

IPC/COMPACGP-1E

Document Ordercode: DOC/COMPACGP-1EE

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1.1	01.12.2003	R. Newbould	Electrical characteristics corrected.

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1 Introduction

1.1. General Remarks

The content and presentation of this document has been carefully checked. No responsibility is accepted for any errors or omissions in the documentation.

Note that the documentation for the products is constantly revised and improved. The right to change this documentation at any time without notice is therefore reserved.

Syslogic is grateful for any help referring to errors or suggestions for improvements.

The following registered trademarks are used:

IBM-PC, PC/AT, PS/2 trademarks of IBM Corporation

1.2. Contents of this Documentation

This document addresses to system integrators, programmers and instructed installation and maintenance personal working with the IPC/COMPACGP-1E. It provides all information needed to configure, setup and program the IPC/COMPACTx-xE base board. The detailed installation guidelines and further information can be found in the documentation DOC/COMPACT2-1EE.

1.3. Additional Documents

The following documents are *required* for correct installation and operation of the IPC/COMPACTx-xE system:

Order Code	Description	Manufacturer
DOC/IOCOMSW	User documentation for examples and utilities	Syslogic AG

Tab. 1 Related Documents

1.4. Safety Recommendations and Warnings

The products are intended for measurement, control and communications applications in industrial environments. The use of the products in systems in which the life or health of persons is directly dependent (e.g. life support systems, patient monitoring systems, etc.) is not allowed. The use of the products in potentially explosive atmospheres requires additional external protection circuitry which is not provided with the products

In case of uncertainty or of believed errors in the documentation please immediately contact the manufacturer (address see chapter 8). Do not use or install the products if you are in doubt. In any case of misuse of the products, the user is solely liable for the consequences.

The products contain electronic components which will be damaged by electrostatic discharges. The recommendations for handling of sensitive electronic equipment must therefore be strictly followed in all phases of the mounting and installation of the products.

The products are “CE”-certified. The “CE”-conformity, i.e. the compliance to the required standards is only guaranteed if the corresponding mounting, installation, and cabling guidelines are strictly observed (see DOC/COMPACT2-1EE).

The products are operated with electrical power. Before manipulating the products, they must be disconnected from the power source and from the communication signals.

The products require set-up procedures before they can be operated. Before being used in an actual installation, they must be correctly configured. If the products are not or wrongly configured, they may malfunction in the intended application.

The products must be assembled and installed by specially trained people. The strict observation of the assembly and installation guidelines is mandatory.

1.5. Life Cycle Information

1.5.1. Transportation and Storage

During transportation and storage the products must be in their original packing. The original packing contains an antistatic bag and shock-absorbing material. It is recommended, to keep the original packing in case of return of the product to the factory for repair. Note that the packing is recyclable.

1.5.2. Assembly and Installation

Observe the EMI-precautions against static discharge. Carefully read the assembly and installation guidelines in this document before unpacking the products. Make sure that you have all the necessary items ready (including all the small parts).

The installation procedures must be strictly observed. Note that deviations from the installation guidelines may result in degraded operational reliability or in unfavorable EM-radiation or EM-susceptibility.

1.5.3. Operation

The operating environment must guarantee the environmental parameters (temperature, power supply, etc.) specified in the technical specification section of the manuals.

The main functionality of the IPC/COMPACGP-1E is defined by the application programs running on the system. The application programs are not part of the delivery by Syslogic but are defined, developed and tested by the customer or a system-integrator for each specific application. Refer to the respective documentation for more information.

1.5.4. Maintenance and Repair

The IPC/COMPACGP-1E features error- and malfunction-detection circuitry. Diagnostic information gathered is transferred to the applications software where it can be used. In the rare

case of a module hardware-failure or malfunction, the complete module should be exchanged. The faulty module must be returned to the factory for repair. Please use whenever possible the original packing for return of the product (ESD and mechanical protection).

