

# **Ipari Elektronika Project**

**Designing and Executing**

**Co. Ltd.**



**Water Filtration Controller**

**(JAZZ - UNITRONICS)**

**Operators manual**

# CONTENTS

1.	INTRODUCTION .....	1
2.	OPERATING BUTTONS AND THEIR FUNCTIONS .....	2
3.	THE DISPLAYED DATAS AND THEIR MEANINGS .....	7
4.	OPERATIONAL POSSIBILITIES / SEQUENCES .....	11
5.	DEFECTS .....	14
6.	PROGRAMMING THE EQUIPMENT .....	15
7.	TECHNICAL DATA .....	15
8.	OPERATION AND MAINTENANCE .....	15
9.	CONTROL OF QUALITY AND TEST .....	16
10.	TERMINAL CONNECTION .....	17

## 1. Introduction

You can switch on the controller by the mainswitch placed on the door of the cabinet.

With the „OPERATIONAL MODE” selector pushbutton is possible to select the operational mode of the equipment.

Pushbuttons which have effect to the control functions are only effective in “MANUAL” mode, when keylock is opened. In this case the signals from the level switches are ignored.

In „AUTOMATIC” position the apparatus operates the processes automatically by the controlling signals from the level sensors.

The momentary working condition of the equipment is displayed on the screen. The possible errors are shown on the screen too.

The controller governs the operations of the magnet valves and pump belonging to the equipment.

## 2. Operating buttons and their functions



i button	Menu screen/System menu for set date and time
ENTER	Error acceptance
0 button	Operational mode button / Key lock ON-OFF
Arrow Up	Page up the Screen
Arrow Down	Page down the Screen
Arrow Left	Change to the former control state
Arrow Right	Change to the next control state

- **„MENU” button (*i button*)**

Pushing this button the „MENU” screen is displayed where the processes operated by the other pushbuttons are always visible. Following these instructions it is possible to check or modify all the available parameters of the equipment.

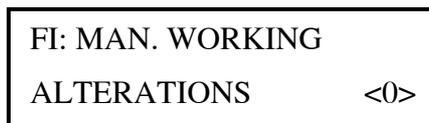
Holding this button for a long time (3sec) you can enter into the system menu, where you can set the time and date.

1. After entering the menu, you can see the text: INPUTS / OUTPUTS.
2. Push the left-arrow button to enter into SYSTEM menu.
3. Push ‘ENTER’. You can see the text: TIME & DATE.
4. Push ‘ENTER’. Now you entered into the TIME menu.
5. Set the new value for time. When finished, push ‘ENTER’.
6. In the TIME menu, if you would like to change date, push the left or right arrow button. Now you can see the name of the actual day of week and day/month/year. Now you can change the date, as it is described in 5.
7. When finished with changes, push the ‘i’ button several times, until you get back to the menu screen.

- **„OPERATIONAL MODE” button (0 button)**

If the key lock is not on with this pushbutton is possible to select the operational mode of the equipment.

If the „OPERATIONAL MODE” is displayed it is possible to change the operational mode from „AUTOMATIC” to „MANUAL” or vice versa by pushing this button.



Change with the „0” button

EG. If the actual operational mode of the equipment is „MANUAL” pushing the „OPERATIONAL MODE” button the equipment switches over to „AUTOMATIC” mode.

- **„CHANGE CONTROL STATE” buttons (*Left-Right arrow*)**

By pushing these buttons you can change the control states of the unit, one by one, both directions. This is only applicable in MANUAL mode, during maintenance, when keylock is released.

Example: the unit is at the “BACKWASH” state. Pushing once the right arrow button the unit switches to “FORWARD FLUSH”. By the next push the unit switches to “OPERATION”. Pushing the left arrow, the states are changing in reverse order. If you do not push button within the normal time period of the state, the unit switches to the next state automatically.

- **„ENTER” button – acceptance of errors.**

Any error occurs the name of the error is flashing on the unacknowledged error screen. Furthermore the equipment has a global error signal output which is getting activated during any error. (*output is closed*) The „ENTER” button is to acknowledge this output and the unaccepted errors.

UNACCEPTED DEF. DEF.: VALVE FAULT
--------------------------------------

Accept with the „ENTER” button

EG. The equipment is sensing the lack of water. The error signal output is activated (*output is closed*). Pushing the „ENTER” button it is possible cease the active stage of the error output. (*output is open*)

#### **ATTENTION!**

If we are on the „PARAMETERS” screen the „ENTER” button is used to reset the individually programmable operational parameters of the equipment. (*eg. Unauthorized person set the values wrongly*).

