saia-burgess

Smart solutions for comfort and safety

PLC based controllers: PCD1

Modular in function, compact in form

Powerful functions – already integrated in base unit

■ **Up to 64/2048 inputs/outputs**
Modular structure with 4 sockets for digital, analogue, counting, measuring and/or motion control modules
– up to 64 central inputs/outputs
– up to 2048 local inputs/outputs (e.g. PROFIBUS DP)

■ **Up to 140 KBytes user memory** for programs, text and data blocks.

■ **Up to 2 serial data ports** can be fitted with a choice of RS232, RS422, RS485 or TTY/current loop 20mA.

■ **Field bus connections** can be fitted with a choice of PROFIBUS DP as master or slave, LONWORKS® or Ethernet-TCP/IP.

■ **Standard inputs:** Fast counters and interrupt inputs directly on CPU of controller.

High performance operating system and efficient programming tools

■ **Efficient programming with PG5** due to its many programming languages, such as IL, FUPLA, GRAFTEC etc. and its diagnostic and other add-on tools. An efficient instruction set, comprehensive FBox libraries and a structure that complies with IEC1131-3 simplify the editing of transparent programs.

■ **Portability of user programs** due to harmonized system resources and the integral SAIA®S-Bus, user programs are transferable across the entire PCD family (PCD1 up to PCD6) and capable of running.

■ **Short reaction times** due to direct accessing of I/O signals, without the passing through a process map (image).

■ **Flexible network integration** due to through communications and programming via Ethernet-TCP/IP to the connected field bus stations (PROFIBUS DP/FMS or LONWORKS®).

Overview of base unit features

Differentiation of base units

	PCD1.M110	PCD1.M120	PCD1.M130
Number of inputs/outputs or I/O module sockets	64 [1] 4	64 [1] 4	64 [1] 4
Processing time [4] bit command word command	5 µs 20 µs	5 µs 20 µs	5 µs 20 µs
Serial data ports PGU, socket A	2 RS 232, RS 485 built-in	1–2 RS 232, RS 422, RS 485, TTY/ current loop 20 mA	1–2 RS 232, RS 422, RS 485, TTY/ current loop 20 mA
Network connections	SAIA®S-Bus (built-in)	SAIA®S-Bus PROFIBUS DP LONWORKS®	SAIA®S-Bus PROFIBUS DP LONWORKS® Ethernet-TCP/IP [3]
Socket B for network and/or small terminal	(no [4])	yes	yes
User memory RAM standard equipment Expansion with RAM, EPROM or Flash-EPROM	17 KBytes up to 140 KBytes	17 KBytes up to 140 KBytes	17 KBytes up to 140 KBytes
Date-time	no	yes	yes
Data protection	30 days with super cap	7 days with super cap	1–3 years [5] with lithium battery
Interrupt inputs or fast counter inputs	no —	2 1 kHz	2 1 kHz

[1] When using digital I/O modules PCD2.E16.. or ..A46.. with 16 I/Os each.
[2] Processing time is dependent on the load placed on communications ports.
[3] Ethernet-TCP/IP as configured system with type no. PCD1.M130F650.

[4] Small terminal PCD2.D162 possible.
[5] Depends on ambient temperature.

General technical data

|	
Supply voltage	24 VDC ±20% smoothed or 19 VAC ±15% full-wave rectified
Power consumption	10 W for 32 I/Os
Load capacity 5 V bus	max. 750 mA
Noise emission Noise immunity	CE mark according to EN 50 081-1 CE mark according to EN 50 082-2
Ambient temperature	Operation 0…+55 °C or 0…+40 °C (depending on mounting position) Storage –20…+85 °C
Atmospheric humidity	95% r. H. without dew formation (DIN 40 040, class F)
Mech. strength	according to EN/IEC 61 131-2
Standards/ approvals	EN/IEC 61 131-2, VDE 0160, Germanischer Lloyd, Lloyd's Register of Shipping, Det Norske Veritas, Polski Rejestr Statków, UL-USA, American Bureau of Shipping, UL-CDN

Supply

A low-cost transformer of approx. 30 VA with bridge rectifier will suffice to drive the PCD1 and a certain number of inputs. The following monitoring circuits are integral to the PCD1:

– Monitoring (with reset circuit) of 24 VDC input voltage and of internal +5 VDC voltage.

– Continuous monitoring of battery voltage.

– The PCD1 has an integral watch-dog monitoring circuit in the system program. When the watch-dog is activated, processing of the user program will be monitored periodically and a coldstart executed if an error is detected. If the required security measures are to be triggered via an electrically isolated relay contact, as for the PCD2, PCD4 and PCD6, the external watch-dog relay should be used with a time domain of 0.05…1 s (order code: KOP 128 J7 BA VP N00).

The adaptive controller platform

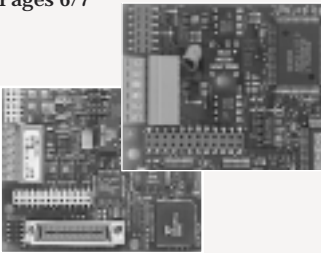**Digital and analogue input/ output modules** Pages 10/11
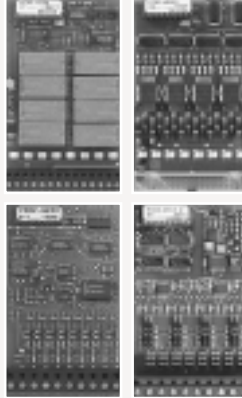
Field bus connections
Socket B

PROFIBUS DP: For this network two modules are available as master or slave.

LONWORKS®: These modules form the platform for vendor-independent communications.

