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Internal

From:	**A. Kistler**	**Tel.: 355**	**Date: 12/07/2005**
Subject:	**PCD2.M110/120**	**FW VERSION V097**	
Doc #:	**D2M110_120_097_Overview.doc**		

PCD2 SUMMARY OF FIRMWARE VERSIONS

This summary presents a description of all firmware versions used with the PCD2 in production (official versions and exceptionally some intermediate $ versions).
Concerning corrected / known bugs:
Only important bugs are listed here. For other bugs, please refer to the file COMSWERR.XLS that contains more information about known bugs.

FEATURES OR RESTRICTIONS SPECIFIC TO PCD2

General

- CPLD programming V060
  At first power up after a firmware update note that the CPLD will be reprogrammed if its version is different.
  Please do not interrupt this programming sequence which take about 30 seconds, but in some case it can take until 2 min. (LED's are all off while programming, and blinking in the normal boot sequence when finished).

  FW Version history ↔ CPLD Version

FW Version	006	007	072, 073	080, ...
CPLD Version	_118	M120	mS26	mS28

- RTC onboard on PCD2 HW ≥H V060
- FW versions > 004 will run on all PCD2 HW versions **except the version D index 1**. To use this specific hardware version the FW V$40 should be used.
- Since V004 the PCD2 is approximately 7% faster.
  Make sure to use 100ns EPROMS if making your own copies of the firmware.
  This is type 27C1001-10 1 MBit, order number 4'502'7126'0.

Memory

- User memory:

User prg mem.	HW	System Memory	FW	Default Memory configuration
None	<J	32kBytes		6k prg lines, 8k txt
	≥J	128kBytes		6k prg lines, 8k txt
			≥080	24k prg lines, 32k texts
RAM (/EPROM) 1Mbits	≥C	128+24kBytes		6k prg lines, 8k txt
			≥080	24k prg lines, 32k txt, 24k ext.
	≥J	128+128kBytes	≥080	24k prg lines, 32k txt, 128k ext.
4Mbits	≥H	512+24kBytes	≥006	6k prg lines, 8k txt
			≥080	96k prg lines, 128k txt, 24k ext.
	≥J	512+128kBytes	≥080	96k prg lines, 128k txt, 128k ext.
FLASH 1Mbits	≥H	112+24kBytes	≥006	6k prg lines, 8k txt
			≥080	21k prg lines, 28k txt, 24k ext.
	≥J	112+128kBytes	≥080	21k prg lines, 28k txt, 128k ext.
4Mbits	≥J	448+128kBytes	≥007	6k prg lines, 8k txt
			≥080	84k prg lines, 112k txt, 128k ext.

Note:
- The memory available in the equipped RAM is: 128KBytes HW≥J
  32kBytes HW<J
- On the memory socket, possibility to put up to:
  RAM / EPROM 4Mbits HW≥H
  RAM / EPROM 1Mbits HW≥C
  FLASH 4Mbits HW≥J
  FLASH 1Mbits HW≥H
- At first memory configuration the FW makes an allocation with the maximum space available depending on the RAM/EPROM/FLASH chip. V080

- EEPROM HW≥H: V006
  - The S-Bus configuration is automatically saved in the EEPROM, this means that even if the battery becomes discharged the S-Bus configuration will be safe.
  - There are 50 non-volatile user registers.
  -

Instructions

- SYSRD/SYSWR
  - SYSRD/SYSWR/SYSCMP/DEFTR instructions. V004
  - SYSWR 1000: System watchdog V080
  - SYSRD/SYSWR 7050 to 7081 V080
    to read and write the different elements of the clock.
  - SYSRD 7090 V080
    Function that returns the number of seconds elapsed since 00:00:00; January 1; 1970 (coordinated universal time), according to the system clock.
- Mul, Mulx and Div, Divx
  - Instructions are up to 10 times faster. V080

- PID
  - Instruction has been corrected. V004
  - Added a SYSWR K 998 to select the old PID algorithm. V005
- SASI
- Text accepts $R parameters. V080
  E.g:"UART:$Ra,$Rb,$Rc,$Rd;MODE:$Re,$Rf;DIAG:FRg,RRh;"

a	Baudrate	110…38400 (numerical value)
b	Bits	7,8 (numerical value)
c	Parity	E,O,N (ASCII coded)
d	Stop	1 or 2 (numerical value)
e	Mode	'MC0', 'SM2', etc. (ASCII coded)
f	Station	Reg. with S-Bus station (numerical value)
g	Diagnostic flags	Reg. with the base diag. flag nbr (0..8191 num. value)
h	Diagnostic register	Reg. with the diag. register nbr (0..4095 num. value)

Communication

- Serial communication:
  - MC0/1/2/4, MD/SD, MM4 V001
  - MC5 mode that deactivate RS-485 drivers directly after completion of transmission. V090
- S-Bus:
  - Parity and break modes as master and slave. V001
  - Data-Mode V005
  - Gateway (GM/GS). V003
  - Modem+ V003
  - New S-Bus configuration data handling (Station no., config. S-BUS) when inserting a programmed user memory (EPROM/FLASH). V006
- S-RIO as master and slave. V005
  The S-RIO master task assumes the communication and the refresh of the process image. The RIO task is activated by a SASI instruction. The SAIA configurator automatically generates the SASI text, the configuration and messages DB. For more information please read the document "Remote I/O with SAIA S-Bus" 26/751 F2.
- PROFIBUS FMS with PCD7.F700 and PCD2.M120 HW ≥D:
  - Base functionality V004
    10 channels (10...19) and 100 objects (100...199).
  - Extension (at least SPROF $137 is needed) V005
    possibility to map objects on DBs, read/write indicator, multicast/broadcast link, watchdog.
  - Extension for profile GA V007
- PROFIBUS DP: V007
  master mode with PCD7.F750 and PCD2 HW ≥K.
  slave mode with PCD7.F77x. and PCD2 HW ≥K.
- LON with PCD7.F80x and PCD2 HW ≥J:
  - Base functionality V080
  - LON enhancement with new functionality poll and alias (LON 1.5). V090
- LAN2 not implemented

