



# 6000

## TEXTILE DYEING CONTROLLER

# ADVANCED

- Compact Modular Design
- Easy, User Customizable Configuration
- Easy Use
- Large Graphic LCD
- High reliability
- Dynamic Programming Capacity of 5000 Steps
- Easy Calibration with High Precision
- Capacity of Running Parallel Processes and Programs
- Single Step and Continuous Control Loops
- Automatic Filling of the Chemicals by Measuring into the Additions Tank
- Fully Automated Dosing
- Differential Pressure Control for Yarn Dyeing
- Automated Water Filling
- Recording Module
- On-line Connection to Chemical Dispensing Systems



*TBB6000 is a uP-based Batch controller, especially designed and developed for the automation of textile dyeing machines, and is capable of fulfilling all the functions required in modern dyeing procedures.*

*10 years of experience in dye-house, numerous requirements of machinery manufacturers and urgencies of customers have led to the development of this device. Hence, an extremely flexible, modular and reliable controller has emerged.*

*TBB 6000 is compatible with all kinds of dyeing machines, and leaves room for new developments.*

*World-wide competition makes the automation of dye-house mandatory. Being not confined to dyeing machine automation only, TBB 6000 leaves room for future automation steps, leading to the total automation of the dye-house.*





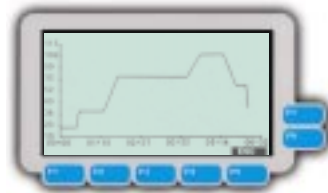
### Compact Modular Design

- Operator Terminal and Input-Output Modules are on the same chassis.
- All Input-Output devices are of modular design.
- Defect modules can be replaced in seconds.
- Control of the machine can easily be expanded simply by adding modules.



### Easy, User Customizable Configuration

- Default commands can easily be organized in the field according to demands.
- Valves and sensors, added later, can be defined by the user.
- New commands are added easily.
- No matter where or when, the whole configuration can be done without the need of an additional programmer.



### Large Graphic LCD

- 240 by 128 pixels
- Programs can be monitored on step or graphical basis.
- Large numeric display of analogue values readable from a distance
- Mimic diagram of the machine (option).



### High Reliability

- Two levels password (engineer-operator).
- User can program interlocks for critical outputs. (Pump can't be active without water, valve can't be opened under pressure, etc.)
- All inputs and outputs galvanically isolated.



### Easy Use

- Completely menu-based operation.
- No need to memorize codes. Alarms, commands, parameters, all readable and editable on the screen.
- Help mode while entering programs.
- Bilingual operation (Turkish and English).



### Easy Calibration with High Precision

- Easy calibration of linear and non-linear tanks.
- Increase of accuracy over a specific region.



### Dynamic Programming Capacity of 5000 Steps

- 255 individual programs with flexible number of steps.
- Up to 300 steps in each program.
- Capacity of 70 individual commands.
- Programs can be linked together in sequential mode.



### Capability of Running Parallel Process and Programs

- Up to 4 parallel commands can be executed in a single step.
- Alongside the main function, pump speed and main tank temperature can be set individually for each command.
- A sub-program can be activated parallel to the command, to execute complex processes simultaneously.



### Single Step and Continuous Control Loops

- Besides temperature, dosing and differential pressure control, 2 stepwise and 2 continuous PI control loops.
- Nozzle pressure control, flow controlled washing, etc.



### Automated Water Filling

- Water intake according to flowmeter or level sensor, or both.
- Water intake on volumetric and/or bath ratio basis.
- Through a special memory command, the amount of water absorbed by the cloth is memorized, thus enabling high repeatability of exact bath ratios.



