SINE-3P-22.5-340/480V / SINE-3P-30-340/480V

Operating Instructions

OP3012-V01

SAFETY PRECAUTIONS

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

If there is physical damage to the unit then do not use it.

Read complete instructions prior to installation and operation of the unit.

WARNING

A. SETUP

1. The hazard of electric shock, is present due to the presence of high voltages within the SVR.
2. Do not install the SVR near heat source, water or in damp environments.
3. Do not block off the ventilation openings of SVR.
4. The unit should be opened, installed or serviced only by trained persons.
5. Servicing of the unit should be carried out while ensuring compliance with all safe electrical work practices and use of protective equipment.

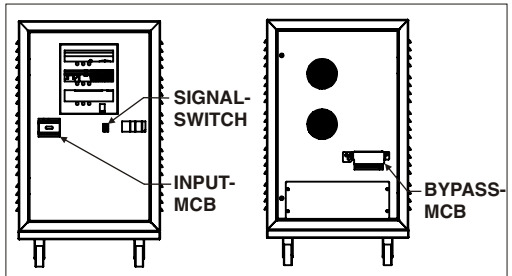
B. INSTALLATION

1. Make sure that all cables used in the SVR system are properly insulated with no visible bare patches.
2. For secure operation ensure the protective-earth connection to the system is proper.
3. Make sure that no overload equipment is connected to the system.
4. Ensure that the connections at input and output terminals of SVR are proper before switching ON the system.

C. OPERATION

1. Do not disconnect any cable from the SVR during its operation.
2. Before disconnecting the system ensure that the load is safely turned-off.
3. Make sure that no fluids or any other foreign objects enter the SVR.

STARTUP, SHUTDOWN AND MANUAL BYPASS PROCEDURE



A. STARTUP

1. Make sure that the Bypass-MCB located on the back-panel is in OFF position.
2. Turn ON the Mains-MCB located on the front-panel.
3. Wait 10s before turning ON the signal-switch.
4. Turn ON the signal-switch located on the front-panel.

B. SHUTDOWN

1. Turn OFF the signal-switch and then the Mains-MCB located on the front-panel.

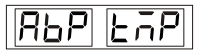
C. MANUAL BYPASS

1. Turn OFF the signal-switch and then the Mains-MCB located on the front-panel.
2. Turn ON the Bypass-MCB located on the back-panel.

D. AUTO-BYPASS

1. Make sure that the Auto-Bypass setting present in the Configuration Menu is set to 'YES' in all the three displays
2. After activating the Auto-Bypass feature make sure that the Bypass-MCB located on the back panel is in OFF position.
3. The unit will now activate Bypass upon detection of following fault conditions :

A) Over-Temperature



B) Board Failure

SPECIFICATIONS

Display Specifications

7 Segment LED display	Regular input and output
Bar graph LED	Load indication with resolution of 10%
LED Indication	Overload, Overvoltage, Undervoltage, Overcurrent
Buzzer Indication	Power on, Overload, Overvoltage, Undervoltage, Overcurrent, Over temperature

Technical Specifications

Eliminates voltage sags	Upto 50V L-N (22% considering 230V L-N nominal)
Swell compensation	Upto 50V L-N (22% considering 230V L-N nominal)
Compensation irrespective of phase	Yes
Compensation of balanced & unbalanced voltage drops	Correct all three phases
Compensation of depth & long disturbances	Continuous correction possible (24x7)

Input Specifications

Input voltage range	320 - 480V L-L and 180V - 280V L-N
Operating frequency	50 - 63 Hz
Input MCB rating	50A / 63A* X 3 Pole
Input connection	Barrier terminal [R,Y,B,N and E]
Max. rated input current	42A / 56A* X 3 Phase
Input Wire Size	6 sq.mm / 10 sq.mm*

