

OPERATION AND MAINTENANCE MANUAL

E301 Series Automatic Transfer Switch with
Single Sided Bypass-Isolation (100-1200 Amp)

E601 Series Automatic Transfer Switch with
Double Sided Bypass-Isolation (100-600 Amp)



TABLE OF CONTENTS

INTRODUCTION	3
SAFETY	4
General Safety	4
Receiving, Handling and Storage	5
Product Serial Number	6
Ratings	6
ATS OVERVIEW	7
E301 ATS with Single Sided Bypass Isolation	7
E601 ATS with Double Sided Bypass Isolation	8
Controller Overview	9
ATS Power Panel Overview	10
INSTALLATION	11
Terminal Block One Overview	11
Engine Start Control Connections	12
Tightening Torque Table	12
Initial Energization	13
C66 CONTROLLER	14
Controller Overview	14
Navigating Controller Menu	15
Operating Modes	16
Warnings and Alarms	17
Passwords	18
LED Functionality on C66 Controller	19
Visualization Options	20
Timer Parameters Menu	21
BYPASSING & ISOLATING	24
E301 - Maintenance Bypass Handle Operation	24
100A to 400A, 1000A to 1200A	24
600A to 800A	25
E601 - Maintenance Bypass Handle Operation	26
SEQUENCE OF OPERATIONS	28
FAULTS AND TROUBLESHOOTING	29
MAINTENANCE & TESTING	31
Preventative Maintenance	31
Annual Inspection and Cleaning	31
Transfer Test	32
Manual Operation of the Automatic Transfer Switch	32
INDEX	34

INTRODUCTION

The E301 Series Single Sided Bypass Isolation Transfer Switch is used to provide a continuous source of power for critical electrical loads by automatically transferring from Source 1 power to Source 2 power if Source 1 voltage falls below preset limits, all while providing single Source 2 bypass for maintenance purposes.

The E601 Series Double Sided Bypass Isolation Transfer Switch is used to provide a continuous source of power for critical electrical loads by automatically transferring from Source 1 power to Source 2 power if Source 1 voltage falls below preset limits, all while providing double sided bypass for maintenance purposes.

The E301 and E601 are operated electrically by the Socomec ATyS C66 Controller located on the ATS cabinet door. The C66 controller is designed to give highly accurate control of the transfer switch system.

This manual describes the installation, basic operation and maintenance of the E301 and E601 series automatic transfer switches.

O&M Manual Terminology:

- All references made within this manual to the term “**S1**” or “**Source 1**” relate to a Normal Power Supply.
- All references made within this manual to the term “**S2**” or “**Source 2**” relate to an Emergency or Alternative Power Supply.
- All references made within this manual to the term “**ATS**” relate to Automatic Transfer Switch.

GENERAL SAFETY

- This manual provides operating and safety instructions for the E301 and E601 series automatic transfer switches.
- Maintenance of these products and any other associated equipment including but not limited to servicing operations must be performed by adequately trained and qualified personnel.
- Each product is shipped with a label or other form of marking including rating and other important specific product information. One must also refer to and respect markings on the product prior to installation and commissioning for values and limits specific to that product.
- Using the product outside the intended scope, outside EEP's recommendations or outside the specified ratings and limits can cause personal injury and/or damage to equipment.
- Do not handle any control or power cables connected to the ATyS C66 when voltage may be present on the product directly through the mains or indirectly through external circuits.
- Voltages associated with this product may cause injury, electric shock, burns or death. Prior to carrying out any maintenance or other actions on live parts in the vicinity of exposed live parts, ensure that the switch including all control and associated circuits are de-energized.

	<p>In this manual, “DANGER” warns of a hazardous situation that, if not avoided, will result in injury or death.</p>
	<p>In this manual, “WARNING” warns of a hazardous situation that, if not avoided, could result in death or serious injury. In this situation failure to comply with these instructions may result in serious product damage.</p>
	<p>In this manual, “CAUTION” warns of a hazardous situation that, if not avoided, could result in minor or moderate injury. In this situation failure to comply with these instructions may result in product damage.</p>

The information provided in this instruction manual is subject to change without notice, remains for general information only and is non-contractual.

RECEIVING, HANDLING AND STORAGE

Receiving

Great care is taken to ensure that transfer switch equipment is delivered intact and installation-ready. All packaging materials, including skids, crates, protective corners, strapping, shrink wrap, etc., are intended to shield both the enclosure and its internal parts.

Upon arrival, the unit should be examined for any noticeable signs of mishandling or external damage sustained during transit. Document any observed damage, both internal and external, and report it to the carrier and EEP following a thorough inspection. Claims should include as much detail as possible, referencing EEP's Sales Order number and customer Purchase Order number. A packing slip with the equipment and customer details is affixed to the container.

You will find an envelope containing critical documents such as wiring diagrams, test results and instruction sheets inside the enclosure; this envelope should be stored in a safe location. Keys for the unit can be found fastened to the handles using zip ties.

Handling

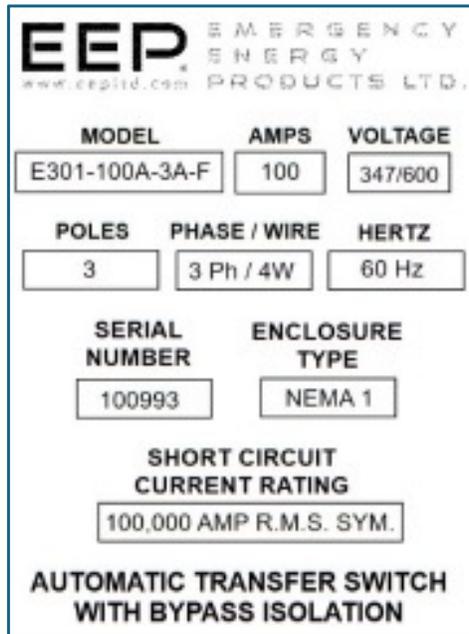
Transfer switch enclosures are mounted on skids, making them suitable for forklift transport. The equipment must be always handled with great caution to avoid any impacts. Any packaging materials that secure and safeguard the shipment during transit should be retained until the equipment is ready to be installed. **DO NOT** stack units on top of one another.

Storage

While securely packaged, this equipment is not designed for outdoor storage. The warranty will be voided if there is any indication that the equipment was stored outside. It is highly recommended to store the packaged equipment indoors in a climate-controlled space; ensure the protective packaging remains intact throughout the storage period. The equipment must be always safeguarded from excessive moisture, construction debris, corrosive environments and other contaminants. **DO NOT** stack any items on top of the transfer switch enclosure, whether it is still in its packaging or not.

PRODUCT SERIAL NUMBER

Please have the serial number available when communicating about the ATS. The serial number can be found on the nameplate located on the top cabinet portion of the bypass door. Example shown below:



