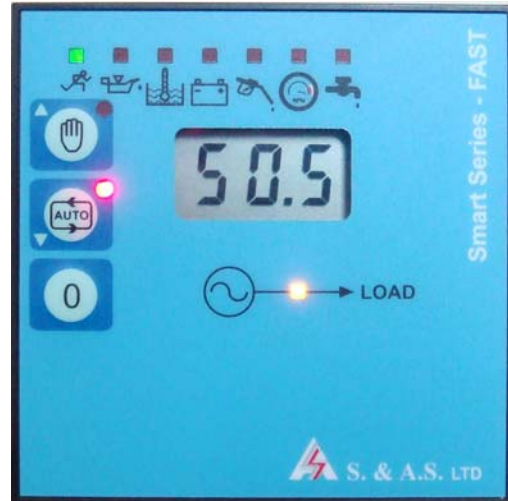


AUTO START MODULE WITH FREQUENCY DISPLAY – SMART-FAST WITH ALARM OR PREHEAT OUTPUT

FEATURES

Microcontroller based design
Operation by 3 push buttons
Easy to fit DIN standard 72x72 panel mount housing
Connection is via locking plug and socket connectors
Solid-state short circuit protected outputs
LCD display for frequency, run hours, status and to access the menu
Oil change notification alert
Front panel leds for status and alarm indication
Automatic engine starting and stopping
Automatic shutdown on fault condition
Low oil pressure alarm and shut down
High engine temperature alarm and shut down
Dynamo failure alarm and shut down
Low fuel alarm and shut down
Over/Under speed alarm and shut down
Coolant level alarm and shut down

ACTUAL SIZE



DESCRIPTION

Smart-FAST is a new addition to the Smart series. It is an intelligent auto start and protection module with frequency display, run hour counter and run hours since the last oil change. Automatic assembly and microcontroller based high integration design resulted in this low-cost yet high performance controller.

OPERATION

Stop Mode: In this mode, the engine is shut down along with the module. All alarms are reset.

Auto Mode: In this mode, the genset is ready to start. Starting is controlled by the remote control input. Following is a description of the operation in this mode:

1. The **Remote Control** input receives a start signal (activated by connection to $-V_{bat}$).
2. No action is taken until the delay set by **rSP** is elapsed.
3. The preheat relay is engaged via terminal **PREHEAT/ALARM** for a time delay if it is set by **APr**.
4. A starting sequence of a preset number of attempts **Att** will initiate.
5. The **Electric Valve** engages 0.5sec before the **Starter**.
6. If the start signal is removed before the engine starts, all timers are reset and the module is ready for a new sequence.
7. Cranking is disconnected when either the frequency on the **Line** and **Neutral** terminals exceeds **crF** or a voltage exceeding **dcd** (if not set to **bYP**) appears on the **Dynamo** input or the oil pressure switch opens given that **boP** is not set to **bYP** and its preset delay has elapsed.
8. If the engine fails to start after the preset number of attempts, a scan of the six red leds is initiated to indicate a start fail. The **Alarm** relay is engaged via terminal **PREHEAT/ALARM** if **APr** is set to **ALA**. The **Smart-FAST** would reattempt starting by selecting the **Stop Mode** then selecting **Auto Mode** or by recycling the remote control signal.
9. After elapse of the warm-up delay, set by **UuP**, the load contactor is engaged via terminal **Contactor** and yellow led activated.
10. All protections are enabled when the engine is running and after the elapse of the fault bypass time set by **FbP**.
11. Any fault will shut the load down and then shut the engine down and the corresponding led is lit. The **Alarm** output is activated via terminal **PREHEAT/ALARM** as well if **APr** is set to **ALA**.
12. When the start signal is removed, the **Smart-FAST** will shut the load down after the elapse of the delay set by **oFF**. The engine is shut down after the elapse of the cooling time set by **coL**.

Manual Mode: This mode is similar to the **Auto Mode** except that the start signal is internally activated.

DISPLAY FUNCTIONS

Frequency: the default function of the LCD display is to show the frequency of the generator when it is running on load.

