C-IPC 171

C-DIAS IPC
with AMD Fusion G-T56N

Date of creation: 27.07.2017 | Version date: 20.11.2023 | Article number: 01-450-171-E

Publisher: SIGMATEK GmbH & Co KG
A-5112 Lamprechtshausen
Tel.: +43/6274/4321
Fax: +43/6274/4321-18
Email: office@sigmatek.at
WWW.SIGMATEK-AUTOMATION.COM

Translation from German

C-DIAS IPC with AMD Fusion G-T56N C-IPC 171

Compact DIAS

Industrial

Personal

Computer

The C-IPC is a C-DIAS industrial PC with an AMD Fusion processor. A 7-segment display and 3 status LEDs provide information on the actual status of the CPU. A CompactFlash card can be used as program memory. The C-IPC also has an VGA interface for a display and a USB V1.1 interface. In addition, an expansion card with further interface connections is available.

Compatibility

Completely PC-compatible. The C-IPC works with a standard PC BIOS; no SIGMATEK-specific BIOS is therefore needed. LASAL is provided as the operating system.

Contents

1 Technical Data

1.1 Performance Data

Processor	AMD G-T56N Dual Core 1.65GHz
Internal program memory (CompactFlash)	1x Compact Flash (1x 512-MByte card)
Internal program memory (SRAM)	256 Kbytes (battery powered)
Internal program memory (DDR-RAM)	1 GB DDR3-RAM
Interfaces	1x x Ethernet 10/100 Mbit 1x RS 232 – COM1 1x RS232/ RS485/ RS422 – COM2 1x DIAS intelligent (Weidmüller plug and 14-Pin ribbon cable) 1x CAN for PLC 1x CAN for a Terminal 1x VGA 1x S-DVI interface for a 15” terminal (TFT display, USB, CAN key-board) Resolution 1024 x 768 pixels 1x USV 1x USB V1.1 Interfaces via expansion cards (optional): 1x VARAN (maximum cable length: 100 m) 1x Ethernet 10/100 1x LPT – Printer 1x RS232/ RS485/ RS422 – COM3 1x RS232/ RS485/ TTY/ Multi-drop Bus - COM4
Data buffer	Buffered via lithium battery
Status display	yes
Status LEDs	yes
Real-time clock	yes

1.2 Standard Configuration

Ethernet	IP 10.10.150.1	Subnet mask: 255.0.0.0
CAN bus PLC	Station: 00	Baud rate: 00 = 615 kBaud
CAN bus Terminal	Station: 00	Baud rate: 00 = 615 kBaud
COM 1 (RS232)	57600 Baud	
COM 2 (RS232)	57600 Baud	

The CAN bus terminal is initialized by the FPGA and is limited in use!
Several CAN objects of the CAN bus terminal are not available.

Problems can arise if a control is connected to an IP network, which contains modules that do not run on a SIGMATEK operating system. With such devices, Ethernet packets could be sent to the control with such a high frequency (i.e. broadcasts), that the high interrupt load could cause a real-time runtime error or runtime error. By configuring the packet filter (Firewall or Router) accordingly however, it is possible to connect a network with SIGMATEK hardware to a third-party network without triggering the error mentioned above.

1.3 Electrical Requirements

Supply voltage	18-30 V DC (1), typically +24 V DC UL: Class 2 or LVLC (3)
Current consumption of the power supply (24 V)	maximum 3,2 A (depending on external devices)
Inrush current	maximum 9 A for ~17 ms (2)
Available current for DIAS (+5 V)	maximum 1 A
Available current for C-DIAS (+5 V)	maximum 1.2 A

(1) For a supply voltage between 18-22 V, it is buffered for only 3 ms.
(2) Measured with a 24 V/10 A fixed voltage supply. If a power supply over 10 A is used an increased inrush current can result.

(3) For USA and Canada:

The supply must be limited to:
a) max. 5 A at voltages from 0-20 V DC, or
b) 100 W at voltages from 20-60 V DC

The limiting component (e.g. transformer, power supply or fuse) must be certified by an NRTL (Nationally Recognized Testing Laboratory).

(3) Pour les États-Unis et le Canada:

L'alimentation doit être limitée à:
a) max. 5 A pour des tensions de 0-20 V DC, ou
b) 100 W pour des tensions de 20-60 V DC

Le composant imposant la limite (par exemple, transformateur, alimentation électrique ou fusible) doit être certifié par un NRTL (National Recognized Testing Laboratory, par exemple, UL).

1.4 Miscellaneous

Article number	C-IPC 171 1 GB Fusion T56N 1 GB DDR3-RAM, 1x 512 MB CompactFlash	01-450-171
	TC-IPC 171 1 GB Fusion T56N 1 GB DDR3-RAM, 1x 512 MB CompactFlash with Coating of the electronic	01-450-171-T
Module identification on DIAS bus	no	
Hardware Version	1.x	
Project backup	internally on CompactFlash	
Standard	UL 508 (E247993)	
Approvals	cULus listed, CE	

1.5 Environmental Conditions

Storage temperature	-20 ... +85 °C	
Ambient temperature	+5 ... +50 °C	
Max. Process temperature	+125 °C (automatic cut-off)	
Humidity	0-95 %, non-condensing	
EMC resistance	in accordance with EN 61000-6-2 (industrial area)	
EMC noise generation	in accordance with EN 61000-6-4 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s²
Protection type	EN 60529	IP20

1.6 Xilinx Version

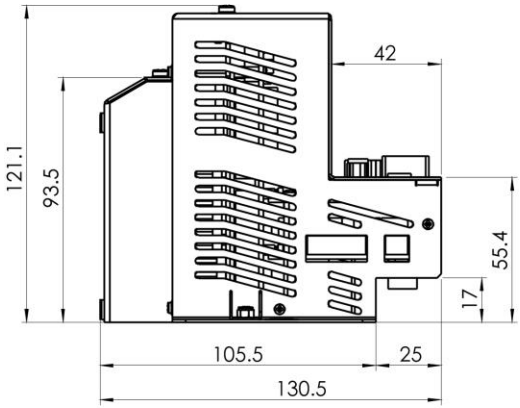
Directly after the C-IPC is turned on, the Xilinx version number is shown in the display.

