

S-IPC Intel® Atom Dual Core



S-IPC with Heat Sink



S-IPC with Heat Sink and Fan Unit

The S-IPC is a C-DIAS industrial PC with an Intel® Atom Dual Core processor. The Speed-Step function of the Intel® Atom Dual Core processor enables passive cooling with a heat sink. For high ambient temperatures, a fan unit is recommended (image right). A 7-segment display and 6 status LEDs provide information on the actual module status. 2 Compact-Flash cards can be used as program or date memory. An exchangeable drive unit can be equipped with 2 additional IDE devices (hard drive, CD ROM). Among other things, the S-IPC also has an S-DVI interface for a display terminal and a USB 2.0 interface. 2 PCI expansion cards can also be inserted.

Compatibility

The S-IPC is completely compatible with the PC and operates with standard PC BIOS; no Sigmatek-specific BIOS settings are therefore needed. Windows XP is provided as the operating system.

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Technical Data

Performance data

Processor	Intel® Atom D510 (1.66 GHz, Dual Core) / 1 Mbytes L2 Cache
Internal program memory (CompactFlash)	2x CompactFlash Type I or II
Drive unit	1 x 40 Gbytes hard drive 1 x CD-ROM / DVD-Combo drive / 40 Gbytes hard drive
Internal program memory (SRAM)	256 Kbytes (battery powered)
Internal program memory (SDRAM)	1 Gbytes DDR2 SDRAM
Interfaces	2 x Ethernet 10/100 Mbit 1 x RS232 – COM1 1 x RS232 / RS485 – COM2 1 x LPT 2 x PS/2 – keyboard and mouse 1 x DIAS intelligent (connected over 2 pugs) 1 x C-DIAS-Bus 1 x CAN for PLC 1x CAN for a Terminal 1x S-DVI interface for a terminal (TFT display, USB, CAN key-board) 1 x DVI interface for a monitor 1 x VGA – analog RGB 3 x USB V2.0 1 x Optional connection for fan unit (2 fans, monitored) IDE devices: 2 x CompactFlash 1 x hard drive 1 x CD-ROM / DVD-Combo / hard drive Expansion cards: 2 x PCI-Bus (+5 V, half-size)
Data buffer	Lithium battery
Status display	Yes
Status LEDs	Yes
Real-time clock	Yes

Electrical requirements

Supply voltage	Typically +24 V DC +18 V to +30 V DC
Supply voltage current consumption	Typically 750 mA Up to 5.0 A (Depending on the PCI slots and external devices)
Starting current	Maximum 10 A for 100 ms
Available current for CAN (+5 V)	Maximum 1.0 A
Available current for C-DIAS (+5 V)	Maximum 1.5 A
Available current for S-DVI (+24 V)	Maximum 1.5 A
Available current for PCI (+3.3 V)	Maximum 5.0 A
Available current for PCI (+5 V)	Maximum 3.0 A
Available current for PCI (+12 V)	Maximum 1.0 A
Available current for PCI (-12 V)	Maximum 0.5 A
Available current for PCI (+5 V)	Maximum 1.5 A

Miscellaneous

Article connections S-IPC complete devices:	Article number	DDR-Ram Mbytes	HDD Gbytes	CD-Rom / DVD-Combo	Fan / heat sink
S-IPC with fan:	12-400-161	1 Gbytes	40.0	DVD-Combo	Fan
S-IPC with heat sink:	12-400-162	1 Gbytes	40.0	DVD-Combo	Heat sink

Article numbers for replacement parts:	Article number	40.0 Gbytes hard drive	CD-Rom DVD-Combo	Fan +24 V
Fan unit (2 fans):	12-410-011	-	-	2 x (80x80x25)
Drive unit (HDD):	12-410-021	Yes	-	-
Drive unit (HDD + CD):	12-410-031	Yes	CD-Rom	-
Drive unit (HDD + DVD):	12-410-041	Yes	DVD-Combo	-
Module identification on DIAS bus	No			
Hardware Version	1.x			
Standard	UL (E247993)			

CD Rom: CD read
 DVD-Combo: DVD read, CD read and write

Environmental conditions

Storage temperature	-20 – +65 °C	
Operating temperature	S-IPC without using the PCI slots	S-IPC using the PCI slots
Cooling with the fan unit	+5 – +55 °C	+5 – +50 °C
Cooling with a heat sink	+5 – +50 °C	+5 – +45 °C
Humidity	10 - 85 %, non condensing	
EMC stability	According to EN 61000-6-2 (industrial area)	
Shock resistance	EN 60068-2-27	150 m/s ²
Protection Type	EN 60529	IP 20

The CAN bus terminal is initialized by the FPGA and has only limited in use!

The FPGA reads the display configuration over the CAN bus terminal and monitors the keyboard. Several CAN objects of the CAN bus terminal are therefore not available.

Le moniteur de bus CAN est initialisé par le FPGA et son domaine d'utilisation est limité.

Le FPGA lit la configuration d'affichage via le moniteur de bus CAN et gère le clavier. En conséquence plusieurs objets Can du moniteur de bus CAN ne sont pas disponibles.

Postcodes



When the S-IPC is turned on, the BIOS-dependent postcodes are shown in the display. It is important to note these codes in order to simplify troubleshooting if the S-IPC does not boot up.

Lorsque le S-IPC est sous tension, les BIOS power-on self-test codes sont affichés à l'écran. Il est important de noter ces codes afin de rendre le dépannage plus facile si le S-IPC ne démarre pas.