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SAIA®S-Bus (RS 485)

The efficient protocol for this master-slave network is supported by every PCD both as master and as slave. Economical design across a serial RS 485 data port, without additional module.
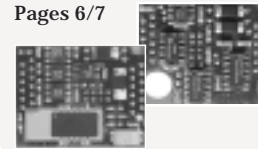
Pages 6/7

Serial data port
Socket A

1 serial data port as RS 422/RS 485, RS 485 electrically isolated, RS 232 for modem or TTY/current loop 20 mA
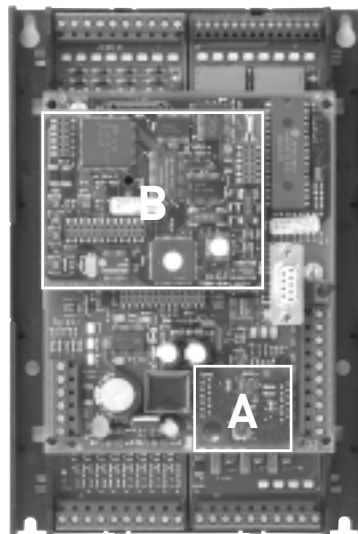
Pages 6/7

Ethernet-TCP/IP

Socket B (only PCD1.M130)

Intelligent co-processor module with fast dual-port RAM interface to the CPU, Ethernet 10 Base-T/ 100 Base-TX. SAIA®S-Bus with UDP/IP for PG5⇔PCD communication and PCD®PCD multi-master communication. Transmission and receipt of TCP and UDP data packages for communication with any choice of system.
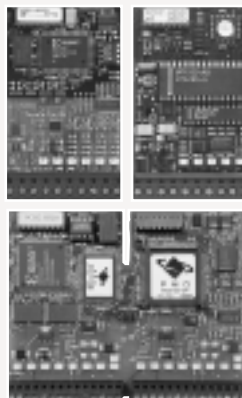
Page 6

User memory

17 KBytes RAM and up to 128 KBytes as add-on RAM, EPROM or Flash-EPROM chip for increasing the memory capacity

Page 5

Counting, measuring, motion control modules Pages 8/9

Digital or analogue modem module

Can be inserted on I/O module sockets

Page 6

Small terminal for direct mounting Socket B

also with additional connection for LONWORKS® or PROFIBUS DP.

Page 11

System overview: Hardware
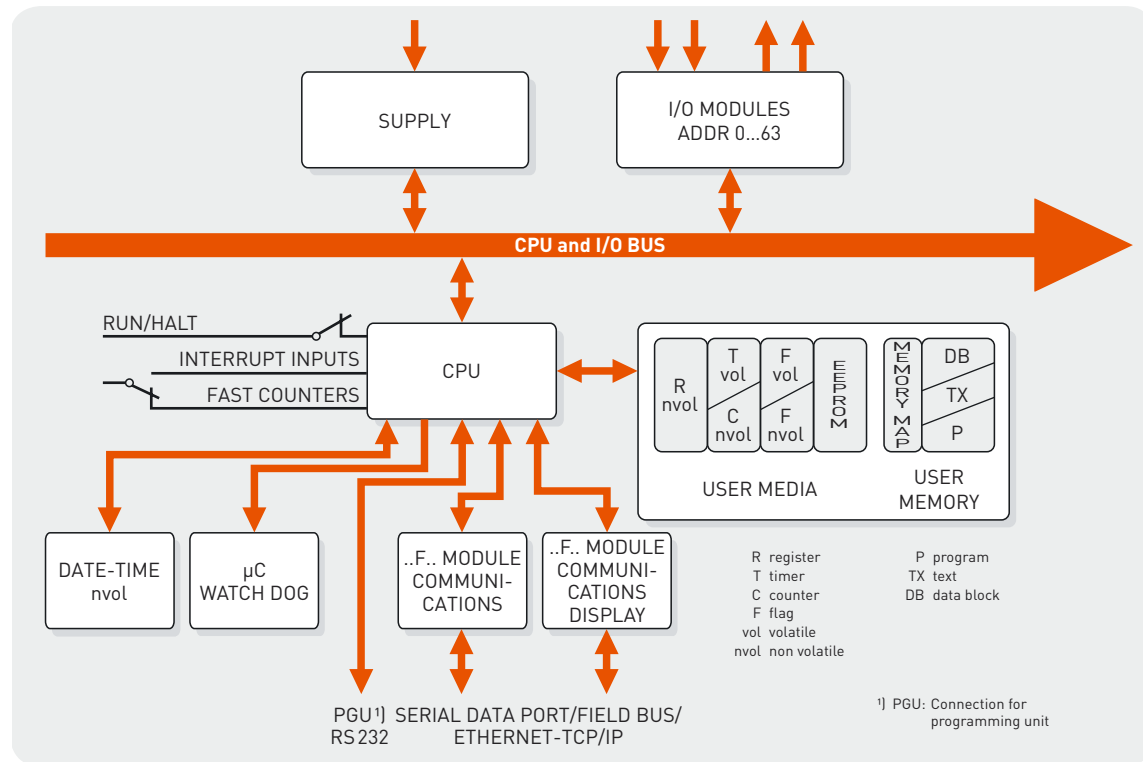
Diverse system resources

Block diagram of resources, using PCD1.M130 as example

Identical system resources for the entire PCD family

Registers	4096 × 32 bit, non-volatile
Computational ranges	Integers: –2 147 483 648… +2 147 483 647 ($-2^{31}…+2^{31}-1$) Floating-point numbers: $±9.22337 × 10^{18}…±5.42101 × 10^{-20}$ Formats: decimal, binary, BCD, hexadecimal or floating point
Index registers	17 × 13 bit (1 each per COB and XOB)
Timers/counters	1600 volatile timers or non-volatile counters, division programmable
	Counting range: 31 bit, unsigned (0…2 147 483 647)
	Timing range: 31 bit, unsigned (0…2 147 483 647 timing signals, selectable from 10 ms up to 10 s)
Flags	8192 × 1 bit, volatile or non-volatile, division programmable
Date-time	Time values: s/min/h, week/day of week, month/day of month, year Accuracy: better than 15 s/month Power reserve: 1 to 3 years