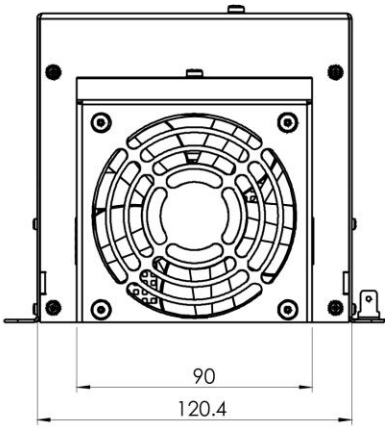
In display D1, 43 is shown and in display 41, the version number can be seen. This information can also be found on the identification label. (e.g.: X 1.8)

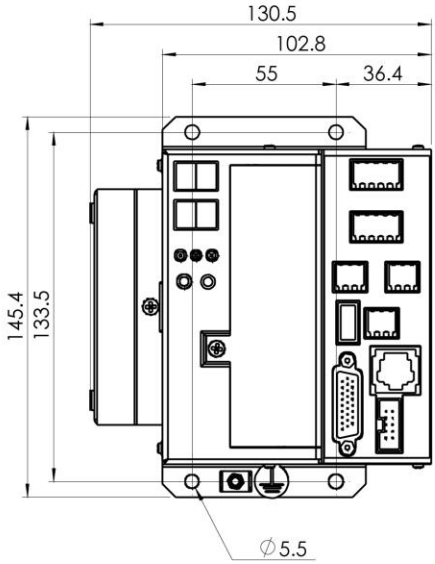
1.7 Post Codes

During startup, the BIOS-dependent post codes are shown in the display It is important to note these codes in order to simplify troubleshooting if an error occurs.

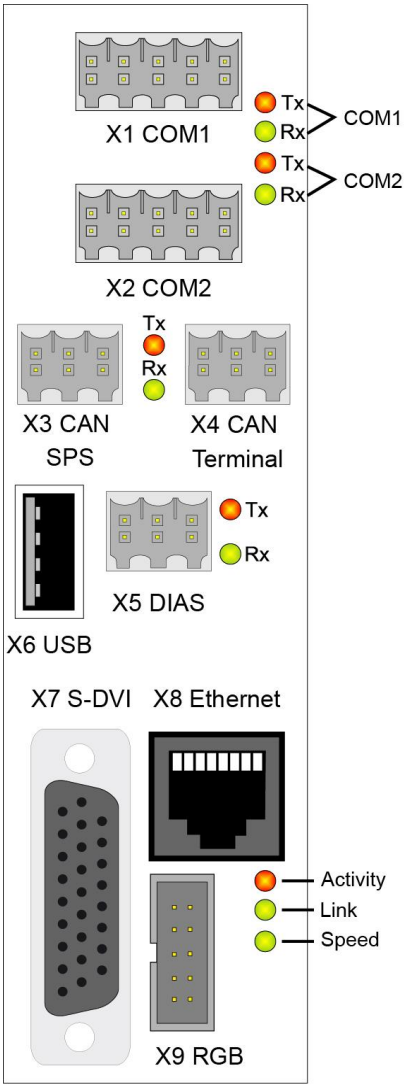
2 Mechanical Dimensions





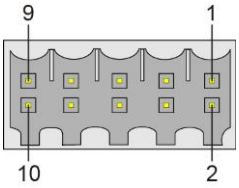


3 Connector Layout



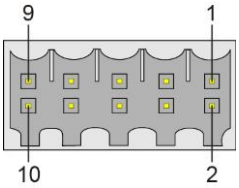
3.1 Connector Layout

X1 COM 1 (10-pin Weidmüller plug)



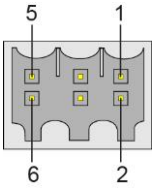
Pin	Function
1	RxD
2	RTS
3	TxD
4	CTS
5	DTR
6	GND
7	DCD
8	DSR
9	RI
10	n.c.

X2 COM 2 (10-pin Weidmüller plug)



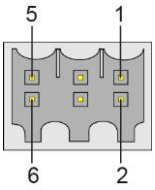
Pin	Function RS232	Function RS422	Function RS485
1	RxD	RS422 TxD+	RS485 A
2	RTS	RS422 TxD-	RS485 B
3	TxD	RS422 RxD+	n.c.
4	CTS	RS422 RxD-	n.c.
5	DTR	n.c.	n.c.
6	GND	GND	GND
7	n.c.	RS422 TxD+	RS485 A
8	n.c.	RS422 TxD-	RS485 B
9	n.c.	RS422 RxD+	n.c.
10	n.c.	RS422 RxD-	n.c.

X3 CAN Bus PLC (6-pin Weidmüller plug)



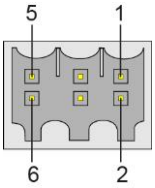
Pin	Function
1	CAN SA = LOW
2	CAN SB = HIGH
3	CAN SA = LOW
4	CAN SB = HIGH
5	GND
6	+5 V (for online adapter)

X4 CAN Bus Terminal (6-pin Weidmüller plug)



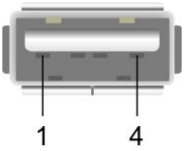
Pin	Function
1	CAN A = LOW
2	CAN B = HIGH
3	CAN A = LOW
4	CAN B = HIGH
5	GND
6	n.c.

