



## STRING MONITORING UNITS SERIE ST

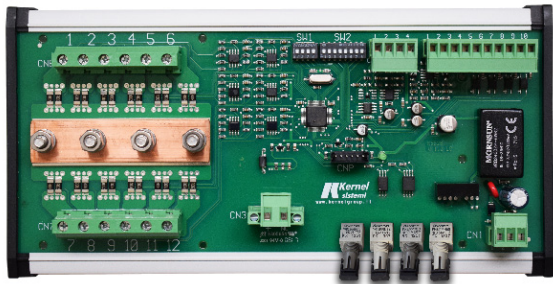
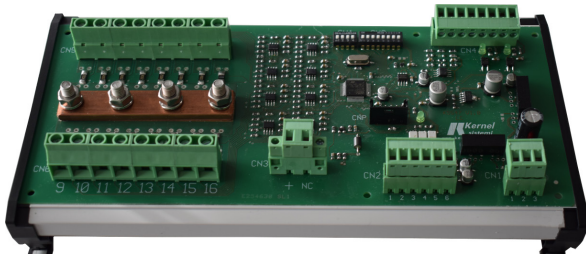


### RELIABLE AND ACCURATE SOLUTIONS FOR MONITORING LARGE PHOTOVOLTAIC PLANTS

- Solutions with shunt and hall sensors
- Data transmission via RS485, optic fiber and wireless
- Common voltage measure up to 1500 VDC
- Modbus RTU, IEC60870, KERNEL and custom communication protocols
- Until 45 Amps measurement current
- Environment temperature from -40°C to +80°
- Compliant with EN61326-1, EN 61000-6-4 , EN 61000-6-2

# SHUNT AND HALL EFFECT SENSOR SMU

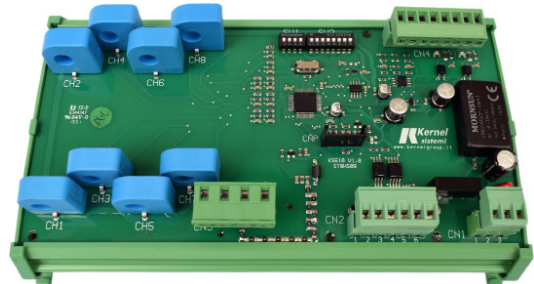
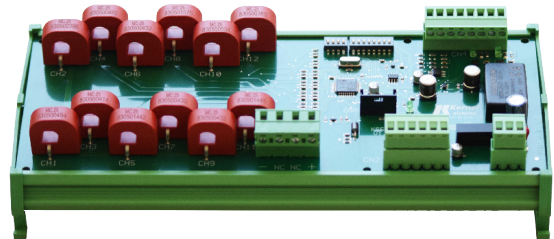
## ST0N and ST2N Series Shunt Technology SMU for 8, 12, 16, 20, 24 and 32 strings



### MAIN FEATURES

- Recommended for monitoring new solar plants
- Current measurement on negative of the strings
- Big accuracy
- Drift in temperature very low
- String parallel busbar on board
- Low consumption
- Current measure from 15 to 40 Amps
- SMU for 8, 12, 16, 20, 24, 32 strings
- Available ST0N and ST2N series
- Available with RS485 serial
- Available with optic fiber data connection

