Product : SMP+
RVE Part Number: 31-3004-00

Technical Quotation

The SMP panel is a smart control and metering system specially designed to charge multiple electric vehicles from the same power source while maximizing each available kilowatt hour thanks to its automatic load shedding algorithm.
More specifically, the SMP+ makes it possible to dynamically reduce power demand, to better distribute the electrical load between the charging stations and to contribute to efficient and smart energy management throughout the entire building.

The SMP+ is the most compact smart panel model on the market in its category, at 24“ x 48” x 8”. It can be connected to any distribution panel and is compatible with all models of charging stations for electric vehicles.

The SMP+ is certified by Measurement Canada, which authorizes its owner to bill for electricity consumption by kilowatt hour (kWh) in accordance with current regulations.

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IMPORTANT INFORMATION

Parts Not Included in the HUB but Necessary for Optimal Installation

1. **Cable to connect the SMP+ to the Internet:** Cat5 Ethernet cable with RJ45 termination.
2. **Cable to connect the SMP+ to parent HUB or to child SMP+**: 22GA communication cable 1 twisted pair 108 Ohm low capacitance, FT4.
   Example: Cerco Cable 8302.
3. **Wires for extending Split Core current transformers (CT) (if required):**
   a. Wire for 1 current transformer: 18GA, 1 twisted pair, FT4.
      Examples: Cerco Cable 8212 or Remee Product, 18/1PR FT4 Overall Shielded Cable
4. **Branch circuits and cabling to supply the SMP+ with electricity.**
5. **Branch circuits and cabling to supply the charging stations with electricity.**
6. **Padlock to lock the SMP+.**

Information to Be Added on Plan

1. **SMP+ model:** It is important to indicate the precise SMP+ model on the plan (RVE-SMP+-12-G2, RVE-SMP+-15-G2, RVE-SMP+-18-G2, RVE-SMP+-21-G2).
2. **Maximum amperage per phase:** Indicate the maximum amperage per phase on the plan. Basic amperage cannot exceed 800 A. *See the references tables in the appendix.*
3. **Operating voltage**: 208V, 60HZ, 3 phases, 4 wires. *Refer to the SMP+ technical specifications.*
4. **Capacity of charging stations in amperes.**
5. **Certification:** Measurement Canada certified, allowing billing per kWh in accordance with current regulations.
6. **Additional surveillance:** Can monitor a 3PH feeder in addition to its distribution panel.
7. **Multi-level protection:** Can protect all levels of the electrical infrastructure when connected to RVE HUBs and SMP+s.
8. **NEMA4 enclosure.**

ADDITIONAL INFORMATION

1. Connection between the SMP+ and the HUB

1.1. **Maximum length:** The maximum distance on the RS485 communication chain between the SMP+ and the HUBs cannot exceed 610 m (2000').

1.2. **Total number of products:** The total number of products on the communication chain is 30 SMP+/HUB.

1.3. **Extension of the communication cable:** The connection is wired via a 22GA shielded communication cable, 1 twisted pair 108 Ohm low capacitance, FT4. Example: Cerco Cable 8302.

1.4. **Connection type:** Series connection, not star connection.

2. Connection between multiple SMP+

2.1. **Maximum length:** The maximum distance on the RS485 communication chain between the SMP+s cannot exceed 610m (2000').

2.2. **Total number of products:** The total number of products on the communication chain is 30 SMP+/HUB

2.3. **Extension of the communication cable:** The connection is wired via a 22GA shielded communication cable, 1 twisted pair 108 Ohm low capacitance, FT4. Example: Cerco Cable 8302.

2.4. **Connection type:** Series connection, not star connection.

3. Installation of current transformers (CT)

3.1. <u>CT for distribution panel</u>

3.1.1. Can monitor one (1) 3PH feeder, maximum 600V. Max 800A per phase.

3.1.2. Three (3) CTs are required to monitor a three-phase feeder. One (1) CT per phase. The neutral does not need to be monitored.

3.1.3. Solid Core CTs come by default with SMP+.
Extension of a rigid CT (Solid Core): The Solid Core CT comes with a 2.5m (8.2') wire. It is possible to extend the wire to a maximum length of 50m (164').
Extension of the wire for one (1) current transformer: 18GA shielded, 1 twisted pair, FT4.
Examples of wire: Cerco Cable 8212 or Remee Product, 18/1PR FT4 Overall Shielded Cable.

3.2. <u>Optional surveillance of additional feeder(s)</u>

3.2.1. Can monitor one (1) 3PH feeder, maximum 600V. Max 5000A per phase.

3.2.2. Three (3) CTs are required to monitor a three-phase feeder. One (1) CT per phase. The neutral does not need to be monitored.