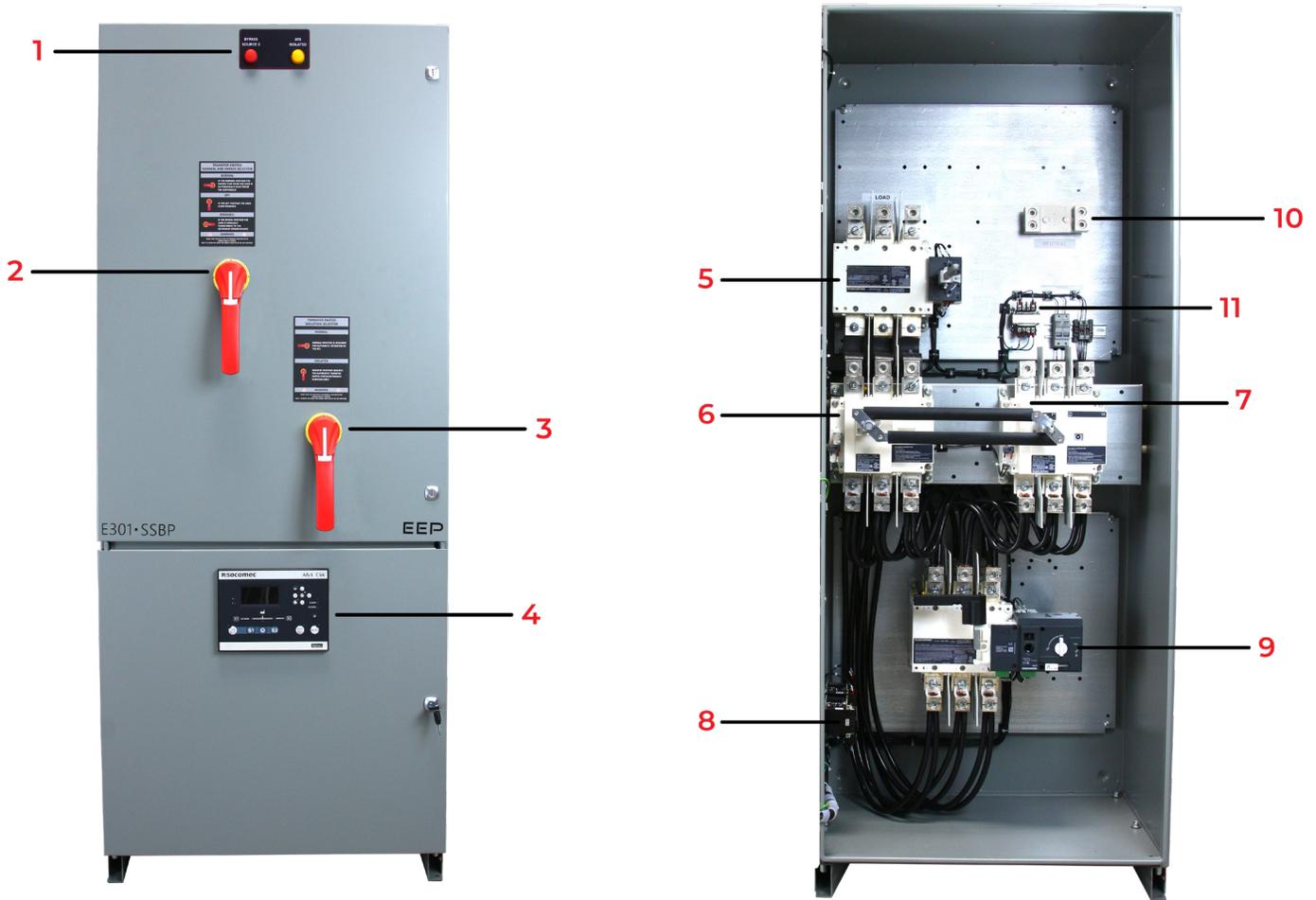
RATINGS

Load and fault circuit withstand/closing ratings are found on the ATS nameplate located on the top cabinet portion of the bypass door. Example shown above.



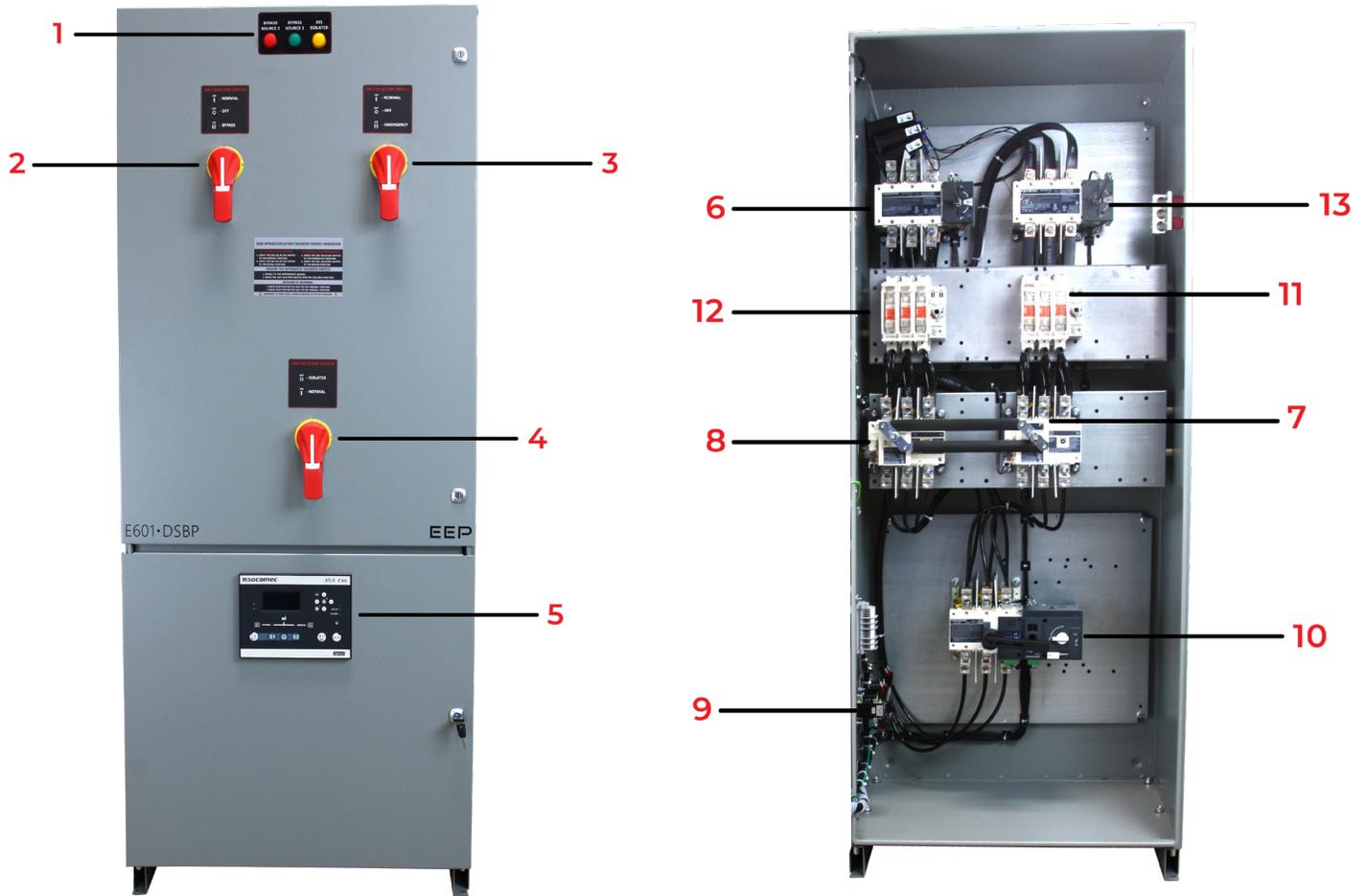
Do not exceed rating values on nameplate. Exceeding listed ratings could cause personal injury or damage to equipment.

E301 ATS WITH SINGLE SIDED BYPASS ISOLATION



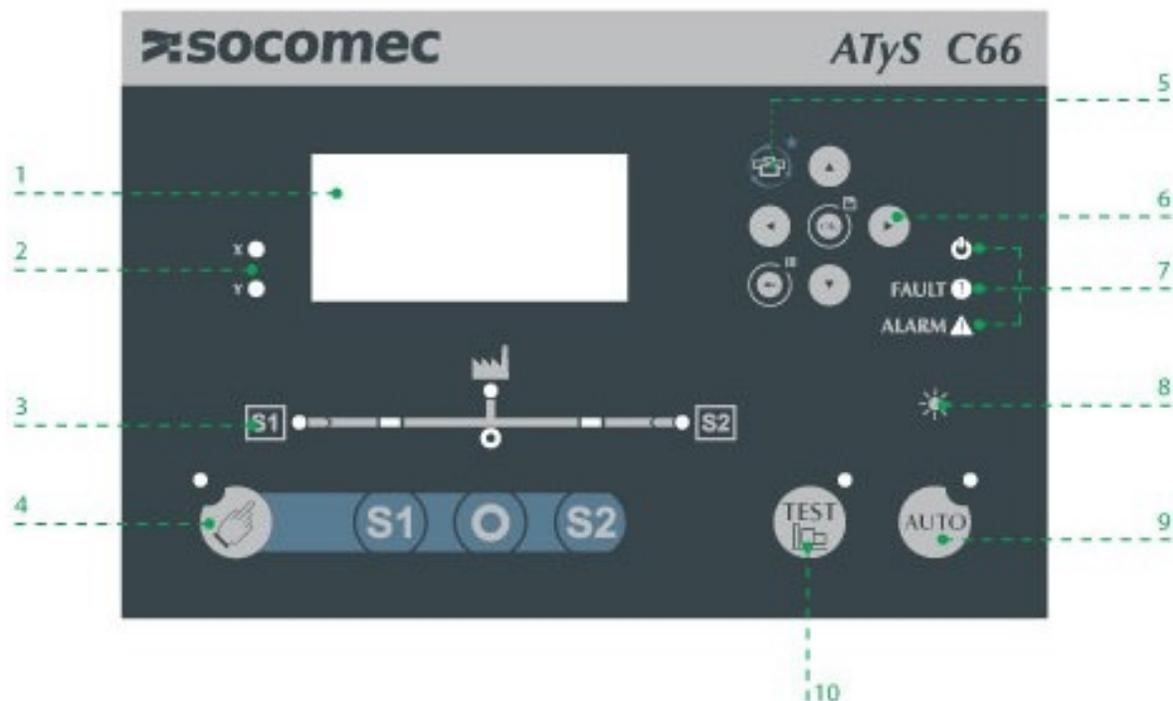
1. Indication Lights for ATS in Bypass Source 2 and ATS Isolated
2. Bypass Position and Normal Position Handle (SW1)
3. Isolated Position and Normal Position Handle (SW3)
4. C66 ATyS Controller
5. Load Output, Bypass Changeover
6. Source 2 Input and Isolation Break
7. Source 1 Input and Isolation Break
8. Control Transformers
9. ATS Power Panel
10. Neutral Pad
11. Indicating Light Power Supply

