

TECO GmbH Germany

Coatron A4 automated coagulation analyser

SOFTWARE HISTORY

V1.07.05a (Build-261) 29. Jul 2020

Recommended TECAM Version: **V7.08.8 (PRO/PROLIS)**

Software changes	
1	System self-rebooted occasional after a missing liquid level (out of liquid), instead of returning to main menu. (Minor bugfix for 1.07.04b)
2	System simulator mode removed after ROBOT ERROR message.

Update and Compatibility Information

This firmware is optional and can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.07.05a (Build-260) 19. Dec 2019

Recommended TECAM Version: **V7.08.6 (PRO/PROLIS)**

Software changes	
1	Backwash of rinse tank filter during startup. This regenerate the filter
2	High speed wash cycle during boot up. This allows to detect a leaky valve. If you see a lot of air bubbles, then valve must be replaced
3	Wash sample out of needle probe inside of the dome. -This wash needle inside+outside -This extend lifetime of valve -This reduce consumption of rinse tank

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible. After update you may be asked to reset all test protocols and calibration data to factory default. You can accept or reject, if you like to continue with EEPROM data before update.

V1.07.04d (Build-259) 12. Nov 2019

Recommended TECAM Version: **V7.08.5 (PRO/PROLIS)**

Software changes	
1	Default protocols changed for -PS: (Protein-S, adapted to new assay TEClot PS, A0601), -VWF (von Willebrand Factor, adapted to immuno assay) -DABI (Dabigatran, adapted to TECLOT DOAC (anti-IIa) -AF10 (anti-Xa, adapted to TECLOT DOAC (anti-Xa)
2	Systems reboots automatically after message "ROBOT ERROR"

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.07.04d (Build-258) 25. Mar 2019

Recommended TECAM Version: **V7.08.4 (PRO/PROLIS)**

Software changes	
1	Since last version, there were occasional barcode reading problems observed like Patient-ID is displayed and transmitted to TECAM with missing characters. Fixed now.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.07.04c (Build-257) 12. Feb 2019

Recommended TECAM Version: **V7.08.2 (LITE/PRO/PROLIS)**

Software changes	
1	Self-Reboot during measurement removed (Bugfix for 1.07.04b)
2	Default protocol of DD changed Old: 10µl sample + 30µl RB + 30µl Latex Start=25s Stop=120s Mix=No New: 10µl sample + 40µl RB + 30µl Latex Start=60s Stop=180s Mix=Yes Reason: Poor linearity and accuracy
3	D-Dimer Auto-calibration changed: Standard-2 is not pre-diluted anymore, but pipet from P01 with half sample volume.

	Reason: Poor linearity and accuracy. Sample dilution with IBS buffer have negative effect to linearity and accuracy.
4	Worklist Mode=QC introduced This mode is intended to check the quality of system. - Place P01 normal control + FIB reagent - Run Worklist MODE="QC" - After 8 repeats, system calculates mean + C.V. and status of QC x if C.V. of (s) is > 7.5% then there is a problem with pump or needle x if C.V. of (E) is > 7.5% then there is a problem with optic or cuvette or XYZ x if mean (E) is < 0.030E then there is a problem with cuvette adjustment
5	In general the analytical performance of aPTT, Fib,DD, AT, FDP, is improved to achieve significant better C.V. values especially for abnormal samples
6	Replacement of rinse tank is now integrated within routine workflow. A change to service menu is not required anymore. Transmit a worklist with TECAM. System will warn before start, if rinse level is low. Now replace the rinse tank and confirm. Afterwards system will start the worklist.
7	System will start always with a new cuvette, if orders are cuvette wise with TECAM (worklist mode=CUV). This ensure best throughput and save a lot of rinse solution.
8	New firmware supports already Code20 tickets (required for cuvette or rinse barcode activation) , which were coming in year 2020

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

After installation all test protocols will reset to default.

After installation D-Dimer must be calibrated new. All other test setup (PT,FIB,..) can be obtained from previous calibration.