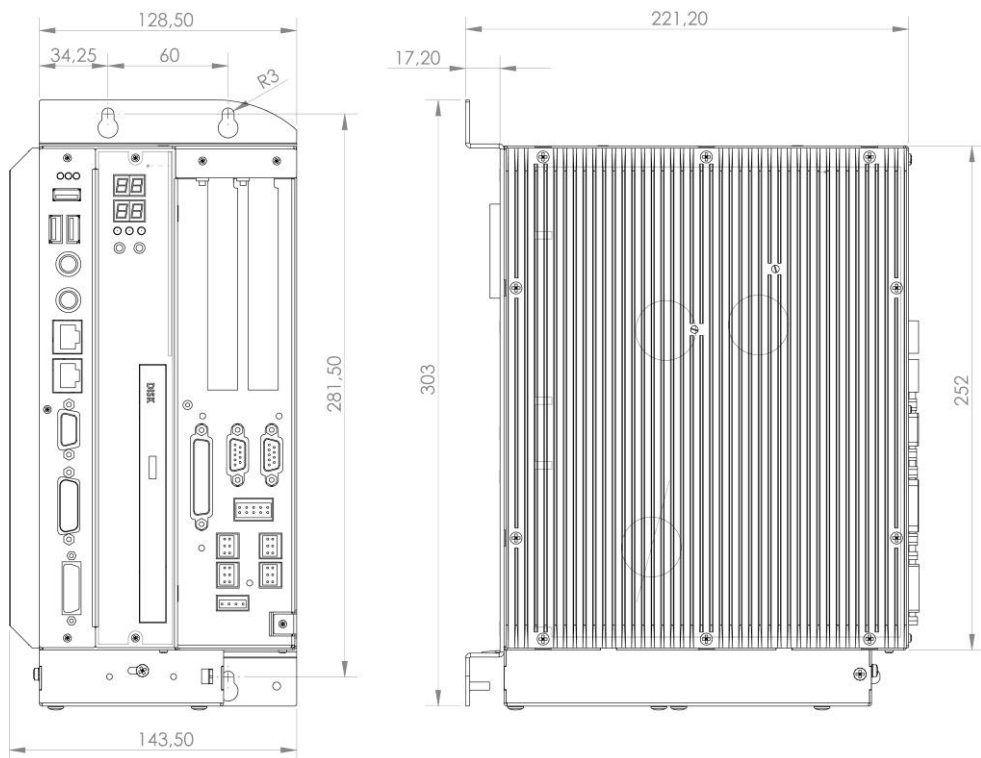
Important Postcodes:

C3: Memory could not be initialized – DDR RAM defective

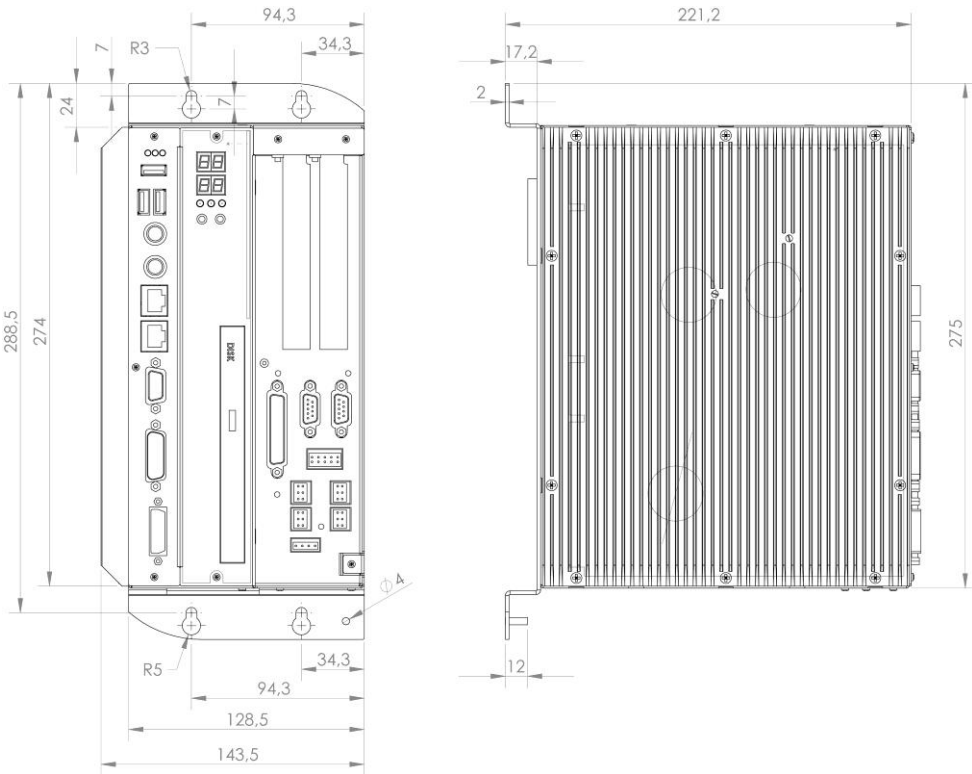
FF: Boot process started

If the reset button is pressed, the first line shows the FPGA identification ("0A") and the second line, the FBGA version (e.g.: "10").

