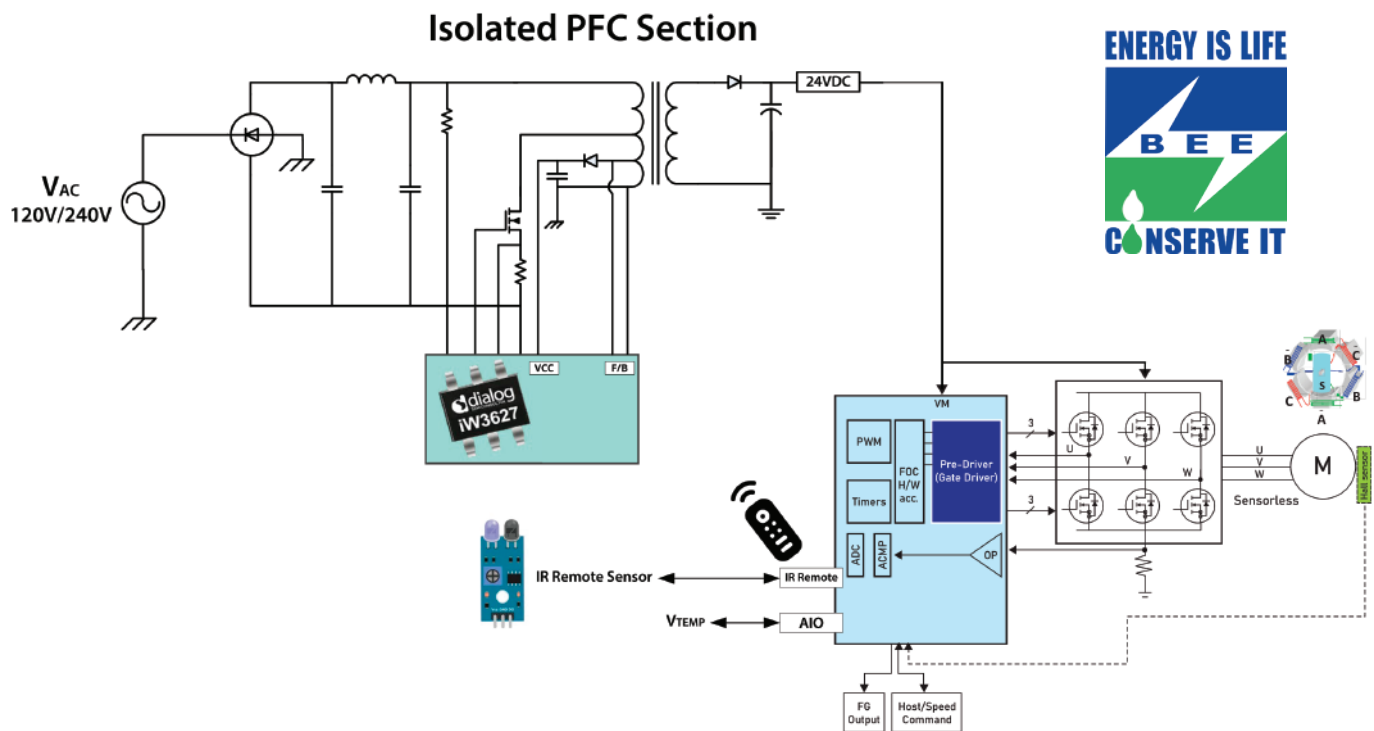
Description

BLDC (Brushless Direct Current Motor) is Remote Controlled, Energy efficient Motor Which Offers High Efficiency, Improved Control, Enhanced Performance, Reliability and Longevity. The Control Algorithm Used in The Drive Can Vary Depending On The Application, and May Include Techniques Such As Field-oriented Control (FOC) For Precise Control And Work For Low Voltages.

Features

- Controls Speed of Fan for Optimized Airflow and Low Noise.
- Included Protection Features to Ensure Safe and Reliable Operation of The Fan.
- Field Oriented Control Based on Single Shunt Topology Supports Smooth Fan Motion.
- Stabilize Operation by Regulating Voltage, Even with Fluctuations.
- Sensor-less Devices Estimate Position Using Motor Back EMF.
- Driver Has Addons Features Like IPD (Initial position detection), SIM (Start in motion), Braking and Field Weakening.
- Can support IR or RF Remote Interface

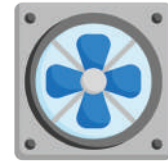
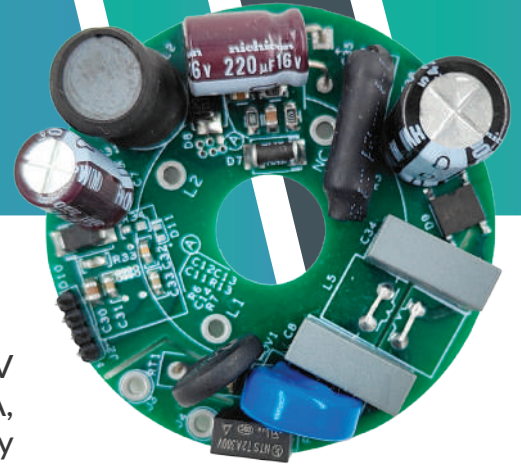
Block Diagram



SINGLE COIL EXHAUST FAN

Description

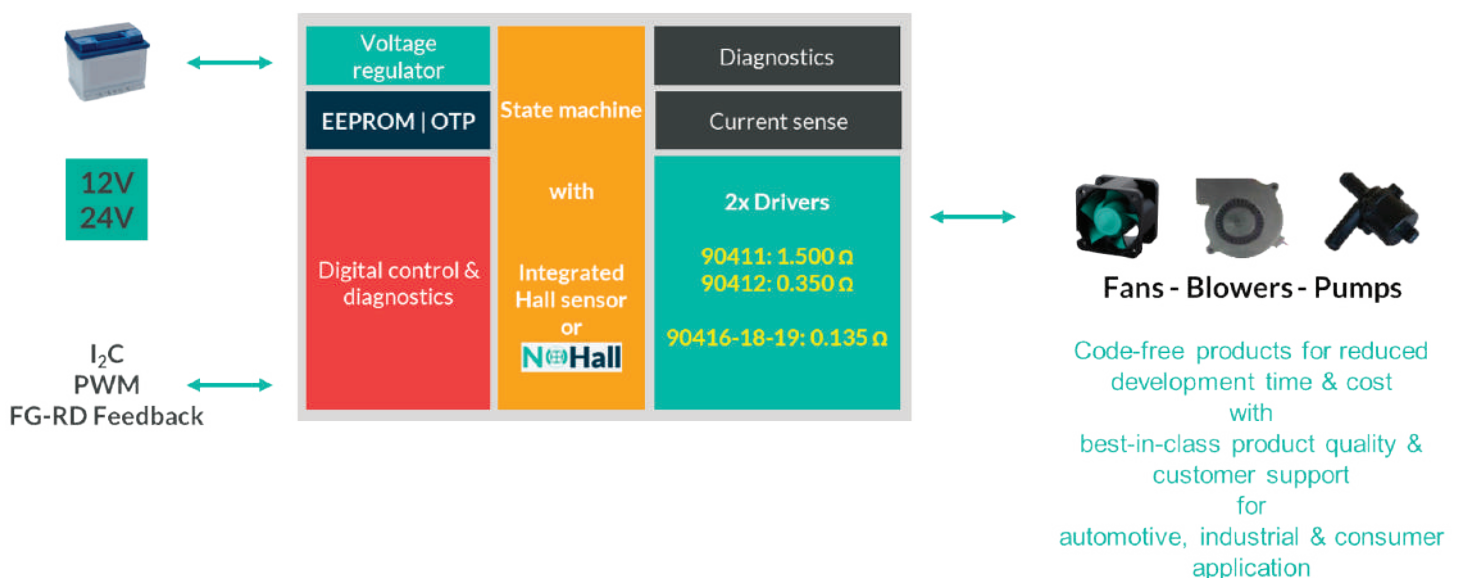
The MLX90412-K operates over a supply voltage range from 3.5 V to 32 V, and is robust up to 40 V, With a current limit up to 2.2A, the MLX90412 can drive applications up to 35 W in a safe way without risk of overheating the device or the motor coil. The closed-loop speed control and adaptive low noise commutation enable industry-standard efficiency with lowest acoustic noise.



Features

- All-in-one fan driver, including high-sensitivity Hall-effect sensor
- Up to 2.2 A motor current
- Adaptive commutation for best in class efficiency over the full speed range for any fan design
- Commutation options
 - » Maximum torque
 - » Very low acoustic noise
- PWM control input
 - » Standby mode
 - » Open loop / closed loop speed control (+/-1.5%)
- Protections and diagnostics
 - » Locked Rotor Protection (LRP) (Programmable)
 - » Temperature Shutdown (TSD)
 - » Over Voltage protection (OVP) (Programmable)
 - » Short circuit protection (OCP)
 - » Current limit (CL)
 - » FG/RD open drain diagnostics output (Programmable)
- Certifications
 - » UL/VDE/CE ready
 - » JEDEC qualified package
- I2C programming
 - » Fast prototyping
 - » End-of-line programming
- Package
 - Exposed pad DFN10 3x3 with wettable flanks
 - » small (9mm²) footprint, for minimal PCB size
 - » <1mm height

Block Diagram



INDUCTION COOKTOP

Description

The Induction Cooktop solution is based on the IC iW248 . It offers pre-programmable coil power which allows users to customize the cooking modes effortlessly. Integrating virtually all discrete components normally used to drive and protect IGBTs, plus an optimized state machine digital core that replaces a traditional microcontroller, the iW248 significantly reduces solution size and eliminates up to 35 components.

The iW248 also features a proprietary low-power continuous mode that allows for smooth operation at low power states and control in 10W increments for induction cooktop applications up to 2100W.

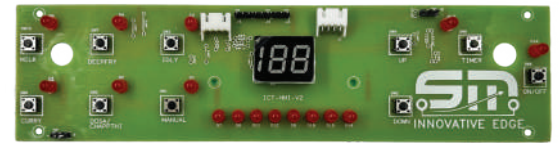
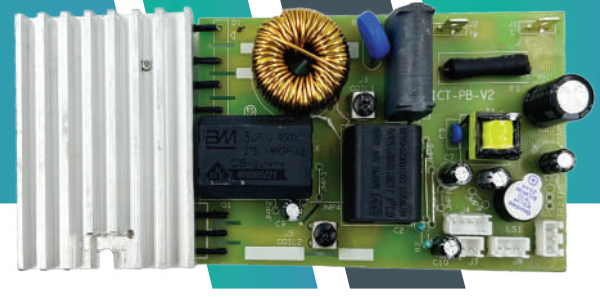
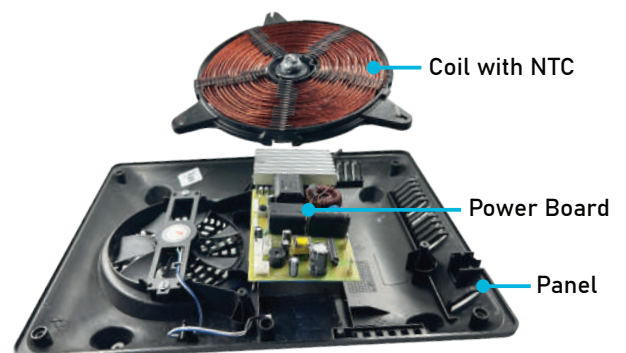
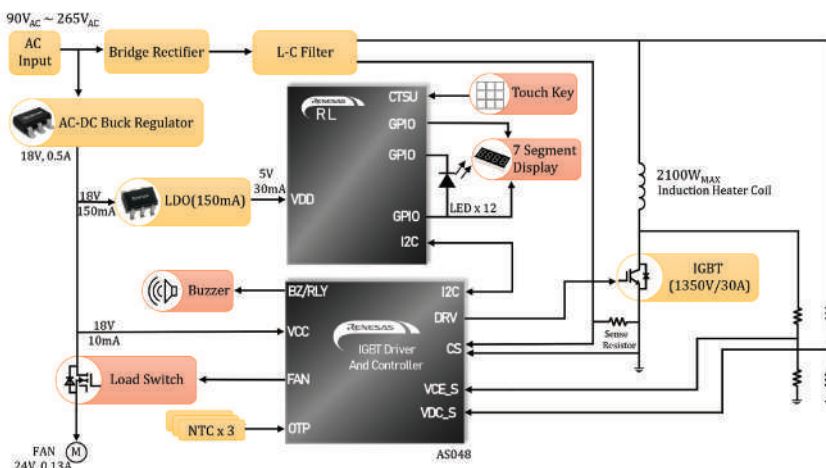
Features

- Customizable timer function and power setting
- Integrated IGBT Controller: Valley-mode switching control
- Optimized State Machine Core: Eliminates Need for MCU
- Low power continuous mode operation with 10W resolution power control
- Built-in pot detection circuit
- Protects IGBT from damage
- DLNK – Isolated communication protocol
- I2C – Non-isolated communication
- Multiple protection features, including programmable:
 - Overvoltage Protection – IGBT Collector
 - Three Dedicated Over-temperature Protection Pins
 - Input surge protection
 - Output power compensation

Applications

- Induction Heating Applications

Block Diagram

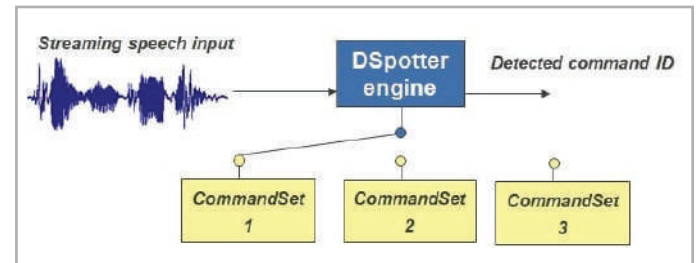
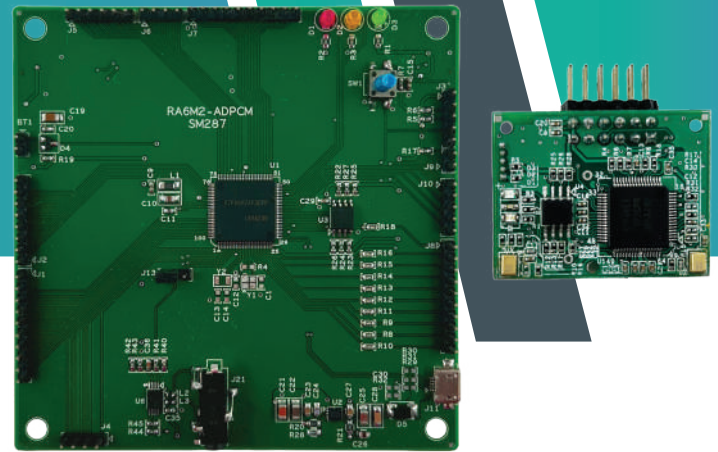


VOICE RECOGNITION

Description

The Voice Recognition Solution Is Implemented With I2S (Inter-IC Sound) And Enables A High Recognition Rate Under Noisy Environment Conditions Using Noise Suppressor Technology. Voice Commands Are Recognised By The I2S Communication and MCU Will Respond Over The External Speaker Through DAC.

