## MLT LLC (EMCO GROUP OF COMPANIES)



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## **Basic information about MLT LLC**

MLT LLC is located in the Dubna special economic zone (Moscow region, Russia) and posses manufacturing facilities in Dubna and Moscow. MLT engineers have developed the first coagulometer in Russia and the first Russian programmable slide stainer. Currently, MLT LLC produces:

- four models of semi-automatic opto-mechanical coagulometers – these are the most popular hemostasis analyzers in Russia, which produce more than 1 million determinations per month;

- five models of automated programmable slide stainers (also the most common in Russia);
- reagent kits for Papanicolaou staining of biological preparations.

MLT LLC quality management system is certified according to EN ISO 13485:2016. Slide stainers FS-9-25, FS-12-25, FS-16-25 has CE mark. Slide stainers FS-16COMBO, and FS-16-HISTO are modification of FS-16-25. We plan that FS-16-COMBO and FS-16-HISTO will receive CE marking in the first half of 2022.

#### MLT LLC quality management system Certificate



### **MLT LLC Slide stainers EC Declarations of Conformity**



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CE	MLT	
	EC Declaration of	Conformity
	Product Identificatio	n
Product name:	Automated slide stainer	
Model/Type:	FS-12-25	
	Manufacturer	
Name:	MLT LLC	
Address:	Tehnologicheskaya street 7, Russia,141981	Dubna, Moscow region,
Country:	Russia	
	Authorized Represe	ntative in Europe
Name:	CEpartner4U B.V.	
Address:	Esdoornlaan 13, 3951 DB M	aarn
Country:	Netherlands	
MLT LLC hereby essenti and is This Declaration is o Use" and Place and Date: Signature: Name:	declares that the product listed al requirements and provisions 98/79/EC on <i>in vitro</i> diagnostic me in conformance with the follow EN 61010-2-101 EN 61326-2-6: EN ISO 18113-3: EN ISO 18113-3: EN ISO 18123-1 EN ISO 14971: only valid when the product is u becomes wold if the device is no excess and because because Network of the device is no Network of the device i	is in conformity with the Annex III, of the Council Directive indical devices ing harmonised standards: : 2002 2006 2011 : 2016 2012 sed in accordance to the "Instruction for modified without our consent. February 10, 2021
		Revision 1.0 10.02.2021



	EC Declaration of Conformity
	Product Identification
Product name:	Automated slide stainer
Model/Type:	FS-16-25
	Manufacturer
Name:	MLT LLC
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essenti	al requirements and provisions of the Council Directive 98/79/EC on <i>in vitro</i> diagnostic medical devices in conformance with the following harmonised standards: EN 61010-2-101: 2002 EN 61326-2-6: 2006 EN ISO 18113-3: 2011 EN ISO 15223-1: 2016 EN ISO 149/71: 2012
This Declaration is o Use" and Place and Date: Signature: Name:	nly valid when the product is used in accordance to the "Instruction for becomes void if the device is modified without our consent. February 10, 2021

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# **NEW FAMILY OF AUTOMATED SLIDE STAINERS**

FASTAINERs are modern, reliable, and affordable automated programmable slide stainers. The product line includes four models, varying in the number of staining stations so that every laboratory can choose the one that best suits its needs. The devices have been designed to perform the most prevalent staining techniques for morphological examinations. They can be used in hematology, microbiology, parazitology, cytology (including Pap-test and cervical screening), and histology.

The staining process principle is a sequential programmed movement of racks with slides from station to station where technological operations are carried out. The working chamber is covered with a transparent lid and has compulsory ventilation, ensuring safety in handling toxic reagents.



# **NEW FAMILY OF AUTOMATED SLIDE STAINERS**

Control, monitoring and programming with color touch screen. Max. number of staining programs – 32. Max. number of program steps – 30. **Free choice for each technological program:** 

- Launch interval for processing of racks with slides ("interval");
- Configuration (arrangement of troughs with reagent and "parking" stations for slide racks);
- Number of troughs with the reagent for longest operation.