E601 ATS WITH DOUBLE SIDED BYPASS ISOLATION



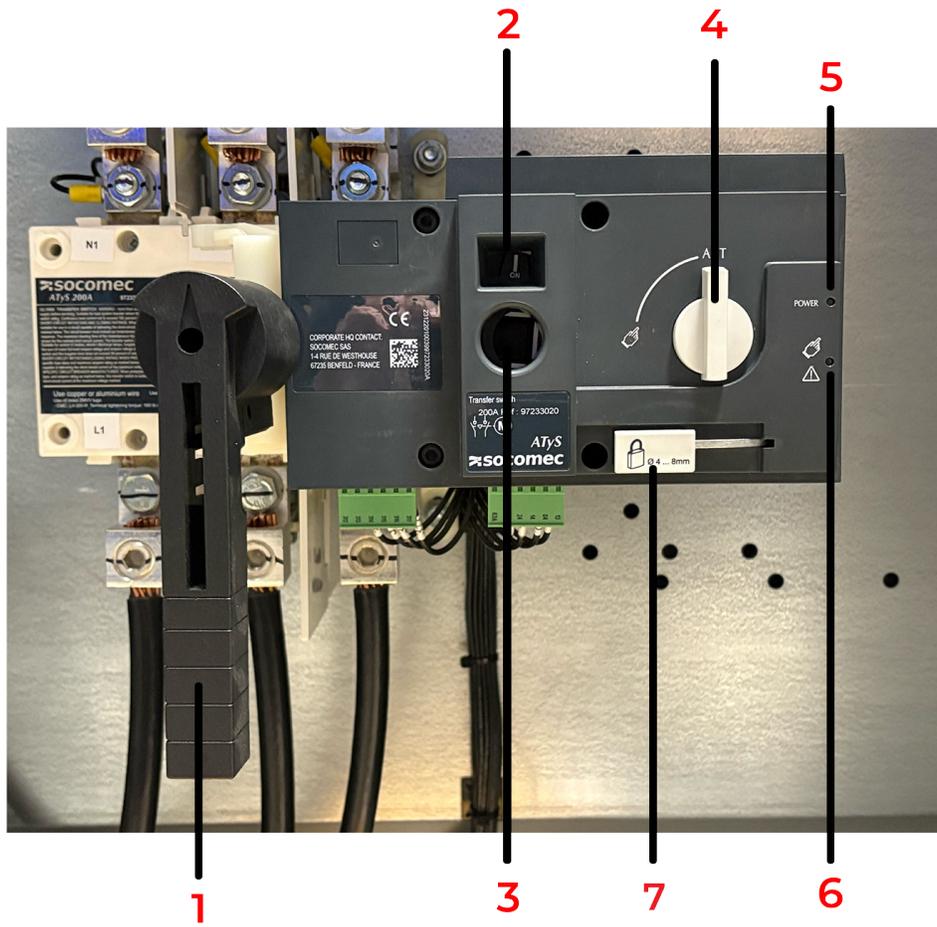
1. Indication Lights for ATS in Bypass Source 1 or Source 2 and ATS Isolated
2. Bypass Position and Normal Position Handle (SW1)
3. Bypass Source Selector Switch (SW2)
4. Isolated Position and Normal Position Handle (SW3)
5. C66 ATyS Controller
6. Load Output, Bypass Changeover
7. Source 1 Isolation Break
8. Source 2 Isolation Break
9. Control Transformers
10. ATS Power Panel
11. Source 1 Input
12. Source 2 Input
13. Bypass Source selector

CONTROLLER OVERVIEW



1. LCD display
2. Current running function LED Indications
3. Source availability and switch position synoptic
4. Electric Pushbuttons for Manual Operation and status Indicator
5. Change dashboard screen / set screen as favourite (hold 1.5s to set as favourite)
6. Navigation Arrows (Up/Down/Left/Right)
7. Power, Fault and alarm LED
8. Lamp Test Button (hold for 2s to clear faults)
9. Automatic Push Button and status indicator
10. Test button and status indicator

ATS POWER PANEL OVERVIEW



1. Manual Handle
2. Switch position indicator
3. Manual handle insert and operation mechanism
4. Motor Manual / Automatic selector switch
5. Motor powered indication light
6. Motor in Manual mode or Product Not Available Indication Light
7. Padlock Mode



Hazardous voltage capable of causing severe injury or death is used in this transfer switch!

You must Turn OFF all power before installation, adjustment or removal of transfer switch or any of its components.

****INSTALLATION OF THE E301 AND E601 SHOULD ONLY BE COMPLETED BY AN EXPERIENCED AND LICENSED ELECTRICIAN****

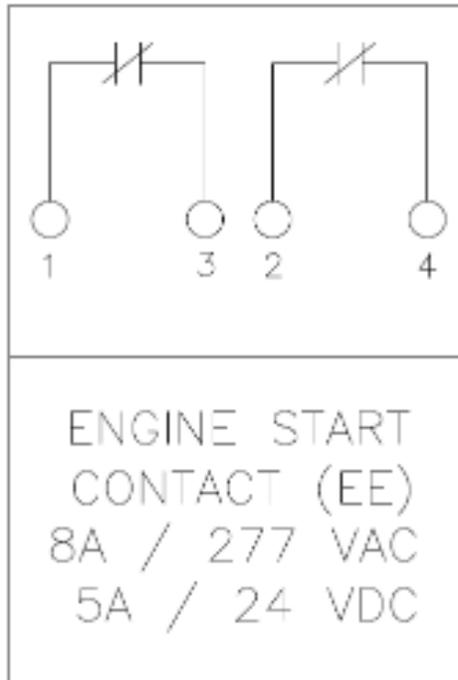
TERMINAL BLOCK ONE OVERVIEW

Terminal block 1, marked TB1, is a customer connection point that consists of the following connection points:

- 1 - 4 – Engine Start Contact
- 5 - 6 – ATS not in Auto (contact closes when ATS is not in auto)
- 7 - 8 – ATS in Bypass (contact closes when ATS is in bypass or is isolated)
- 9 - 12 – Elevator pre and post (contact closes prior to transfer in either direction)
- 13 - 14 – ATS in Source 1 – (contact closes when ATS is in Source 1)
- 15 - 16 – ATS in Source 2 (contact closes when ATS is in Source 2)

ENGINE START CONTACT (EE) 8A / 277 VAC 5A / 24 VDC	ATS NOT IN AUTO 8A / 277 VAC 5A / 24 VDC	ATS IN BYPASS 15A / 125 VAC	ELEVATOR PRE AND POST 15A / 125 VAC	ELEVATOR PRE AND POST 15A / 125 VAC	ATS IN SOURCE 1 15A / 125 VAC	ATS IN SOURCE 2 15A / 125 VAC

ENGINE START CONTROL CONNECTIONS



Engine start terminals are located on TB1 on terminals 1 to 4. Contacts 1 and 3, and, 2 and 4 are normally closed.

TIGHTENING TORQUE TABLE

Amperage Size	Barrells/Wires	Lug Size	Torque lbs. in / Nm
100A-200A	1/1	#6-300 Kcmil	200/22.5
225A-400A	1/(1-2)	(1) #4-600 Kcmil (2) #4-250Kcmil	500/56.5
600A Load & Normal	2/2	#2-600Kcmil	375/42.4
600A Emergency	2/2	#2-600Kcmil	500/56.5
800A	4/4	#2-600Kcmil	375/42.4
1000A-1200A	4/4	#2-600Kcmil	500/56.5

INITIAL ENERGIZATION

Before proceeding with the initial energization, you must read and understand the information on all accessories provided. Refer to the information package supplied with the ATS.

1. Unlock the enclosure.
2. Open the enclosure.
3. Verify the correct system voltage.

NOTE: The equipment rating nameplate on the transfer switch lists the voltage.

4. Close Source 1 circuit breaker.

NOTE: The controller will illuminate Source 1 Available LED if proper voltage is sensed.

5. Verify the phase to phase voltages at Source 1 line terminals.
6. Close Source 2 circuit breaker.
7. Start the generator's engine.