### Automatic Filling of the Chemicals by Measuring into the Additions Tank

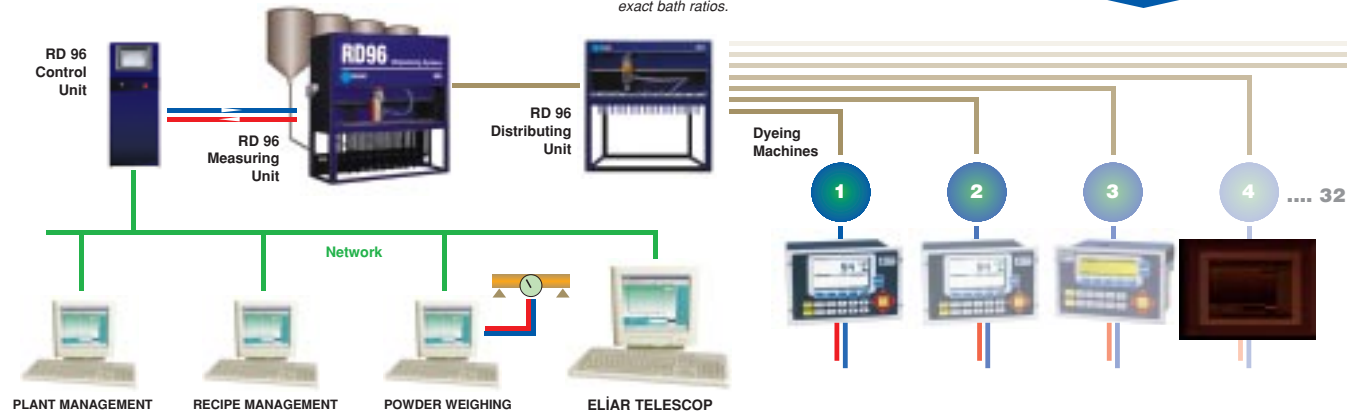
- Through measurement via hydrostatic level sensor, chemicals are taken on kg. basis.
- Tare and topping up facility.
- Weigh out facility.
- Compatibility with Salt feed system facilitates automated dosing of salt.



### Differential Pressure Control for Yarn Dyeing

- Automated pressure control via differential pressure transmitter.
- Different pressure and time set values for in-out, out-in.
- Possibility of timer-only mode.

## ELIAR DYE-HOUSE AUTOMATION





## PROGRAMMING FEATURES

### Standard Commands

#### Fill Main 1, Fill Main 2:

Commands for water intake to a specific bath ratio. Can also be defined as Fill Soft Water, Hard Water, Hot Water if necessary.

#### Drain Cold, Drain Hot:

Commands for the time-based discharge of the main tank. Can also be defined on a level basis.

#### Dose:

Doses chemicals into the main tank from the add. tank by a specific curve. New commands can be defined for multi-valve dosing.

#### Wait, Wash:

Commands for maintaining the desired temperature, or time-set washing.

#### Heat, Fast Heat, Cool, Fast Cool:

Commands to heat/cool the tank in accordance with a specified gradient, or in minimal time.

#### Prepare, Load, Unload, Sample, pH Test:

Commands to warn the operator. Different alert commands can be defined.

#### Rinse, Warm Rinse:

Commands for time or temperature-based rinsing. A flow controlled rinsing command can also be defined if necessary.

#### Transfer, Recycle Add. Tank:

Commands for bath transfer from the main tank to the add. tank, and for circulation.

#### Fill, Wash, Drain, Heat Add. Tank:

Commands for weighing in clean water into the addition tank; washing the tank, draining the washing water, and heating the tank. Additional commands can be defined for machines with more than one add. tank.

### Special Commands

Special commands are provided for Differential Pressure Control, In-Out Operating Timer, 2 stepwise and 2 continuous PI control loops, recording process values to memory and automatic chemical request from the Dispensing System.

## ELIAR TELESCOP MONITORING SOFTWARE

Software for transferring dyeing programs into individual controllers, graphical monitoring and data-logging of processes.

### Features:

- Simultaneous monitoring of Theoretical and Actual process curves.
- Simultaneous monitoring of up to 64 machines.
- Coordination of the requests from the Chemical Dispensing System.
- Programs, Commands, Calibration and System Values can be edited, saved on PC and downloaded to individual controllers.
- Each Dyeing Program can be archived together with full set of parameters.
- ZOOM feature for detailed archive search.

