

Settings conversion from ATS010 to ATS022

User Manual


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Technical guide

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1 Preliminary Operations

Retrofitting activity allows the substitution of an obsolete device, without altering in any manner the data of original project of the existing switchgear. It is customer's responsibility to verify correspondence of functions supplied by the new ATS022 and to check if these functions are sufficient to comply with the original certification of the switchgear.

1.1 ATS010 features not available with ATS022

a) Switch Logic

Strategy 1 is no more available. ATS022 behaves according only to strategy 2.

b) Digital Inputs

ATS010 had capabilities to be connected simultaneously up to 3 different digital inputs:


SW ENABLE (pin 5), GEN AUTO (pin 6), RESET (pin 48) .

ATS022 have only a single DI, which function could be programmed by the customer: DI10 (pin X32:2); The mentioned functions are in alternative, and defined as described below:

SW ENABLE	Hardware connection existing as default. pin 5 of ATS010 to X32:2 of ATS022 (DI10) Please enable this function via sw by using main menu.
GEN AUTO	Please contact ABB in case needed.
RESET	This function is in alternative to sw enable. Hardware connection must be changed: please remove cable from pin 5 of ATS010 and connect it to pin 48 of ATS010. No changes over ATS022 pin X32:2. Please enable this function via sw by using main menu. The meaning of this function is partially different from ATS010 and ATS022: With ATS010, while switching this contact were generated two effects, reset of active alarms and operating logic change AUTO/MAN; With ATS022, this input only affects the reset of active alarms but there is no effect over operating logic.

c) Digital outputs

ALARM	Hardware connection existing as default. pins 49-50 of ATS010 and pins X29:7-X29:1 of ATS022 (DO6). Activation of this contact keep the same logical behavior of ATS010, even if the hardware configuration of ATS022 contact is NO.
NPL LOADS	The meaning of this function is partially different from ATS010 and ATS022: With ATS022 it is mandatory to connect the CB status of CB3 (open/close) to DI11 pin X32:1 and common to pin X32:9. CB3 is dedicated to control not-priority loads. Please enable this function via sw by using main menu: 3CBsNPL. If there is need to control CB3 only at opening, please select 3CBsNPL opening. If there is need to control CB3 at opening and closing, please select 3CBsNPL opening & closing, and it is necessary to use external relays according to following table. In case of need, please contact ABB.

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Protection Devices selection	DO11	NOTES
2 CBs	not used	
3CBs NPL	used	CT-AWE type timed relays required if selected opening&closing option
3CBs NPL Bus Tie	used	CT-AWE* type timed relays required
3CBs Bus Tie	used	CT-AWE* type timed relays required
*The CT-AWE must be adjusted with a time between 200ms and 300ms.		

REMINDER:



Please take note of the existing settings of the ATS010 following table at ANNEX A before to uninstall the device. Refer to the instructions manual 1SDH001059R0001 in order to be able to uninstall ATS010 and to install mechanically and electrically new ATS022. Please follow ATS022 standard instruction manual, in order to configure properly the unit settings and protection functions.