Cyberon DSpotter is a local voice trigger and command recognition solution with robust noise reduction that consumes very low resources and provides high-accuracy performance. It runs on RA MCU Family and supports multiple languages as well as many connectivity functions and security capabilities depending on the selected MCU.



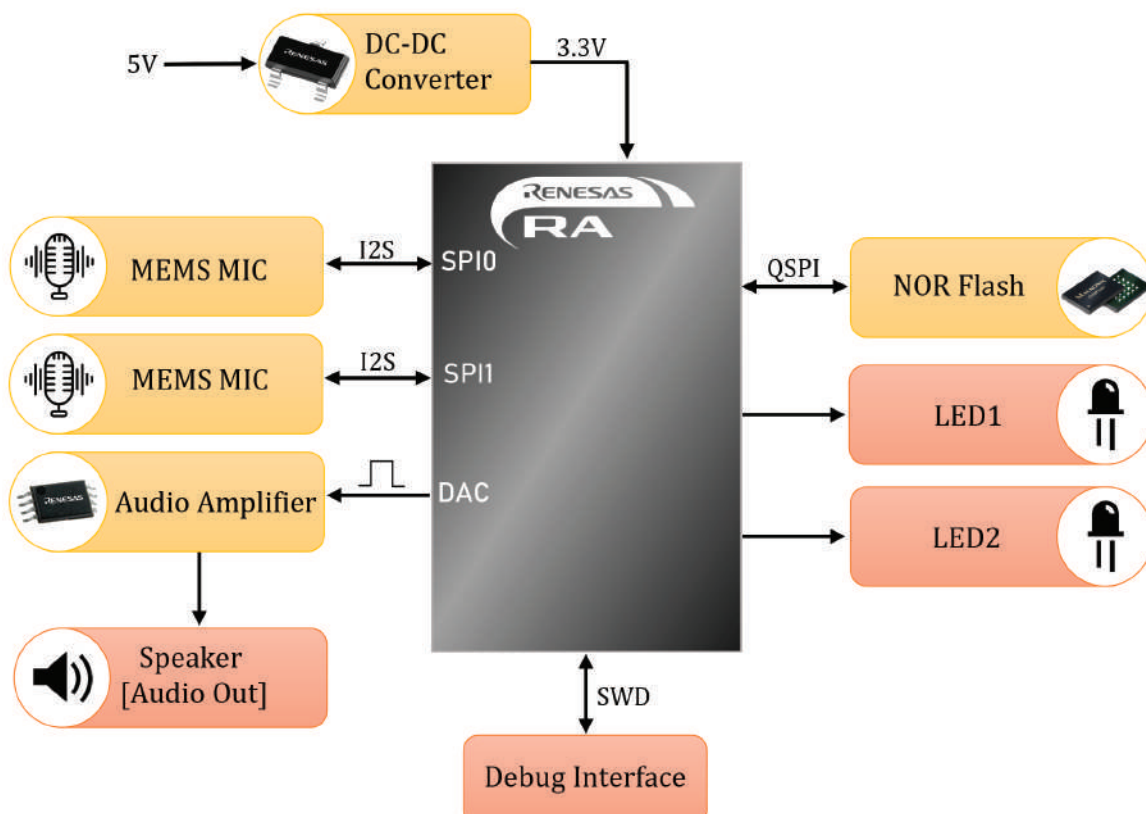
Features

- No Internet Connection Is Required For Voice Recognition.
- Multi Language Support
- Accessibility
- Wake Word Detection (Example : Hey Siri Or OK Google)
- Ambient Noise Handling

Applications

- Vending Machines
- Wearables And Other Tiny Devices
- Smart Speaker
- Soundbar
- Home Security And Surveillance

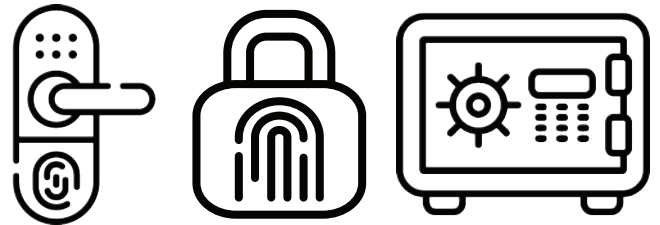
Block Diagram



SMART DOOR LOCK

Description

Fingerprints Biometric System device family FPC2530 offers a proven, robust fingerprint sensor solution that can easily be integrated into virtually any application. Fingerprint templates are automatically created and stored in the internal flash memory. The device can be controlled from any host with basic commands for enrolment and verification, or be customized for stand-alone operation without external components.



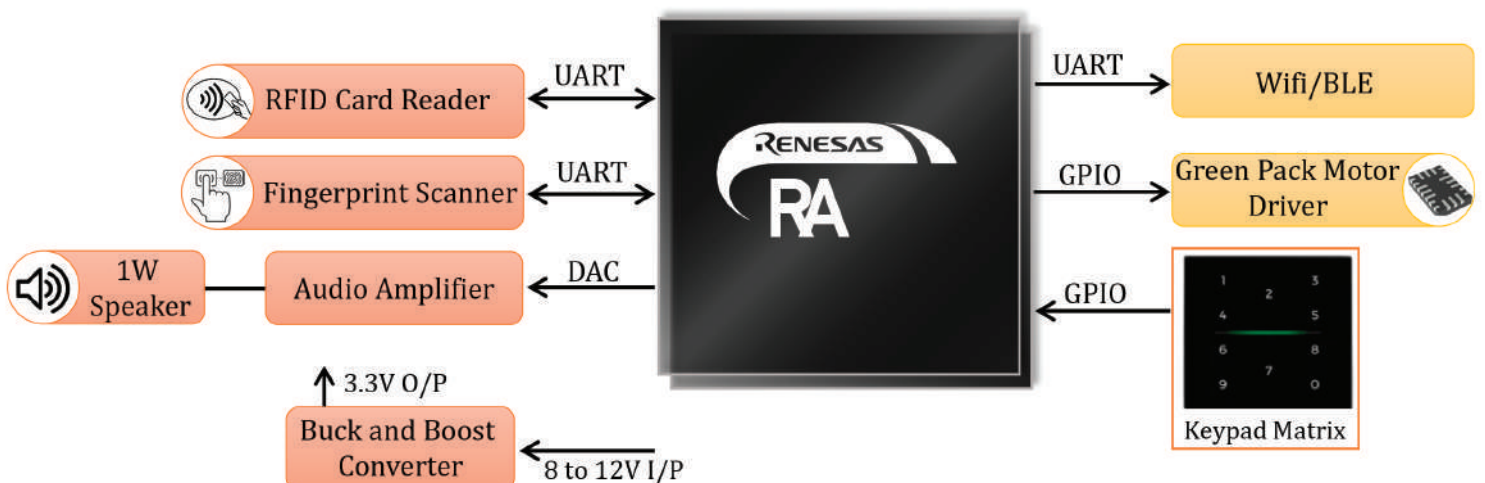
Features

- Compact biometric system
- Onboard authentication software
- Navigation support
- Encrypted fingerprint template storage
- Multiple interfaces SPI/UART/USB/I2C
- Single 3,3V power supply
- Support for GPIO ports
- Black matt protective sensor coating
- All-in-one package and/or flex module
- Feather wing and Arduino shield support
- Authentication through fingerprint RFID / Keypad / WiFi / Bluetooth.

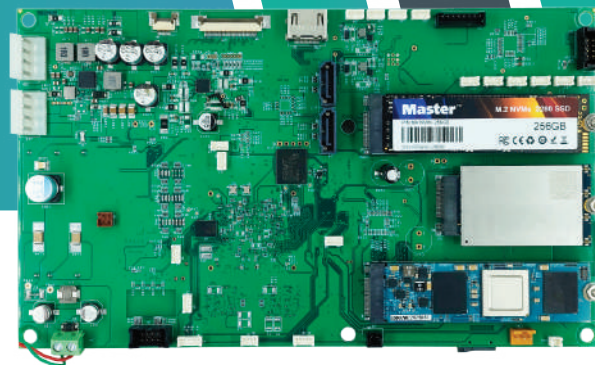
Applications

- Access control, door locks
- Crypto wallets
- Fido authenticators, tokens
- Digital access devices
- Time and attendance
- Safety Lockers
- Fingerprint locks

Block Diagram



MOBILE NVR WITH AI



Description

NVR (Network Video Recorder) is a video recording system over network, commonly used for surveillance and security purposes. This device streams security video footage from IP cameras and records the footage in digital format on to a sata hard drive. NVRs Uses wired or wireless network to connect to IP cameras. Streams are transferred using TCP or UDP protocol.

Features

- Runs Linux Kernel 5.10 with Yocto Root File System (RFS).
- Streams video from IP cameras over wired network that can be configured upto 16 channels.
- Uses Real Time Streaming Protocol (RTSP) based on client server architecture.
- Uses H.264, H.265 decoder and wayland sink for rendering
- Simultaneously stores streamed data onto hardisk through SATA interface.
- Uses open source GStreamer plugins pipeline to parse and decode the RTSP Packets.
- Capable of rendering videos from 16 tiles onto single window that can be monitored over HDMI Interface.
- Can be used for basic analytics by running Neural Network model on Deepx NPU
- Supports QT for GUI application developement.
- Supports scaling.
- MCU with OTP area for network MAC ID
- 6-Port USB smart hub with:
 - Five standard USB 3.2 Gen 2 downstream ports.
 - One standard USB 2.0 downstream port.
- It uses all automotive type connectors.
- Operating input volatage: 18-24VDC
- Battery-14.8V, 2000MHz, 3hr.
- MAC ID storing and secure chip.
- Magnetics on board.
- Audio codec DA7218 for 2mics.
- Stereo jack speaker out.
- PCIE interface for NVME SSD and DEEPX
- PCIE to SATA connection through SATA expansion controller adapter card.
- HDMI out.
- Display HDMI / LVDS with cap touch.
- 1Gbps Ethernet.
- USB 2.0, USB 3.0 with NVME SSD and 4G/5G module USB 2.0 connected USB hub of USB 2.0
- 8 GPIO non isolated pins.
- 2 UART RS232 ports, 1 CAN 2.0B, 2 RS485, 2 IDC ports, GPIO isolated port

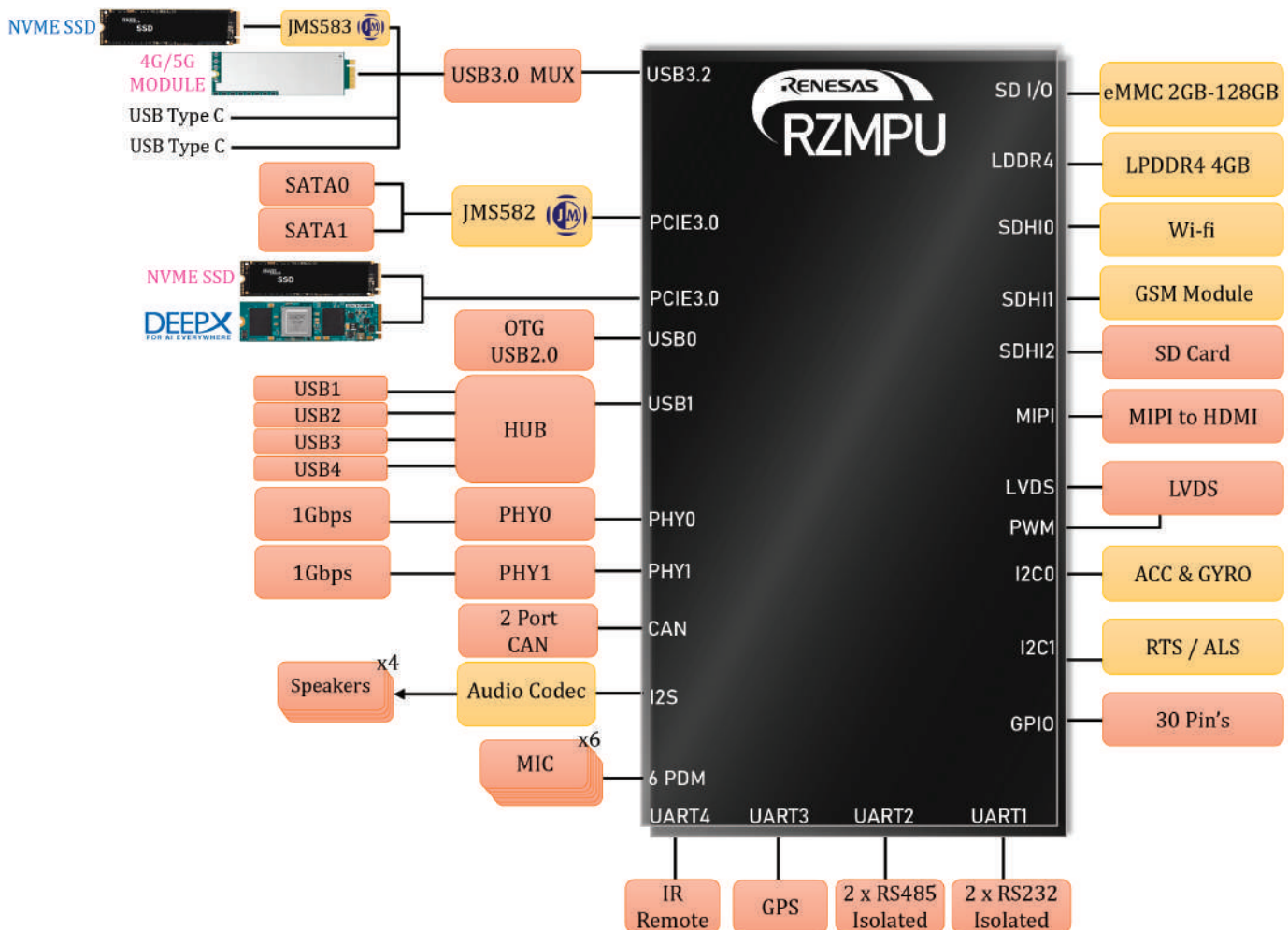
Software Environment

- Host setup: Ubuntu 20.04 LTS.
- Open source GStreamer version 1.0
- Yocto SDK RZ/G Verified Linux Package (VLP) for 64 bit kernel, BSP version 3.0.x
- Software stacks supported:
 - Web browser: Firefox.
 - Web server: Apache / Lighttpd.
 - Backend script: PHP.
 - RDBMS support: MySQL / SQLite.

