



Overall Size : 400(H) X 325(V) X 130(D) mm

ASTERO-UF NXT + PANEL

SUPPLY	230V OR 415V AC 50Hz 24V DC FOR SOLENOID VALVES
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GUARANTEE CERTIFICATE

We certify that the instrument mentioned above has been tested by us and is guaranteed for a period of 12 months from the date of dispatch. We undertake to make good by replacement or repair defects arising due to faulty design, material Or workmanship within the above mentioned period. Provided that the part in respect to which the complaint is made, is sent at the purchaser's expense.

The warranty is valid subject to:

- * The meter or part there of not being subject to alteration, accidents or misuse.
- * The installation having been done as per our guidelines in the manual.

Aster Technologies And Controls LLP



Authorized Signatory

Automation Philosophy:

The Astero microprocessor based panels are ideally suited for UF plants as they have the complete operating logic of the process pre-programmed. The panels basically can take 6 inputs as Raw water tank level switch & permeate tank level switch & 4 Auxiliary Inputs (Auxiliary inputs can be configured as PRESS, TWLL, DOSING, DPS) and controls the 14 outputs Raw water Pump (RWP), Backwash pump (BWP), Air Blower, Doser 2 nos., Alarm and 8 valves.

Operating Logic:

Upon switching ON power supply of the panel, if the level of the permeate tank is low & level of raw water tank is high then panel will start with **default step** and will continue as per VALVE OPENING SEQUENCE programmed. Typical (factory set) VOS is mentioned on **Page no.11**

OPERATION OF THE PANEL:

Starting Sequence: After switching ON power supply of the panel, it checks for the following inputs.

1. If level of permeate tank is low (input closed) & raw water tank level is high (input open) then it resumes

Operation

Stopping Sequence: Under following conditions processor will stop its operation

- | | |
|--|---|
| (First Pump/blower will off & then after 15 sec valves will be de-energized) | 1. If plant is stopped manually |
| | 2. If treated water tank is full (open) |
| | 3. If raw water tank is empty (short) |

Trip sequence : Under following conditions processor will trip, at that time press start to acknowledge & resume operation.

- | | |
|---------------------------|---------------------------------------|
| 1. Pressure is high. | 3. Dry run, Single phasing, Overload. |
| 2. Dosing tank level low. | |

KEYS SIGNIFICANCE:

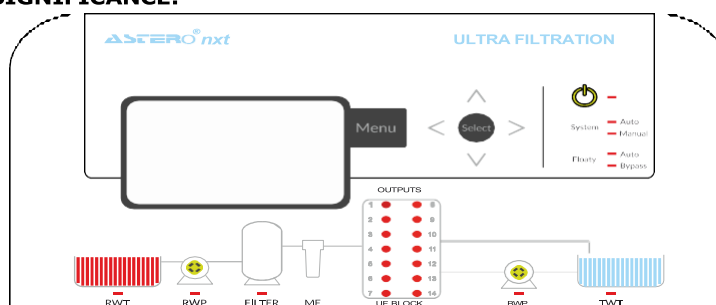


FIG. 1

Use the keys available on mimic as shown in FIG.1 for setting of the panel as per given instructions.

- > : This Left Arrow key is used to move the cursor forward.
- < : This Right Arrow key is used to move the cursor backward.
- ^ : This Up Arrow key is used to move cursor upward and increase the value.
- v : This Down Arrow key is used to move cursor downward and decrease the value.
- Select : This Select key is used to select the routine or to save the set value .
- Power : This standby key is used to switch on/off the panel except while setting.
- 1 : This MENU key is used to HOLD/SKIP/RESET the step.
- 2 : This system key is used to select system mode (Auto/Manual).
- 3 : This Floaty key is used to enable (Auto) of disable (bypass) TWT Floaty.

How to change system mode (AUTO/MANUAL) ?

Panel has an AUTO/MANUAL facility. To switch the mode user has to press 'SYSTEM' KEY. The LED indication will be on as per selected mode.

In manual mode display will show 'MANUAL MODE ON'. In this mode only inputs will get bypassed. Use "MENU" key to select the step.