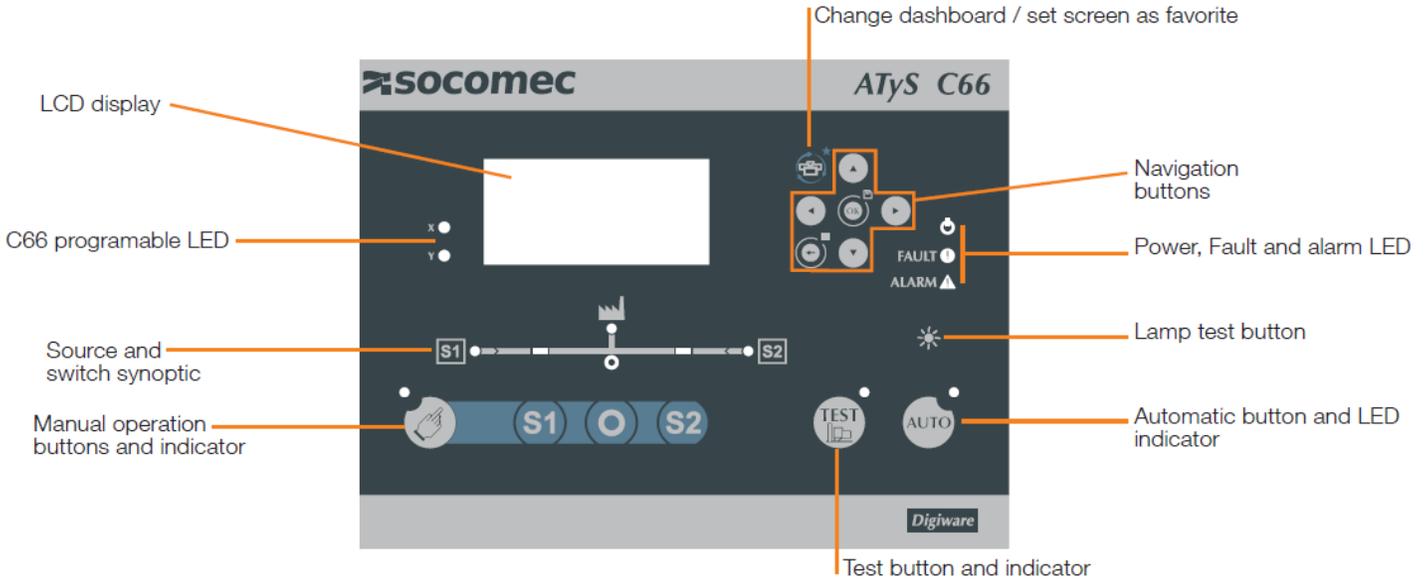
NOTE: The controller will illuminate Source 2 Available LED when preset voltage and frequency levels are reached.

8. Verify the phase to phase voltages at Source 1 line terminals.
9. Verify that the phase rotation of Source 1 is the same as the phase rotation of Source 2.
10. Shut down the generator's engine.
11. Complete the visual inspection of the transfer switch.
12. Close and lock the enclosure.

CONTROLLER OVERVIEW

The C66 controller's HMI provides 14 keys/buttons that may be used to configure, operate and visualize the ATS values anytime.

Overview of the HMI



Button	Operation
Manual	Turns on CTRL mode. Allows the use of the I, 0, II buttons that will send position orders to the switch.
Automatic	Turns on AUTO mode. Controller will automatically perform transfers in case of priority source unavailability and priority source comeback.
S1	Position I (source 1) manual order. Only in CTRL mode.
0	Center-off (position 0) manual order. Only in CTRL mode.
S2	Position II (source 2) manual order. Only in CTRL mode.
TEST	Performs a TEST (as defined inside Parameters/Display/Options menu)
Arrows	Navigation through different screens, menus, options and values.
Lamp Test/Fault clear	Press: lamp test and information about option X and Y LEDs on screen Long press: Clear faults pop-up (only if faults active)
Back/Menu	Press: back/return to previous screen or clear pop-up Long press: Back to Main Menu page
Dashboard/Favorite	Press: Go to the favourite Dashboard / Change between dashboard type (1 to 8, in a loop) Long press: Sets the current dashboard screen as favourite
OK/Save & Quit	Press: Enter / OK / set a value / accept / confirm Long press: (only when configuring) Save and Quit (back to previous configuration screen)

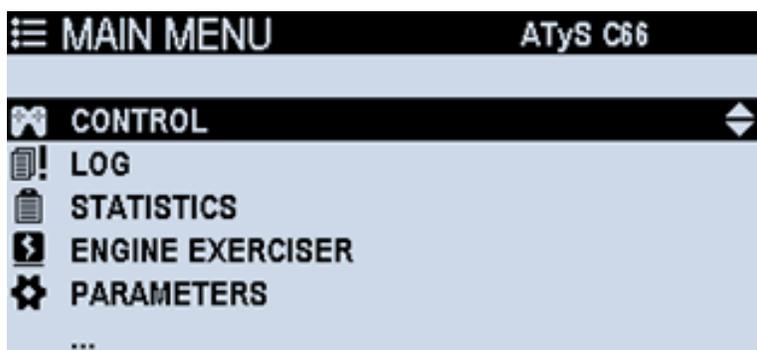
NAVIGATING CONTROLLER MENU



Hazardous voltage capable of causing severe injury or death is used in this transfer switch!

De-energize both Normal and Emergency power sources before programming exerciser.

The Menu on the display can be accessed with the Return/Menu button on the front face of the controller. It is structured in different chapters and is easy to navigate through it with the navigation pad. To select a screen, use the navigation arrows, then press the “OK” key to validate the selected screen.



CONTROL – This menu allows the user to change the operation mode as well as to test position orders and engine start signals.

LOG – In this menu, the operator can see the list of past events, search an event by date, see the statistics of the transfer switch and manage faults and alarms.

STATISTICS – This menu gives users information on the use of the ATS system, such as number of cycles, runtime on sources, etc...

ENGINE EXERCISER – The operator can set 4 different customized engine start programs and schedule them in a cyclic or non-cyclic mode.

PARAMETERS – In this menu all the configuration parameters of the controller can be set, as well as the timers, communication, alarms, I/O and display parameters. Passwords and specific functions can also be set in this menu.

SPECIFIC FUNCTIONS – All functions that are specific for the controller are inside this menu.

ABOUT – The main information for the controller is shown on this menu: product serial number, firmware, communication address, etc.

The Home screen (Main Menu) can always be accessed by long-pressing the button from any other screen.

OPERATING MODES

The C66 controller has 3 types of operation modes:

Manual Operation: allows the user to take the control of the commands sent by the controller and the automatic procedure is totally disabled.

To enter Manual mode, click the Manual operation button:



The LCD will prompt the user to enter the operator password. The Manual mode LED will light up and the manual operation buttons will be enabled.

Select **S1** to switch to Source 1, **S2** to go to Source 2 and **0** to go to centre-off position (if existing).



NOTE

In Manual mode, if a source is lost, the genset (if any) will start and the controller will not force an automatic transfer. The controller will remain in Manual mode until reverted to Auto by the user.

Automatic Operation: in Automatic mode the controller will take full control over the monitoring and switching according to the configuration settings such as operating range, timers, etc.

To switch from Manual mode to Automatic mode, click the automatic operation button:



The LCD will prompt the user to enter the operator password. The Automatic mode LED will light up.



NOTE

The switch may transfer as soon as Automatic mode has been enabled.

Test Mode: allows an authorized maintenance person to perform a transfer to backup source (default Source 2) and to decide when to go back to the priority source (default Source 1). The testing of the ENGINE START can be performed using a NO LOAD TEST test in the menu or assigning the TEST button to this function. The TEST mode can be launched from both MANUAL or AUTOMATIC modes.

To switch to TEST mode, make sure there are no external inhibitions and click the automatic operation button:



The LCD will prompt the user to enter the operator password. The TEST mode LED will light up.



NOTE

The switch may transfer as soon as TEST mode has been enabled, respecting the elevator timers, in-phase timers (for open transition switches with positions I-II) and centre-off position timer (if the switch has a 0 position).

WARNINGS AND ALARMS

Alarm Name	Description
CYCLE EXC.	"Maximum number of switching cycles. A cycle is when the switch has reached the opposite source and transferred back once (for example I-off, off-2, 2-off, off-1)"
OPERATION EXC.	Maximum number of operation (any change of position order including off position).
GEN1 ACTIVE DURATION	"Total amount of time that the genset 1 has been working (supplying or not the load). Can be used for genset maintenance purposes."
GEN2 ACTIVE DURATION	"Total amount of time that the genset 2 has been working (supplying or not the load). Can be used for genset maintenance purposes."
GEN1 ONLOAD DURATION	Total amount of time that the genset 1 has been connected to the load. Can be used for genset maintenance purposes.
GEN2 ONLOAD DURATION	Total amount of time that the genset 2 has been connected to the load. Can be used for genset maintenance purposes.
INSPECTION	"Counts the time after the last inspection (entered in "Inspection Mode" of the maintenance menu). Can be used for periodic inspection/service purposes on the ATS. By default it is set to 300 months which is the maximum value. Socomec recommends 12 months after servicing."
PHASE ROT	Activated if a change of phase rotation is detected.
EXTERNAL ALARM	Activated when an external alarm input is active.
CONTROLLER UNAVAILABLE	Activated if the controller is not able to perform automatic operations (major faults or product inhibited).
LOAD NOT SUPPLIED	Activated if the load is not connected to a power source.
DC AUX PB	Activated if the auxiliary DC supply connected is less than 10 VDC.
GENSET RUNNING	Generator is available 10 seconds after the genset signal (after cool-down timer).