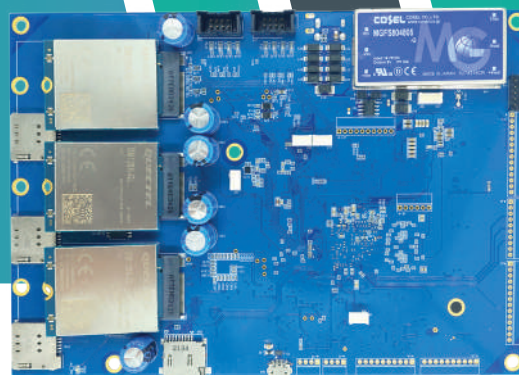
Applications

- Public safety.
- Traffic monitoring.
- Industrial monitoring.
- Video surveillance for locomotives like Train, Bus, truck
- Mobile NVR
- Commercial NVR

Block Diagram



AGGREGATOR

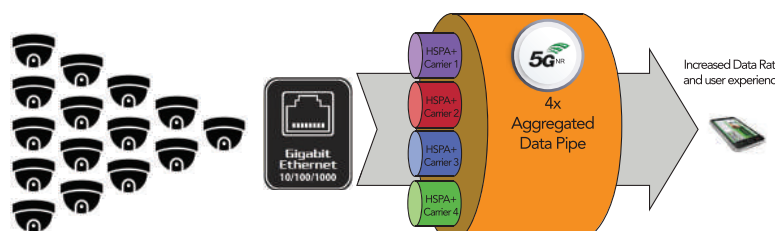


Description

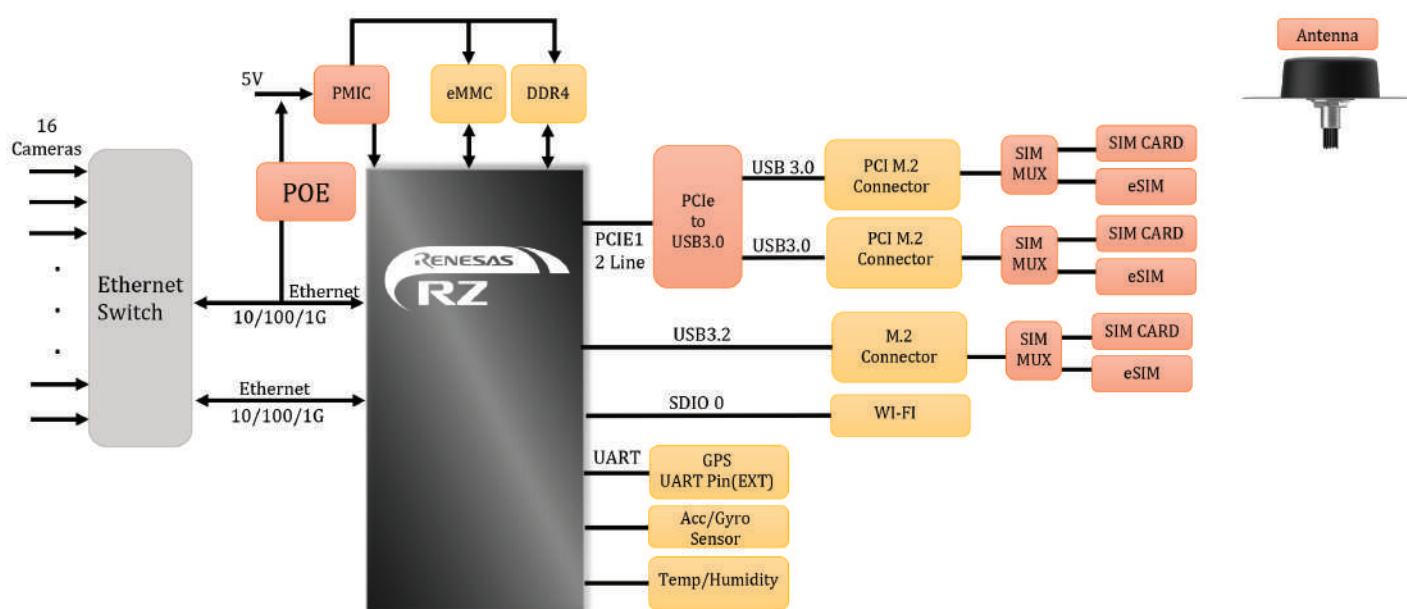
Aggregator is a device or system that collects and consolidates data from different communication channels, like cellular, DSL or broadband WSN, into a unified format, allowing larger multiple data to be transmitted.

Features

- Accomodate three 4G / two 5G modem with third party data aggregator software.
- Input uplink steam through gigabit ethernet.
- Wi-Fi MIMO for fast throughput.
- Supports MIMO Wi-Fi antenna (YEWN004AA) and 9 in 1 combo antenna (YB0027AA) for 4G/5G networks.
- High accuracy GPS with 50cm triangulation and tracking.
- On-Board temperature and humidity sensor.



Block Diagram



INDUSTRIAL ETHERNET SWITCHES

WITH M12 CONNECTIVITY



Description

Robust unmanaged industrial Ethernet switches with M12 connectivity for use in railways and other forms of public transport. This is designed for industrial applications in harsh environments. The M12 connectors ensure tight, robust connections, and guarantees reliable operation, even for applications that are subject to high vibration and shock.

Features

- M12 connector with A-Coded 8 Pin or X-Coded Connectors.
- Unmanaged Switch Has MCU & EEPROM to Disable Ports On The Fly
- Provides 24 fast Ethernet ports with Auto MDI/MDI-X Supports 10/100 Mbps auto-negotiation.
- All M12 ports with IEEE 802.3af compliant PoE ports, The switch is classified as power source equipment (PSE) and provide up to 15.4/30 W of power per port.
- Ethernet switch supports IEEE 802.3/802.3u/802.3x with 10/100M, full/half-duplex, MDI/MDI-X auto-sensing, and provides an economical solution for your industrial Ethernet network.
- Each port supports both 10/100 Mbps speed auto negotiation.
- Standards: IEEE 802.3 for 10BaseT, IEEE 802.3u for 100BaseT(X), IEEE 802.3x for Flow Control Processing.
- Type: Store and Forward Flow Control: IEEE 802.3x full duplex, back pressure flow control.
- Supports redundant 110V + 30%
- 150WATT total power.
- LED Indicators Power 1, Power 2 10/100T (X): Link/Activity.
- Automatic MDI/MDI-X crossover for plug-and-play Store-and-forward architecture Auto-detection of PD (powered devices) and automatic power management (NSM-208PSE-M12-IP67).

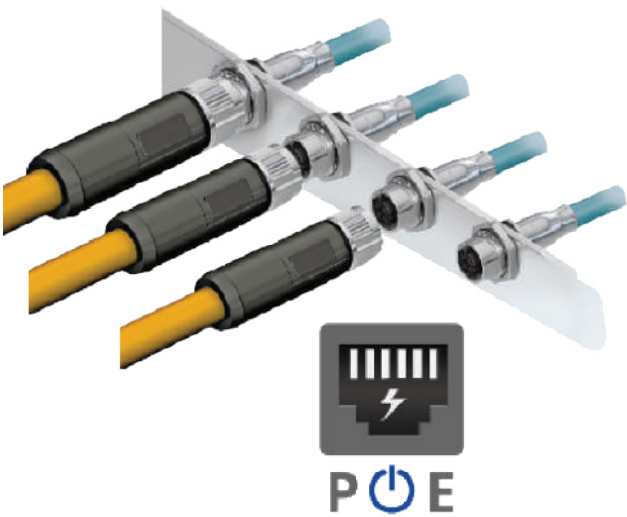
Applications

- Public Transportation - Buses, Ambulances
- Heavy Industrial Applications
- Railway
- Metros

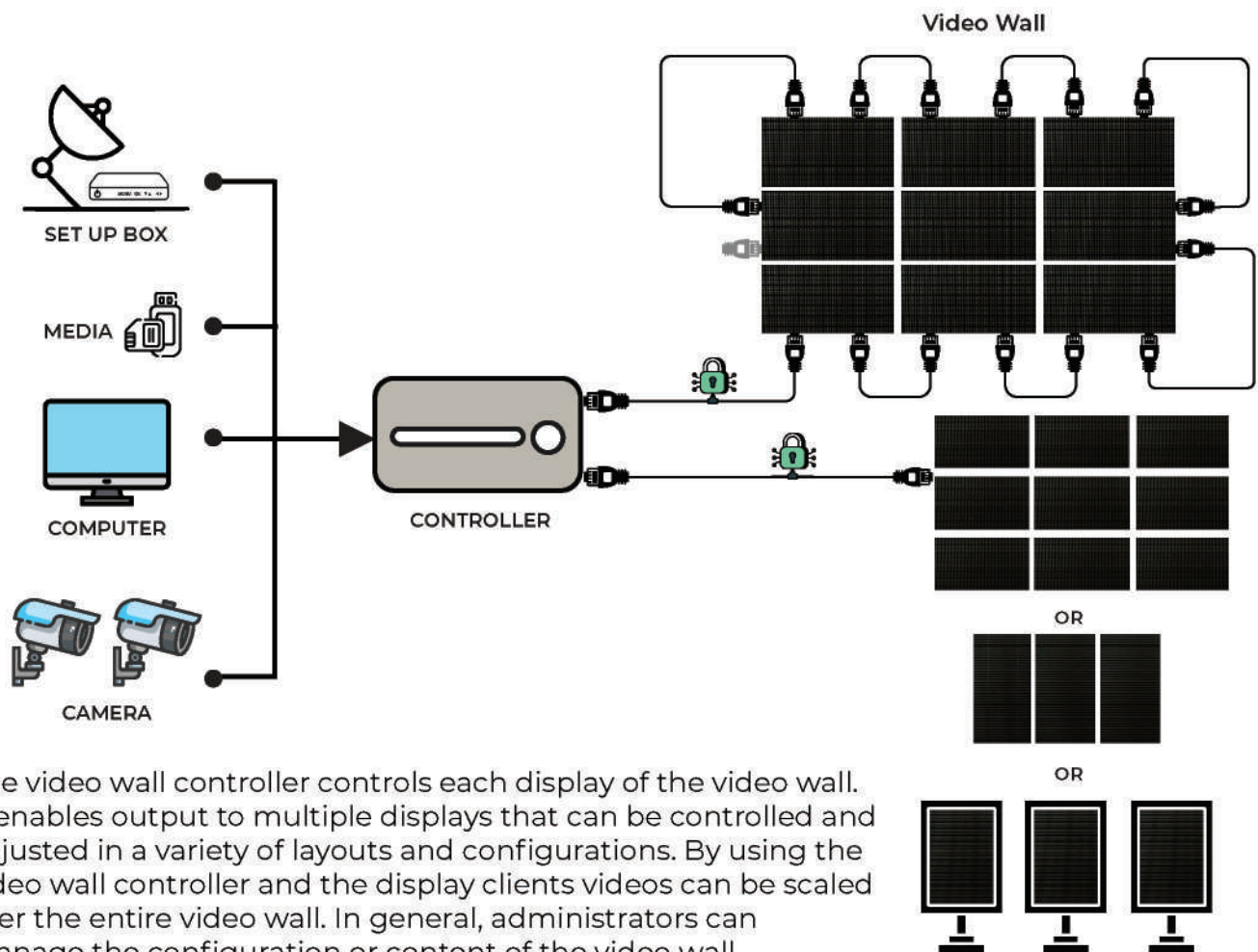
10/100 - 15Watt
1 Camera 1
2 Camera 2
3 Camera 3
4 Camera 4
5 Camera 5
6 Camera 6
7 Camera 7
8 Camera 8
9 Camera 9
10 Camera 10
11 Camera 11
12 Camera 12
13 Camera 13
14 Camera 14
15 MIC 1
16 MIC 2
17 Wifi Access Point
18 RDAS
19 FREE / No Mount
20 FREE / No Mount
21 FREE / No Mount
22 FREE / No Mount
23 FREE / No Mount
24 FREE / No Mount

1Gbps - 90Watt
1 NVR
2 Data Aggregator
3 UP Link
4 Down Link

POE	+	Switch
IP804AR		IP1829A
4		24 5
		10 / 100 10 / 100 / 1000
POE	+	Switch
IP804AR		IP1811LRI
4		8 4
		10 / 100 10 / 100 / 1000
POE	+	Switch
IP804AR		IP1810I
4		8 2
		10 / 100 1000
POE		Switch
IP804AR		IP1819I
4		16 3
		10 / 100 10 / 100 / 1000



VIDEO WALL



The video wall controller controls each display of the video wall. It enables output to multiple displays that can be controlled and adjusted in a variety of layouts and configurations. By using the video wall controller and the display clients videos can be scaled over the entire video wall. In general, administrators can manage the configuration or content of the video wall.

Typical Video Wall usage involves Video Controllers with HDMI – our solution does not need HDMI – our solution uses Ethernet in daisy chain.

