COSinus_1.24.69 Release Note

This document describes important notes for the COSinus FW version.

The COSinus FW is available for the following systems:
- PCD1.Mxxx0
- PCD2.M5xx0
- PCD3.Mxxx0
- PCD3.Mxx60
- PCD7.D4xxxT5F

1   Important for FW update:

Usually by FW update the application program, the Texts/DBs and the media (Flags, Registers, Timers/Counters) remains unchanged.

However:

Updating to FW 1.22.xx from a version 1.16.xx deletes the data on SRAM.
⇨ PCD2.M5xx0 & PCD3.Mxxx0 (without PCD3.Mxx60):
The program, the media and all Texts/DBs are deleted. The program and the Texts/DBs will be restored from the "program backup" if present.
⇨ PCD1.M0xx0, PCD1.M2xx0 & PCD3.Mxx60:
The application program is not deleted whereas the media are cleared and the RAM Texts/DBs are restored from the "program file" or the "program backup".
On PCD3.Mxx60 the INTFLASH size has been increased to 128MB. Therefore the File System on the INTFLASH will be reformatted and all files stored on this device will be lost.

Update to this FW from a version ≤ 1.14.xx deletes the user program, the media and the onboard file system is formatted, all data on the flash (file system, backup program & DB's) are deleted.
If a program backup on an external device exists it will be restored!

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2   Compatibility of COSinus with the PCD types

This COSinus firmware 1.24.xx requires a PCD equipped with 8 MB onboard flash or SD card and with 32MB DRAM.

The table hereafter presents the corresponding COSinus FW for the different PCD types as the required minimal HW revision

COSinus compatibility with PCD types and HW revision

PCD System	HW revision		COSinus FW
	Listed on the sticker (System vers.)	**Read by the PG5 (CPU vers.)**	
PCD1.M0xx0 PCD1.M2xx0	F*	F*	PCD1.M2xx0_1.24.xx.blk
PCD1.M2110R1	$A	F	
PCD2.M5xx0	D	D	PCD2.M5xx0_1.24.xx.blk
PCD3.M2030V6 PCD3.M2130V6	F	H	PCD3.Mxxx0_1.24.xx.blk
PCD3.M2330A4T1 PCD3.M2330A4T3	D	H	
PCD3.M2x30A4T5	E	H	
PCD3.M3020 PCD3.M3120	H	H	
PCD3.M3230 PCD3.M5440			
PCD3.M3330 PCD3.M5340 PCD3.M5540 PCD3.M6x40			
PCD3.Mxx60	A	A	PCD3.Mxx60_1.24.xx.blk
PCD7.D4xxxxT5F	A	A	PCD7.D4xxxT5F_Prog_1.24.xx.blk

⚠️ **For the PCD older than listed the firmware 1.22.xx resp. 1.10.xx is the last firmware which can be installed.**

Note: * On PCD1 hardware revision F is required to use the S-Monitoring function and LON FT-10.

3   New Features for COSinus 1.24.69 release

This new firmware version of PCD Classic, identified as COSinus, contains a mix of new features as well as enhancements of existing functionality.

3.1 Main corrections and improvements

- SBUS parity mode, correction when NAK character is received as first byte of response.
- When download new Ethernet-RIO Program with the option 'Delete all backups' it can happen that the RIO is not commissioning and don't goes anymore in 'data exchange mode' until the PCD reboots.
- When RIO name is not in upper case the RIO file is not updated until a restart is executed.
- When RIO file is downloaded with download changed RIO file then RIO file is not sent to RIO until a restart is executed.
- Ethernet Frame Padding Information Leakage fixed [CVE-2017-9628]
- Self-download tool, sometimes config is lost after download of the project. Various minor issues fixed
- Various BACnet issues fixed

4   New Features for COSinus 1.24.67 release

This new firmware version of PCD Classic, identified as COSinus, contains a mix of new features as well as enhancements of existing functionality.

4.1 Main corrections and improvements

- New Conversation Table for W380 Ni1000 and PT1000 Temperatur
- S-Bus Serial UART Diagnostics not correct
- Various Open Data Mode fixes: Read Timeout enhancement, Client Connection timeout and Client Keep alive with anonymous port issue fixed
- LonIP Mapper improvement
- Modbus Communication error on F2 module
- Program Restore issue fixed when restore from file system flash card
- New PLC Start configuration after Crash added
- Profi-SBus Master stop working when cable is broken
- Various minor issues fixed

5   New Features for COSinus 1.24.25 release

This new firmware version of PCD Classic, identified as COSinus, contains a mix of new features as well as enhancements of existing functionality.

5.1 Improvements

- Enhancements and improvements regarding the communication with the new E-Line modules.