X5 DIAS Bus (6-pin Weidmüller plug)



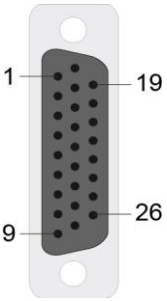
Pin	Function
1	MBUS+
2	MBUS-
3	SBUS+
4	SBUS-
5	GND
6	n.c.

X6 USB (Type A)



Pin	Function
1	+5 V
2	D0-
3	D0+
4	GND

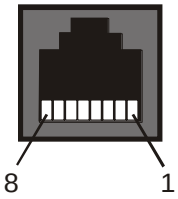
X7 S-DVI (26-pin HD-DSUB)



Pin	Function	Pin	Function
1	DVI1+	14	Shielded
2	DVI1	15	Shielded
3	DVI2+	16	Shielded
4	DVI2	17	Shielded
5	DVI3+	18	Shielded
6	DVI3	19	+24 V
7	DVIC+	20	+24 V
8	DVIC-	21	USB Ext. In+
9	Reserved	22	USB Ext. In-
10	GND	23	USB Ext. Out+
11	GND	24	USB Ext. Out-
12	Shielded	25	CAN A
13	Shielded	26	CAN B

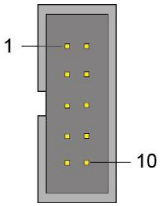
Only 15” TAE models can be driven on the S-DVI interface of this PC.

X8 Ethernet (8-pin RJ45)



Pin	Function
1	TD+
2	TD-
3	RD+
4	n.c.
5	n.c.
6	RD-
7	n.c.
8	n.c.

X9 Video (RGB)

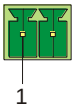


Pin	Function
1	red
2	GND
3	green
4	GND
5	blue
6	GND
7	Vsync
8	GND
9	Hsync
10	GND

For using the X9 video output, it is necessary to either connect a display before the C-IPC is started or restart the C-IPC after a display has been connected. Otherwise a video signal will not be sent to this interface.

X10 Power Supply 24 - 30 Volt DC

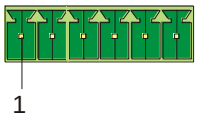
2-pin Phoenix 3.5 mm (power supply)



Pin	Function
1	+24 V
2	GND

X11 External UPS Connection

6-pin Phoenix 3.5 mm (UPS)



Pin	Function
1	RxD
2	TxD
3	RTS (USV Off)
4	CTS (+24 V OK)
5	DCD (Battery weak)
6	GND

3.2 Applicable Connectors

COM1/COM2: 10-pin Weidmüller plug B2L/B2CF 3,5/10
CAN/ DIAS bus: 6-pin Weidmüller plug B2L/B2CF 3,5/6
USB: Type A
Ethernet: 8-pin RJ 45
Video: 10-pin RM 2.54
Power: 2-pin Phoenix FK-MCP 1.5/2-ST-3.5
USV: 6-pin Phoenix FK-MCP 1.5/6-ST-3.5

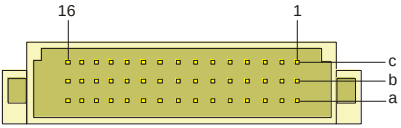
The complete C-DIAS CKL 012 connector set with spring terminals is available from SIGMATEK under the article number 12-600-012.

S-DVI Cable	0.3 m	Art.No.: 05-950-003
	2 m	Art.No.: 05-950-020
	3 m	Art.No.: 05-950-030
	3.5	Art.No.: 05-950-035
	5 m	Art.No.: 05-950-050
	7 m	Art.No.: 05-950-070
	10 m	Art.No.: 05-950-100
	15 m	Art.No.: 05-950-150

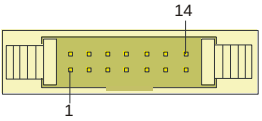
NOTE:
Connecting the S-DVI cable under voltage can damage the S-DVI interface; it is not hot-plug capable.

3.3 Bottom Connectors

X12 C-DIAS Bus Connector

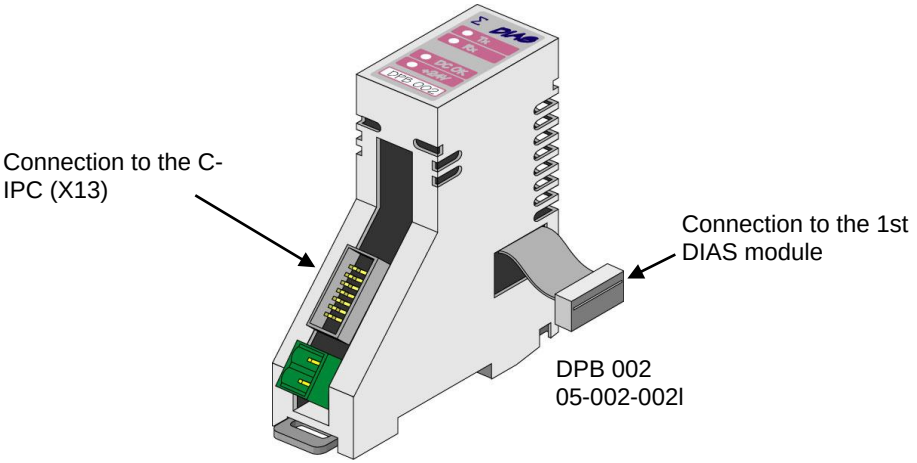


X13 DIAS Bus Connector

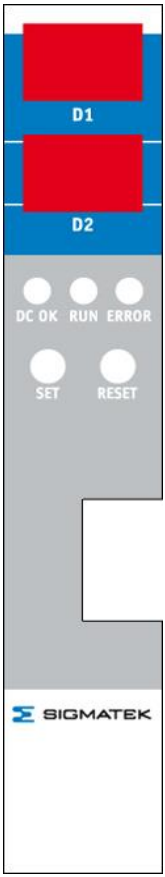


Pin	Function
1	GND
2	MBUS+
3	MBUS-
4	GND
5	SBUS+
6	SBUS-
7	GND
8	DCOK
9 – 13:	+5 V
14	GND

CAUTION!
To connect the DIAS module to X13 of the C-IPC, a DIAS power module (power booster) between the C-IPC and DIAS module is required. The measure is necessary to protect the C-IPC from EMC-noise and to unburden the DCDC converter in the C-IPC (reducing power loss in the C-IPC).