Output Specifications

Output voltage range	380-400-415V L-L and 220-230-240V L-N (Selectable)
Correction initiation (speed)	Less than 20 msec
Technology	PWM based IGBT switching
Voltage regulation	±1%
Output connection	Barrier Terminal [L1,L2,L3, N and E]
Max. rated output current	33A / 44A* X 3 Phase
Load Bypass	Auto & Manual

Protection Functions

Input protection	Line Over-current, Over-voltage, Under-voltage
Output Protection	Over-load, Over-current trip
Overload & Short-Circuit	Through suitable input circuit breaker
Surge-test Conditions	As per Class 2 Surge (Combination Wave)
Surge Let-through Voltages	1.2 X 50µs, 6kV, 8 X 20µs, 3kA waveform, L-N < 300V

Power Specifications

Capacity	22.5 / 30* KVA
Power consumption	100VA per phase

Physical Specifications

Dimension (In mm)	470W x 643H x 780D mm
Weight	100 / 120* kg Approx.
Mounting	4 High Quality castor wheels, 2 with brakes
Ambient temp.	0 - 50°C 10-90% RH non-condensing
Cooling method	Fan Cooling
IP ratings	IP20

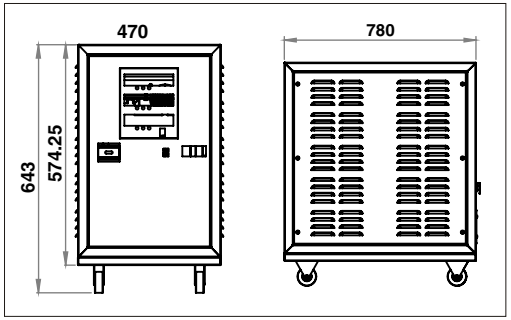
ACCURACY

Measurement	Accuracy
Input Voltage	±0.5% of Full Scale
Output Voltage	±0.5% of Full Scale
Load Percentage	±10% of Full Scale

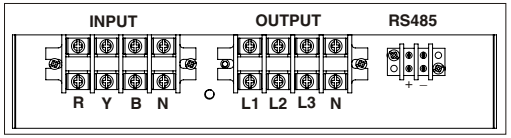
SERIAL COMMUNICATION

Interface standard and protocol	RS485 and MODBUS RTU
Communication address	1 to 255
Transmission mode	Half duplex
Data types	Float and Integer
Transmission distance	500m maximum
Transmission Speed	2400, 4800, 9600,19200, 38400 (in bps)
Parity	None, Odd, Even
Stop bits	1 or 2
Response time	100ms (max and independent of baud rate)

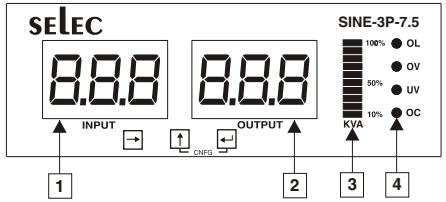
DIMENSIONS (All in mm)