Terminal Connections:

R	Y	B	N	R	Y	B	R	Y	B	P	N	P	N
INPUT				BWP1				BWP2				DOSE1	
												DOSE2	

Input
Supply
Terminals

R	Y	B	R	Y	B
RWP1			RWP2		

Output terminals

FLOW 1	FLOW 2	RWT	TWT	PRS	TWL	DOS	DPS
R	G	B	R	G	B	C	NC
C	NC	C	NC	C	NO	C	NC
C	NC	C	NC	C	NO	C	NC

INPUT Terminals on PCB

I/P VTG TO VLV	V1	V2	V3	V4	V5	V6	V7	V8
P	N	P	N	P	N	P	N	P
P	N	P	N	P	N	P	N	P

OUTPUT VALVES

TERMINAL	DESCRIPTION	CONNECTION
BWP	Backwash Pump	R,Y,B
RWP	Raw Water Pump	R,Y,B
V1 to V8	Valve Solenoid/Motorized	P - Phase N - Neutral P - Phase
V9 to V12	Valve Solenoid/Motorized	P - Phase N - Neutral P - Phase
FLOATY RWT	Raw Water Tank Floaty	C- Common NC - Normally Closed
FLOATY TWT	Treated Water Tank Floaty	C- Common NC - Normally Closed
AUX I/P1,2,3,4	Auxiliary Inputs	C- Common NO - Normally Open

TO VIEW THE FACTORY SETTINGS

KEY PRESSED	DISPLAY
SELECT	STRT CYC ? NO

What is this?

If you wants to initiate the cycle, make it YES. Using V key

SELECT

TO SET OVERLOAD CURRENT & TIMINGS(SECT.1.1)

Why to set overload current?

When the motor draws more current than the normal running current then it is said to be an overload current which is an abnormal condition which leads to motor burns or failures.

To take care of it we set overload currents, the panel trips when the current drawn by the motor is more than the normal running current value set by us (20% more than actual running current)

How to know normal(actual) running motor current?

There are two methods (1)With the Clamp Meter check the output currents of individual phases(P / N).(2) Using our control panel Refer section 1. 6

KEY PRESSED FOR 3 sec (Make sure panel is in auto mode)	
RWP	RWP OVL CRT? 04.0(Factory set value)
Use < , > , ^ , v keys to set desired value & press SELECT key	
BKP	BKP OVL CRT? BKP OVL CRT?04.0
Use < , > , ^ , v keys to set desired value & press SELECT key	
TO SET OVERLOAD CURRENT OF AUXILIARY O/P	
KEY PRESSED	DISPLAY
SELECT	STRT CYC ?
USE v KEY TO SELECT AXP OVL	
SELECT	AXP OVL : 04.00
Use < , > , ^ , v keys to set desired value & press SELECT key	
TO SET DRY RUN CURRENTS (SEC-1 2)	
Why to set Dry Run current? If the pump is running without any water, is termed as motor dry running and current drawn by the motor is lesser than the normal running current. The controller avoids the dry running of motor by tripping the PUMP1/PUMP2. Dry running can lead to pump failures and therefore there is a need to trip pump/motor in such a condition.	
How to know dry running motor current? Run the motor without any load and check the phase currents with Clamp meter. The set point must be kept between normal running current and actual dry running current.	
Press < & > KEYS SIMULTANEOUSLY	PASSWORD:000
ENTER PASSWORD 123 USING < , > , ^ , v KEYS	
SELECT	PHASE UNBAL :
SELECT	PHASE UNBAL :40
USE < , > , ^ , v KEYS TO SET DESIRED VALUE	
SELECT	DRY RUN OPRN:
SELECT	DRY RUN OPRN:OFF
USE v KEY TO MAKE IT ON	
SELECT	RWP DRY CRT?
SELECT	RWP DRY CRT?01 5
USE < , > , ^ , v KEY TO SET DESIRED VALUE BELOW WHICH THE PUMP MUST TRIP	
SELECT	BKP DRY CRT?
SELECT	BKP DRY CRT?01 5
USE < , > , ^ , v KEY TO SET DESIRED VALUE BELOW WHICH THE PUMP MUST TRIP	
SELECT	AUTO RESTART?
	AUTO RESTART? OFF
What is AUTO RESTART ? Once the pump go dry running and if Auto Restart is ON then the motor Starts automatically after set time is elapsed else we have to start the motors manually.	
USE v KEY TO MAKE IT ON	
SELECT	TIME : 015 m
SELECT	EXIT?