V1.07.04b 6. Jul 2018

Recommended TECAM Version: **V7.06 (LITE/PRO/PROLIS)**

Software changes

1	Carryover of AT-buffer removed. Assay Techrom AT C1000-010 contains a heparinized buffer to prepare a 1:100 sample dilution. If the AT-buffer is not wash out of needle carefully, then a consequent TT measurement will result in "+++". (Note: On Coatron-A instrument the liquid AT reagent (C1010-020) is intended. No carryover is observed , because the sample buffer is without heparin)
2	Cap Piercing procedure changed to new BD Microtainer 1.6mL. The standard BD Vacutainer (3.0mL) can't be pierced anymore.
3	Worklist Setting Clean = MIN or MAX removed. System works now always in mode MAX, which forces a wash cycle between sample to sample.
4	OEM=6 (China) specific changes -Default protocol of AT changed to C1000-010 (4PAT+156BUF-110CLR+ 50R1+50R2) - Result transmission to LIS2002 fix to data protocol from 2017 (version 1.07.04a , change-8 from 2018 showed incompatibility with some Chinese LIS)

	- AnyCode valid until 1.1.2020
5	Minor fixes (reported bugs below are very rare) - System pipet sample in second cuvette even if no cuvette is available. - System pipet reagent in wrong sequence, if sample was skipped before.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible

V1.07.04a 13.Mar 2018

Recommended TECAM Version: **V7.04 (LITE/PRO/PROLIS)**

Software changes	
1	Worklist mode SEL is removed, New worklist mode ECO This mode save upto 30% reagent and rinse, but throughput will reduce upto 50%.
2	Carryover removed, Sometimes FIB reagent is pipet before aPTT step. This cause carryover of FIB into aPTT cuvette. The aPTT results can be 25% shorter in worst cause. Fixed now.
3	Airbubble and spike filter added to measurement, In worst case a spike on signal can cause +++ or false short results. The software filter remove now any spikes
4	Integration into new TECO ticket system, The instrument require every 50.000 tests a service. The interval must reset by a barcode. The barcode is obtained from www.teco-reg.com For login the SIN and PIN is required, which is now showed by the instrument during bootup or print system report With TECAM V7.04 the login can be done automatically
5	AnyCode is disabled with 1.1.2019 (applied in China)
6	Needle dispense waste now outside of wash position, The membrane inside of wash positon often blocks the drainage and must be replaced each 50.000 tests. This is not necessary anymoren.
7	New chromogenic tests based on anti Xa or anti IIa to monitor new anticoagulants (DOAC) like LMWH , Apixaban, Rivaroxaban, Edoxaban or Dabigatran. The new assays kits for anti IIa and anti Xa are currently under validation and soon available.

	Additionally aPTT allows to input calibration curve for Heparin monitoring
8	T-Corr setting is now transmit to TECAM V7.04, This allow much better reaction curve analysis on TECAM side
9	AnyCode tickets are disabled with 1.1.2019
10	Mirror Print Print data like system report or setup test are sent to TECMA, if connected
11	Minor fixes (reported bugs below are very rare) • Needle sometimes crashed into cuvette • Some last result is not transmit to TECAM • Curve transmission to TECAM is sometimes with wrong deadtime • Skip of orders can cause false volume in cuvette

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.07.03a 11.Aug 2017

Software changes	
1	Default protocol of aPTT changed T-Corr: old=+15% - 6s new=0
2	System information (name, S/N, SW) added to print of SETUP TEST
3	Test setup is automatically transmitted to TECAM with each result
4	Lipemia patch. PT ,aPTT, TT is now working with sample up to 500mg/dL Triglycerides. Samples with higher concentration will be measured as “+++”.
5	PT-Unit: “R + INR” introduced

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.
An update of TECAM PRO(LIS) to V7.02 or later is required to activate Calibration Lot Management.

