

Next Generation **ASTERO**[®]

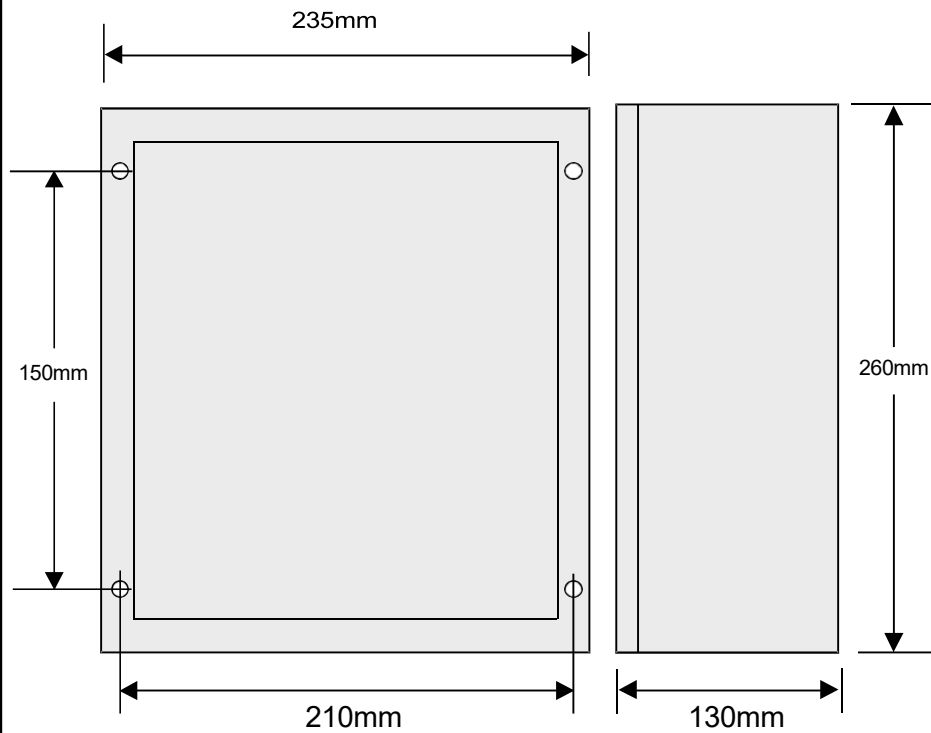


AUTO VALVE NXT

Overall size : 235 (horizontal) X 260 (vertical) X 130 (depth)mm

Cutout size : 190 (horizontal) X 222 (vertical) mm

Mounting drawing :



Overall size: 235 (H) X 260 (v) X 130 (D)

Cut out: 190 (H) X 222 (V)

Accessories :

- 1) 4 numbers M4 nuts for easy mounting of panel.
- 2) 1 number 1.5 Ampere fuse

Standard component ratings :

MOV	320V, D14mm
FUSE	1.5 Ampere

Abbreviations used:

PMP 1/PMP 2: PUMP 1/2	RWT:Raw Water Tank
TWT:Treated Water Tank	PFR:Permeate Flow Rate
IFR:Inlet Flow Rate	CNDUCTIVITY:Conductivity
RFR:Reject Flow Rate	INL:Inlet
AUX IP:Auxiliary Input	REJ:Reject
AUX OP:Auxiliary output	UNBL:Unbalance
SET PT:Set Point	MF : Micron Filter
OVL CRT:Overload Current	MPV: Multiport valve
DRY RUN CRT:Dry run current	SERV TIME: Service time
IND: Indian (MPV)	CHN: Chinease (MPV)
SENSR POSN: Flow Sensor Position	DOSLVL: Dosing Level
TW LEVEL SW:Treated Water level switch	RWLVL: Raw water level
UV IP: Ultraviolet Input	

Pump 1 :	2 HP single phase	5 HP Three Phase
Pump 2 :	2 HP single phase	5 HP Three Phase

COLOUR CODING :

ALARM	PUMP2	PUMP1
R	V	G
R	Y	O

ALARM	PUMP2	PUMP1
R	V	G
R	Y	R

COLOUR CODING:: R:RED V:VIOLET G:GREEN Y:YELLOW O:ORANGE

Note:- Colour coded cables are used for outputs PUMP1, PUMP2, ALARM, etc as mentioned above.