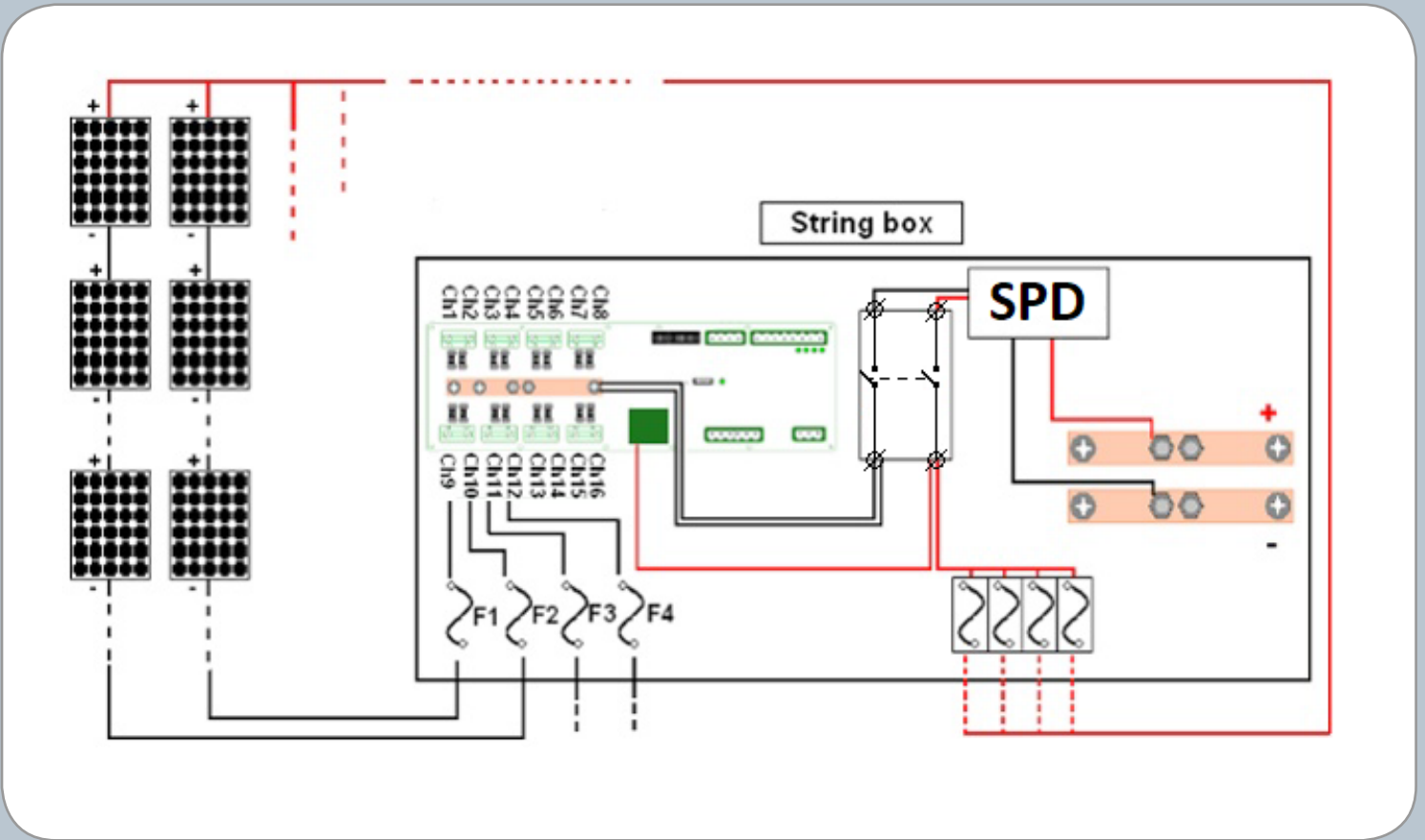
## ST0HS Series Hall Effect Sensors Technology SMU for 8, 12, 16, 20 and 24 strings