## Free choice for each step:

- reagent; station; time (0 s 59 min 59 s); agitation period (1 99 s);
- draining time (0 99 sec); number of dipping (1 99).



## **NEW FAMILY OF AUTOMATED SLIDE STAINERS**

The mechanics of devices are unique in simplicity and reliability. The racks with slides rotate not only in a horizontal plane but also up and down. The rising of a rack from reagent is accompanied by inclining and vibration, facilitating the draining of excess liquid from slides and the rack. Thus, the transfer of reagents between troughs is very low. The manipulator's mechanism is designed in such a way that the rack gets firmly fixed in its grab, making it possible to carry out high-speed movements (during dipping, shaking, transfer from station to station, etc.).

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#### Automated programmable slide stainer «Fastainer» FS-9-25

Overall number of stations – 9 Number of combined stations – 7 Number of flow-through stations – 1 Number of drying stations – 1 Dimensions, mm – 530×460×330 Weight, kg – 18

Intended use: haematology, microbiology, parasitology.

Productivity(slides per hour): Pappenheim staining – up to150 Gram staining – up to 175 Kinyoun staining (AFB) – up to 75.



#### Automated programmable slide stainer «Fastainer» FS-9-25





Working chamber of FS-9-25. In the center is a manipulator with a robotic arm. Drying station is the station 1. Station with tap water is the station 2.

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External appearance of FS-9-25 slide stainer.

#### Automated programmable slide stainer «Fastainer» FS-12-25

Overall number of stations -12Number of combined stations -10Number of flow-through stations -1Number of drying stations -1Dimensions, mm  $-530 \times 580 \times 330$ Weight, kg -22

Intended use: cytology (Papanicoloau staining – Pap-test, cervical screening); +

haematology; microbiology; parasitology.

Productivity(slides per hour): Papanicolaou staining – up to100.



#### Automated programmable slide stainer «Fastainer» FS-12-25



Working chamber of FS-12-25. In the center is a manipulator with a robotic arm. Drying station is the station 1. Station with tap water is the station 2.

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External appearance of FS-12-25 slide stainer.

#### Automated programmable slide stainer «Fastainer» FS-16-COMBO

Overall number of stations -16Number of combined stations -14Number of flow-through stations -1Number of drying stations -1Dimensions, mm  $-610 \times 580 \times 330$ Weight, kg -25

Intended use: cytology (Papanicoloau staining – Pap-test, cervical screening); histology (H&E, and special staining);

haematology; microbiology; parasitology.

Productivity(slides per hour): Papanicolaou staining – up to100; H&E staining – up to100.





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## Automated programmable slide stainer «Fastainer» FS-16-HISTO

Overall number of stations -16Number of combined stations -15Number of flow-through stations -1Number of drying stations -0Dimensions, mm  $-610 \times 580 \times 330$ Weight, kg -25

Intended use: histology (H&E, and special staining); cytology (Papanicoloau staining – Pap-test, cervical screening).

Productivity(slides per hour): H&E staining – up to150; Papanicolaou staining – up to150.







The stainers are supplied with stainless racks for 25 slides and with two types of troughs: polypropylene troughs (recommended when handling aqueous solutions; spirits; and acetone) and polyoxymethylene troughs (recommended when handling xylene and substitutes of xylene; aqueous solutions; and solution with  $pH\geq7$ ).



There are small size racks for 10 slides and small troughs compatible with such racks. They are useful for laboratories with low productivity and for techniques that are used for a low quantity of preparations.

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(right picture) are used for safely processing preparations in slide stainers without any additional manipulation.



For safely transportation of slides in the RI-20 to the laboratory, the special protective containers are used : - small plastic suitcase for 10 pcs. RI-20 with a tray for accompanying documents (capacity of at least 200 A4 sheets) or special corrugated cardboard boxes for 10 (5 or 2) racks inserts RI-20 with slides. In protective containers the preparations are delivered in to laboratory absolutely safely.