4

Operating system and user memory

Structure of program, operating system and hardware
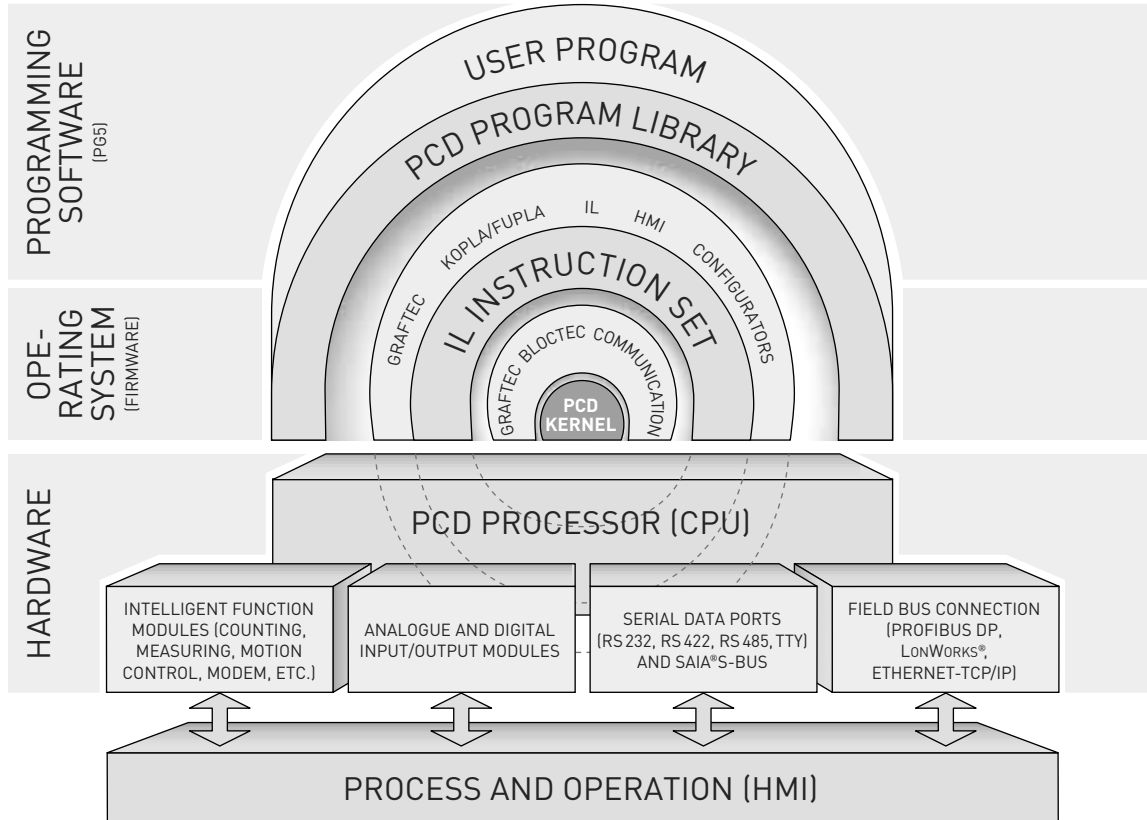
Excellent customer benefit arising from ideally matched components and subsystems, due to full in-house development of operating systems, hardware, firmware and programming software. The following documentation provides detailed information: for PG5 programming tool see 26/362; for operating system see 26/354.

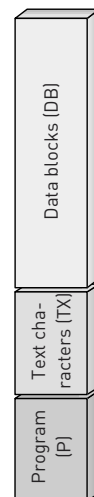## Expandable and flexible user memory

PCD1.M110/..M120/
..M130

Each PCD1 has a standard battery-backed RAM user memory, which can be partitioned as required into sections for programs, texts and data blocks. Add-on RAM, EPROM or Flash EPROM modules can be used in the expansion socket, thereby increasing memory capacity.

Total available user memory can practically be divided at will into sectors for program, text and data blocks. This enables the requirements of any particular application to be met in the best possible way. With the instructions available, data can be transferred under the other user media, such as flags, registers, timers and counters. The following values are valid:

– 1 register content (32 bit) occupies 4 bytes in the data block range and 8 bytes in the text range

– 1 text character occupies 1 byte

– 1 program line occupies 4 bytes

5

Operating system and user memory

Communications possibilities with PCD1

PCD1.M120/..M130

Socket B for PROFIBUS DP or
LONWORKS® or Ethernet-TCP/IP
connection modules, small terminal