PASSWORDS

The controller provides 3 levels of security intended for 3 different types of users:

Standard user – requires no password and permits the visualization of the parameters and values measured by the controller. This is the level by default. When using other levels, the controller will automatically timeout after 5 minutes and will revert to standard user level.

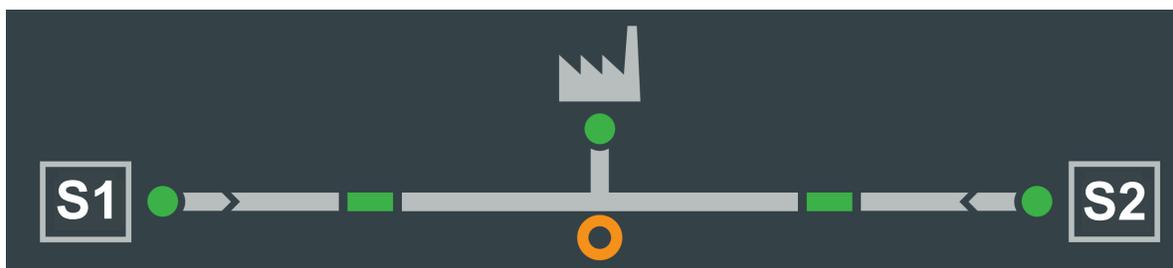
Operator – requires the Operator password that, by default, is set to 4000 and can be changed by the user in Configurator level in Parameters. This level allows all the above as well as changing the operating mode, sending position orders to the switch and setting the engine exerciser parameters and alarms.

Configurator – requires the Configurator password that by, default, is set to 1000 and can be changed by the user. This allows all the above as well as to change any configuration of the controller such as operating range, timers, type of control, display settings, etc...

Passwords by default (factory settings):

- User (access to visualization): No password
- Operator (access to control functions): 4000
- Configurator (access to parameter setting): 1000

LED FUNCTIONALITY ON C66 CONTROLLER

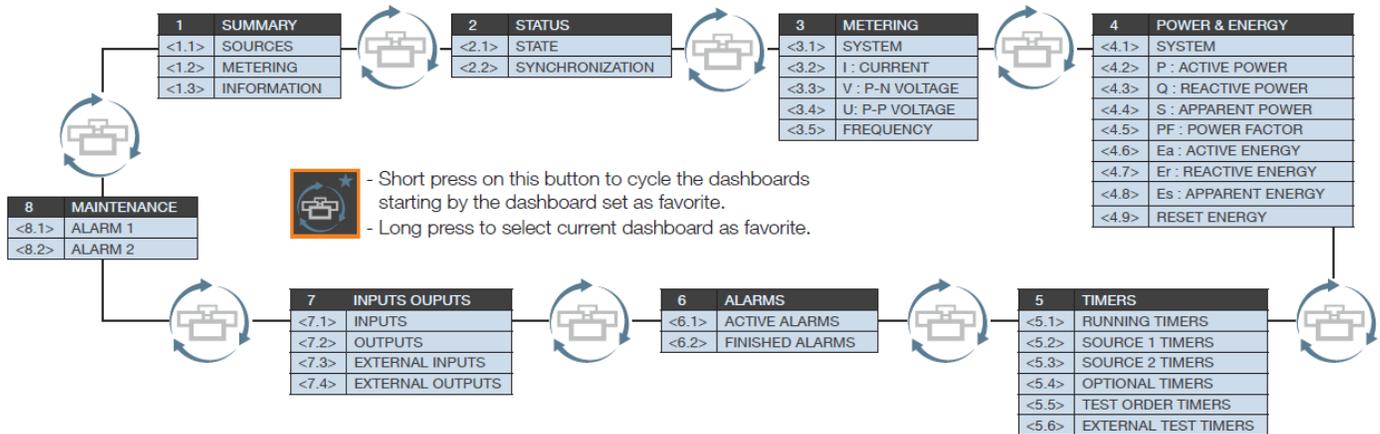


LED	DESCRIPTION
	<p>The round green LED next to S1 or S2 indicates if the source is available or not.</p> <ul style="list-style-type: none"> • If the LED is on but not blinking then the source is considered as available. • If the LED is blinking, the voltage is present but the source is not considered available. • If the LED is off, then the busbar is dead.
	<p>The 2 rectangle green LED indicates the position of the switch.</p> <ul style="list-style-type: none"> • If the LED is on, the switch is closed on that position (S1 or S2). • If the LED is blinking, the controller considers the switch is in that position, but there is no return from the switch. • If the LED is off, the switch is not in that position.
	<p>The green LED in the centre-up of the diagram indicates if the load is powered.</p> <ul style="list-style-type: none"> • If the LED is on, the load is supplied by either Source 1 or Source 2, which means that the source is available and the switch is in one of these positions. • If the LED is off, the load is not supplied (switch not closed on an available source).
	<p>The “0” amber LED under the load LED indicates the centre-off position.</p> <ul style="list-style-type: none"> • If the LED is on, the switch is in 0 position • If the LED is off, the switch position is either on S1, S2 or unknown • If the LED is blinking, the controller considers the switch is in that position, but there is no return from the switch

VISUALIZATION OPTIONS

The controller has a direct access button to the visualization dashboards on the front face. The dashboards can be accessed by short pressing the  key.

By pressing again the display switches from one dashboard to another, and inside each dashboard there are a number of screens as shown in the image below. Each dashboard is numbered from 1 to 7 (Ex. 3.1 METERING) and the screens are numbered using a second digit (Ex. 3.1 METERING – SYSTEM).



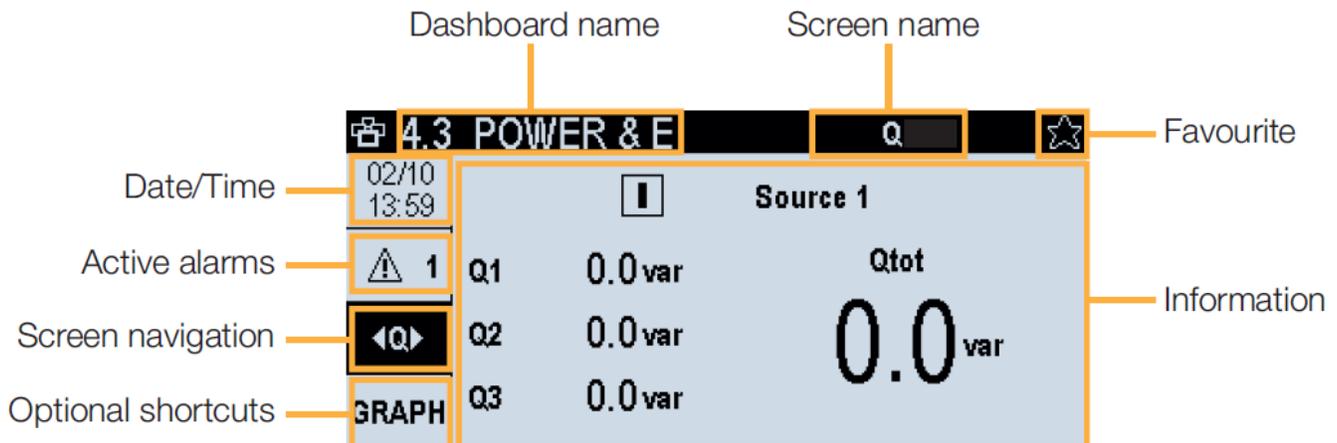
The dashboards can be visualized and screened through without the use of a password.

By pressing the  key it gives direct access to these screens (no matter the current menu screen), starting by the screen selected as favourite. To select a screen as favourite, maintain the  pressed for 1,5 seconds (long-press) while the screen is shown*. When a dashboard screen is selected as favourite the star in the top right-hand corner will be shown filled: ★.

*The favourite function is only available for the screens of the dashboard menu.

To display the favourite screen after navigation, exit the menu by pressing the return key and then press the dashboard key.

