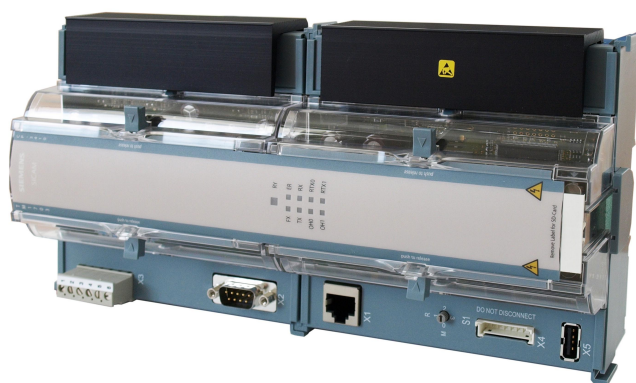


AMIS DC

CP-341x/CPC30 System Element Data Sheet

Processing and Communication



Master control element for AMIS Data Concentrator

- Communication CP-3410:
 - Ethernet interface (TCP/IP) for LAN/WAN connections acc. to IEC 60870-5-104
 - Serial interface V.24/V.28 for multi-point or dial-up traffic acc. to IEC 60870-5-101 with an external data transmission facility
- Communication CP-3411:
 - 2 serial interfaces V.24/V.28 for multi-point or dial-up traffic acc. to IEC 60870-5-101 with an external data transmission facility
- DLC interface for the connection of the AMIS terminal devices
- Integrated LV-DLC modem
- Central processing functions
- Expandable with up to 4 I/O modules (process peripherals)
- Parameter-settable telecontrol function with or without time-tag
- Freely programmable open-/closed-loop control function
- Decentral archive (DEAR)
- Engineering, diagnostic, and test using TOOLBOX II or webbrowser
- Storing of parameters and application programm on flash card
- Loadable firmware
- Function and failure indication via LED
- Power to be supplied by PS-3460

Application and Overview

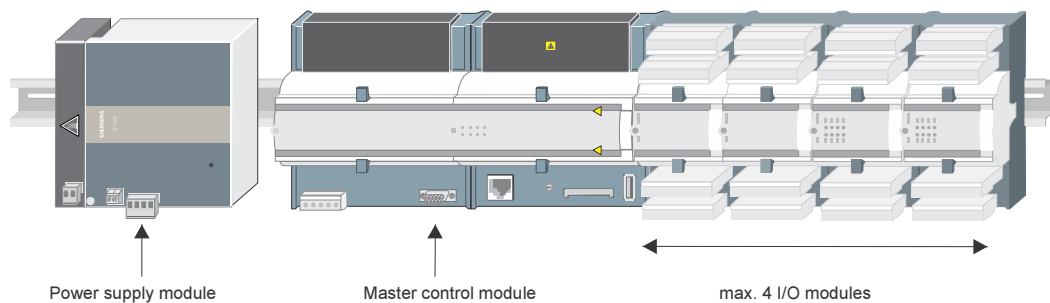
The system element CP-341x/CPC30 is used in automation units of the system AMIS DC. Range of application is DLC metering in electrical distribution networks.

The system AMIS DC serves as data concentrator in low-voltage transformer stations. As subnode it provides interfaces with variable protocols for the communication with a master station and possibly higher-level nodes, as well as an interface with not changeable protocol for the communication with the AMIS terminal devices (counters, load-switching devices, third-party device gateways) via the low-voltage energy distribution network.

Installation takes place on a 35 mm rail. It must be considered that the modules are mounted horizontally or vertically on a vertical standing rack montiert werden.

The sequence of modules from left to right or top to bottom is prescribed as follows:

- Power supply module
- Master control module
- Optionally up to 4 I/O modules



The power supply and TM bus are electrically connected during the process of latching together, wherein each module can be individually replaced.

Engineering

The engineering is done exclusively using a webbrowser (Internet Explorer ®) or using the TOOLBOX II, including OPM II.

Architecture

Power Supply Modules

The supply of the master control element is carried out by a power supply module. The power supply module also provides the required operating voltage for the transmission facilities for multi-point traffic and dial-up traffic.

Type	Designation	Power
PS-3460	AMIS Power Supply Module 12 VDC/24 VDC/230 VAC	50 W max.