5.2 Main corrections

- COPYX instruction: the destination is new indexed when a timer/counter is used as destination.
- STXMX / SRXMX instructions are working correctly.
- IO modules: PCD2.G200: temperature is correctly calculated when Ni100 L&S is selected; PCD2/3.W380: support for hardware revision B – conversion factor for current inputs has been updated.
- Correction regarding PCD3.M6860: support for the new hardware version.

6 Features or restrictions specifications

6.1 General for all Systems

- Not usable with PG3 & PG4

- Register extension: Up to 16383 Registers with PG5 V $1.3.010 or newer.

- FBox library: The Fbox of the analogue modules W1, W2 & W5 only working from PG5 V $1.3.010 or newer.

- The FW can be updated with the Firmware Download Tool (FWdnld.exe) located in the PG5 directory.

- There is no CPLD programming.

- Default PGU mode is S-BUS parity

- New Configuration with PG5 2.0 for: **1.14.00**
    - FTP /File system
    - New web-server / HTTP direct
    - TCPIP/ enhancements:
        - DHCP/DNS
        - SNTP
        - PPP
        - SNMP
    - Bluetooth

- Clear Mapped Media   **1.16.42**

- Program backup/restore
    - Program backup in a "*. Sbackup" file (PCD2.M5,PCD3)   **1.10.00**
    - Program backup in a "*.SBAK" file   **1.16.22**
      Backup including also the Configuration and the Media
    - PG5 generated "*.SPRG" file can be downloaded and restored in the PCD   **1.20.25**
      This file includes the "first time init data"

6.1.1 PCD1.Mxxx0 & PCD3.Mxx60:

- To use the PCD1.Mxxx0 & PCD3.Mxx60 a PG5 2.0 SP2 or newer is required.

- The user program and configuration are stored in the internal SD-Card memory.

- Mapping of the PCD3.Mxx60 Interrupt Inputs   **1.22.08**

6.2 Not implemented features

- Mode MM4
- LAN2:
- Mode D
- S-Bus-RIO as master.
- PROFIBUS FMS
- LON
- Program backup to PCD7.R500 (PCD1 & PCD3+)

6.3 Memory

- User memory PCD1.M2xx0

System	HW revision	User memory		Onboard File System
		Code/Text (ROM)	DB (RAM)	
M2110R1	-	256 kbytes	128 kbytes	8 Mbytes
M2020 M2120	-	512 kbytes	128 kbytes	8 Mbytes
M0160 M2160	-	1024 kbytes	512 kbytes	128 Mbytes

- User memory PCD2.M5xx0

System	HW Revision	User memory Code/Text/DB (RAM)	Default Memory configuration	Onboard File System
M5440 M5540	HW >=D	1024 Kbytes	96k prg lines, 128k txt, 384k ext.	-

Note: At first memory configuration the FW makes an allocation with the maximum space available depending on the RAM/EPROM/FLASH chip.

- User memory PCD3.Mxxx0

System	HW Revision	User memory Code/Text/DB (RAM)	Default Memory configuration	Onboard File System
M2030 M2130 M2230 M2330	-	512 Kbytes	48k prg lines, 64k txt, 256k ext.	1MBytes
M3020 M3120	HW >=E Mod 48	256 Kbytes	12k prg lines, 16k txt, 64k ext.	-
M3230 M3330	HW >=D	512 Kbytes	48k prg lines, 64k txt, 256k ext.	-

M5240 M5340 M5440 M5540 M6340 M6540	HW >=D	1024 Kbytes	96k prg lines, 128k txt, 384k ext.	-

⚠ Note: At first memory configuration the FW makes an allocation with the maximum space available depending on the RAM/EPROM/FLASH chip.

- User memory PCD3.Mxx60

System	HW Revision	User memory		Onboard File System
		Code/Text (ROM)	Ext. (RAM)	
M5560 M6360 M6560 M6860	-	2 Mbytes	1 Mbytes	128 Mbytes

- EEPROM:
    - The S-Bus configuration is automatically saved in the EEPROM, this means that even if the battery or super cap becomes discharged the S-Bus configuration will be safe.
    - There are 50 non-volatile user registers.
- Media:
    - Up to 16383 Registers **1.06.16**
    - Up to 16383 Flags **1.20.25**
- DB backup (SYSWR 3xxx):
    - Fix size for onboard flash 256kB **1.16.24**

6.4 Instructions

Please refer to the following list which indicates the first firmware version used in production supporting the relevant feature.

