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Internal

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Subject: PCD4.M445	FW VERSION **V0F0**

Doc #: D4_M445_0F0.doc

PCD4M445 SUMMARY OF FIRMWARE VERSIONS

This summary presents a short description of all firmware versions used with the PCD4M445 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 COMSWER.XLS that contains more information about known bugs.

FEATURES OR RESTRICTIONS SPECIFIC TO PCD4.M445

General

- FW Compatibility between CPU0 and CPU1:
  On a PCD4.M445 it is necessary to have suitable FW versions on CPU0 and CPU1.

  The table below gives the overview of FW compatibility:

CPU0 (PCD4.M1x5/M1x0)	005, 00B	00C	00D	0E0..0F0
CPU1 (PCD4.M44x)	001	00C	00D,	00E..0F0

- Restriction: Port 2 & 3 can only be used from CPU1.

Memory

User prg mem.	HW	System Memory	FW	Default Memory configuration
R110 / R2x0 RAM (/EPROM) 2*256kbits		64kBytes		CPU0: 7k prg lines, 4k txt CPU1: 7k prg lines, 4k txt
2*512kbits		128kBytes		CPU0: 7k prg lines, 4k txt CPU1: 7k prg lines, 4k txt
2*1Mbits	≥E	256kBytes		CPU0: 7k prg lines, 4k txt CPU1: 7k prg lines, 4k txt
R310 RAM (/EPROM) 2*256kbits		64+172kBytes	0B0	CPU0: 7k prg lines, 4k txt CPU1: 7k prg lines, 4k txt

Smart solutions for comfort and safety

2*512kbits	128+172kBytes	0B0	CPU0: 7k prg lines, 4k txt
			CPU1: 7k prg lines, 4k txt
2*1Mbits	256+172kBytes	0B0	CPU0: 7k prg lines, 4k txt
			CPU1: 7k prg lines, 4k txt

- EEPROM: Not present on PCD4

Instructions

- SYSRD/SYSWR
  - SYSRD/SYSWR/SYSCMP/DEFTR instructions. V00C
  - SYSWR 1000: System watchdog not implemented
  - SYSRD/SYSWR 7050 to 7081 V0E0
    to read and write the different elements of the clock.
  - SYSRD 7090, coordinated universal time. V0E0
    Function that returns the number of seconds elapsed since 00:00:00;
    January 1; 1970 (), according to the system clock.
- PID
  - Instruction has been corrected. V00C
  - Added a SYSWR K 998 to select the old PID algorithm. V00D
- SASI
- Text accepts $R parameters. V0E0
  E.g:"UART:$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:
  - MD/SD, MM4, MC0/1/2,4: V001
  - MC5: Character mode for RS-485 that deactivates drivers directly after
    completion of transmission. V0F0
- S-Bus:
  - Parity and break modes as master and slave. V001
  - Data-Mode V00D
  - Modem+ V001
  - Gateway (GM/GS). V00C
- S-RIO as master and slave. V00D
  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:
  - Base functionality V001

90 channels (10...99) and 400 objects (100...499).
- Extension (at least SPROF $137 is needed)   V00C
  possibility to map objects on DBs, read/write indicator, multicast/broadcast
  link, watchdog.
- Extension for profile GA   V0D0
- PROFIBUS DP: not implemented
- LON: not implemented
- LAN2:   not implemented

- Up to 2 ports could be configured/assigned at 38.4 kBds at the same time. V0F0
- It is possible to configure/assign port 2 (or 3) at 38.4 kBds and port 3 (or 2) at
  19.2 kBds   V0F0

Miscellaneous

- New features for PG5.   V0E0
  - 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   not implemented
  - XOB 17, 18, 19: User XOB's   V001
    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   V00C
  - XOB 14/15: Cyclic XOB's
    can be executed from 10 ms to 1000s with 10 ms steps   V00C
    can be executed from 5 ms to 1000s with 1ms steps   V0E0
  - New XOB handling.   V0E0
    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   V00D
  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.   V001

0F0

Major corrections

- The serial communication, especially at 19.2 or 38.4 kBauds, sometimes blocks (SWER 1288).
- 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).
- 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 SWERs 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.