B

A

Programming unit (PGU) or
RS 232 serial data port

Socket A for serial data port

or telecommunication/SMS
via modem module at I/O socket
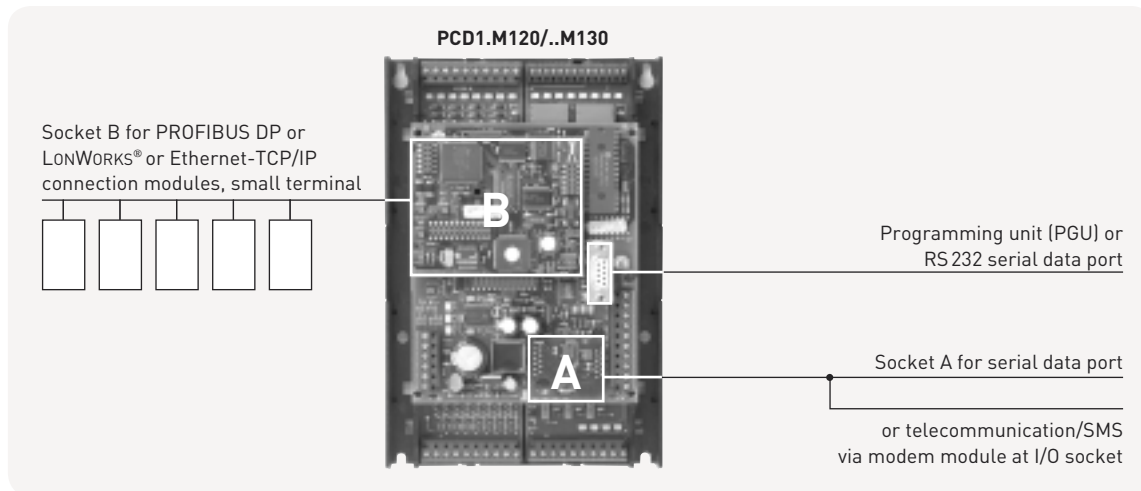
Serial data ports

The PCD supports a large number of protocols for connecting
very diverse peripheral devices, such as printers, weighing
machines, barcode readers, terminals or other controllers.

Technical data

Baud rate	up to 38.4 kBit/s (TTY/current loop 20 mA up to 9600 Bit/s)
Protocols	– MC mode for single character
	– MD mode for full-duplex exchange of data
	– S-Bus mode for half-duplex, software library available
	– user definable ASCII driver

Field bus connections

SAIA®S-Bus

SAIA®S-Bus, with its safe and easy protocol, is already avail-
able in the standard equipment (without additional modules)
of all PCDs as master or slave. For details see Technical
Information 26/370.

Technical data

Master connection	38.4 kBit/s (high net data rates due to low protocol overhead), up to 4 masters via gateway function
Slave connection	up to 254 slaves in segments of 32 stations each

PROFIBUS DP

For the field level in industrial automation, PROFIBUS DP
as standardized, open network protocols for data transfer.
See documentation 26/951 for details.

Technical data PROFIBUS DP

Master connection	12 MBit/s, up to 4 masters
Slave connection	up to 124 slaves in segments of 32 stations each

LONWORKS®

SAIA®PCD systems as LON host nodes extend the possibilities
in LONWORKS® networks by up to 4096 SNVTs and form the
platform for vendor-independent communications.

Technical data

Number of nodes	up to 32000 per domain
Distances	up to 2700 m
Network variables	4095 SNVT according to LONMARK®

Network connections

Ethernet-TCP/IP

The intelligent co-processor module provides the PCD1.M130
with access to the Ethernet. For details see Technical In-
formation 26/356.

Technical data

Connection	10 Base-T/100 Base TX (RJ 45)
Speed	10/100 MBit/s (autosensing)
Protocols and services	TCP/IP or UDP/IP SAIA®S-Bus with UDP/IP for PG5⇔PCD communication, PCD⇔PCD multimaster communication and SCADA⇔PCD communication

Telecommunication via modem

Digital and analogue modem modules, combined with the
appropriate modem software library, enable telecommu-
nication with the PCD. Great distances can therefore be
overcome quickly and easily, and costs can be saved. For
details see Technical Information 26/335.

■ Integral modem in base unit (can be inserted on special
I/O module sockets) saves expenditure on external instal-
lation.
■ SMS messages can be transmitted directly from the PCD.
■ Data exchange across great distances via modem.

Other connections

Depending on the application, the following hardware and/
or software solutions are available: EIB, MP-Bus for BELIMO,
M-Bus, Modbus RTU and ASCII, Siemens 3964R, Cerberus,
GENIbus for Grundfos, STX-Bus for NeoVac, TwiLine, JCI-
N2-Bus, BACnet.

Communications possibilities

Overview of communications modules

Serial data ports at socket A

PCD7.F110: RS 422 with RTS/CTS or RS 485 electrically connected, with line termination resistors capable of activation

PCD7.F120: RS 232 with RTS/CTS, DTR/DSR, DCD, suitable for modem connection

PCD7.F130: TTY/current loop 20 mA (active or passive)

PCD7.F150: RS 485 electrically isolated, with line termination resistors capable of activation

PROFIBUS DP or LONWORKS® connection modules at socket B

PCD7.F750: for connection of PROFIBUS DP as master

PCD7.F770: for connection of PROFIBUS DP as slave

PCD7.F800: for connection to the LON network

Without add-on module (PGU connector): RS 232 with RTS/CTS

| Base unit and sockets for communications modules		Plug-on communications modules								
	Socket	PCD7.F110	PCD7.F120 [1]	PCD7.F130	PCD7.F150	PCD7.F750	PCD7.F770	PCD7.F800	PCD7.F650
PCD1.M110 → Port 0 (PGU) RS 232, → Port 1, RS 485 (built-in)	–	–	–	–	–	–	–	–	–
PCD1.M120/..M130 → Port 0 (PGU), RS 232, → Port 1	A	■	■	■	■	–	–	–	–
	B	–	–	–	–	■	■	■	■ [2]

[1] Suitable for modem connection due to provision of 6 control lines.
[2] Only with PCD1.M130 at socket B with special housing cover 4'104'7409'0, or as configured system with type no. PCD1.M130F650.