4. Mar. 2017:
V1.07.02d

Software changes	
1	INIT SCREEN allows now to reset service interval
	0 EXIT
	1 INIT TEST
	2 INIT ALL
	3 RESET SERVICE (Reset service interval, needle and syringe without barcode)
2	Negative D-Dimer reaction curves are now reported as "0" instead of +++
3	Result flag "f" = for low FIB. , if endsignal during PT is below 0.075E Result flag "F" = for high FIB. , if endsignal during PT is above 0.800
4	Menu ANALYSIS: 8 ACTIVATE SYSTEM accept now also barcode for rinse.
5	Bugfix: Menu ANALYSIS: 5 VIEW results were not showed. This is fixed now.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V6.06 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

24. Jan. 2017:
V1.07.02c

Speed Pack

Throughput of PT, aPTT increased by 30% or more

Clean=MIN	Mode= BAT (Routine)	
	1.07.02a	1.07.02c
PT	105	156
aPTT	71*	90*

Mode=EV1 (Research)	Mode= BAT (Routine)	
	1.07.02a	1.07.02c
PT	162	204
aPTT	78*	114**

* aPTT incubation + maxtime = 120s

** aPTT incubation + maxtime = 90s

By following measures:

The intensity of cleaning can be set without menu “ANALYSIS”

CONTINUE: **YES**

TEST:	PRFL
BARCODE:	NO
RELFEY:	NO
DOUBLE:	NO
QC-ACTIVE:	NO
AUTOSKIP:	NO
HCT-L:	00 mm
CLEAN:	MIN
SHIELD:	YES
MODE:	CUV

Software changes and new cleaning program		CLEAN=MIN (max speed)	CLEAN=MAX (max accuracy, default)
1	Sample is clean out of needle with next sample. No rinse or cleaning solution is used. The observed carryover affect result less than 5% at a significant win of throughput.	Yes	No
2	PT, aPTT,CaCL, IBS buffer is clean out of needle with rinse solution only. No additional clean solution is used.	Yes	Yes
3	aPTT + CaCL is dispensed in multi mode (one input , four outputs)	Yes	Yes
4	PT is dispensed in multi mode (one input , four outputs)	Yes	No

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V6.06 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

28. Oct. 2015:

V1.07.02a

Modifications

1. Sample dilutions are always pipet in one shot with diluent together. First input diluent, then input sample, then output both in one shot. This new procedure allows best mixing and precision in the cuvette. The C.V. of FIB increased significantly. Even test protocols with just 3µL sample can be run now at good precision.
2. Autocalibration dilutions are now prepared with pipeting IBS+PAT in one shot like regular sample dilutions. The linearity of calibration and the accuracy of patient samples is significant improved.
3. New worklist mode "CUV" is introduced in menu ANALYSIS. The worklist is run cuvette wise (first cuvette PT, second cuvette aPTT,..) . It combines the best of mode BAT (test wise = best throughput, lowest consumption) and SEL (sample wise = complete result report during worklist).
4. In menu analysis a new setting "CLEAN= MIN/MAX " is introduced and the old option VMAX is removed completely from menu SETUP SYSTEM. CLEAN=MIN (default) means, no clean cycle between sample to sample pipeting. The throughput is upto 20% higher than in mode "MAX" . No carryover was observed during evaluation with extreme high dose of heparin (10IE/ml control).

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V6.04 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

26. Feb. 2015:

V1.07.01 SW5

Modifications

1. Some instruments showed problem with cuvette detection. Now this fixed now by firmware.
2. Tecam interface is upgraded to synchronize methods from instrument to TECAM.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V6.02 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

03. Dec. 2014:

V1.07.01 SW4

New features

1. FIB default protocol changed to 11µL sample + 90µL IBS-Buffer and 50µL FIB reagent. Runtime changed from 60sec to 90sec. Then new protocol gives better calibration linearity and more accuracy in the low dose area (<100mg/dL). After upgrade a recalibration of FIB is recommended. This feature is not available for instrument AC-4.
2. PT detection algorithm was slightly modified to give a result even for extreme weak, strong, quick or slow clots. (before often "+++" was reported). The clotting results itself will not changing. A recalibration is not required.
3. Cuvette detection is now working with a single cuvette. Before at least two cuvette had been required. The instrument prepared sample with the next cuvette. When moving the cuvette into optic it gave a "cuvette" error, if no more empty cuvette as available. In this case also the prepared cuvette was lost. Now the prepared cuvette will be processed anyway.
4. Adjust XYZ is optimized for instruments, where a optic shield is in use.
5. New menu PIPET STATION. Use the instrument to reconstitute reagent or controls.