TERMINAL CONNECTIONS



DISPLAY DESCRIPTION

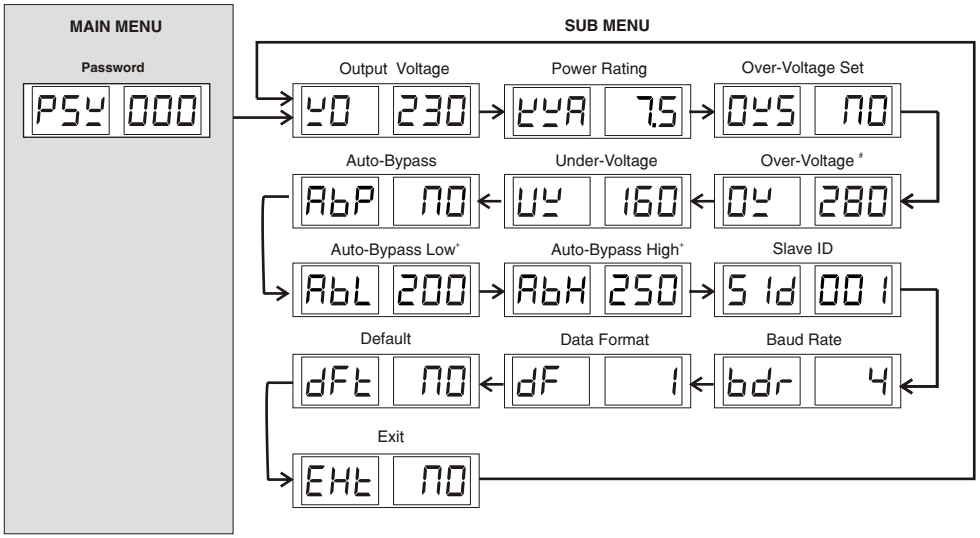


No.	Description	
1	Input Voltage	
2	Output Voltage	
3	Load (KVA)	
4	Fault	Over-Load, Over-Voltage, Under-Voltage, Over-Current

NOTE : *Marked values are only valid for SINE-3P-30-340/480V

CONFIGURATION MENU

Key	Description
→	Press to edit the concered parameter in configuaration menu OR change the position of cursor while editing.
↑	Press to change / toggle the value.
↵	Press to confirm the edited value / move into new parameter
↵ + ↑	Press for 5sec. to enter configuration menu.



NOTE :
1.# Marked parameter will only appear if **YES** is selected in **Over-Voltage Set**.
2.+ Marked parameter will only appear if **YES** is selected in **Auto-Bypass**

ONLINE PAGE

Parameter	Default	Condition	Display position
Input Voltage	Vin	- - - -	Seven Segment Display: Left Hand Side
Output Voltage	Vout	- - - -	Seven Segment Display: Right Hand Side
KVA	ON	At step of 10%. **Range** - **Min** : 0% **Max** :100%	LED Bar Graph
Over Load	- - -	ON as per fault	LED : OL
Over Voltage	- - -		LED : OV
Over Current	- - -		LED : OC
Under Voltage	- - -		LED : UV
Auto Bypass Status	- - -	Displayed when control is transferred to Auto Bypass.	Seven Segment Display: Left Hand Side
Fault	- - -	Displayed due to the occurrence of the following fault conditions: 1.Over- Temperature 2. Board Failure	Seven Segment Display:Right Hand Side

CONFIGURATION PAGE

PG.	DISPLAY	DESCRIPTION	RANGE Min	RANGE Max	DEFAULT
A	PSY	Password	—	—	100
1	YO	Output Voltage	220	240	230
2	KVA	Power Rating	1	7.5 / 10*	7.5 / 10*
3	OVS	Over- Voltage Set	Yes / No		NO
3.1	OV	Over - Voltage	260	280	280
4	UV	Under - Voltage	155	200	160
5	AbP	Auto-Bypass	Yes / No		NO
5.1	AbL	Auto-Bypass Low	190	220	200
5.2	AbH	Auto-Bypass High	240	300	250
6#	SId	Slave ID	1	255	001
7#	bdr	Baud Rate	1-2400 2-4800 3-9600	4-19200 5-38400	4
8#	dF	Data Format	0-8N1 1-8N2 2-8E1	3-8E2 4-8O1 5-8O2	1
9	dFt	Default	Yes / No		NO
10	EHt	Exit	Yes / No		NO

NOTE :
1.* Marked values are only valid for SINE-3P-30-340/480V
2. #Marked values need to be set same in all the three displays for external-communication.

