Solar power conversion and data solutions for safety, performance and best lifecycle cost

NEP
NORTHERN ELECTRIC

C&I Inverter, Data for complete RSD Solution

September 2023

www.northernep.com

NEP Expanded RSD Solution

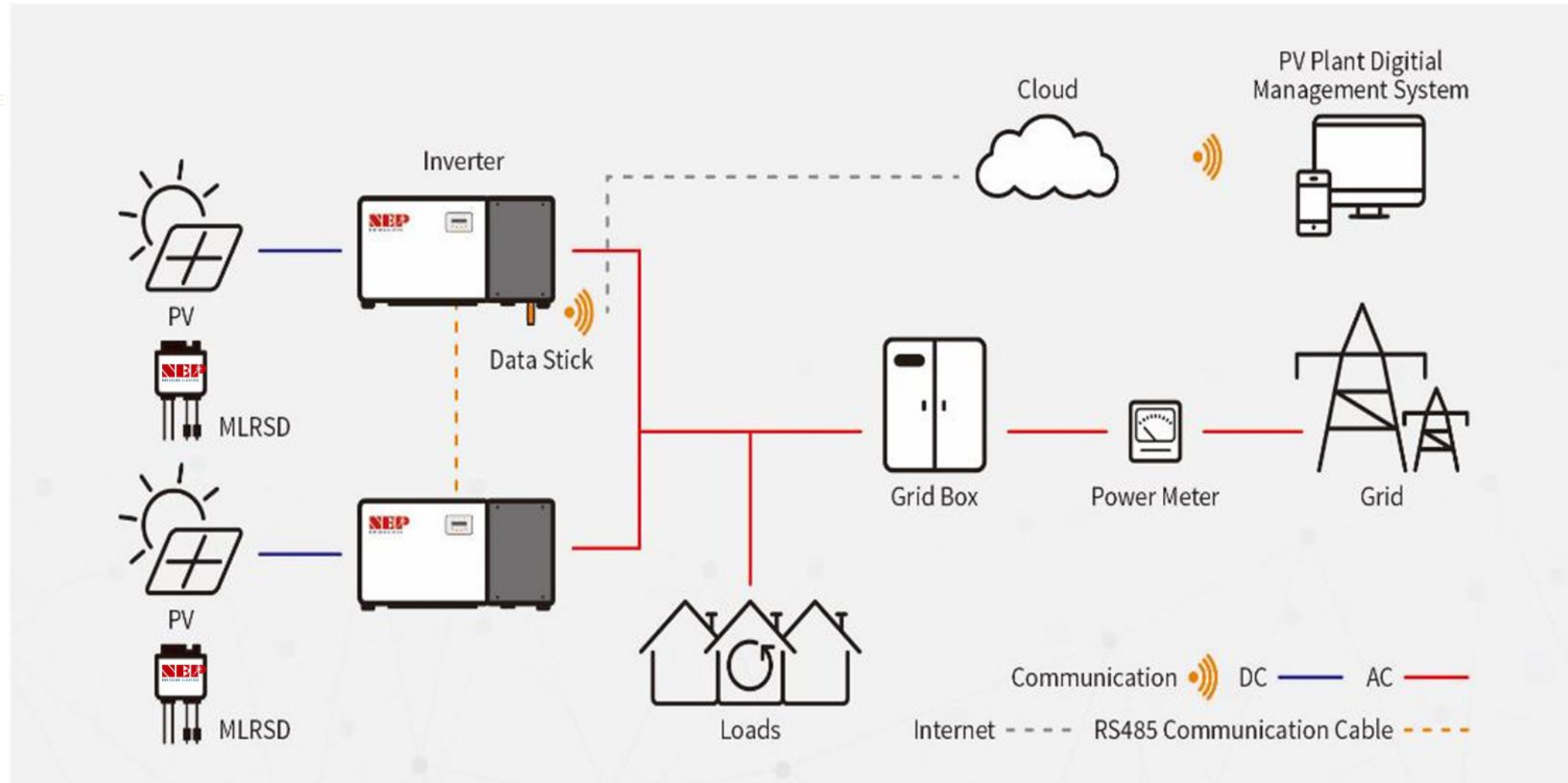**Data, Communications – "Galaxy" Solutions**
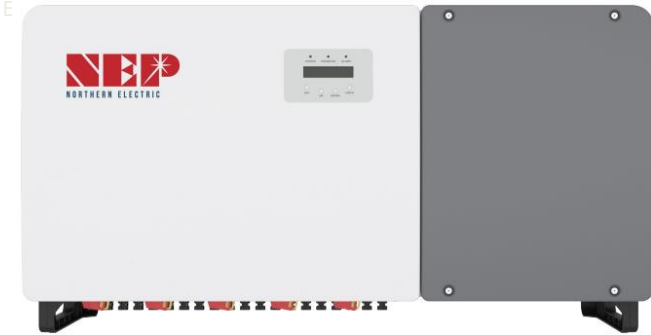
    Hardware