- SYSWR 900x   or SYSWR 300x
- Peripheral instructions **1.08.23**
- PB, FB Temporary Data **1.10.16**
- 2000 FB's, 1000 PB's, 32 COB's **1.10.16**
- FB call depth of 31. **1.08.23**
- IEEE floating point instruction for single and double **1.10.16**
- Signed extension instruction EXTB, EXTW **1.10.16**
- System Functions SF
    - SF for text **1.10.16**
    - SF read DB/Text length **1.20.25**

- SF for CRC Calculation **1.20.25**
- SF to convert time std<->unix time **1.22.08**
- SFs for AES128 encryption/decryption **1.22.08**
- SFs for MD5 hash and AES, DES, 3DES cipher encryption **1.24.05**

- SYSRD 71xx (UTC Time) **1.20.25**

- Interpreted Text
  - New $lnnnn and @lnnnn encoding for interpreted Texts Containing Data **1.20.25**
  - DB for interpreted Texts Containing Data($bxxxx.yyyyy) **1.20.25**

6.5 **Communication**

- Serial port on PCD1.Mxxx0
  - The port 0 is for RS485
  - The port 1 has a full RS 232 if it is equipped with F121

- Serial port on PCD2.M5xx0
  - The port 0 has RS 232/RS485 switch
  - The port 0 has a full RS 232 (a modem can be equipped)
  - The port 1 has a full RS 232 if it is equipped with F121
  - The port 2 has a full RS 232 if it is equipped with F121
  - The port 3 is for RS485 or Profi-S-Net as port 10

- Serial port on PCD3.Mxxx0 &PCD3.Mxx60
  - The port 0 has a full RS 232 (a modem can be equipped)
  - The port 1 has a full RS 232 if it is equipped with F121
  - The port 2 is for RS485 & Profi-S-Net (M3xx0 & M6xx0)
  - The port 3 is for RS485 or Profi-S-Net as port 10 (M5xx0)

- New Serial port with PCD3.F2xx
  - Port 100 & 101 on Slot 0
  - Port 110 & 111 on Slot 1
  - Port 120 & 121 on Slot 2 (not on PCD1.Mxxx0)
  - Port 130 & 131 on Slot 3 (not on PCD1.Mxxx0)
  - S-Bus Driver on F2xx module **1.22.00**

- Serial communication
  - Baudrates up to 115k Baud
  - No Baudrates < 1200 on all port

- S-Bus
  - Baudrates up to 115k Baud
  - CSF for Send/Receive.
  - No break modes as master and slave.
  - No parity modes as master (SM1) on port 0 & 1. (PCD1.Mxxx0)
  - No parity modes as master (SM1) on port 2 & 3. (PCD2.Mxxx0)
  - No parity modes as master (SM1) on port 0 & 3. (PCD3.Mxxx0)

- Modem
  - Auto answer modem on port 0 and 1 (analogue & ISDN)

- PROFIBUS DP
  - Transfer of signed values possible, with PG5 SP1.4.120 or newer **030**
  - Master mode on Port 10 with PCD3.M64x0 / PCD3.M65x0 **020**
  - Slave mode with MPI/S-Net port 10. **010**
  - Slave mode with MPI/S-Net port 2 (with maximal baudrate = 187.5Kb). **010**

- Profi-S-IO
  - Transfer of signed values possible, with PG5 SP1.4.120 or newer **030**
  - Master / Slave mode with MPI/S-Net port 10. **010**
  - Master / Slave mode with MPI/S-Net port 2 (with maximal baudrate = 187.5Kb) **010**
  - MPI for Terminal R/W OP **010**
    (please contact SAIA-Burgess Controls for more information)

- Communication on TCP_IP
  - Classless inter domain router **039**
  - S-Bus over IP **010**
  - "Open data mode" over IP with max. 32 ports / 32 connections **010**
  - S-Bus GWY Master over IP **010**
  - 255 ARP table entries **1.10.16**
  - PGU address for Ether-S-Bus **1.20.25**
  - ACL Mac/IP Lists **1.22.00**
  - Web-FTP encoded Passwords **1.22.00**

- WEB server **010**

- WEB server with HTTP direct connection **020**

- WebServer2 **1.10.16**

- IP filtering **1.22.08**

- Improve the robustness of the system against Ethernet storm. **1.24.05**

- PPP (Point to Point Protocol) **1.10.16**
  - Configuration through file, WEB-CGI and CSF
  - No FBox support
  - All serial ports available

- SNTP (Simple Network Time Protocol) **1.10.16**
  - Configuration through file and WEB-CGI

- DHCP **1.10.16**

- DNS **1.10.16**

- SNMP **1.14.00**

- PING **1.14.03**

- FTP
  - Passive mode **1.22.08**
  - Dynamic password for FTP (service key) **1.22.08**

