

Spare Parts for Siemens SICAM A8000 RTU

- **General**

Electricity Distribution Company intends to buy spare parts for the RTUs that are installed in the RMUs.

RTU brand is Siemens SICAM A8000.

- **Scope of Work:**

The contractor shall **supply** the **exact** materials listed below.

- **List of materials:**

The table below shows all the spare parts for the RTU that are needed to be supplied

Item	Name	Par Number	Technical data	Manufacturer	Qty
1	SICAM A8000 CPU CP-8022	6MF2802-2AA00	As shown in appendix 1	Siemens	2
2	SICAM A8000 Power Supply Module CP-8620	6MF2862-0AA00	As shown in appendix 2		2

Appendix 1:

5.4.2 CP-8021 and CP-8022

5.4.2.1 Technical Data

Processor and memory	
Processor	Blackfin BF536
Clock pulse frequency	Core clock approx. 400 MHz System clock approx. 133 MHz
Accuracy clock pulse	± 3.5 ppm (-40°C to $+80^{\circ}\text{C}$), ± 2 ppm (0°C to 40°C)
Internal real time clock and external synchronization	<ul style="list-style-type: none"> • Buffered maintenance-free (72 h) • Automatic daylight-saving time/normal time change • (S)NTP time server
Free run accuracy	12.6 ms/h
Program memory	Flash-PROM 16 MB
Main memory	SDRAM 32 MB
Local non-volatile memory	FRAM 8 KB
Changeable non-volatile memory	<ul style="list-style-type: none"> • SD card up to 2 GB • SIM card standard (mini SIM) for GPRS communication ¹⁾
Max. number of data points	20000 (sum of process images over all 4 interfaces)
Memory for application program	128 KB, thereof 4 KB temporary memory for variables
Number of variables for application program	512 variables possible, thereof 256 bytes non-volatile (variables: BOOL = 1 bit, DINT = 4 bytes, REAL = 4 bytes)
Program sampling	<ul style="list-style-type: none"> • Cyclical 10...2000 ms (settable raster 1 ms) • Spontaneous (settable; run not based on interrupt)
Acquisition grid digital I/O	10 ms
Decentralized archive	Recording raster for measured values 1, 2, 3, 5, 10, 15, 30, 60 min, settable
	Max. message length of a segment 1...200 bytes, settable
	Memory configuration, settable 10 files of 1000 records each (= 10000 records) 20 files of 500 records each (= 10000 records) 50 files of 400 records each (= 20000 records) 80 files of 450 records each (= 36000 records) 100 files of 100 records each (= 10000 records) 100 files of 25 records each (= 2500 records) 200 files of 50 records each (= 10000 records) 200 files of 25 records each (= 5000 records)

Communication	
2 Ethernet/LAN interfaces (X1, X4)	<ul style="list-style-type: none"> • Ethernet acc. to IEEE 802.3 (10Base-T or 100Base-TX) • Galvanically insulated • Transmission rate 10 Mbit/s or 100 Mbit/s • Half duplex or full duplex • Auto-MDI(X) • Time synchronization via NTP server • Line length 0...100 m • Rated impulse voltage 2 kV
1 serial interface (X2)	<ul style="list-style-type: none"> • Unbalanced interchange circuit RS-232, V.24/V.28 • Galvanically not insulated • ESD protection • Transmission rate up to 115.2 kbit/s (depending on protocol) • Time synchronization • Line length up to 2.5 m
1 serial interface (X3)	<ul style="list-style-type: none"> • Balanced interchange circuit RS-422/RS-485 • Galvanically insulated • ESD protection • Configuration 4-wire/2-wire with/without terminating resistor (parameter-settable) • Transmission rate up to 115.2 kbit/s (depending on protocol) • Rated impulse voltage 2 kV
1 serial interface (X6) ¹⁾	<p>RS-232 Mode:</p> <ul style="list-style-type: none"> • Unbalanced interchange circuit RS-232, V.28 • Galvanically insulated • ESD protection • Transmission rate up to 115.2 kbit/s (depending on protocol) • Rated impulse voltage 2 kV • Line length up to 2.5 m <p>RS-485 Mode:</p> <ul style="list-style-type: none"> • Balanced interchange circuit RS-422/RS-485 • Galvanically insulated • ESD protection • Configuration 4-wire/2-wire with/without terminating resistor (parameter-settable) • Transmission rate up to 115.2 kbit/s (depending on protocol) • Rated impulse voltage 2 kV
1 radio interface (X7) ¹⁾	<p>GPRS</p> <ul style="list-style-type: none"> • Quad band EGSM 850/900/1800/1900 MHz • GPRS modem (radio standard 2G) class 10 (production level CC), class 4 (production level BB) • Coding scheme CS 1-4 • Uplink up to 80 kbit/s (HW rev. BB: 60 kbit/s) • Downlink up to 40 kbit/s (HW rev. BB: 20 kbit/s) • Maximum transmitted RF power: <ul style="list-style-type: none"> – 2 W (33 dBm) for GSM 850 and GSM 900 – 1 W (30 dBm) for GSM 1800 and GSM 1900 • Permitted antenna gain: <ul style="list-style-type: none"> – GSM 850 MHz ≤ 6 dBi – GSM 900 MHz ≤ 6 dBi – GSM 1800 MHz ≤ 2.25 dBi – GSM 1900 MHz ≤ 2.25 dBi • ESD protection • Licensing RED 2014/53/EU