- No Limitation in between display cluster's distance!!
- No EMI and Noise interference
- Easy installation
- Easily scale up and add more Panels

Applications

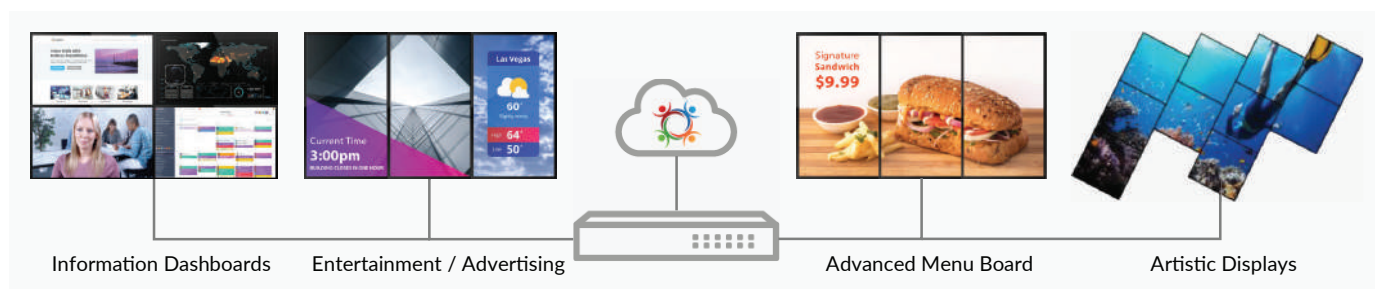


Features

- Single Video controller can serve multiple display cluster
- Video Controller and Display clients based on secure, hardened Linux with open source software components
- Media Server to handle Videos and Images. The content can be end to end encrypted.
- Single Workspace for entire Video Wall or standalone displays
- Layout Management
- Audio server for integration with receiver/amplifier
- Super Narrow Bezel - Featuring an extremely narrow bezel
- Content Management System
- Hardware Encoder Integration – H.265 encoding/decoding

Display Panel Features:

- Brightness: 700 (cd/m2)
- Super Narrow Bezel LCD Displays – 0.4mm
- Color Depth: 10Bit (D), 1.07 Billion Colors.
- LED Backlighting
- Wide Viewing Angle of 178°
- High Resolution - Full HD 1080p resolution



RDAS CAMERA



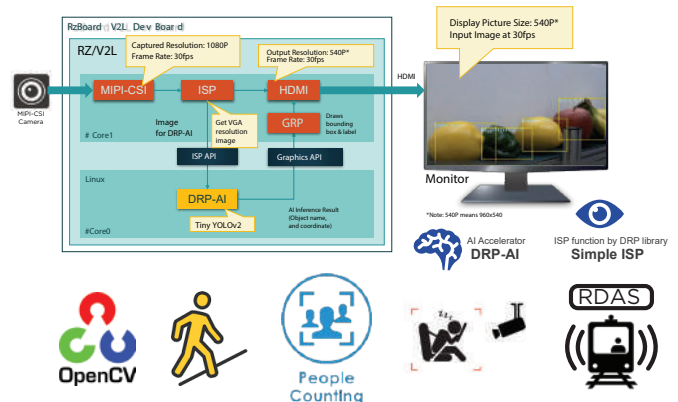
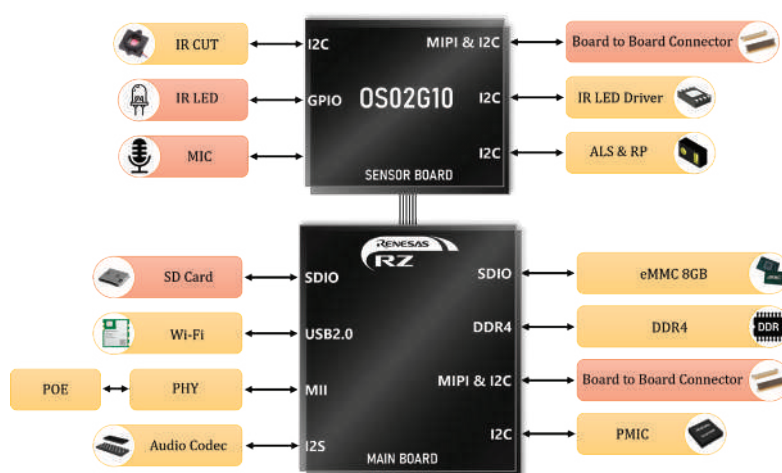
Features

- RZ/V2L with Integrated Secure element which Features:
 - Tamper resistance,
 - Unlimited secure key storage,
 - Hardware cryptographic acceleration (RSA),
 - SPA/DPA resistance,
 - Isolation technologies including Arm® TrustZone®
 - Device Lifecycle Management
- Fish eyes de-warping
- Videos can be saved to the micro SD card
- Provide Onvif protocol
- IR build in
- Support WebRTC interface
- Interface standard: ONVIF Profile S, CGI
- AI: Human detection/ Motion detection

Specifications

- Sensor: Omnivision OS02G10 2MP, 1/2.9" Optical Format, 1080P, 30 FPS
- Encoder: H.264
- White Balance: Auto, Manual
- LAN: RJ-45 (10/100Base-T)
- WIFI on board
- RTC : built-in & Time storage
- Audio : Sound format, Support MIC Input
- Power Supply: DC 12V(2A), POE(Optional)
- Consumption: <3W(Max)

Block Diagram



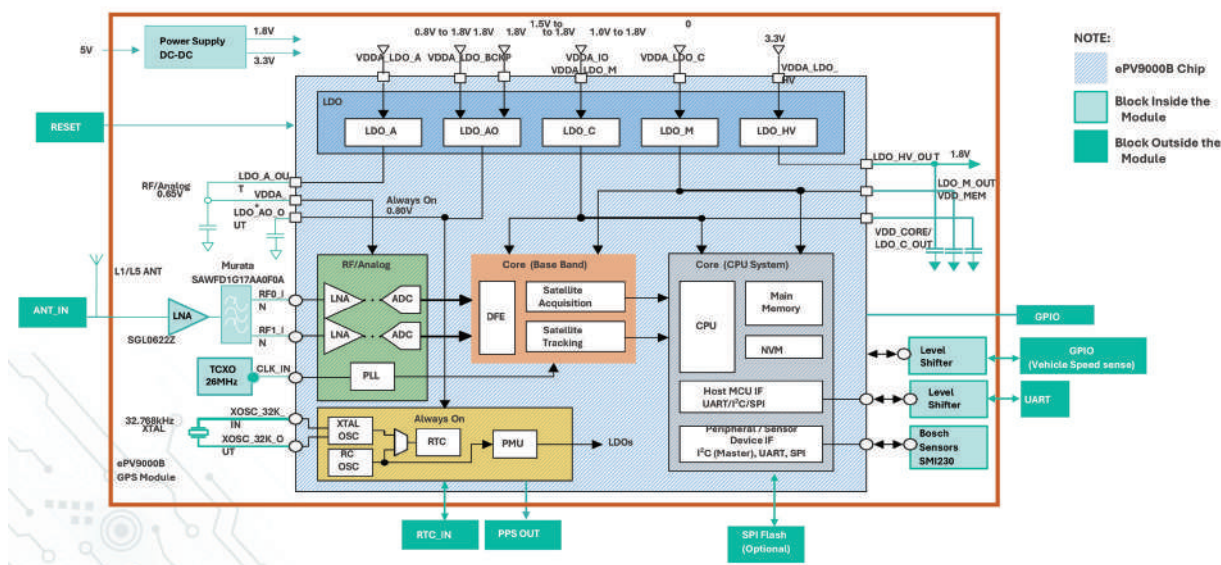
Description

Furuno ePV9000B GNSS receiver, supporting both L1 and L5 frequency bands for robust and precise satellite signal acquisition. Whether you are operating in urban environments, open skies, or signal-challenged zones, our GNSS module ensures superior accuracy and stability. Offers unmatched precision, reliability, and a developer-friendly ecosystem to accelerate your applications.

Features

- 50cm DRMS position accuracy allows for lane-level navigation
- Extended Carrier Aiding Technology
- Dead Reckoning
- Dual-band, Multi GNSS
- Anti-Jamming, Anti-Spoofing
- Time pulse output (1PPS)
- RAW DATA output
- With eMRAM, no flash memory required
- GNSS Reception Capability
 - GPS L1CA/L5, Galileo E1/E5a, BDS B1I*/B1C/B2a, GLONASS L1OF*, QZSS L1CA/L1CB*/L5, SBAS* L1/L5
 - * Enabled in the future firmware update.
- GNSS Reception : 62 channels
- Sensitivity
 - Cold start: -147 dBm
 - Hot start: -158 dBm
 - Tracking: -160 dBm*
- Position Accuracy (Horizontal)
 - 0.5 m DRMS (63%)
 - *open sky (-130dBm)
- TTFF (Typical)
 - Cold start: 19 s@-130dBm, BDS enabled case
 - Hot start: 1 s@-130dBm
- 1PPS Stability
 - 30 ns (1 σ) @-130dBm, sync. to GPS time
 - Configurable duty ratio
- Supply Voltage : 2.97 VDC to 3.63 VDC (3.3 V mode)
- Operating Temperature
 - 40°C to 105°C (1.8V mode)
 - 40°C to 85°C (3.3V mode)
- Storage Temperature :-65°C to 150°C
- Protocol: NMEA 0183 V4.11, FEC binary, RTCM Ver.3.3
- Functions:
 - » Extended-Carrier Aiding (Smart code noise reduction algorithm)
 - » Multipath Mitigation
 - » Anti-Jamming
 - » Anti-Spoofing
 - » Raw data output (GNSS measurements and navigation messages, and IMU data)

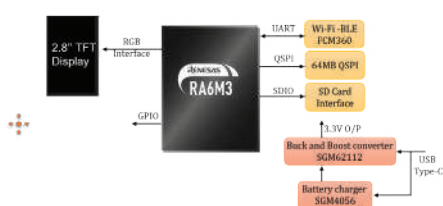
Block Diagram



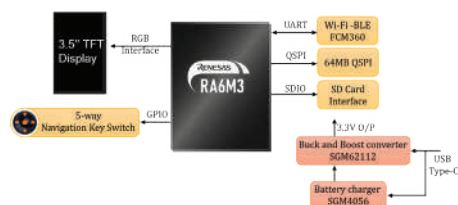
TIANMA LCD'S DISPLAYS



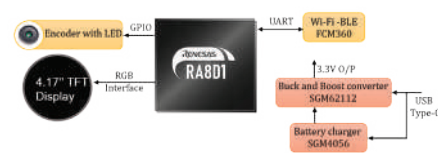
Block Diagram of 2.8" Rectangle Display



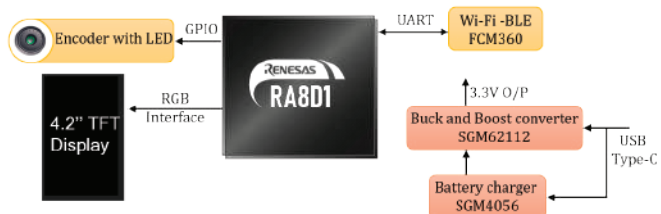
Block Diagram of 3.5" Rectangle Display



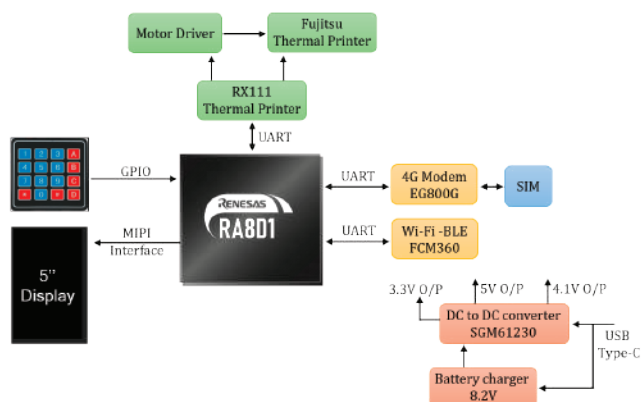
Block Diagram of 4.17" Circular Display



Block Diagram of 4.2" Rectangle Display



Block Diagram of 5" Rectangle Display



SMART METER



Description

A Smart Meter Is A Digital Device That Measures And Records Energy Consumption And Communicate With Real-time Data To Back-end Server And Pre-payment Auto Connect or disconnect. Smart Meters Play A Critical Role In The Smart Grid, By Enabling Utilities To Better Manage Their Networks, And Empowering Consumers To Take Control Of Their Energy Usage. Smart Meters Are Important Tools For Creating A More Efficient, Sustainable, And Resilient Energy System.

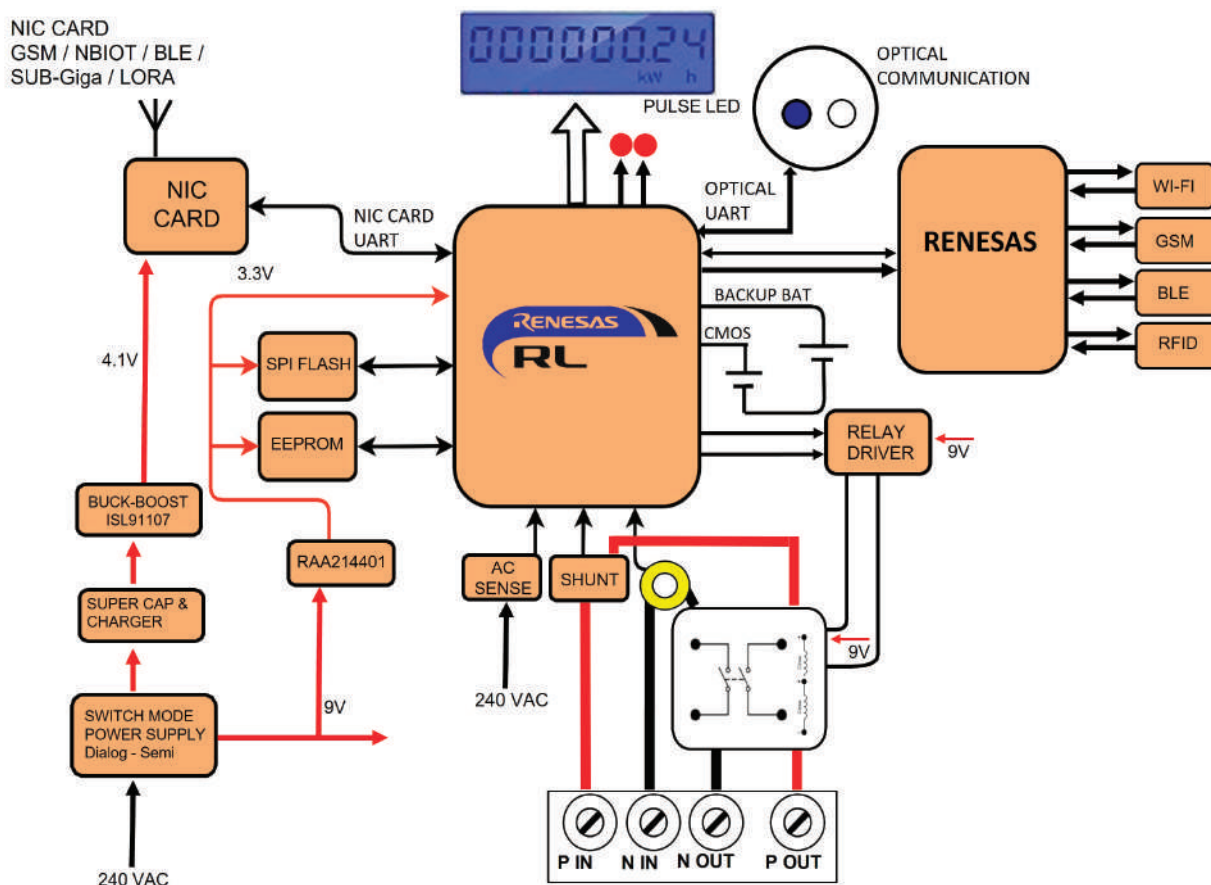
Features

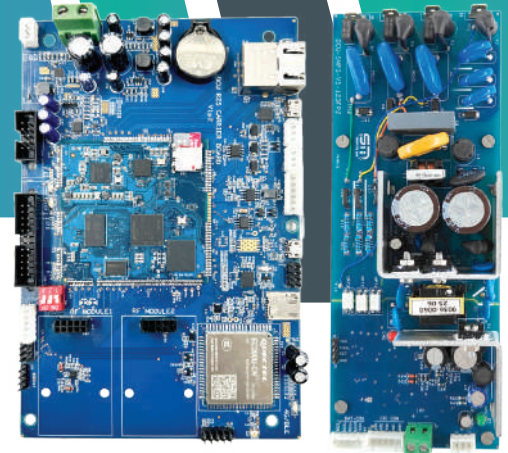
- Standard : IS16444, IS15959(1),IS15959(2)
- Accuracy : Class 1
- Rated Voltage : 240V
- Rated Current : 60A (max)
- Load Contractor : Latching Relay
- Communication Protocol: DLMS COSEM
- Communication Port : GSM/RF

Applications

- Energy Management
- Renewable Energy Integration
- Fault Detection And Diagnostics
- Billing Accuracy

Block Diagram





Description

A Data Concentrator Unit (DCU) Is A Device Or Component Used In Various Systems To Collect, Process, And Transmit Data From Multiple Sources. It Acts As An Intermediary (Gateway) Between The Data Sources And The Central System, Facilitating Efficient Data Management, Communication Can Be Wired Or Wireless.