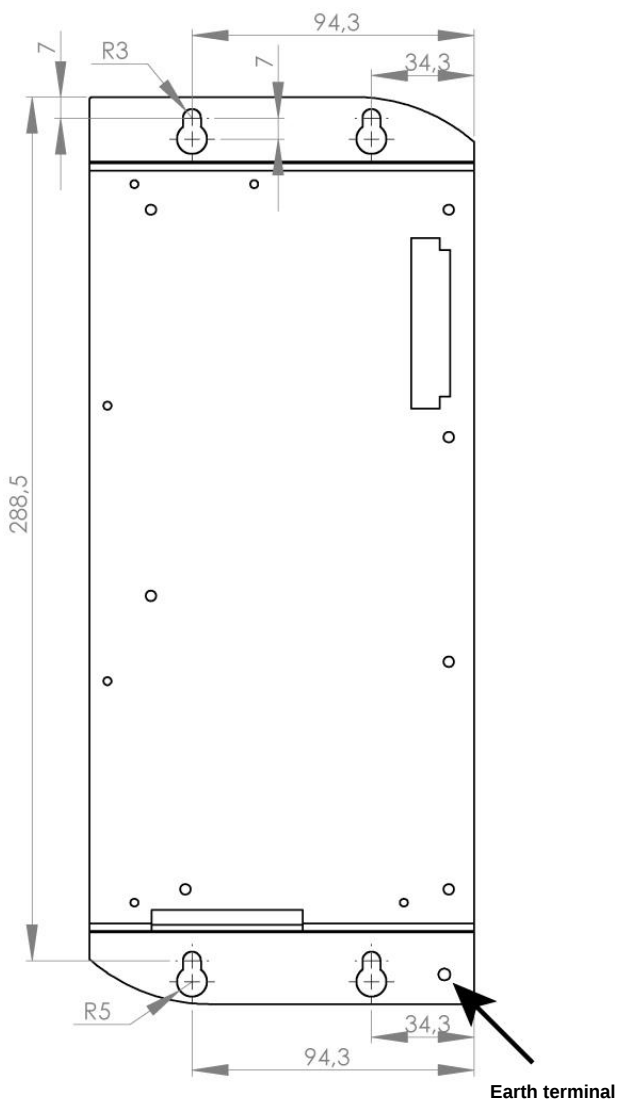
Mechanical Dimensions (with fan and heat sink)



Mechanical Dimensions (with heat sink)

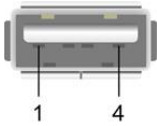


Mechanical Dimensions (mounts)



Front connectors

X1 – 3: USB 1 – 3 (Type A)



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

X4: PS2 mouse



PIN	Function
1	MOUSE DATA
2, 6	Not used
3	GND
4	+5 V
5	MOUSE CLOCK

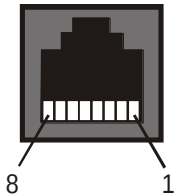
X5: PS2 keyboard



PIN	Function
1	KEYBOARD DATA
2	MOUSE DATA
3	GND
4	+5 V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

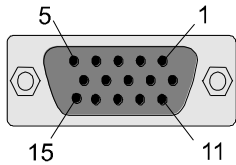
The PS2 keyboard connection can be used for a keyboard and mouse with a "Y cable". The PS2 mouse connector (X4) in this case, cannot be used!

X6, 7: Ethernet 1, 2 (8-pin RJ45)



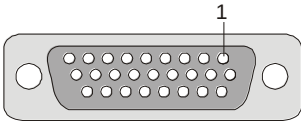
PIN	Function
1	TD+
2	TD–
3	RD+
4	Not used
5	Not used
6	RD–
7	Not used
8	Not used

X8: VGA output (15-pin HD-DSUB)



PIN	Function
1	Red
2	Green
3	Blue
4	Nicht belegt
5	GND
6	Red GND
7	Green GND
8	Blue GND
9	+5 V
10	GND
11	Nicht belegt
12	DDC DAT
13	H-Sync
14	V-Sync
15	DDC CLK

X9: S-DVI (26-pin HD-DSUB)

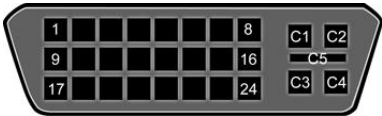


PIN	Function	PIN	Function
1	DVI1+	14	GND
2	DVI1-	15	GND
3	DVI2+	16	GND
4	DVI2-	17	GND
5	DVI3+	18	GND
6	DVI3-	19	+24 V
7	DVIC+	20	+24 V
8	DVIC-	21	USB Ext. In+
9	Reserved	22	USB Ext. In-
10	GND	23	USB Ext. Out+
11	GND	24	USB Ext. Out-
12	GND	25	CAN A
13	GND	26	CAN B

X9 cannot be connected while voltage is applied!
The +24 V supply must be turned off.

X9 ne doit pas être inséré sous tension!
L'alimentation 24 V doit être éteinte.

X10: DVI (24-pin DVI without analog RGB)



PIN	Function	PIN	Function
1	DVI2-	13	DVI13+
2	DVI2+	14	+5 V
3	GND	15	GND
4	DVI4+	16	Hot Plug Detect
5	DVI4+	17	DVI0-
6	DDC-CLOCK	18	DVI0+
7	DDC-DATA	19	GND
8	V-Sync ^{*)}	20	DVI5-
9	DVI1-	21	DVI5+
10	DVI1+	22	GND
11	GND	23	DVI-CLOCK+
12	DVI3-	24	DVI-CLOCK-
C1	Red ^{*)}	C4	H-Sync ^{*)}
C2	Green ^{*)}	C5	GND ^{*)}
C3	Blue ^{*)}		

^{*)} Analog RGB is not wired into the socket (not used)

The following resolutions are supported:
640x480 – 18-bit color depth
800x600 – 18-bit color depth
1024x768 – 18-Bit color depth

X11: Fan unit connection (4-pin Phoenix RM3.81)

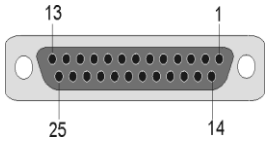


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PIN	Function
1	VCC-FAN
2	Monitor 1
3	Monitor 2
4	GND

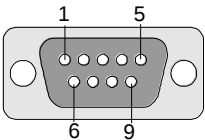
If the fan unit available from Sigmatek (article number: 12-410-011) is not used, a conventional +24 V fan with a maximum current consumption of 250 mA can be connected!