Bugfixes

1. Autocalibration of F8 and calibrator IU/mL=0.7 caused a system reboot , while printing the setup. This is solved now.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V5.31 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

6. Jun. 2014:

V1.07.01 SW3

New features

1. Worklist is now paused and an alarm can be heard, if system run out of reagent. The operator can now replace the vial within 30sec and press ESC to continue worklist. After 30sec instrument will skip job (if autoskip is activated) or break worklist with error "NO LIQUID DETECTED"
2. Worklist is now paused and an alarm can be heard, if system run out of cuvette. The operator can now reload cuvettes and press ESC to continue worklist.
3. Instrument will automatically reconnect to TECAM, if rebooted.
4. Service interval introduced. System will ask for service after 100.000 determination.
5. System configuration for Open or Close is completely revised.
6. Minor Fixes:
 - a. changing by sending result error flags like "S" (low signal) or "F" (low Fibrinogen). TECAM can now receive these kind of information.
 - b. Serialnumber is now validated for invalid characters. In some cases, device sent false serialnumber to TECA
 - c. Cuvette positioning more tolerant to deviations of cuvette motor or gearbox or microswitch.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V5.30 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

12. Dec. 2013:

V1.06.08 SW3

New features

- A scan of patient barcode during operation will interrupt worklist. Now new samples or reagent can be loaded safely. A press on key "ESC" or "ENTER" will continue the worklist

- Worklist ID number introduced. It is an autonumber (1-65536) and cannot be changed by operator. With each new worklist (created manually or received from LIS) the ID number will be incremented by one. The worklist ID number is reported with the final result print-out and send with each new result to the LIS. TECAM software V5.28 is now able to receive the worklist-id and the sample rack position. With these two information TECAM is creating a Sample-ID number like "1000-01"(Worklist-1000 , Rack P01). Now TECAM can identify and report a patient not only by the patient-id number , but also by the sample-id number. This is very helpful if a patient is repeated on the same day, because now the results can be split on two separate reports. This is also very helpful for traceability, because each worklist printed by instrument can be filtered easily and reprinted by TECAM.

-Cuvette Motor Patch

There is a risk of slightly false cuvette alignment and extremely rare condition, which can influence the accuracy of result. The patch removes the risk of false cuvette adjustment completely and can be applied on all older and future instruments.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

An update of TECAM PRO(LIS) to V5.28 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

24. Oct. 2013:

V1.06.08

release version.

New Features

- A press on key "ENTER" during operation will interrupt worklist. Now new samples or reagent can be loaded safely. A press on key "ESC" or "ENTER" will continue the worklist
- Modified clotting algorithm for Fibrinogen detection to improve correlation to other instruments (like from Sysmex, Siemens,...).
- Firmware support now export and import of test calibration to TECAM software
- Reflex testing can be (de)activated within worklist menu
- Target temperature of prewarmed reagent block and optic block can be adjust from 25 to 42°C. No results differences are visible for PT, aPTT, TT, FIB between 37°C and 30°C. Target
 - Target temperature of cuvette changed from 39°C to 37°C.
 - Target temperature of reagent block changed from 37°C to 30°C.
- Speed Pack
 - System Speed V=HIGH enables reduced sample washing. This does increase throughput by 20%. (PT/h from 97h to 115h). Reduced sample washing can improve the risc for carryover. During evaluation no heparin carryover was observed at least upto 2.0 U/mL.
 - System Speed V=NORMAL (default). System applicate same washing and pipeting as with former versions
 - System Speed V=LOW disables sample multi dispensing to allow a maximum of precision. This does nearly not effect the throughput of single testing, but for profile in selective mode in can drop 25% or more.
- Optimized pipeting and washing
The pipeting was significantly improved to avoid carryover (sample, reagent, cleaner or rinse) or air bubbles. Especially small volumes can be dispensed now with an better precision.
- Hidden Test Setup "PIP2BUF" is removed and replace with "MULTI".
Dispensing small volumes of plasma into buffer is not required anymore. Instead samples are always shot from air into the buffer. This reduces the risc of carryover and improve the precision.
The parameter MULTI do (dis) enable plasma multi dispensing. Especially for very small volumes (<10µL) should dispensed in single mode !
- TT or aPTT Measurement of high heparin sample
Sometimes it was observed, that the Coatron gives no result (+++), while mechanical devices do or that the Coatron gives much shorter results in compare to a mechanical device. Heparin inhibit or speed down the clot formation, so that fibrin formation takes minutes instead of 5-20sec. The instrument can not detect accurately a clear turnpoint of such reaction. In this cause, the system switch now automatically to mechanical clotting time algorithm.
- Optic amplification enhanced for extreme turbid sample