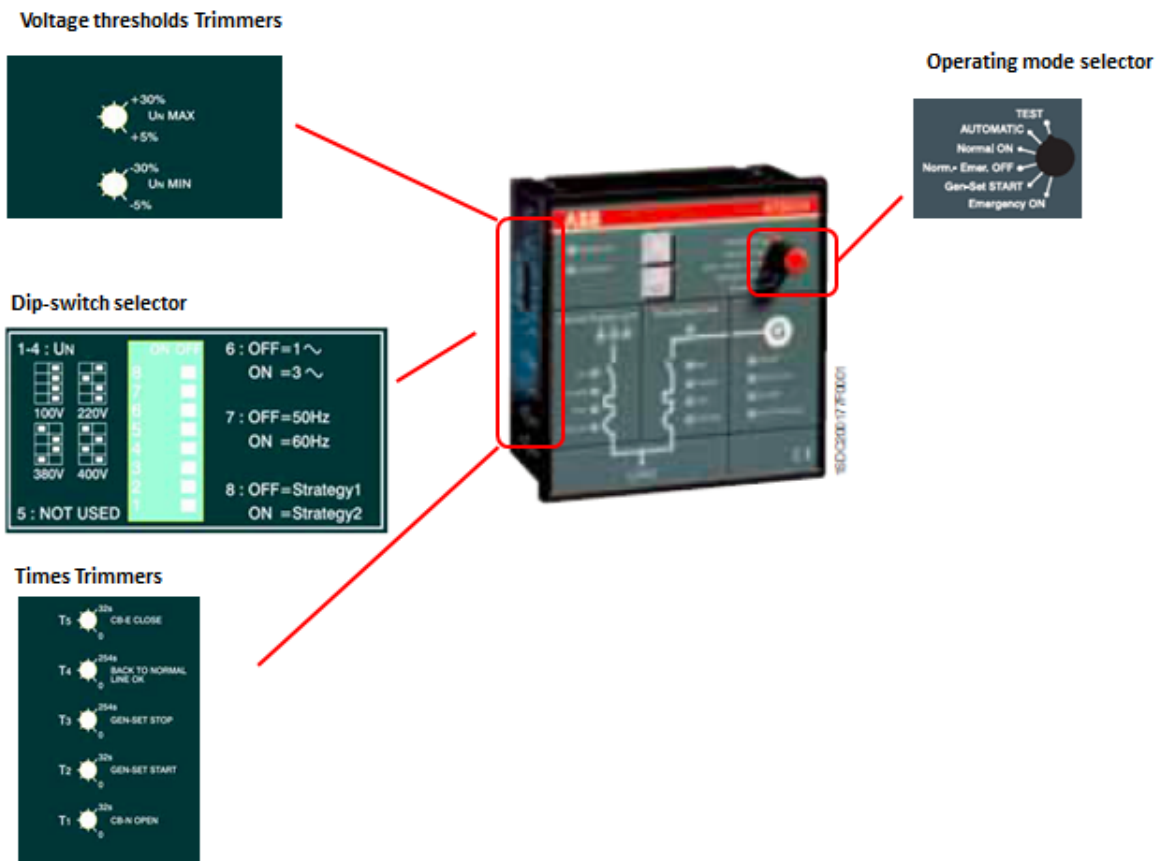


Figure 1. Functional mode, thresholds and parameters selection of ATS010

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2 Settings configuration during retrofitting from ATS010 to ATS022



REMINDER:

ATS010 controls two power supply lines: the first supplies normal power from the net, the second from a gen set. These two power supply lines are connected to the same busbar system through two CBs controlled by the ATS010.

The ATS010 only monitors one phase of the three-phases of the emergency line.



WARNING:

While configuring settings and parameters of ATS022, please put the device in manual mode and follow the instructions written in the ATS022 user manual 1SDH001059R0001 (paragraph 5.5.2).

Make sure the device is powered by an auxiliary voltage or by a voltage present on at least one of the two main lines (normal or emergency).

2.1 Selection mode



REMINDER:

With ATS022, to access to main menu:

- Press Enter to access the main Menu.
- Insert a 4-digit password which must be entered using the UP DOWN and ENTER keys [default password: 0001].

To confirm all settings (whenever user wants to come out menu):

1. Press ESC key until will appear a window with request to confirm modification saving.
2. Confirm with ENTER.



WARNING:

Please contact ABB SACE experts if ATS010 was installed in a customized solution, that differs from the one described in the table below.

PARAMETER	Selection Mode	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		<ol style="list-style-type: none"> 1. On menu, select: "System Configuration" <ul style="list-style-type: none"> • set "Protection devices": "2CBs" • set "Utilization of Generator": "Generator in use" • set "Line priority": "Line LN1" • set "Switching": "with inverse procedure" 2. Select setting with UP DOWN key, and confirm with ENTER.

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2.2 Voltage



WARNING:

Max rated voltage of ATS022 is 480Vac; for higher values must be used an external voltage transformers. For details see user manual 1SDH001059R0001

PARAMETER	Voltage Threshold	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Voltage thresholds" ⇒ "Min voltage threshold" 2. Select setting with UP DOWN key, and confirm with ENTER.