    Integration

    Smart phone and Web data

Complete RSD + Inverter + Data Solution... All from NEP

Inverters for any and all C&I Rooftops

NEP-75KW
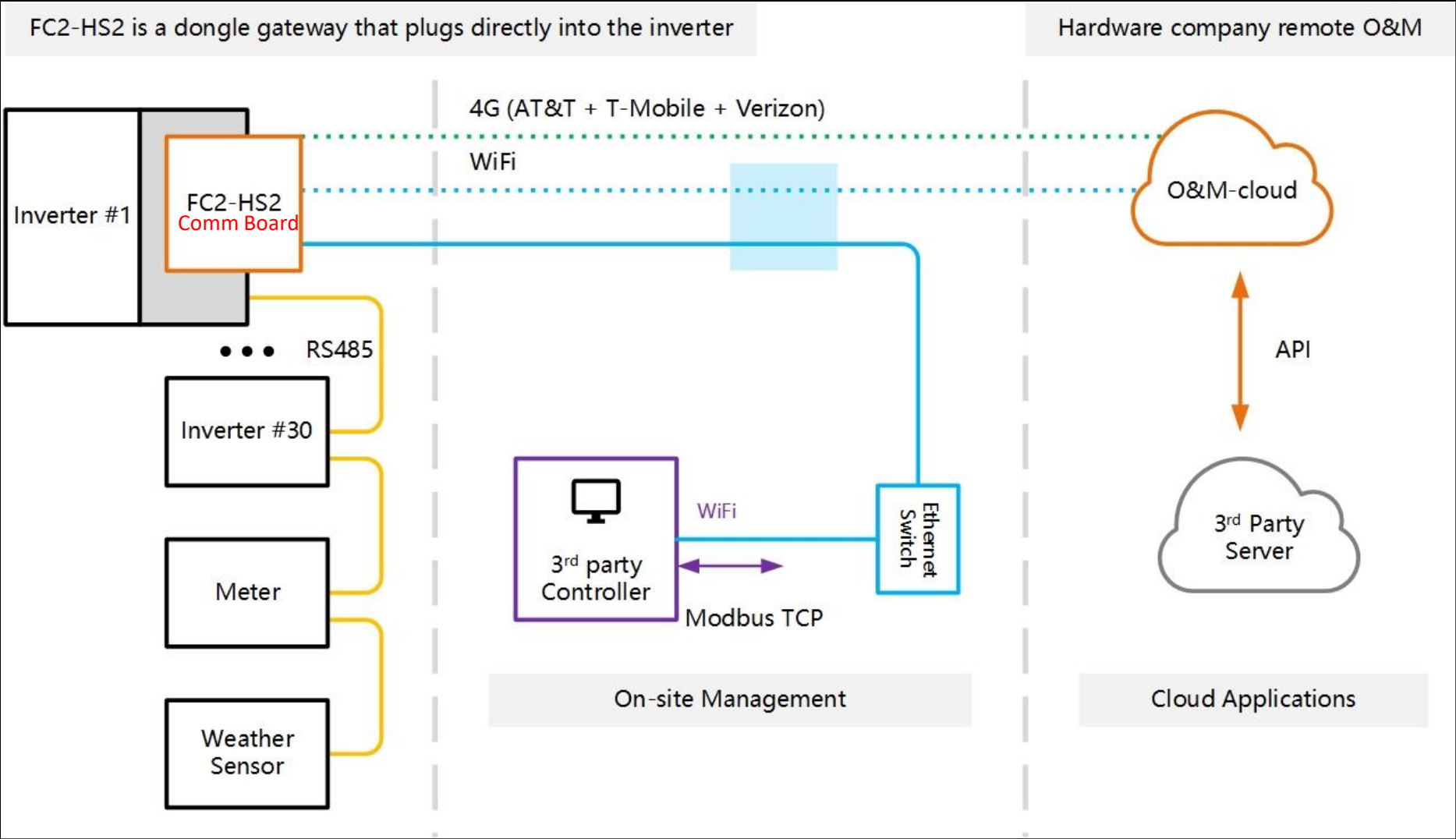NEP-100KW

NEP-33KW
NEP-50KW
NEP-30KW-208Vac

+

Integrated
Transmitter

RSD Receivers
PVG-2, PVG-3

- Elegant wire-box integration of NEP transmitter
- NEP Gateway inside wire-box
- No supplemental RSD related enclosures necessary
- NEP warranty wrap

