sbc

SAIA BURGESS CONTROLS

Saia® PLC System
Översikt

Malthe Winje

Memory management of the Saia® PCD systems with COSinus operating system
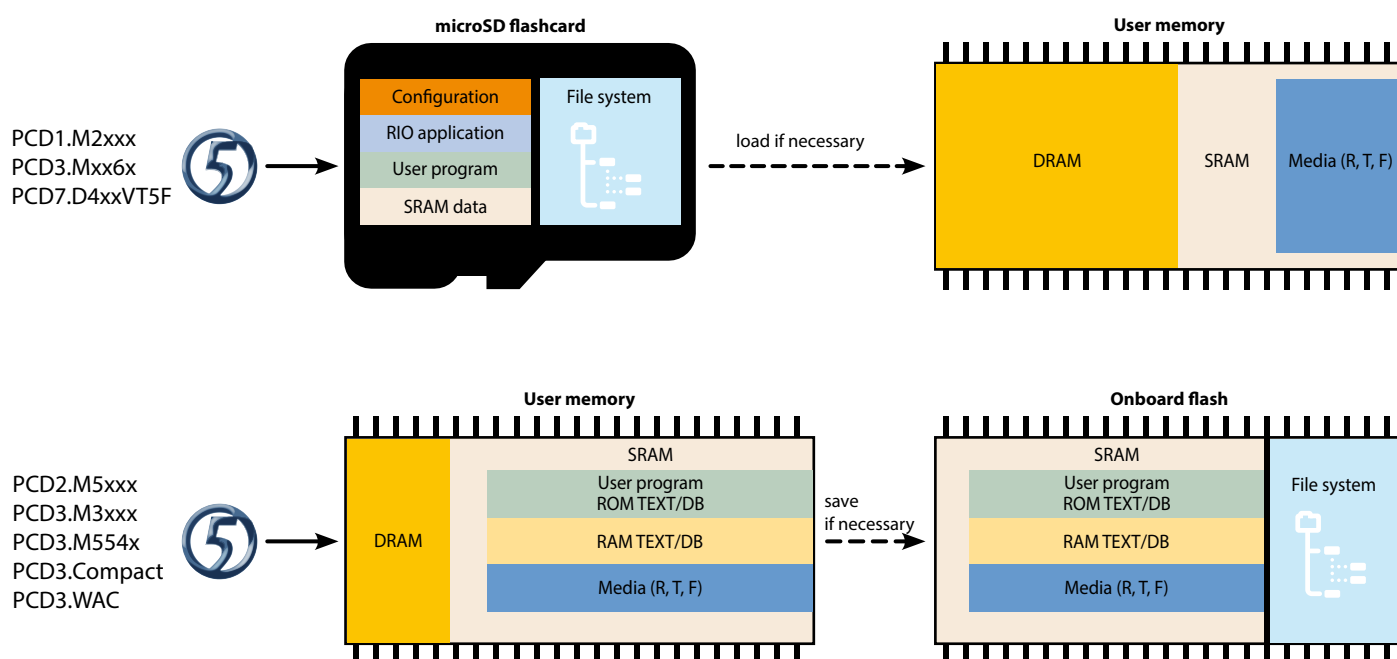
Automation devices with integrated uSD card

The automation devices Saia® PCD3 Plus, Saia® PCD1.M2 and the programmable panel are provided with an on-board uSD flash card. When loading a user application with Saia® PG5, all the necessary files in the internal flash memory are stored on the uSD card. If the operating voltage is connected to the automation device and there is no executable program in the user memory, COSinus attempts to load a valid program from the uSD card on startup.

Saia® PCD1.M2xxx   Saia® PCD3.Mxx6x   Saia® PCD7.D4xxVT5F

Automation devices with integrated on-board flash

In the case of automation devices without an integrated uSD card that are fitted with the COSinus system, the user application is copied directly to the user memory from Saia® PG5. If when the controller is started up no valid program is detected in the user program, a search is run for a backup program in the on-board flash or an optional memory module.