## **Control and programming**

Control and programming are performed with a color touch-screen display.

Programming includes not only setting the consequence and duration of technological operations but also their parameters and modes:

• The technological operation can be performed in a number of ways: immersion into the reagent, immersion with a programmed period agitation, repeated dipping of slides into the reagent (this mode accelerates the speed of procession).

• There is an option to program the delay of a rack above the trough after removing it from the reagent ("draining time").

• Programming the interval for launching racks into the process gives the opportunity to configure programs with a parallel procession of several racks.

• There is a possibility of installing several troughs with the reagent used for the most time-consuming operation. These two last options can multiply the performance of the device.

The development of the new technological program is quite easy: it is needed to insert the name of the new program, number of technological operations, and after that, the screen with the template of the program arises. The programming is just editing the template on the touch screen.

#### Control and programming - Main menu



The button PROGRAMMES – to switch to the menu section «PROGRAMMING» (choice of a technological program from the available ones, correction of parameters of a program and programing a new technological program).

The button START OF PROCESS – to switch to the menu section «PROCESS» (loading and unloading of racks, processing of racks with slides according to a chosen program).

The button CONFIGURATION – to switch to the menu section «CONFIGURATION» (changing configuration of the Stainer: changing properties of stations, including the choice of reagent and delay time above a trough for draining of reagent; changing the interval for introduction of new racks; switching to the menu «SERVICE»).

#### Control and programming - Programms menu

PROGRAMMES	SELECTION	OF PROGRAM :	DEMO
DEMO	L5-G15	L5-G30	MG5-G15
MG5-G15	PAP-DIFF	PAP-16	NEW
MAIN	MENU	•	•

PRO	GRAMMING	DEMO-STAIN	N = 9	
N	REAGENT	MODE	ACTIVATION	TIME
1	DRYER	IMMERSION	15	00:06
2	LEISHMAN F-S	IMMERSION	15	00:06
2	EOSIN	DIPPING	15	5
2	AZURE	DIPPING	15	3
2	TAP WATER	IMMERSION	15	00:06
MAIN M	IENU CANCEL	ENTER		•

To access the menu section «PROGRAMMING», press the button PROGRAMMES in the main menu.

For the selection of needed programs – push the button with the name of the needed program.

For developing a new program – push the button NEW. The development of the new program is provided by editing the template on the touch screen (left picture).

#### Control and programming - Configuration menu

CONFIGURATION H-AN			E-2	INTE	ERVAL : 03:55	
1 FLOW	2 RESOUR 253		3 RESOUR 253		4 RESOUR 253	
TAP WATER	EOSIN		HEMATOXYLIN		ALCOHOL SOLN.	
5 RESOUR 253	6 RESOUR 253		7 RESOUR 253		8 RESOUR 253	
ALCOHOL-3	ALCOHOL-2		ALCOHOL-1		ALCOHOL-4	
9 RESOUR 253	10 RESOUR 253		11 RESOUR 253		12 RESOUR 253	
ALCOHOL-5	XYLENE-3		XYLENE-2		XYLENE-1	
13 RESOUR 253	14 RESOUR	253 15	15		16	
XYLENE-E	XYLENE-	E	PARKING		PARKING	
MAIN MENU		INTERVAL			SERVICE	

CONFIGURATION	H-AND-E-2	STATION - 3
STATION APPLICATION	•	TECHNOLOGICAL
REAGENT	•	HEMATOXYLIN
RESOURCE LIMIT	•	255
DELAY	•	5
MAIN MENU		CANCEL

Menu "CONFIGURATION" gives the opportunity to change different properties of the station. To start it is needed to push the button with a corresponding number of the station (left picture).

After arising of new screen (right picture) the user can set needed parameters.

First of all, it is possible to choose the destination of the station – is it destined for rack parking or for trough with a reagent.