"Galaxy" Data, Communications Solution – (non-RSD example)

FC2-HS2 is a dongle gateway that plugs directly into the inverter

Hardware company remote O&M

Inverter #1

FC2-HS2
Comm Board

4G (AT&T + T-Mobile + Verizon)

WiFi

O&M-cloud

RS485

Inverter #30

Meter

Weather Sensor

3rd party Controller

WiFi

Modbus TCP

Ethernet Switch

API

3rd Party Server

On-site Management

Cloud Applications

The "Smart Link" function of the APP allows users to automatically match complex hardware scenarios with just one click.

* Architecture example with no RSD functions

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"Galaxy" Data communications – Rapid Shutdown Architecture

Gateway
+
Comm Board

Inside inverter wire-box
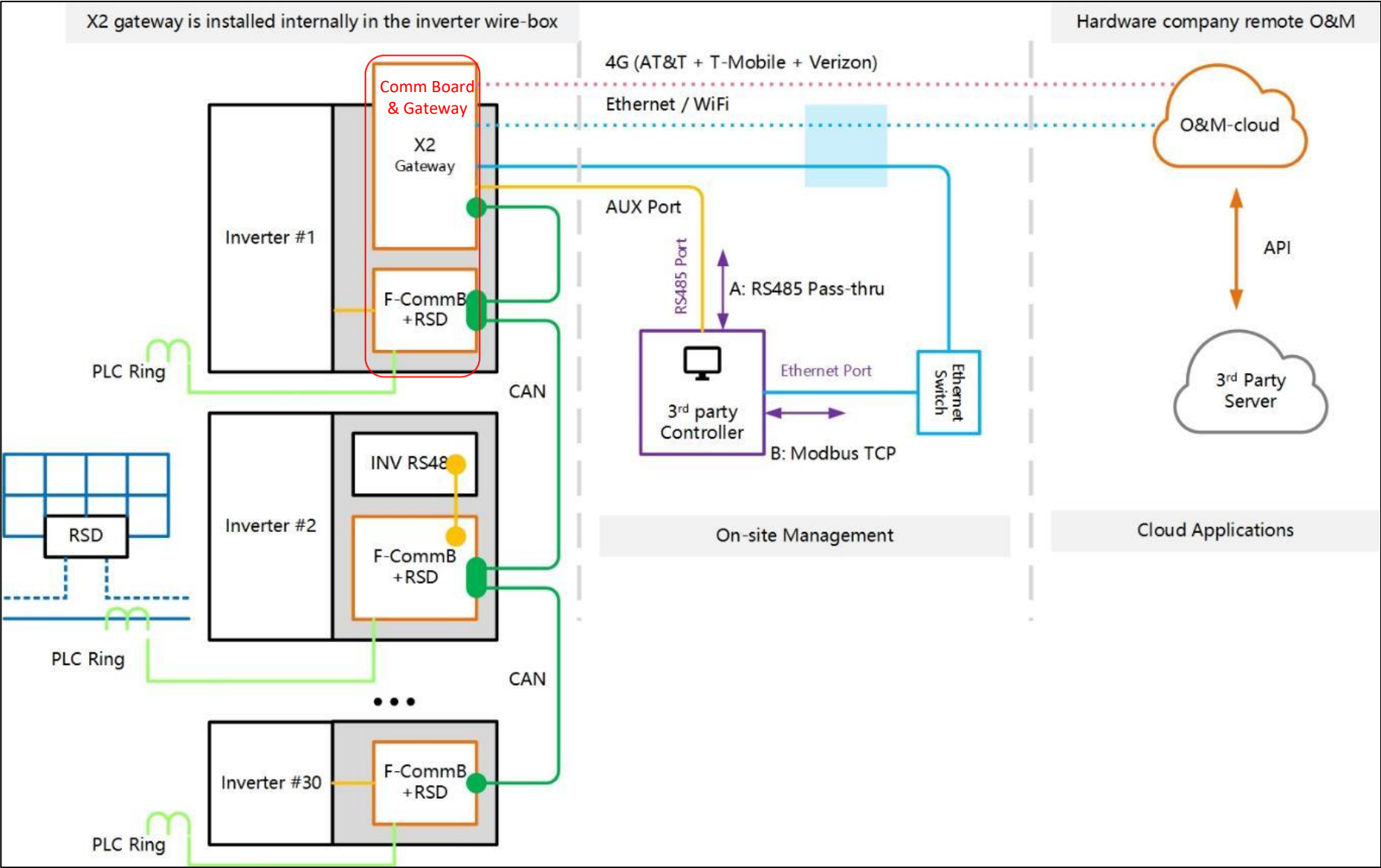
"Galaxy" Data hardware – Field integrated in NEPTUNE wire-boxes