Pushing the button for 2 sec. the „PARAMETERS GET UP!” script appears on the display and the parameters are reset to the values programmed in the factory and making possible the proper operation.

- **„SCREEN PAGE” button (*Up-Down arrows*)**

If the process display is visible on the screen, pushing these buttons it is possible to change the screen (*checking various datas*).

Pushing the „UP” arrow button the actual stage of the inputs of the equipment are visible Pushing the „DOWN” arrow button the operational mode, the actual time and the state of the outputs can be seen. You can switch back to the control state by pushing the opposite direct arrow.

If the presently active errors are displayed and more error signals are active simultaneously, pushing the „SCREEN PAGE” buttons is possible to display the active errors one by one.

Paging up or down on the parameters screen the programmable parameters are displayed one by one. Prior to paging it is necessary to accept the values with the „ENTER” button otherwise the paging is not working.

### 3. The displayed datas and their meanings

- **MENU screen**

PROCESSES	<1>	Display of Processes and Parameters
DEFECTS	<2>	Display of active errors

KEY LOCK	<3>	Password needed: 1230
PARAMETERS	<4>	Password needed: 4560

- **Process screen**

On this screen the actual stages of processes and other operational informations are displayed.

Pushing the „SCREEN PAGE” buttons (*Up/down arrows*) the available informations are displayable.

ACTIVE INPUTS I2 I5 I6 I7
------------------------------

Push the Up-arrow button to reach it  
The number of the active inputs.

FI:OPERATION ELAPSED: 23m12s
---------------------------------

The name of process  
Elapsed time of process

FI:MAN. WORKING ALTERATIONS <0>
------------------------------------

Operational mode  
Change with the „0” button

FI:CURRENT TIME 14.09 04.12.2007
-------------------------------------

Hour.Min, Day.Month.Year

ACTIVE OUTPUTS OUT: O0 O2 O3 O4
------------------------------------

Active Outputs

- **KEY LOCK Screen**

On this screen is possible to put on/off the KEY LOCK.

Pushing the <0> button is possible to change the actual state of the KEY LOCK. (*OPENED or CLOSED*)

KEY LOCK: OPENED ALTERATIONS            <0>
--

**If the KEY LOCK is on (*CLOSED*) the process controlling pushbuttons and the operational mode selecting pushbuttons are inactive.**

- **PARAMETERS Screen**

On this screen is possible to change the operational parameters of the equipment.

Pushing the „SCREEN PAGE” buttons (*up/down arrows*) the programmable parameters are displayed one by one. Prior to paging it is necessary to accept the displayed parameters with the „ENTER” button otherwise no paging possible.

FI. BACKWASH PERIOD:                    10min
--

Duration of backwash  
Set/accept the value in this format

FI. FORW. FLUSH PERIOD:                    5min
--

Duration of postwash  
Set/accept the value in this format

FI. BACKWASH TIME:                        08:00h:m
---

Time of the day when backwash starts  
Set/accept the value in this format

FI. BACKWASH TIME:                      SUN+day
--

Backwash on the days signed by '+'  
Change days by the '3' and '6' buttons  
Activate - deactivate by '+/-' button.

FI. BACKW. MOTOR DELAY:                      05sec
---

Delay of the start of the backwash motor  
Set/accept the value in this format

The „ENTER” pushbutton is used to reset the individually programmable operational parameters of the equipment. (*eg. Unauthorized person set the values wrongly*).

Pushing the button for 2 sec the „PARAMETERS GET UP!” script appears on the screen and the parameters are reset to the values set in the factory and making possible the proper operation.

## 4. Operational Possibilities / Sequences

- Backwash
- Forward flush
- Operation
- Operation standby

- **Backwash**

The controller switches to this state periodically when the programmed time is elapsed and the control mode is AUTO. The controller stays in this state until the preset time is elapsed. (*10min*) The controller opens the backwash valves and starts the “backwash” procedure, turn on the P1 backwash pump when the preset delay (*5sec*) is elapsed. (*This delay is needed to let the valve fully open before the pump starts.*)

It is possible to switch the controller to the next/former state by the “CHANGE CONTROL STATE” buttons if the control mode is “MANUAL” and keylock is released.

Backwash time and the pump delay time can be adjusted in the parameter menu.

- **Forward flush**

This is the next state when “backwash” ends. This state takes a given time (*5min*). The controller opens the output valves and initiates the “forward flush” process.

It is possible to switch the controller to the next/former state by the “CHANGE CONTROL STATE” buttons if the control mode is “MANUAL” and keylock is released.