All the dashboards have the same display format logic as follows:



TIMER PARAMETERS MENU

All the operational timers can be set on this menu. There are up to 26 general timers split into 4 groups:

Operation timers (6 timers)

OPERATION	ATyS Cxx
S1 FAILURE (s)	03.0
S1 RETURN (s)	0003
S2 FAILURE (s)	03.0
S2 AVAILABLE (s)	0005
SAVE CONFIG	

- **FAILURE TIMER (s)**: time after source is lost, to confirm it is actually lost and start a transfer.
- **RETURN TIMER (s)**: time after a transformer/main source that was off comes back, to make sure it did come back.
- **AVAILABLE TIMER (s)**: time for a genset/diesel generator source to be on and inside the right defined values to be considered available and ready to accept a transfer.
- **S1 DEAD BAND (s)**: time to wait without load supply (including source failure time and time in centre-off / zero position) when transferring from S1 to S2.
- **S2 DEAD BAND (s)**: time to wait without load supply (including source failure time and time in centre-off / zero position) when transferring from S2 to S1.



NOTE

By default, S1 and S2 DEAD BAND are the same and set to 3s.

Genset Source 2 Timers

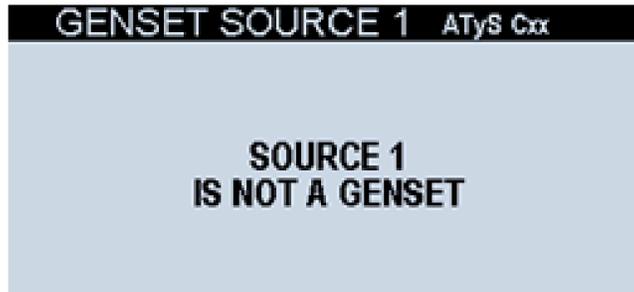
GENSET SOURCE 2	ATyS
S2 GENSET COOLDOWN (s)	130
S2 START TIMEOUT (s)	030
GENSET TIMEOUT S2 (h)	001
BATT CHARGE DURATION S2 (s)	0050
SAVE CONFIG	

- **GENSET COOLDOWN (s)**: once transferred back and genset is running without load, time to wait until the signal to turn off the genset is sent. This permits the genset to cool down after utilization.
- **START TIMEOUT (s)**: time to wait for the genset to start. After this time, a fault will pop-up saying "Fail to start genset".
- **GENSET TIMEOUT (h)**: time for the genset to be off, in hours, for the battery charger output to become active (if used in the I/O menu).
- **BATT CHARGE DURATION (s)**: time for the battery charger output to stay active once it's been activated after the genset timeout.



NOTE

If the source is not linked to a genset the following message will be shown:



Tests on load (5 timers) and off load (4 timers)

ON/OFF LOAD TEST (limited or unlimited): *Limited* means there is a defined test time and it will perform the changeover and the comeback to the priority source. *Unlimited* will require the acceptance from the user to comeback to priority source. Otherwise, it will stay in secondary source waiting confirmation unless the secondary source is lost and priority one is available; in that case it will transfer and end the test automatically (except if the option TEST PRIO has been selected on the NETWORK/APPLICATION menu).

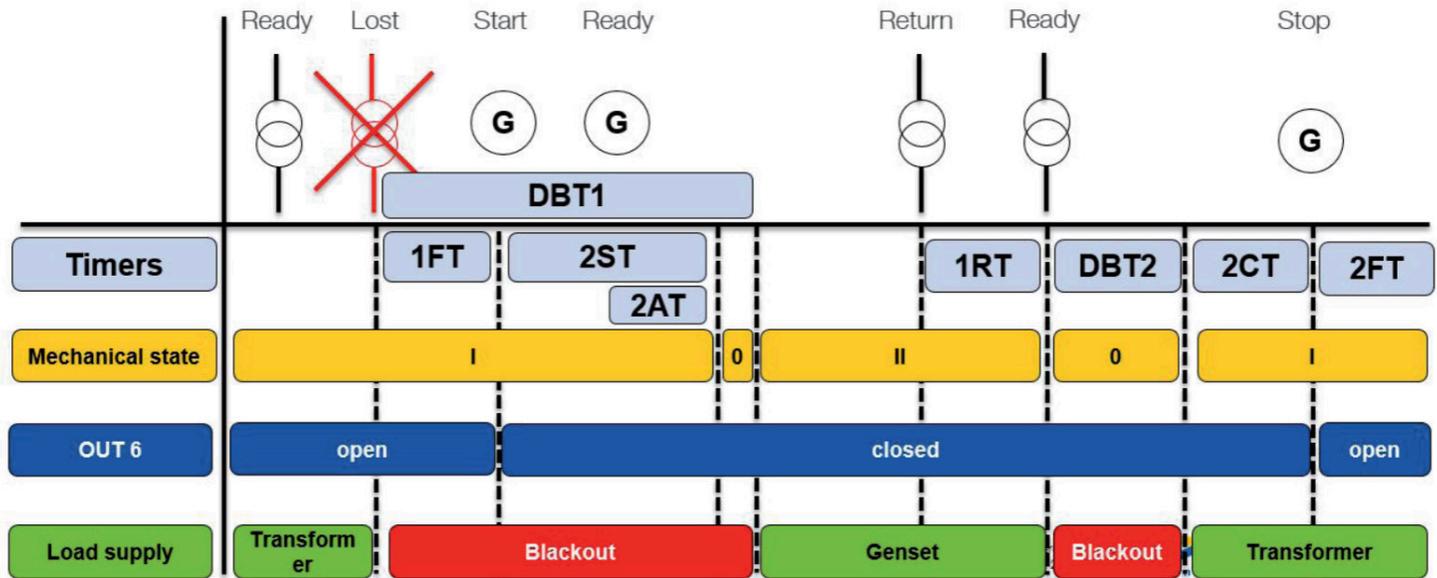
LOAD TESTS	ATyS Cxx
LOAD TEST	◀UNLIMITED▶
LOAD TEST (s)	00010
LOAD TEST END (s)	0005
EXT LOAD TEST PRE (s)	0005
EXT LOAD TEST	UNLIMITED
...	

NO LOAD TESTS	ATyS Cxx
NO LOAD TEST	◀UNLIMITED▶
NO LOAD TEST (s)	00600
EXT NO LOAD TEST PRE (s)	0005
EXT NO LOAD TEST	LIMITED
EXT NO LOAD TEST (s)	00600
...	

- **TEST (s)**: duration of the test.
- **TEST ON LOAD END (s)**: after a test on load (not external), time to wait in secondary source before going back to priority source.
- **EXT. TEST ON/OFF LOAD PRE (s)**: pre-timer before starting transfer to secondary source on an external test.
- **EXT. TEST ON/OFF LOAD POST (s)**: post-timer after finishing the test and going back to priority source on an external test.

Example of a full sequence with all the main operation timers:

- Utility-Genset, priority on Utility (Transformer)
- No manual retransfer. Elevator signal active (specific function)



LEGEND:

- 1FT = Failure timer S1
- 2ST= Genset start timeout timer
- 2AT= Availability timer S2
- DBT1= Dead band timer S1
- 1RT= Source 1 return timer
- ELD = Elevator delay & ELR = Elevator restore
- DBT2= Dead band timer S2
- 2CT= Cooldown timer genset S2
- 2FT= Source 2 failure/disconnection timer

E301 – MAINTENANCE BYPASS HANDLE OPERATION

	<p>Hazardous voltage may cause severe injury or death</p>
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	<p>Ensure only qualified personnel install, operate, service and maintain all electrical equipment.</p>
	<p>DISCONNECT all power sources prior to installation, operation, service and maintenance of all electrical equipment. These activities should be performed only by certified EEP technicians or qualified electricians.</p>

100A to 400A, 1000A to 1200A

When the ATS is in the normal operation position the bypass handles will look as pictured below (Fig. 1.1) Handle SW1 in Position II and handle SW3 in Position I.

To start the bypass procedure, call for Source 2 (Generator). Once Source 2 is available, switch bypass handle SW1 into position I, then switch isolation handle SW3 into position 0.