Saia® PCD2.M554x   Saia® PCD3.Mxx4x   Saia® PCD3.M3xxx   Saia® PCD3.Compact
Saia® PCD3.Wide Area Controller

PCD1.M2xxx
PCD3.Mxx6x
PCD7.D4xxVT5F

microSD flashcard

Configuration
RIO application
User program
SRAM data

File system

load if necessary

User memory

DRAM | SRAM | Media (R, T, F)

PCD2.M5xxx
PCD3.M3xxx
PCD3.M554x
PCD3.Compact
PCD3.WAC

User memory

DRAM | SRAM
User program ROM TEXT/DB
RAM TEXT/DB
Media (R, T, F)

save if necessary

Onboard flash

SRAM
User program ROM TEXT/DB
RAM TEXT/DB
Media (R, T, F)

File system

▲ Loading of the user program from Saia® PG5 onto Saia® PCD automation devices and division of different data between the storage media.

Memory extension and resources of the Saia® PCD systems

Memory division of PCD1.M2xx0

User memory
▸ User program: 512 kbytes–1 Mbyte
▸ DB/text: 128 kbytes–1 Mbyte

Flash memory
▸ File system 8–128 Mbytes(maximum of 900–2,500 files or 225–625 directories)
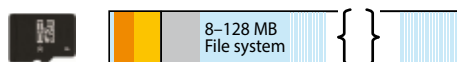
Flash memory extensions
▸ 1 extension module

| User memory | 1024 kB | 1024 kB |

| uSD flash | 8–128 MB File system |

| Flash ROM extensions | Extension device (max. 1) |

Memory division of PCD3.M5x6x

User memory
▸ User program: 2 Mbytes
▸ DB/text: 1 Mbyte

Flash memory
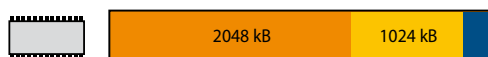▸ File system 128 Mbytes (maximum of 2,500 files or 625 directories)
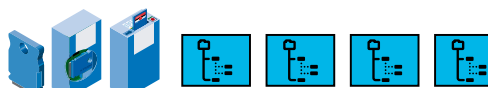
Flash memory extensions
▸ 4 extension modules

| User memory | 2048 kB | 1024 kB |

| uSD flash | 8–128 MB File system |

| Flash ROM extensions | |

Memory division of PCD3.Mxx4x

User memory
▸ User program and DB/text 1024 kbytes

Flash memory
▸ Backup memory 1024 kbytes

Flash memory extensions
▸ 4 extension modules
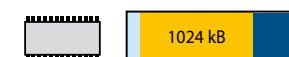
| User memory | 1024 kB |

| Flash ROM extensions | |

Memory division of PCD2.M5xx0

User memory
▸ User program and DB/text 1024 kbytes

Flash memory
▸ Backup memory 1024 kbytes

Flash memory extensions
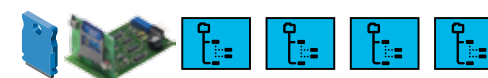▸ 4 extension modules