- Analysis menu screen “CLEAR RESULT ?” + “START WORKLIST” + “SYNCHRONIZE TO HOST” removed.
- If patient barcode is scanned during measurement, then instrument displays PID and rack position where to place sample
- New analysis menu "Cuvette Activation"
- Support of Tecam protocol V5.27 (CRC syntax). False data were transferred to TECAM under very rare circumstances. Since TECAM V5.2 the data transmission is secured with an additional checksum.
- New test protocol for Antithrombin Liquid
- New tests PSF (free Protein-S) and FDP included to default configuration
- Statistic counter for test D-Dimer and Thrombintime added
- Test protocol updated for PT, aPTT, TT and D-dimer.

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

After update the system will reset test protocol data to default and delete all calibration data. The system temperature will be reset to default and should be checked in service menu.

Test PT and FIB must be recalibrated. !!!!!!!!!!!!!!!!!!!!!!!

An update of TECAM PRO(LIS) to V5.27 or later is not required , but recommended.

You can download the latest setup from [TECAM SETUP](#)

1. Feb. 2012:

V1.06.04 SW3

release version.

New Features

- Sample Continuous Loading. New orders can be sent during measurement by TECAM software. This feature requires software TECAM 5.01 Barcode Scanner is activated during worklist. Simply scan a new patient and place it on the next free position in the rack. The barcode will be transmitted to TECAM software. Here you can add a test and send back to instrument
- Speed Pack. Throughput increased by 10%
- Fibrinogen readjusted to better correlation to other instruments, especially in the high range .
- Skipped jobs will be repeated automatically at end of worklist. Operator can refill reagent during operation
- Needle dive now 2.5mm into cleaning solution. Before it was just 0.5mm. This should prevent from carry over and needle clogging
- Needle dive now 3mm into sample tubes. This will allow using micro tubes like Eppendorf 2mL.
- Unit RP+INR activated for PT testing. RP is normalized activity (mostly used in poland) and calculated as $100\% * \text{normaltime} / \text{result}$.
- Results are sent automatically over second serial port (Debug port) without any handshake protocol. This allows using an external LIS simultaneously to TECAM software

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is completely backward compatible.

An update of TECAM PRO(LIS) to V5.01 or later is not required , but recommended.

- Current firmware 1.06.xx. Test protocols will be set to default..
- Current firmware 1.05.xx and higher: Test protocols will be set to default.
- Current firmware 1.04.xx and higher: Test protocols will be set to default.
- Current firmware 1.03.xx and lower : Test protocols, bios, system and test setup data will be erased and set to default

Update over 1.06.01 or lower: The system is configured as "open". No barcode is required for rinse or cuvette activation.

About TECAM communication:

This firmware is optimized for **TECAM V5.01**. You can download the latest setup from [TECAM SETUP](#)

10. Mai. 2011:

V1.06.02

release version.