Ethernet-TCP/IP connection module at socket B (..M130 only)

PCD7.F650: intelligent interface module for connection to Ethernet-TCP/IP

Pin Configuration
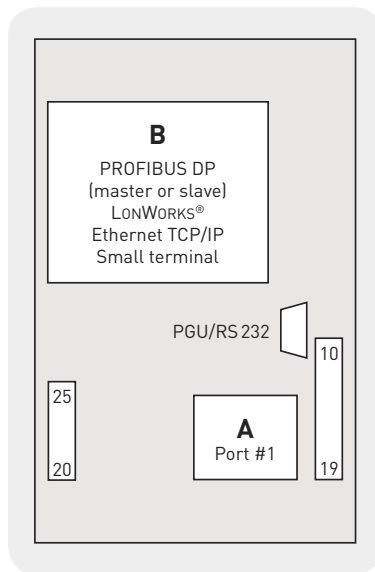
Serial data ports, socket A Port #1					
Terminal 10...19	RS 485 [1] PCD7.F110	RS 422 PCD7.F110	RS 232 PCD7.F120	TTY/20 mA PCD7.F130	RS 485 galv. PCD7.F150
10	PGND	PGND	PGND	–	–
11	RX – TX	TX	TXD	TS	RX – TX
12	/RX – /TX	/TX	RXD	RS	/RX – /TX
13	–	RX	RTS	TA	–
14	–	/RX	CTS	RA	–
15	–	PGND	PGND	–	–
16	–	RTS	DTR	TC	–
17	–	/RTS	DSR	RC	–
18	–	CTS	RSV	TG	SGND
19	–	/CTS	DCD	RG	–

[1] Also valid for the built-in RS 485 interface of PCD1.M110

B
PROFIBUS DP (master or slave)
LONWORKS®
Ethernet TCP/IP
Small terminal

PGU/RS 232

25
20

A
Port #1

10
19

Supply, interrupt/counter	
Terminal 20...25	
20	+24 V
21	+24 V
22	PGND
23	PGND
24	INB2
25	INB1

PGU/RS 232 Port #0	
PGU RS 232	
1	PGND
2	RXD
3	TXD
4	–
5	PGND
6	DSR
7	RTS
8	CTS
9	+5 V

Field bus connections for PROFIBUS DP and LONWORKS® Connection of socket B can be achieved via screw terminal blocks. Details should be obtained from the relevant documentation.

Ethernet-TCP/IP on socket B Connection can be achieved via RJ 45 plug of category 5.

Pin Configuration

Counting, measuring and motion control

Overview of possibilities for axis control

PCD1.M120/..M130

Local positioning action controlled via PROFIBUS DP

Local positioning action controlled via serial port RS 232, RS 422 or RS 485

Positioning action via three-phase AC motors with frequency inverter

Positioning action via stepper motors with motion control module

Positioning action via servomotors (DC/BL/AC) with motion control module
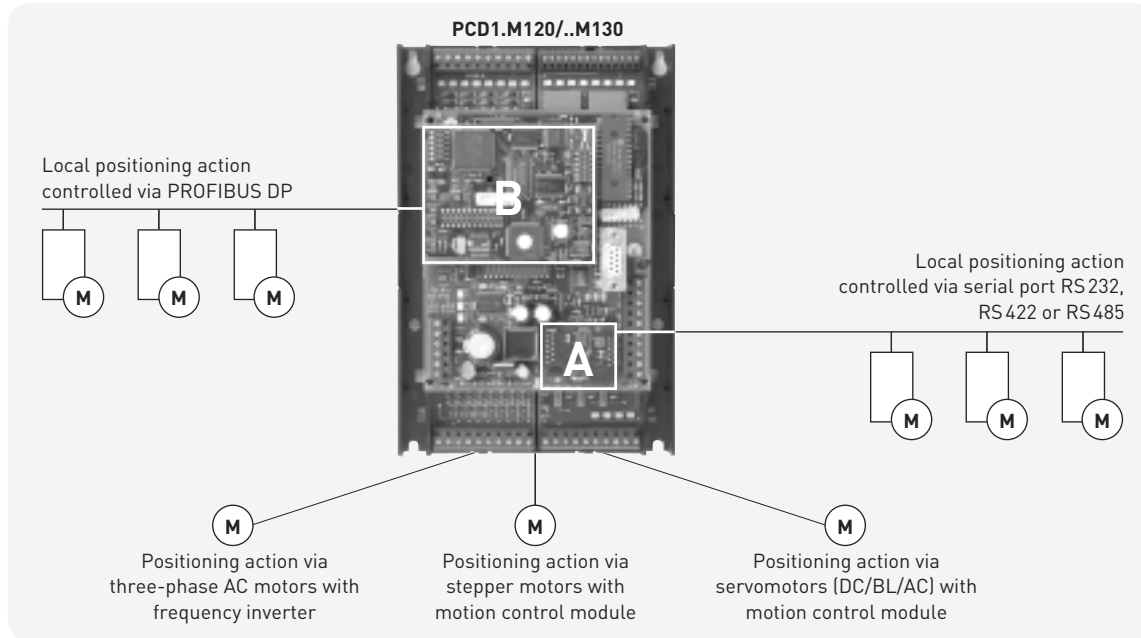
Whether the drive is analogue or digital, whether there is a frequency inverter, stepper and servomotor (DC/BL/AC), whether positioning action takes place centrally in der PCD or locally in an intelligent drive: the PCD offers an efficient solution for every technology and topology. By close coupling of the PCD and the driving controller, even complex motion sequences and their associated peripheral control functions can be realized with the comfort and diagnostic capabilities of PCD programming.

Performance level	Low Cost Control in CPU	Mid range Positioning action in motion control module		High End Positioning action in drive
Drive type	Frequency inverter with AC motor	Stepper motor	Servodrive and servomotor	Intelligent drive
Velocity setpoint	Fixed velocities triggered with digital signals	Monophase pulse string and directional signal up to max. 20 kHz	±100 % setpoint with ±10 V analogue signal	By power component, motion control via DP or RS 485 serial data port
Path detection	Incremental or SSI absolute value transmitter	–	Incremental or SSI absolute value transmitter	In power component
Modules	PCD2.H110/.H150 PCD2.A400	PCD2.H210	PCD2.H31../..H32..	PCD7.F750 PCD2.F5../PCD7.F1..