- Gateway communications boards
- High-performance response to real-time control of large sites
- Automated inverter commissioning
- Energy production management
- Smart Panel Level Monitoring
- Optional Cellular (wifi, Ethernet standard)
- RSD and Inverter data

Example;
"Maxi" gateway assembly
For 75/100kW models
(Mounts on Comm Board in
inverter wire-box)
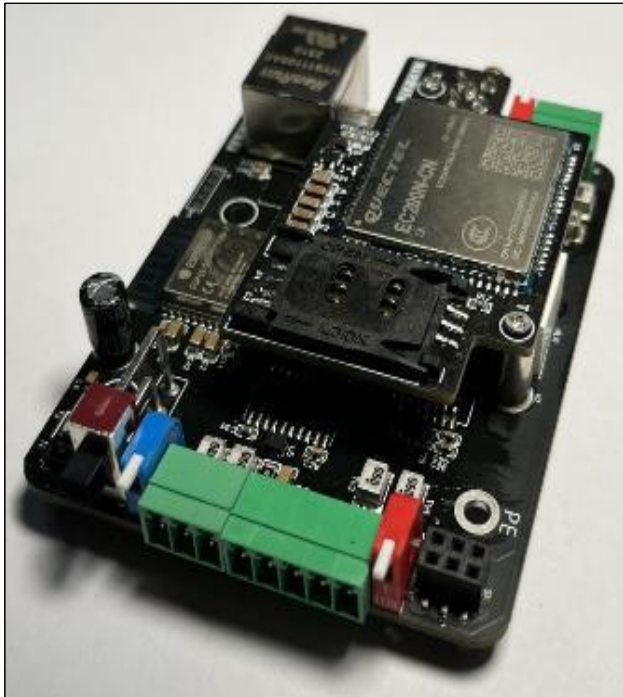
With Cellular   Gateway   option for DAS box installation

NEP Expanded RSD Solution – "Maxi" Comm Board for 75/100kW

Model Name	FCB-100
SKU	FD2C2F12001
Customer Code	TBD
Protocol Converter Specifications	
RS485 Interface	
No. of Ports	2 (2-pole Terminal Block and 4-pole Terminal Block)
Protocol	Modbus RTU and Custom
Modbus RTU Mode	Master
CAN Interface	
No. of Ports	1 (2-pole Terminal Block)
Signals	CAN_L, CAN_H
Terminator	120 ohms (configurable)
Isolation	3 kV (built-in)
Bluetooth Interface	
Standard	BLE 4.2
Antenna	Built-in
Power Parameters	
Input Voltage	5 to 24 Vdc
Power Consumption	1 W, Max. 2 W
Environmental Limits	
Operating Temperature	-30℃ to 85℃ (-22 to 185°F), Natural convection
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 85% (non-condensing)
Physical Characteristics	
IP Rating	IP20
Dimensions	210 mm / 94 mm / 19 mm
Weight (without housing)	86g

Packaging and accessories	
Dimension of packaging box	253*152*40mm
Total Weight	0.17KG
Protocol Converter	1 * FCB-100
Connector	1 * EDG-3.5-3P, 1 * EDG-3.5-5P, 2 * EDG-5.08-2P
Documentation	Quick guide QR-code on stickers

Packaging and accessories photos	
Protocol Converter	

One comm board
Per inverter

NEP Expanded RSD Solution – "Mini" Comm Board for 30/33/50kW

Model Name	FCB-60
SKU	FD2C3F12001
Customer Code	TBD

Protocol Converter Specifications

RS485 Interface

No. of Ports	2 (2-pole Terminal Block and 8-pole Terminal Block)
Protocol	Modbus RTU and Custom
Modbus RTU Mode	Master

CAN Interface

No. of Ports	1 (2-pole Terminal Block)
Signals	CAN_L, CAN_H
Terminator	120 ohms (configurable)
Isolation	3 kV (built-in)

Bluetooth Interface

Standard	BLE 4.2
Antenna	Built-in

Power Parameters

Input Voltage	5 to 24 Vdc
Power Consumption	1 W, Max. 2 W

Environmental Limits

Operating Temperature	-30℃ to 85℃ (-22 to 185°F), Natural convection
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 85% (non-condensing)