4 Status Displays

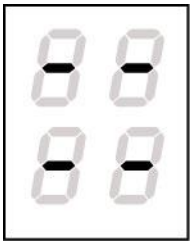


LED 1	Green	DC OK	Lights when the supply voltage is correct.
LED 2	Green	Run	Lights when the program is running
LED 3	Red	Error	Lights when an error occurs
Button 1		Set	Set/display Ethernet, CAN address
Button 2		Reset	Reset CPU hardware

5 Setting C-IPC Parameters with the SET Button
(under LASAL operating system only)

To enter the mode to change settings, press and hold the SET button while the C-IPC is booting

When the following display appears



The SET button can be released.

The upper section of the display shows which setting can be changed; the lower section of the display shows the set value.

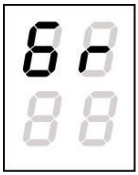
The blinking part of the display can be set with a short press of the SET button:

If the upper section is blinking, the various settings can be viewed by quickly pressing the set button multiple times. To change between the setting and the value, the Set button must be pressed for about 1.5 s.
Once the desired changes are made, press the SET button for about 5 seconds to end the process. If the changes are to be discarded, press the RESET button to restart the C-IPC

The settings for the IP address, subnet mask and gateway are hexadecimal, whereas in the left and right digits, 0 - F must be entered separately. The changeover is triggered by pressing the SET button for about 1.5 s

The values from AUTOEXEC.LSL are used as the standard settings; changes are written back to this file. Before this, the original content of the file is written to AUTOEXEC.BAK.

Gr ... graphics resolution
01 ... QVGA 320x240
02 ... VGA 640x480
03 ... SVGA 800x600
04 … XGA 1024x768



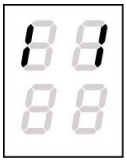
L1 … Lasal Online COMx interface number
01 ... COM1
02 ... COM2

L2 .. Lasal Online Baud rate for COMx
00 ... 300
01 ... 600
02 ... 1200
03 ... 2400
04 ... 4800
05 ... 9600
06 ... 14400
07 ... 19200
08 ... 38400
09 ... 57600
10 ... 115200

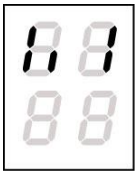
C1 ... CAN PLC station
00 – 30 ... Station number

C2 ... CAN PLC baud rate
00 ... 615.000
01 … 500,000
02 … 250,000
03 … 125,000
04 … 100,000
05 … 50,000
06 … 20,000
07 … 1,000,000

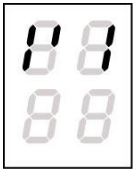
I1, I2, I3, I4 IP Address I1.I2.I3.I4, hexadecimal
00-FF respectively