Optimum solutions for every counting and measuring task

Every PCD has 1600 counting registers with a counting capacity of 2 147 483 647 (31 bit). The counting frequency reaches, on average, frequencies around 20 Hz. Via the interrupt inputs counting frequencies of 1 kHz are achieved with the help of counting registers.

PCD2.H100 counting module
The PCD2.H100 counting module counts pulses up to 20 kHz with 16-bit resolution (counting capacity 0…65535; can be used in tandem with CPU counter). The module has two inputs A and B and recognizes the direction of incremental shaft encoders. The counter can be enabled via an external enable signal. The CCO output (counter controlled output) is directly controlled by the counter and can, for example, be used to trigger precise external switch operations or to release an interrupt.

The module is suitable for counting revolutions, distances, volumes, etc. and for measuring by counting the pulses.

PCD2.H110 counting and measuring module
This universal module not only enables counting functions up to 100 kHz but also the precise measurement of frequencies up to 100 kHz and the duration of periods and pulses up to one hour. For this purpose a modern FPGA (Field Programmable Gate Array) component is used.

The two counting inputs A and B allow the direction of incremental shaft encoders to be recognized and the simultaneous use of counting and measuring functions in the same module. The two fast outputs: CCO (counter controlled output) and TCO (timer controlled output) can, for example, be used to trigger precise external switch operations or to release an interrupt.

Counting, measuring and motion control

Overview of modules for axis control

Module	Velocity profile	Drive	Frequency Encoder	Output	Count range/ position distance	Number of axes	Current draw[1]
PCD2.H100			max. 20 kHz	digital	16 bit (65 535)	max.4	90 mA
PCD2.H110			max. 100 kHz	digital	24 bit (16 777 215)	max.4	90 mA
PCD2.H310 PCD2.H311		Servomotor, frequency inverter	max. 100 kHz 24 VDC 5 V/RS 422	analogue ±10 V, 12 Bit	±30 bit (±1 073 741 824)	max.4	140 mA
PCD2.H320 PCD2.H325		Servomotor, frequency inverter, 2 axes	max. 125 kHz 24 VDC max. 1 MHz 5 V/RS 422 and SSI	analogue ±10 V, 12 Bit	±30 bit (±1 073 741 824)	max.4	220 mA[2]
PCD2.H322 PCD2.H327		1 axis as slave or single axis	as ..H320 as ..H325			max. 4	
PCD2.H150			max. 500 kHz SSI	+4 digital outputs	8...29 bit selectable	max. 4	25 mA
PCD2.H210		Stepper motor	max. 19.5 kHz	Square pulse	24 bit (16 777 215)	max. 4	85 mA

[1] Current draw from the internal 5 V bus, loading capacity max. 750 mA for PCD1.
[2] + max. 400 mA per module for shaft encoder supply with the PCD2.H325.

Commissioning tool for motion control modules

The software package can run as a stand-alone program or be integrated into the PG5. It is capable of running under Windows 98, 2000 and NT and offers the following performance features:

- Support for the commissioning, configuration and programming of motion control modules.

- Direct, easy access to all standard ..H.. module functions.

- Movement of axis and adjustment of control parameters without writing a line of program code.

- Entry, testing and storage of motion parameters.

- Tracing and graphical representation of motion sequences and PCD data.
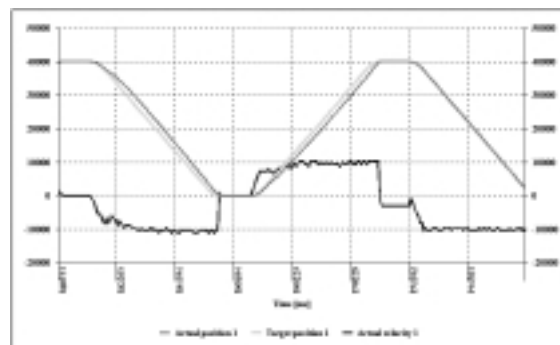
Fully selectable equipment for input/output level

Adaptive, due to modular input/output level

- The modular structure means that it is only necessary to include (and pay for) those functions that are actually required for a specific application.

- All modules of the I/O level can be plugged onto any preferred point on the bus.

- The robust design and excellent reliability (average field failure rate FFR >10^6 hours) guarantee a high degree of functional security.

- Plug-in terminals allow for convenient wiring outside the controller.

- For analogue modules, electrical isolation is possible with KFD1 isolating amplifiers. Detailed information can be obtained from Documentation 26/328.

- Insertion of the I/O modules is simple and elegant: Push the module into the side opening towards the middle of the device until it reaches the end stop, then lock the retaining catch in place. That is all.