PULSE O/P		COND. SENS		FLOW 2		FLOW 1		AUX I/P 4	AUX I/P 3	UV I/P	DOS LVL	TWT FLOTY	RWT FLOTY	PUMP CONT	PMP ON		ALARM		PMP1	PMP2
				B	G	R	B	G	R	C	NO	C	NO	C	NO	C	NO	C	NO	C

Power terminals:

11

INCOMING WIRE SHOULD BE OF 2.5 sqmm									
INPUT	PUMP 1	PUMP 2	DOSER	N.A.					
P	N	P	N	P	N	P	N	X	X

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INCOMING WIRE SHOULD BE OF 2.5 sqmm													
INPUT				PUMP 1			PUMP 2			DOSER		DOSER	
R	Y	B	N	R	Y	B	R	Y	B	P	N	P	N

Automation Philosophy:

The Astero microprocessor based panels are ideally suited for Auto filter/Ion ex plants as they have the complete operating logic of the process pre-programmed. The panels basically can take 7 inputs as pump contact signal, raw water tank level switch, treated water tank level switch, dosing tank level, UV Input, auxiliary input 3 & auxiliary input 4 besides two flow sensor inputs and controls two pumps. The microcontroller shows instant flow rate as well as totalize the volume. It also gives potential free 'Pump ON Signal & Pulse output to initiate backwash. The advanced electronics also takes care of the required motor protection such as over load, dry running & single phasing.

Operating Logic:

Upon switching ON power supply of the panel, if the level of the raw water tank as well as treated water tank is OK, then pump will start depending on operation mode. (i.e. if Operation mode is AUTO and the PUMP ON TIME is 5m then pump1 will start & remain ON for 5 minutes. After 5 min Pump2 will start automatically where as in Manual mode one has to select the pump.)

OPERATION OF THE PANEL:

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

1. If level of raw water tank and treated water tank is OK then Pump1 or Pump2 will start depending upon operation mode.

Stopping Sequence: Under following conditions processor will stop its operation

1. If start/stop key is pressed
 2. If raw water tank is empty(short).
 3. If treated water tank is full(open).
 4. If dosing tank is empty(short)
 5. If UV fault has occurred(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, at that time press  to resume operation. (The Hooter relay will be energized in these conditions & can be acknowledged by  key and reset by pressing )

1. Dry Run,
2. Single phase
3. Overload.
4. High Conductivity/TDS (if control operation ON)

KEYS SIGNIFICANCE:

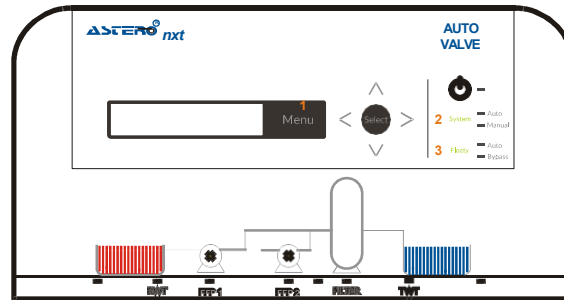


FIG. 1

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

> < : To put the the Password press these keys simultaneously.

▲ : This Up Arrow Key is used to move curser upward & increase the value.

▼ : This Down Arrow Key is used to move curser downward & decrease the value.

● : This Select key is used to select the routine or to set value.

⏻ : This Standby key is used to switch on/off the panel except while setting .

MENU: This MENU Key is used to end the routine or to exit the operation.

Select: This Select Key is used to select the system mode (Auto/Manual).

Floaty: This Floaty Key is used to enable (Auto) or disable (bypass) TWT Floaty.

START STOP : This Key is used to Start/Stop the Pump1/Pump2.

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 only inputs will get bypassed & pump protection like Overload,Single phasing will be there.

To switch On/Off the Pump in Manual mode follow the below mentioned procedure.

To Switch on the Pump1/Pump2

Key pressed	Display
START STOP	PMP 1 ? PMP 2 ?
Choose the required Pump using ▲,▼ keys and press the Select key.	

To Switch off the Pump1/Pump2

Key pressed	Display
START STOP	PMP 1 ? PMP 2 ?
Choose the previously switched on Pump using ▲,▼ keys and press the Select key.	

Note : To switch on the Pump1 or Pump 2 user need to Switch off the previously switched on Pump.