S1, S2 ,SI3, S4 Subnet Mask SI1SI2.S3.S4, hexadecimal
00-FF respectively



G1, G2, G3, G4 Gateway G1,G2.G3.G4, hexadecimal
00-FF respectively



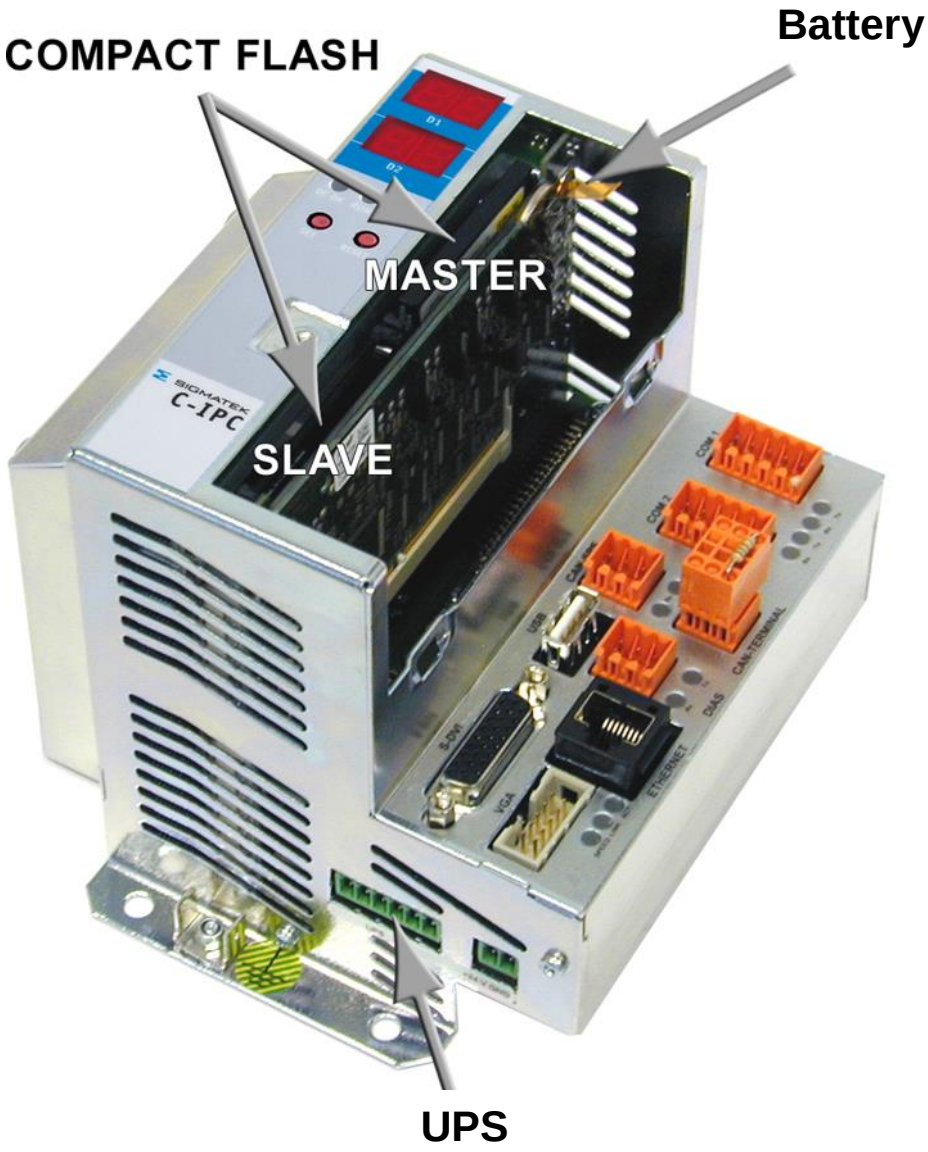
6 Design Layout

The CPU module is placed on the left side of the C-DIAS module carrier.

Front view with cover

Rear view with cover

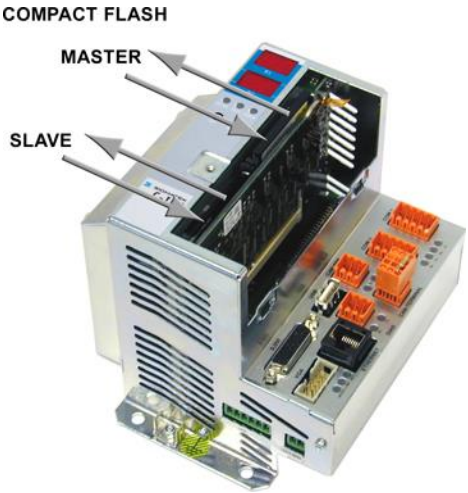
Front view without cover



6.1 Exchanging the CompactFlash Card

To exchange the CompactFlash card, remove the screws and carefully tilt the cover to the front as shown below.

Next, remove the old flash card and insert the new card as shown. Finally, replace the cover and tighten the screws.



Note:
The CompactFlash card in the master slot is always the primary BOOT device.

6.2 Storage Media

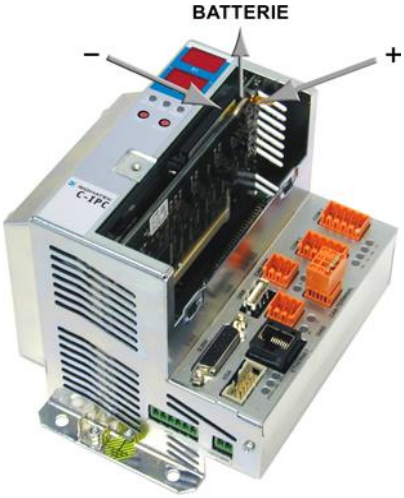
It is recommended that only storage media provided by SIGMATEK (CompactFlash cards, microSD cards etc.) be used.

The number of read and write actions have a significant influence on the lifespan of the storage media.

6.3 Exchanging the Battery

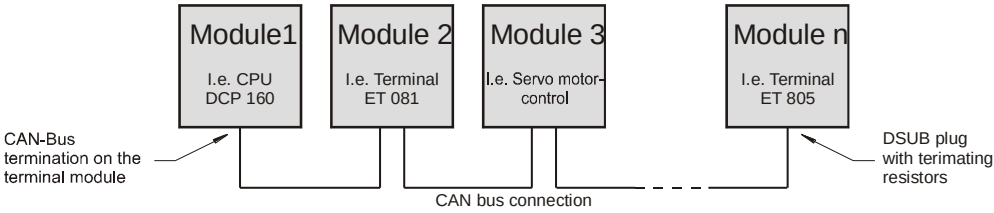
The battery can only be exchanged when the C-IPC is OFF! To exchange the battery, remove the screws and carefully tilt the cover to the front as shown below.

Next, remove the old battery from the fixture and insert the new one. When inserting the new battery, ensure the polarity is correct. Finally, replace the cover and tighten the screws.



6.4 CAN Bus Termination

In a CAN bus system, both end modules must be terminated. This is necessary to avoid transmission errors caused by reflections in the line.



If the C-IPC is an end module, it can be terminated by placing a 150-Ohm resistor between CAN-A (Low) and CAN-B (High).

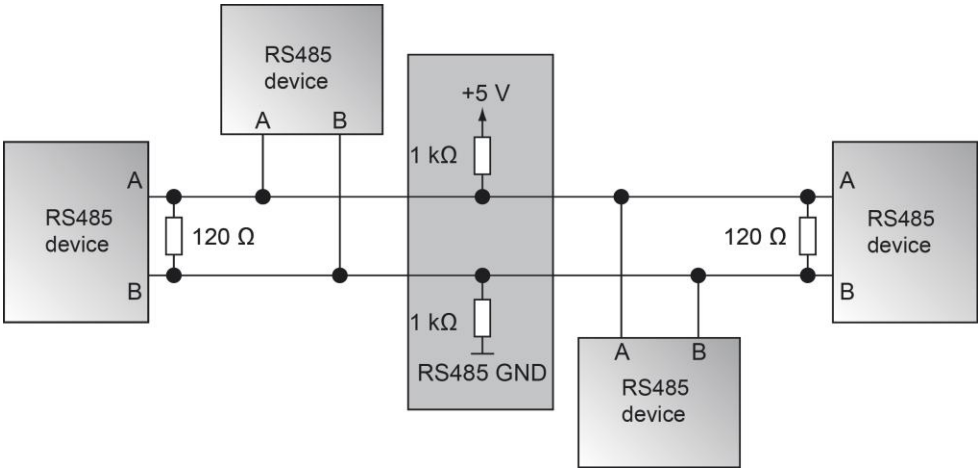
1 x 150-Ohm resistor

6.5 RS485

- Because the RS485 requires a defined quiescent point, a pull-up and pull-down resistor is required in addition to the termination resistor.