FAULT CODE DESCRIPTION

Fault Type	Decimal Value
Over-Current	2
Over-Load	4
Over-Voltage	8
Under-Voltage	16
Over-Temperature	32
Board Faiulre	64

MODUS REGISTER ADDRESS LIST

Readable / writable parameters for communication [Length (Register) : 1: Resolution :1]

Address	Parameter	Range	Default	Data Structure
40000	Output voltage Set : R Phase	220-240	230	u16
40001	Output voltage Set : Y Phase	220-240	230	u16
40002	Output voltage Set : B Phase	220-240	230	u16
40003	KVA : R Phase	1-7.5 / 10*	7.5 /10*	u8
40004	KVA : Y Phase	1-7.5 / 10*	7.5 /10*	u8
40005	KVA : B Phase	1-7.5 / 10*	7.5 /10*	u8
40006	Over-voltage selection : R Phase	0-1(YES- NO)	0 (NO)	u8
40007	Over-voltage selection : Y Phase	0-1(YES- NO)	0 (NO)	u8
40008	Over-voltage selection : : B Phase	0-1(YES- NO)	0 (NO)	u8
40009	Over-voltage range : R Phase	260-280	280	u16
40010	Over-voltage range : Y Phase	260-280	280	u16
40011	Over-voltage range : B Phase	260-280	280	u16
40012	Under-voltage range : R Phase	155-200	160	u16
40013	Under-voltage range : Y Phase	155-200	160	u16
40014	Under-voltage range : B Phase	155-200	160	u16
40015#	Slave ID : R Phase	1-255	1	u16
40016#	Slave ID : Y Phase	1-255	1	u16
40017#	Slave ID : B Phase	1-255	1	u16
40018#	Baud rate : R Phase	1-2400 4-19200 2-4800 5-38400 3-9600	4-19200	u16
40019#	Baud rate : Y Phase	1-2400 4-19200 2-4800 5-38400 3-9600	4-19200	u16
40020#	Baud rate : B Phase	1-2400 4-19200 2-4800 5-38400 3-9600	4-19200	u16
40021#	Data format : R Phase	0-8N1 3-8E2 1-8N2 4-8O1 2-8E1 5-8O2	1-8N2	u16
40022#	Data format : Y Phase	0-8N1 3-8E2 1-8N2 4-8O1 2-8E1 5-8O2	1-8N2	u16
40023#	Data format : B Phase	0-8N1 3-8E2 1-8N2 4-8O1 2-8E1 5-8O2	1-8N2	u16
40024	Auto-Bypass : R Phase	0-1(YES- NO)	0 (NO)	u8
40025	Auto-Bypass : Y Phase	0-1(YES- NO)	0 (NO)	u8
40026	Auto-Bypass : B Phase	0-1(YES- NO)	0 (NO)	u8
40027	Auto-Bypass Low : R Phase	190-220	200	u16
40028	Auto-Bypass Low : Y Phase	190-220	200	u16
40029	Auto-Bypass Low : B Phase	190-220	200	u16
40030	Auto-Bypass High : R Phase	240-300	250	u16
40031	Auto-Bypass High : Y Phase	240-300	250	u16
40032	Auto-Bypass High : B Phase	240-300	250	u16

Readable parameters : [Length (Register) : 2 ; Data Structure : F32]

Address	Parameter
30000	Input voltage : R Phase
30002	Input voltage : Y Phase
30004	Input voltage : B Phase
30006	Output voltage : R Phase
30008	Output voltage : Y Phase
30010	Output voltage : B Phase
30012	Load Power (KVA) : R Phase
30014	Load Power (KVA) : Y Phase
30016	Load Power (KVA) : B Phase
30018	Load parcentage : R Phase
30020	Load parcentage : Y Phase
30022	Load parcentage : B Phase
30024	Fault Code : R Phase
30026	Fault Code : Y Phase
30028	Fault Code : B Phase

NOTE :
1.*Marked values are only valid for SINE-3P-30-340/480V
2. #Marked values need to be set same in all the three displays for external-communication.

ORDERING INFORMATION

Product code	Supply Voltage	Certification
SINE-3P-22.5-340/480V	320-480V AC (L-L)	----------
SINE-3P-30-340/480V	320-480V AC (L-L)	----------

(Specifications are subject to change, since development is a continuous process.)

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