Master Control Modules

The master control module forms together with the CPC30 firmware the master control element. The master control element contains all the central functions for processing and communication.

Type	Designation	Power
CP-3410	AMIS DC Master Control Module LAN	20 W max.
CP-3411	AMIS DC Master Control Module serial	20 W max.
Flash card	Memory card for parameters and firmware	

I/O Modules

The optional I/O modules support the master control element with the process data input and output.

Type	Designation	Power
DI-6100	Binary Input 2x8, 24-60 VDC	170 mW
DI-6101	Binary Input 2x8, 110/220 VDC	170 mW
DI-6102	Binary Input 2x8, 24-60 VDC 1 ms	170 mW
DI-6103	Binary Input 2x8, 110/220 VDC 1 ms	170 mW
DI-6104	Binary Input 2x8, 220 VDC	170 mW
DO-6200	Binary Output Transistor 2x8, 24-60 VDC	600 mW
DO-6212	Binary Output Relays 8x 24-220 VDC/230 VAC	800 mW
DO-6220	Command Out Basic Module	560 mW
DO-6221	Command Out Basic Module Measure	1.38 W
DO-6230	Command Output Relay Module	130 mW
AI-6300	Analog Input 2x2 ± 20 mA/ ± 10 V	480 mW
AI-6307	Analog Input 2x2 ± 5 mA	480 mW
AI-6308	Analog Input 2x2 ± 2 mA/ ± 10 V	480 mW
AI-6310	Analog Input 2x2 Pt100/Ni100	480 mW
AO-6380	Analog Output 4x ± 20 mA/ ± 10 mA/ ± 10 V	1.9 W
TE-6430	Counter Input 2x 24...60 VDC	150 mW

Transmission Facilities With Direct Supply

The following transmission facilities can be supplied directly from the power supply module using a special cable.

Type	Designation	Power	
MODEM GSM	Dual band GSM modem Siemens TC35 for dial-up traffic ¹⁾	300 mW 1.8 W peak	6MF18130GA260AA1
MODEM TP RADIO	Fast radio modem TP Radio WDM 8000	15 W	
MODEM LV DLC	Integrated DLC modem	10 W	

¹⁾ Supply 12 V via modem cable TM 1703 (e)mic for TC35-Modem (see Accessories)

Communication

Via the communication interfaces the master control element can communicate with any superior or subordinate automation unit, supporting multi-point traffic and dial-up traffic (using an external data transmission device), and LAN/WAN communication.

For process communication and engineering the following interfaces are available:

Master Control	Interface	Engineering Tool
CP-341x/CPC30	serial EIA-232 ^{*)}	TOOLBOX II (via direct cable)
	LAN/WAN	Webbrowser

^{*)} with additional input for external auxiliary voltage (supply for external modem)

The master control element provides the following protocols:

Protocol	Designation	Standard	Interface			
			X1 ²⁾	X1 ³⁾	X2	X3
UMPMT0	Multi-point traffic (master)	IEC 60870-5-101		✓	✓	
UMPMT1	Multi-point traffic (master)	IEC 60870-5-101		✓	✓	
UMPST0	Multi-point traffic (slave)	IEC 60870-5-101		✓	✓	
DIAST0	Dial-up traffic (slave)	IEC 60870-5-101			✓	
103MT0	Interfacing of protective devices (master)	IEC 60870-5-103		✓	✓	
ETT0	Ethernet TCP/IP	IEC 60870-5-104	✓			
SMSST0	ASCII protocol for SMS alarms			✓	✓	
TG8ST0	L&G TELEGYR 800 GV-S			✓	✓	
ST1SA0	Siemens SINAUT-ST1 GV-S			✓	✓	
DNPST0	DNP3 (slave)			✓	✓	
MODMT0	Modbus (master)			✓	✓	
DLCMT0 ¹⁾	LV-DLC Protokoll (Master)	EN 50065				✓

¹⁾ integrated in CPC30

²⁾ applies for CP-3410

³⁾ applies for CP-3411

The detailed information on the protocols can be found in the manual "AMIS Protocol Elements".