- Up to 2 ports could be configured/assigned at 38.4 kBds at the same time. V090

- It is possible to configure/assign port 0 (or 1) at 38.4 kBds and port 1 (or 0) at19.2 kBds. V090

Miscellaneous

- Introduced the possibility to have a serial number and mechanism related with (e.g. "check licence" CSF). V094
- New features for PG5. V080
  - 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, 25: interrupt inputs XOB's V001
  - XOB 17, 18, 19: User XOB's V003
    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 V004
  - XOB 14/15: Cyclic XOB's
    can be executed from 10 ms to 1000s with 10 ms steps V004
    can be executed from 5 ms to 1000s with 1ms steps V080
  - New XOB handling. V080
    During the execution of a XOB other XOBs are queued and executed at the end of the first one.
- Calculation of week and day number V007
  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. V003

V097

Major corrections

- Modem applications (Fupla Modem library) don't work correctly if the PCD also contains a modem configuration (SWER 1459).

Modifications realized by SWER number

1459
Modem applications (Fupla Modem library) don't work correctly if the PCD also contains a modem configuration.

1458
The read/write text Sbus commands should also be supported in Sbus reduced mode.

1448
If the user program is in FLASH or EPROM, the S-Bus station number, written using SYSWR 6000, is overwritten by the configuration after a restart.

1447
S-Bus communications (configured) fails after a few minutes if DP slave communication is assigned but no master is on the bus.

1446
Fatal errors (e.g. "bus quit failure", "68k address error", etc) can occur if using SYSWR 70xx.

1425
In mode MC1 during STXT / STXD the XBSY /TBSY flag is sometimes cleared though the port is still sending characters.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_097_1.hex	C9D9	PCD2.M11/12 V097/1	27C1001-10 --- 4 502 7126 0
D2M110_120_097_2.hex	92DF	PCD2.M11/12 V097/2	

V096

Major corrections

IN MC0 mode the XBSY/TBSY was sometimes cleared even though the port was still sending characters

Modifications realized - by SWERs number

1424 – 08.11.2004
Mode MC0, STXT/STXD:

XBSY/TBSY was sometimes cleared even though the port was still sending characters.

1421 – 11.11.2004
If the 1st or the 4th character of the projects name is a special character (ASCII code greater than 127) then the checksum is not correctly calculated:
With Flash/EPROM memory: PC goes in HALT and Sbug displays "checksum fail".
With RAM : PCD is not in Halt, but there is a history entry : "Modfied Program".

1335 – 26.05.2003
New DBX SEG to hide functions or a whole user program.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_096_1.hex	E3D8	PCD2.M11/12 V096/1	27C1001-10 --- 4 502 7126 0
D2M110_120_096_2.hex	8DC2	PCD2.M11/12 V096/2	

V094

Major corrections

- Access to flashcard, Firmware Download and Webserver communication over gateway works (SWERs 1401, 1399, 1398, 1392).

Modifications realized - by SWERs number

1407 – 03.08.2004
EEPROM access over gateway failed.

1401 – 07.07.2004
Introduced the possibility to have a serial number and mechanism related with (e.g. "check licence" CSF).

1399 – 11.05.2004
Access to flashcard over gateway fails.

1398 – 11.05.2004
Firmware Download over gateway fails.

1392 – 11.05.2004
Webserver communication is not possible over gateway.

1373 – 21.01.2004
Especially with external interrupts (e.g. XOB 20/25), in some circumstances the system indicates a system overload (XOB 7) even if this is not the case.

1372 – 15.01.2004

Some SYSWR instructions (7000, 7001, 7050…) expect a register as 2nd parameter. If that parameter is a constant (K) various failures are possible, for example:
- Program stops, RUN LED remain turned on.
- Communication is lost.
- A valid result is not available (no register for the return value).

1358 – 30.10.2003
With S-Rio:
- if XOB 30 is programmed, the S-Rio communication stops after a call to the XOB 30.
- A diagnostic DB < 4000 gives an error during execution of the SASI.
- An other assignation mode than RM1 gives an error.

1350 – 26.09..2003
The master SRIO task does not work with baudrates other than 38.4 and 76.8 kBauds.

1345 – 15.07.2003
With PROFIBUS FMS transferring Floating point objects blocks the PCD. If the the PCD is client then it stays stuck in the STXM/SRXM and if it is server then it stay stuck somewhere.

1343 – 18.06.2003
If an S-Bus (DATA mode) response telegram is corrupted that the last byte is equate to C5 then a retry is done but the answer will not be correctly interpreted. (B5 will be put in the msB of the answer).

1341 – 12.06.2003
1) After execution of instruction TEST 20 (serial channels) the gateway (configuration) doesn't work until a restart cold.
2) The PCD goes off line if TEST 20 is executed continuously.
To reproduce this bug: configure SBUS at 38400baud on port 0 or 1 and after a few seconds the system goes to offline.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_094_1.hex	9552	PCD2.M11/12 V094/1	27C1001-10 --- 4 502 7126 0
D2M110_120_094_2.hex	9349	PCD2.M11/12 V094/2	

V090

Major corrections

- The serial communication, especially at 19.2 or 38.4 kBauds, sometimes blocks particularly when LON or Profibus DP is also active (SWER 1288).
- Various Profibus DP corrections were done (SWERs 1300, 1267, 1241, 1199, 1171).