- The terminating resistors with 120 Ω must be placed on each end of the bus

- Star wiring should be avoided



6.6 USB Interface Connections

The C-IPC control panel has a USB interface. The terminal has a USB interface connection that can be used to connect various USB devices (keyboard, mouse, storage media, hubs, etc.) in LASAL. Using a hub, several USB devices can be connected that are then fully functional in LASAL.

The following restriction applies to the BIOS setup:

The BIOS setup can only be accessed when the USB keyboard is connected directly to the USB socket. Using a USB hub can cause errors in the BIOS setup!

It should be noted that many USB devices on the market do not comply with the relevant EMC standards for industrial environments. Connecting such a device can lead to malfunctions.

6.7 DIAS Bus Termination

In a DIAS bus system, both end modules must be terminated. This is necessary to avoid transmission errors caused by reflections in the line.

The DIAS bus termination is integrated in the C-IPC and must no longer be built into the DIAS bus connector.

6.8 The DIAS Bus Connection

To ensure a good bus connection, several wiring guidelines must be followed:

- It is important to ensure the cables used are designed for the data transfer speed.

Data cables (10Mbit, 2 x 2 wire TWISTED PAIR, shielded)
e.g.: LAPPKABEL / UNITRONIC-BUSLEITUNG FD P LD

- Because of the internal resistance of the module, the cable impedance should be 100 Ohms.

- With twisted-pair cables, ensure that the correct pairs are connected to one another:

2x2 pair cables:	Pair 1	MBUS+
		MBUS-
	Pair 2	SBUS+
		SBUS-

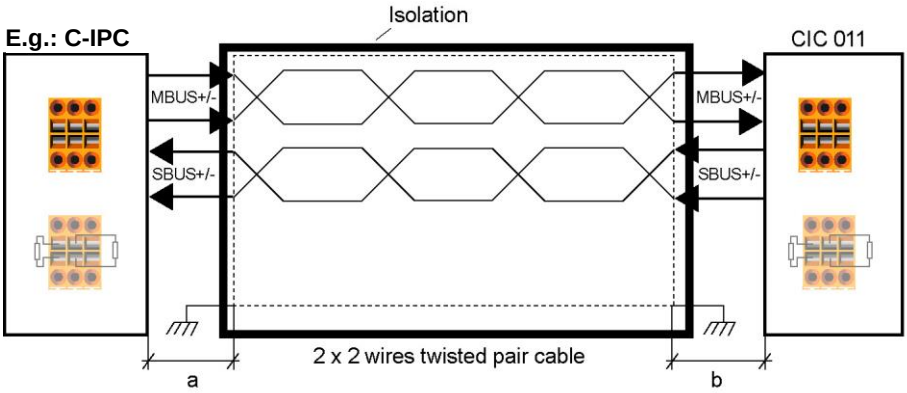
- The shielding must be connected over a large area and the shortest possible route.

- To connect the individual wires to the connector, the insulation must be removed and the exposed shielding shifted to the side. Only remove as much of the insulation and shielding as needed.

- It is important to ensure that the send and receive modules are connected to the same GND potential.

The maximum length allowed for twisted-pair cables per DIAS bus connector is 20 M (when using the UNITRONIC BUS cable FD P LD / Fa. LAPPKABEL)

Example



a, b ..... These distances are to be kept as small as possible!
Put screening on both sides and extensive on shortest way to GND!

The C-IPC can also be connected to a DIAS module. However, the DIAS modules require a power supply (a DPS 001, for example) as well as an adapter module for connecting the twisted-pair cable to the ribbon cable connector (i.e.: DKO 012 /013).

6.9 Connecting DIAS Modules

The C-IPC can also be connected to DIAS modules. Here, 2 options are available:

1. Connection over a DIC 121

The DIAS bus connection between the C-IPC and DIC 121 is a point-to-point connection and must therefore be terminated on both sides. The DIC 121 has an integrated bus termination

Wiring the C-IPC:
- X1: Install bus termination (2 x 100 Ω)
- X2: Connection to DIC 121

2. Connection over a DKO 011 or DKO 013:

If both DIAS bus connectors on the C-IPC are needed, a DKO 011 or DKO 013 can be used in combination with a DPS 001 power supply module.

Wiring the DIAS modules with a DPS 001:
- Left: DPS 001 power supply module
- Right: DKO 011 or DKO 013 adapter module

Wiring the C-IPC:
- X1: DIAS bus to CIC interface modules or bus termination (2 x 100 Ω)
- X2: Connection to DKO 011 or DKO 013 adapter module

7 Buffer Battery

The exchangeable buffer battery ensures that programs and data in the user memory (RAM) are preserved in the absence of a supply voltage. A lithium battery is installed at the manufacturer.

The battery has enough capacity to preserve data in the absence of a supply voltage for up to 3 years.

We recommend however, that the battery be replaced **annually** to ensure optimal performance.

Battery order number: 01-690-028

	COMPANY	TYPE	DATA
Lithium battery	RENATA	CR2032	3 V

Use batteries from RENATA with the number CR2032 only! With any other battery, the danger of fire or explosion exists!

Caution:
The battery can only be changed when the C-IPC is turned off! After the +24 V supply is removed, the battery is buffered for approximately 15 minutes (via ELKO). The battery must be changed within this period or data loss occurs.

8 Cooling

The terminal's power loss can reach up to 45 Watts. The built-in fan removes most of the generated heat. Also when mounted, heat dissipation must be ensured.

At processor temperatures above the allowed limit, the C-IPC will shut down automatically!
The C-IPC will only resume normal operation after a sufficient cooling period (1 minute). After an emergency shutdown, the fan function and environmental conditions should be checked.