- All alarms are logged, pauses due to equipment malfunction or operator delay are instantly visible on screen.
- Abridged or detailed report generation on daily basis.
- Detailed reporting of the efficiency and the reasons for pauses for each individual machine.





## Fully Automated Dosing

- Control of dosing via hydrostatic level sensor or flowmeter.
- Fast, linear, or "curved" dosing.
- total or partial dosing.
- Optional dosing for pH or conductivity.



## On-line Connection to Chemical Dispensing Systems

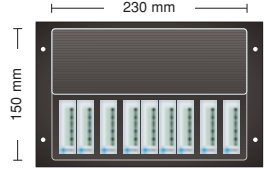
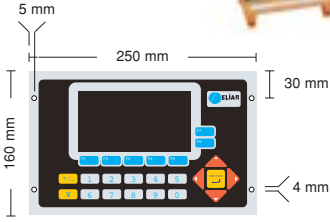
- On-line connection to Recipe Management SW's.
- Requests can be incorporated in the program directly in g/lit or in % terms; amount of required chemicals is automatically calculated as per kg. of fabric in treatment.
- Program automatically resumes as soon as the transfer of chemicals is acknowledged

## TBB 6000 INPUT/OUTPUT CAPACITY

	ANALOG INPUTS	ANALOG OUTPUTS	DIGITAL OUTPUTS (RELAY) 5 A 250 V AC / 5 A 30 V DC	DIGITAL INPUTS	DIGITAL INPUTS + COM
STANDARD	<p>16 Pt-100 8 Pt-100 8 Pt-100</p>	<p>16 4-20 mA 8 4-20 mA 8 4-20 mA</p>	<p>8 X 5 A 250 V AC / 5 A 30 V DC</p>		<p>16 RS232 Tx/Rx Ground 5-24 V DC 5-24 V Counter 5-24 V Counter 5-24 V DC</p>
	<p>16 Pt-100 8 Pt-100 8 Pt-100</p>	<p>16 4-20 mA 8 4-20 mA 8 4-20 mA</p>	<p>16 X 5 A 250 V AC / 5 A 30 V DC</p>	<p>8 X 5-24 V DC On/Off Input</p>	<p>16 X 5-24 V DC On/Off Input</p>
OPTIONAL					<p>16 X 5-24 V DC On/Off Input</p> <p>Tx RS232 Rx Ground 0+ RS485 0-</p>

## TBB 6000 INPUT/OUTPUT CAPACITY

	Standard (16/5/4/4)	Maksimum (64/48/8/8)
Digital Input (On/Off 5-24 V DC)	3	46
Counter Input (5-24 V)	2	2
Digital Output (Relay contact 2A 250 V AC / 2A 30 V DC)	16	64
Analog Input (0/4-20 mA)	2	6
Analog Input (Pt-100)	2	2
Analog Output (4-20 mA)	4	8
PC Connection (RS 232)	1	1



## TBB 6000 CONFIGURATIONS

<b>Standard</b> (16/5/4/4)	<b>16</b> Digital Output	<b>5</b> Digital Input	<b>4</b> Analog Output	<b>4</b> Analog Input
<b>Optional Modules</b>	+8 +16	+8 or +11 or +32 or +43	only +4	only +4
<b>Maximum</b> (64/48/8/8)	<b>64</b> Digital Output	<b>48</b> Digital Input	<b>8</b> Analog Output	<b>8</b> Analog Input

Operating Voltage	90-250 V AC	Input/Output Unit	Built in
Power Consumption	25 W	Max. Digital I/O	112
Operating Temperature	0-50 °C	Max. Analog I/O	16
Operating Humidity	% 10-85 (noncondensing)	Number of Steps	5000
Digital Isolation	2000 V	Parallel Functions	9
Analog Isolation	500 V	Number of PI Loops	7
Analog Calibration	Linear or 10 pt piecewise	Number of Passwords	2
Keyboard	Industrial type membrane	Program and calibration data downloading	PC or Memory Module
Display	240 X 128 Graphic		

Specifications are subject to change without notice.