

WASTE WATER CONTROL PANEL



Overall size: 700 mm(Horizontal) X 400 mm(Vertical) X 225 mm (depth)

ASTERO NXT WASTE WATER

FACTORY SETTINGS	STANDARD	CHANGES
OVERLOAD CURRENT	ITP: 4.0Amps FFP: 4.0Amps BLOWER :4.0Amps SDP: 4.0Amps	
DRY RUN CONTROL	OFF	
MAXIMUM HP	ITP: 5 hp 3 P FFP: 5 hp 3 P BLOWER :10 hp 3 P SDP: 5 hp 3 P	
CHANGES MADE TO TERMINAL, IF ANY		
MOV	320V, D14mm	
FUSE	1.5 A	
MCB	63 A	

Tested By,

Name -----

Sign -----

Date -----

Automation Philosophy:

The Astero microprocessor based panels are ideally suited for the plants where automatic pump control is required as they have the complete operating logic of the process pre-programmed. The panels basically can take 6 inputs from the level switches and controls the three pairs (1 working + 1 standby) pumps & 1 pair (1 working + 1 standby) of blower. It also controls 1 spare pump. The advanced electronics also takes care of the required motor protection such as **over load, dry running, and single phasing.**

Operating Logic:

Upon switching ON power supply of the panel, the processor will start the air blower & check for equalisation tank level input. If the input is ON (open), then influent transfer pump will start & if clarified water tank level is ON (open) filter feed pump will start. Sludge drain pump can be configured as RECIRCULATION or TRANSFER pump.

If configured as Transfer

It will start for the set time after set service time (running of Air blower)

If configured as Recirculation

It will be on continuously.

OPERATION OF THE PANEL:

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

1. If equalisation tank level OK then influent transfer pump will start.
2. If clarified water tank level is OK then filter feed pump will start.

Stopping Sequence: Under following conditions processor will stop its operation

1. If stop key is pressed
2. If tank is empty (short).

If any one of the above condition occurs, then

- Pump stops
- STATUS is displayed on MIMIC

Trip sequence: Under following conditions processor will trip and switch on the Hooter at that time press start to acknowledge the hooter. Same key is used to resume the operation

1. Dry Run,
2. Single phase
3. Overload.

Instructions for Setting the Panel: Use the following keys for setting the panel as per given instructions.

KEYS SIGNIFICANCE:

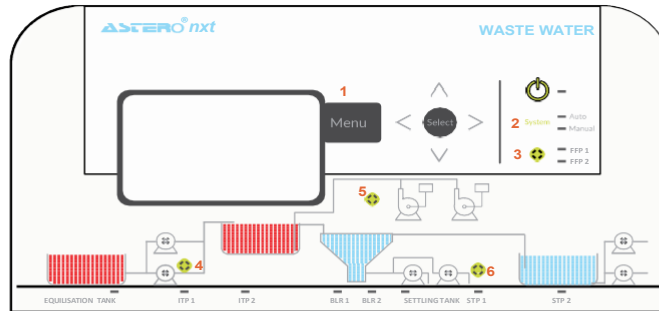


FIG. 1

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.
- ⏻ : This Select key is used to select the routine or to save the set value .
- ⏻ : This standby key is used to switch on/off the panel except while setting.
- 1 : This MENU key is used to enter the quick settings.
- 2 : This system key is used to select system mode (Auto/Manual).
- 3 : This FFP1/FFP2 Key is multifunction key and is used in following ways :
 - Single press operation : Check Current of FFP1/FFP2 in Auto mode.
 - Start/Stop FFP1/FFP2 in manual mode
 - Press & hold operation : Set FFP1/FFP2 overload current in Auto mode
- 4 : This ITP1/ITP2 Key is multifunction key and is used in following ways :
 - Single press operation : Check Current of ITP1/ITP2 in Auto mode.
 - Start/Stop ITP1/ITP2 in manual mode
 - Press & hold operation : Set ITP1/ITP2 overload current in Auto mode
- 5 : This BLR1/BLR2 Key is multifunction key and is used in following ways :
 - Single press operation : Check Current of BLR1/BLR2 in Auto mode.
 - Start/Stop BLR1/BLR2 in manual mode
 - Press & hold operation : Set BLR1/BLR2 overload current in Auto mode
- 6 : This STP1/STP2 Key is multifunction key and is used in following ways :
 - Single press operation : Check Current of STP1/STP2 in Auto mode.
 - Start/Stop STP1/STP2 in manual mode
 - Press & hold operation : Set STP1/STP2 overload current in Auto mode

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.

Upon power on in manual mode display will show 'MANUAL MODE ON'. In this mode inputs will get bypassed Automatic change over to the standby motor will not happen. However pump protection like Overload, Single phasing will be there. Use 'FFP1/FFP2', 'ITP1/ITP2', 'BLR1/BLR2', 'STP1/STP2' KEY to switch ON/OFF the FILTER FEED PUMP, INFLUENT TRANSFER PUMP, BLOWER, SEWAGE TRANSFER PUMP .

