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Internal

From:	**A. Kistler**	**Tel.: 355**	**Date: 30/10/2003**
Subject:	**PCD6.M300**	**FW VERSION**	**V040**
Doc #:	**D6_M300_040.doc**		

PCD6M300 SUMMARY OF FIRMWARE VERSIONS

This summary presents a short description of all firmware versions used with the PCD6M300 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 PCD6.M300

General

- Compatibility with PCD6.M1xx/M2xx:
  The PCD6.M3xx is fully compatible with PCD6.M1xx/M2xx but it is necessary to have suitable FW versions on both types of CPUs.

  The table below gives the overview of FW compatibility:

PCD6.M3xx	001	002..040
PCD6.M1xx/M2xx	$9B,$9C	00A

  Maximum 6 PCD6.M3 CPUs can be inserted in the rack instead of 7 PCD6.M1xx/M2xx. This will be always the case because the M3 is faster and with 7 PCD6.M3xx there is too much accesses on the public bus. **Be careful**: even with 6 CPUs the last one can run very slowly. It is depending on the traffic on the public bus.
- Default PGU mode is S-BUS parity
  Therefore PG5, PG4 from version V1.3 upward, PG3 from version β2.0 upwards or P100 programming unit with FW $301 has to be used.

Memory

User prg mem.	HW	System Memory	FW	Default Memory configuration
R1.. / R5.. RAM (/EPROM) 2*256kbits		64kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
4*256kbits		128kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt

6*256kbits		172kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
8*256kbits		256kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
R310 RAM (/EPROM) 2*1Mbits		256+0kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
4*1Mbits		512+0kBytes 256+256kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
6*1Mbits		768+0kBytes 512+256kBytes 256+512kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt
8*1Mbits		1024+0kBytes 768+256kBytes 512+512kBytes 256+768kBytes		CPU0: 9k prg lines, 4k txt CPU1..6*: 8k prg lines, 4k txt

*If CPU is present, else the header is not initialized.

- EEPROM: 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 instructions. V001
  - SYSCMP/DEFTR instructions. not implemented
  - SYSWR 1000: System watchdog not implemented
  - SYSRD/SYSWR 7050 to 7081 V030
    to read and write the different elements of the clock.
  - SYSRD 7090 V030
    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. V030
- PID
  - Instruction has been corrected. V001
  - Added a SYSWR K 998 to select the old PID algorithm. V001
- SASI
  - Text accepts $R parameters. V030
    E.g:"UART:$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 V001
  - MM4 not implemented
  - MC5 mode that deactivate RS-485 drivers directly after completion of 3transmission. V040
- S-Bus:
  - Parity and break modes as master and slave. V001
  - Data-Mode V001
  - Gateway (GM/GS). V001
  - Modem+ V001
  - New S-Bus configuration data handling (Station no., config. S-BUS) when inserting a programmed user memory (EPROM/FLASH). V020
- S-RIO as master and slave. V001
  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 V001
    10 channels (10...19) and 100 objects (100...199).
  - Extension (at least SPROF $137 is needed) V001
    possibility to map objects on DBs, read/write indicator, multicast/broadcast link, watchdog.
  - Extension for profile GA V002
- PROFIBUS DP: V002
  master mode with PCD7.F750 and PCD6.M3xx HW ≥C or A/B modif4.
  slave mode with PCD7.F77x. and PCD6.M3xx HW ≥C or A/B modif4.
- LON not implemented
- Communication on TCP_IP with PCD7.F651: V040
  - S-Bus over IP
  - “Open data mode” over IP
- LAN2 with PCD6.T1xx V005 V001
- PGU switches automatically to 38.4 kBds (requires PG5 V1.2). V040
- Up to 3 ports could be configured/assigned at 38.4 kBds at the same time. V040
- It is possible to configure/assign port 1 (or 2) at 38.4 kBds and port 2(or 1) at 19.2 kBds. V040

Miscellaneous

- New features for PG5. V030
  - 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 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 V001
- XOB 14/15: Cyclic XOB's
  can be executed from 10 ms to 1000s with 10 ms steps V001
  can be executed from 5 ms to 1000s with 1ms steps V030
- New XOB handling. V030
  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 V002
  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

040

Major corrections

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

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.