Run hours counter and oil run hours counter: pressing the **AUTO** or **HAND** push button (user should press the one that is already active so as not to change the operating mode), the display will automatically show **oil** briefly and then the run hours since the last oil change and then will show **hr** briefly and horizontally scrolls the run hour counter starting from the most significant digit. When the oil run hour reaches **rhr**, the low oil pressure indicating led will start blinking. Following an oil change, the oil hour counter can be reset to zero by pressing simultaneously both **AUTO** and **HAND** push buttons for 2 seconds.

Genset status: while standing-by for a start signal in **Auto Mode**, the display shows **rdY** if the genset is ready to start. In case the genset is not ready, the display will alternate **not** and **rdY**. This could be the result of three causes: oil pressure switch not connected (or damaged), dynamo input sees a voltage exceeding **dcd** or the **Line** and **Neutral** see an ac voltage exceeding 100 volts. If there is no oil pressure switch, set **boP** to **bYP**. If there is no dynamo (or dynamo not connected), set **dcd** to **bYP** and **dSd** to **diS**. The display will show **crA** during cranking and it will also show the count down of the response, warm-up, load shutdown (off delay) and cooling delays. Following a shutdown due to a fault, the display will show **FLt**.

ACCESSING THE MENU

The menu is accessed by pressing either **AUTO** or **HAND** push buttons for 3 seconds. Once in menu mode (i.e. scrolling the menu and editing parameters), the **AUTO** and **HAND** push buttons will no longer affect the operating mode of the **Smart-FAST** controller. The **AUTO** push button scrolls down the menu and decrements values. The **HAND** push button selects the menu item for editing and increments values. The new value will be automatically memorized after 2 seconds if no push buttons are pressed. If no buttons are pressed for 25 seconds, the **Smart-AST** will automatically exit the menu mode.



Beirut Office:
Boutros Building 1st Basement
Cheikh-el-Ghabi Street
Ghabi Beirut 2068 7808
Lebanon
Tel: +961 1 216 994
Fax: +961 1 339 600

Headquarters & Factory:
S. & A. S. Building
Seaside Road
Jieh Chouf
Lebanon
Tel: +961 7 996 333
Fax: +961 7 996 116

Website:
www.sascontrollers.com

Technical Support & Email:
Tel: +961 71 996 333
support@sascontrollers.com

MENU DESCRIPTION

Display	Description	Range	Factory Setting
rSP	Response delay	0 to 255sec	5sec
StA	Starter time	0 to 255sec	5sec
bEt	Time between trials	0 to 255sec	12sec
Att	Number of starting attempts	0 to 255	3
FbP	Fault bypass delay	0 to 255sec	15sec
UuP	Warm-up delay	0 to 255sec	10sec
oFF	Load shutdown delay (Off delay)	0 to 255sec	10sec
coL	Engine cooling time	0 to 255sec	5sec
crF	Crank disconnect frequency set point	0 to 255Hz	15Hz
oFS	Over frequency set point	0 to 255Hz	55Hz
uFS	Under frequency set point	0 to 255Hz	45Hz
oFd	Over frequency delay or disables over frequency	DiS, 1 to 255sec	2sec
uFd	Under frequency delay or disables under frequency	DiS, 1 to 255sec	5sec
SoL	Selects energize to run or energize to stop by setting time for stop solenoid For energize to stop, Note that selecting "Stop Mode" will not turn off the engine	run, 1 to 255sec	Run
cht	Selects whether to enable cool down after high temperature shutdown	diS, EnA	diS
boP	Selects whether to permanently bypass the Oil pressure switch for crank disconnect or whether to bypass it for a preset delay	bYP: bypass OPS for crank disconnect 1 to 5sec	3sec
dcd	Selects whether to permanently bypass the dynamo for crank disconnect or sets the voltage above which cranking stops	bYP: bypass dynamo for crank disconnect 10 to 26Volts	bYP
dSd	Selects whether to disable the dynamo shutdown or sets the voltage below which there will be a dynamo shutdown	diS: disables bypass dynamo shutdown 5 to 10Volts	5Volts
LcL	Low coolant input polarity logic	no, nc	nc
APr	Selects whether the spare output is used as alarm or preheat	ALA: Output used as alarm 1 to 255sec: Preheat delay	ALA
rhr	Sets the number of hours before alerting for an oil change	diS, 1 to 255hours	150
hrc	Edits the run hour counter [†]	0 to 65530	0 [‡]
LFS	Load factory settings		
out	Exit the menu		