3.2.3. **Feeder size:** Depending on the physical size of the feeder, it can sometimes be difficult to install a CT around a group of wires or a busbar. This is why RVE offers

rigid CTs (Split Core) and flexible CTs (Rogowski) of different sizes, amperage and maximum capacity.
Consult the RVE CT Catalog for more details.

3.2.4. **Location of the CTs on the feeder:** The CTs must be installed at critical points in the electrical infrastructure in order to limit current spikes. There are many possibilities for installing CTs, depending on the specifics of the project and physical constraints. For further advice, please contact our technical support team.

3.2.5. **Location of CTs on a transformer:** On a transformer, the CTs must be installed at the secondary level. For further advice, please contact our technical support team.
Extension of a rigid CT (Split Core): The Split Core CT comes with a 2.5m (8.2') wire. It is possible to extend the wire to a maximum length of 50m (164').
Wire extension for one (1) current transformer: 18GA shielded, 1 twisted pair, FT4.
Extension of the wire for two (2) current transformers going to the same point: 18GA shielded, 2 twisted pairs, FT4.
Examples of wire: Cerco Cable 8212 or Remee Product, 18/1PR FT4 Overall Shielded Cable.

3.2.6. **Extension of a flexible CT (Rogowski):** The wire CANNOT be extended, but it can be shortened. The Rogowski CT comes with a 25m (82') or 50m (164') wire.

4. Connection to the Internet

4.1. La connexion du SMP+ à Internet est obligatoirement filaire. On doit connecter le SMP+ au réseau Ethernet du bâtiment via un câble Ethernet Cat5 avec un connecteur RJ45. A wired connection is required when connecting the SMP+ to the Internet. The SMP+ must be connected to the building's Ethernet network via a Cat5 Ethernet cable with an RJ45 connector.

4.2. The Internet connection speed must be at least 5 Mbps upstream and downstream.
To enable remote communication with the SMP+, the network ports below must be open in outgoing mode only:
- 443/TCP
- 8883/TCP
- 10883/TCP
- 123/UDP

No incoming port needs to be open for communication with the RVE Connect portal.

5. Electricity supply

5.1. 208V, 3PH, 4-wire connection.

5.2. Maximum consumption 240W (2A).

5.3. The controller power supply must be supplied by the same panel as the connected charging stations, as this is also the reference for the Measurement Canada certification.

6. RVE Connect Portal

6.1. Access to the RVE Connect portal requires that the product be connected to the Internet. according to the criteria specified in section 4 of this document.

6.2. The portal allows users to view SMP+ monitoring and control data and to automate the billing of the electricity consumed.

6.3. The portal allows managers and electricians to access information on all the products for which they are responsible.

6.4. **Modifying information:** The portal allows managers and electricians to add and modify product-related information.

6.5. **Consumption reports:** The portal allows consumption reports to be exported in order to bill co-owners for electricity by kWh.