- LON corrections and modifications were done (SWERs 1303-1298, 1250, 1222, 1190).
- The software watchdog functionality was improved. Now, the PCD always disables the software watchdog when it is switched in STOP or CONDITIONAL RUN. Also at each watchdog failure an entry is done in the history table (SWER 1270).
- MC mode
  No more character will be lost during SASI off if TBSY is low.
  By sending character check TFUL (and not TBSY) in order to not have a delay between each character (SWER 1235).

Modifications realized by SWER number

1325 – 26.03.2003
The CPU's internal status register SR, saved in berr_info in the case of a cpu crash, is no overwritten anymore after a restart of the PCD.

1324 – 26.03.2003
In the case of a cpu-crash the stack will be copied to get more informations about the crash.

1318 – 12.02.2003
Sometimes the DP network is stoked in a fdl status, and no update of data is done between the master and the slave, sometimes the watchdog of the slave reach the end, and the error can be detected.

1312 – 29.11.2002
A "bus quit failure" occurs if in the TFRI instruction the source or destination register / timer / counter) is negative. Eg. TFRI DB DB_pnt, R R_pos, R R_Dst_pnt with R_Dst_pnt = -1.

1311 – 22.11.2002
A SASI GM on port 0 or 1 can cause any kind of problems. Known effects are: - CPU crash
- Loss of S-Bus communication on port 2 or 3.

1308 – 29.10.2002
Graftec: Download block on run is not possible if COB 15 is used (COB 15 is running). A Message Box appears: Timed out waiting for blocks to be switched.

1303 – 02.10.2002
LON: At message sending with an out of range CodeID the LON-driver is hanging up.

1302 – 02.10.2002
LON: The use of a not bound message tag sets the new “non-bound message tag” bit 27 instead of the 'interface error' bit 16 in the diagnose register.

1301 – 02.10.2002
LON: Message Tag doesn't work with the new SNET, Fupla and LonMaker. The address table index is kept to 0x0f, LonMaker does not update it when it writes the address table info.

1300 – 02.10.2002

LON: At first use after a new program download at unbound value the driver is still called. The transmit LED lights up but nothing is sent and a NAK is returned. LON should return an unbound diagnosis without a driver call. After commission with an unbound value the problem is gone.

1299 – 26.09.2002
LON: At NV out ring buffer use overflow caused diagnose register Bit 'interface error' setting with transmission loss without any warning before.

1298 – 26.09.2002
LON: The use of a not bound NV sets the new “not bound NV out” bit 19 instead of the 'interface error' bit 16 in the diagnose register.

1281 – 27.06.2002
Reset IO signal is being activated for at least 1ms for projects with PCD3.LIO.

1276 – 23.05.2002
S-Bus configuration (Gateway, modem, TCP/IP) should not put the PCD in Halt if there is not enough memory space in the EEPROM for the data.

1274 – 15.05.2002
The command "Display CPU-Status" in the SAIA debugger returns only 1 line of information (CPU number, platform and FW version) over Master Gateway. The PRODUCTION INFORMATION (System ID, Hardware Version, Modifications, Fab. Date) is not returned.

1270 – 07.05.2002
If the software watchdog is activated and the PCD is set into the STOP state, then it restarts because of a watchdog failure. Also a history entry is only made when XOB 0 exists and the SYSWR 1000 with the option 2 was executed.
The PCD should always disable the software watchdog when it is switched in STOP or CONDITIONAL RUN and at each watchdog failure an entry should be done in the history table.

1267 – 01.05.2002
Profibus DP Master doesn't work on some PCDs. Sometimes the data transfer is not done.

1263 – 15.04.2002
If you put an EPROM (or a FLASH), which has an S-Bus configuration and a password protection, on a PCD that has no S-Bus setting, the result is “no-S-Bus” instead of the S-Bus setting present in the EPROM.
The S-Bus setting will be enabled if you write a station number (eg. with Write S-Bus-station cmd or SYSWR K 6000) on this system.

1258 – 01.03.2002
Downloading a DB in run causes a 68k Address Error.

1250 – 13.02.2002
Error at some specific LON connection binding: Unacknowledged / repeated. LON did not work if trying to use it.

1248 – 13.02.2002
It is now possible to configure/assign one port at 38.4 kBds and the other at 19.2 kBds on the internal Duart (port 0 & 1).

It is possible to configure/assign the 2 ports of a DUART at 38.4 kBds but the number of ports at 38.4 kBds are limited to number of ports for the system divided by 2 (PCD1 can only have 1 port at 38.4 kBaud at the same time).

1241 – 22.01.2002
Using heavily the SCON DP function, which then generate interrupt, was making too many interrupts and the system to handle them, was missing some, then it generates in the History "INTERRUPT ERROR".

1235 – 14.01.2002
In MC mode, the tbsy (or xbsy) flag is reset during the transmission of the 2 last characters, therefore these characters could be lost during a SASI OFF. !!! Now tbsy is reset at the end of transmission. This could result in a delay (at 9600 baud ,8bits,N,1stop : 2ms) between each character if communication is controlled with tbsy instead of tful.

1233 – 20.12.2001
After a restart on a password protected PCD, the PCD goes into reduced protocol after about from 5 to 10 minutes, and the password has to be entered again.

1230 – 13.12.2001
The function for PROFIBUS DP SCON x 3 1 doesn't work correctly. The PCD goes in HALT and the connection with debugger goes off.

1229 – 13.12.2001
Display non-volatile register in PGU mode works only one time. The 2nd time the PCD goes offline.

1222 – 27.11.2001
Download of a LON project over Gateway by using PG4 Version 2.0.210 is not executed.

1214 – 10.10.2001
The last character of the module type (e.g. PCD2.M15¢ or PCD2.M15`) is sometimes incorrect in the PG. PG displays six characters but only five characters are initialized in the PCD.