PARAMETER	Rated Voltage	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		<ol style="list-style-type: none"> 1. Press Enter to access the main Menu. 2. Insert a 4-digit password which must be entered using the UP DOWN and ENTER keys 3. Select: "System Configuration" ⇒ "Rated voltage" 4. Select setting with UP DOWN key, and confirm with ENTER. 5. Press ESC key until will appear confirm request window.

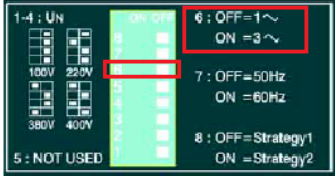
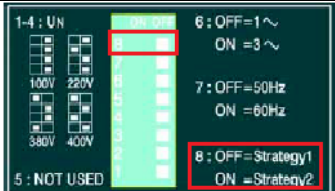
2.3 Frequency

PARAMETER	Frequency threshold	
DEVICE	ATS010	ATS022
SETTING PROCEDURE	+/-10% as default	<ol style="list-style-type: none"> 1. Press Enter to access the main Menu. 2. Insert a 4-digit password which must be entered using the UP DOWN and ENTER keys 3. Select: "Device Configuration" ⇒ "Frequency thresholds" ⇒ "Min Frequency threshold" 4. Select setting with UP DOWN key, and confirm with ENTER. 5. Press ESC key until will appear confirm request window.





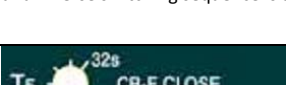
PARAMETER	Rated Frequency	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		<ol style="list-style-type: none"> 1. Press Enter to access the main Menu. 2. Insert a 4-digit password which must be entered using the UP DOWN and ENTER keys 3. Select: "System Configuration" ⇒ "Rated frequency" 4. Select setting with UP DOWN key, and confirm with ENTER. 5. Press ESC key until will appear confirm request window.

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2.4 Other Settings

PARAMETER	Plant configuration	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		<ol style="list-style-type: none"> 1. Press Enter to access the main Menu. 2. Insert a 4-digit password which must be entered using the UP DOWN and ENTER keys 3. Select: "System Configuration" ⇒ "Number of phases LN1" and "Number of phases LN2" 4. Select setting with UP DOWN key, and confirm with ENTER. 5. Press ESC key until will appear confirm request window.
PARAMETER	Strategy	
DEVICE	ATS010	ATS022
SETTING PROCEDURE		ATS022 always operates according to strategy 2 mode regardless where the breakers motors are powered from

2.5 Times Delay

PARAMETER	Delay settings	
DEVICE	ATS010	ATS022
SETTING PROCEDURE	 <p>T1: delay between fault detection and opening of CB over the standard line</p>	<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay Ts" 2. Select setting with UP DOWN key, and confirm with ENTER. <p>Ts (ATS022 configured without generator): opening delay of standard CB, after fault detection in standard line.</p>
	 <p>T2: delay between fault detection and gen-set startup</p>	<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay Ts" 2. Select setting with UP DOWN key, and confirm with ENTER. <p>Ts (ATS022 configured with generator): Generator start delay, after fault detection in standard line.</p>
	 <p>T3: delay between opening of circuit breaker over the emergency line and gen-set stop</p>	<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay TG off" 2. Select setting with UP DOWN key, and confirm with ENTER. <p>TG Off: generator switching off delay after closure of standard line CB</p>
	 <p>T4: delay between standard line voltage is back and inverse switching sequence is activated</p>	<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay Tbs" 2. Select setting with UP DOWN key, and confirm with ENTER. 3. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay Tcn" 4. Select setting with UP DOWN key, and confirm with ENTER. <p>Tbs: opening delay of emergency line CB, after detection of stabilized voltage on standard line. Tcn: closing delay of standard line CB after opening of emergency line CB</p>
	 <p>T5: Delay for Emergency voltage stabilization after gen-set started</p>	<ol style="list-style-type: none"> 1. Select: "Device Configuration" ⇒ "Delay Times" ⇒ "Delay TCE" 2. Select setting with UP DOWN key, and confirm with ENTER. <p>Tce: closing delay of emergency line CB, after detection of stabilized voltage on emergency line</p>