The I/O module is inserted from the side.
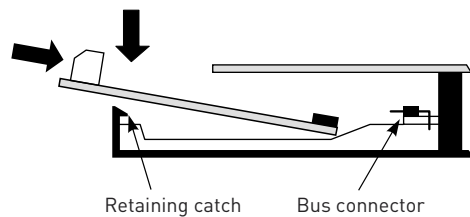
Pluggable system cable with connectors at PCD end for all I/O modules

The route to quick, convenient connection includes pre-assembled cable. At the PCD end of the cable the connector is ready mounted, so connection is just a matter of plugging it in. At the process end there are ribbon connectors for the terminal adapters or relay interface, or numbered 0.5 mm² strands, or colour-coded 0.25 mm² strands.
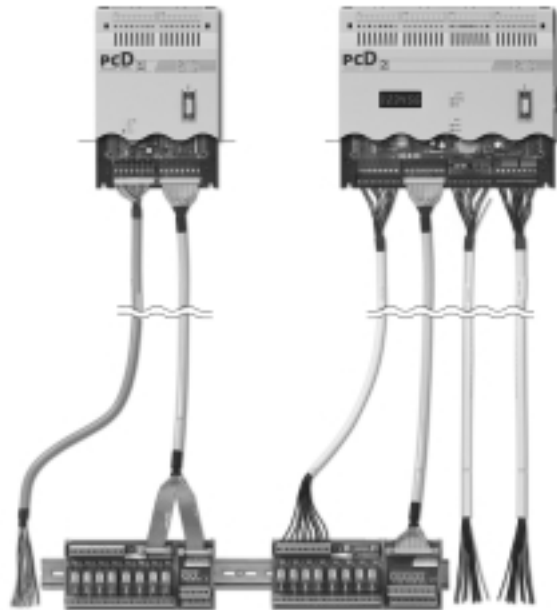
Overview of digital input/output modules (for details see Technical Information 26/358)

Type	Total I/Os	Input voltage	Breaking capacity DC	AC	Input filter	Electrical isolation	Current draw [1]
PCD2.E110	8 I	15...30 VDC [2]			8 ms	no	typ. 12 mA
PCD2.E111	8 I	15...30 VDC [2]			0.2 ms	no	typ. 12 mA
PCD2.E160/..5	16 I	15...30 VDC			8 ms	no	typ. 50 mA
PCD2.E161/..6	16 I	15...30 VDC			0.2 ms	no	typ. 50 mA
PCD2.E610	8 I	15...30 VDC [3]			10 ms	yes	typ. 12 mA
PCD2.E611	8 I	15...30 VDC [3]			1 ms	yes	typ. 12 mA
PCD2.E500	6 I	115...230 VAC			20 ms	yes	typ. 1 mA
PCD2.B100	2 I + 2 O +	I: 15...32 VDC			8 ms	no	typ. 15 mA
	4 I/O	O:	0.5 A/5...32 VDC			no	
PCD2.A400	8 O, transistor		0.5 A/5...32 VDC			no	typ. 15 mA
PCD2.A410	8 O, transistor		0.5 A/5...32 VDC			yes	typ. 15 mA
PCD2.A460/..5	16 O, transistor		0.5 A/10...32 VDC			no [4]	typ. 50 mA
PCD2.A300	6 O, transistor		2 A/10...32 VDC			no	typ. 12 mA
PCD2.A200	4 O, relay (make)		2 A/50 VDC	2 A/250 VAC		yes [5]	typ. 10 mA
PCD2.A210	4 O, relay (break)		2 A/50 VDC	2 A/250 VAC		yes [5]	typ. 10 mA
PCD2.A220	6 O, relay (make)		2 A/50 VDC	2 A/250 VAC		yes	typ. 12 mA
PCD2.A250	8 O, relay (make)		2 A/50 VDC	2 A/48 VAC		yes	typ. 15 mA

[1] Current draw from internal 5 V bus (depending on number of active input or output channels), loading capacity max. 750 mA for PCD1
[2] Special: 5 VDC, 12 VDC   [3] Special: 5 VDC, 48 VDC   [4] with short-circuit protection   [5] with contact protection

Overview of analogue input/output modules (for details see Technical Information 26/359)

Type	Total channels	Signal ranges	Resolution	Current draw 5 V bus [1]	24 V bus [2]
PCD2.W100	4 I	0 V…+10 V / −10 V…0 V / −10 V…+10 V	12 bit	45 mA	15 mA
PCD2.W105	4 I	0 mA…+20 mA [3] / −20 mA…0 mA / −20 mA…+20 mA	12 bit	45 mA	15 mA
PCD2.W110	4 I	Pt 100: −50 °C…+150 °C	12 bit	45 mA	30 mA
PCD2.W111	4 I	Ni 100: −50 °C…+150 °C	12 bit	45 mA	30 mA
PCD2.W112	4 I	Pt 1000: −50 °C…+150 °C	12 bit	45 mA	20 mA
PCD2.W113	4 I	Ni 1000: −50 °C…+150 °C	12 bit	45 mA	20 mA
PCD2.W114	4 I	Pt 100: 0 °C…+350 °C	12 bit	45 mA	20 mA
PCD2.W200	8 I	0 V…+10 V	10 bit	8 mA	5 mA
PCD2.W210	8 I	0 mA…+20 mA [3]	10 bit	8 mA	5 mA
PCD2.W220	8 I	Pt 1000: −50 °C…+400 °C / Ni 1000: −50 °C…+200 °C	10 bit	8 mA	16 mA
PCD2.W300	8 I	0 V…+10 V	12 bit	8 mA	5 mA
PCD2.W310	8 I	0 mA…+20 mA [3]	12 bit	8 mA	5 mA
PCD2.W340	8 I	0 V…+10 V / 0 mA…+20 mA [3] Pt 1000: −50 °C…+400 °C / Ni 1000: −50 °C…+200 °C	12 bit	8 mA	20 mA
PCD2.W350	8 I	Pt 100: −50 °C…+600 °C / Ni 100: −50 °C…+250 °C	12 bit	8 mA	30 mA
PCD2.W360	8 I	Pt 1000: −50 °C…+150 °C	12 bit	8 mA	20 mA
PCD2.W500	2 I + 2 O	I: 0 V…+10 V / −10 V…+10 V	12 bit	200 mA	0 mA
PCD2.W510	2 I + 2 O	I: 0 mA….+20 mA [3] / −20 mA….+20 mA	12 bit	200 mA	0 mA
		O: 0 V….+10 V / −10 V…+10 V			
PCD2.W400	4 O	0 V…+10 V	8 bit	1 mA	30 mA
PCD2.W410	4 O	0 V…+10 V / 0 mA…+20 mA / +4 mA…+20 mA	8 bit	1 mA	30 mA
PCD2.W600	4 O	0 V…+10 V	12 bit	4 mA	20 mA
PCD2.W610	4 O	0 V…+10 V / −10 V…+10 V / 0 mA…+20 mA	12 bit	110 mA	0 mA

[1] Current draw from internal 5 V bus, loading capacity max. 750 mA for PCD1
[2] Current draw from internal 24 V bus, loading capacity max. 100 mA for PCD1
[3] +4…+20 mA via user program

Small terminals for direct mounting PCD7.D16..