[†] A three digit password (000) is required to access the hour counter. Display shows **E** on the leftmost digit. Use the **HAND** (increment) and **AUTO** (decrement) push buttons to scroll to the desired number. If no buttons are pressed for 2 seconds, the digit is entered and is replaced by **c**. Repeat the previous steps for the second and third digit of the password. If the entered password is correct, the most significant digit of the hour counter will start blink. Use the **HAND** (increment) and **AUTO** (decrement) push buttons to scroll to the desired number. If no buttons are pressed for 2 seconds, the digit is entered and the next digit starts to blink. If no push buttons are pushed at all when a digit starts blinking, its value will remain unchanged and 2 seconds later the next digit will start blinking.

[‡] Not affected after a load factory settings.

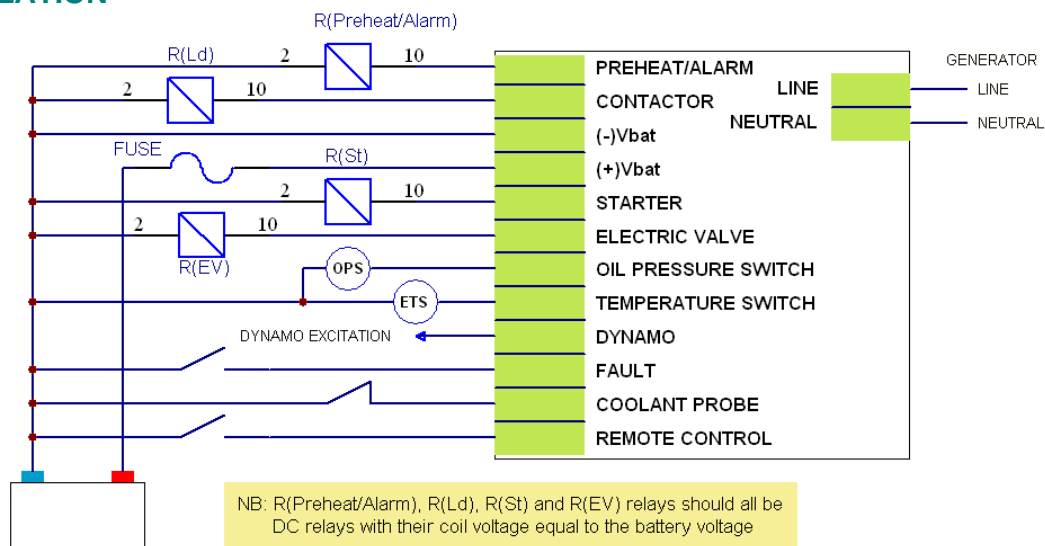
SPECIFICATION

Operating voltage	8 to 28vdc
Signal voltage range	50 to 250vac
Outputs	1A 50V
Dimensions (WidthxHghtxDepth)	72x72x32 mm

ABSOLUTE MAXIMUM RATINGS

Supply voltage	8-30Vdc
Signal voltage	280vac
Outputs	1.4A
Operating temperature	-30 to 70°C

INSTALLATION



Beirut Office:
Boutros Building 1st Basement
Cheikh-el-Ghabi Street
Ghabi Beirut 2068 7808
Lebanon
Tel: +961 1 216 994
Fax: +961 1 339 600

Headquarters & Factory:
S. & A. S. Building
Seaside Road
Jieh Chouf
Lebanon
Tel: +961 7 996 333
Fax: +961 7 996 116

Website:
www.sascontrollers.com

Technical Support & Email:
Tel: +961 71 996 333
support@sascontrollers.com