- Config Tags for eDisplay **1.10.16**

- PGU switches automatically to 115 kBds. **010**

- No limitation with the baudrate configured/assigned. **010**
- Profi-S-Bus
  - Master & Slave mode with MPI/S-Net port 10. **010**
  - Profi-S-Bus GWY Master. **010**
- Multi PGU (incl. modem) **010**
- S-Bus over USB **010**
- CAN on Port 10, PCD3.M63x0 only **020**
- RS422/RS485 on port 3 of PCD3.M5240 and PCD3.M5340 **030**
- MODBUS Driver over TCPIP, UDP and serial **1.10.16**
  - Accessible over CSF calls only
  - Serial port 0, 1, 2 and 3.
  - No support for F2xx serial lines (port 100 .. 131)
  - MODBUS serial on F2xx module and inter-character timeout as parameter **1.22.00**
- Lon IP
  - Support the LonIP Module PCD3/7.R580/581. **1.14.00**
  - PCD7.R582 ;128MB memory card with LON/IP **1.20.25**
- PCD2.F2400 ;LON FTT-10 com. module **1.20.25**
- PCD2.F2150 ;BACnet MS/TP com. module **1.20.25**
- Ether-S-IO
  - Support Ether-S-IO RIO **1.16.00**
- M-BUS Communication modules supported (PCD2.F2700, PCD2.F2710, PCD2.F2720, PCD2.F2730)
  - Support for these modules with "Frame" protocol **1.16.48**
- DALI Communication modules supported (PCD2.F2610)
  - Support for these modules with "Frame" protocol **1.16.48**
  - DALI master commands receive channel implementation **1.20.25**
- S-Bus/Modem configuration over Tags **1.20.25**
- Integrate PCD1.F2300 (PCD1) **1.20.25**
- LON FT-10 **1.24.05**
- New SFs and communication driver for the E-Line devices **1.24.05**

6.6 New I/Os modules

- PCD2/3.B160 supported **1.16.51**
- PCD2.G200 for PCD1.Mxxx0 & PCD2.M5xx0 **1.22.11**
  - PCD2.G200 Module enhanced Configuration **1.22.25**
- PCD2/3.W380 analogue Input Module **1.22.14**
- PCD7.W600 analogue Module **1.24.05**

6.7 Miscellaneous

- IL code of analogue modules W1, W2 & W5 must change (see manual). **010**

- New features for PG5. **010**
    - New OUTL and OUTLX instructions
    - New synchronization for a bloc downloads in mode "RUN"
    - Possibility to upload data (SEDIT and SFUP) in a synchronized manner.

- XOB
    - XOB 20-21: interrupt inputs XOB's **010**
    - XOB 14, 15, 25-29 Time Cyclic Alarm **010**
        - can be executed from 1 ms to 1000s with 1ms steps **010**
        - can be executed only one time with SYSWR 41xx **010**
    - XOB 17, 18, 19: User XOB's **010**
    - This XOB's which can be provoked via S-BUS telegram (STXM chan, 0, k 4000, k 17..19) or SYSWR command (K4017..K4018). The XOB's are only executed if the CPU is in RUN or CONDITIONAL RUN.
    - XOB 7: System overload XOB **010**
    - XOB 1 and 2 Status call (see manual) **010**
    - XOB 1 and 2 Status call (see manual) **010**
    - New XOB handling.
    - The XOB's are split in 2 priorities. A higher prior XOB can interrupt the lower prior XOB. (see manual)
    - XOB 32-63: configurable for CAN (PCD3.M6340, PG5 V$1.3.127) **020**
    - XOB 3 for task and Task data overflow **1.10.16**

- Calculation of week and day number **010**
The PCD compute the day and the week number based on the date using the same algorithm as in the PG. The command 'Write Clock' corrects automatically the week number or day number if they are wrong.

- Password mechanism. **010**

- Copy user program from flash to SRAM without PG **010**

- File system. **020**
    - CSF asynchronous **039**
    - 6 File devices (2 internal, 4 external Flashcards) **020**
    - Onboard File system for configuration files **1.10.16**
    - PCD7.R550M128 ;128MB memory card **1.20.25**

- FTP server **020**

- Flash Modules PCD3.R5xx are supported on the IO Slots 0..3 **020**

- SD Flash Modules PCD3.R6xx are supported on the IO Slots 0..3 **030**

    - Allow to overwrite data on a SD card (PCD3.R600/PCD2.M6000) file system. **1.10.16**

- Alarm DB **039**
    - Number of parameters changed **039**

- Data Initialisation DBX **1.10.16**

- "Memory lost" history entry **1.10.16**

- Integration of L&S NI1000 Temperature Sensors on dif. W- Module **1.20.25**

- New History **1.20.25**
  - FW download give a history entry **1.22.00**
- EnergyManager (PCD1, PCD3+) **1.20.25**
  - S-Monitoring (PCD1,PCD3+) **1.20.25**
- 5 min logging in the S-Monitoring
- Download in Run Changed blocks (PCD1, PCD3+) **1.20.25**
  - Download in RUN Config DBX, Ether-SIO Config (PCD1,PCD3+) **1.20.25**
- PCD7.R610 uSD Module **1.24.05**
- Easy update functionalities => FW update & restore of the application including the Web pages from a *.sprg file. **1.24.05**