1212 – 01.10.2001
A Program that has more ST/TR than allowed in a system results in unpredictable problems.
The PG limited this to 2000 until now. However this has now been changed (PCS1.C8 max. 200 ST/TR, M170 max. 6000 ST/TR).

1199 – 30.08.2001
Profibus DP. If a slave is deconnected/reconnected to the master, then some times the input media's of the slave in the master are reset to 0 for a short time.

1190 – 14.07.2001
On LON broadcast explicit message read request (incoming) without explicit message configured an answer with empty message was returned. The PCD / LON should not respond. Same error than SWER 1177 (The original correction from IBT did not work).

1184 – 01.03.2001

The serial ports COM 2&3 on a LON module F802 or 804 doesn't work correctly, when the LON part of the module is configured.

1171 – 26.02.2001
If a SASI DP master is performed a 2nd time the CPU blocks.

1168 – 20.02.2001
Customers using LON requested for polled Variables to be implemented.
Info:
The polling function is called with a pcd_send with the READ_IND service. A polled binding uses an address table entry at the receiver side. LON IBT V1.5 update with added SNET adaptations.

1167 – 20.02.2001
Customers using LON requested for Alias Variables to have the new binding constraints supported. LON IBT V1.5 update with added SNET adaptations.

1166 – 08.01.2001
A non-bound variable (NV Update) was sent unsolicited to the network. On a Neuron based node, unbound variables are not sent at all.
Info:
This was fixed in release 1.3 of the driver but not released by SAIA. The original specs intended to have the Application programmer deciding on sending a NV update or not.

1165 – 08.01.2001
Customers using LON requested Turnaround Binding features to have extended configuration features available.

1164 – 08.01.2001
With LON in certain sequences of loading backup data / tool updates, the selector table could be matched up. The problem can be solved in downloading a new unbound backup and by the use of the installation tools replace function.
Corrupted selector table => no more LON communication.

1163 – 08.01.2001
With LON PCD responds with nv_fetch response (code 0x33) instead of the expected nv_update as result of the poll request. If pcd_send finds state&0xff000000) != 0, a fetch response is sent, otherwise a poll response is sent.

1162 – 08.01.2001
LON customer requested to get control over the sender's address in relation with incoming messages.

1076 – 12.01.1999
PG5 has got the possibility to read the type of the modules that can be put on the slots B1 and B2.

1066 – 20.11.1998
MC4 mode does not deactivate RS-485 drivers directly after completion of transmission (like PCD4.MXX5 v$c4). Added new mode MC5.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_090_1.hex	29ED	PCD2.M11/12 V090/1	27C1001-10 --- 4 502 7126 0
D2M110_120_090_2.hex	A9AB	PCD2.M11/12 V090/2	

V086

Major corrections

- Corrected the PROFIBUS DP-MASTER SASI instruction which fails (PROF DP fail 2 in history) with FW version V085 (SWER 1213).

Modifications realized - by SWERs number

1213 – 24.09.2001
The SASI instruction with PROFIBUS DP-MASTER always fails (PROF DP fail 2 in history) with FW V085. Impossible to use this functionality.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_086_1.hex	D242	PCD2.M11/12 V086/1	27C1001-10 --- 4 502 7126 0
D2M110_120_086_2.hex	6CB9	PCD2.M11/12 V086/2	

V085

Major corrections

- PROFIBUS DP Master was no more working at 12Mbps with the new firmware V1.1 on modules PCD7.F750. It fails during the PROFIBUS SASI instruction (SWER 1195).

Modifications realized - by SWERs number

1196 – 13.08.2001
When error is happening in the XOB16, and then the function DIAG is used in the XOB13, the diag. instruction will indicate a totally wrong line of the software.

1195 – 08.08.2001
PROFIBUS DP Master is not working anymore at 12Mbps with the new firmware V1.1 on the modules PCD7.F750. It fails during the initialization of the PROFIBUS (SASI).

1175 – 27.03.2001

On PCD2 with 1Mb RAM (PCD2.M110 and M120 HW Vers <J) the Flags 1..5, 18..21 are cleared at each power up or restart.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_085_1.hex	D168	PCD2.M11/12 V085/1	27C1001-10 --- 4 502 7126 0
D2M110_120_085_2.hex	6DA7	PCD2.M11/12 V085/2	

V084

Major corrections

- If an error occurred in the XOB13 then the XOB was executed until its end and then restarted immediately, causing an endless loop if the error is still present (SWER 1181).
- Some corrections were done in relation with the download in RUN and the synchronous dataview (SWERs 1174, 1172, 1170, 1160, 1159).

Modifications realized - by SWERs number

1189 – 04.06.2001
Before the PCD access the dual port RAM of the DP Master module, it locks the access and some time the locking was hold for a too long time, this was making a strange behavior on the PROFIBUS DP network.

1183 – 11.05.2001
If a bus error occurs, a redesign PCD is not always set in HALT. Every 2nd time the PCD remains in RUN without notifying anything.

1182 – 11.05.2001
Using the LDX instruction to set timer/counter causes a bus quit failure when the sum of the index register and the number of the timer/counter is bigger than 8191.

1181 – 10.05.2001
If an error occurred in the XOB13, then it was executed until its end and then restarted immediately, causing an endless loop (if the error was still present).

1174 – 05.03.2001
Download block in run from PG5 downloader doesn't work correctly.
a) After download block in run, the PCD returns an error message to the PG. The telegram from the PG is correct.
b) The "download block in run" deletes blocks, which are not used anymore. If the address of the block to be changed equals 0, the corresponding pointer in the block table is not cleared immediately.

1172 – 28.02.2001

In PG5 synchronous dataview (SAIA IL Editor) the ACU information is not correct. In fact it is the actual ACU (ACTA) and not the OR combination between actual ACU (ACTA) and OR ACU (ORA).