TO CONFIGURE INPUTS (SEC.1.3)	
Panel has 6 inputs, among them 2 are RW & TW level, 4 are Auxillary input	
Input 1 :- High Pressure	Input 2 :- T W LEVEL. SW
Input 3 :- Dosing Tank low level switch	Input 4 :- DPS I/P
Press < & > KEYS SIMULTANEOUSLY PASSWORD:000	
ENTER PASSWORD 678 USING <,>, ^, v KEYS	
SELECT	FLOW SENSORS:
SELECT	NO OF SENSOR:2
SELECT	SENSR1 FACTOR
SELECT	Previously set value
SELECT	SENSR2 FACTOR
	Previously set value
SELECT	END?
SELECT	RW LEVEL SW
	RW LEVEL SW : ON
USE v KEY TO MAKE IT OFF	(Only if Level SW needs to be bypassed)
SELECT	TW LEVEL SW
	TW LEVEL SW: ON
USE v KEY TO MAKE IT OFF	(Only if no level control required)
SELECT	AUX INPUT1:
	AUX INPUT1: PRSHI
USE v KEY TO MAKE IT OFF	(Only if no control required)
SELECT	AUX INPUT2:
	AUX INPUT2: TWLL
USE v KEY TO MAKE IT OFF	(Only if no control required)
SELECT	AUX INPUT3:
	AUX INPUT3: DOSLL
USE v KEY TO MAKE IT OFF	(Only if no control required)
SELECT	AUX INPUT4:
	AUX INPUT4:DPS
USE v KEY TO MAKE IT OFF	(Only if no control required)
SIGNIFICANCE: TWLL-Treated water tank low level DPS- Differential Pressure Switch DOSLL-Dosing tank level PRSHI-Pressure input	
TO CONFIGURE STEPS & OUTPUTS (SEC. 1.4)	
Key Pressed	Display
Press < & > KEYS SIMULTANEOUSLY PASSWORD:000	
Enter the password 567 using <,>, ^, v keys.	
SELECT	PROGRAME STEPS
SELECT	NO.OF STEPS:00
Use ^ , v key to set required number of steps.	
SELECT	DEFSTEP
SELECT	SETNAME

SELECT	*SERVICE*
Use v key to select required name.	
SELECT	SET OUTPUTS
SELECT	1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0
Use v key to make required valve O/P ON/OFF.	
SELECT	9 10 11 12 0 0 0 0
Use v key to make required valve O/P ON/OFF.	
SELECT	RP BP 13 14 0 0 0 0
Use v key to make required PUMP O/P ON/OFF.	
SELECT	QUIT?
SELECT	STEP1
▪	
SELECT	QUIT?
Follow above guideline for number of steps set.	
SELECT	END
SELECT	SET TIMERS
SELECT	OP'S OFF DLY:
SELECT	OP'S OFF DLY: 02
Use Λ, v key to set required time.	
What is this ?	
This is the delay time between two steps. All the outputs will be OFF for this much time.	
SELECT	OP ON-PMP ON DLY
SELECT	OP ON-PMP ON DLY: 000 Sec
Use Λ, v key to set required time.	
What is this ?	
This is the delay by which pump output will start after valve output becomes ON	
SELECT	PMP OF-OP OF DLY
SELECT	PMP OF-OP OF DLY: 000 Sec
Use Λ, v key to set required time.	
What is this ?	
This is the delay by which pump output will stop before Valve output becomes OFF	
	EXIT?
SELECT	START SENSOR*