X12: LPT 1 (25-pin DSUB)



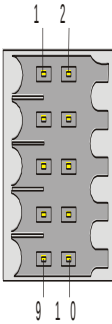
PIN	Function
1	\STB
2	PD0
3	PD1
4	PD2
5	PD3
6	PD4
7	PD5
8	PD6
9	PD7
10	\ACK
11	BUSY
12	PE
13	SLCT
14	\AFD
15	ERR
16	\INIT
17	SLIN
18 – 25	GND

X13, 14: COM 1, COM 2 – RS232 (9-pin DSUB)



PIN	Function
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

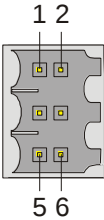
X15: COM 2 – RS485/422 (10-pin Weidmüller plug)



PIN	RS422 *)	RS485
1	RS422 TxD+	RS485 A
2	RS422 TxD-	RS485 B
3	RS422 RxD+	RS485 A
4	RS422 RxD-	RS485 B
5	+5 V	+5 V
6	GND	GND
7	RS422 TxD+	RS485 A
8	RS422 TxD-	RS485 B
9	RS422 RxD+	RS485 A
10	RS422 RxD-	RS485 B

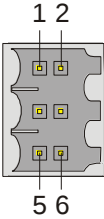
*) Currently not connected

X16: CAN bus PLC (6-pin Weidmüller plug)



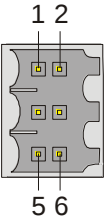
PIN	Function
1	CAN SA = LOW
2	CAN SB = HIGH
3	CAN SA = LOW
4	CAN SB = HIGH
5	GND
6	+5 V (for online adapter)

X17: CAN bus terminal (6-pin Weidmüller plug)



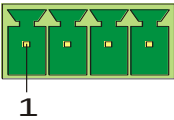
PIN	Function
1	CAN A = LOW
2	CAN B = HIGH
3	CAN A = LOW
4	CAN B = HIGH
5	GND
6	Not used

X18, 19: DIAS bus (6-pin Weidmüller plug)



PIN	Function
1	MBUS+
2	MBUS-
3	SBUS+
4	SBUS-
5	GND
6	Not used

X20: Power supply (4-pin Phoenix RM3.5)



PIN	Function
1	+24 V
2	+24 V
3	GND
4	GND

Applicable connectors

- USB:** Type A
- Ethernet:** 8-pin RJ45
- VGA:** 15-pin HD-DSUB plug
- S-DVI:** 26-pin HD-DSUB plug
- DVI:** 24-pin DVI plug
- Fan:** 4-pin Phoenix FK-MCP 1.5/4-ST-3.81

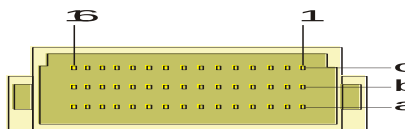
- LPT 1:** 25-pin DSUB plug
- COM 1 / COM 2:** 9-pin DSUB socket
- COM 2 – RS422/485:** 10-pin Weidmüller plug B2L/B2CF 3.5/10
- CAN- / DIAS-Bus:** 6-pin Weidmüller pin B2L/B2CF 3.5/6
- Power supply:** 4-pin Phoenix FK-MCP 1.5/4-ST-3.5

The complete C-DIAS CKL 015 connector set with spring terminals is available from SIG-MATEK under the article number 12-600-015.

S-DVI Cable	0.3 m	Art.Nr.: 05-950-003
	2 m	Art.Nr.: 05-950-020
	3 m	Art.Nr.: 05-950-030
	5 m	Art.Nr.: 05-950-050
	10 m	Art.Nr.: 05-950-100
	15 m	Art.Nr.: 05-950-150

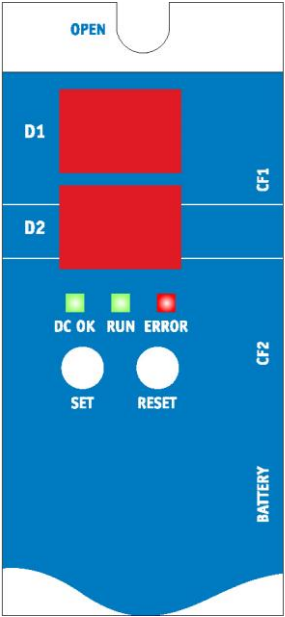
Bottom Connectors

X21: C-DIAS Bus Connector



The S-IPC can be mounted on the left of a CMB.

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 a program error occurs.
Button 1		Set	Set/display Ethernet, CAN address, power on.
Button 2		Reset	Reset CPU hardware



LED 1	Red	ERR	1.00 s on/off: EEPROM error 0.50 s on/off: temperature sensor – over temperature 0.25 s off/on: fan error 0.10 s off/on: battery – over temperature
LED 2	Yellow	HDD	Lights when the hard drive is accessed.
LED 3	Green	On	Lights when the ETX board is turned on.

Sigmathek Components

- 7-segment display for CPU status
- Reset button
- Set button
- DC OK LED
- Error LED
- Run LED
- Timer - 1 μ s precision with Interrupt capability
- EEPROM for configuration and version management
- S-DVI interface including:
 - Keyboard
 - USB
 - Touch
 - Chip card
 - PC speakers
 - 18-Bit TFT signal TMDS coded (3x data, 1x clk), max. resolution 1600x1200

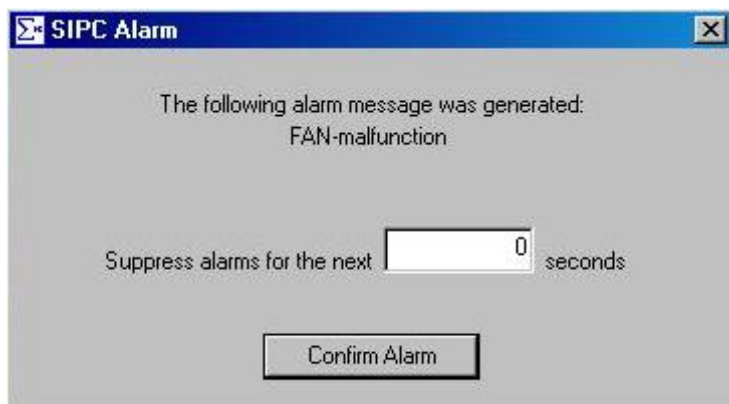
S-IPC Status

- When installing the Sigmatek driver, a "Sigmatek" program group is created that contains the "SipcInfo" program.