| User memory | 1024 kB |

| Flash ROM extensions | |

1 Automation stations

2 HMI Visualization and operating

3 Dedicated room controller

4 Consumption data acquisition

5 Cabinet components

2.2 An overview of Saia® communications systems

	Fully modular													Compact modular				
	PCD3									RIO		PCD2		PCD1				
	PCD3.M3120	PCD3.M3230	PCD3.M3330	PCD3.M5340	PCD3.M5440	PCD3.M5540	PCD3.M5560	PCD3.M6560	PCD3.M6860	PCD3.T665	PCD3.T666	PCD2.M5440	PCD2.M5540	PCD1.M2020	PCD1.M2120	PCD1.M2160	PCD1.M0160E0	PCD1.M2110R1
I/O data points																		
On-board (data points)	---	---	---	---	---	---	---	---	---	---	---	---	---	18	18	18	18	24
On-board I/O slots [1]	4	4	4	4	4	4	4	4	4	4	4	8	8	2	2	2	---	1
Optional I/O slots using expansion modules [1]	---	60	60	60	60	60	60	60	60	3	3	56	56	---	---	---	---	---
Maximum number of I/Os [1]	64	1023	1023	1023	1023	1023	1023	1023	1023	256	256	1023	1023	50	50	50	18	40
Maximum number of interfaces (incl. PGU, USB, Ethernet)	11	10	11	13	13	13	13	13	12	2	11	14	15	7	8	8	4	6
On-board interfaces																		
RS-232, PGU up to 115 kBit/s (Port #0)	---	---	---	●	●	●	●	●	---	---	---	●	●	---	---	---	---	---
USB 1.1 device, PGU	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Ethernet TCP/IP 10/100 MBit Fullduplex, autosensing/crossing	1	---	1	1	---	1	1	1	2	1	1	---	1	---	1	1	1	1
RS-485 up to 115 kBit/s (Port #2) or	●	●	●	---	●	---	●	●	●	---	---	---	---	●	●	●	●	---
Profi-S-Net up to 187.5 kBit/s (Port #2)	●	●	●	---	●	---	●	●	●	---	---	---	---	●	●	●	●	---
RS-422/485 up to 115 kBit/s (Port #3) or	---	---	---	●	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RS-485 up to 115 kBit/s galvanically separated (Port #3)	---	---	---	---	●	●	●	●	●	---	---	●	●	---	---	---	---	---
or Profi-DP slave, Profi-S-Net up to 1.5 MBit/s (Port #10)	---	---	---	---	●	●	●	●	●	---	---	●	●	---	---	---	---	---
Profibus DP master up to 12 MBits/s	---	---	---	---	---	---	---	●	---	---	---	---	---	---	---	---	---	---
Optional interfaces																		
Slot C, Profibus DP master 12 MBit/s	---	---	---	---	---	---	---	---	---	---	---	●	●	---	---	---	---	---
BACnet® IP (with PCDx.R56x modules) [2]	●	---	●	●	---	●	●	●	●	---	---	---	●	---	●	●	●	●
BACnet® MS/TP [3] (with PCDx.R56x and PCDx.F215x modules)	●	●	●	●	●	●	●	●	●	---	---	●	●	●	●	●	---	●
LON®-over IP (with PCDx.R58x modules) [3]	●	---	●	●	---	●	●	●	●	---	---	---	●	---	●	●	●	●
Modbus RTU serial or IP	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Slot for PCD7.F1xxS (A1/A2)	---	---	---	---	---	---	---	---	---	---	---	2	2	1	1	1	1	1
I/O slot #0 for PCD3.F1xx ▸ RS-232 (RTS/CTS, DTR/DSR, CD, RI) PCD3.F121 ▸ RS-485/RS-422 galvanically connected PCD3.F110 ▸ RS-485/RS-422 galvanically insulated PCD3.F150 ▸ Belimo MP-Bus PCD3.F180	●	●	●	●	●	●	●	●	●	---	●	---	---	---	---	---	---	---
I/O slot #0… #3 for PCD3 ▸ PCD3.F210 RS-485/422 + opt. PCD7.F1xxS ▸ PCD3.F215 BACnet MS/TP… + opt. PCD7.F1xxS ▸ PCD3.F221 RS-232 full + opt. PCD7.F1xxS ▸ PCD3.F240 LON FTT10 + opt. PCD7.F1xxS [4] ▸ PCD3.F261 DALI incl. bus power supply ▸ PCD3.F27x M-Bus master ▸ PCD3.F281 Belimo MP-Bus + opt. PCD7.F1xxS	4	4	4	4	4	4	4	4	4	---	--- / --- / --- / --- / 4 / 4 / ---	---	---	---	---	---	---	---
I/O slot #0… #3 for PCD2 and slot #0… #1 for PCD1 and ▸ PCD2.F2100 RS-485/422 + opt. PCD7.F1xxS ▸ PCD2.F2150 BACnet MS/TP… + opt. PCD7.F1xxS ▸ PCD2.F2210 RS-232 full + opt. PCD7.F1xxS ▸ PCD2.F2400 LON FTT10 + opt. PCD7.F1xxS [4] ▸ PCD2.F2610 DALI incl. bus power supply ▸ PCD2.F27x0 M-Bus master ▸ PCD2.F2810 Belimo MP-Bus + opt. PCD7.F1xxS	---	---	---	---	---	---	---	---	---	---	---	4	4	2	2	2	---	1
Slots for modem (A1/A2)	---	---	---	---	---	---	---	---	---	---	---	2	2	---	---	---	---	---
Uses an external modem via RS-232 interfaces	●	●	●	●	●	●	●	●	●	---	---	●	●	●	●	●	●	●