1170 – 23.02.2001
A download of a block while the PCD is running causes a timeout error in PG5 before the timeout has exceeded.

1160 – 26.01.2001
In the SAIA debugger, the command " File Load Cob" of an additional COB causes a CPU crash (68k invalid address, 68k invalid OPC,…), only with PGU S-Bus protocol.

1159 – 10.01.2001
In synchronous dataview if the program has a jump forward then the buffer was not filled on the correct datas. The jump instruction has no data but the line before the jump entry has some datas.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / Art n°
D2M110_120_084_1.hex	D937	PCD2.M11/12 V084/1	27C1001-10 --- 4 502 7126 0
D2M110_120_084_2.hex	6E96	PCD2.M11/12 V084/2	

V082

Major corrections

- Corrected the COB supervision time. In a program with only one COB, XOB 11 was called even if the supervision time wasn't exceeded (SWER 1151).
- Write EEPROM (SYSWR k 20xx) is reliable again (SWER 1150).

Modifications realized - by SWERs number

1155 – 15.11.2000
The CPLD cannot be reprogrammed when the user changes the firmware version for a PCD, which is equipped with CPLD, made with AEM (005) mask (0.5um).

1152 – 28.09.2000
SYSRD K 5210 must return back 70h and not 0 for FW-Version 070.
A bugfix version must return a value too (#81 returns 81h).

1151 – 22.09.2000
XOB 11 is called, even if the COB supervision time has never exceeded. If the supervision time is 2s then the XOB 11 will be called every 2s. If there is one COB more (for example COB 1) then the XOB 11 will not be called anymore.

1150 – 11.09.2000

If a Write Eeprom (SYSWR k 20xx) occurs during the background "read RTC" task (every 250ms) the value written in the EEPROM is not reliable.

1149 – 04.09.2000
The Read system buffer telegram doesn't send a NAK on systems without system buffer (PCD2.M110).

1148 – 21.08.2000
The instruction " DIAG " gives the wrong program line numbers of the block calls (Nesting level information) and entirely wrong informations when the error occurred within XOB 16.

1147 – 03.08.2000
Instructions MOV (with digit), DSP and WTIME change P/N status flags. Instructions DIGO and DIGOR set the E and N status flags with negative values.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_082_1.hex	4C73	PCD2.M11/12 V082/1	27C1001-10 --- 4 502 7126 0
D2M110_120_082_2.hex	6CF5	PCD2.M11/12 V082/2	

V080

Major corrections

- Test 400: The information of media corruption is now memorized until next TEST 400 and no more cleared by the start-up (SWER 1138).
- After use of FLASH and putting back RAM memory, the PCD can be in a state where each restart modifies the program. This result in "Invalid OPC" or at least wrong code. If no extended header is configured this appears at line 2630 and 5361 (SWER 1142).

Modifications realized by SWER number

1146
The software watchdog in PCD2 doesn't work.

1144
After a STH (or another bit instruction except ACC) a SOCL set the signal even if ACCU is low.

1142
In some case after each restart, value 0x55 is written at address 402AAA and 0x0A at address 405555. This causes "Invalid OPC" or at least wrong code at line 2630 and 5361 (if no extended header)

1139
SNVTs are always sent as ACK'd service even if they were bound as UACK'd service.

1138
The information of media corruption has to be memorized until next TEST 400 and not cleared by the startup.

1137
The information of media corruption has to be memorized until next TEST 400 and not cleared by the startup.

1135
In some cases, after a reset SB (RSB) in a parallel branch, the grafcet doesn't wait correctly the rendez-vous the next times this branch is executed.

1133
On Profibus-DP, SCON 16 Instruction doesn’t work correctly with PCD2 version V073.

1130
On Profibus-DP, SCON 16 Instruction doesn’t work correctly with version 073.

1128
Profibus-DP Slave doesn’t work with FW version 073.

1125
Send the date to a display with STXT on XOB 16 gives: dd.mm.yy. (Mode MC1).

1124
Profibus-FMS: Reading of media’s doesn’t work. The same program works without problems with FW version 006.

1123
Profibus-FMS: Transfer of DB’s. Only the first 8 elements are transferred.

1119
Default initialization of empty extended header in the EEPROM is wrong. For the user the functionality is OK but at each power up the EEPROM is overwritten.

1118
A DBX bigger than 3 gives a "HALT EVERYTHING IS OK" message on startup. The FW should ignore DBX bigger than dbxlimit.

1109
Introduce a new time function that returns the number of seconds elapsed since midnight (00:00:00), January 1, 1970, coordinated universal time, according to the system clock. DD-PFW6-048 Rev. 10.

1105
In the debugger connected with S-Bus, the command "Run To End_of_block" returns "Address outside code segment". This is due to tlg "Read bloc size" which give a wrong value back, except for text db and DBx.

1102
When the Neuron Chip of the Lon card f80x is not on-line a Lon global diagnostic flag is set and reset when the neuron chip is on line.

1101

A Lon global diagnostic flag is set when there is a new binding.

1100
Lon communication was not really "stable" because the LON MIP was not called correctly.

1099
Interrupt comint was not cleared safely when channel 9 status was not active.

1097
Command like "Display non volatile register" should also works with P8 and not only work in S-Bus PGU).

1096
Introduce the software watchdog in PCD2.

1089
RAM 64K is not supported.

1085
If external user memory is RAM, a Download give a "write error", if the memory allocation was made with an old FW version. And a program can give an Invalid opcode.

1082
Trace mode in the PG4 Debugger provokes:
- some 68K ADDR ERR
- Some strange steps (for example program line 12 to program line 65?)
Same problem when asking GET STATUS:
- the line displayed at "stopped at" is sometimes completely out of range?
The command 'Display Program (COB, XOB,...) Refresh' provokes the same error.