Physical Characteristics

IP Rating	IP20
Dimensions	125 mm / 107 mm / 15 mm
Weight (without housing)	48g

Packaging and accessories

Dimension of packaging box	153*153*51mm
Total Weight	0.13KG
Protocol Converter	1 * FCB-60
Cable	1 * DC power cable
Connector	2 * EDG-3.5-2P, 3 * EDG-5.08-2P
Documentation	Quick guide QR-code on stickers

Packaging and accessories photos

One comm board
Per inverter

NEP Expanded RSD Solution – Wifi Gateway (mounts on Mini or Maxi Comm Boards)

One inverter per site shall host a Gateway in the wire-box mounted on the Comm Board – One Gateway per up to 10 inverters, typically

Model Name	FC2-EWX2-S
SKU	FC2A2F12002
Customer Code	TBD
Gateway Specifications	
RS485 Interface	
No. of Ports	1 (5-pole Terminal Block)
Protocol	Modbus RTU
Modbus RTU Mode	Master
CAN Interface	
No. of Ports	1 (3-pole Terminal Block)
Signals	CAN_L, CAN_H, CAN Signal GND
Terminator	120 ohms (configurable)
Isolation	3 kV (built-in)
AUX Interface	
No. of Ports	1 (5-pole Terminal Block)
Protocol	Modbus RTU
Modbus RTU Mode	Slave (RS485 Pass-thru)
Terminator for RS485	120 ohms
Isolation	5 kV
Ethernet Interface	
10/100BaseTX Ports	1 (RJ45 Connector)
Cloud Applications	MQTT
SCADA controllers on the same LAN subnet	Modbus TCP
Modbus TCP	
Mode	Server (Slave)
Max. No. of Client Connections	2
WLAN Interface	
WLAN Standards	802.11 b/g/n
Frequency Band	2.4 GHz
Wireless Security	WEP, WPA/WPA2
Antenna	Built-in
Bluetooth Interface	

Standard	BLE 4.2
Antenna	Built-in
Power Parameters	
Input Voltage	5 to 24 Vdc
Power Consumption	2.5 W, Max. 5 W
Environmental Limits	
Operating Temperature	-30℃ to 85℃ (-22 to 185°F), Natural convection
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 85% (non-condensing)
Physical Characteristics	
Housing	Plastic
IP Rating	IP20
Dimensions (without housing)	93 mm / 69 mm / 21 mm
Dimensions (includes housing)	95 mm / 77 mm / 32 mm
Weight (without housing)	48g
Weight (includes housing)	148g
Standards and Certifications (DoC)	
CE-EMC	EN 55032
	EN 55035
	EN 61000-3-2
	EN 61000-3-3
CE-RED	EN 301 908
	EN 300 328
	EN 301 489-1 / -17 / -52
	EN 62368-1
CE-LVD	EN 62368-1
FCC SDoC	Part 15B
FCC ID	Part 15C

Plastic housing	1 * Housing, 1 * DIN rail mounting clips, 2 * M4 Screw 3 * Standoff and M3 Screw
Cable	1 * CAN jumper, 1 * DC power cable
Connector	2 * EDG-3.5-3P, 1 * EDG-3.5-5P, 1 * EDG-5.08-2P
Documentation	Quick guide QR-code on stickers

Packaging and accessories photos

Gateway	

Packaging and accessories

Dimension of packaging box	235*125*65mm
Total Weight	0.26KG
Gateway	1 * FC2-EWX2-S

NEP Expanded RSD Solution – Gateway with Cellular (mounts on Mini and Maxi)

One inverter per site shall host a Gateway in the wire-box mounted on the Comm Board – Typically one Gateway per up to 10 inverters
This is the Gateway with optional Cellular functionality on board. Includes sim card with 5 years of cellular data.