1.5.5. Disposal

At the end of the lifespan the IPC/COMPACGP-1E must be properly disposed. IPC/COMPACGP-1E contains a multitude of elements and must be disposed like computer parts. The system contains a battery which should be properly disposed.

2 Product Description

2.1. General Information

The IPC/COMPACGP-1E base board can be used in the following system:

- IPC/COMPACT_{x-xE}

2.2. Features

The IPC/COMPACT_{x-xE} system provides all necessary support functions to build a standalone network capable industrial control system. Standard desktop PC functions are implemented according to the PC/AT reference platform.

The following is a list of all features implemented on the standard COMPACT base board version IPC/COMPACGP-1E. Besides the power supply circuit the base board provides the connectors COM1, COM2 and Mouse interface.

Power Supply

- non isolated switching regulator
- input range: 9Vdc to 30Vdc
- protected against reverse connection of external power source
- protected against overload with replaceable fuse
- optional: isolated converter from 24Vdc input to 5V logic supply (standard IEC1131-2 24Vdc input voltage range, has a different order code)

PC/104 Bus Interface

- subset of standard PC/104 bus interface, power supply only

Non Isolated Serial Ports

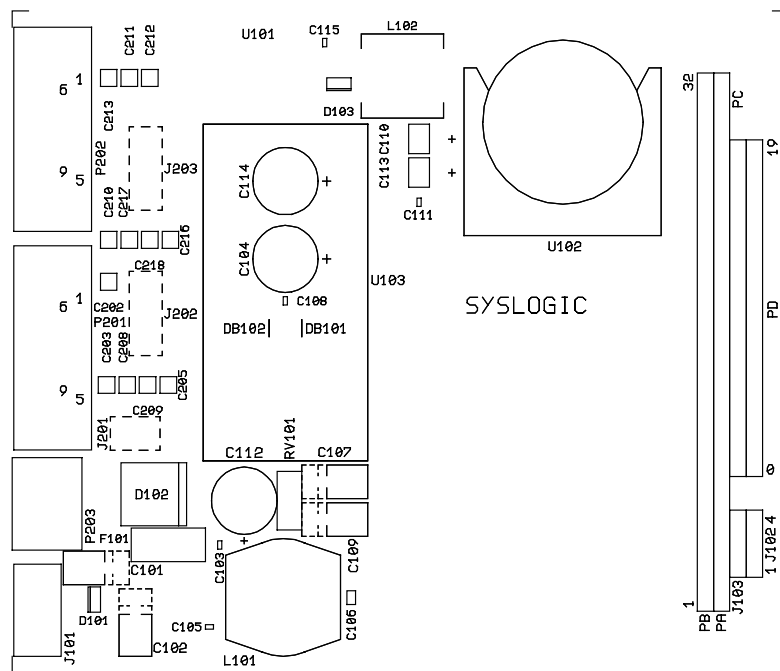
- 2 standard DSUB9 connectors for COM1 and COM2 (interface implemented on the CPU board)

Mouse

- standard PS/2 connector (controller implemented on the CPU board)

3 Hardware Description

3.1. Overview



5071
 S2020A
 IPC/COMPACGP-1E G2620-2
 15-Jul-02 BPL=1

Fig. 1 Board Layout

3.2. Memory and I/O Resources

The IPC/COMPACTx-xE base board does not have any resources in either memory or I/O address range.

3.3. Onboard Function Blocks

3.3.1. Power Supply

The standard version of the base board consists of a non isolated switching regulator which converts the input voltage to the logic power supply. Optional the logic power is converted from an external 24Vdc (nominal voltage) power supply to galvanically isolated +5V with a DC/DC converter. In both cases the external input voltage is rectified to prevent any short circuit situation.

Power Supply Device Connection

The input for the external 24Vdc power supply is provided on male connector J101. The order code for the female part is: **Weidmüller BL 3.5/2F**.

The signal layout is compatible with standard PC power supply cabling.