Terminal connections :

Control terminals (on PCB)

FLOW	REM -OT	PUMP CONT.	DOS LVL	SETL LVL	EQL LVL	CLW LVL	PULSE
B G R	C NO	C NC	C NC	C NC	C NC	C NC	G N D O/P V+

Power Terminals

R	Y	B	R	Y	B	P	N	R	Y	B	R	Y	B	P	N	R	Y	B	R	Y	B	P	N	P	N	R	Y	B	N
ITP 1		ITP 2		DOSER (ITP IL)		FFP 1		FFP 2		DOSER (FFP IL)		AIR BLOWER 1		AIR BLOWER 2		SD/ROR P 1		SD/ROR P 2		SPARE PUMP		SPARE SUPPLY		SPARE SUPPLY		INPUT (3 PHASE) 415 V A.C. 50 Hz			
INCOMING WIRE SHOULD BE OF 16 sq.mm.																													

Terminal	Description	Connections
ITP	Influent Transfer Pump	R Y B
FFP	Filter Feed Pump	R Y B
AB	Air Blower	R Y B
SDP	Sludge Drain Pump	R Y B
DOSER	Dosing Pump (I/L with ITP)	P Phase N Neutral
EQL LVL	Equilisation tank low level	C- Common NC Normally Closed
CLF LVL	Clarified water tank low level	C- Common NC Normally Closed
SETTLING LVL	Settling tank low level	C- Common NC Normally Closed
REMOTE FAULT	Spare input	C- Common NO Normally Open
FLOW SENSOR	Flow Sensor input	R-Red,G-Green,B-Black

TO VIEW THE FACTORY SETTINGS

Key Pressed	Display
MENU	VIEW?
Display scrolls through all the settings set by factory.	
MENU	EQL LVL IP : ON
	CLW LVL IP : ON
	ST LO IP : ON
	REMOT IP : ON
	DOS LVL IP : ON
	AUX OUTPUT : ALARM

TO SET OVERLOAD CURRENTS(SEC--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 overload current set by us (which should be 20% more than actual normal 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(R/Y/B).(2) Using our control panel Refer section 1.7 follow below steps to change overload current (when system is in AUTO mode)

LONG PRESS ITP	ITP OVL CRT?04.0
Use < ,> ,△ ,▽ keys to set desired value	

LONG PRESS FFP	FFP OVL CRT?04.0
Use <,>,Δ,∇ keys to set desired value	
LONG PRESS BLR	BLR OVL CRT?04.0
Use <,>,Δ,∇ keys to set desired value	
LONG PRESS STP	STP OVL CRT?04.0
Use <,>,Δ,∇ keys to set desired value	

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 respective pump. Dry running can lead to pump failures and therefore there is a need to trip 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 <,>, Δ, ∇ KEYS

SELECT PHASE UNBAL :

PHASE UNBAL :40

USE <,>,Δ,∇ KEYS TO SET DESIRED VALUE

This is the percentage value of unbalance between two phase currents.If unbalance increases beyond this limit processor will trip respective pump or blowerwith SINGLE PHASING.

SELECT DRY RUN OPRN:

SELECT DRY RUN OPRN:OFF

USE Δ KEY TO MAKE IT ON

SELECT ITP DRY CRT?

SELECT ITP DRY CRT?01.5

USE <,>,Δ,∇ KEY TO SET DESIRED VALUE BELOW WHICH THE PUMP MUST TRIP

SELECT FFP DRY CRT?

SELECT FFP DRY CRT?01.5

SELECT BLR DRY CRT?

SELECT BLR DRY CRT?01.5

SELECT STP DRY CRT?

SELECT STP DRY CRT?01.5

USE <,>,Δ,∇ KEY TO SET DESIRED VALUE BELOW WHICH THE PUMP MUST TRIP

SELECT AUTO RESTART?

SELECT 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 Δ KEY TO MAKE IT ON

SELECT TIME : 015 m

SELECT EXIT?