Features

- **Processor:** RISC-V CPU - RZ/G2UL Single Core Cortex®-A55 (1.0 GHz) CPU
- **Memory:** RAM-1GB DDR4, eMMC-8GB, uSDCard
- **LED Indications:** Network, Power and RF Data Communication with 5 Indication LED's
- **Inbuilt Real Time Clock (RTC)** with Battery Backup
- **Time Synchronization** – MDAS Server, GPRS Network, SNTP, GPS (optional)
- **Connectivity:**
 - USB2.0 CDC
 - LTE Module: EC200U LTE Modem, SIM Interface MUX with eSIM and micro-SIM Holder
 - Wifi FCU741 for Diagnostics and Communication
 - Ethernet: Wired TCP/IP
 - Bluetooth: Dialog DA14531
- **Communication:** Node Connection
 - Wired: RS485
 - Wireless: Sub GHz / GHz Modules (Wirepas, Wi-sun, Melange, LORA....)
- **Protocols:**
 - DCU to MDAS: TCP/IP Based Socket /FTP
 - Others: TCP/IP, UDP, HTTP, FTP, PPP, CURL, DHCP
- **UART Interfaces:** RS232, RS485
- **Sensors Supported :**
 - Temperature/Humidity - Monitor the Case Temp
 - Acc/Gyro - Theft Detection and Device Fall Detection
 - ALS - Tamper Detection
- **HMI :** Graphical LCD Display and LED Indications
- **USB2.0 Port PPP Interface Throughput** (**Depends On LTE Modem, Internet Speed From Service Provider)
 - Upstream: Avg. Speed- 565Kb
 - Downstream: Avg. Speed - 1508 Kb

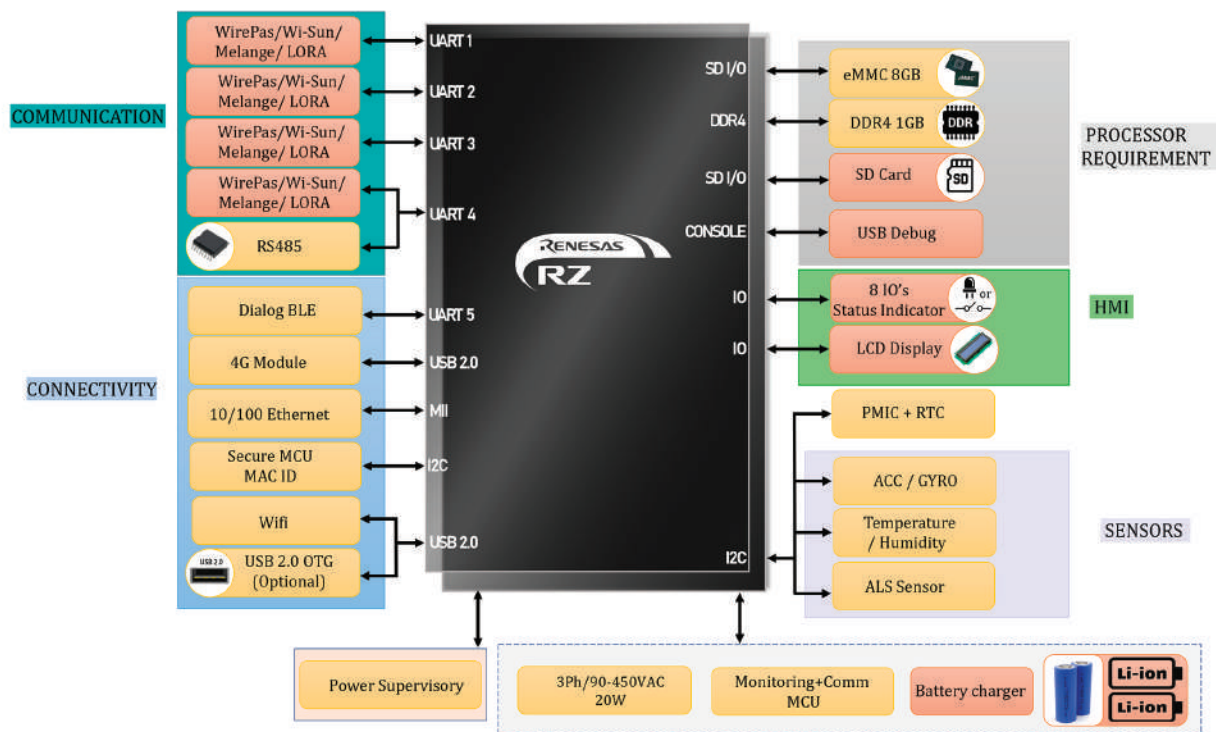
Applications

- **Automatic Meter Readings:** Energy Meter, Gas Meter and Water Meter

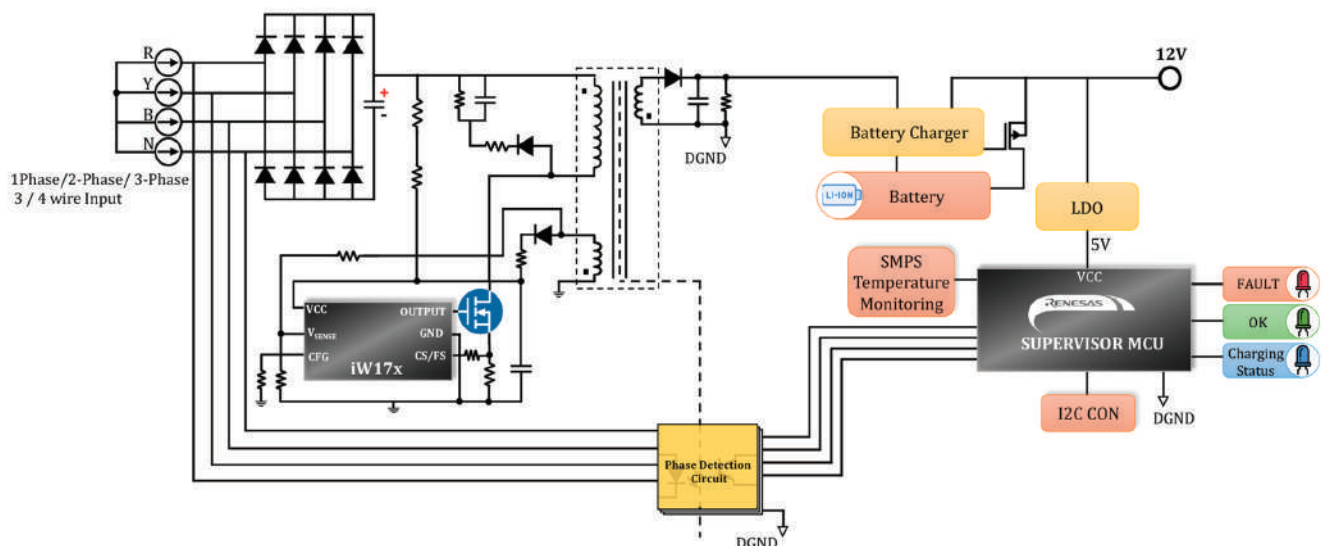
Power Supply Specs

- SMPS Type: Isolated Flyback
- Input:
 - Single Phase
 - Two Phase (3 wire)
 - Three Phase (3 wire or 4 wire)
- AC Input: 100 – 450 VAC
- Output Voltage: 12VDC
- Output Power: 20W
- OVP (Over Voltage Protection)
- Over Current Protection Circuit per Cycle
- Efficiency: 80-85%
- Battery Backup (7.4V 4200mAH)
- Automatic Power Path Selection
- On Board Battery charger
- Battery Health Indication
- Fault Detection
 - OTP (Battery as well as SMPS)
 - Input Phase Missing
 - Output Voltage missing
 - Battery Charge Suspend

Block Diagram



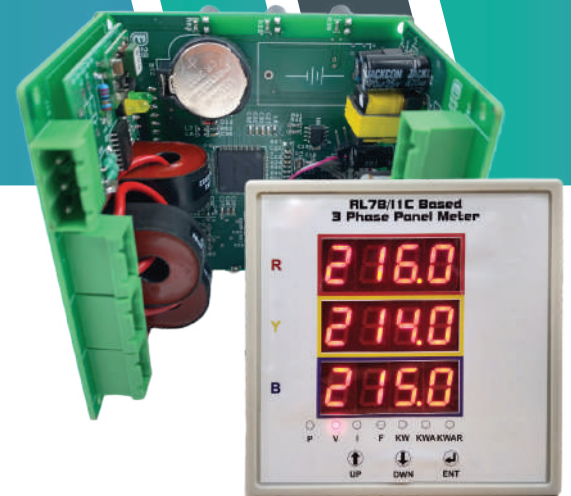
DCU SMPS Block Diagram



PANEL METER

Description

A Panel Meter is a device used to measure and display of various electrical or physical parameters such as voltage, current, frequency, power factor etc. Panel meters are commonly used in industrial control systems and process automation applications where precise measurements of these parameters are required. They can be powered by either AC or DC voltage sources.



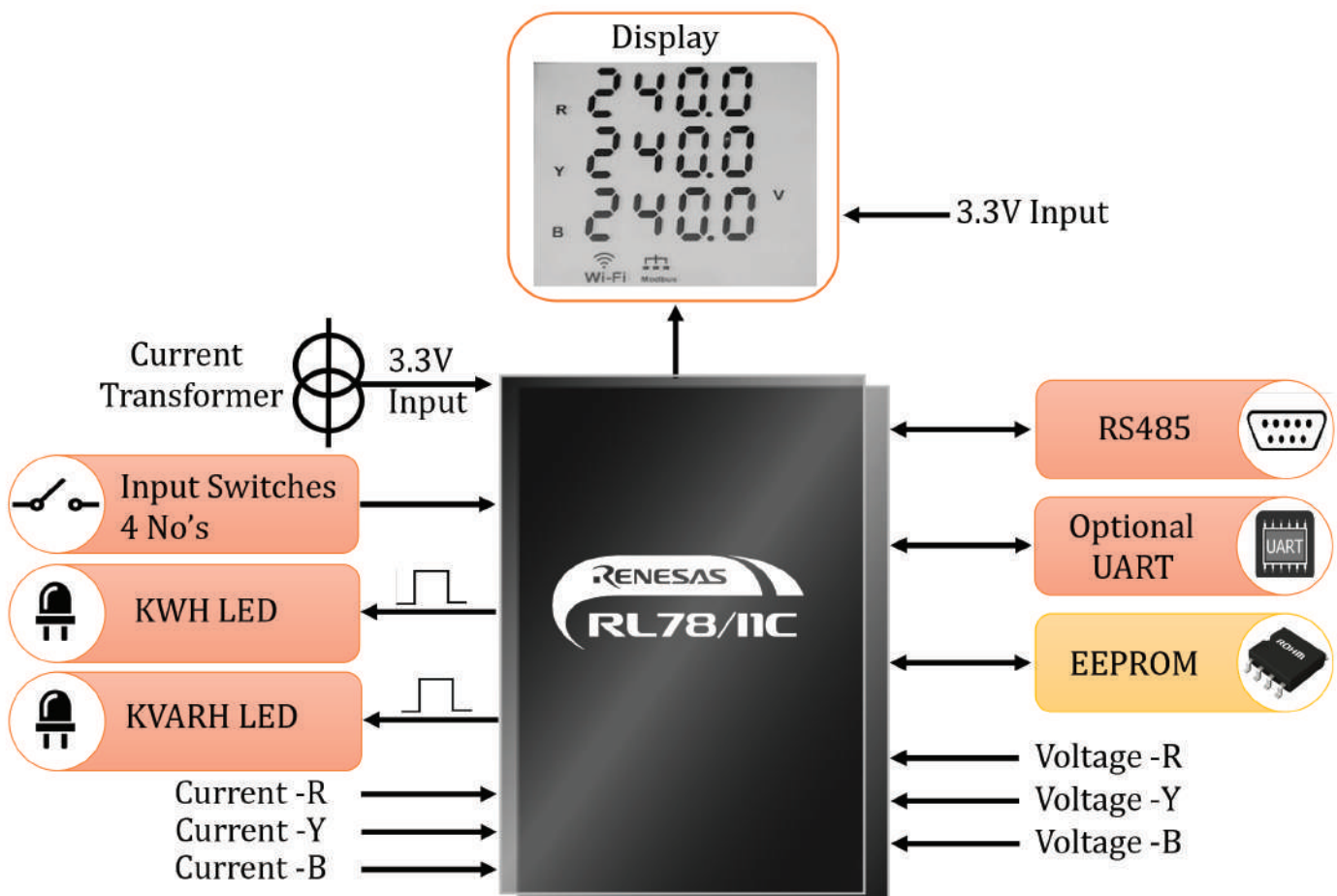
Features

- Meter Accuracy : Class - 1
- Rated Voltage : 240V
- Max Current : 30A
- Auxillary Supply : 120V - 240V AC
- Communication : RS485 (Modbus protocol)
- Display : 7 Segment LCD Display With Backlight
- Harmonics : Detects upto 21st Harmonics

Applications

- Process Control and automation
- Distribution Systems
- Test And Measurement

Block Diagram



INSULATION MONITORING

Description

Leakele, State-of-the-art Insulation Monitoring Device, designed to provide real-time monitoring of insulation resistance in ungrounded (IT) systems. Whether in industrial plants, hospitals, renewable energy systems, or data centers, our IMD detects insulation faults before they become failures, preventing costly downtime and enhancing electrical safety.

