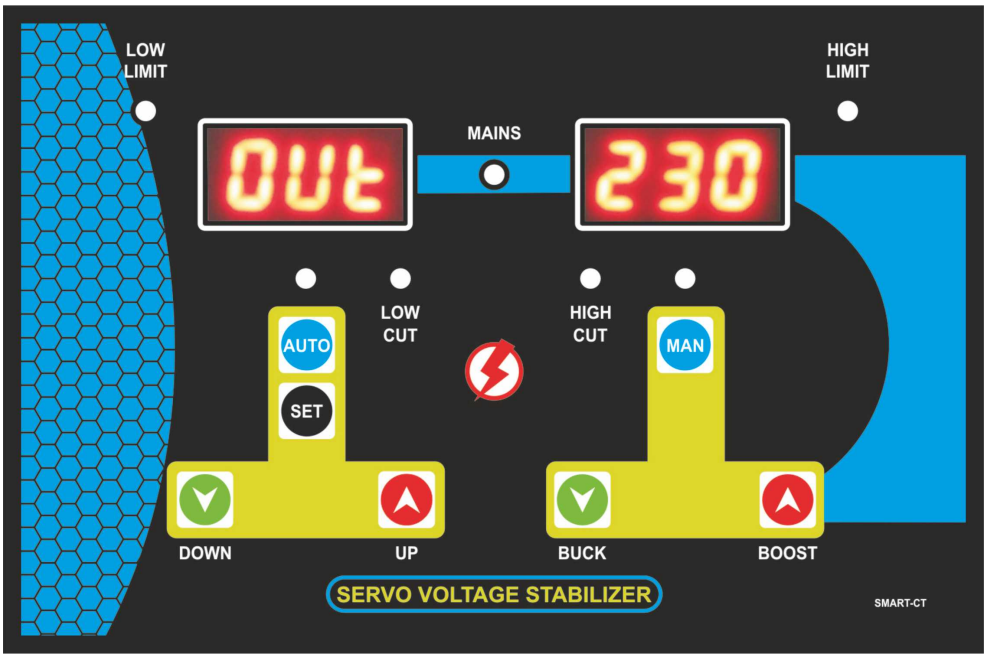
USER MANUAL
SMART-CT/90 MODEL



SALIENT FEATURES OF SMART Model

- ***Range 10-20 % Extra***
- ***Current - Straight Program (No Formula)***
- ***No jumps in current Readings***
- ***Mounting Same as Digital Deluxe (Single Display)***
- ***SMD Technology***
- ***Voltage Display upto 500V***
- ***Software Calibration***

This manual is divided into four parts. These four parts are as follows:

All these four parts are explained as follows:

1. Normal (Running) Operation Mode

SMART MODEL panel for servo control card has dual display. It has seven push button switches. This model displays following three parameters:

1. OUTPUT VOLTAGE
2. INPUT VOLTAGE
3. CURRENT

These three parameters keep coming one by one. In left window, we see parameter and in right window, we see it's value. Out of these four parameters, if we do not want to see some parameters, then we can program it for NO. This we shall see in programming part of this manual

LED INDICATIONS:

In the center of panel there is a mains indicator. It represents relay or contactor for output voltage. On means, output relay is ON and Off means, output relay is OFF. And when it is blinking that means relay is about to turn ON and it is in tdr time. In left and right are the Low and High Limit indicators. Then there is indicator for Auto mode and Manual mode.

There are fault indicators LED.

- LOW CUT
- HIGH CUT
- O/L cut is displayed as CUR - Hi in display system.

And then there is indicator for Auto Mode above Auto push button and there is Manual Mode indicator above Manual push button. Apart from this there is indicator for Low Limit and one indiactor for High Limit.

PUSH BUTTONS:

There are seven push buttons. As mentioned, these push buttons are

- AUTO
- SET
- DOWN
- UP
- MANUAL
- BUCK
- BOOST.

After having gone through front panel layout, let us see it's operation.

In normal operation there are two modes in which this unit can be operated.

AUTO MODE:

This is mode which normally is used. In this mode desired output voltage can be set and then the card gives command to motor to move so as to achieve the desired output voltage.

To see the set output voltage, press the ***SET*** button. Now the left display shows SET and right window shows set voltage. For changing the set voltage, press ***UP*** or ***DOWN*** button to reach at desired set voltage.

If we press SET button again then it comes out of set voltage mode or otherwise, if we do not press any button for some time, then it automatically comes out of it.

MANUAL MODE:

This mode can be entered in by pressing the ***MANUAL*** button and keeping it pressed continuously for three seconds. In this way it detects a genuine press for ***MANUAL*** button.

In this mode the desired output voltage is achieved by pressing ***BUCK*** or ***BOOST*** key below the manual button. Here it does not correct the output voltage when there is fluctuation in the incoming power supply.

2. *Programming Mode*

To enter in programming, press ***SET*** and ***BOOST*** buttons together. Left display shows ***Lo.*** Now it has entered in programming mode.