Model Name	FC2-EHX2-S
SKU	FC2A2F12001
Customer Code	TBD
Gateway Specifications	
RS485 Interface	
No. of Ports	1 (5-pole Terminal Block)
Protocol	Modbus RTU
Modbus RTU Mode	Master
CAN Interface	
No. of Ports	1 (3-pole Terminal Block)
Signals	CAN_L, CAN_H, CAN Signal GND
Terminator	120 ohms (configurable)
Isolation	3 kV (built-in)
AUX Interface	
No. of Ports	1 (5-pole Terminal Block)
Protocol	Modbus RTU
Modbus RTU Mode	Slave (RS485 Pass-thru)
Terminator for RS485	120 ohms
Isolation	5 kV
Ethernet Interface	
10/100BaseTX Ports	1 (RJ45 Connector)
Cloud Applications	MQTT
SCADA controllers on the same LAN subnet	Modbus TCP
Modbus TCP	
Mode	Server (Slave)
Max. No. of Client Connections	2
WLAN Interface	
WLAN Standards	802.11 b/g/n
Frequency Band	2.4 GHz
Wireless Security	WEP, WPA/WPA2
Antenna	Built-in
Bluetooth Interface	

Standard	BLE 4.2
Antenna	Built-in
Cellular Interface	
Cellular Standards	LTE-FDD/LTE-TDD
No. of SIM Slot	1
Cellular Antenna Connectors	1 SMA female
Power Parameters	
Input Voltage	5 to 24 Vdc
Power Consumption	2.5 W, Max. 5 W
Environmental Limits	
Operating Temperature	-30℃ to 85℃ (-22 to 185°F), Natural convection
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 85% (non-condensing)
Physical Characteristics	
Housing	Plastic
IP Rating	IP20
Dimensions (without housing)	101 mm / 69 mm / 21 mm
Dimensions (includes housing)	103 mm / 77 mm / 32 mm
Weight (without housing)	67g
Weight (includes housing)	167g
Standards and Certifications (DoC)	
CE-EMC	EN 55032
	EN 55035
	EN 61000-3-2
	EN 61000-3-3
CE-RED	EN 301 908
	EN 300 328
	EN 301 489-1 / -17 / -52
	EN 62368-1
CE-LVD	EN 62368-1
FCC SDoC	Part 15B
FCC ID	Part 15C

Packaging and accessories	
Dimension of packaging box	260*235*70mm
Total Weight	0.9KG
Gateway	1 * FC2-EHX2-S
Plastic housing	1 * Housing, 1 * DIN rail mounting clips, 2 * M4 Screw
	3 * Standoff and M3 Screw
Cable	1 * CAN jumper, 1 * DC power cable
Connector	2 * EDG-3.5-3P, 1 * EDG-3.5-5P, 1 * EDG-5.08-2P
Documentation	Quick guide QR-code on stickers
SIM532 Kit	1 * IP65 antenna with 3 meters cable, 1 * antenna bracket,
	1 * SIM already plugged into the gateway

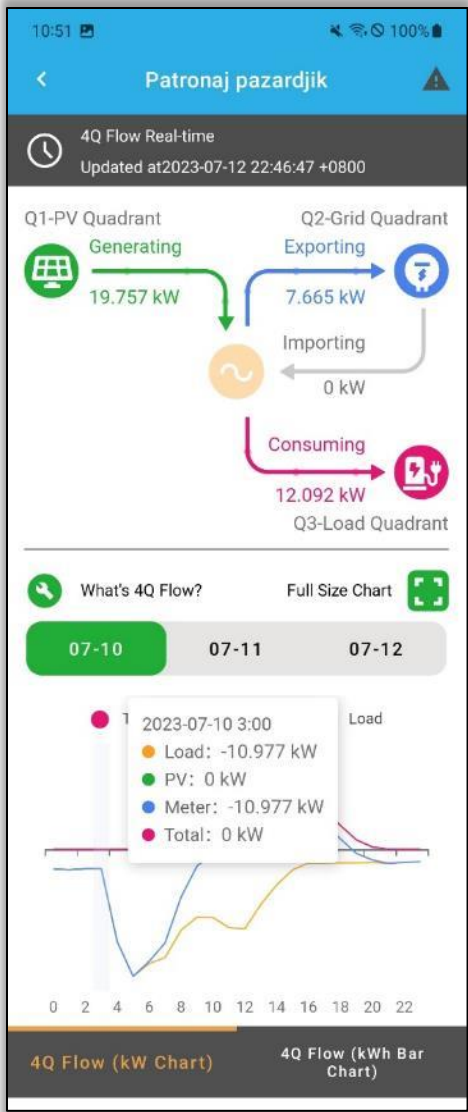| **Packaging and accessories photos**	
Gateway	