Pin Number	Signal	Remarks
1	GND	
2	+24V	

Tab. 2 Power Supply Connector J101 (2 pin)

3.3.2. Mouse

Because the Mouse Controller is on the NETIPC these signals are connected via J201 to the base board. The additional wiring for use with keyboard and mouse is provided on the base board. The signals for the mouse are available on a standard PS/2 connector (P203).

Pin Number	Signal	Remarks
1	-	connected with Pin3, KBDATA
2	-	connected with Pin4, KBCLK
3	-	connected with Pin1, KBDATA
4	-	connected with Pin2, KBCLK
5	MDATA	
6	MCLK	

Tab. 3 Mouse Header J203 (2x3 pin)

Pin Number	Signal	Remarks
1	MDATA	
2	not used	
3	GND	not connected with GND on the base board
4	VCC	not connected with VCC on the base board
5	MCLK	
6	not used	
7	Shield	
8	Shield	
9	Shield	

Tab. 4 PS/2 Mouse Connector P203 (MiniDIN)

3.3.3. Serial Ports

The Serial Port A of the UART (COM1, 0x3F8; IRQ4) is available on the standard PC/AT DSUB9 male connector P201.

The Serial Port B of the UART (COM2, 0x2F8, IRQ3) is available on the standard PC/AT DSUB9 male connector P202.

Pin Number	Signal	Remarks
1	DCD*	
2	RXD	
3	TXD	
4	DTR*	
5	GND	
6	DSR*	
7	RTS*	
8	CTS*	
9	RI*	

Tab. 5 Serial Port A and B Connectors P201, P202 (DSUB9)

Pin Number	Signal	Pin Number	Signal
1	DCD*	2	DSR*
3	RXD	4	RTS*
5	TXD	6	CTS*
7	DTR*	8	RI*
9	GND	10	+5V (not fused)

Tab. 6 Serial Port COM1 and COM2 internal Headers J202, J203 (2x5 pin)

4 Programming Information

4.1. Overview

The base board of the IPC/COMPACTx-xE system does not contain any resources in either memory or I/O address range. So no special programming or configuration has to be done. For detailed information on the CPU programming refer to the IPC CPU board's user documentation, firmware documentation and other related documents as listed in paragraph 1.3.

5 Technical Data

5.1. General Electrical Data

Important Note

Do not operate the IPC/COMPACTx-xE base board outside of the recommended operating conditions. Otherwise lifetime and performance will degrade.

Operating the board outside of the absolute maximum ratings may damage the hardware.

Absolute Maximum Ratings (over free-air temperature range)

Parameter	Symbol	min	nom	max	Unit
external power supply voltage	Vdd	-0.5		36	Vdc
internal power supply voltage	Vcc	-0.5		5.5	Vdc
isolation external power supply to logic (AC, 60s, 500m a.s.l., Ta=25°C)		1000			Vrms
(DC, 1s, 500m a.s.l., Ta=25°C)		1500			Vdc
➔ option with DC/DC Converter					
isolation external power supply to chassis (AC, 60s, 500m a.s.l., Ta=25°C)		500			Vrms
isolation logic to chassis (AC, 60s, 500m a.s.l., Ta=25°C)		1000			Vrms
creepage distance external power supply to logic		2.5			mm
creepage distance external power supply to chassis		1.0			mm
creepage distance logic to chassis and PCB boarder		1.5			mm
storage temperature range	Tst	-40		90	°C
operation temperature range	Top	0		70	°C

Tab. 7 General Absolute Maximum Ratings

Recommended Operating Conditions

Parameter	Symbol	min	nom	max	
external logic supply voltage	Vdd	9		30	Vdc
external logic supply voltage (with DC/DC)	Vdd	19.2	24	30	Vdc
internal logic supply voltage	Vcc	4.75	5.00	5.25	Vdc
operating free-air temperature range (in case)	Ta	0		55	°C

Tab. 8 General Recommended Operating Conditions

Electrical Characteristics

(over recommended operating range, unless otherwise noted)

Parameter	Symbol	min	typ	max	Unit
external supply current (Vdd=24V, no additional modules)	Idd		115	730	mA
external supply current (Vdd=24V, CPU)	Idd		434	730	mA
power dissipation (24V, no additional modules)	Pmax		2.8	17.5	W
power dissipation (24V, CPU)	Pmax		10.4	17.5	W

Tab. 9 General Electrical Characteristics

5.2. Mechanical Data

Mechanical data is dependent on the enclosure used for the IPC/COMPACTx-xE system. Please refer to the DOC/COMPACT2-1EE documentation for details.