TO CONFIGURE INPUTS (SEC--1.3)	
Panel has 5 switch inputs. These inputs can be enabled/disabled in this routine.	
Press < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 678 USING <,>, ^, v KEYS	
SELECT	FLOW SENSORS:
SELECT	NO OF SENSORS:0
SELECT	NO OF SENSORS:1
Make it 0 if Flow sensor is not connected	
SELECT	SENSOR CONST
SELECT	SENSOR CONST: Previously set value
Use <,> , ^ , v keys to alter this value (put the Factor mentioned on sensor)	
SELECT	QUIT ?
SELECT	EQL LVL IP:
SELECT	EQL LVL IP:ON
USE v KEY TO MAKE IT OFF (only if level interlock needs to be bypassed)	
SELECT	CLW LVL IP:
SELECT	CLW LVL IP:ON
USE v KEY TO MAKE IT OFF (only if level interlock needs to be bypassed)	
SELECT	ST LO IP:
SELECT	ST LO IP:ON
USE v KEY TO MAKE IT OFF (only if level interlock needs to be bypassed)	
SELECT	REMOT TRIP:
SELECT	REMOT TRIP:ON
USE v KEY TO MAKE IT OFF (only if level interlock needs to be bypassed)	
SELECT	DOS LVL IP:
SELECT	DOS LVL IP:ON
USE v KEY TO MAKE IT OFF (only if level interlock needs to be bypassed)	
SELECT	AUX OUTPUT:
SELECT	AUX OUTPUT:ALARM
USE v KEY TO MAKE IT PMPON	
SELECT	EXIT?
TO CONFIGURE OUTPUT (SEC--1.4)	
PRESS < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 191 USING <,>, ^, v KEYS	
SELECT	IT PUMP
SELECT	IT PUMP : 3 PH
USE ^ KEY TO MAKE IT 1 PH(as per IT pump configuration)	
SELECT	FF PUMP
SELECT	FF PUMP : 3 PH
USE ^ KEY TO MAKE IT 1 PH(as per FF pump configuration)	
SELECT	BLOWER
SELECT	BLOWER : 3 PH
USE ^ KEY TO MAKE IT 1 PH(as per blower configuration)	
SELECT	ST PUMP
SELECT	ST PUMP : 3 PH
USE ^ KEY TO MAKE IT 1 PH(as per ST pump configuration)	
SELECT	OP MODE
SELECT	OP MODE : MANUAL
USE ^ KEY TO MAKE IT SEMIAUTO*	
SELECT	EXIT?

*In semiauto mode , pumps will have motor protection as well as level interlock but automatic change over will not happen.

CURRENT CHECKING (SEC--1.5)	
What is CURRENT CHECKING feature?	
If you want to check normal running currents of motor use this feature.	
PRESS < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 456 USING <,>, ^, v KEYS	
SELECT	SELECT PUMP ?
USE ITP/FFP/BLR/STP KEY TO SELECT PUMP OF WHICH CURRENT HAS TO BE CHECKED	
ITP KEY	ITP 1
USE v KEY TO CHECK ITP 2	
SELECT	R:00.0 B:00.0 **
FFP KEY	FFP 1
USE v KEY TO CHECK FFP 2	
SELECT	R:00.0 B:00.0 **
BLR KEY	BLR 1
USE v KEY TO CHECK BLR 2	
SELECT	R:00.0 B:00.0 **
STP KEY	STP 1
USE v KEY TO CHECK STP 2	
SELECT	R:00.0 B:00.0 **
**Incse of single phase ITP/FFP/BLR/STP pump display will show R:00.0 and for three phase pump display shows both R:00.0 & B:00.0 as mentioned above.	
USE ITP/FFP/BLR/STP key to switch off the respective pump.	
SELECT	MANUAL STOP
PRESS  KEY AND v KEY TO SELECT AND START THE PUMP	
BLOWER & PUMP CHANGE OVER TIME SETTING (SEC--1.6)	
Press < & > KEYS SIMUITANEOUSLY	PASSWORD:000
ENTER PASSWORD 345 USING <,>, ^, v KEY	
SELECT	BLOWER ON TIME
SELECT	BLOWER ON TIME : 000
USE ^, v KEY TO SET REQUIRED TIMING. THIS IS THE TIME (IN MINUTES) AFTER WHICH BLOWER WILL SHUFFLE.	
SELECT	BLOWER OFF TIME
SELECT	BLOWER OFF TIME : 000
CONTROL PANEL HAS AN ADDED FEATURE TO SAVE ELECTRICITY. BLOWER CAN BE SWITCHED OFF FOR SET TIME.	
USE ^, v KEY TO SET REQUIRED TIMING. THIS IS THE TIME (IN MINUTES) FOR WHICH BLOWER WILL OFF.	
SELECT	STP SERV TIME
SELECT	STP SERV TIME : 000
USE ^, v KEY TO SET REQUIRED TIMING. THIS IS THE TIME (IN MINUTES) AFTER WHICH SLUDGE DRAIN PUMP WILL SWITCH ON.	
SELECT	STP ON TIME
SELECT	STP ON TIME : 000
USE ^, v KEY TO SET REQUIRED TIMING. STP WILL SWITCH ON FOR THIS MUCH TIME (IN SECONDS)	
SELECT	IT PMP AUTO:
SELECT	IT PMP AUTO:000
USE ^, v KEY TO SET REQUIRED TIMING. THIS IS THE TIME IN MINUTES	
SELECT	FF PMP AUTO:
SELECT	FF PMP AUTO:000
USE ^, v KEY TO SET REQUIRED TIMING. AFTER WHICH PUMP WILL SHUFFLE	
SELECT	EXIT ?
NOTE:FOR ALL SETTING PROCEDURES In each setting routine , the changes made are finally stored only when the select key is pressed once after the display shows EXIT/QUIT.	