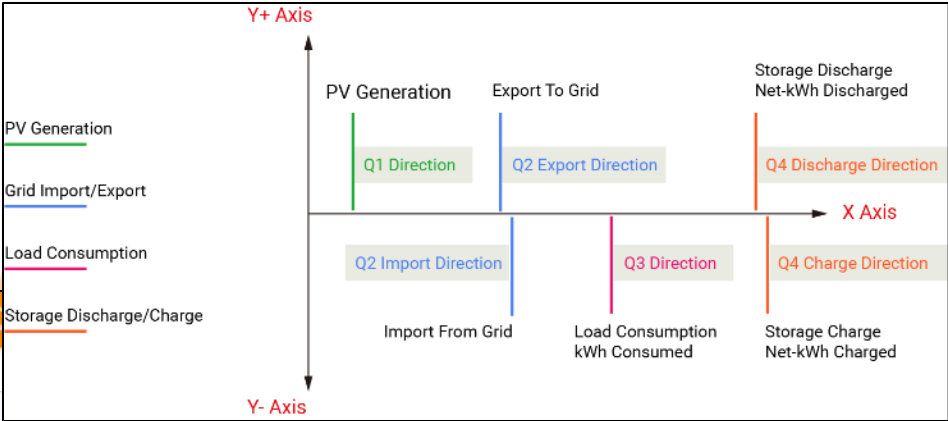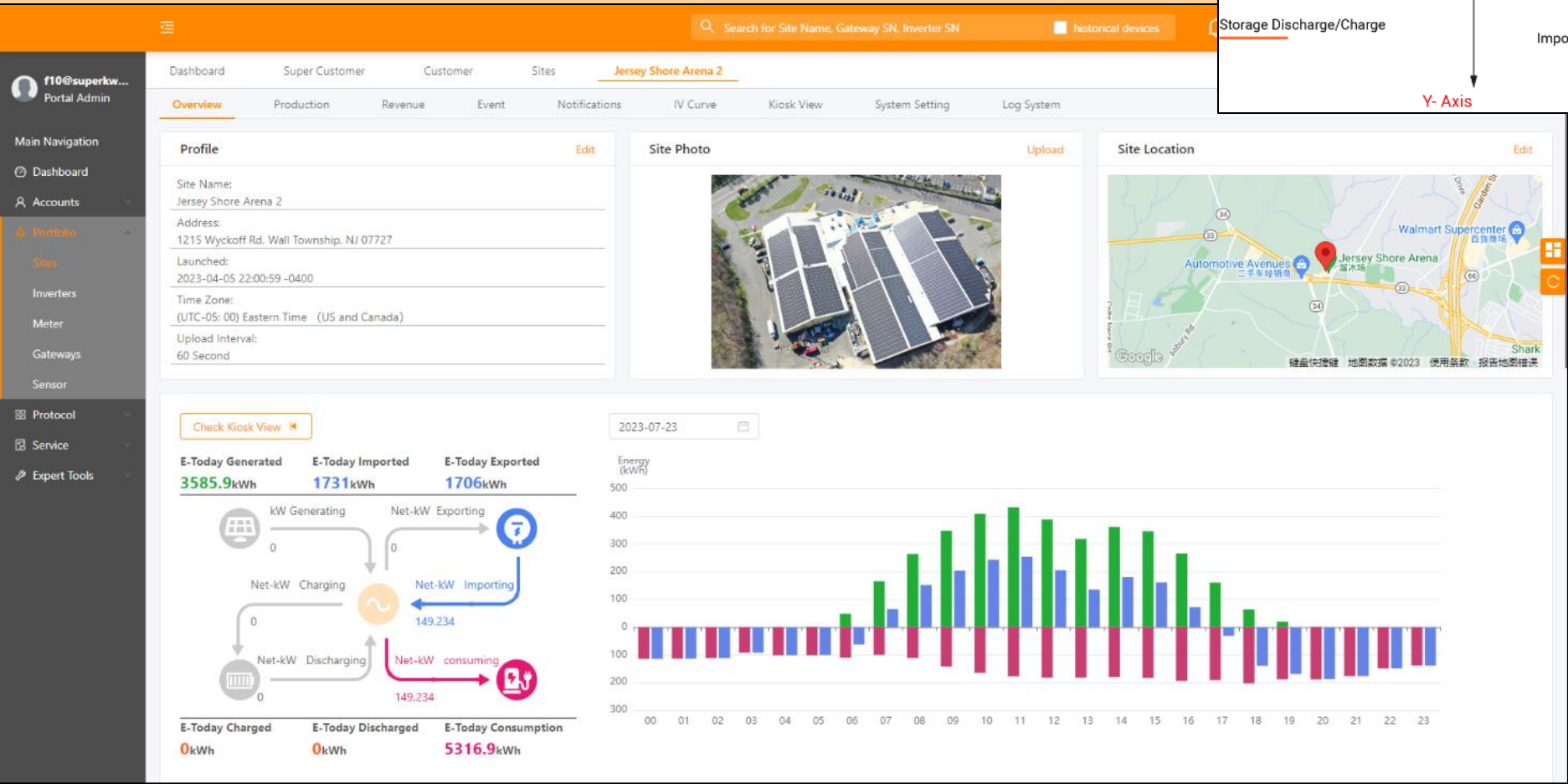# "Galaxy" Data – Web Portal for Inverter and RSD Device Data