When the Bypass procedure is complete the indicator lights will have turned on (red: bypass S2; yellow: ATS isolated) and handles pictured below in Fig. 1.2:

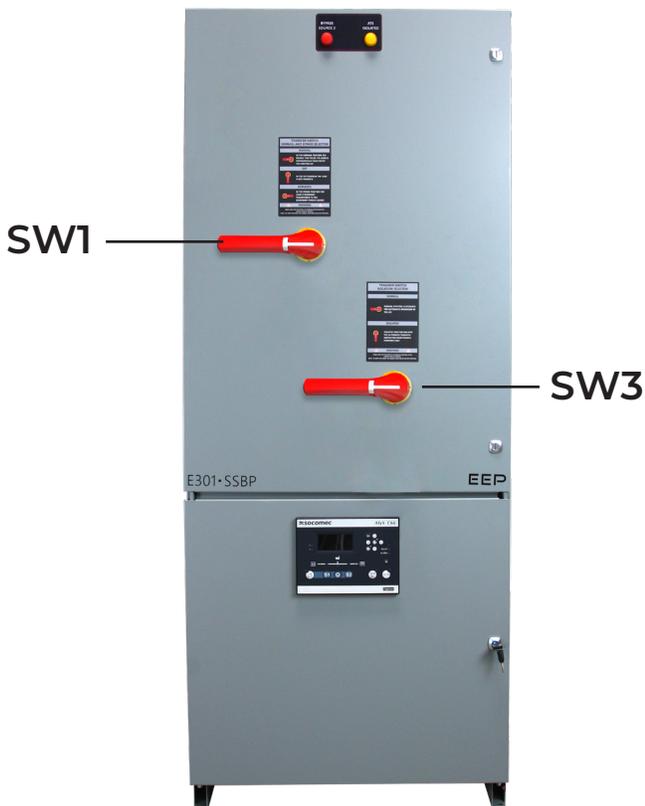


Fig. 1.1



Fig. 1.2

600A to 800A

When the ATS is in the normal operation position the bypass handles will look as pictured below (Fig. 1.3). Handle SW1 in Position I and handle SW3 in Position I.

To start the bypass procedure, call for Source 2 (Generator). Once Source 2 is available, switch bypass handle SW1 into position II, then switch isolation handle SW3 into position 0.

When the Bypass procedure is complete the indicator lights will have turned on (red: bypass S2; yellow: ATS isolated) and handles will look as pictured below in Fig. 1.4:



Fig. 1.3



Fig. 1.4

When ready to return to normal, move SW3 selector switch into the normal position (I on the handle), the yellow indicator light will turn off, then move selector switch SW1 to the normal position (II on the handle), the red indicator light will turn off.

E601 – MAINTENANCE BYPASS HANDLE OPERATION

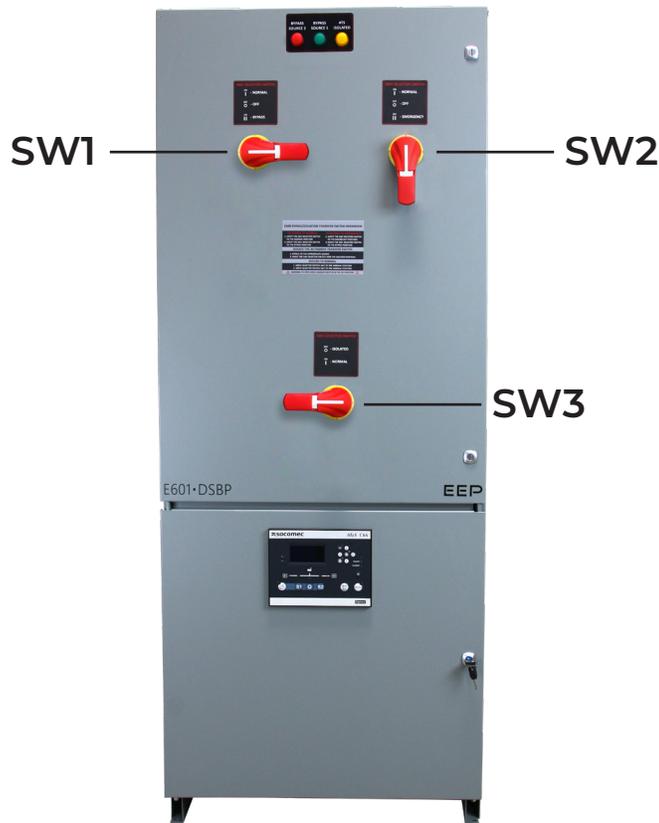


Hazardous voltage may cause severe injury or death



Ensure only qualified personnel install, operate, service and maintain all electrical equipment.

DISCONNECT all power sources prior to installation, operation, service and maintenance of all electrical equipment. These activities should be performed only by certified EEP technicians or qualified electricians.



When the ATS is in the normal operating position the bypass handles will look as pictured above. Handle SW1 in Position I, handle SW2 in position O and handle SW3 in Position I.

To start the bypass procedure, choose which source to bypass from.

Turn bypass handle SW2 into either position 1 normal or position 2 emergency, once chosen turn bypass handle SW1 to position II, once completed turn isolation handle SW3 into position O.

When the Bypass procedure is complete, the indicator lights will have turned on (green or red: bypass s1 or s2; yellow: ATS isolated) and handles will look as follows:



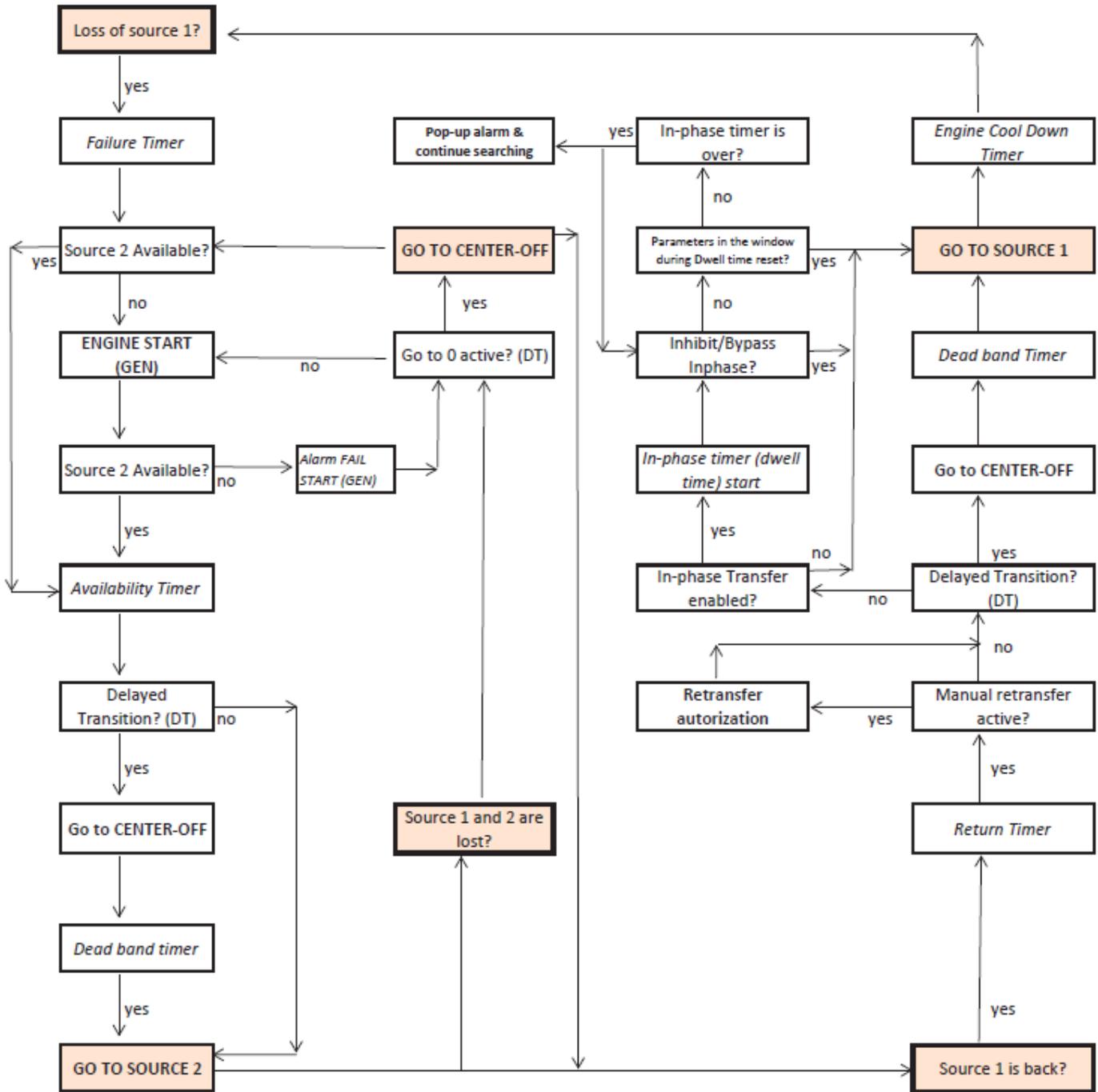
Bypass in Normal Position



Bypass in Emergency

When ready to return to normal operating position, move SW3 handle into the normal position (I on the handle), the yellow indicator light will turn off, then move bypass handle SW1 to the normal position (I on the handle), the red indicator light will turn off and reset the source selector handle SW2 to the O position.