- The program and driver version, as well as several hardware parameters are displayed:
 - Restart counter
 - ETX and CPU temperature
 - S-IPC and fan operating hours counter
 - Fan speed (revolutions/second)
 - Fan PWM stage (preset speed in 16 stages)

- With a cooling defect (fan defective, ambient temperature too high), as well as a critical error, an error message is generated by the S-IPC: T



- Cancel error messages:
 - The alarm can be delayed for any amount of time by entering the desired value in the "Suppress alarms for the next [] seconds" field.
- Set alarm parameters:
 - The PWM stage ("Desired Fan Speed") can be set between 0 and 15, and indicates the fan speed from 0% to 100%.
 - Starting from a PWM stage of (default value) 10, the fan speed is analyzed and an alarm message generated when one or both fans malfunction.
 - With the "HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\SIPC\Parameters\FanBlockedDetectionThreshold" registry key the fan speed monitor can be defined:
 - Values < 5 are impractical, since the fan typically starts with PWM stage of 2 .. 3.
 - A value > 15 means that no fan warning is generated, since the highest PWM stage is 15.
 - The default value after the drive installation is 10.
- Activate and deactivate alarms:

With the deactivation of alarms, the application must assume (thermal) monitoring to avoid damage to the module!

Si les alarmes sont désactivées alors l'application doit prendre en charge la surveillance afin d'éviter des dommages (thermique) de l'appareil!

- With the help from the "net stop sipclaunch" command, the alarm messages are deactivated until the next restart ("Start" – "execute" or the select input requirement). The service is thereby ended.
- With „net start sipclaunch“ the service and therewith the alarm messages are reactivated
- With the
"HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Sipclaunch\Start" registry key
the alarm service can be deactivated :
 - A value of 2 (= SERVICE_AUTO_START) means that the service is started while booting and alarm messages are generated.
 - A value of 3 (= SERVICE_DEMAND_START) means that the service is not automatically starting during boot-up and therefore no alarm messages are generated.

Exchanging the CompactFlash Card

To exchange the CompactFlash cards, the 2 mounting screws for the 7-segmatek display / drive unit must be removed.

The cover can then be removed by pulling it straight forward.

Locking
Screws



The master CompactFlash and the slave can now be exchanged.

Next replace the cover and locking screws.

MASTER

SLAVE



A CompactFlash card cannot be exchanged while voltage is applied to the unit!
Because the CompactFlash cards are used as an IDE device, it cannot be exchanged during operation!

Une carte CompactFlash ne peut être échangée tandis que la tension est présente!

Vu que la carte Compact Flash est utilisée comme un module d'IDE, on ne peut pas l'échanger pendant que le système est en marche.

Exchanging the Battery

To exchange the buffer battery, the 2 mounting screws for the 7-segmatek display / drive unit must be removed.

The cover can then be removed by pulling it straight forward.

Locking
Screws



The battery is not removed (lift on the right side) and a new battery inserted.

Next replace the cover and locking screws.

BATTERIE



The battery should only be exchanged when the S-IPC is off.

The battery must be installed with the + POLE forward. The + POLE is visible on the battery when installed, the smaller – POLE is below in the battery socket.

CAUTION:

The battery can only be changed when the IPC is off! After the +24 V supply is removed, the battery is buffered for approximately 5 minutes (via ELKO). The battery must be changed within this period or data loss occurs.

ATTENTION:

La pile ne doit être changée que si le S-IPC est éteint! Après avoir débranché l'alimentation +24 V, la pile est tamponnée pendant 5 minutes (via ELKO). La pile doit être remplacée pendant ce laps de temps sinon les données seront perdues.

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

	MANUFACTURER	TYPE	DATA
Lithium battery	RENATA	CR2032	3 V

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

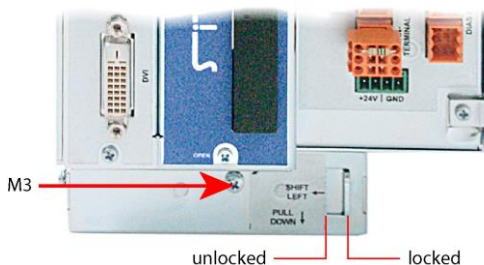
N'utilisez que des piles RENATA CR2032! Avec d'autres piles, un risque d'incendie ou d'explosion existe!

Exchanging the Fan

The fan can be exchanged at any time (also during operation). To exchange the fan, the M3 screw on the fan unit must be removed.

Next, the lock must be moved to the left and the fan unit can be removed downward.

When using the fan unit, first hang the fan unit on the back and the push straight upward to secure it. The lock is on the left. The lock is then moved to the right and the M3 screw reinserted.



Instead of the fan unit, a conventional 80x80x25 mm +24 V fan can also be used. See the connector layout!

Les ventilateurs +24 V 80x80x25 mm disponibles dans le commerce peuvent également être utilisés à la place de l'unité de ventilation. Voir la connectique.

Should one of the two fans fail, the software shows the status (+ status LED). In this case, the S-IPC can continue to operate with only one fan until the defective fan unit is replaced. Under some conditions, the maximum ambient temperature cannot be reached by the time the fan unit is replaced.

Si l'un des deux ventilateurs tombe en panne, le défaut est signalé dans le logiciel ainsi que par une LED. Dans ce cas, le S-IPC peut fonctionner avec un seul ventilateur jusqu'à ce que le ventilateur soit remplacé. Selon les conditions, la température maximale de l'environnement ne peut pas être atteinte avant le ventilateur est échangé.

Mounting PCI Cards



To open the side panel, 3 mounting screws must be removed.

Afterwards, the side panel can be lifted and removed upward.



When remounting the side panel, ensure that the locking mechanism engages correctly.

To install the PCI card, the slot bracket must first be removed (1x M3 screw). The mounting screws are used to secure the PCI cards.