6 Firmware

6.1. Software Structure

The x86 CPU board based IPC system is based on the following software structure:

BIOS (Basic Input/Output System)

- Power On Self Test (POST)
- Initialization of standard peripheral devices
- Boot procedure for the Operating System

Note : Refer to the BIOS documentation for detailed information

OS (Operating System)

- Initialization of additional peripheral devices
- Start procedure for the Application Programs

Note : Refer to the OS documentation for detailed information

Application Programs

- Initialization of COMPACT system, communications and external devices
- Start procedure for the Control Tasks

Note : Refer to the Application Programs documentation for detailed information

6.2. Firmware Functions

The IPC/COMPACTx-xE base board does not contain any firmware. Some standard PC/AT peripheral devices (e.g. Serial and Parallel Ports) are directly supported by most BIOS and Operating Systems. Some peripheral devices (e.g. NE2000-Ethernet) are directly supported by standard communication software (e.g. TCP/IP stacks, TCP packet drivers) others need special programming according to the freely available sample software CUB/IOCOMSW-1A (e.g. CAN, Digital I/O). Please refer to the appropriate documentation for detailed information.

6.3. Application Programming Interface (API)

The IPC/COMPACTx-xE base board does not contain any special API. Refer to the BIOS and Operating System documentation for API specifications.

7 Product Revision History

7.1. Hardware

This paragraph lists the different hardware revisions of the IPC/COMPACTx-xE base boards delivered beginning with the first production lot. Note that prototyping boards are not included and must be returned to factory for upgrade or replacement. All information listed in this document relies on definitive state hardware. Therefore this information may be incompatible with the prototyping board hardware.

Important Note

This document always covers the newest product revision listed in Tab. 10.
Please contact the manufacturers technical support for upgrade options.

Board Identification (see product label)	Product Revision	Revision ID Register	Remarks
IPC/COMPACGP-1E #1	1	-	Original Release
IPC/COMPACGP-1E #2	2	-	Corrections, new PCB

Tab. 10 Hardware Revision State

7.2. Firmware

The IPC/COMPACTx-xE base board does not contain any firmware. Please refer to the appropriate firmware documentation of the IPC/NETIPC-xX for detailed information.

7.3. Software Products

The following software products are:

Order Code	Description	Manufacturer
CUB/IOCOMSW-1A	Examples & utilities (BBCMON)	Syslogic AG

Tab. 11 Software Products

8 Manufacturer Information

8.1. Contact

Our distributors and system integrators will gladly give you any information about our products and their use. If you want to contact the manufacturer directly, please send a fax or email message containing a short description of your application and your request to the following address or use one of the information or technical support request forms on our website:

Syslogic Datentechnik AG
Bruggerstr. 69
CH-5400 Baden / Switzerland

Email: info@syslogic.ch
www: <http://www.syslogic.ch>
Fax: +41 56 200 90 50

Technical support:
support@syslogic.ch

8.2. Warranty

Our products are covered by a world-wide manufacturers warranty. The warranty period starts at the delivery time from our official distributor to the customer. The duration of the warranty period is specified in the respective product catalogs and the offers. All products carry a date code and a job number for identification. The manufacturing data and deliveries are registered in a high level Quality Management System.

The warranty covers material and manufacturing defects. All products must be returned via the official distributor to the factory for repair or replacement. The warranty expires immediately if the products are damaged of operation outside of the specified recommended operating conditions. The warranty also expires if the date code or job number listed on the product is altered or rendered unintelligible. The warranty does not include damage due to errors in firmware or software delivered with the products.