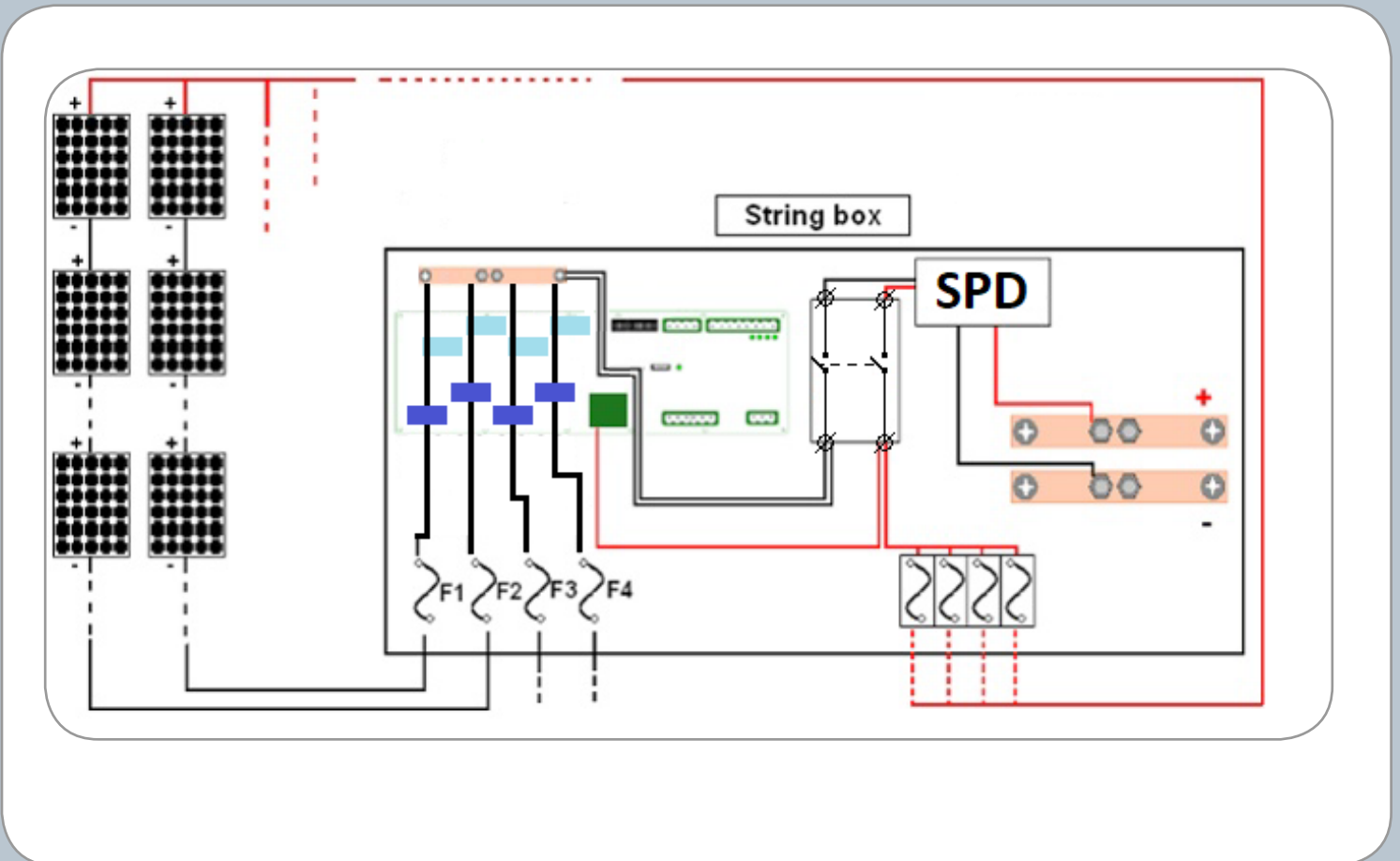
### MAIN FEATURES

- Suitable for monitoring new solar plants and retrofit of plants
- Recommended when string inverters are used in the solar plant
- Current measurement on positive or on negative of the string
- Absence of busbar parallel
- Measurement of the passing current without interruption of the string cable
- Current measure up to 25 Amps or up to 60 Amps
- SMU for 8, 12, 16, 20, 24 strings
- Available with RS485 serial
- Available with optic fiber data connection