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.

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 a 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.

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 kBds at the same time).

1247 – 13.02.2002
Possibility to switch the PGU port from 9.6 kBds to 38.4 kBds.
See DDEPFW6143.

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.

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 initialised 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.

1076 – 12.01.1999
PG5 has got the possibility to read the type of the modules which 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°
D6M300_040_1.hex	59B6	PCD6.M3 V040/1	27C1001-10 --- 4 502 7126 0
D6M300_040_2.hex	2FFA	PCD6.M3 V040/2	

032

Major corrections

- Corrected the PROFIBUS DP-MASTER SASI instruction which fails (PROF DP fail 2 in history) with FW version V031 (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). Impossible to use this functionality.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D6M300_032_1.hex	A24C	PCD6.M3 V032/1	27C1001-10 --- 4 502 7126 0
D6M300_032_2.hex	2248	PCD6.M3 V032/2	

031

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).

- 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).
- 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

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).

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 behaviour on the PROFIBUS DP network.

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).

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 (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 (Saia IL Editor) if the program has a jump forward then the buffer was not filled with the correct datas. The jump command has no data but the line before the jump entry has some datas.

1158 – 10.01.2001
In the synchronous Dataview the M3 goes in halt.

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.

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.

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°
D6M300_031_1.hex	A242	PCD6.M3 V031/1	27C1001-10 --- 4 502 7126 0
D6M300_031_2.hex	21B8	PCD6.M3 V031/2	

030

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).

- Some corrections were made on Profibus-FMS concerning problem on opening/closing channels and transferring “octet string” objects (SWERs 1107, 1108, 1122-1124, 1130).
- It is not possible to be connected in PGU mode on two CPUs at the same time. If we do a second connection, the CPU returns message "Error 28: PCD not connected to COM1 or powered off" (SWER 1092).

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.

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

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

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.

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

1118
A DBX bigger than 3 gives a "HALT EVERYTHING IS OK" message on start-up. 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.

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]).

1098
GWY Master Port 0 with S-Bus data mode
On the master side the SRXM command after a broadcast STXM command don't work.

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

1092
On PCD6.M3, it is not possible to be connected in PGU mode on two CPUs at the same time. If we do a second connection, the CPU returns message "Error 28: PCD not connected to COM1 or powered off".

1091
Handling of the error #9 of Profibus-DP master provoke sometimes bus error

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.

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°
D6M300_030_1.hex	7A41	PCD6.M3 V030/1	27C1001-10 --- 4 502 7126 0
D6M300_030_2.hex	351F	PCD6.M3 V030/2	

002

Major corrections

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

Modifications realized - by SWERs number

1077
S-BUS Gateway: It is not possible to connect to the slave station via the gateway master port for a certain time if the slave doesn't answer to a request from the master (time out). This occurs only with parity mode or break 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.

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.

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

1061
STHS instruction returns always ACCU = 1.

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.

1051

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

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.

1045
After a power up the S-Bus communication on both the GWY master port and the GWY slave port of a PCD6 work only after 1 minute.

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

1042
The handling of S-BUS header (Station no., config. S-BUS) is no more the same than before when EEPROM didn't exist. A hardware solution to erase or to keep the station no. In EEPROM invalid, so that the number from EPROM is taken in account is absolute necessary, because actually there is no way to bring invalid the contents in EEPROM, the station no. in EPROM will never be read. See also the description ddpf6063.doc.

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

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.

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

1022
ALGI, ALGO, OUTS, STHS crash the PCD6.M3.

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.

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.

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°
D6M3_002_1.hex	55CE	PCD6.M3 V002/1	27C1001-10 --- 4 502 7126 0
D6M3_002_2.hex	B975	PCD6.M3 V002/2	

001

This is the first official version for PCD6.M3xx. It is based and therefore fully compatible with the $9C of PCD6.M1xx/M2xx .
The PCD6.M3xx is about twice as fast as a PCD6.M1xx/M2xx.

Information for PROM programming.

Hex file	Checksum	EPROM Label	EPROM type / art n°
D6M3_001_1.hex	----	PCD6.M3 V001/1	27C1001-10 --- 4 502 7126 0
D6M3_001_2.hex	----	PCD6.M3 V001/2	