SELECT	PUMP TIME
Use √ key to make it FLOW SENS or PULSE I/P or RL2 I/P	
SELECT	SET RSET STEP
SELECT	NO OF RESET'S
SELECT	NO OF RESET: 0
Use √ key to make it 1 or 2	
What is this? The logic controller has a facility to perform a step(which is already defined) once in X number of cycles. Similarly it can perform next step once in Y number of cycles.(e.g.Lets assume that one has defined 3 steps viz.SERVICE(DEF STEP),FORWARD FLUSH,BACKWASH and CROSS FLOW. Now he doesn't want to do BACKWASH & CROSSFLOW in every cycle. But once in X number of SERVICE & FORWARD FLUSH cycles he will do a BACKWASH and after Y number of BACKWASH cycles he will do a CROSSFLOW. In this case he will set NO OF RESET 2)	
SELECT	RET 1 AFTR STEP
SELECT	RET 1 AFTR STEP STEP 2
Use √ key to set required step number	
What is this? After set number of step(STEP 2 in above case) controller will preform the step(BACKWASH) which is supposed to perform after X number of cycles.	
SELECT	RET 2 AFTR STEP
SELECT	RET 2 AFTR STEP STEP 3
Use √ key to set required step number	
What is this? After set number of step(STEP 3 in above case) controller will preform the step(BACKWASH) which is supposed to perform after Y number of cycles.	
SELECT	QUIT?
SELECT	OUTPUT 12 ?
SELECT	OUTPUT 12 ? ALARM
Use √ key to make it NORML.	
What is this ? This O/P is configurable.One can use it as valve output or as an alarm output(which will be ON when fault occurs).	
SELECT	EXIT?

STEP TIMING SETTINGS (SEC.1.5)

Why to set?

Depending upon raw water quality, process parameters one needs to set Service, Forward flush & Backwash timings and backwash frequency. Use following guideline for these settings :

Press < & > KEYS SIMULTANEOUSLY PASSWORD:000	
ENTER PASSWORD 345 USING <,>, ^, v KEYS	
SELECT	SET STEP TIME ?
SELECT	STEP 1 : 0030
Use ^, v key to set Desired value.	
SELECT	STEP 2
SELECT	⋮
SELECT	STEP 4
SELECT	END
All the step timings are in seconds.	
SELECT	SET SERV TIME?
SELECT	TIME: 00.02
SELECT	QUIT?
SELECT	

Service Time is in HH:MM format.

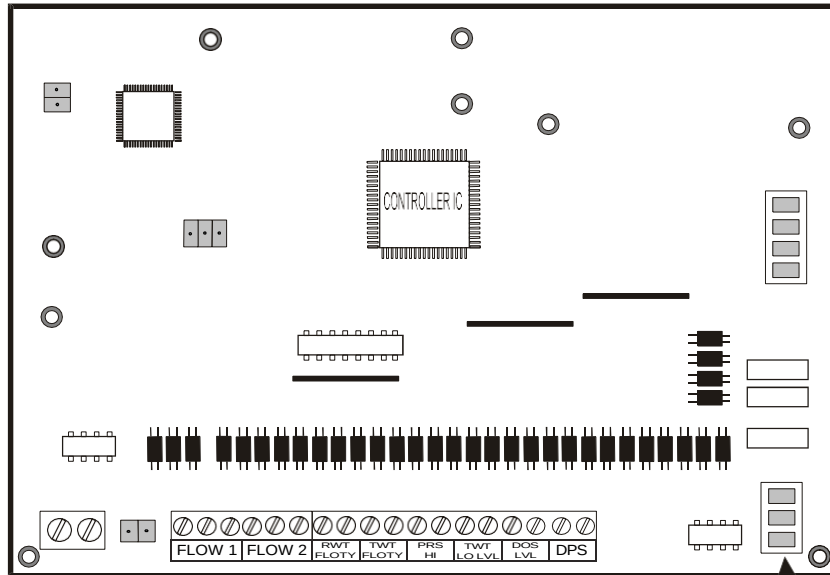
CURRENT CHECKING(SEC-1.6)

What is CURRENT CHECKING feature?