Power supply		
Operating voltage	Input DC 5 V:	
	DC 4.75...5.5 V	1.5 W
	Input DC 28 V:	
	DC 25.2...30.8 V	3.5 W (CP-8021) 5.5 W (CP-8022)
Internal operating voltages	Logic	DC 3.3 / 2.5 / 1.2 V
Optional power supply for external modem via X2 ²⁾ (CP-8021; CP-8022 with deactivated internal GPRS modem ³⁾)	• De-energized (for reset of modem)	
	• DC 5.2 V ± 5 %	2.5 W
Optional power supply for external modem via X2 ²⁾ (CP-8022 with activated internal GPRS modem ³⁾)	• DC 12 V ± 5 %	2.5 W
	• De-energized (for reset of modem)	
	• DC 5.2 V ± 5 %	0.75 W
Connections/mechanics		
Ethernet/LAN (X1, X4)	RJ45 socket 8-pole (IEC 60603-7)	
Serial RS-232 (X2)	RJ45 socket 8-pole (IEC 60603-7)	
Serial RS-485 (X3)	Push-in terminal 8-pole (without interception)	
serial RS-232/RS-485 (X8) ¹⁾	Push-in terminal 8-pole (without interception)	
GPRS (X7) ¹⁾	SMA connector	
Connection data X3, X8	AWG	min. 24 max. 16
	Conductor cross section solid	min. 0.21 mm ² max. 1.31 mm ²
	Conductor cross section stranded	min. 0.21 mm ² max. 1.31 mm ²
	Conductor cross section stranded with ferrule without plastic sleeve	min. 0.25 mm ² max. 1.31 mm ²
	Conductor cross section stranded with ferrule with plastic sleeve	min. 0.21 mm ² max. 0.75 mm ²
	2 wires stranded with ferrule without plastic sleeve	min. 0.21 mm ² max. 0.51 mm ²
	2 wires stranded with ferrule with plastic sleeve	min. 0.21 mm ² max. 0.51 mm ²
	Wire strip length	min. 9 mm max. 10 mm
	Length ferrule	10 mm
Dimension (LxWxH)	132 x 30 x 142 mm (measure without DIN rail)	
Weight	Approx. 210 g (CP-8021), ca. 260 g (CP-8022)	

¹⁾ only CP-8022²⁾ only for specific transmission facilities³⁾ as of production level CC

Appendix 2:

5.3.2 PS-8620, PS-8622

External power supply modules for

- CP-8021
- CP-8022 (as of production level CC)

5.3.2.1 Technical Data

Voltage input		
(voltage is provided via terminals)	PS-8620	PS-8622
Input voltage	DC 24...60 V	DC 110...220 V
Operating voltage	DC 18...70 V (78 V ¹⁾)	DC 82.5...253 V (286 V ¹⁾)
Input current	0.8 A at DC 24 V 0.4 A at DC 48 V 0.3 A at DC 60 V	0.16 A at DC 110 V 0.08 A at DC 220 V
Reverse voltage protection	Yes	
Overload protection	Yes	
Short-circuit protection	Yes	
Can be connected in parallel	Yes (for redundancy, not for power enhancement) ¹⁾	
Inrush peak current	Specified acc. to IEC 60870-4 (90) class S1	
Voltage outputs		
Output nominal voltage 1	DC 5.15 V \pm 2% static, \pm 3% dynamic	
Output nominal current 1	0...1.8 A	
Output nominal voltage 2	DC 28 V \pm 10%static, \pm 3% dynamic ²⁾	
Output nominal current 2	0...0.43 A	
Output power 1 (P _{out1})	9 W	
Output power 2 (P _{out2})	12 W - P _{out1} (12 W if P _{out1} = 0 W)	
Total output power	12 W	
Guaranteed interruption time	50 ms	
Startup time	< 2 s	
Permanent short-circuit proof	Yes	

Connections/mechanics		
Connections	Removable screw terminals, 4-pole (grid size 5.08)	
Connection data X1	Locking torque ³⁾	0.5 Nm to 0.6 Nm (PHOENIX) 0.36 Nm to 0.4 Nm (FCI)
	AWG	min. 22 max. 12
	Conductor cross section solid	min. 0,33 mm ² max. 2,5 mm ²
	Conductor cross section stranded	min. 0,33 mm ² max. 2,5 mm ²
	Conductor cross section stranded with ferrule without plastic sleeve	min. 0,33 mm ² max. 2,5 mm ²
	Conductor cross section stranded with ferrule with plastic sleeve	min. 0,33 mm ² max. 2,5 mm ²
	2 wires stranded with ferrule without plastic sleeve	min. 0,33 mm ² max. 1 mm ²
	2 wires stranded with TWIN ferrule with plastic sleeve	min. 0,5 mm ² max. 1,31 mm ²
	Wire strip length	min. 6 mm max. 7 mm
	Length ferrule	10 mm
Dimension (LxWxH)	124 x 30 x 132 mm (measure without DIN rail)	
Weight	Approx. 240 g (incl. bus module 12 g)	

¹⁾ as of production level CC

²⁾ for the generation of the auxiliary voltage for specific transmission facilities

³⁾ the respective manufacturer is imprinted at the terminal