# SCHEMATIC OF COMBINER BOX WITH SHUNT SMU

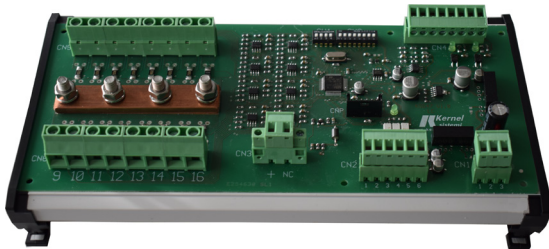


# SCHEMATIC OF COMBINER BOX WITH HALL EFFECT SENSORS SMU



# ST SERIES - SOLAR STRING MONITORING UNITS

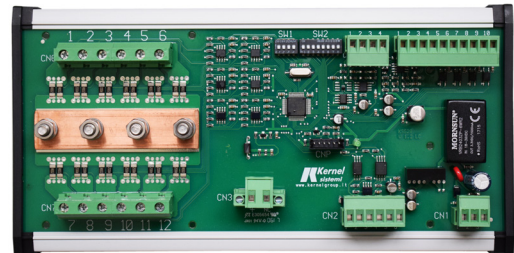
## ST0N



### FEATURES

Power supply	24Vdc max 3 W		
Number of monitored strings	8, 12, 16, 20, 24 or 32		
Max. common voltage	1500V with 0,5% precision on full scale		
Max. current for each string	8, 12, 16, 20 ch.= 25A; 24, 32 ch.= 15A		
Range of measurement (A)	8 ch.	12 ch.	16 ch.
	0...200	0...300	0...400
	20 ch.	24 ch.	32 ch.
	0...500	0...360	0...480
Communication	RS485, Optical Fiber		
Digital inputs	2		
Analog inputs	1 PT100 input		
SMB temperature measurement	With solid state temperature sensor on board		
Working temperature's range	From -40 °C to +85 °C		
Working atmosphere	Without corrosive gas		
Temperature's drift -40°C÷85°C	Better than 60 mA at 12,5A		
Current reading accuracy	Better than 0,15%		
Current reading precision	Typical 0,5%		
Size (mm)	8 ch.	12 ch.	16 ch.
	108x208,9	108x249,8	108x249,8
	20 ch.	24 ch.	32 ch.
	108x279,7	108x279,7	108x338,1
Working humidity	Lower 95% without condensation		

## ST2N

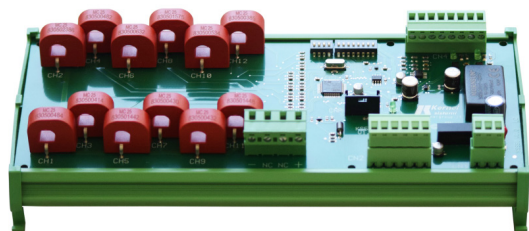


### FEATURES

Power supply	24Vdc max 3 W		
Number of monitored strings	8, 12, 16 or 24		
Max. common voltage	1500V with 0,5% precision on full scale		
Max. current for each string	8, 12 ch.= 40A; 16 ch.= 35A; 24 ch.= 25A		
Range of measurement (A)	8 ch.	12 ch.	16 ch.
	0...320	0...480	0...560
	24 ch.		
	0...600		
Communication	RS485, Optical Fiber		
Digital inputs	4		
Analog inputs	1 PT100 input, 1 current input (0...20mA) and 1 voltage input (0...10V)		
SMB temperature measurement	With solid state temperature sensor on board		
Working temperature's range	From -40 °C to +85 °C		
Working atmosphere	Without corrosive gas		
Temperature's drift -40°C÷85°C	Better than 60mA at 17A		
Current reading accuracy	Better than 0,15%		
Current reading precision	Typical 0,5%		
Size (mm)	8 ch.	12 ch.	16 ch.
	108x208,9	108x249,9	108x279,7
	24 ch.		
	108x338,1		
Working humidity	Lower 95% without condensation		

# STOHS SERIES - SOLAR STRING MONITORING UNITS

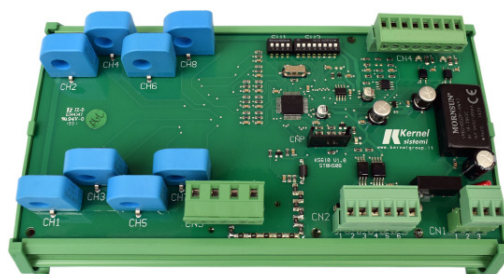
## STOHSXX25



### FEATURES

Power supply	24Vdc lower then 3 W		
Number of monitored strings	8, 12, 16, 20 or 24		
Max. common voltage	1500V with 0,5% precision on full scale		
Max. current for each string	25A		
Range of measurement (A)	8 ch.	12 ch.	16 ch.
	0...200	0...300	0...400
	20 ch.	24 ch.	
	0...500	0...600	
Communication	RS485, Optical Fiber		
Digital inputs	2		
Analog inputs	1 PT100 input		
SMB temperature measurement	With solid state temperature sensor on board		
Working temperature's range	From -20 °C to +80 °C		
Working atmosphere	Without corrosive gas		
Temperature's drift -20°C+80°C	120 mA		
Current reading accuracy	Better than 0,3%		
Current reading precision	Typical 1%		
Size (mm)	8 ch.	12 ch.	16 ch.
	108x208,9	108x249,8	108x279,7
	20 ch.	24 ch.	
	108x338,1	108x338,1	
Working humidity	Lower 95% without condensation		