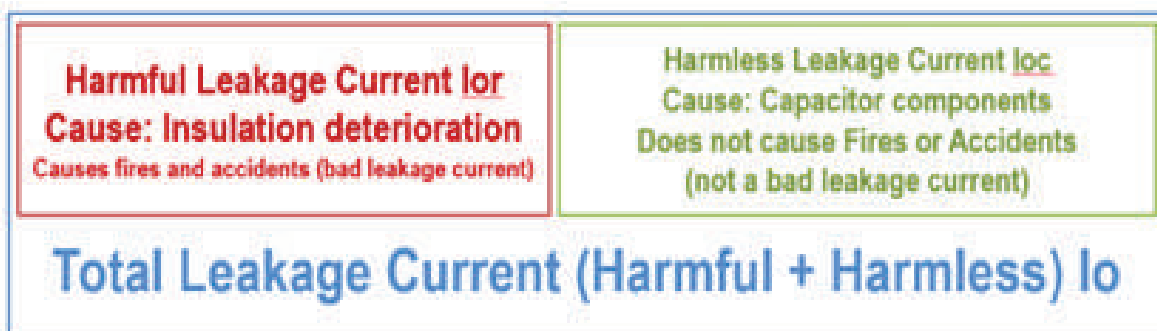


Features

- Measurements can be made on 8 independent banks (voltage, Single-phase/Three-phase Delta and Star) *AC600V or less
- Accurate detection possible even from distorted current waveforms caused by harmonic noise
- Minimum measurement monitoring interval (measurement sampling) time: 250msec
- Measured and calculated Ior, IorM, Io, Gr, V, θ , temperature, date and time data
- output (LAN/RS485)
- Measured and calculated data is written and recorded on the attached SD card *CSV file
- Three levels of thresholds are set to detect abnormalities and output an alarm contact.
- Equipped with automatic recording mode for 30 seconds before and after an alarm is issued, every 250 msec.
- Accurately detects insulation resistance (Ior), the cause of fire and electric shock.
- Predictive monitoring of insulation degradation in circuits and connected equipment.
- Enables continuous monitoring while the system is live (no need to shut down).
- Supports low-voltage systems up to 600V and can measure up to 8 banks.
- True R Ω technology – Emphasizing accuracy in resistance measurement.
- Specifications:
 - Dimension: 350 (W) × 180 (H) × 236 (D) mm ,
 - Weight : 5kg or less ,
 - Display : TFT5.7 inch LCD

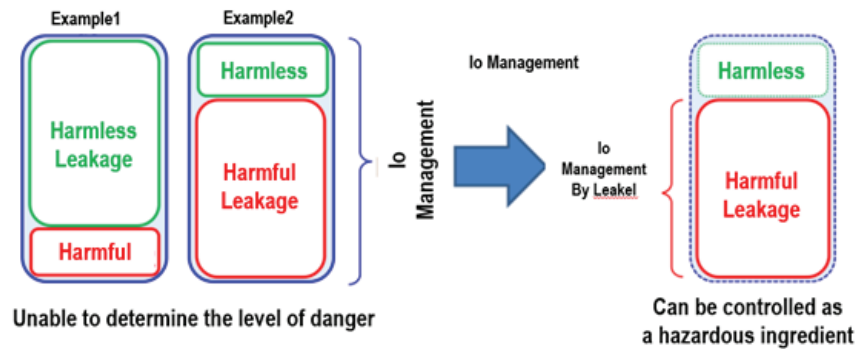
Basics of insulation monitoring: Leakage Current is broadly classified into three types

- Harmful Leakage Current Ior Cause: Insulation deterioration Causes fires and accidents (bad leakage current)
- Harmless Leakage Current Ioc Cause: Capacitor components Does not cause Fires or Accidents (not a bad leakage current)
- Total Leakage Current (Harmful + Harmless) Io



Limitations of existing Systems:

Earth Leakage Relays and Earth Leakage Breakers are designed to detect only the "Magnitude of Total Leakage Current (I_o)" therefore have a problem of detecting even Harmless Leakage Currents when only the Leakage Current is large. Problems with management based on total leakage current Measures only the total leakage current I_o without distinguishing between Harmful and Harmless Leakage Currents. If the leakage current (I_o) is the only factor determining whether the device is safe, it may react to "Harmless Currents" resulting in False positives (False alarms). Unnecessary inspection needed.

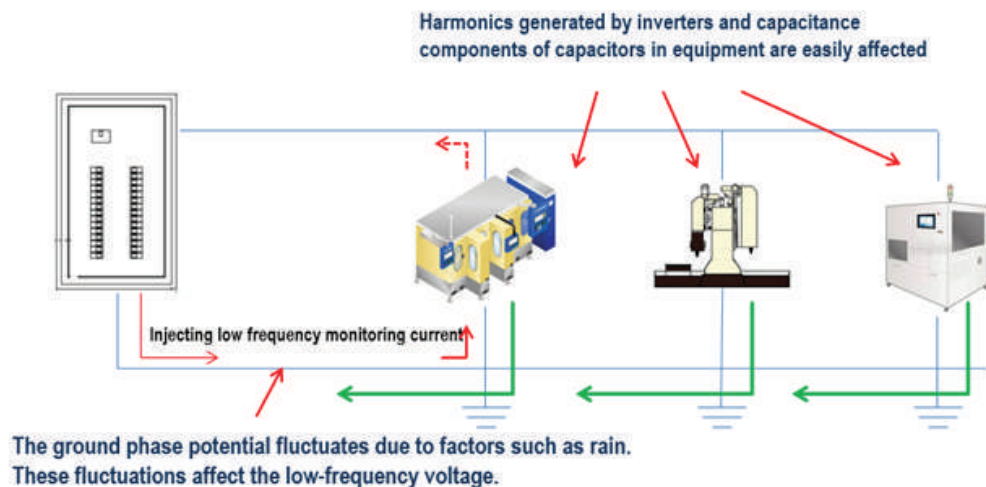


Limitations of Injection Method of detection (superimposed type):

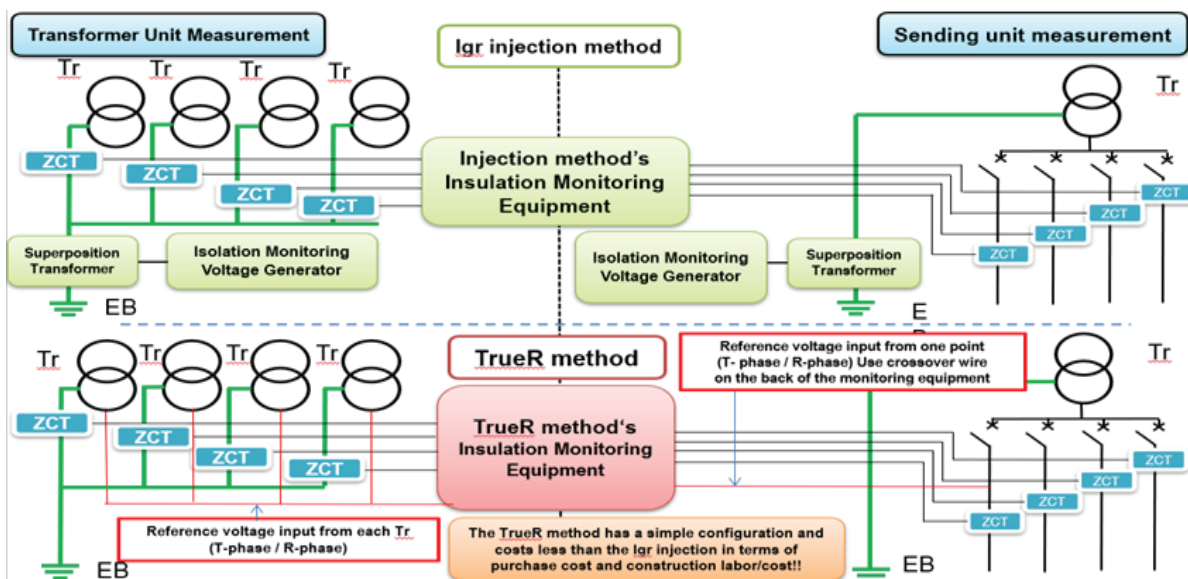
With the Igr injection method, the capacitance component (I_{gc}) of the capacitor installed in the load equipment can affect the leakage detection signal, preventing normal insulation monitoring.

With the increase in inverter equipment and UPS, the generated harmonics further amplify I_{gc} , making it difficult for the injection method to make accurate measurements.

In this method, the monitoring voltage is injected into the ground phase, so it can be affected by fluctuations in the ground phase potential due to weather, etc. The low-frequency monitoring current used for measurement is sometimes eliminated by a noise-reduction band pass filter.



Comparison of Igr Injection type / TrueR type monitoring equipment:

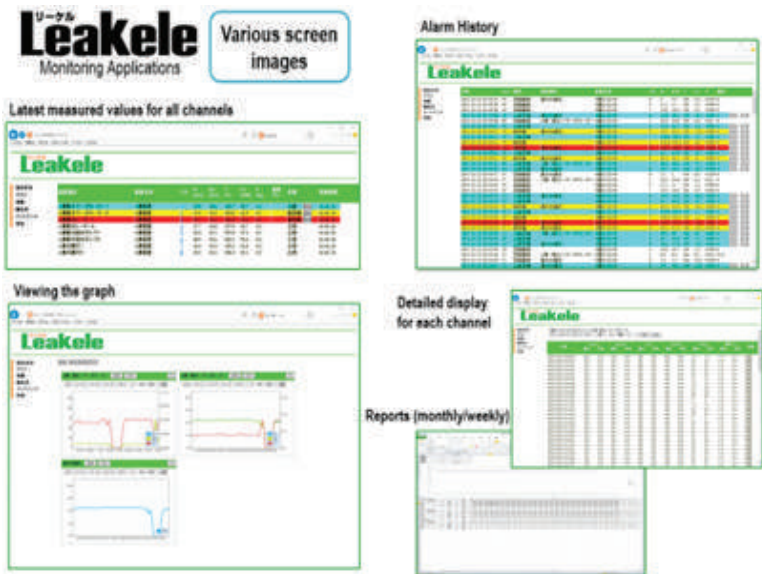
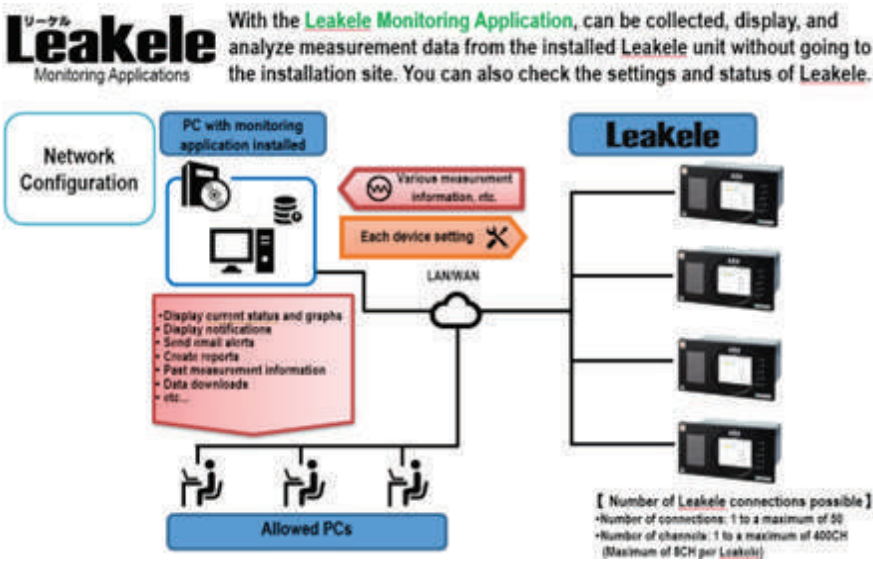


Leakele Eco system:



Remote Monitoring and configuration through cloud

PC monitoring software with multiple user (sold separately)



Large data set to

- monitor and schedule preventive maintenance,
- data set to train models and provide insights into system behavior

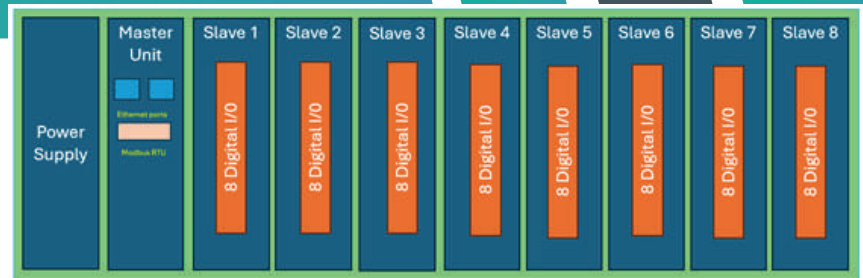
REMOTE TERMINAL UNIT (RTU)

Description

RTU is designed to be modular in nature, supports Digital In/OUT and Analog ports. Up to 8 slave cards can be plugged to one unit. The RTU provides time stamping for each transition of the digital signal with accurate time synchronized through PTP.

Communication is supported through dual ethernet ports (T1L and CAT 4) supporting up to 100 Mbps. T1L support allow the user to have a long-distance data collection with higher bandwidth. The communication protocols supported are IEC 60870-5-101/104, Modbus RTU.

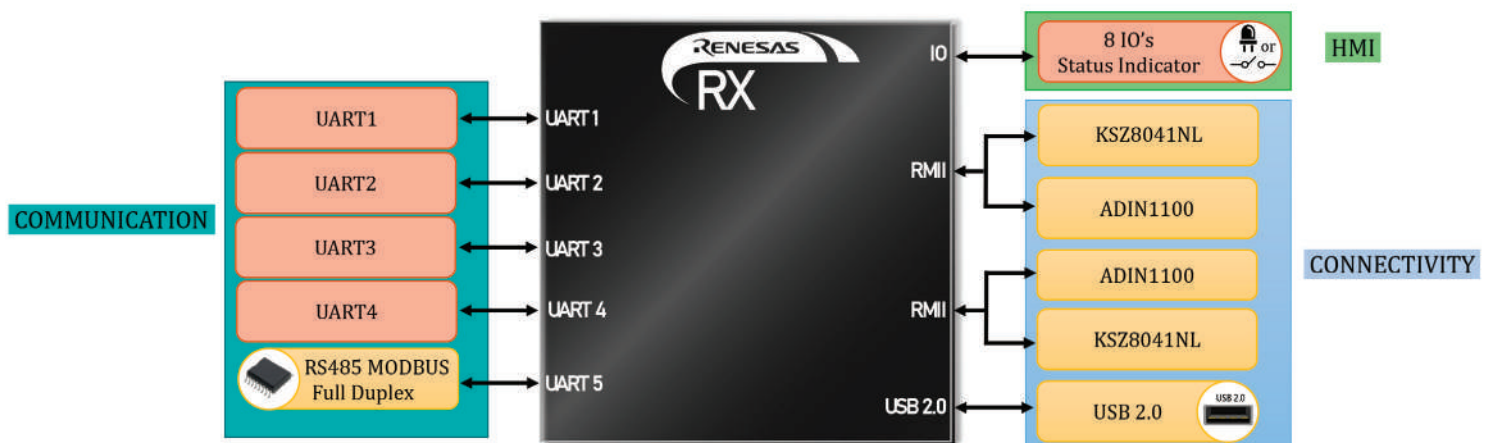
The RTU provides flexibility d\to the user to implement desired architecture and robust hardware to support the same.