These SAIA® small terminals use the intelligence and large memory of the SAIA®PCD and are therefore ideal for use under favourable conditions with industrial controllers or in building automation.

- Terminals are mounted directly on the cover of controllers. This combination results in a compact controller with the capability for direct display and entry.

- Text to be displayed (4 × 16 characters) is stored in the PCD controller.

- Depending on the choice of terminal set, other communications possibilities are produced. The following table provides information.

Terminal set	..D160	PROFIBUS DP as slave	LONWORKS®
PCD7.D162	■	–	–
PCD7.D164	■	■	–
PCD7.D165	■	–	■

With PCD1 the additional RS 485 interfaces are not available.
On PCD1.M110 only terminal set PCD7.D162 may be used.

Economical remote display of data

PCD7.D120

- Particularly bright, 6-digit LED display with decimal point. Very clear to read, even in conditions of poor visibility.

- Does not take up one of the PCD's serial ports; only needs 3 transistor outputs from the following standard modules: PCD2.A400 (inc. version Z06), PCD2.A460/..A465 or ..B100.

- Parallel driving of up to 7 remote displays. The same value (up to 6 digits) is shown on all displays.

- Serial driving of 2 (or more) remote displays: useful if more than 6 digits have to be displayed.

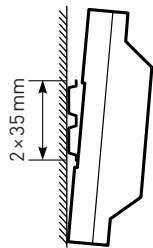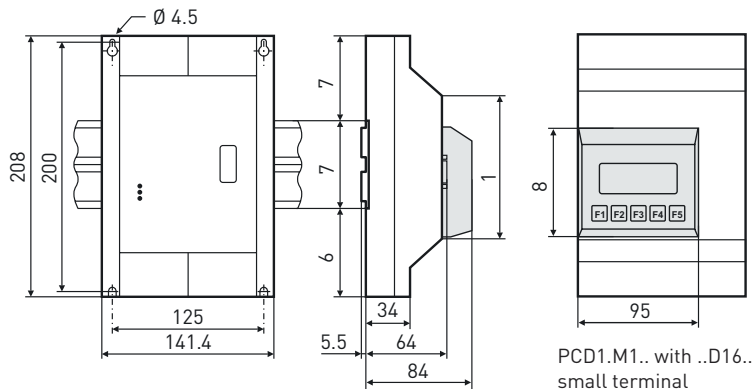- For details see Technical Information 26/361.

Operator terminals

A whole range of operator terminals can be supplied to go with SAIA®PCD controllers, from the small text terminal up to the intelligent control panel with graphics and touch-screen.

11

Dimension drawings and mounting
Ordering information

Dimension drawings

PCD1.M1.. with ..D16..
small terminal

Mounting

The PCD can be mounted on double top-hat rail according to DIN 50 022 (2 × 35 mm) and fastened. However, with 4 × M4 screws, the PCD2 can also be firmly screwed to any base; the grooves provided for this purpose can be accessed by lifting off the cover.

Ordering information

Type	Description	Weight
	Base units	
PCD1.M110	Base unit with 2 interfaces: RS 232 (PGU) and RS 485, without date-time, 30-day protection of all RAM data	920 g
PCD1.M120	Base unit with PGU interface (RS 232) and insertion spaces A and B, built-in date-time, 7-day protection of all RAM data and date-time	920 g
PCD1.M130	Base unit as ..M120 but with lithium battery for data protection and power reserve between 1 and 3 years	920 g
4'507'4817'0	Lithium battery (replacement)	10 g
PCD8.K111	**Connection cable for PC** with 9-pole connector	200 g
26/737 E	**PCD1/PCD2 Hardware Manual**	
	Extended memory components	
4'502'7013'0 [1]	RAM chip with 128 KBytes	12 g
4'502'7126'0	EPROM chip with 128 KBytes	12 g
4'502'7141'0	Flash-EPROM chip with 128 KBytes	12 g
	Communications modules for socket A	
PCD7.F110 [2]	with RS 422/RS 485 interface (electrically connected)	8 g
PCD7.F120 [2]	with RS 232 interface (suitable for modem)	8 g
PCD7.F130 [2]	with 20 mA current loop interface	8 g
PCD7.F150 [2]	with RS 485 interface (electrically isolated)	8 g
	Field bus connection for socket B	
PCD7.F750 [2]	PROFIBUS DP connection (master)	45 g
PCD7.F770 [2]	PROFIBUS DP connection (slave)	45 g
PCD7.F800 [2]	LONWORKS® connection	45 g
PCD7.F650 [3]	**Network connection with Ethernet module**	45 g
	Modem modules for I/O module socket	
PCD2.T813	Analogue modem 33.6 kbps (RS 232 and TTL ports)	50 g
PCD2.T850	Digital modem ISDN-TA (RS 232 and TTL ports)	50 g

[1] Risk of data loss if foreign RAM components are used.
[2] Non-functional with PCD1.M110 base unit.
[3] Only with PCD1.M130 at socket B with special housing cover 4'104'7409'0, or as configured system with type no. PCD1.M130F650.