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.

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.

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 2 & 3).

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 kBds at the same time).

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.

1215 – 24.10.2001
On PCD4.M445 S-RIO SASI with baudrate 76800 doesn't work. CPU 1 crashes with end less loop of 68k invalid OPC.

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).

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 during executing opcode in the XOB13, the XOB13 is executed until its end and then restarted immediately, causing an endless loop (if the error is still present).

1178 – 09.04.2001
In multi CPU PCD, using TEST 2 on one CPU can cause a bus-quit failure on the other CPU.

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 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 PCD is running causes a timeout error in PG5 before the timeout has exceeded.

1066 – 20.11.1998
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.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D4M445_0F0_1.hex	9F0E	PCD4.M445 V0F0/1	27C1001-10 ---
D4M445_0F0_2.hex	1B50	PCD4.M445 V0F0/2	4 502 7126 0

0E1

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).

Modifications realized - by SWERs number

1160 – 26.01.2001
File Load Cob of a new 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.

1152 – 28.09.2000
SYSRD K 5210 must return back 70h and not 0 for FW-Version 070.
A bug fix 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.

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°
D4M445_0E1_1.hex	1A69	PCD4.M445 V0E1/1	27C1001-10
D4M445_0E1_2.hex	3434	PCD4.M445 V0E1/2	--- 4 502 7126 0

0E0

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).
- S-BUS communication via gateway master port 0 or 1 now works also if the user program is in the CPU 1 (SWER 1074).
- Some corrections were made on Profibus-FMS concerning problem on opening/closing channels and transferring "octet string" objects (SWERs 1107, 1108, 1122-1124, 1130).

Modifications realized - by SWERs number

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

1138
The information of media corruption has to be memorised until next TEST 400 and not cleared by the start-up.

1130
Profibus-FMS communication blocks if a lot of SCON instructions are performed at the same time.

1129
Tlg "write clock" on PCD4 with GWY sometimes blocks the CPU. LED RUN is ON but process is stopped and communication is not possible.

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

1124
Profibus-FMS: Reading of "octet string" objects mapped on flags don't work.

1123
Profibus-FMS: Transfer of DB's
Only the first 8 Elements of a DB are transferred.

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

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

1108

If a lot of profibus FMS tlg 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 an S-BUS/PGU or GS port are sending without TS delay on a MG port.

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

1080

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

1074

The communication S-BUS via gateway master port 1 or 0 doesn't work if the user program is in the CPU 1. Remark: The design of the GWY on M44x was that CPU0 handle port 0/1 and CPU1 handle port 2/3.

1072

When the data exchange between the master station and the RIO slave doesn't work, all registers containing analogue value are reset.

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.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D4M445_0E0_1.hex	EA38	PCD4.M445 V0E0/1	27C1001-10
D4M445_0E0_2.hex	34F1	PCD4.M445 V0E0/2	--- 4 502 7126 0

00D

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

Modifications realized - by SWERs number

1049
After a download of a program with PROFIBUS FMS configuration (with PG4 VB2.0), the PCD4 goes in halt and indicate "text segment error".

1048
A PROFIBUS FMS SASI give an error if one of the included texts is equate to 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

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D4M445_00D_1.hex	E13A	PCD4.M445 V00D/1	27C1001-10
D4M445_00D_2.hex	0A4A	PCD4.M445 V00D/2	--- 4 502 7126 0

00C

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.

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

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D4M445_00C_1.hex	BDE9	PCD4.M445 V00C/1	27C1001-10
D4M445_00C_2.hex	A989	PCD4.M445 V00C/2	--- 4 502 7126 0

001

This is the first official version for PCD4.M44x (CPU1).
The PCD4.M445 V001 is FW compatible with PCD4.M240 V005 and included a PROFIBUS FMS connexion.
Restriction: Port 2 & 3 can only be used from CPU1.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D4M445_001_1.hex	D16F	PCD4.M445 V001/1	27C1001-10
D4M445_001_2.hex	C7F6	PCD4.M445 V001/2	--- 4 502 7126 0