## STOHSXX45

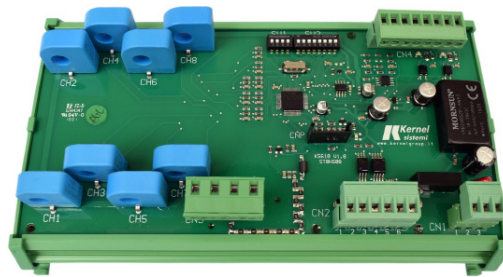


### FEATURES

Power supply	24Vdc lower then 3 W		
Number of monitored strings	8, 12, 16, 20 or 24		
Max. common voltage	1500V with 0,5% precision on full scale		
Max. current for each string	45A		
Range of measurement (A)	8 ch.	12 ch.	16 ch.
	0...360	0...540	0...720
	20 ch.	24 ch.	
	0...900	0...1080	
Communication	RS485, Optical Fiber		
Digital inputs	2		
Analog inputs	1 PT100 input		
SMB temperature measurement	With solid state temperature sensor on board		
Working temperature's range	From -40 °C to +80 °C		
Working atmosphere	Without corrosive gas		
Temperature's drift -20°C+80°C	120 mA		
Current reading accuracy	Better than 0,3%		
Current reading precision	Typical 1%		
Size (mm)	8 ch.	12 ch.	16 ch.
	108x208,9	108x249,8	108x279,7
	20 ch.	24 ch.	
	108x338,1	108x338,1	
Working humidity	Lower 95% without condensation		

# STOHS SERIES - SOLAR STRING MONITORING UNITS

## STOHSXX60



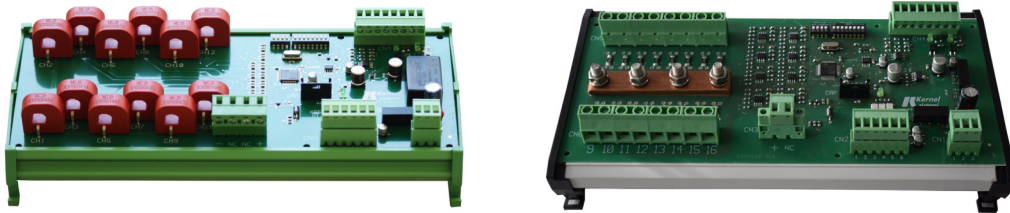
### FEATURES

Power supply	24Vdc lower then 3 W		
Number of monitored strings	8, 12, 16, 20 or 24		
Max. common voltage	1500V with 0,5% precision on full scale		
Max. current for each string	45A		
Range of measurement (A)	8 ch.	12 ch.	16 ch.
	0...480	0...720	0...960
	20 ch.	24 ch.	
	0...1200	0...1440	
Communication	RS485, Optical Fiber		
Digital inputs	2		
Analog inputs	1 PT100 input		
SMB temperature measurement	With solid state temperature sensor on board		
Working temperature's range	From -40 °C to +80 °C		
Working atmosphere	Without corrosive gas		
Temperature's drift -20°C+80°C	120 mA		
Current reading accuracy	Better than 0,3%		
Current reading precision	Typical 1%		
Size (mm)	8 ch.	12 ch.	16 ch.
	108x208,9	108x249,8	108x279,7
	20 ch.	24 ch.	
	108x338,1	108x338,1	
Working humidity	Lower 95% without condensation		

