

TECO GMBH , Germany

COATRON A6

automated coagulation analyser

SOFTWARE HISTORY

V1.03.05a (Build-106) 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 can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.03.05a (Build-105) 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 EEPRON data before update.

V1.03.04d (Build-104) 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.

V1.03.04d (Build-103) 5.Jun 2019

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

Software changes	
1	Consumption of rinse solution reduced from 1000 to now 1800 PT per 1.25L tank .

Update and Compatibility Information

The change has no impact to analytical performance, nor any risk regarding carryover effects. This firmware can be installed over all instruments. The LIS Interface is fully backward compatible.

V1.03.04d (Build-102) 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.

V1.03.04c (Build-101) 12.Feb 2019

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

Software changes	
1	Self-Reboot during measurement removed (Bugfix for 1.03.04b)
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.

V1.03.04b 6.Jul 2018

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

Software changes	
1	Unit reflex testing , if result is 25% higher than max. calibration point. Before the trigger value was fixed at absolute levels like 3000ng/mL.
2	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)
3	Cap Piercing procedure changed to new BD Microtainer 1.6mL. The standard BD Vacutainer (3.0mL) can't be pierced anymore.
4	Worklist Setting Clean = MIN or MAX removed. System works now always in mode MAX, which forces a wash cycle between sample to sample.
5	OEM=6 (China) specific changes -Default protocol of AT changed to C1000-010 (4PAT+156BUF-135CLR+ 40R1+40R2) - Result transmission to LIS2002 fix to data protocol from 2017 (version 1.03.04a , change-8 from 2018 showed incompatibility with some Chinese LIS) - AnyCode valid until 1.1.2020
6	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.

V1.03.04a 22.Feb 2018Recommended 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 anymore.
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 TECAM, if connected
11	Minor fixes (reported bugs below are very rare) • Needle sometimes crashed into cuvette • Cuvette moved when needle is inside during XYZ adjustment • 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.

V1.03.03a 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	Lipemia patch. PT, aPTT, TT is now working with sample up to 500mg/dL Triglycerides. Samples with higher concentration will be measured as “+++”.
4	Receive “Hi-Sense” orders from TECAM V7.01. If order is marked as hisense, then measurement is performed in high sensitivity mode. This is very helpful for all “+++” results.
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 V7.01 or later is required to activate Calibration Lot Management.

3. Mar. 2017:
V1.03.02d

Software changes	
	INIT SCREEN allows now to reset service interval
1	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	Function „ADJUST XYZ" without need of optic shield.
4	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 0.800E
5	Menu ANALYSIS: 8 ACTIVATE SYSTEM accept now also barcode for rinse.
6	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 required to activate Calibration Lot Management.

07. Feb. 2017:
V1.03.02c

Software changes	
SW1	Speed Pack increases throughput up to 30%
SW2	Calibration Lot Management:
SW3	In workmode "EV1" system print additionally mean and CV. value

Calibration Lot management (TECAM V6.06 required)

Working with different reagents LOTs is now very convenient.

- Setup is automatically transmitted to TECAM software, if new calibration is entered or any result is transmitted
- Setup is automatically loaded from TECAM software, if vial barcode is scanned within menu SETUP TEST or ANALYSIS/REAGENT BARCODE.

Speed Pack

Throughput of PT, aPTT increased by 30%

Clean=MIN	Mode= BAT (Routine)
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	1.03.02a	1.03.02c
PT	151	194
aPTT	94*	125*

* aPTT incubation + maxtime = 120s

By following measures:

The intensity of cleaning can be set in menu "ANALYSIS/NEW WORKLIST/CLEAN=MIN or MAX". With minimum cleaning the throughput is increased and consumption of rinse and cleaning solution is reduced. The price is sample carryover below 5%, which is acceptable

Speed pack software changes		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. Additional clean solution is used, if test in cuvette switch.	Yes	Yes

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 required to activate Calibration Lot Management.

28. Oct. 2015:

V1.03.02a

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:

V1.03.01 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](#)

3. Dec. 2014:

V1.03.01 SW4

New features

1. FIB default protocol changed to 8µL sample + 64µL IBS-Buffer and 36µL FIB reagent. Runtime changed from 60sec to 90sec. Then new protocol allows 30% less FIB reagent, 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-6.
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:

V1.03.01 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:

V1.02.08 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](#)

15. Nov. 2013:

V1.02.08

New features

- Modified clotting algorithm and calibration procedure for Fibrinogen detection to improve correlation to other instruments (like from Sysmex, Siemens,...).
- 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
- Firmware support now export and import of test calibration to TECAM software
- If patient barcode is scanned during measurement, then instrument displays PID and rack position where to place sample.
- Optic amplification enhanced for extreme turbid sample.
- 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 temperature of cuvette changed from 39°C to 37°C.
- Target temperature of reagent block changed from 37°C to 30°C.
- New tests PSF (free Protein-S) and FDP included to default configuration
- Statistic counter for test D-Dimer and Thrombintime added
- Test protocol default values 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 temperature will be reset to default and should be checked in service menu.

An update of TECAM PRO(LIS) to V5.26 or later is not required , but recommended.
You can download the latest setup from [TECAM SETUP](#)

24. Oct. 2012:

V1.02.05

Bugfix.

- A "robot error" failure was observed with multi dispensing mode, when PT incubation time is set to > 0 . It is fixed with this version.
- Constant temperature is now reached 20min after switch on (before it was 60min)

About TECAM communication:

This firmware is optimized for **TECAM V5.22 or later**. You can download the latest setup from [TECAM SETUP](#)

15. Oct. 2012:

V1.02.04

first release version.

About TECAM communication:

This firmware is optimized for **TECAM V5.22**. You can download the latest setup from [TECAM SETUP](#)

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