Communication interface for solar inverters V2.0



Function: For the correct functioning of solar (photovoltaic) inverters in connection with a smart meter, it is necessary to install the smart meter at the entry point of the electrical distribution network. It is often not possible to implement a cable connection between the inverter and the smart meter. The solution is to create a radio connection.

The communication interface has the task of ensuring a continuous data flow between the inverter and the smart meter in cases where the cable link is replaced by a radio link.

- Interfaces: In most cases, the data communication line between the inverter and the smart meter is implemented via the RS485 line. The replacement of the cable connection is created by a chain of smart meter - radio - radio - communication interface - inverter. Both LoRa radios and the communication interface maintain the RS485 standard. For this reason, LoRa radio modules USR-LG206-H-P were selected, which meet all the requirements for this application.
- **Compatibility:** The firmware of the module was developed for the needs of the most frequently used inverters from manufacturers Solax, Growatt and Huawei.

Supported type	es: Solax: X3-MIC-G2, X3-Hybrid-G4
	Growatt: MIN-TL-X SPH-TL3-BH-UP
	Huawei: SUN-TL-M1 - firmware is being developed
NOTE:	In all cases, the use of smart meters DTSU666 or SDM630 with RS485 communication interface
	and MODBUS RTU protocol is assumed. Please do not forget to check or set communication
	parameters: 9600Baud, 8 data bits, 1 stop bit, no parity, no handshake

Setting up LoRa radios: Please use these settings for proper operation.

e Serial Ente	r Cfg Mode Query Para	ms Exit Cfg Mode Fv	v Update Language 选择产品	型号		
ns ersion: ote: The version set	V1.0.2 lower than V1.0.2 firmw	vare does not support the	Node ID: 0010630D master-slave mode, such as an error, p	olease ignore!	LOG >[Tx ->][COM9][12:55:24:533] AT +PWR	
ork mode: ister/slave machir	O Fixed point O Master machine	Trans Slave machine	Master/Slave mode: O ON	OFF	AT+PWR +PWR:20	
peat No.:	3	0 WI	Repeat interval: 5000	ms	>[Success][12:55:24:663] Query success-[PWR] >[Tx ->][COM9][12:55:45:997]	
ud rate	9600 • Pa	arity/Data/Stop NONE	• 8 • 1 •	Flow Cor 485 -	AT+CFGFT >[xx <][COM9][12:55:46:132] AT+CFGFT	
eed dass:	8 👻		Channel (0-127): 65		ERR-2 >[Tx ->][COM9][12:56:00:626]	
insmitted power:	20 db		Destination address 10		>[Rx <-][COM9][12:56:00:738]	
:C :	O ON	OFF			AT+CFGTF >[Rx <-][COM9][12:56:01:218] +CFGTF:SAVED	
					ОК	
					AT CECTE	

NOTE: If several such radio links are installed close to each other, then it is necessary to vary the communication channel, the transmission power, or the addresses of the LoRa radios as necessary in order to avoid unwanted interference in communication.

Connection example: Connecting the LoRa communicator on the side of smart meter





Connection example: Connecting the LoRa communicator and PV communicator module on the side of inverter

Power supply methods It is possible to use the power adapter that is part of the LoRa radio package. Then it is necessary to install a DIN rail socket with a suitable upstream circuit breaker/fuse. On the inverter side, the "jack" connector of the power adapter can be plugged directly into the "jack" connector on the PV communicator. It has an output power connector, from which the LoRa radio can be powered.

The second option is to use a suitable DIN rail installed AC/DC source, which will be powered directly from the 230V AC network.

Technical data:	Power supply: 2.1x5.5mm	5V DC/1A (internal fuse T 250mA), PWR input "Jack'					
	or screw connector to PCB						
	Dimensions :	108 x 90 x 62 mm					
	Interfaces:	2 x RS485					
	Comm. Protocol:	MODBUS RTU					
	Comm. Parameters:	9600Baud, 8 data bits, 1 stop bit, no parity, no handshake					
	Supported inverters:	Solax: X3-MIC-G2, X3-Hybrid-G4					
		Growatt: MIN-TL-X SPH-TL3-BH-UP					
		Huawei: SUN-TL-M1					