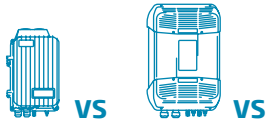


# VarioString series

The **VarioString** high voltage MPPT solar charge controller ensures an optimal charge of the battery maximizing the solar production. First of its kind, the **VarioString** achieves the highest conversion efficiency in the world from high voltage solar power (900V) to 48V battery voltage, including a galvanic isolation between the PV and battery. 100% designed and manufactured in Switzerland, the **VarioString** offers a 10-year warranty.

# Technical data



Electrical characteristics PV array side	VS-70	VS-120		
	MPPT	MPPT 1/2	1 + 2 in parallel	1+2 in series
Maximum solar power recommended (@STC)	4200 W	3500 W	7000 W	7000 W
Maximum current	13 A	13 A	26 A	13 A
Maximum solar open circuit voltage	600 V	600 V	600 V	900 V
Minimum solar functional circuit voltage	200 V	200 V	200 V	400 V
Recommended MPPT voltage	250-500 V	250-500 V	250-500 V	500-750 V
<b>Electrical characteristics battery side</b>				
Maximum output current	70 A	60 A	120 A	
Nominal battery voltages	48 V			
Operating voltage range	38 - 68 V			
Battery grounding possibility	Battery + or battery -			
<b>Performances of the device</b>				
Maximum efficiency	> 98 %			
MPPT efficiency	> 99.8 %			
Maximum stand-by self-consumption	< 20 mA (1 W)		< 25 mA (1.25 W)	
Charging stages	4 stages: Bulk, Absorption, Floating, Equalization Number of steps, thresholds, end current and times adjustable with the RCC-02/-03			
Battery temperature compensation (with accessory BTS-01/BSP)	-3 mV / °C / cell (25°C ref) default value adjustable -8 to 0 mV / °C			
<b>Electronic protections</b>				
PV reverse polarity	✓			
Over temperature	✓			
Reverse current at night	✓			
Galvanic isolation	✓			
PV grounding possibility	PV +, PV -, floating			
Ground fault Protection	Programmable			
<b>Environment</b>				
Operating ambient temperature range	-20 to 55°C			
Humidity	100%	maximum 95 %, non-condensing		
Ingress protection of enclosures	IP54	IP20		
Mounting location	indoor			
<b>General data</b>				
Weight	5.51 kg	7.5 kg		
Dimensions h/w/l [mm]	120 / 220 / 350	133 / 322 / 466		
Solar generation connection (6mm <sup>2</sup> )	SUNCLIX™ (Phoenix Contact Tool Free)			
Parallel operation (separated PV arrays)	Up to 15 devices			
Max wire size	35 mm <sup>2</sup>	70 mm <sup>2</sup>		
Glands	M 20 × 1,5	2 x PG21		
<b>Communication</b>				
Network cabling	STUDER communication BUS (included)			
Configuration	RCC-02/-03, Internal DIP switches for basic settings			
Data logging	With RCC-02/03, Xcom-232i on SD card · One point every minute			
<b>Accordance to standards</b>				
Conformity	Low Voltage Directive (LVD) 2014/35/EU: EN/IEC 62109-1 Electromagnetic Compliance (EMC) Directive 2014/30/EU: EN/IEC 61000-6-2, 61000-6-4			

## An exceptional device

- Reduces Balance of System costs (eliminates expensive wiring for parallel strings)
- Safe, simple and trouble-free connection with SUNCLIX™ (Phoenix Contact "tool free") PV connector
- Safety guaranteed, thanks to the reinforced isolation between the PV generator and battery, allowing for independent earthing of the battery and/or solar modules
- World champion for efficiency in isolated converter with >98 %
- Up to 15 **VarioString** in parallel on the same communication bus (105kW)
- 4 step charger fully programmable for longer battery life
- Low self-consumption: <1W in night time mode
- Display with 9 LEDs showing status and current
- Suitable for any solar and battery system
- Optimal usage in an **Xtender** system with synchronized battery management

## Combine with a range of accessories

- Display, programming and data logging remote control (**RCC-02/-03**)
- Communication sets (**Xcom-LAN/Xcom-GSM**)
- Communication module (**Xcom-232i/Xcom-CAN**)
- Battery temperature sensor (**BTS-01**)
- Battery Status Processor (**BSP**)
- Communication with lithium battery BMS (**Xcom-CAN**)
- 2 additional auxiliary contacts (**ARM-02**)

## Certifications & Warranty

100% manufactured and tested in Switzerland (Europe). ISO certified factory 9001:2008/14001:2004. All our products include a 10-year warranty (5+5).

STC = Standard Test Conditions  
Data may change without any notice

Call our specialists **+41 27 205 60 80** or visit **studer-innotec.com**.

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