TO VIEW THE FACTORY SETTINGS	
Key Pressed	Display
MENU	VIEW?
Display scrolls through all the settings set by factory.	
SELECT	TW LEVEL SW : ON
	RW LEVEL SW : ON
	AUX IP 1: DOSLVL
	AUX IP 2: UV IP
	AUX IP 3: MOTOL
	AUX IP 4: REMOT
	AUX OP1 : ALARM
	AUX OP2 : PULSE
	SETTINGS? **
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 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(R/Y/B).(2) Using our control panel Refer section 1.7	
SELECT	P1 OL CRT ?
SELECT	P1 OL CRT? 04.0(Factory set value)
Use < ,> , ^ , v keys to set desired value & press SELECT key	
SELECT	P1 OL CRT ?
SELECT	P1 OL CRT? 04.0(Factory set value)
Use < ,> , ^ , v keys to set desired value & press SELECT key	
*If Panel is in Manual mode.	
SELECT	DISP? TIME/CURNT
SELECT (if SYSTEM is in AUTO mode)	SCROLL?
SELECT	SCROLL?OFF/ON
Why to make scroll ON/OFF ? This scrolling facility provided to the users who want to see flow rate,volume,operation hour mains voltage along with plant status & conductivity in scrolling.If user want to see only conductivity & plant status on display during plant operation they have to make scroll off.	
Display scrolls through all the settings set by factory.	
SELECT	*QUIT?
*If CNDUCTIVITY : ON in 678 password.	
SELECT	COND/TDS?
SELECT	DISP: μSM
Use ^ key to make it PPM if required	
SELECT	SET PT:(IF CNTRL OPRN:ON. SEC 1.4)
SELECT	SET PT:500(Previously set value)
Use < ,> , ^ , vkeys to set desired value	
SELECT	DELAY
SELECT	DELAY:010(Previously set value)
What is this delay time and set point ? Set point is the value of conductivity beyond which the system will trip. Delay is the time up to which the increase in conductivity will be ignored during start up.	

Use < ,> ,Λ, V keys to set desired value & press SELECT key	
SELECT	EXIT ?
SELECT	QUIT ?
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 PMP 1 / PMP 2. 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 <,> ,Λ, V KEYS	
SELECT	PUMP 1 UNBL:
SELECT	PUMP 1 UNBL: 40(Previously set value)
USE <,> ,Λ, V KEYS TO SET DESIRED VALUE	
SELECT	PUMP 2 UNBL:
SELECT	PUMP 2 UNBL:40(Previously set value)
USE <,> ,Λ, V KEYS TO SET DESIRED VALUE	
SELECT	DRY RUN OP:
SELECT	DRY RUN OP:OFF(Previously set status)
USE Λ KEY TO MAKE IT ON	DRY RUN OP:ON
SELECT	AUTO RESTRT?
SELECT	AUTO RESTRT? OFF(Previously set status)
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 Λ KEY TO MAKE IT ON	AUTO RESTRT? ON
SELECT	TIME : 015 m(Previously set value)
SELECT	P1 DRY CRT?
SELECT	P1 DRY CRT? 01.5(Factory settings)
USE <,> ,Λ, V KEYS TO SET DESIRED VALUE	
SELECT	P2 DRY CRT?
SELECT	P2 DRY CRT? 01.5(Factory settings)
USE <,> ,Λ, V KEYS TO SET DESIRED VALUE	
SELECT	EXIT?
SELECT	PLANT STATUS
CONDUCTIVITY CALIBRATION (SEC--1.3)	
Why to calibrate? If there is mismatch between actual and required value of conductivity then there is need for recalibration.For that 1) Dip the sensor in standard known solution and set the required value. Ex.If actual value is 400µs/cm and required value is 450µs/cm then calibrate as:	
Press < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 234 USING <,> ,Λ, V KEY	
SELECT	CND FACTOR?
SELECT	CND FACTOR?1.00
USE <,> ,Λ, V TO SET DESIRED VALUE	
SELECT	COND. OFFSET?