SELECTION OF NO. OF PUMPS (SEC--1.7)	
PRESS < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 168 USING <,>, ^, v KEYS	
SELECT	ITP
SELECT	ITP : 1
USE ^ KEY TO MAKE IT 2 (IF NO. OF ITP PUMPS 2)	
SELECT	FFP
SELECT	FFP : 1
USE ^ KEY TO MAKE IT 2 (IF NO. OF FFP PUMPS 2)	
SELECT	BLOWER
SELECT	BLOWER : 1
USE ^ KEY TO MAKE IT 2 (IF NO. OF BLOWER 2)	
SELECT	STP
SELECT	STP : 1
USE ^ KEY TO MAKE IT 2 (IF NO. OF STP PUMPS 2)	
SELECT	STP MODE
SELECT	STP MODE : RECR*
USE ^ KEY TO MAKE IT TRFR*	
SELECT	EXIT?

TRFR* Sludge Drain Pump will start for the set time after set service time (running of Air blower)
 RECR* Sludge Drain Pump will be on contineously.

SPARE PUMP ON/OFF IN MANUAL MODE (Sec-- 1.8)	
PRESS < KEY TO 'ON' THE SPARE PUMP	
PRESS> KEY TO 'OFF' THE SPARE PUMP	

TROUBLESHOOTING :

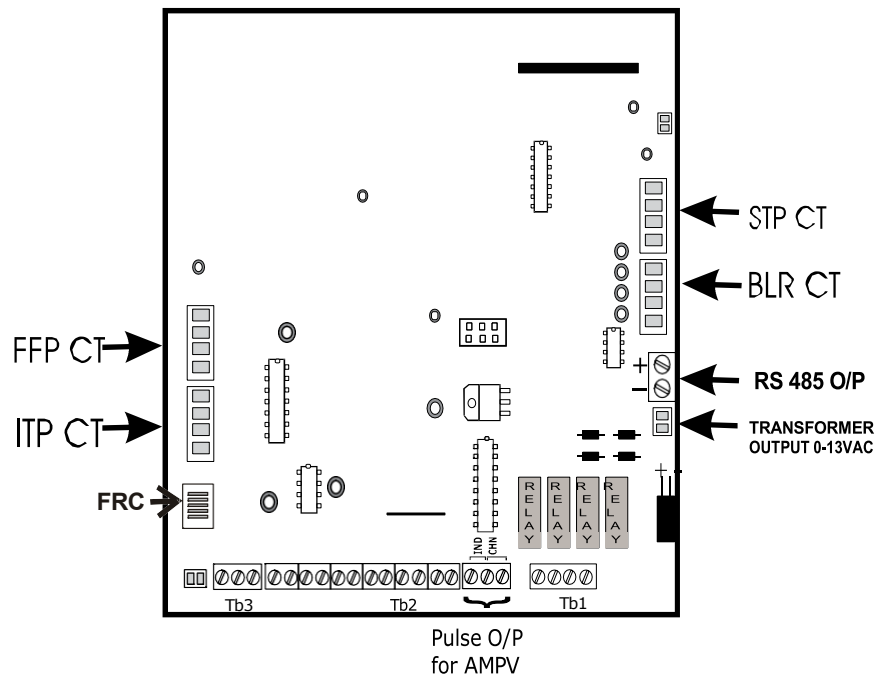
LED Blinking	Message ON Display	Cause & Action
ITP/BLR/FFP/STP	ITP/BLR/FFP/STP OVERLOAD	● More current than the normal ratings. Set Overload current accordingly.
		● Motor is drawing more current than normal. Check Motor
	ITP/BLR/FFP/STP SINGLE PHASING	● If there is mismatch between the R-Y-B phase currents drawn by the pump.
		● Check the connections.
		● Increase the phase unbalance value.
	ITP/BLR/FFP/STP 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

QUICK REFERENCE

Sr. No	Password	Feature	Section	Page No
1	123	Dry run current setting	1.2	6
2	—	Overload Current Setting	1.1	5
3	678	Input Configuration	1.3	7
4	191	Output Configuration	1.4	7

5	456	Current Checking	1.5	8
6	345	Time setting	1.6	7
7	168	No. of pump Selection	1.7	9
8	< & >	Spare pump ON/OFF in in manual mode	1.8	9

Connections on PCB:



Rev 1 on 06/06/2023 Spare pump

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