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2.5.1 Switching procedure comparison between ATS010 and ATS022

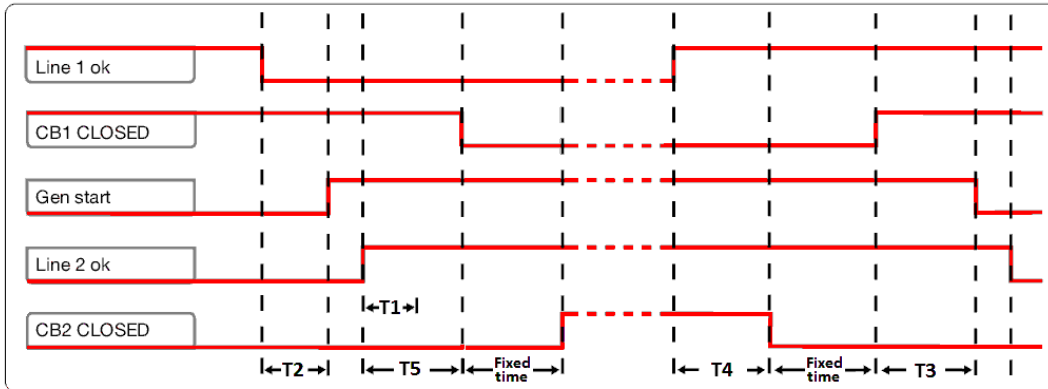
WARNING:



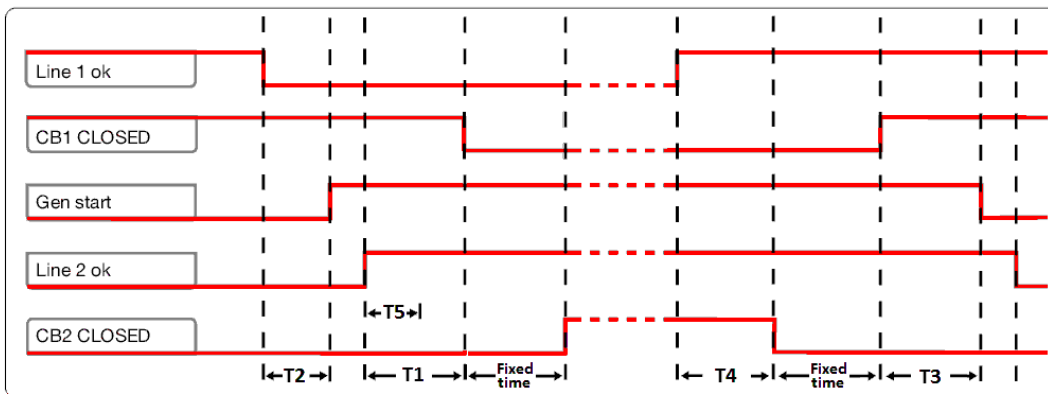
Management of the switching procedure of ATS022 can be identified as Strategy 2 operating mode of ATS010; before to control the breakers, ATS022 waits availability of voltage on the emergency line regardless of the feeding mode of motors and electrical auxiliaries inside the breakers.