SELECT	COND. OFFSET? 000
USE <, >, ^, v KEY TO SET DESIRED VALUE	
SELECT	QUIT?
SELECT	PLANT STATUS
TO CONFIGURE INPUTS (SEC--1.4)	
Panel has 7 inputs (potential free switch) available Input 1 : Pump contact signal Input 5 : UV IP Input 2 : Raw water tank floaty Input 6 : MOTOL/REMOT/OFF/BKIP/REGN./BKWSH Input 3 : Treated water tank floaty Input 7 : REMOT Input 4 : Dosing Tank Level Output 1: ALARM/DOSPM(if UV IP OFF) Conductivity and two Flow sensor I/P. Output 2: PULSE/PMPON	
Press < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 678 USING <, >, ^, v KEYS	
SELECT	FLOW SENSOR:
SELECT	NO OF SENSORS:
SELECT	NO OF SENSORS:2 (Previously set value)
USE ^ KEY TO MAKE IT 0 or 1(According to number of sensors connected)	
SELECT	SENSR1 CONST :
SELECT	SENSR1 CONST : 060.0 (Previously set value)
Use <, >, ^, v keys to alter this value (put the constant Factor mentioned on sensor)	
SELECT	SENSR2 CONST :
SELECT	SENSR2 CONST : 060.0 (Previously set value)
SELECT	QUIT?
SELECT	SENSR2 POSN:
SELECT	SENSR 2 POSN:INL(INLET)
Use ^ KEY TO SELECT IT AS REJ i.e. Reject	
SELECT	QUIT?
SELECT	CNDUCTIVITY:
SELECT	CNDUCTIVITY:OFF
USE v KEY TO MAKE IT ON if required	
SELECT	CONTROL OPRN:OFF(Previously set status)
What is CONTROL OPRN? This is an interlock for conductivity,when the conductivity exceeds set maximum value then panel trips showing HI CONDUCTIVITY on display if CONTROL OPRN is On else it neglects value of conductivity. One can set desired set point in factory settings option.	
USE ^ KEY TO MAKE IT ON if required	
SELECT	UV CHECKING:
SELECT	UV CHECKING : OFF
USE v KEY TO MAKE IT ON if required	
SELECT	TW LEVEL SW:
SELECT	TW LEVEL SW:ON(Factory set status)
USE ^ KEY TO MAKE IT OFF	
SELECT	IF NO CONTROL REQUIRED
SELECT	RW LEVEL SW:
SELECT	RW LEVEL SW:ON(Factory set status)
USE ^ KEY TO MAKE IT OFF	
SELECT	IF NO CONTROL REQUIRED
SELECT	AUX. IP1:
SELECT	AUX. IP1:DOSLVL (FACTORY Setting)

USE Λ, V KEY TO Make IT OFF	
SELECT	AUX. IP2:
SELECT	AUX. IP1:UV IP (FACTORY Setting)
USE Λ, V KEY TO MAKE IT OFF	
SELECT	AUX. IP3:
SELECT	AUX. IP3:MOTOL (FACTORY Setting)
USE Λ, V KEY TO MAKE IT REMOT/OFF/BKIP/REGEN./BKWSH	
SELECT	AUX. IP4:
SELECT	AUX. IP4:REMOT (FACTORY Setting)
USE Λ, V KEY TO MAKE IT OFF/BKIP/REGEN./BKWSH/MOTOL	
SELECT	AUX OP1:
SELECT	AUX OP1 :ALARM
What is this output?	
Basically this is an Auxiliary output which can be configured as ALARM(will be ON in case of any fault) or DOSE R(will be ON along with pump)*IF UV IP off	
SELECT	AUX OP2:
	AUX OP2: PULSE
What is this output?	
Basically this is an Auxiliary output which can be configured as PULSE(will give a pulse output after the set service time or volume) or PMPON (which potential free signal for AMPV)	
SELECT	EXIT?
<i>PLANT STATUS shows PUMP SWITCH-OVER *if PMP2 on by make PMP1 off</i>	
TO CONFIGURE OUTPUT (SEC--1.5)	
Press < & > KEYS SIMUTANEOUSLY	PASSWORD:000
ENTER PASSWORD 191 USING <, >, Λ, V KEYS	
SELECT	PMP TYPE :NORMAL
Use Λ key to make it SUBMRBL *then set RL2 ON TIME:04	
SELECT	NO.OF PUMPS : 2
Use Λ key to make it 1 (depending upon number of pumps connected)	
SELECT	PMP TYPE:3-3
Use Λ key to make it 1-3/1-1/311/331/131(in case motors are single phase)	
SELECT	OPRN MODE:AUTO
Use Λ key to make it SEMI/MAN(MANUAL if AUTO changeover is not required)	
SELECT	OP TIME:0001 m
USING <, >, Λ, V KEYS to set required time	
SELECT	EXIT?
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 <, >, Λ, V KEYS	
SELECT	SELECT PUMP ?
USING <, > KEYS TO CHECK PMP1 & PMP2 CURRENTS respectively	
</>	PMP1/ PM2 R:00.0 B:00.0 **
**Inc case of single phase PMP 1 / PMP 2 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 '</>' key to switch off the respective pump.	
SELECT	P1 MANUAL STOP or P2 MANUAL STOP

PRESS  KEY TO SELECT PUMP & THEN SELECT KEY TO MAKE IT ON.