## MODBUS RTU, IEC60870 AND CUSTOMIZED PROTOCOLS

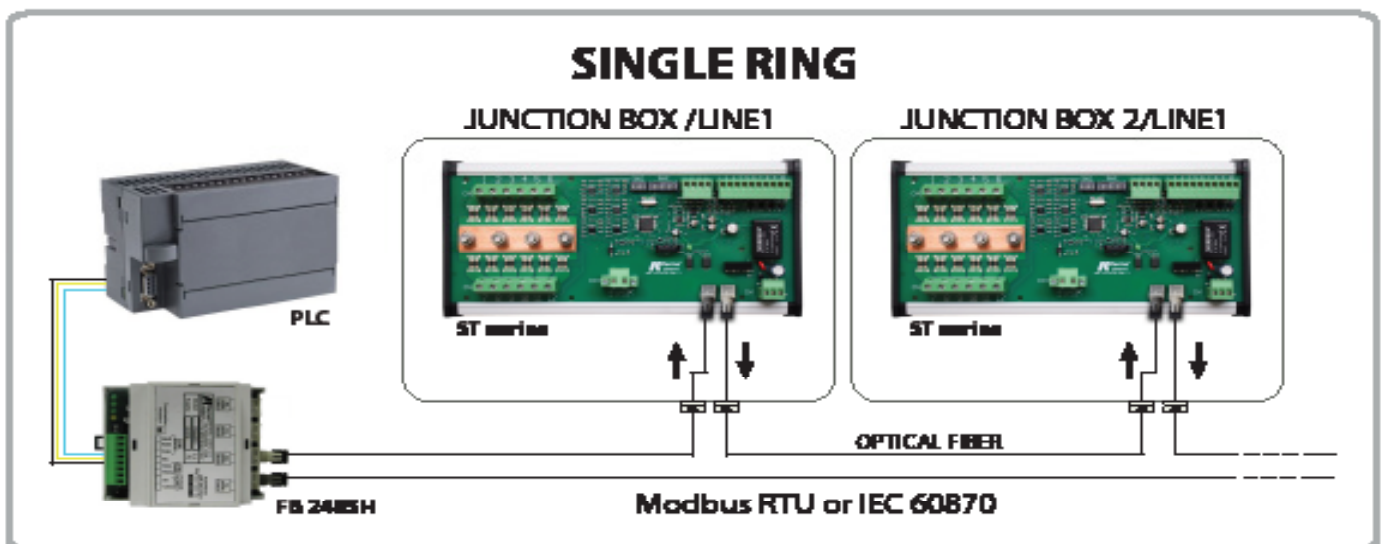
### RS485: THE ECONOMIC AND RELIABLE SOLUTION

- It's possible connect up to a maximum of **128** slaves
- 3 Wire connection: TX + RX + GND for the stabilization of the static potentials
- Surge and electrostatic discharge protection up to **16 KV**
- Static potential protection from **-70 to +70 V**
- Serial repetition on the same terminal block for a fast installation
- Galvanic isolation to potentials of the strings and power supply