1059
New S-Bus telegrams cannot be accepted via gateway into slave PCD if these new functions are not implemented in the FW of the Gateway station.

1029
The instruction, which follows the NCOB, is sometimes executed before the switching of COB.

1014
For the online debugger we need the possibility to up load data in a synchronized manner.

316
When a PCD which works with S-BUS has a BUS Quit Failure, the failure affects the whole S-Bus.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_080_1.hex	6D8D	PCD2.M11/12 V080/1	27C1001-10 --- 4 502 7126 0
D2M110_120_080_2.hex	D81E	PCD2.M11/12 V080/2	

V073

Major corrections

- Some PCD2 (60/18000) definitely blocked with the 3 LED's Run, Halt and Error steady lighted. The reason is that the CPLD has lost its program due to bounces during switching On/Off of the power supply or if the program perform SYSWR K 2000 command (especially in XOB 0) at power down (SWER 1120).
- Some corrections were made on Profibus-FMS concerning problem on opening/closing channels and transferring “octet string” objects (SWERs 1107, 1108, 1121-1124, 1130).

Modifications realized by SWER number

1122
If a lot of profibus FMS telegram have to be treated, an abort command can block the communication on all channels.

1121
With Profibus-FMS there are "*xxxxxx* Interrupt error date *time*" entries in the history table .

1120
PCD2 definitely blocked with the 3 LED's Run, Halt and Error steady lighted. Reason: The CPLD has lost its Program. It's also possible that the EEPROM is corrupted. This defect is due to bounces during switching On/Off of the power supply or if the program performs SYSWR K 2000 command at power down.

1116
Put CPLD in TLR state after each access to CPLD. Include new CPLD file mS26 in FW.

1108
If a lot of profibus FMS telegrams have to be treated, an abort command can block the communication on all channels.

1107
With PROFIBUS FMS after an initiate negative response, the SCON are no more permitted.

1106
If SYSCMP is call after an OR or XOR sequence with the first conditions at true (ORA=1) then the result is always ACC high even if the time is elapsed.

1103
There is a memory corruption if you execute the command PUT/GET with a register into/from a DB in extension memory of 0 bytes (DB[0]).

1094
Telegrams from a S-Bus/PGU or GS port are sending without TS delay on a MG port.

1091
With incompatible F750 & PCD HW hardware, after writing "*xxxxxx* Profibus DP error #9 *date time*" in the history table there is sometimes a bus error.

1084
Not possible to perform a SASI GM on port 3 when a PC 104 is connected via dual-port RAM, to the PCD.

1080
DB in extension memory defined with a size of 0 bytes produces errors, when the program is in a FLASH or an EPROM. The extension memory was not recreated after a BATTERY failure.

1079
If there is a shutdown directly after the flash was erased, S-Bus configuration is corrupted and it produces some firmware errors.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_073_1.hex	31E4	PCD2.M11/12 V073/1	27C1001-10 --- 4 502 7126 0
D2M110_120_073_2.hex	5180	PCD2.M11/12 V073/2	

V007

- **Don't use anymore that version, replace it with version V073.**
  With this version a PCD2 can definitely blocked with the 3 LED's Run, Halt and Error steady lighted. The reason is that the CPLD has lost its program due to bounces during switching the power supply On/Off.

Major corrections

- Many corrections were made on S-Bus and especially on gateway (SWERs 1070, 1067, 1053).

Modifications realized by SWER number

1075
If a PCD is configured as Profibus-DP Slave with a large Profibus-DP configuration (172 modules):
When the Slave is switched on without a connection to the master , then the outputs and the mapped profibus flags are set to a random state.

1071
It is not possible to connect to slaves stations via a gateway master station when the GM port is in Data mode and that the PGU is in another mode (e.g. PGU Parity mode). The error occurs only if the slaves stations are assigned (SS2) but not if they are configured as PGU Data mode.

1070

Assignation of an SBPGU and a MGWY give no errors back if the baudrates are not compatible (38.4bd/38.4bd, 38.4/19.2, …) on the port 0/1 (respectively 2/3).

1069
Sending of DB's via S-Bus sometime doesn't work.

1068
With the FW Beta 98 versions, S-Bus RIO doesn't work. It is not possible to make a communication to a PCD1.RIO.

1067
GWY System with an S-Bus communication from the master to the slaves: Not possible to make an S-Bus connection whit the debugger from external master to a Slave, if one Slave is not connected to the network.

1064
Broadcast S-Bus telegrams with slow baudrates (ex: 300 Bauds) doesn't work.

1063
S-Bus with slow baudrate (ex: 300 Bauds) doesn't work correctly.

1062
TFR instruction could provoke a "Bus error" if position is given with a value bigger 65535.

1054
GWY System with Broadcast message on the GWY Master port and on the GS Port: After an irregular time the PCD goes in halt and the run and error led blinks.

1053
Broadcast messages on an S-Bus are always repeated tree times.

1051
Profibus-FMS communication between a PCD and a SIEMEMS PLC don't work with a Profibus Controller 6.3.

1050
The S-Bus communication don't work correctly if in a GWY system a BITO instruction is performed before the SASI instruction (The output of the BITO instruction are the diag-flag from the SASI instruction).

1048
A PROFIBUS FMS SASI gives an error if the number of one of the included texts is 0 or 4000.

1047
With PROBIBUS FMS transfer of objects mapped on DB > 3999 don't work.

1046
Broadcast message with Profibus FMS doesn't work.

1043
In S-Bus communication with more then one station, the destination number for the slave is not coherent with the message.

1042

On the CPU with EEPROM we have to change the handling of S-BUS header configuration (Station no., confide. S-BUS). We need a mechanism, which allow to chose the S-Bus config. from the EEPROM or from the EPROM. For more information see the description "ddpf6063.doc".