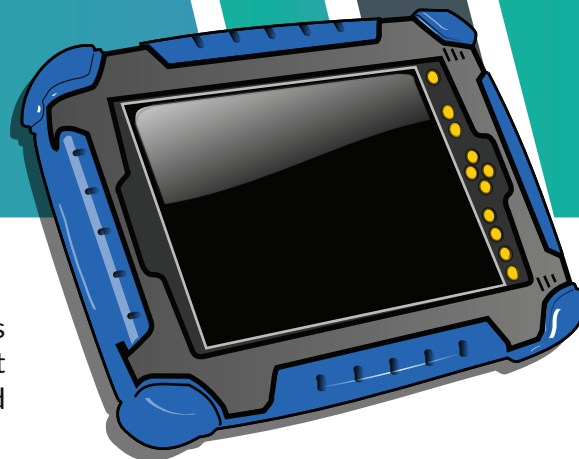
Features

- Rugged and flexible design
- Good EMI/EMC performance to meet varying industrial needs
- 12 V supply
- Connectivity:
 - o2 ethernet ports supporting ring architecture in hardware
 - oSelectable physical layer T1L/ cat 4/8
- Hardware PTP for time synchronization, supports Boundary clock (BC), End-to-end transparent clock (E2E TC), Peer-to-peer transparent clock (P2P TC)
- Secure FOTA solution available with hardware security module
- Modular Slave architecture supporting Digital and analog IO
- Code flash up to 4 MB to support varied application needs
- Double precision floating point unit to support complex mathematical calculations.

Block Diagram



7" INDUSTRIAL TABLET



Description

Industrial Android Tablets combine the user - friendly features of android with rugged durability, representing a significant technological advancement that enhances efficiency and productivity in demanding industrial environments.

Features

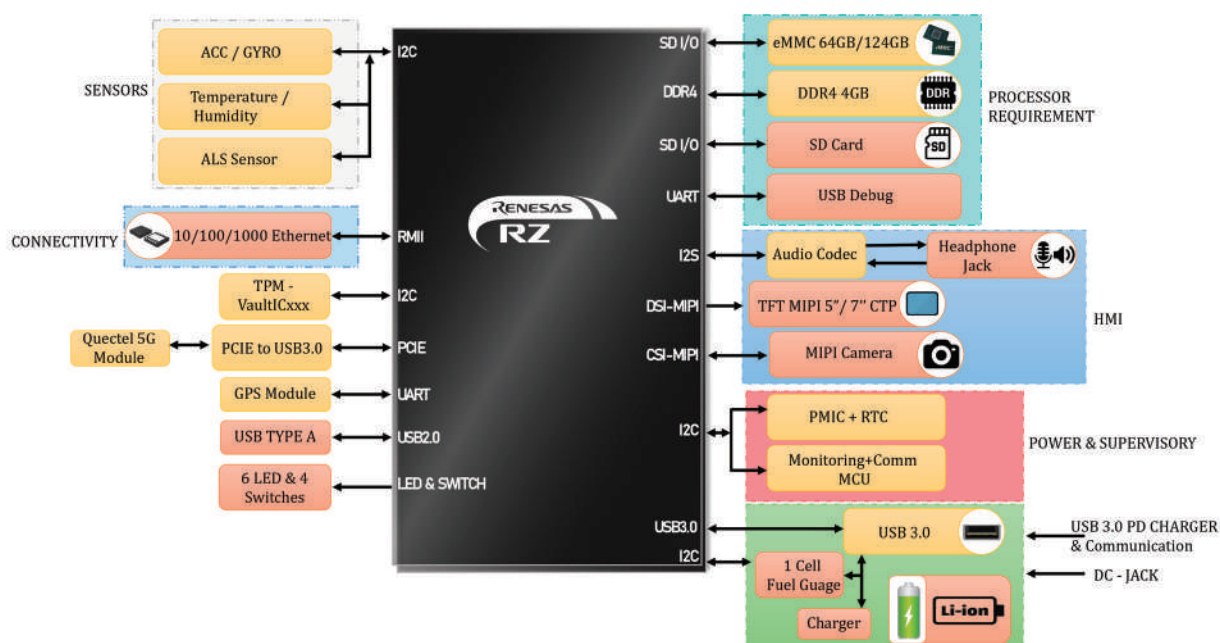
- Processor - Microprocessor includes a Quad Core - Cortex®-A55 (1.2GHz) CPU.
- Memory –
 - eMMC – 32GB / 64GB.
 - DDR4 – 4GB / 8GB
- SDCARD
- Display – LVDS 5.5" 720 X 1280 / 7" 800 X 1280, CTP.
- HDMI Output.
- Camera – MIPI interface.
- Audio Codec – DA7218.
- Power – main battery: li-ion, rechargeable, 8000 mAh.
- Interface – 4 port USB 2.0 Type-C, OTG.
- Navigation – GPS
- USB PD fast charging with Dual Cell Battery
- High Brightness Automotive Grade TFT with Cover Glass

- Communication :
 - Isolated RS485(Optional)
 - Isolated SPI
 - Isolated CAN
- Connectivity :
 - 10/100 ethernet (IC Plus)
 - Quectel LTE
 - Wi-Fi + BLE
- Sensors :
 - Accelero / gyro.
 - Temperature / humidity.
 - ALS.
- Secure – NFC receiver - PTX100R NFC Reader IC, EMVCo® 3.0/3.1 PCD L1 compliancy2.
- Inbuilt QR CODE READER: Zebra SE4710 - 1D,2D/QR Codes (including AADHAAR).
- LORA Connectivity

Applications

- Inventory management.
- Health and safety monitoring.
- Asset management.
- Real-time communication.

Block Diagram



RX111 THERMAL PRINTER

Description

The RX111 Thermal Printer Is A Type Of Thermal Printer That Is Designed For High-quality, Fast, And Reliable Printing. It Uses Heat To Produce Sharp Images And Text On Specially Coated Thermal Paper. It Is Designed To Withstand Heavy Usage And Harsh Environments, Making It Ideal For Use In Busy Retail Environments, Warehouses, And Other Settings Where Frequent Use And Exposure To Dust And Debris Are Common.



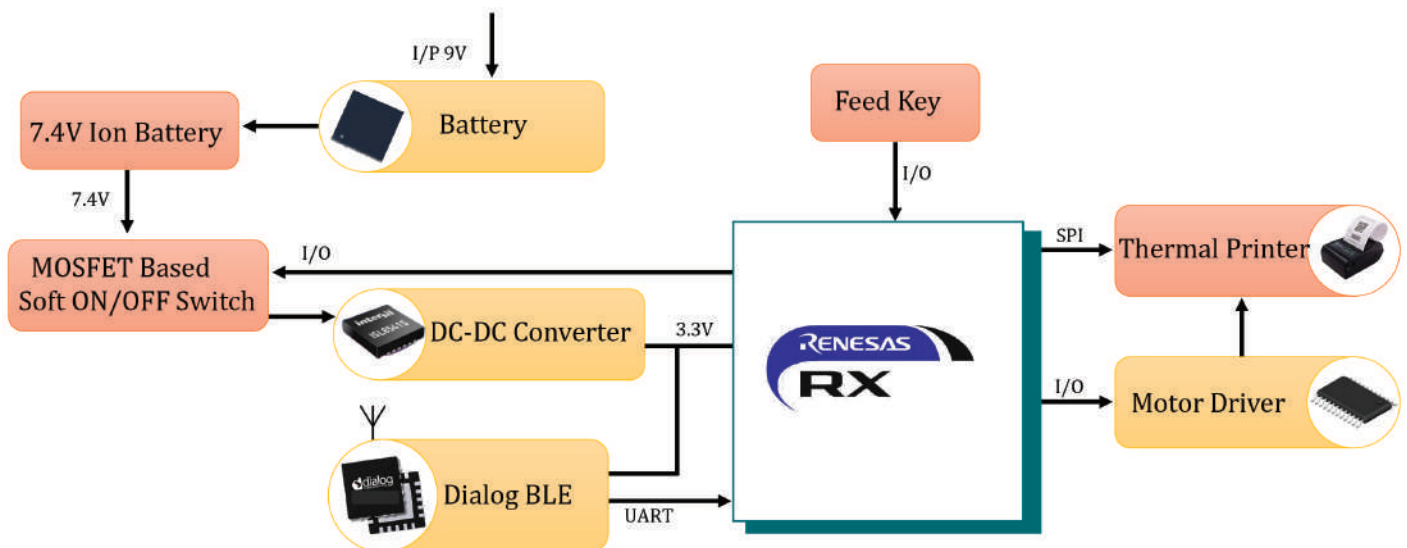
Features

- RX111 - R5F5111ADFP Based Thermal Printer with FTP628MCL103 2 inch Printer
- ESC Command Sequence For Printing
- Image Printing And Text Printing
- Battery Operated
- BLE Interface
- Bluetooth: DA14531 BT 5.1
- Platen Release And Power Out Indication

Applications

- Retail Industry
- POS Systems
- Manufacturing
- Medical Equipment

Block Diagram



RX651 THERMAL PRINTER

Description

The RX651 Thermal Printer Is A Type Of Thermal Printer That Is Designed For High-quality, Fast, And Reliable Printing. It Uses Heat To Produce Sharp Images And Text On Specially Coated Thermal Paper. It Is Designed To Withstand Heavy Usage And Harsh Environments, Making It Ideal For Use In Busy Retail Environments, Warehouses, And Other Settings Where Frequent Use And Exposure To Dust And Debris Are Common.



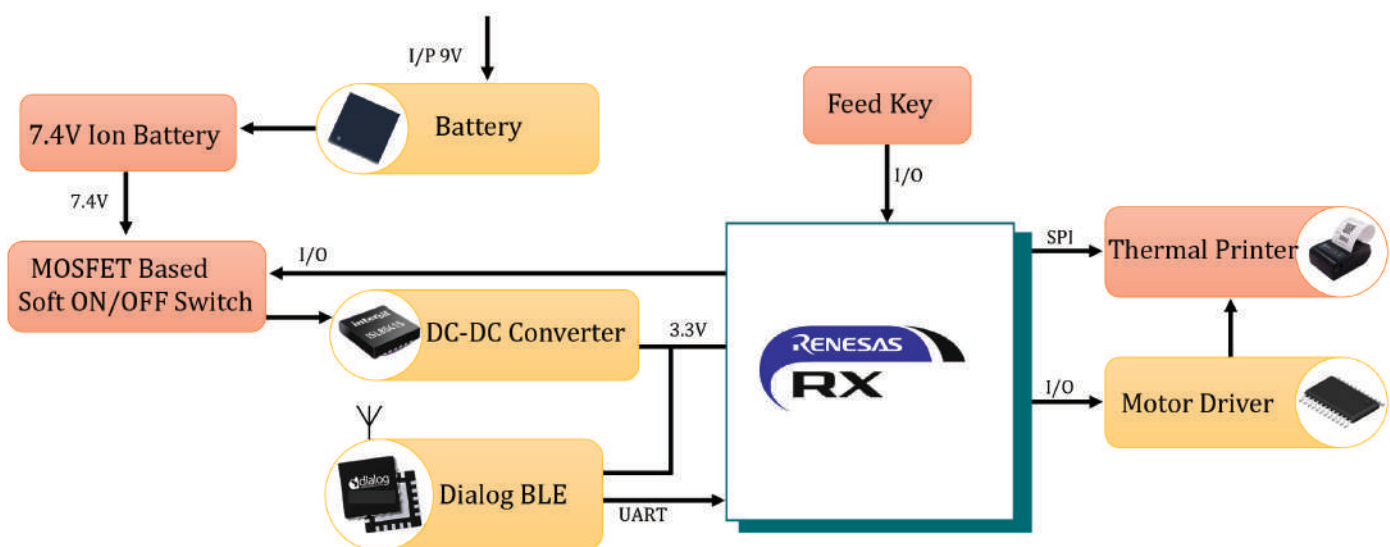
Features

- RX651 - R5F56519BDFP Based Thermal Printer with FTP628MCL103 2 inch Printer
- ESC Command Sequence For Printing
- Multi-Language (English + Any Local Languages)
- Image Printing And Text Printing
- Battery Operated
- BLE Interface
- Bluetooth: DA14531 BT 5.1
- Platen Release And Power Out Indication

Applications

- Retail Industry
- POS Systems
- Manufacturing
- Medical Equipment

Block Diagram



Description

AEBAS – Aadhaar Enabled Biometric Attendance System The AEBAS system would enable an employee to register attendance by simply presenting his / her biometric (fingerprint). This event will be authenticated online after one to one match with the bio-metric attributes stored in the UIDAI data base against the employees aadhaar number. This reference solution come integrated with L1 registered biometric device (optical fingerprint).



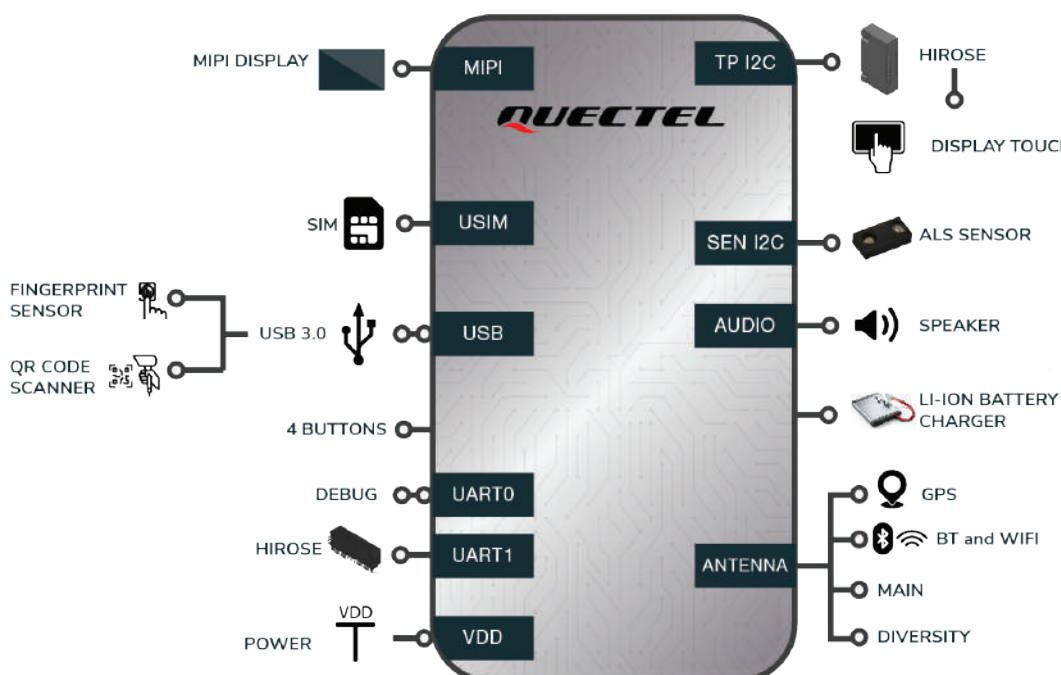
Features

- Quectel LTE SC200E Smart Module
- TFT 2.4/5/7 inch
- Finger Print Sensor (FPS) Interface on USB
- Ethernet 10/100
- USB Device and UART
- On chip RTC
- Reliable Capturing Performance
- Andriod Version 13
- Linux: Kernel Version 4.19
- Hardware Encryption support @ RSA-2048 bit Key-Generation and AES-256 Bit

Applications

- Biometric Security
- Border Control / Airports
- Financial
- Time and Attendance
- Healthcare Biometrics
- Justice / Law Enforcement

Block Diagram



IRIS AND FPS

L1 COMPATIBLE

Description

Iris(eye) and Fingerprint Sensors Are Biometric Technologies Used For Identification And Authentication Purposes. An Iris Sensor Captures The Unique Patterns Of The Iris Can Be Used To Identify Individuals With A High Level Of Accuracy. Fingerprint Sensors Use Capacitive Or Optical Technology To Capture The Unique Patterns On The Fingertips.