New Features

- Serialnumber protection removed from cuvette and rinse barcode. Each box of cuvette or rinse solution is now provided together with valid barcode
- Service functions "Replace Needle & Syringe and Adjust Motor are protected by admin login . Ask service engineer for more information.
- D-Dimer changed to protocol of new reagent TECO Blue D-Dimer D2020-007. The former reagent can be still used, but a change is highly recommended. The new protocol will improve precision dramatically.
- Incubation time can now be set up to 10min

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is completely backward compatible.

An update of TECAM PRO(LIS) to V4.93 or later is not required , but recommended.

- Current firmware 1.04.xx and higher: Test protocols will be set to default. Bios, system and test Setup data will be unchanged.
- Current firmware 1.03.xx and lower : Test protocols, bios, system and test setup data will be erased and set to default

Update will disable the cuvette and rinse activation. The system can be used without barcode.

1. FEB. 2011:

V1.06.01 - SW3

release version.

New Features

- Reflex testing is implemented. This feature is always active and can not be switched off. The repeated result will be flagged with "R" .
 - For clotting tests like PT,aPTT, Fib, Factors: "+++" results will be repeated one time with additionally 60s runtime.
 - For chromogenic tests like AT or PC: "0.000E" results will be repeated one time.
- System closed to cuvette and rinse Solution verification by barcode verification.
 - System ask for cuvette activation if less than 500 pieces are enabled before start of worklist. The message can be ignored, but latest at zero a barcode must be scanned.
 - System ask for rinse solution activation during menu "SERVICE/REPLACE RINSE TANK" . The message can be ignored, but latest at zero a barcode must be scanned.
 - Ask your local distributor how to get the barcode labels.
- Wash cycles improved
 - Precision of system (CV. values) improved around 30% or more (eg. CV. of PT old=1.4 % new=0.8% , CV. of FIB old=3.5% new=1.3%)
 - 50% less consume of rinse solution and clean solution. One tank is now for 1300 PT or 220 Profiles (PT+PTT+FIB , selective) , before it was 882 PT or 140 PRFL.
 - In average 10% more throughput for PT or Profile of testing, because less cleaning time is required.

Minor Changes

- New code routines do accelerator the memory access. This will significantly increase the system operation speed.
- Within menu SERVICE/CHECK ROBOTICS a press on key "0" or "." will move positions 10 wise
- Unit IU/mL enabled for factor assays
- Error message "SSS" removed. Instead the measurement will be continued and the final result will be flagged with "S"

Bugfixes or system improvements

- Barcode Reading optimized for 8-12 digits labels from type 2/5 interleave or 13 digits EAN-128. Communication optimized for new firmware of BCL scanner.
- Stop in air problem: Sometimes the needle probe stop in air instead of liquid during level sensing. Improvements:
 - Hardware: Replace insulation with new brazen version. Ask your local distributor for more information
 - Software: Sensor is now activate in a smaller search window instead over the full length of the z-axis.
 - Software: The z-speed of needle is increased. This causes also more stable level sensor signal.
 - Software: Reflex testing

- Clogged needle: In worst case the needle clogged after driving into sample hematocrit. This is now solved by an increased output diameter of the probe.
- Timing optimized to TECAM V4.92 to reduce communication errors. The message “HOST ERROR” is printed in case of stopped transmissions.
- Position and volume for reagent “R0” was not displayed in the requirement screen short before starting the worklist. Required for e.g. Protein-S testing.
- Negative optical values caused in worst case “SSS” instead of a regular clotting time

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is completely backward compatible.

An update of TECAM PRO(LIS) to V4.92 or later is not required , but recommended.

- After update from firmware 1.05.xx or below there will be 1000 cuvettes and 10 rinse tanks enabled.
- Current firmware 1.04.xx and higher: Test protocols will be set to default. Bios, system and test Setup data will be unchanged.
- Current firmware 1.03.xx and lower : Test protocols, bios, system and test setup data will be erased and set to default

Warning: After installation of this firmware it is not possible to return to any former version. Please contact distributor, if you need to perform a downgrade procedure

03. Mar. 2010:

V1.05.03 - SW2

release version.