#### **Control and programming - Process monitoring**

	PROCESS	DE	MO	N = 9
1	00:01 DRYER	2 FLOW TAP WATER	3 RESOUR 253 BUFFER PH<7	4 RESOUR 253 AZURE
5	RESOUR 253 EOSIN	6 RESOUR 253 LEISHMAN F-S	7 READY RACK	8 1 / 9 RACK
9	RACK	10 PARKING	11 PARKING	12 PARKING
	UPLOAD	CANCEL	STOP	UNLOAD

When the process of staining is in progress, all the stations are displayed on the screen as a rectangles with numbers in left upper corner. This numbers correspond numbers of stations. The technological stations (stations with reagents) are highlighted in blue color. Empty parking stations are white, parking stations with rack in process are pink, parking stations with rack which are waiting for processing are yellow, stations with processed racks are green.

#### **Control and programming – SFE software**

File 🔻	Settings 🔹	Program •	Device: FS	16-HISTO				Configuration Chart Reagents Commen
P	rograms (2	- 32)	Op	erations (16	6 - 30)	Operation - 01	Station - 13	Program - 02
+	++	-	+	++	-	Reagent	Reagent	Name
01 - DEM	C		01 - XYLENE-1			XYLENE-1	▼ XYLENE-E	▼ Г-Э ГИСТ 2
02 - H-and-E-2			Immersion: 01:00 Agitation: 00			Immersion ● Dipping ○ Agitation time (0) 00 ▼ + -	Delay (10)	PIN (000-999)
			02 - XYLENE-2 Immersion: 01:00 Agitation: 05				10 -	255
							Resource	Interval (?)
			Agitation: 05 03 - XYLENE-3 Immersion: 01:00 Agitation: 05			Immersion (60)	255	00 - 10 - 06
						01 • 00 • •		Comments
								3 штатива, 1 ванна с КСИЛОЛ-К
	04 - ALCOHOL-1 Immersion: 00:10 Agitation: 05					2 штатива, 2 ванны с коилол-к		
		05 - ALCOHOL-2 Immersion: 00:10 Agitation: 05						
		06 - ALCOHOL-3 Immersion: 00:10 Agitation: 05			Stations			
					16 - PARKING		01 - TAP WATER	
		07 - ALCOHOL SOLN. Immersion: 00:10 Agitation: 05 08 - HEMATOXYLIN Immersion: 03:00		Ι.	15 - PARKING			
					14 - XYLENE-E Delay: 10 Resource: 255		Delay: 10 Resource: 255	
					13 - XYLENE-E Delay: 10 Resource: 255		03 - HEMATOXYLIN Delay: 10 Resource: 255	
		Agitation: 05 09 - TAP WATER Immersion: 02:30 Agitation: 00			12 - XYLENE-1 Delay: 10 Resource: 255	13 05	5 04 - ALCOHOL SOLN. Delay: 10 Resource: 255	
					11 - XYLENE-2		05 - ALCOHOL-3 Delay: 10 Resource: 255	
			10 - EOSIN Immersion: 00:15			10 - XYLENE-3		06 - ALCOHOL-2 Delay: 10 Resource: 255
			Agitation: 05 11 - TAP WATER Immersion: 00:10			Delay: 10 Resource: 255 09 - ALCOHOL-5		07 - ALCOHOL-1 Delay: 10 Resource: 255
						Delay: 10 Resource: 255		

There is an opportunity to prepare and optimize technological programs with special computer software "Stainer Firmware Editor" (SFE). It is also possible to rewrite or to upgrade the firmware of devices with the help of SFE. The website fastainer.com gives opportunity to use <u>SFE software online</u>.

#### **Control and programming – SFE software**



The section of PC software SFE "Chart" gives opportunity to optimize technological programs. In this screen there are different tools for calculation charts of each processing rack. Particularly, there is an option in which automatically calculation of optimal interval of the racks launching performed. It gives opportunity to process successfully two or three racks simultaneously with high productivity.

#### Website fastainer.com

At the our website fastainer.com there is an additional information, including technical documentation, video and so on. In particular there is opportunity to try the online version of SFE software.



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