TO CONFIGURE AUTOMPV(SEC--1.7)

PRESS < & > KEYS SIMULTANEUSLY	PASSWORD:000
ENTER PASSWORD 084 USING <,>,Λ,∇ KEYS	
SELECT	MPV TYPE:
SELECT	MPV TYPE:IND
USE Λ KEY TO MAKE IT CHN	
SELECT	SENSOR
SELECT	SENSOR : TIME*
USE Λ,∇, <,> KEYS TO SET TYPE VOLUM**	
*SELECT	SERV TIME :0060 m (Previously set time)
USE Λ,∇, <,> KEYS TO SET DESIRED TIME	
SELECT	QUIT ?
**SELECT	VOL REM :16.0 m3 (Previously set Volume)
SELECT	QUIT ?
SELECT	PLANT STATUS

UNDER & OVER Voltage Settings of Panel (SEC--1.8)

What is UND VTG and OVER VTG?
This is mains voltage supplied from electricity board which is same with panel display.
(NOTE: THIS CHANGE UNDER USER RESPONSIBILITY)

PRESS < & > KEYS SIMULTANEUSLY	PASSWORD:000
ENTER 567 USING <,>, Λ, ∇ KEYS AS PER REQUIRED	
SELECT	UND VTG:
SELECT	UND VTG: ON
USE Λ, ∇ KEYS TO IT ON / OFF	
SELECT	UND VTG : 180V
USE <,>,Λ,∇ KEYS TO SET DESIRED VOLTAGE	
SELECT	OVR VTG:
SELECT	OVR VTG : ON
USE Λ, ∇ KEYS TO IT ON / OFF	
SELECT	OVR VTG : 260V
USE <,>,Λ,∇ KEYS TO SET DESIRED VOLTAGE	
SELECT	QUIT?

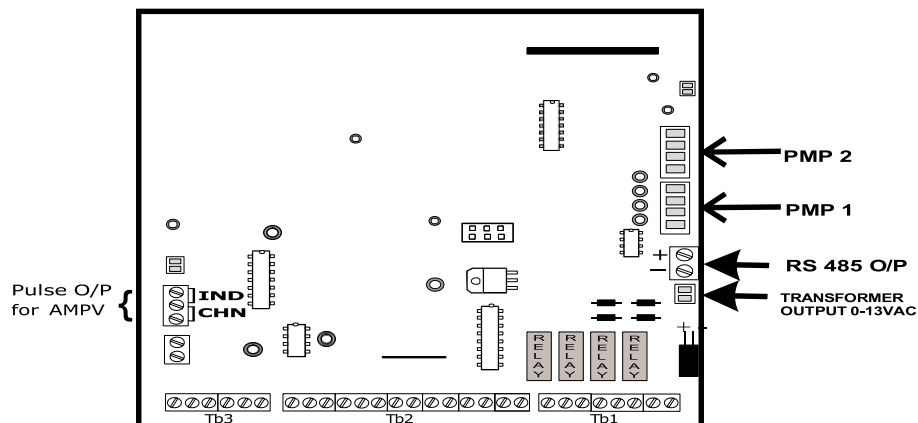
Note:For all settings procedures.
In each setting routine,the changes done are finally stored when user pressed Select key once.

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.
		* Floaty is not connected. Short FLOATY terminal by an external wire link.
		* Check, is it C NC contact? If not make it.
PMP1	PMP1 OVERLOAD	* More current than the normal ratings. Set Overload current accordingly. Refer section 1.1
		* Motor is drawing more current than normal. Check Motor
	PMP1 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.
PMP2	PMP2 OVERLOAD	* If current drawn by the pump is less than the set value. If tank is empty. Set dry run current accordingly. Refer:section 1.2
		* More current than the normal ratings. Set Overload current accordingly. Refer:section 1.1
	PMP2 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.
—	OVER VTG TRIP TV=280V; V=278V	* Increase the phase unbalance value.
		* If current drawn by the pump is less than the set value. If tank is empty. Set dry run current accordingly. Refer:section 1.2
	(OR)	* Check Voltage from Electricity Board with Voltmeter to the mains Voltage display on Panel. And compare both voltages.
		* If Both Voltages are same then one can change over & Under Voltage Set points In Password 567. (NOTE: THIS CHANGE UNDER USER RESPONSIBILITY) Refer:section 1.8
	UNDER VTG TRIP TV=170V; V=168V	* If Both Voltages are same then try to make Supply Voltage from Electricity Board In range (180V- 260V).
		* If there is mismatch between Actual Voltage on Voltmeter and Display then Contact with our technical support team.

Connections on PCB:



QUICK REFERENCES

Sr. No	Password	Feature	Section	Page No
1	123	Dry run current setting	1.2	7
2	234	Conductivity Calibration	1.3	7
3	—	Overload Current Setting	1.1	6
4	678	Input Configuration	1.4	8
5	191	Output Configuration	1.5	9
6	456	Current Checking	1.6	9
7	084	Configure AUTO MPV	1.7	10
8	567	Voltage Settings	1.8	10

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