Forward flush time can be adjusted in the parameter menu.

- **Operation**

This is the next state when “forward flush” ends. The controller switches back to Backwash state when it is due to start next time when the preset time of day has come again and the mode of control is “AUTOMATIC”. The controller opens the production valves and initiates the “operation” process.

It is possible to switch the controller to the next/former state by the “CHANGE CONTROL STATE” buttons if the control mode is “MANUAL” and keylock is released.

You can change backwash time of day on the parameter screen. It is forbidden to set minute values finished by number ‘9’! (*9, 19, 29, and so on*)

Here you can set the days on which to start backwash process as well. First choose the day by buttons ‘3’ and ‘6’ (*SUN, MON, TUE, WED, THU, FRI, SAT*) Next to the name of the day you can see a plus sign “+” when this day is choosed for backwash. To cancel / choose the actual day you can use the ‘+/-’ button. You can choose any of the days to enable backwash. (*+ means: that day is choosen for backwash*)

**Abbreviations:**

**SUN** = Sunday, **MON** = Monday, **TUE** = Tuesday, **WED** = Wendsday,

**THU** = Thursday, **FRI** = Friday, **SAT** = Saturday

When automatic (AUT.) mode of operation is choosen and the levelswitch indicates high level (*closed contact*), the unit switches to “operation standby” state.

- **Operation standby**

The controller switches to this state only when automatic mode of operation is set and the levelswitch indicates a high level (*closed contact*) while “operation” is in progress.

In this state the controller closes the production valves and stops “operation”.

The unit stays on this state until the levelswitch indicates the level is dropped under the upper value (*opened contact*) or the mode of operation is switched to MANUAL. In this case the unit switches back to “operation”.

## 5. Defects

Any error happens it is displayed on the screen, just as the error signal-output gets activated too. It is possible to acknowledge the error signals and the unaccepted errors by pushing the „ENTER” button.

UNACCEPTED DEF. DEF.: VALVE FAULT
--------------------------------------

Acceptance with the „ENTER” button

### „VALVE FAULT”

When the fuse of the magnetic valves is blown, an error occurs. (*Example.: in case of a short circuit*).

**This error signal disables the pump!**

### „LEVELSWITCH FAULT”

This error is only applied in „AUT.” mode of operation, when the level switch fails or it is connected incorrectly. (*low level is not sensed, but upper level is – it is a logical inconsistency*)

LOW level sense: when the level is under the low level switch, the signal is opened. This case the unit switches from “OPERATION STANDBY” to “OPERATION” state.

HIGH level sense: when the level is above the upper level switch, the signal is closed. This case the unit switches from “OPERATION” to “OPERATION STANDBY” state.

## 6. Programming the equipment

The instrument is pre-programmed in the factory for the maximum performance. Of course it is possible to modify the program at request. Furthermore it is possible to change the operational parameters on the „PARAMETERS” screen.

## 7. Technical data

Box type:	BOPLA 280 x 210 x 140
Voltage:	230V - 50Hz AC
Max. Power consumption:	100VA
Contact Protection:	Null method
PLC Type:	UNITRONICS JZ10-11-R16
Display Type:	UNITRONICS JZ10-11-R16

## 8. Operation and Maintenance

**Operate the equipment by well trained person only!**

**It is advised to service the instrument throughout yearly (Eg. Check/tight the contacts, etc.) by qualigied technician!**

## 9. Control of Quality and Test

The ready made equipment is put to continuous operational trial as follows:

All the operational processes are checked in „MANUAL” and „AUTOMATIC” modes when the equipment is controlled by the level sensors, indicators or other governing signals or the equipment is changing the processes according to the preset time and performs the governing operations belonging to the actual process (*control of magnet valves, motors*).

When the equipment performs a given process the proper state of the controlling outputs are checked according to the operational tables (magnet valves, motors) just as the working capability of the controlling inputs, belonging to the given processes (level indicators, instruments and other controlling signals). Furthermore the displayed messages, belonging to the given process, on the programming terminal are checked also.

These inspections are performed at all the possible operational processes..

If there are instruments built in to the equipment ( $\mu S/cm$ ,  $pH$ ,  $Rx$ ,  $Cg$ , etc) then the proper operation of these instruments is inspected also, just as the adjustment of switching limits required by the equipment.

On the Worksheet in the section of the „Notes of Supplier” is entered the duration of the operational trial and the worksheet is signed by the technician preparing/checking the equipment.

In case of deviations, errors the quality supervisor should be advised. The errors, the reason of errors must be entered in the section of ”Quality observations” of the worksheet.

# 10. Terminal connection