There are seven settings which can be set in this mode. And the parameters can be changed with the help of ***UP*** and ***DOWN*** button below Auto mode button. Parameters can be toggled by ***SET*** button. Here left display shows the parameter and right display shows the value set. These settings are:

• Low voltage cut off set	Display shows-	Lo	
• High voltage cut off set	Display shows-	Hi	
• Time delay relay set (TDR)	Display shows-	tdr	
• Hysteresis	Display shows-	HYS	
• C T Ratio	Display shows-	CT (For 5A CT Only)	
• Set Current	Display shows-	CUr	
• Output Voltage Display	Display shows	Out	YES
• Input Voltage Display	Display shows	In	YES
• Current Display	Display shows	Cur	YES

Low Voltage cut off:

This value can be changed from 100V to 220V. Whenever there is any fluctuation present in the power supply to the extent that output voltage has turned out to be below this set voltage range then relay switches OFF.

High Voltage cut off:

This value can be changed from 220V to 280V. Whenever there is any fluctuation present in the power supply to the extent that output voltage has turned out to be above this set voltage range then relay switches OFF.

Time Delay Relay:

This value can be programmed from 1 sec to 180 sec. Whenever the output voltage goes beyond the low and high voltage range or load current exceeds the set limit, the relay switches off. When the output voltage has reached in this range and now this much time (which has been programmed in TDR) is introduced and after this the relay turns ON.

Hysteresis:

Hysteresis can be programmed from 1V to 15V. It is used to minimize hunting of motor when there is a lot of fluctuation in the power supply. In this case we allow a min. and max. band for the servo motor to operate. For example if hysteresis is set at 4V and auto set voltage is 225V then servo motor will not take action between 221V—229V. In this way hunting of motor is avoided at places where there is lot of voltage fluctuations.

C T Ratio:

There are two models available for current 100A and 5A.

For 100A, this Option of CT Ratio will not appear. Through this CT straight away 100 A current can be passed through. There is no requirement of any other external CT.

If current requirement is more than 100A, then other option is used which is 5A. In this case, already 5A CT is already there and an external CT is required as per current requirement.

You must select a CT in such a way that it has a ratio of 5 Amp current in secondary at full load of CT's Primary Current . Primary approximately 1.5 times of full load current. For example for

30A full load current	CT 50/5	Ratio 10
70A full load current	CT 100/5	Ratio 20
150A full load current	CT 200/5	Ratio 40

Now the ratio of this CT is to be fed to the controller. Now in CT program this ratio as mentioned above. For example, if CT is 100/5, ratio to be programmed 20.

Set Current:

This is a current that sets the maximum current which can be drawn from the system. In this setting this value is fed here. Whatever is the cut off current, program it straightway here.

For example if a CT of 100A/5A is used then it has a CT ratio of 20. And required set current is say 70A. Then value fed in CUR will be 70

As an another example if a CT of 50A/5A is used then it has a CT ratio of 10. And required set current is say 25A. Then Cur value fed will be 25

Display Option →Output Voltage:

Once entered in this setting it displays **Out YES** and it has two options: a) Yes b) No which can be done by pressing **UP** & **DOWN** buttons. If selected Yes then it will show **Output Voltage** otherwise it will not.

Display Option →Input Voltage:

In the same way again it displays **In YES** and it has two options: a) Yes b) No which can be done by pressing **UP** & **DOWN** buttons. If selected Yes then it will show **Input Voltage** otherwise it will not.

Display Option →Current:

In the same way again it displays **CUr YES** and it has two options: a) Yes b) No which can be done by pressing **UP** & **DOWN** buttons. If selected Yes then it will show **Current** otherwise it will not.

Note:

- If all display options are selected No then it will by default show OUTPUT VOLTAGE.
- It has an auto exit function that means if no key is pressed for some time in Programming Mode then it will come out of it automatically.
- If panel is turned OFF in between programming, then values programmed are not saved.

3. Calibration Mode

Some times, we see that voltage readings displayed at panel does not match with the readings displayed by our standard meters. And there is a mismatch. So here this calibration can be done which is software based.
For this, press UP key button and BUCK key button together. So in right window CAL displays and then OUT is displayed. So with the help of UP/DOWN button we make it match with standard meter. Again press the SET button, it shows IN. In a similar way calibrate it for Input Voltage. Then again press SET button and it comes out of calibration mode and readings are saved.

Note:

- It has an auto exit function that means if no key is pressed for some time in Calibration Mode then it will come out of it automatically.
- If panel is turned OFF in between calibration, then values programmed are not saved.

Disclaimer:

Features / Specifications mentioned above are for tentative indications and explanations. However research and design is a continuous process which keep evolving and changing over a period of time or it may have already changed. It may change as per customized requirements. And there could be some differences between model to model. Users of advised to go through their own systems checkup and settings.

4. Wiring Diagram