A PCI card can only be installed when no voltage is applied (+24 V supply disconnected)!

Une carte PCI ne peut pas être installée tant que la tension est présente (alimentation +24 V deconnecté)!

Exchanging the Drive unit

The two mounting screws on the 7-segment display/drive unit and the cover must first be removed.



The drive unit can then be removed from the front using the grip.

After inserting the new drive unit, the cover is remounted with the two mounting screws.



A drive unit can only be exchanged when no voltage is applied (+24 V supply disconnected)!

Le lecteur DVD ne peut être modifié que si le S-IPC est éteint (alimentation +24 V déconnecté)!

Cooling

The S-IPCs power loss can reach up to 100 Watts. Most of the generated heat is removed by the built in fan or the heat sink. Also when mounted, heat dissipation must be ensured.

A clearance of **10 cm** around the S-IPC is strongly recommended. This ensures that the waste heat can be dissipated.

At processor temperatures above the allowed limit, the S-IPC will shut down automatically!

Le S-IPC s'arrête automatiquement en présence d'une température trop élevée du processeur!

Mounting Instructions

The S-IPC has 4 mounting holes for mounting on the **back wall of the control cabinet**. This is the preferred mounting position, since the cool air can flow from the bottom (fan unit) to the top of the module and ensure optimal cooling.

A different mounting position is not recommended; the specified ambient temperature thereby cannot be reached.

In addition, a clearance of **10 cm** between the nearest components (control cabinet wall) must be ensured.

The left housing wall (heat sink) can be very hot and can lead to injury, especially at high ambient temperatures!

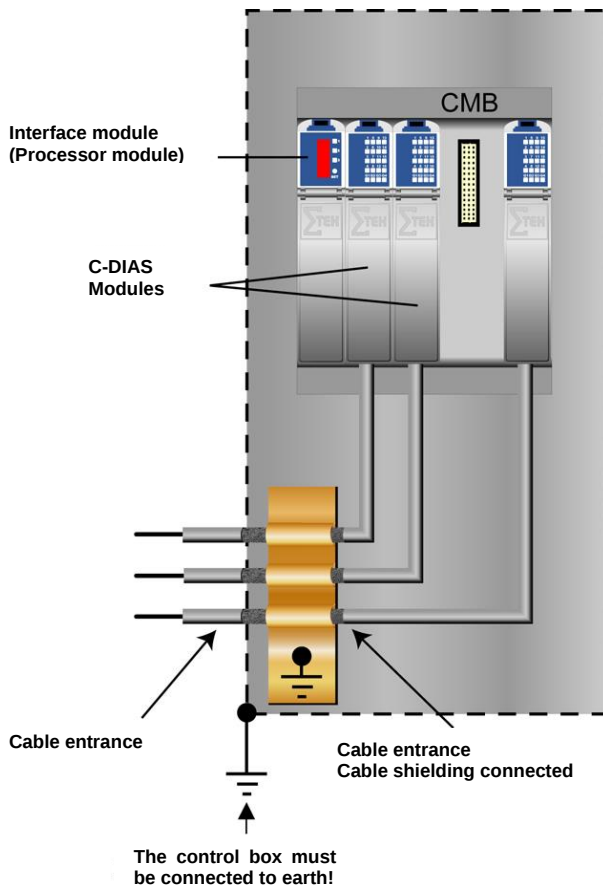
Le panneau de logement à gauche (dissipateur thermique) peut devenir extrêmement chaud et est dangereux, surtout à des températures élevées!

Wiring Guidelines

1. Earth Connection

The S-IPC must be connected to earth through the mounting on control cabinet or over the earth terminal provided. It is important to create a low-ohm earth connection, only then can error-free operation be guaranteed. The earth connection should have the maximum cross section and the largest electrical surface possible.

Any noise signals that reach the S-IPC over external cables must be dissipated over the earth connection. With a large electrical surface, high frequency noise can also be dissipated (skin effect).



2. Shielding

The wiring for the COM1, COM2, RS485, CAN-Bus, DIAS-Bus, VGA, S-DVI and DVI must be shielded. For RS485, CAN bus and DIAS bus, twisted pair wires must also be used. The prefabricated S-DVI cable is available from Sigmatek in various lengths.

The low-ohm shielding is either connected at the entry to the control cabinet or directly before the S-IPC of a large surface (cable grommets, grounding clamps)!

Noise therefore cannot reach the electronics and affect the function.

3. ESD Protection

Typically, the PS/2 devices (keyboard, mouse) are not equipped with shielded cables. The same is true for a USB keyboards and mouse; these devices are disrupted by ESD and in some instances, no longer function.

Before any device is connected to or disconnected from the S-IPC, the potential with ground should be equalized (by touching the control cabinet or earth terminal). Electrostatic loads (through clothing and shoes) can thereby be dissipated.

4. DIAS Bus Termination

In a DIAS bus system, both end modules must be terminated. This is required to avoid data transfer errors that are caused by reflections in the data lines.

If the S-IPC is one to the end modules, the termination can be made with a 100-Ohm resistor between MBUS+ and MBUS as well as SBUS+ und SBUS-. If this is the case, the 2nd DIAS bus connector is for the remains available.