| | Compact modular | | | | | | Compact | | | |
| | PCD3 compact | | PCD3.WAC Wide area controller | | | | PCS1 | | | |
I/O data points	PCD3.M2030V6	PCD3.M2130V6	PCD3.M2330A4T1	PCD3.M2330A4T3	PCD3.M2330A4T5	PCD3.M2230A4T3	PCS1.C42x	PCS1.C62x	PCS1.C82x	PCS1.C88x
On-board (data points)	38	38	14	14	14	14	19	30	44	44
Optional I/O slots via expansion modules PCD3.Cxxx [1]	4	4	4	4	4	4	---	---	---	---
Maximum number of I/Os [1]	102	102	78	78	78	78	19	30	44	44
Maximum number of interfaces (incl. PGU)	3	4	5	5	5	4	3	3	3	4
On-board interfaces										
RS-232, PGU up to 115 kBit/s (Port #0)	---	---	---	---	---	---	●	●	●	●
USB 1.1 device, PGU	●	●	●	●	●	●	---	---	---	---
Ethernet TCP/IP 10/100 MBit Fullduplex, autosensing	---	1	1	1	1	---	---	---	---	---
RS-485 up to 115 kBit/s (Port #2) or Profi-S-Net up to 187.5 kBit/s (Port #2)	● ●	● ●	● ●	● ●	● ●	● ●	--- ---	--- ---	--- ---	--- ---
LONWORKS® FTT10	---	---	---	---	---	---	---	---	---	●
Modem P=PSTN, I=ISDN, PCD: G=GSM/GPRS, PCS: G=GSM	---	---	P	I	G	G	P, I, G	P, I, G	P, I, G	P, I, G
Optional interfaces										
Modbus RTU serial or IP	●	●	●	●	●	●	---	---	---	---
Slot for PCD7.F1xxS (A1)	1	1	1	1	1	1	---	---	---	---
Uses an external modem via RS-232 interfaces	●	●	---	---	---	---	●	●	●	●

[1] I/O slots can be fitted with I/O modules as required (see pages 29/30 and 48/49). The number of data points which can be processed by a PLC depends on the number of I/O data points per module. A max. of 16 data points is available per module. A PCD can therefore process a maximum number of data points of 64 I/O slots × 16 data points/slot = 1024 I/O data points.

[2] A PCDx.R56x memory module is always required to use BACnet®. Controllers without Ethernet support BACnet MS/TP using optional PCD2.F2150 or PCD3.F215 communication modules.

Controller	Memory module	Max. free I/O slots
PCD3.M3xx0	PCD3.R56x	3
PCD3.M5xx0	PCD7.R56x	4
PCD2.M5xx0	PCD7.R56x	4
PCD1.M2xx0	PCD7.R56x	2
PCD1.M0xx0	PCD7.R56x	---
PCD1.Room	PCD7.R56x	1

[3] It is only possible to operate BACnet®-IP and LON®-IP in parallel on the PCD3.M5560, PCD3.M6560 and PCD3.M6860 controllers.

[4] The PCD2.F2400 and PCD3.F240 LON-FTT10 modules are only available on the following controllers: PCD1.M2020, PCD1.M2120, PCD1.M2160, PCD1.M2110R1, PCD3.M5560, PCD3.M6560, PCD3.M6860

1 Saia® Software

2 Communication & interaction

3 Saia® S-Web Technology