New Features

- Database updated for new reagent TECLOT APTT-XL
- Information for worklist status (progress 0-100%) is transmitted to TECAM.
- Barcode Scanner support now 8 ,10 or 12 digits 2/5 interleaved labels
- Access Control Managment for system critical parameter (hidden functions).

Update and Compatibility Information

This firmware can be installed over all instruments. The LIS Interface is completely backward compatible.

An update of TECAM PRO(LIS) to V4.90 or later is not required , but recommended.

- Current firmware 1.05.xx: All data will be unchanged after update
- Current firmware 1.04.xx: Test protocols will be set to default. Bios,system and test Setup data will be unchanged.
- Current firmware 1.03.xx: Test protocols, bios, system and test setup data will be erased and set to default

03. Jun. 2009:

V1.05.02

release version.

New Features

- Profile support now 8 different tests. With TECAM software even more than 8 tests per patient can be defined.

17. Feb. 2009:

V1.05.01

release version.

- AT default protocol changed to new TECO reagent TEChrom AT liquid (CAT=C1010-020).
- DD default protocol changed to new TECO Blue D-Dimer (CAT=D2020-003)
- System can be locked to TECO cuvette. Other cuvettes will be rejected. This feature is deactivated after update, but can be activated or deactivated by your local distributor.
- System can be closed to reagent by barcode activation. This feature is deactivated after update, but can be activated or deactivated by your local distributor.
- Communication between main controller unit and robotic system is more fault tolerant . Therefore robotic error messages are reduced.
- During multidispensing a total of 50µl deadvolume is used to avoid plasma thinning effects.

Update and Compatibility Information:

This firmware can be used as a service-pack for all versions.

After installation the system will update the test protocols automatically.

So if you use a specific test protocol, then it need to be restored manually.

If installed over version 1.03.00 or lower, all eeprom data will be lost. The system needs then recalibrated afterwards.

16. Sep. 2008:

V1.04.03

release version.

- Methods F8:C , ECAT and ECAH removed.

Update and Compatibility Information:

This firmware can be used as a service-pack for all versions higher than 1.03.02..

After installation the system is ready to use. All eeprom data are still stored.

Only the test protocols will be updated automatically.

If installed over version 1.03.00 or lower, all eeprom will be lost. The system needs then recalibrated afterwards.

01. Aug. 2008:

V1.04.02

release version.

Service pack for D-Dimer testing

- New Result flag "S" ("Signal"), which is set if the signal after measurement start goes below 400 digits. The flag replaces the former error "OPTIC".
- New Result flag "!" (= invalid reaction). This flag is set, if the result is based on an invalid reaction. For D-dimer testing it does indicate, that the result is affected with the high-dose hook effect. Which means that the result is probably higher than displayed.
- Menu "SERVICE/CHECK OPTIC" with advanced features:
 - instead of temperature "T3" now the cuvette status "CV" is displayed. It indicates if a cuvette is in presence or not.
 - By pressing key "0" you can trigger now the TECMONI start. (See below)
 - By pressing key "ENTER" you can switch from AD-digits to optical density.
- The test protocol parameter "REGRESSION" is replaced by "CT-Mech" (=Clotting Time Mechanical). If set to 1, then the clotting time is defined at the begin at the reaction. Otherwise it is on the turnpoint..
- TECMONI Interface implemented. TECMONI is a curve analysis tool and allows to visualize 4 reaction curves simultaneously. TECMONI requires a start trigger for every channel. This is done automatically during worklist menu or manually in the service menu "check optic" by pressing key '0'. TECMONI version 2.90 is required for this feature !