Configuration of the Process Communication

The following methods of communication are available:

Multi-Point Traffic	Dial-Up Traffic
Serial asynchronous interface (V.24/V.28), transfer rate up to 115.2 kbps *)	
Data transmission according to IEC 60870-5-101 (sequence of information objects)	
Time synchronization via serial interface	
Data transmission facilities	
<ul style="list-style-type: none"> • TP Radio WDM 8000 • Digital radio • Analog radio • Direct connection 	<ul style="list-style-type: none"> • Siemens TC35 (GSM) • Siemens MD 741-1 (GPRS) • Dr. Neuhaus Tainy EMOD-V2-IO (GPRS) • Westermo TD-36 (analog) • Westermo IDW90 (ISDN)
SMS (messages) when using a GSM data transmission device	
LAN/WAN	
Data transmission according to IEC 60870-5-104	
Ethernet according to IEEE 802.3i, transfer rate 10 Mbps (10Base-T)	
Fast Ethernet according to IEEE 802.3u, transfer rate 100 Mbps (100Base-TX)	
Mode half duplex or full duplex	
Auto MDI	
Time synchronisation via NTP server	
Substation function	
Internet/GPRS	
Data transmission acc. to IEC 60870-5-104	
Connection via Router and Firewall with a wireless radio network	
Router in the central station sets up connection to the network provider via internet	
Data transmission facilities	
Wavecom M1206B-ON Fastrack Modem GSM, GPRS classe 10	
Cisco Router 1711-VPN/K9 (VPN/security package)	

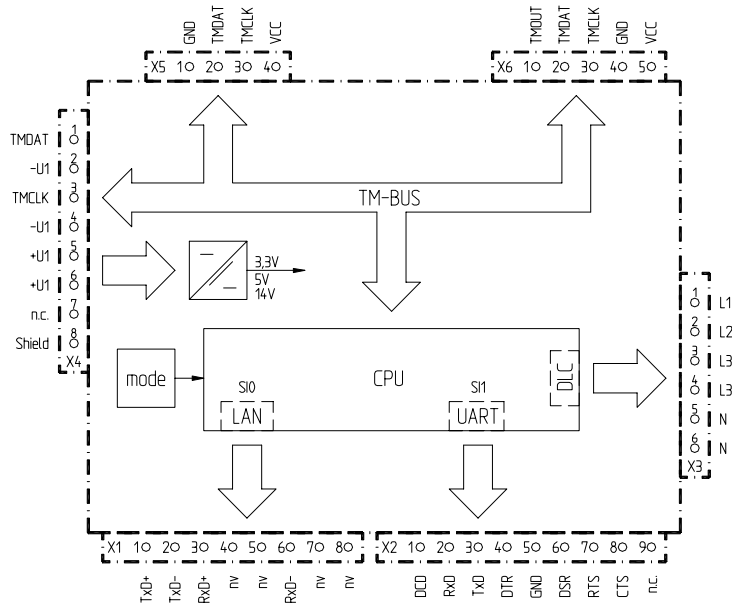
*) depends on the used data transmission facility