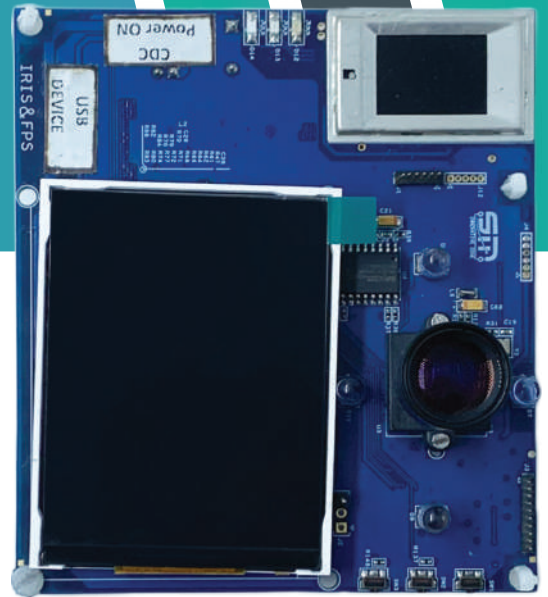
This Solution Rely On Biometric Data, Which Is A Unique Characteristic Of An Individual That Can Be Used To Identify Them. When The IRIS and FPS Systems Grant Access, a Signal Is Sent To A Microcontroller That Is Connected To The TFT Display.

Features

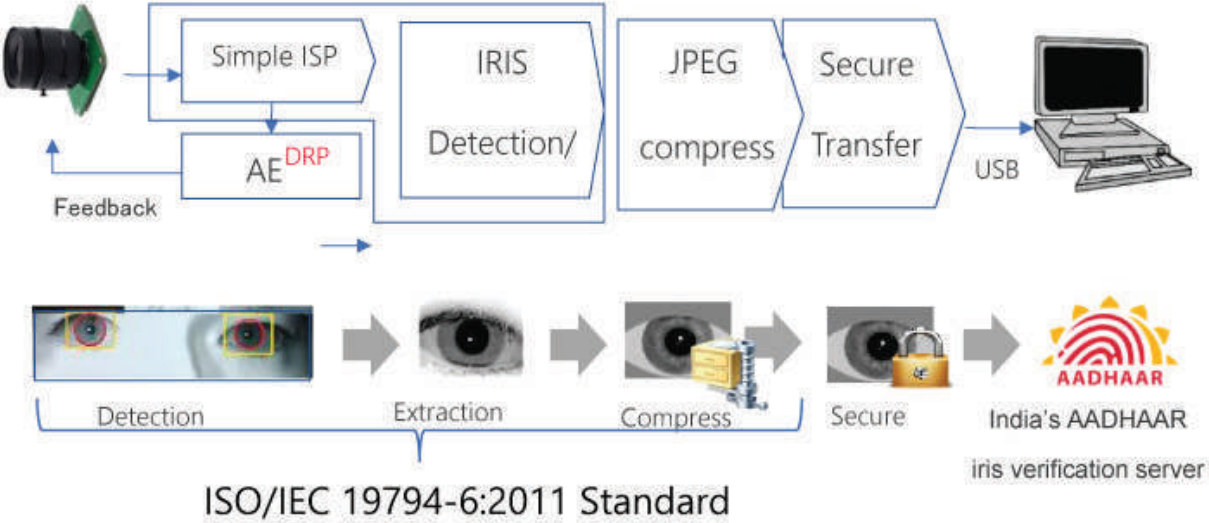
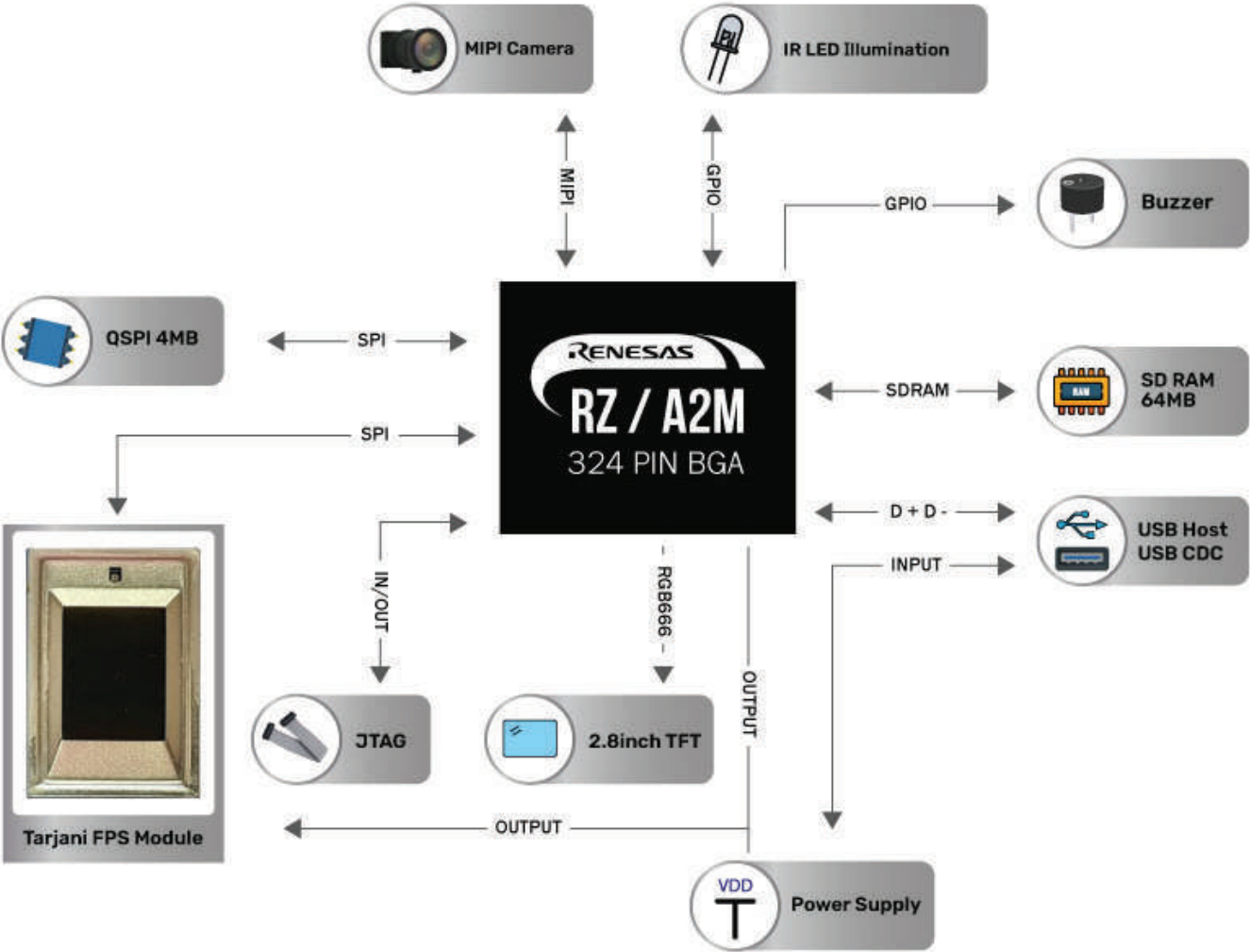
- RZ/A2M (324 Pin BGA).(R7S921058VCBG)
- MIPI CAMERA (MT9V034LCC)
- Quad SPI (MX25L51245G-M-SOP16P)
- USB 2.0 WITH CDC Interface.
- USB 2.0 is Host Interface.
- Intersil Buck Regulator(ISL80505,ISL80030A).
- Buzzer Interface.
- Indication Tri Color LED.
- IR LED Control.
- FPS Sensor Interface.
- 2.8inch TFT Display.

Applications

- Access Control
- Time And Attendance
- Law Enforcement
- Healthcare



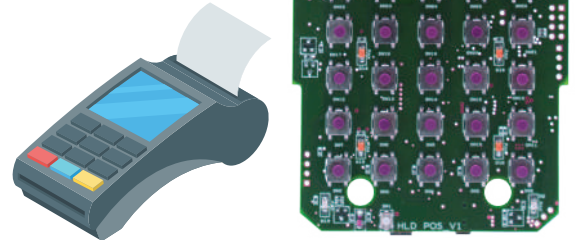
Block Diagram



LINUX HANDHELD POS

Description

It Is A Portable Device Used For Processing Transactions In Various Retail And Hospitality Industries Which Offers Greater Flexibility, Improved Efficiency, Enhanced Security. The Linux Operating System Offers A Stable And Secure Environment For Developing POS Software and Applications. Linux-based POS Is Highly Customizable And Lower Costs Compared To Proprietary Operating Systems.



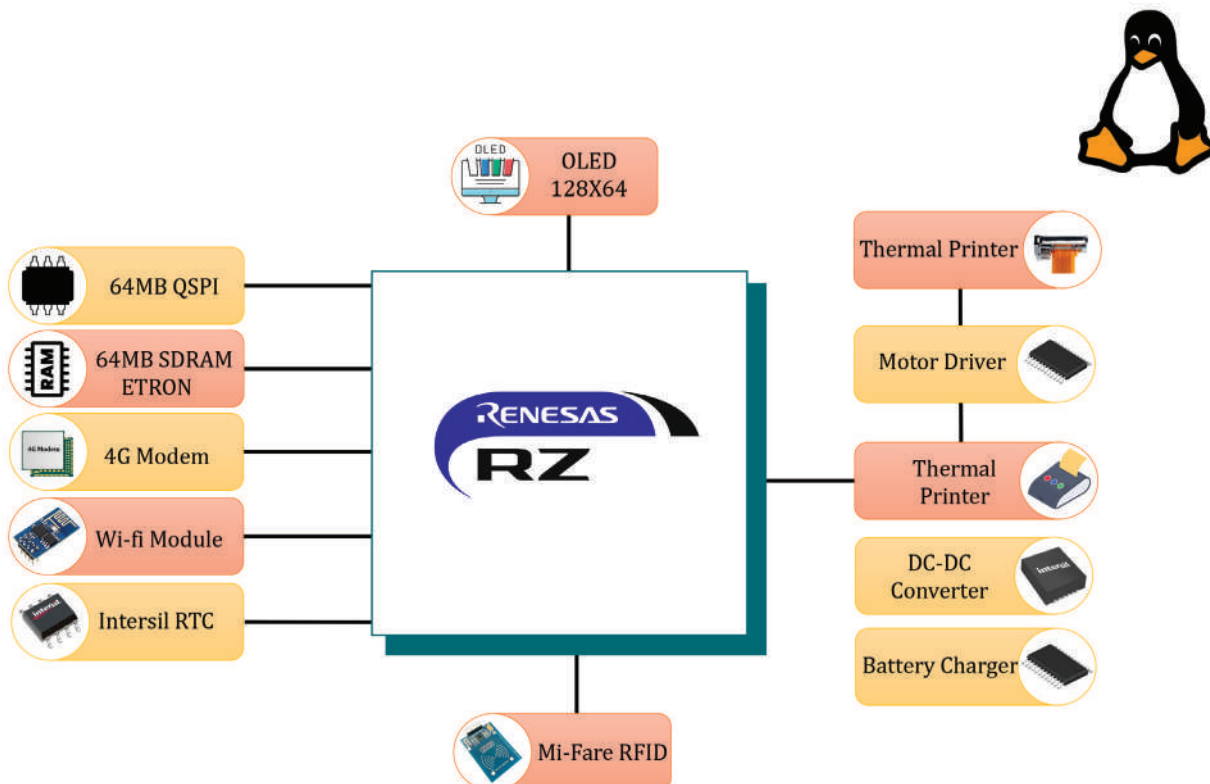
Features

- Renesas RZA1H Based Microprocessor
- 128x64 OLED Display
- RX651 Based Thermal Printer
- 30 User Defined Keys
- Mi-Fare RFID Card Reader
- 64MB QSPI for Linux and 64MB QSPI for Storage
- 64MB SDRAM, External RTC with Alarm Support
- Battery Powered with 7.4v/3000mAh Battery
- Quectel based 4G Modem Interface with Micro SIM Support

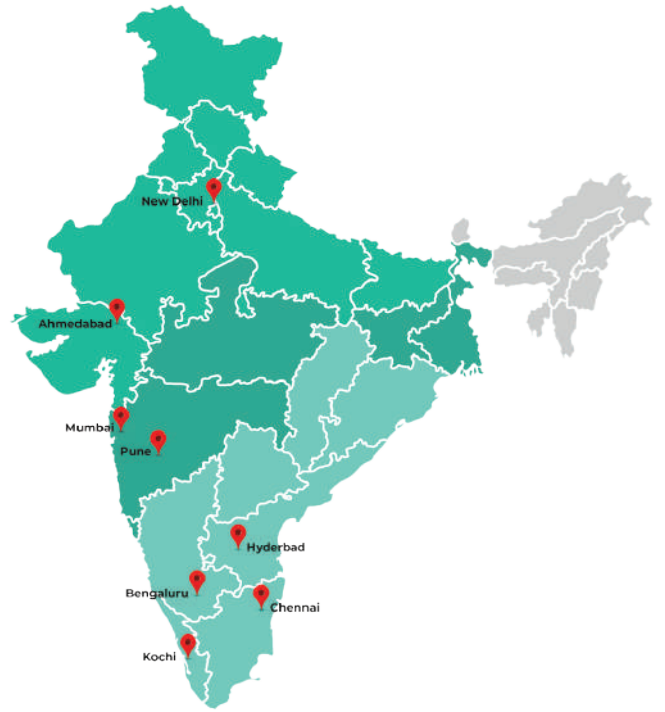
Applications

- Retail Stores
- Healthcare Facilities
- Transportation / Ticketing
- Payment Collection

Block Diagram



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