9 System Boot Checkpoints

The checkpoints are shown on the 7-segment display before the LASAL CLASS software status and error messages. Since these involve checkpoints, they are to be interpreted as errors when the system stops at one of the checkpoints.

Number	Definition	Cause/solution
FF	The operating system or the application cannot be started.	- Check operating system/boot medium - Boot medium not plugged in - Boot medium defective - No operating system on the boot medium

10 Status and Error Messages

Status and error messages are shown in the status test of the LASAL CLASS software. If the CPU has a status display, the status or error number is also show here as well. POINTER or CHKSUM messages can also be shown on the terminal screen.

Number	Message	Definition	Cause/solution
00	**RUN RAM**	The user program is currently running in RAM. The display is not affected.	INFO
01	**RUN ROM**	The user program stored in the program memory module loaded into the RAM is currently running. The display is not affected.	Info
02	**RUNTIME**	The total time for all cyclic objects exceed the maximum time; the time can be configured using two system variables: - Runtime: Remaining time - SWRuntime: Preset value for runtime counter	Solution: - Optimize the application's cyclic task. - Use higher capacity CPU - Configure preset value
03	**POINTER**	Incorrect program pointers were detected before running the user program	Possible Causes: - The program memory module is missing, not programmed or defect. - The program in the user program memory (RAM) is not executable. - The buffering battery has failed. - The user program has overwritten a software error. Solution: - Reprogram the memory module, if the error reoccurs exchange the module. - Exchange the buffering battery - Correct programming error
04	**CHKSUM**	An invalid checksum was detected before running the user program.	Cause/solution: s. POINTER

05	**WATCHDOG**	The program was interrupted via the watchdog logic.	Possible Causes: - User program interrupts blocked over a longer period of time (STI command forgotten) - Programming error in a hardware interrupt. - INB, OUTB, INW, OUTW instructions used incorrectly. - The processor is defect. Solution: - Correct programming error. - Exchange CPU.
06	**GENERAL ERROR**	General error An error has occurred while stopping the application over the online interface.	The error occurs only during the development of the operating system.
07	**PROM DEFECT**	An error has occurred while programming the memory module.	Cause: - The program memory module is defect. - The user program is too large. - The program memory module is missing. Solution: - Exchange the program memory module
08	**RESET**	The CPU has received the reset signal and is waiting for further instructions. The user program is not processed.	INFO
09	**WD DEFEKT**	The hardware monitoring circuit (watchdog logic) is defective. After power-up, the CPU checks the watchdog logic function. If an error occurs during this test, the CPU deliberately enters an infinite loop from which no further instructions are accepted.	Solution: - Exchange CPU.
10	**STOP**	The program was stopped by the programming system.	
11	**PROG BUSY**	Reserved	
12	**PROGRAM LENGTH**	Reserved	
13	**PROG END**	A memory module was successfully programmed.	Info
14	**PROG MEMO**	The CPU is currently programming the memory module.	INFO

15	**STOP BRKPT**	The CPU was stopped by a breakpoint in the program.	INFO
16	**CPU STOP**	The CPU was stopped by the programming software.	INFO
17	**INT ERROR**	The CPU has triggered a false interrupt and stopped the user program or has encountered an unknown instruction while running the program.	Cause: - A nonexistent operating system was used. - Stack error (uneven number of PUSH and POP instructions). - The user program was interrupted by a software error. Solution: - Correct programming error.
18	**SINGLE STEP**	The CPU is in single step mode and is waiting for further instructions.	INFO
19	**READY**	A module or project has been sent to the CPU and it is ready to run the program.	INFO
20	**LOAD**	The program is stopped and the CPU is currently receiving a new module or project.	INFO
21	**UNZUL. MODULE**	The CPU has received a module that does not belong to the project.	Solution: - Recompile and download the entire project
22	**MEMORY FULL**	The operating system memory /Heap) is too small. No memory could be reserved while calling an internal or interface function is called from the application.	Cause: - Memory is only allocated bun not released. Solution - Clear memory
23	**NOT LINKED**	When starting the CPU, a missing module or a module that does not belong to the project was detected.	Solution: - Recompile and download the entire project
24	**DIV BY 0**	A division error has occurred.	Possible Causes: - Division by 0. - The result of a division does not fit in the result register. Solution: - Correct programming error.
25	**DIAS ERROR**	While accessing a DIAS module, an error has occurred.	Hardware problem
26	**WAIT**	The CPU is busy.	INFO

27	**OP PROG**	The operating system is currently being reprogrammed.	INFO
28	**OP INSTALLED**	The operating system has been reinstalled.	INFO
29	**OS TOO LONG**	The operating system cannot be loaded; too little memory.	Restart; report error to SIGMATEK.
30	**NO OPERATING SYSTEM**	Boot loader message. No operating system found in RAM.	Restart; report error to SIGMATEK.
31	**SEARCH FOR OS**	The boot loader is searching for the operating system in RAM.	Restart; report error to SIGMATEK.
32	**NO DEVICE**	Reserved	
33	**UNUSED CODE**	Reserved	
34	**MEM ERROR**	The operating system loaded does not match the hardware configuration.	Solution: - Use the correct operating system version
35	**MAX IO**	Reserved	
36	**MODULE LOAD ERROR**	The LASAL Module or project cannot be loaded.	Solution: - Recompile and download the entire project
37	**BOOTIMAGE FAILURE**	A general error has occurred while loading the operating system.	Contact SIGMATEK
38	**APPLMEM ERROR**	An error has occurred in the application memory (user heap).	Solution: - Correct allocated memory access error
39	**OFFLINE**	This error does not occur in the control.	This error code is used in the programming system to show that there is no connection to the control.
40	**APPL LOAD**	Reserved	
41	**APPL SAVE**	Reserved	
44	**VARAN MANAGER ERROR**	An error number was entered in the VARAN manager and stopped the program.	Solution: - Read log file
45	**VARAN ERROR**	A required VARAN client was disconnected or communication error has occurred.	Solution: - Read LogFile - Error Tree
46	**APPL-LOAD-ERROR**	An error has occurred while loading the application.	Cause: - Application was deleted. Solution:

			- Reload the application into the control.
47	**APPL-SAVE-ERROR**	An error has occurred while attempting to save the application.	
50	**ACCESS-EXCEPTION-ERROR**	Read or write access of a restricted memory area. (I.e. writing to the NULL pointer).	Solution: - Correct application errors
51	**BOUND EXCEEDED**	An exception error has occurred when accessing arrays. The memory area was overwritten through accessing an invalid element.	Solution: - Correct application errors
52	**PRIVILEDGED INSTRUCTION**	An unauthorized instruction for the current CPU level was given. For example, setting the segment register.	Cause: - The application has overwritten the application program code. Solution: - Correct application errors
53	**FLOATING POINT ERROR**	An error has occurred during a floating-point operation.	
60	**DIAS-RISC-ERROR**	Error from the Intelligent DIAS Master.	Restart; report error to SIGMATEK.
64	**INTERNAL ERROR**	An internal error has occurred; all applications are stopped.	Restart; report error to SIGMATEK.
65	**FILE ERROR**	An error has occurred during a file operation.	
66	**DEBUG ASSERTION FAILED**	Internal error.	Restart; report error to SIGMATEK.
67	**REALTIME RUNTIME**	The total duration of all real-time objects exceeds the maximum time; the time cannot be configured. 2 ms for 386 CPUs 1 ms for all other CPUs	Solution: - Optimize the application's real-time task (RtWork). - Reduce the clock time for the real-time task of all objects. - Correct application errors - CPU is overloaded in real-time => use a higher capacity CPU.
68	**BACKGROUND RUNTIME**	The total time for all background objects exceed the maximum time; the time can be configured using two system variables: -BTRuntime: Remaining time -SWBTRuntime: Preset value for runtime counter	Solution: - Optimize the application's background task (background) - Use higher capacity CPU - Set SWBTRuntime correctly
70	**C-DIAS ERROR**	A connection error with a C-DIAS module has occurred.	Cause: - The cause of the error is documented in the log file

			Solution: - This depends on the cause
72	**S-DIAS ERROR**	A connection error with an S-DIAS module has occurred.	Possible Causes: - real network does not match the project - S-DIAS client is defective Solution: - analyze log file
73	**EEPROM ERROM**	While reading the CPU EEPROM, an error has occurred.	Cause: - Access to I²C has failed multiple times due to an error or hardware defect Solution: - Restart the CPU - After repeated failure exchange the CPU
75	**SRAM ERROR**	An error occurred while initializing, reading or writing SRAM data.	Possible Causes: - SRAM configured incorrectly - Battery for powering the internal program memory is empty Solution: - Analyze log file (Event00.log, Event19.log) - check configuration - Exchange battery for powering the internal program memory
97	**USER DEFINED 2**	User-definable code.	
98	**USER DEFINED 3**	User-definable code.	
99	**USER DEFINED 4**	User-definable code.	
100	**C_INIT**	Initialization start; the configuration is run.	
101	**C_RUNRAM**	The LASAL project was successfully started from RAM.	
102	**C_RUNROM**	The LASAL project was successfully started from ROM.	
103	**C_RUNTIME**		
104	**C_READY**	The CPU is ready for operation.	

105	**C_OK**	The CPU is ready for operation.	
106	**C_UNKNOWN_CID**	An unknown object from a stand-alone or embedded object, or an unknown base class was detected.	
107	**C_UNKNOWN_CONSTR**	The operating system class cannot be created; the operating system is probably wrong.	
108	**C_UNKNOWN_OBJECT**	Indicates an unknown object in an interpreter program; more the one DCC080 object.	
109	**C_UNKNOWN_CHNL**	The hardware module number is greater than 60.	
110	**C_WRONG_CONNECT**	No connection to the required channels.	
111	**C_WRONG_ATTR**	Wrong server attributes.	
112	**C_SYNTAX_ERROR**	Non-specific error. Recompile and download all project sections.	
113	**C_NO_FILE_OPEN**	An attempt was made to open an unknown table.	
114	**C_OUTOF_NEAR**	Memory allocation error	
115	**C_OUT OF_FAR**	Memory allocation error	
116	**C_INCOMAPTIBLE**	An object with the same name already exists but has a different class.	
117	**C_COMPATIBLE**	An object with the same name and class exists but must be updated.	
224	**LINKING**	The application is currently linking.	
225	**LINKING ERROR**	An error has occurred while linking. An error messaged is generated in the LASAL status window.	
226	**LINKING DONE**	Linking is complete.	
230	**OP BURN**	The operating system is currently being burned into the Flash memory.	
231	**OP BURN FAIL**	An error has occurred while burning the operating system.	
232	**OP INSTALL**	The operating system is currently being installed.	
240	**USV-WAIT**	The power supply was disconnected; the UPS is active. The system is shutdown.	
241	**REBOOT**	The operating system is restarted.	

242	**LSL SAVE**		
243	**LSL LOAD**		
252	**CONTINUE**		
253	**PRERUN**	The application is started.	
254	**PRERESET**	The application is ended.	
255	**CONNECTION BREAK**		

Documentation Changes

Change date	Affected page(s)	Chapter	Note
19.10.2017	5	1.3 Electrical Requirements	Supply voltage
21.11.2017	16	5. Setting C-IPC Parameters	Sentence for graphics resolution removed
15.03.2018	26	6.5 RS485	Chapter added
24.06.2019	6	1.4 Miscellaneous	Variant -T added
04.11.2019		1 Technical Data	Updated to TÜV requirements
20.11.2023	13	3.2 Applicable Connectors	B2CF added