Functions

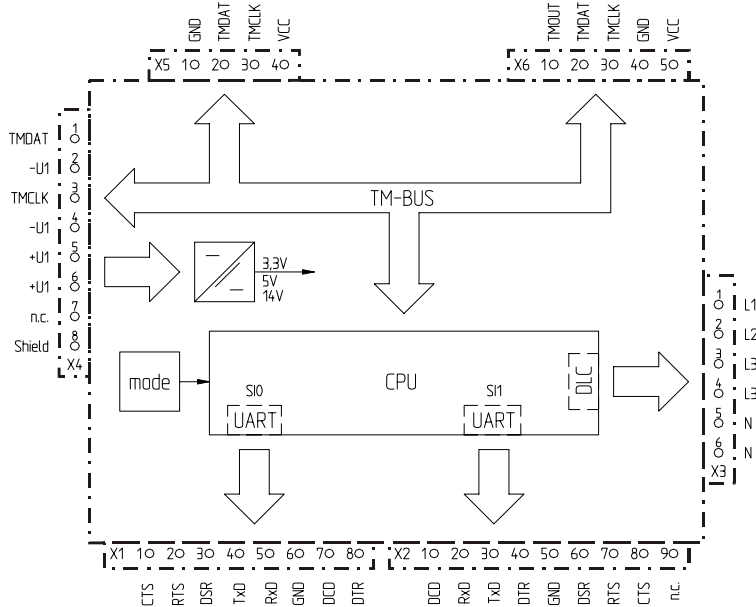
- **System functions**
 - Central element, coordinating all system services
 - Master function for up to 1000 terminal devices
 - Automatic detection and management of the terminals
 - Bidirectional transport of the data
 - Auto-routing between data concentrators for network switchovers
 - Time management
 - Central clock of the automation unit
 - Setting and keeping the own clock's time with a resolution of 10 ms
 - Synchronization via serial communication (with another automation unit), or via LAN (NTP server)
 - Integrated webserver
 - TOOLBOX II connection
 - Storing of firmware and application data on flash card
- **Functions for telecontrol (communication)**
 - Communication via selectable protocols to any superior or subordinate automation unit
 - Monitoring of the communication upon failure
 - Automatic or selective data flow routing
 - Priority based data transmission (priority control)
 - Own circular buffer and process image for each connected station (data keeping)
 - Redundant communication routes
 - Communication with redundant remote stations
 - Redundant communication with a remote station (load share operation)
 - Special application specific functions for dial-up traffic
 - Test if stations are reachable
 - An application program may evaluate telephone charges
 - Parameter setup allows the telephone line to be used efficiently with respect to connection charges (e.g. command output possible only if a connection exists)
- **Functions for telecontrol (process peripherals)**
 - Transmission of spontaneous information objects from and to peripheral elements, via the serial TM Bus
 - Monitoring of the I/O modules upon failure
 - Archiving of events (DEAR)
 - Reconstruction of all process-relevant data after communication faults
 - Transmission to the control system upon trigger of the control system
 - File transfer acc. to IEC 60870-5-101
 - Data saving non-volatile
 - Datapoint-specific parameter-settable
 - Configuration acc. to IEC 60870-5-101/104, also multi-hierarchically possible
- **Functions for automation**
 - Open-/closed-loop control function by means of freely definable application program
 - Creation with CAEx *plus* acc. to IEC 61131-3 – e.g. as function diagram
 - Alternatively creation of an instruction list using an ASCII editor
 - 64 kB for application program, thereof 4 kB temporary memory for variables
 - 256 I/O variables possible
 - 8 kB non-volatile memory for variables
 - Cycle time 10...2000 ms, adjustable grid 10 ms
 - Transmission of periodic process information between the open-/closed-loop control function and the peripheral elements via the serial TM Bus