2 x 100-Ohm resistor

5. DIAS bus connection to C-DIAS modules

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

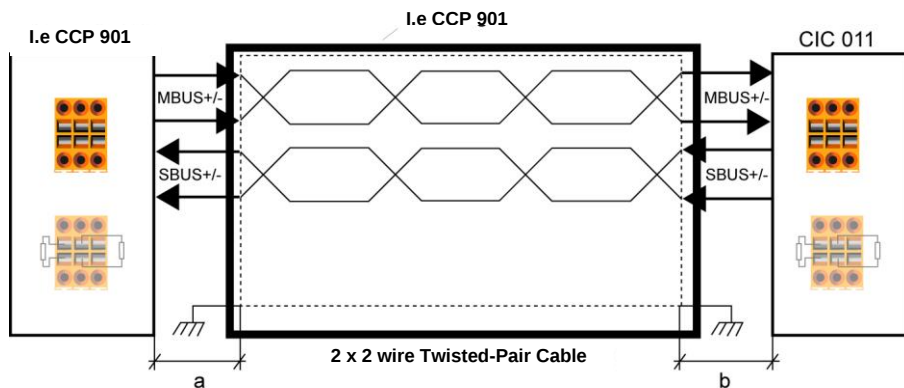
- The cable used must be designed for the data transfer speed:
Data cable (10 Mbits, 2 x 2 wire TWISTED PAIR, shielded)
E.g.: LAPPKABEL / UNITRONIC-BUSLEITUNG FD P LD
- Because of the internal resistance of the module, the cable impedance should be 100 Ohms.
- With twisted-pair cables, ensure that the 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.

- The send and receive modules must have the same GND potential.

The maximum length allowed for twisted-pair cables 20 m (when using the UNITRON-IC bus cable FD P LD / LAPPKABEL)

La longueur maximale totale d'un câble à paire torsadée est de 20 m (lors de l'utilisation UNITRONIC BUS FD P LD / Fa. LAPPKABEL)



**The distance between a and b should be kept as short as possible!
The shielding should be connected to GND over the shortest route possible!**

6. Connecting DIAS Modules

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 to connect the twisted-pair cable to the ribbon cable connector (e.g.: DKO 012 /013).

6.1 Connection over a DIC 121

The DIAS bus connection between the S-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 S-IPC:

- X18: Install bus termination (2x 100 Ω)
- X19: Connect to DIC 121

6.2 Connection over a DKO 011or DKO 013:

If both DIAS bus connections to the S-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:

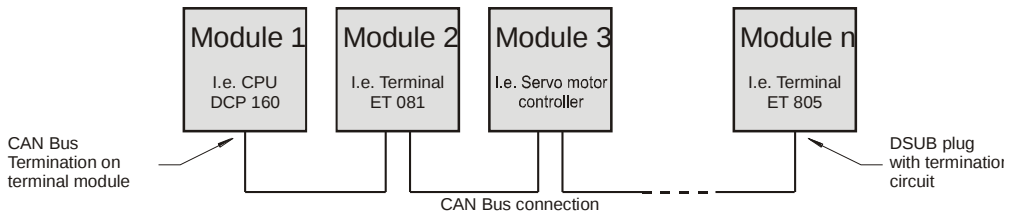
- Left: DPS 001 power supply module
- Right: DKO 011 or DKO 013 adapter module

Wiring the S-IPC:

- X18: DIAS bus to CIC interface modules or bus termination ($2 \times 100 \Omega$)
- X19: Connection to DKO 011 or DKO 013 adapter module

7. 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 S-IPC is an end module, it can be terminated by placing a 150-Ohm resistor between CAN-A (LOW) and CAN-B (HIGH).

The bus termination on the CAN terminal is installed before delivery!

1 x 150-Ohm resistor



8. USB Interface Connections

The S-IPC has a USB interface connection that can be used in LASAL to connect various USB devices (keyboard, mouse, storage media, Hubs ...). Several USB devices, which are fully functional in LASAL, can be connected using a hub.

The following restriction applies to the BIOS setup:

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

La configuration du BIOS est accessible uniquement si le clavier est connecté directement à la prise USB. L'utilisation d'un concentrateur USB peut provoquer des erreurs dans la configuration du BIOS!

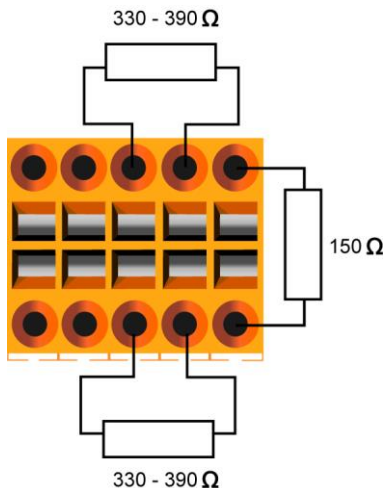
It should be noted that many of the USB devices on the market do not comply with USB specifications; this can lead to device malfunctions. It is also possible that these devices will not be detected at the USB port or function correctly. Therefore, it is recommended that every USB stick be tested before actual use.

Il faut souligner que la plupart des périphériques USB sur le marché ne sont pas conformes aux spécifications USB, ce qui peut entraîner des dysfonctionnements de l'appareil. Il est également possible que ces dispositifs ne seront pas détectés par le port USB ou qu'ils ne fonctionnent pas correctement. Par conséquent, il est recommandé que chaque clé USB soit testée avant l'utilisation sur l'automate.

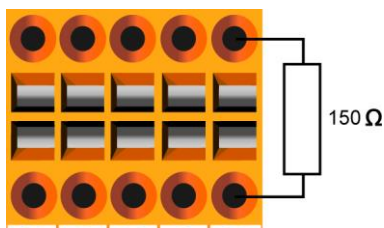
9. RS485 Bus Termination

The RS485 wired as a continuous line and connected to each bus end to avoid reflections. Here, there are 2 termination types:

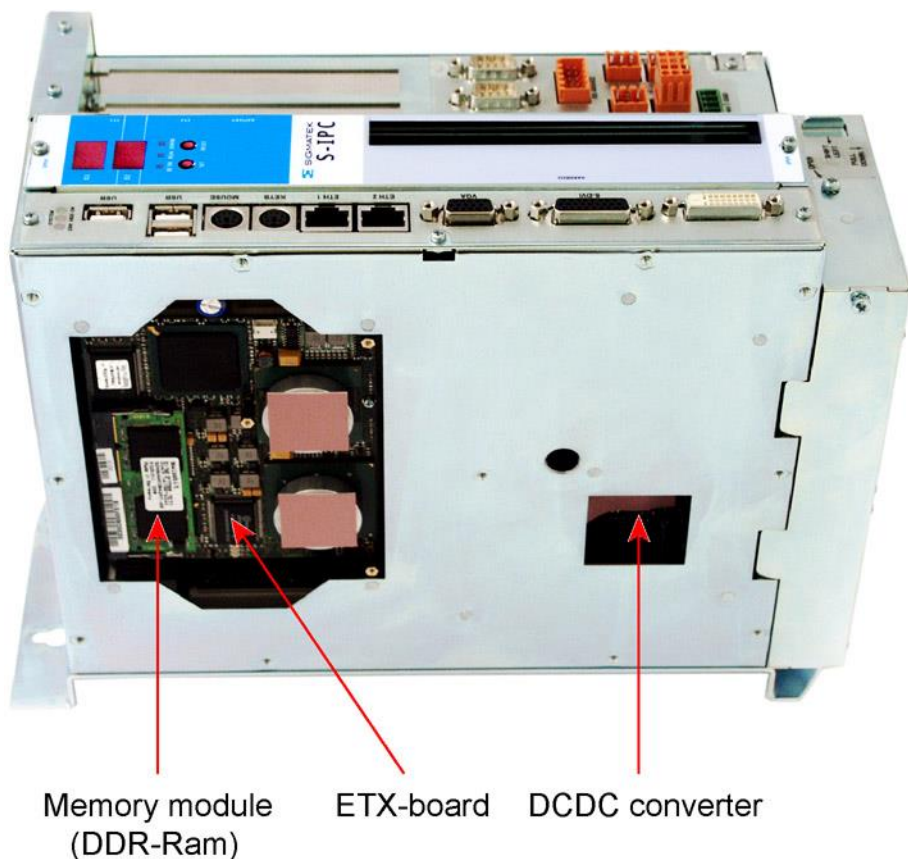
- Bus termination with quiescent level definition:



- Both $330 - 390 \Omega$ resistors ensure a defined bus status when all participants are passive (receive). Wiring:
 - A $\rightarrow$ +5 V
 - B $\rightarrow$ GND
- Bus termination:

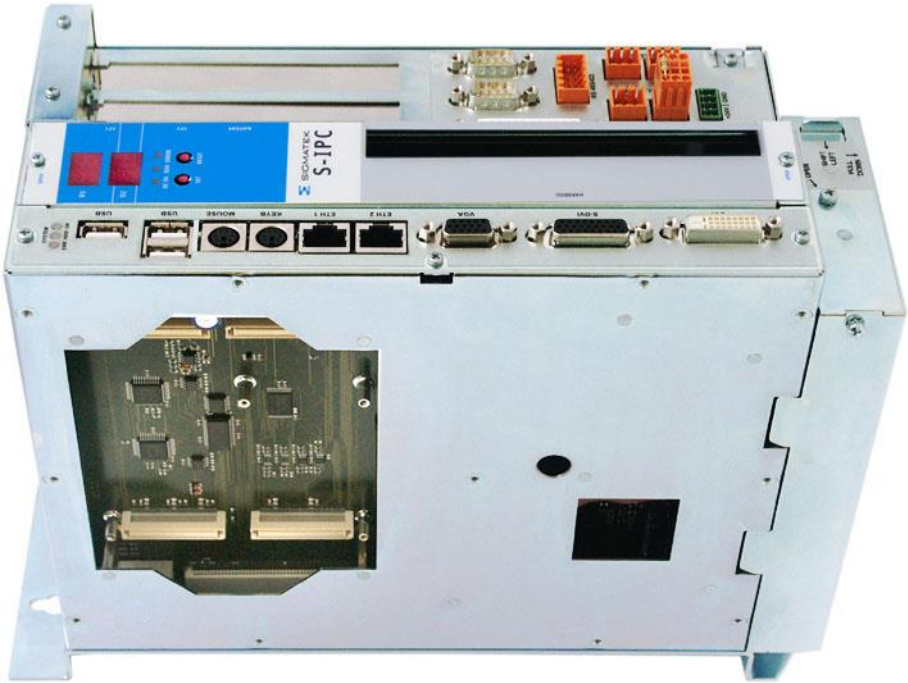


Pictures of the S-IPC



The ETX board can be accessed by removing the heat sink. This may be necessary to exchange the memory (DDR Ram). When assembling the S-IPC, caution must be taken to ensure that no contamination gets between the GAP pads (here: pink) and the heat sink!

On peut accéder à la carte ETX une fois le dissipateur de chaleur retiré. Cela peut être nécessaire dans le but d'échanger la mémoire (RAM DDR). Lors du réassemblage du S-IPC, on doit veiller à ce qu'aucune saleté ne s'est infiltrée entre les tampons gap (ici, rose) et le dissipateur de chaleur!



View without ETX board



S-IPC with heat sink and fan

At extreme ambient temperatures (high ambient temperature, continuous high processor load), a fan unit should be mounted onto an S-IPC with a heat sink to extend the life of the CD Rom/DVD and hard drive!

Dans des conditions environnementales extrêmes (températures élevées, charge élevée du processeur sur une durée), une unité de ventilateur doit être montée sur le S-IPC en plus du dissipateur de chaleur afin d'augmenter la durée de vie du lecteur CD-Rom / DVD et des disques durs.

System Boot Checkpoints

The checkpoints are shown on the 7-segment display before the LASAL CLASS software status and error messages. Since this involves checkpoints, it should be interpreted as errors when the system stops at a checkpoint.

Number	Meaning	Cause/solution
C0	The operating system or application cannot be started	- Check operating system/boot medium - Boot medium not inserted - Boot medium defective - No operating system on the boot medium
16	BIOS CMOS Checksum Error	- Check buffer battery
E0, 20, 28, 2A, 2C, 2E, 38	Error in RAM	- The module detected an error in the RAM during the self-test.