Following graphs compare the switching procedure of ATS010 and ATS022

ATS010

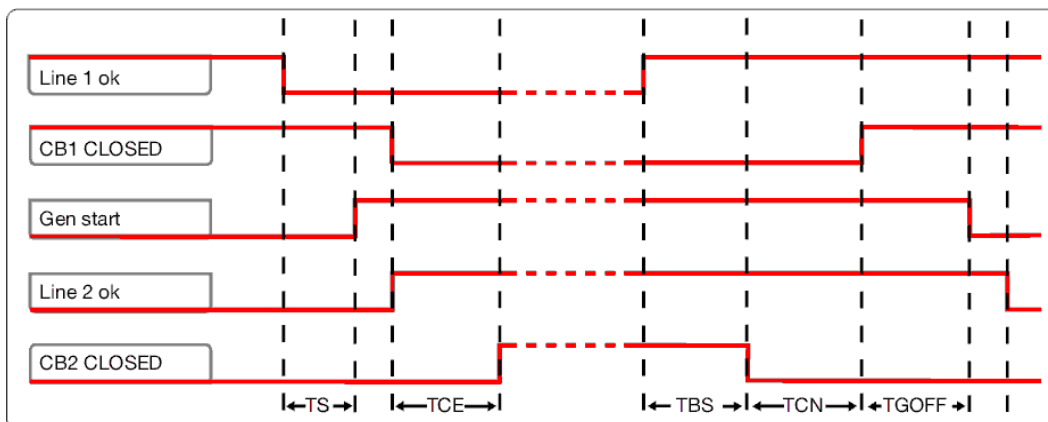


With $T1 < T5$









With $T1 < T5$

ATS022



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2.6 Operating mode selection

PARAMETER	Functioning selection	
DEVICE	ATS010	ATS022
TEST		<ol style="list-style-type: none"> 1. Check if Generator is set in use from the menu on the display 2. Set the ATS022 in manual mode Follow indication of 1SDH001059R0001, par. 5.7 Test Modes <ol style="list-style-type: none"> 3. Keep the TEST key pressed for at least 3 seconds 4. On releasing the TEST key, all the LEDs, except Tx/Rx, flash simultaneously four times and then the Auto LED flashes at 0.5Hz; the graphic display shows the GT icon. 5. Press TEST; generator starts 6. Press TEST; generator stops
AUTOMATIC		Follow indication of 1SDH001059R0001, par. 5.4.2 Automatic mode <ol style="list-style-type: none"> 1. Make sure the Power LED is On, see Figure 5.3/1 2. Press RESET once, see Figure 5.3/2. If the Auto LED is ON, the automatic transfer switch ATS022 is in Automatic mode, see Figure 5.3/3. 3. If the Auto LED is OFF, press RESET again, see Figure 5.3/3; the Auto LED switches to ON and the device is in Automatic mode/ Figure 5.3/4
NORMAL		<ol style="list-style-type: none"> 1. Set the ATS022 in manual mode 2. Open CB2 pressing the CB2 key 3. Close CB1 pressing the CB1 key 4. Switch off the generator. Keeping RESET pressed, press CB2
NORMAL & EMERGENCY OFF		<ol style="list-style-type: none"> 1. Set the ATS022 in manual mode 2. Open CB2 pressing the CB2 key 3. Open CB1 pressing the CB1 key 4. Switch off the generator. Keeping RESET pressed, press CB2
GEN-SET START		<ol style="list-style-type: none"> 1. Set the ATS022 in manual mode 2. Open CB2 pressing the CB2 key 3. Open CB1 pressing the CB1 key 4. Switch on the generator. Keeping RESET pressed, press CB1 5. Close CB2 pressing the CB2 key
EMERGENCY ON		

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3 ANNEX A


ATS010 existing settings

Operating mode selection	Description	To record Actual value
TEST	It allows gen set startup in order to verify effective start with switching logic Active	
AUTOMATIC	Switching logic Active	
NORMAL ON	Emergency line circuit breaker is opened and it is forced closing of the Normal line; generator is stopped and logic disabled	
NORMAL & EMERGENCY OFF	Both Standard and Emergency line circuit breakers are forced open. Useful for plant maintenance purpose	
Gen-Set START	Both the Normal and Emergency line circuit breakers are forced to open and the gen set start-up command is disabled	
EMERGENCY ON	After Gen-set start selection is done, both circuit breakers are kept open and the gen set is started up whether the line is powered or not	

Voltage level trimmers	Description	To record Actual value
Un max	Maximum voltage limit trim	
Un min	Minimum voltage limit trim	

Time delay switching settings	Description	To record Actual value
T1	Time delay between fault detection and opening of circuit breaker over the standard line	
T2	Time delay between fault detection and gen-set startup	
T3	Time delay between opening of circuit breaker over the emergency line and gen-set stop	
T4	Time delay between standard line voltage is back and inverse switching sequence is activated	
T5	Delay for Emergency voltage stabilization after gen-set started	

Dip switch selection	Description	To record Actual value
DIP 1-4	Nominal voltages definition	
DIP 5	Not used	
DIP 6	Distribution system definition	
DIP 7	Nominal Frequency definition	
DIP 8	Switching strategy definition	

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