If you want check the normal running currents of motor then use this feature

PRESS < & > KEYS SIMUTANEOUSLY PASSWORD:000	
ENTER PASSWORD 456 USING <,>, ^, v KEYS	
SELECT	SELECT PUMP ?
USE RWP/BWP KEY TO SELECT PUMP OF WHICH CURRENT HAS TO BE CHECKED	
RWP/BWP KEY	RWP/BWP R:00.0
USE RWP/BWP key to switch off the respective pump.	
SELECT	MANUAL STOP
PRESS  KEY TO START THE OPERATION.	

CONNECTIONS ON PCB



Power supply
OUTPUT 13VDC

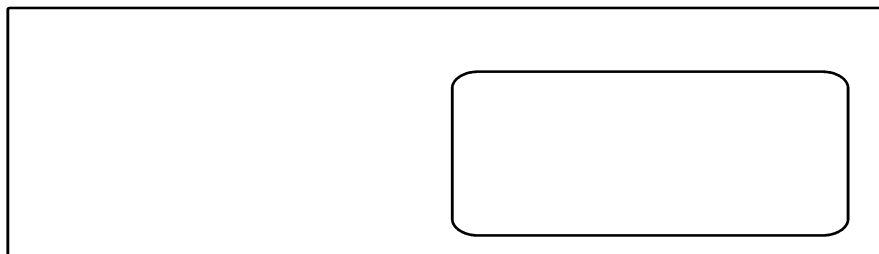
TROUBLESHOOTING :

LED Blinking	Message ON Display	Cause & Action
Level low	RW TANK EMPTY	→ Actually tank is empty. → Check whether it is C NO contact.If not make it.
FLOATY (LEVEL)	TW TANK FULL	→ Actually tank is full. → Check whether it is C NC contact.If not make it. → Floaty not connected.Short floaty terminal by an external wire link.
RWP	RWP OVERLOAD	→ More current than the normal ratings. Set Overload current accordingly. Refer section 1.1
	RWP SINGLE PHASING	→ Motor is drawing more current than normal. Check Motor
		→ If there is mismatch between the R-Y-B phase currents drawn by the pump. Check the connections. → Increase the phase unbalance value.

LED Blinking	Message ON Display	Cause & Action
RWP	RWP DRY RUNNING	→ If current drawn by the pump is less than the set value. If tank is empty. Set currents as given in instructions section. Refer:section1.2
BWP	BWP OVERLOAD	→ More current than the normal ratings. Set Overload current accordingly. Refer section 1.1
		→ Motor is drawing more current than normal. Check Motor
	BWP SINGLE PHASING	→ If there is mismatch between the R-Y-B phase currents drawn by the pump. Check the connections.
		→ Increase the phase unbalance value.
	BWP DRY RUNNING	→ If current drawn by the pump is less than the set value. If tank is empty. Set currents as given in instructions section. Refer:section1.2

VALVE OPENING SEQUENCE:

Step no.	STEP	TIME	O/P1	O/P2	O/P3	O/P4	O/P5	O/P6	O/P7	O/P8	O/P9	O/P10	O/P11	O/P12	O/P15	O/P16
			VLV 1	VLV 2	VLV 3	VLV 4	VLV 5	VLV 6	VLV 7	VLV 8	VLV 9	VLV 10	CEB1 DP	CEB2 DP	BWP	RWP
DEF STEP	SERVICE	30 MIN	ON	ON	ON						ON		ALKALI	ACID		ON
STEP1	FORWARD FLUSH	30 SEC			ON	ON	ON					ON				ON
STEP2	BACKWASH	30 SEC						ON	ON	ON					ON	
COUNTER 1= 01																
STEP3	CEB1	60 SEC					ON	ON					ON		ON	
STEP4	SOAK	300 SEC														
STEP5	BACKWASH	60 SEC						ON	ON	ON					ON	
COUNTER 2= 01																
STEP6	CEB2	60 SEC					ON	ON						ON	ON	
STEP7	SOAK	300 SEC														
STEP8	BACKWASH	60 SEC						ON	ON	ON					ON	



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