Block Diagram

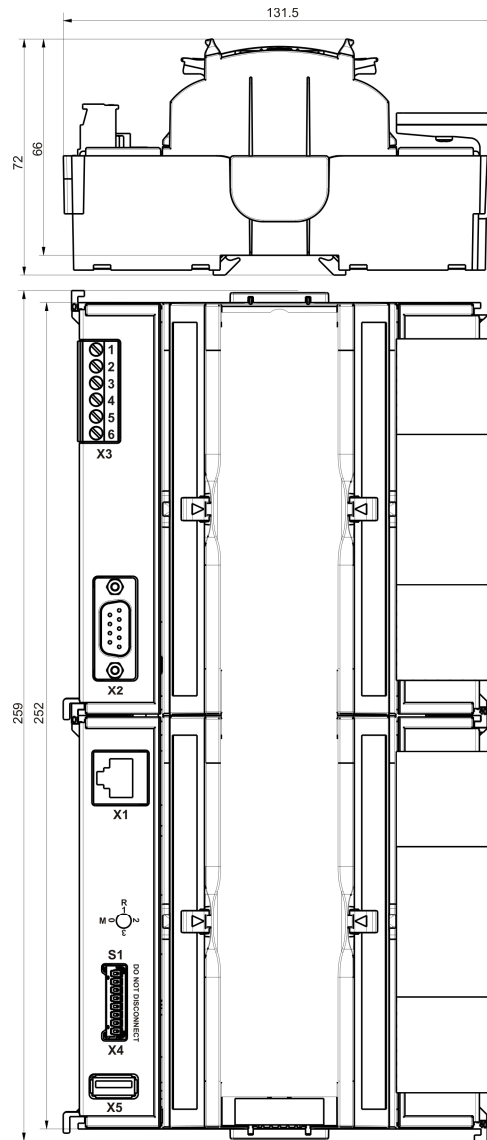
CP-3410



CP-3411



Dimensional Drawing



Technical Specifications

Processor and Storage	
Processor	Blackfin BF531
Pulse frequency	CCLK (core clock): 400 MHz SCLK (system clock): 133 MHz
Free run accuracy	3.6 ms/h
Internal main memory	SRAM 52 kB
External main memory	SDRAM 8 MB
Program memory	Flash PROM 2 MB
Parameter memory	SD card 512 kB or SD card 1 GB (preferred type)
Communication CP-3410	
LAN interface X1	<ul style="list-style-type: none"> • Ethernet acc. to IEEE 802.3 (10Base-T or 100Base-TX) • Transmission rate 10 Mbps or 100 Mbps • ESD protection • Galvanically not insulated • Line length up to 100 m
Serial interface X2	<ul style="list-style-type: none"> • Serial asynchronous acc. to EIA-232 (UART, V.24/V.28) • Data rate max. 115.2 kbit/s (dependent on modem) • ESD protection • Galvanically not insulated • Line length up to 2 m
DLC interface X3	<ul style="list-style-type: none"> • DLC communication acc. to EN 50065 band A (9...95 kHz) • LV-DLCM protocol • Power amplifier for 3-phase connection • Communication with terminals via low-voltage network
Supported terminals	<ul style="list-style-type: none"> • TD-3510 Meter 3p 10/100 A • TD-3511 Meter 3p 5/60 A • TD-3512 Meter 1p 1/60 A • TD-3520 Switching Device • TD-3530 Gateway
Administration of the terminals	Automatic acquisition, diagnosis, alerting
Number of terminals	< 1000

Communication CP-3411		
2 serial interfaces X1, X2		<ul style="list-style-type: none"> • Serial asynchronous acc. to EIA-232 (UART, V24/V28) • Data rate max. 115 kbit/s (dependent on Modem) • ESD protection • Galvanically not insulated • Line length up to 2m
DLC interface X3		<ul style="list-style-type: none"> • DLC communication acc. to EN 50065 band A (9...95 kHz) • LV-DLCM protocol • Power amplifier for 3-phase connection • Communication with terminals via low-voltage grid
Supported terminals		<ul style="list-style-type: none"> • TD-3510 Meter 3p 10/100 A • TD-3511 Meter 3p 5/60 A • TD-3512 Meter 1p 5/60 A • TD-3520 Switching Device • TD-3530 Gateway
Administration of the terminals		Automatic acquisition, diagnosis, alerting
Number of terminals		< 1000
Power Supply		
Operating voltages		12 VDC (10.5...15 VDC), approx. 30 W
Internal operating voltages		Logic: 3.3 V DLC communication: 14 V TM 1703 modules: 5.0 V
To exterior conducted voltages on X2		12 V (10.5 V...15 VDC), can be switched off via relay power depends on PS-3460, consider total power!
Mechanics and Connections		
Communication 1	X1	RJ45 socket connector 8-pole (IEC 603.7)
Communication 2	X2	D-SUB socket connector 9-pole, male (DIN 41652)
L1, L2, L3, N	X3	Removable screw terminals 6-pole (RM 5.08)
+12V, GND, TM Bus	X4	Pin connector 8-pole (RM 2.5)
Diagnosis	X5	USB plug for diagnosis (Siemens internal)
TM bus	X6	TM bus interface
Operating mode switchover	S1	Miniature turn-switch (position 1 = master, 2 = repeater)
Mounting		35 mm DIN rail
Dimensions		131 x 259 x 72 mm (L x W x H, for horizontal mounting position)
Weight		Approx. 450 g

Literature

Brochure AMIS	M23-001-1
AMIS DC System Data Sheet	M23-017-1
Data Sheet AMIS Meter TD-351x/EMVK30/EMAS30	M23-050-1
Data Sheet AMIS Power Supply Module PS-3460	M23-052-1
Data Sheet AMIS Load Switching Device TD-3520/TASU30	M23-053-1
Data Sheet AMIS Meters Protocol Converter TD-3530/TACU30	M23-054-1

Disclaimer of Liability

Although we have carefully checked the contents of this publication for conformity with the hardware and software described, we cannot guarantee complete conformity since errors cannot be excluded. The information provided in this manual is checked at regular intervals and any corrections that might become necessary are included in the next releases. Any suggestions for improvement are welcome.

Subject to change without prior notice.

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