SEQUENCE OF OPERATIONS



FAULTS AND TROUBLESHOOTING



Hazardous voltage capable of causing severe injury or death is used in this transfer switch!

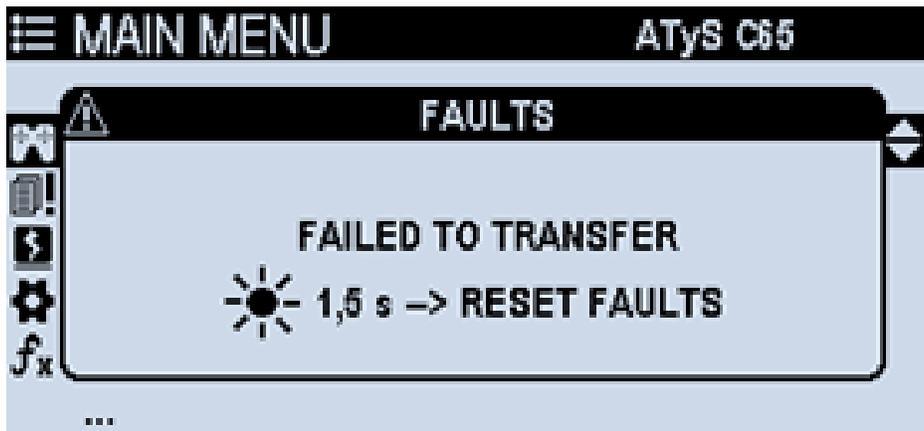
There are various events that can be listed as a fault on the controller. Unlike alarms, faults are not user-selectable, will always be taken into consideration and related actions will be as follows:

Fault	Description (cause)	Actions	Acknowledge/ cleared	Fault log	Pop-up	Fault LED	Output
Unexpected Transfer	The controller receives a feedback/return from the switch without sending any order (auto or manual). Also if feedback is lost from the current position.	Mode stays the same. Controller will start retries if position is unknown. If a position is reached, no retry takes place.	Can also be cleared through display or through RST - Reset Fault input.	Yes	Yes, "Unexpected Transfer"	BLINKS (priority)	FLT - Fault active
Failed to Transfer	Position not reached after an order sent by controller (auto or manual) or loss of feedback of the new source after sending a transfer command.	Mode stays the same. Controller will start retries.	Automatically cleared if the requested position is reached or cleared through display or through RST - Reset Fault input.	Yes	Yes, "Failed to transfer"	BLINKS (priority)	FLT - Fault active
Max operation per minutes reached	If the controller performs 10 operations in less than 1 minute (by default) (automatic or controlled/manual).	Mode stays the same. During a timer, the controller will not do or allow any operation.	Automatic after the 1 minute (configurable through software) (value is dynamic).	Yes	Yes, "Max operations per minutes reached"	FIXED (non-critical)	FLT - Fault active
Max password attempts reached	User tries to enter a profile password more than X times set in the maintenance menu (by default 10 attempts).	Mode stays the same. Can't enter any password during X time set in the maintenance menu (by default 2 minutes).	Automatic after the set timeout (maintenance mode).	Yes	Yes, "Max number of tries reached, please wait: X s"	FIXED (non-critical)	FLT - Fault active
Genset Failstart	Controller tries to start a genset (as configured) and after the genset start delay, the genset doesn't start (controller doesn't see the source on).	Mode stays the same. Genset start relay remains active unless other source is available.	Automatic if genset starts or if source is set as Main/Utility.	Yes	Yes, "Engine fail to start"	BLINKS (priority)	FLT - Fault active
External Fault	If an input is selected as FTE - External Fault and becomes active.	Switch goes to position O / centre-off directly without timers and the mode is set to Partial Inhibit (genset starts if needed).	Input must not be active and reset by user is requested (by RST-Reset Fault input or through display).	Yes	Yes, "External fault"	BLINKS (priority)	FLT - Fault active

For faults with a pop-up, the pop-up will either be cleared when the fault is cleared or by pressing any button on the front face of the controller. The total number of faults logged on the controller is dynamic, whilst the total number of “faults + alarms” is 100. Total events, excluding faults and alarms, is 3000 and uses a FIFO listing.

To clear Faults through the HMI, it is possible through the LOG/FAULTS menu with the option “PRESS OK TO CLEAR FAULTS”, using the configurator profile password. There is also a shortcut by holding the  button for 1,5s and validating on the pop-up that appears. If the fault is still active, it will be inside the log “in progress” but the fault LED and output will be off. If the faults are no longer active, they will be logged in the “history” log.

Clearing the fault will be automatically proposed by the controller through a pop-up:



MAINTENANCE & TESTING



Hazardous voltage capable of causing severe injury or death is used in this transfer switch!



Always follow below Maintenance, Inspection and Cleaning instructions to avoid damaging ATS.

PREVENTATIVE MAINTENANCE

Yearly preventative maintenance is strongly recommended to insure high reliability and long life of the transfer switch.

ANNUAL INSPECTION AND CLEANING

****DE-ENERGIZE ALL SOURCES PRIOR TO PERFORMING ANY OF THE BELOW STEPS****

- **Clean** the ATS enclosure of any accumulation of dust or dirt using a vacuum or wiping with a clean cloth. Moisture can be removed using a clean cloth. NEVER use a blower as this could cause debris to become lodged in the electrical and mechanical components and cause damage.
- **Check** ATS contacts by bypassing and isolating the transfer switch. Remove the transfer switch barriers and check condition of the contacts. Use only a clean cloth to remove any surface deposits. If contacts are pitted or worn they should be replaced. Reinstall transfer switch barriers.
- **Lubricate** the operating mechanism of the transfer switch if the switch has been contaminated by dust or debris. Clean the mechanism and relubricate with motor assembly grease. **Do not use oil.**
- **Check** cable connections mechanically or by thermal measuring/monitoring. Retighten any connections that are loose.

TRANSFER TEST

Testing Operating Mode



Ensure transfer switch enclosure door is closed before testing electrical operation.

TEST button on the HMI can be used (by default) to perform a **LOAD TEST** (as standard) or **NO LOAD TEST** and can be configured inside the “MAIN MENU” > “PARAMETERS” > “DISPLAY” > “OPTIONS” menu (TEST BUTTON USE).

LOAD TEST: a load test sequence will start by sending a start-gen signal to the secondary source (if in Utility-Gen), and will initiate a transfer to the secondary source. Once the test has ended the switch will transfer back to the priority source.

NO LOAD TEST: will start the genset and check that it correctly started within the configured time, but will not give the order to transfer to the secondary source when it becomes available.

The duration of the tests can be limited (in the configuration) or can be set to Unlimited. When set to unlimited the user will have to press the test button again to stop the tests.

This operation can also be performed with an input, using the EXTERNAL LOAD TEST function



NOTE

LOAD TEST will cause a load supply interruption when testing the transfer function as the load will change from one source to another in open transition.

MANUAL OPERATION OF THE AUTOMATIC TRANSFER SWITCH



Maintenance and service should be performed by trained and authorized personnel. Verify the condition of power source prior to manually transferring. Do not manually transfer under live load. Disconnect both power sources: open both circuit breakers.

Remove handle from clip from left side of the motor.



Turn selector switch to manual mode (indicated by the hand symbol). This will open the port revealing the manual mechanism as shown in example to the right.



Insert the handle in the manual operation mechanism. From Position 0, turn the mechanism counterclockwise 90 degrees to achieve Source 1 or from Position 0, turn the mechanism clockwise 90 degrees to achieve Source 2. (**Check position indicators to ensure correct Source position**).



Returning to Automatic Mode

Remove the handle from the manual operation mechanism and return to the storage clip on the side of the motor. Turn the Manual/Auto Selector Switch back to Automatic operation mode indicated by AUT, as shown in example to the right.



INDEX

A			
alarms	17, 30		
B			
bypass position	7, 8, 24, 25, 26, 27		
C			
C66 controller	7, 8, 9, 14-23, 29, 30		
controller operating modes			
manual	16		
automatic	16		
test	16		
D			
dashboards	20		
E			
enclosure	5, 31		
F			
faults	29, 30		
H			
handle	7, 8, 10, 24-27		
handling	5		
I			
indicator			
lights	7-10, 25-27		
switch	10		
installation	11		
isolated position	7, 8		
L			
LED functionality		19	
M			
maintenance		31, 32	
N			
nameplate		6, 13	
P			
passwords		18, 20, 29, 30	
R			
rating		4, 6, 13	
receiving		5	
S			
selector		8, 10, 25, 27, 33	
serial number		6	
storage		5	
T			
TB1 / terminal block 1		11, 12,	
timers		16, 21, 22, 23	
transferring sources		16, 21, 22, 32	
U			
users		18, 29	
standard		18	
operator		18	
configurator		18, 30	
W			
warnings		17	

NOTES



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