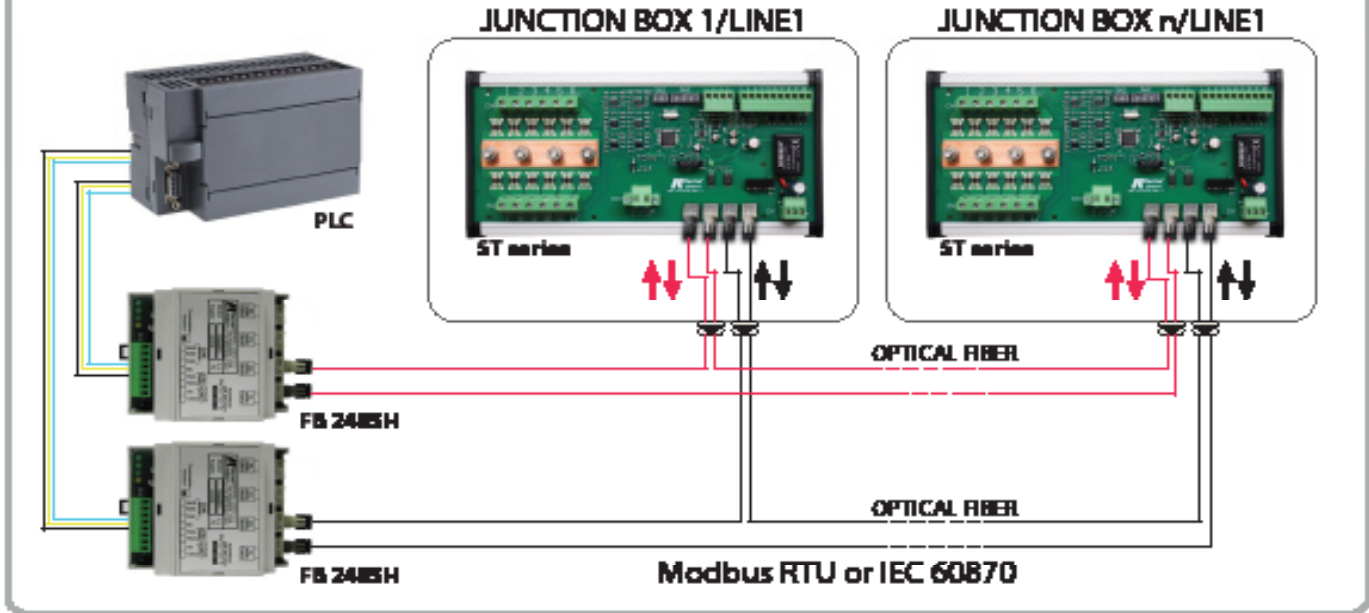


### OPTICAL FIBER: THE SOLUTION FOR DIFFICULT ENVIRONMENTAL CONDITIONS

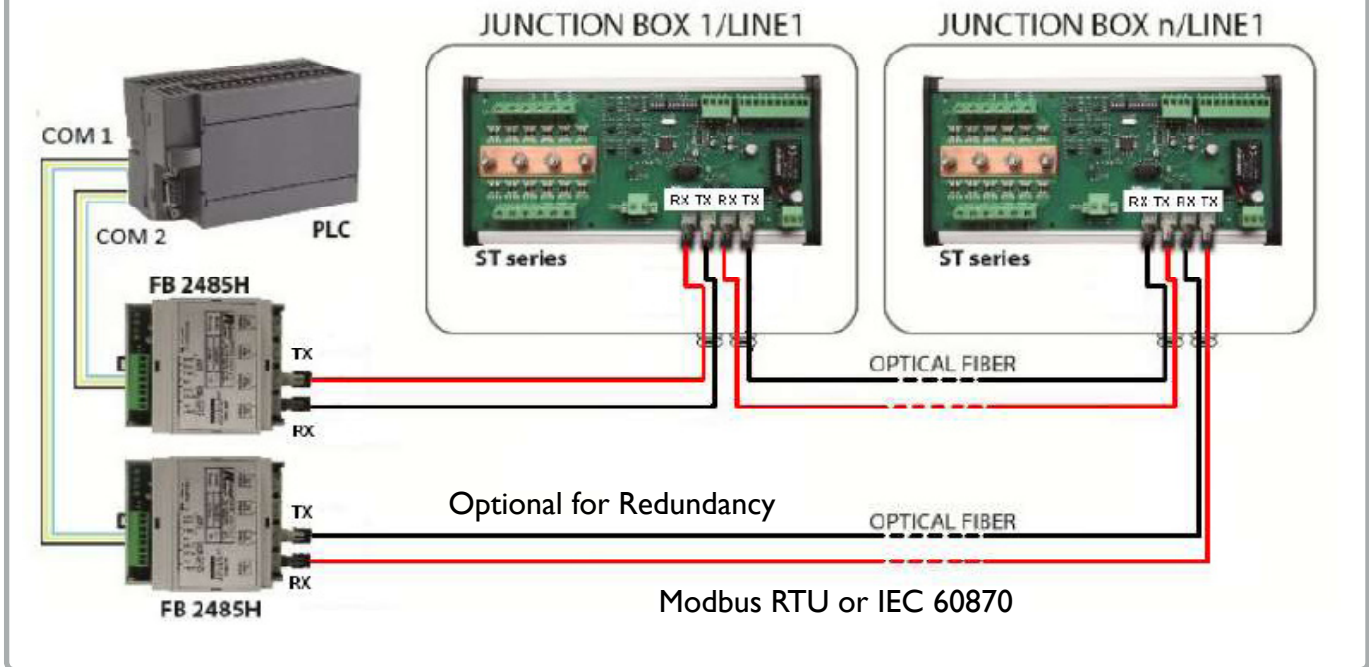
- Use of multimode optical fiber standard OM2 standard or higher 50/125, 62,5/125
- Connection realization in single ring and double ring or multidrop with redundancy
- Maximum distance guarantee few kilometers without optical signal regeneration
- Regeneration of the optical signal inside each SMU or of the FB2485H converter to have virtually infinite length of the ring
- SPD devices not required, because optical fibers are connected directly to the board, without any kind of converter



## DOUBLE RING



## MULTIDROP







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