- Inverter performance data
- PV Module data
- RSD Device data
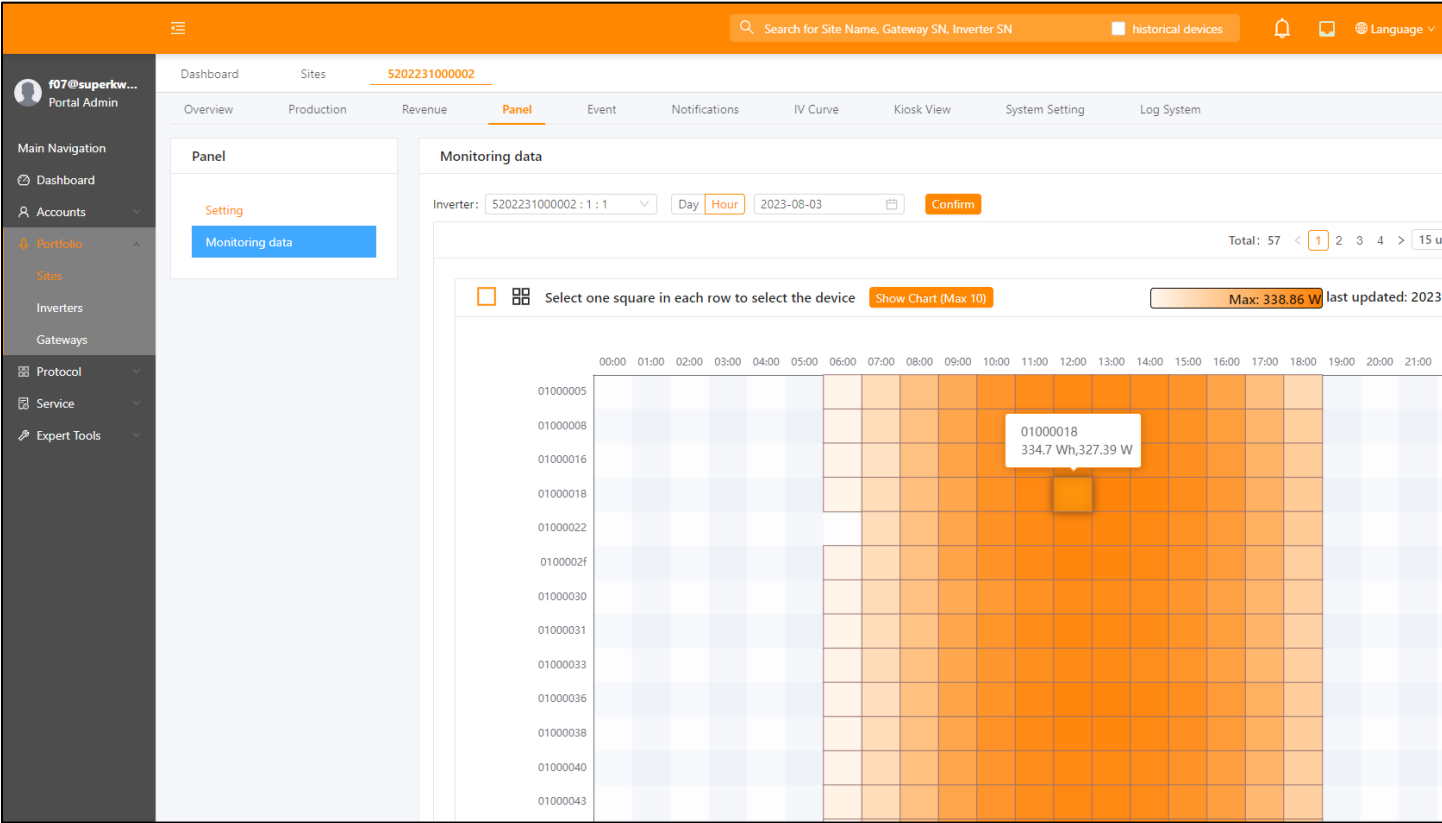
"Galaxy" Data – Smart phone App for commissioning and mobile data

"Galaxy" Data Example

"Galaxy" Data Example