1039
Serial communication doesn't work on port 2 and 3.

1035
Broadcast telegram (address 255) disturbs the following Telegram.

1034
The instruction HALT doesn't reset outputs if the jumper RO (reset outputs) is set, and this happens only with HW Version H (with version < H, it works)

1033
4MB RAM and FLASH problem with programs having more than 65535 lines. COB or XOB having more than 65535 lines will not be installed and so never be called.

1031
The instruction WTIME doesn’t accept bad entries for the day number and week number. If so, then the PCD sets the Error Flag and does not update the time.

1028
On module F5x0, the last 2 digits are not stable with instruction DISP K 4 / DISP K.

1027
Instructions using the macro SLOW_HARDWARE and FAST_HARDWARE like the instructions STHS and OUTS provoke a short low impulse on the signal /IORES for the old PCD2 HW and COM0 for the Redesign PCD2.

1026
A clear of the signal DTR on the port 1 using "SOCL 1,1" caused a clear of the signal COM1. Only valid for Redesign PCD2.

1025
If an EPROM was equipped on an old HW (without EEPROM) containing an S-Bus station number, then this Number is not taken in case of battery failure.

1024
If RTC V3022 is not equipped for some customers like SELE, then the PCD2 remains in HALT, as the FW assumes that the RTC is faulty.

1023
With very fast interrupts and XOB20/21 missing, the PCD Crash.

1021
If an S-Bus telegram provoked a bus error (with display/write byte or erase flash) the PCD stay in an end less loop.

1020
A programmed FLASH inserted in a new PCD (never equipped with FLASH) could provoke a bus error if you try to erase the device.

1019
Gateway system with parity and data-mode. If the response of a slave contains the FS-character then this answer will not be transmitted from GWY to the PC.

1012
With PROFIBUS the PCD "GET_OV" answer is not compatible with Siemens S7.

1009/1001
MC mode on ports 2 or 3 works only after any 2 ‘restart cold command’.

311
Display values with fixed width field with leading zeroes.

308
Command 'Write Clock' doesn't correct automatically the week number or day number if they are wrong.

306
If in the XOB 11 the COB who's produce the XOB is stopped then the program never return in the COB.

296
S-Bus PGU and S-Bus PLM don't give the same diagnostic on restart if F1xx module is missing.

294
Extension Memory initialization failure on partial text.

272
The PCD1 now calculates the week number based on the date using the same algorithm as is used in the PG3. Modify the FW so that this algorithm is used for all PCD Systems. This is a good idea as each year we have the Problem on the PCD6/PCD4/PCD2 that the week number passes to week 53.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_007_1.hex	04CE	PCD2.M.. V007/1	27C1001-10 --- 4 502 7126 0
D2M110_120_007_2.hex	77C2	PCD2.M.. V007/2	

V006

Major corrections

- Simultaneous access on the EEPROM doesn’t give invalid values anymore (SWER 304).

Modifications realized by SWER number

318
Port #1 S-Bus PGU not possible in RS-422.

317
When in a PROFIBUS object the number of media is a multiple of 256, the data transfer doesn't work correctly.

304
Simultaneous accesses on the EEPROM give invalid values. PCD2(<index m) are not concerned.

303
Error LED isn't set if XOB20/25 aren't programmed but are provoked.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_006_1.hex	09FA	PCD2.M1.. V006/1	27C1001-10 --- 4 502 7126 0
D2M110_120_006_2.hex	5414	PCD2.M1.. V006/2	

V005

Major corrections

Modifications realized by SWER number

314
Refresh the status-LED (Run + Error) every 250ms.

302
PID instruction: incompatibility with old FW.

300
When RIO is activated it is no more possible to use another port as S-Bus master.

293
The S-Bus command "write real time clock" with an invalid value block up the slave.

291
Download via S-Bus of XOB, PB, or any block, did sometimes Bus error.

289
The STXM, SRXM instructions using timers or counters executed from gateway master port occur retries and multiple NAK.

287
Download via GWY clears all outputs even if the switch "clear outputs" = No.

284/86
Effective Tn, Ts and timeout values could be twice to big or to small depending of the system if the baud rate is ≥ 19200 Baud.

282
JPI instruction doesn't accept values greater than 8191.

50
After a irregular time the CPU goes in "Halt" (Bus quit failure).

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_005_1.hex	4740	PCD2.M.. V005/1	27C1001-10 --- 4 502 7126 0
D2M110_120_005_2.hex	5B2F	PCD2.M.. V005/2	

V004

Major Corrections

- There have been some very large modifications made to the kernel of the system to reorganize the treatment of the communications, the decrementation of the timers and the update of the real time clock (all tasks which take a long time). This was necessary because of a number of SWERS illustrating bad quality of communication with retries on all systems. This has meant major modifications to the kernel structure which are now common to all systems.
- File load modifications has been implemented under S-Bus only. It is now possible to choose whether to clear the outputs during the download or to make a RUN command directly after the download.
- Instruction SCOB has been improved. The instruction SCOB will no more provoke the jump to the other COB (except its own COB, e.g. SCOB 0 is programmed in the COB 0), the program will continue to the next instruction line.

Modifications realized

- Problems with the PID instruction.
- SCOB instruction doesn't work correctly.
- When in trace in GRAFTEC, if a condition is TRUE in the transition then the transition is active, but the next step has already been executed.
- The error flag problem with the SASI instruction, this includes the whole concept of the error flag.
- Problem with MD/SD mode when transmitting the RTC.
- The break length definition doesn't work correctly with SM0 Mode
- The MC4 mode doesn't work on ports 1 and 2.
- If the command 'display program ST/TR' is executed after a command 'run until pointer equals..', then the CPU will crash.

