1 – Introduction

The UC 500E is the newest Station Server from Efacec, targeted to be used in the CLP 500 diskless platform.

It corresponds to an industrial PC without mechanical parts such as disks, fans, etc., and can be used to implement distributed solutions such as Remote Terminal Units, Substation Command and Control Systems, Front-end Processors and Protocol Translators, etc.

It is a modern and flexible solution, since it uses state of the art technology suitable for complex and distributed configurations. It manages, supervises and controls up to 256 independent distributed acquisition units or protection relays, from Efacec, such as the BCU 500, UA 500, UAC 420, TPU 420, SYNC 420. It is targeted to interface third party IED and third party protection relays as well.

Its hardware relies on a powerful motherboard, as well as expansion boards, as requested.

All components were selected from the best market suppliers in terms of cost effectiveness, reliability and performance.

The UC 500E is available in several configurations, namely in 3U or 2U box versions, according to the number of serial ports.

2 – UC 500E Overview

The UC 500E is a rack mounted industrial PC. The chassis is designed to meet the EIA 310C 19'' rack mount rugged Industrial PC Chassis, targeted for severe industrial environments. It was designed to isolate all the computer components from shock, vibration, heat, dust, sprayed water and moisture. The chassis was tested under the conditions specified in several international standards and it is CE approved.

All UC 500E components are labeled, tested and assembled according to the ISO 9001 standards. Efacec keeps track of the computer components, from the purchasing till the commissioning and maintenance, in order to meet the customer and Efacec quality goals.

3 – UC 500E Features

- Targeted for scalable and distributed solutions
- Allows to implement redundant solutions at the Station Server level or industrial LAN level, optionally
- Easy configuration and diagnosis via Remote Desktop Connection
- SNTP/GPS Synchronization
- Provides WEB Server for Human Machine Interface implementation
- Support of up to 20 serial ports
- Support of up to 2 industrial LAN ports
- Support of radio communications
- Communications with up to 8 Control Centres
- Communications with several RTUs or IEDs

- TCP/IP protocol over an IEEE 802.3 LAN
- Upstream standard and proprietary communications protocols: IEC 60870-5-101, IEC 60870-5-104, DNP 3.0, 4F, PUR and CETT
- Downstream standard and proprietary communications protocols, such as: IEC 61850-8-1 (MMS/GOOSE), IEC 60870-5-101, IEC 60870-5-104, DNP 3.0, IEC 60870-5-103, 4F, PUR, SPABUS, MODBUS, PROCOME, JBUS, M LINK, SEL FM and INSUM
- Compatible with the Automation Studio tool, according to IEC 61850
- CE Approved

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Power Systems Automation

Due to the continuous development,
the characteristics may change without notice.
Not valid as a contractual item.

4 - Technical Characteristics

Characteristics	
Microprocessor	INTEL CELERON
RAM	DIMM support, up to 512 MB
Clock	400 MHz
Compact Flash Socket	YES
Bus	PC104, PC104 Plus
PCI	1
IDE	2, suitable for optional archiving IDE disks (2.5", 3.5" or 5.25")
Diskless	YES
Ventilation fans	NO
Dimension (mm) Height x Width x Depth	3U version: 134 x 484 x 300 2U version: 89 x 484 x 355

Communications Interfaces	
Serial Ports	3 x RS232 1 x RS232 / RS422 / RS485 Full Handshake No Galvanic Insulation
USB Ports	2 x USB 2.0
Optional Serial Ports	4, 8, 12, 16, 20
Radio Interface (1)	Squelch Input PTT Output
Ethernet	2 x 10/100BaseT (RJ 45)

Power Supply		
Options:		Characteristics:
Option 1	1CC	24 V d.c. (19-36 V d.c.); Pmax. 40W
Option 2	2CC	48 V d.c. (36-72 V d.c.); Pmax. 40W
Option 3	3CC	110/125 V d.c. (72-144 V d.c.); Pmax. 40W
Option 4	4CC	220 V d.c. (124-370 V dc.); Pmax. 40W 110/125 V a.c. (88-264 V a.c.); 50/60 Hz; Pmax. 80VA
Option 5	1AC	240 V a.c. (176-264 V a.c.); 50/60 Hz; Pmax. 80VA

Operating System	
Manufacturer	Microsoft
Version	Windows XP Embedded
Multitask	Yes
Preemptive	Yes

Firmware	
SCADA	Available firmware versions: • CLP 500RTU • CLP 500ASA • CLP 500ASE • CLP 500ELT • CLP 500SCC • CLP 500FEP • CLP 500AGR • CLP 500RAIL
Automation Functions	Yes
Programming Languages	C, C++

Maximum Capacity	
Digitals	65536
Measurements	65536
Pulse counters	65536

UC 500E Protocols	
IEC 61850-8-1	AU, PU, DP
IEC 60870-5-101	CC, RTU
IEC 60870-5-103	DP
IEC 60870-5-104	CC, RTU, AU, PU
DNP 3.0	CC, RTU
MODBUS	IEDs, CC
PROFIBUS	IEDs
PROCOME	DP
SEL Fastmeter	DP
M-Link	DP
SPA-Bus	DP
J-BUS	IEDs, DP
Insum	IEDs
HARRIS	CC
Efacec 4F	CC, RTU
Efacec 4F Ethernet	CC, RTU
Efacec F4F	CC
Efacec PUR	CC, RTU
CETT	CC
TG809	CC
SK1703	CC
Siemens UPS	UPS (Uninterruptible Power Supply)
Silcon	UPS (Uninterruptible Power Supply)

Synchronization	
UC 500E Rule	Master or Slave
Through LAN	1 ms resolution
Through Serial Port	1 s resolution

Features	
Start Modes	Cold or warm modes
Watchdog	Implemented by Software and Hardware
Isolated I/O	6 Inputs 4 Outputs
Architecture	Single or redundant (manual or automatic changeover)
Configuration and Diagnosis	Automation Studio Designer

Environment	
Storage Temperature	-25ºC...+70ºC
Operating Temperature	0ºC...+60ºC
Operating Humidity	8… 95%

CE Marks	
EN 60255-5 (2001)	EN 61000-3-3 (1995) Amendment A1: 2001
EN 60950-1 (2001)	EN 61000-6-2 (2001)
EN 61000-3-2 (2000)	EN 61000-6-3 (2001)

Notes: (1) – Optional
RTU – Remote Terminal Unit
AU – CLP 500 Platform Acquisition Unit
PU – CLP 500 Platform Panel Unit
CC – Control Centre
DP – CLP 500 Platform Digital Protections
IED – Intelligent Electronic Device