7. Warranty

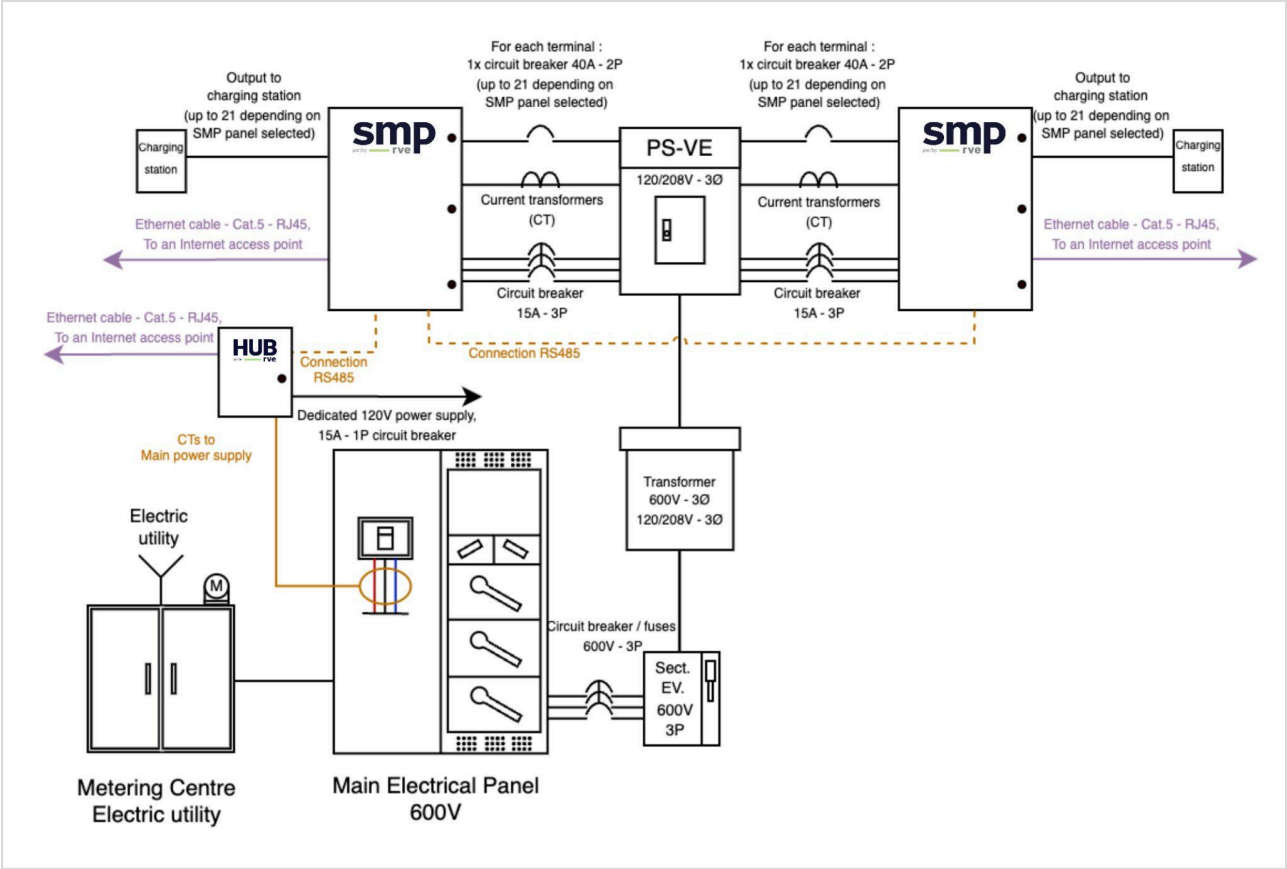
Please refer to the official RVE guarantee document for the guarantee terms, exclusions and conditions.

SUPPORT AND TECHNICAL ASSISTANCE

If you have any questions or wish to report a problem, please contact our technical support.
Email: support@rve.ca
Telephone: 1-833-717-1355

APPENDIX 1

Typical diagram of a muli-SMP+ and HUB system



APPENDIX 2

REFERENCE TABLES

How to determine the amperage per phase of an SMP panel

1. In the table corresponding to the selected panel model, identify the appropriate approach (*Sharing Ratio or Power per Circuit*);
2. Select the row closest to the desired value;
3. Refer to the Amperage per Phase column to determine the software setpoint to be indicated when ordering the panel.

These calculations are based on a 32A charging station model. These figures may vary according to the distribution of charging stations between the three phases and the current of each branch.

SMP-12

Sharing Ratio	Power per Circuit	Amperage per Phase	Concurrent EV Chargers
4 to 1	1,66 kW	56 A	3
3 to 1	2,55 kW	85 A	4
2 to 1	3,33 kW	111 A	6

SMP-15

Sharing Ratio	Power per Circuit	Amperage per Phase	Concurrent EV Chargers
5 to 1	1,33 kW	56 A	3
3,8 to 1	2,04 kW	85 A	4
2,5 to 1	2,67 kW	111 A	6
2,1 to 1	3,34 kW	139 A	7

SMP-18

Sharing Ratio	Power per Circuit	Amperage per Phase	Concurrent EV Chargers
6 to 1	1,11 kW	56 A	3
4,5 to 1	1,70 kW	85 A	4
3 to 1	2,22 kW	111 A	6
2,6 to 1	2,78 kW	139 A	7
2 to 1	3,34 kW	167 A	9

SMP-21

Sharing Ratio	Power per Circuit	Amperage per Phase	Concurrent EV Chargers
7 to 1	0,95 kW	56 A	3
5,3 to 1	1,46 kW	85 A	4
3,5 to 1	1,90 kW	111 A	6
3 to 1	2,38 kW	139 A	7
2,3 to 1	2,87 kW	167 A	9
2,1 to 1	3,35 kW	195 A	10

DISCLAIMER

This electrical load calculation tool provided by RVE is for information purposes only. RVE does not guarantee the completeness or accuracy of the information provided. Users are strongly encouraged to verify results with a certified electrical professional. RVE assumes no responsibility for errors, omissions, inaccuracies or damages resulting from the use of or inability to use this tool, including, without limitation, financial or information loss. By using this tool, you agree to release RVE from any legal liability related to its use.