- 'Display ST/TR' command causes a crash if used after the 'RUN UNTIL POINTER EQUALS ...' command.
- Problems with the communications being blocked and XOBs 14/15.
- GWY problems with password. When using port 0 as the Gateway Slave Port (GSP), there are retry problems, which made the Password window pop-up.
- Modifications to support the PCD7.F700 - PROFIBUS FMS
- When the S-Bus Gateway Master Port (GMP) is assigned on port 0 in RS232 mode then it is not possible to come online with the programming tools using the P8 protocol
- The Restart Warm debugger command doesn‘t work correctly. Now, if the Reset Output (RO) jumper is set then the outputs will be cleared otherwise they are left untouched.
- It is not possible to use port 0 in RS-485 mode as the
- Gateway Master Port (GMP)

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_004_1.hex	4C51	PCD2.M.. V004/1	27C1001-10 --- 4 502 7126 0
D2M110_120_004_2.hex	AC12	PCD2.M.. V004/2	

V003

Major corrections

- Modifications and corrections were done to the TEST instruction
- Some corrections in Grafcet were made.

Modifications realized

- While loading a COB with the Debugger instruction 'File Load [file name] COB No', the CPU makes a bus quit failure.
- In the debugger the command 'Display program SB [number]' does not work. Error message 'Block does not exist'.
- Accessing a test > 3999 (for example with STXTX) if the memory extension is not allocated or not present will cause a crash.
- Executing an RSB instruction at a STEP, which doesn't exist, causes an error. This is not detected by the Assembler.
- The TEST instruction doesn't work correctly, it has never worked correctly.
- The PID instruction is not working correctly for the following cases.
    - Proportional factor < 15 and set point > than actual value, when the calculated result of the PID algorithm would be a multiple of 256 then the controlled output (Yn) is set to 0 for one scan.
    - Integral factor Fi=0 --> then ZS becomes maximum value then Fi is set > 0 --> integrator does not work. To make integrator work a cold start must be performed.

- S-Bus communication can cause a problem for the following case:
  For one comm. port S-Bus is assigned or configured for 38.4kBd and a second port is assigned for S-Bus < 38.4kBd (e.g. 9600Bd). If on the second port an SRXM instruction to read 32 Registers is executed then the master will perform retries because the timeout is too short. The intermediate solution is to double the timeout (2 * default value) in the SASI for the second S-Bus port.
- The PG3 command 'File Load [filename] COB no' followed by a 'Restart cold all-CPUs' caused a crash.
- The DSP K 0 instruction didn't return to 6-digit integer mode without leading zeros if a DSP K 7 had already been executed.
- File loading DB's greater than 5999 did not indicate an error but erased all other DB's.
- If a SASI was performed on port3 then the RTS of port2 was cleared.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_003_1.hex	5F44	PCD2.M.. V003/1	27C1001-10 --- 4 502 7126 0
D2M110_120_003_2.hex	F34E	PCD2.M.. V003/2	

V002

Major corrections

- The memory extension did not keep the DB structure in the RAM on battery loss. This has been corrected in the mini project 'memory extension security'.
- The S-Bus slave drivers have been modified to make them more tolerant to errors generated by NON-SAIA masters and errors caused by noise on the lines. These modifications have been made in the light of problems with S-Bus in several countries whereby a system crash occurs approximately once a week.

Modifications realized

- The instruction DSP K for the display PCD2.F5xx doesn't work in a COB having a cycle time < 10 ms
- While using the S-Bus with Break mode (SM0/SS0, RS 232), the signal RTS is always ON, that means it is not possible to use the Private Line Modem and converter PCD7.T120.
- The instruction RSB provokes a crash with error message, 'Bus Quit Failure'
- If the transition before a parallel sequence is set to 1, it causes a crash with error message ‚Bus Quit Failure'
  The two above problems (RSB /transition…) can be solve by introducing the following code in the user program :

```
XOB  16
```

```
LD          R 0          ; MUST USE REGISTER 0
            0FFFFF044H
LD          R 1          ; MUST USE REGISTER 1
            1
LD          R 2          ; MUST USE REGISTER 2
            2
CALL68                   ; SPECIAL DEVELOPMENT
            81A000H      ; INSTRUCTION
…
…                        ; REST OF USER PROGRAM
EXOB
```

- The nesting of texts up to 4 levels caused a crash of the System under certain circumstances. If a nested text is called directly from within a sub-text then this also caused a crash.
- Disconnecting and reconnecting the debugger while using MD/SD mode on PORT 1 caused the MD/SD communications to be blocked.
- It was not possible to download a DB greater than 2047 elements.
- The STXT instruction transmitted invalid characters if the TEXT specified in the instruction didn't exist. Also, if two ports executed STXT instructions in parallel then the length of the text to be transmitted was occasionally corrupted which caused invalid characters to be transmitted on either of the ports.
- The RCOB instruction didn't work correctly
- The indirect text indicators $Rxxxx or @Rxxxx should always be followed by four digits. If only three digits were specified in the latest official versions then a crash would occur.
- The RSB instruction caused a crash in V001.
- The TR instruction also caused a crash in V001.
- The RTS/CTS lines did not work on port 1 with the PCD2 V001 when using SM0/SS0 which meant that private line modems could not be used and that RS-485 could not be used.
- After a restart cold, port 3 (RS-485) was put in transmit mode which would block an RS-485 network.
- The F5 display update mechanism has now been improved so that there is less flicker on the digits between updates.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_002_1.hex	78C8	PCD2.M.. V002/1	27C1001-10 --- 4 502 7126 0
D2M110_120_002_2.hex	005A	PCD2.M.. V002/2	

V001

This is the first official version for PCD2.M110 and M120.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D2M110_120_001_1.hex	Unknown	PCD2.M.. V001/1	27C1001-10 --- 4 502 7126 0
D2M110_120_001_2.hex	Unknown	PCD2.M.. V001/2	