Example for manual pipeting of test PT :

- Goto "CHECK OPTIC"
- Place an empty cuvette into the optic
- Pipet 50µl sample into channel 1,2,3 and 4
- Start TECMONI and press "F8" = receive curve. Now you should see actual AD-digits on PC.
- Pipet 100µL to optic-1 and press key '0' simultaneously. Repeat for all other channels.
- On TECMONI you should see now the reaction curves ontime. Press "ESC" to stop TECMONI.
- New reagent mixing procedure to reduce thinning effects. Mixing can only be activated if the deadtime is set greater than 10s.
- For auto calibration the position of the dilution buffer is always set to P39.
- New algorithm for signal noise reduction caused by external light like sunlight. This feature is most important to UV sensitive tests like D-dimer.
- Default PS for new Helena Protein-S Kit.
- Default DD for new Teco Blue D-Dimer Kit
- Test PK is replaced by PLG. The default is set to Helena Z-Chrom Plasminogen Kit
- Test HMWK is replaced by F8:C. The default is set to Helena Z-Chrom Factor VIII:C Kit
- Digital Filter for Fibrinogen Clauss method, to improve assay precision.
- Service Pack for D-Dimer testing includes:
 - External UV-light elimination
 - Result flag "!" for high-dose indication.-> repeat sample 1:10 diluted.
 - Result is limited to 5000ng/mL.
 - New reagent mixing procedure (see above)

Bugfixes:

- New pipet sequence BUF, PAT,CLR, DEF,R0,R1,R2 . In former versions step "DEF" was performed before "CLR". This caused, that not only plasma-dilution but also deficient plasma was cleared.
- Point Method didn't stop exactly at determined breaktime..
- Plasma Multi-Dispense with additionally 25µL over-volume to improve test precision.
- The temperature is now controlled outside of optic measurement. In former versions the heating may caused small peaks on the signals, which have negative effects in precision especially for FIB or D-dimer testing.
- Communication between main controller unit and robotic system is more fault tolerant.

Update and Compatibility Information:

This firmware can be used as a service-pack for all versions gigher than 1.03.02..

After installation the system is ready to use. All eeprom data are still stored.

Only the test protocols will be updated automatically.

I f installed over version 1.03.00 or lower, all eeprom will be lost. The system needs then recalibrated afterwards.

28. Nov. 2007:

V1.04.01

release version.

Optional update

- Spanish dialogue added
- Sample Multi-Dispensing added to improve the throughput by 15-30%
- Cap Piercing mode highly improved .
- Imprecision significantly improved
- Reduced consume of cleaning and rinse solution
- Cuvette counter introduced
- low fibrinogen flag 'F' introduced. 'F' indicates a fibrinogen concentration below 100mg/dL. The flag is only active for test PT.
- U-Corr added for FIB to improve correlation
 - Setup for Sysmex: -30% + 40U
 - Setup for Behnk: -10% -15U
 - Setup for CoaLAB: -10% -10U

Update information:

After installation the test protocols must be reset.

- 1.switch off instrument.
- 2.press key "0" and keep it pressed
- 3.switch on instrument
- 4.When INIT screen appear release key "0"
- 5.Select "INIT PROTOCOLS"

Compatibility:

This firmware can be used as a service-pack for version 1.03.02 or higher.

After installation the system is ready to use. All eeprom data are still stored.

If installed over version 1.03.00 or lower, all eeprom will be lost. The system needs then recalibrated afterwards. .

26. Sep. 2006:

V01.03.04

release version.

Update strongly recommended in case of CAP Piercing operation

New Features

- Italian language added to dialogue
- instrument send normal range or quality range to TECAM PRO 3.52 (or higher)
- A new pipet step "R0" can be defined within the test setup menu
- Avoid air-gap during pipeting plasma into buffer. The option can be activated in the hidden Test Setup by parameter "PIP2BUF" . Especially in CAP Piercing mode and at plasma volumes below 15µL this feature should be enabled.
- The clearance of plasmadilution in the cuvette are performed as an individually pipeting step to avoid plasma carry over , air-bubbles and to ensure best mixing.

update information:

Print all test setups and a service report before updating, because all data will reset to default. After update adjust needle and restore test calibration data..

06. Apr. 2006:

V01.03.00

Second release version.

27. Nov. 2003:

V1.01N27

First release version.