

GUIDE

Testing ABB Circuit Breakers Utilizing Ekip Connect





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Utilizing Ekip Connect

The following instructions will explain the process to confirm and test that the internal functionality of the circuit breaker and trip unit are working properly. ABB's suggested testing procedure is to utilize our dedicated Ekip Connect software to conduct a secondary injection test sequence to validate that the trip unit and internal functions such as the trip coil, and opening mechanism are working properly.

ABB's Ekip trip units are equipped with a Watchdog feature that monitors the continuity of internal connections such as the trip coil, rating plug and current sensors (ANSI 74). In case of an alarm, a message is shown on the HMI of the Ekip Touch trip units or through LEDs alarms for Ekip DIP.

1. Launch the free Ekip Connect software on the customer supplied laptop. Download here.

2. Connect your laptop computer to the circuit breaker trip unit using the Ekip T&P cable. Connect one side of the mini-USB cable to the Ekip T&P module and the other side to the Ekip DIP, Ekip Touch or Hi-Touch trip unit. Connect the USB connection on the Ekip T&P module to the customer supplied laptop. The user can confirm the proper connection is made when the green power led is on. Active communication will be indicated via the orange transmission indicator blinking on the Ekip T&P module.



*NOTE: To perform testing on circuit breakers the Ekip T&P Programming and Test unit (ZEAEKPTP) must be used. It may be necessary to scan for the trip unit via the ABB Key before the device will appear in the Ekip Connect software

3. Click **SCAN** using T&P to connect to device.

Troubleshooting tip: If device cannot be found remove mini USB connector from front of trip unit and re-insert and click **SCAN** again.

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4. Once connected click **Tools** in lower left corner and click **Test Area** icon.



5. Click **OK** pop-up message confirming that this test area is used for secondary injection test purposes only.

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Once in the **Test Area** the user has the option to perform secondary injection test on the connected circuit breaker. The user can add a specific **Test Session** or use the **Default Test Session** already created.

Continue to next page for instructions on creating a user defined **Test Session**.

Executing a single test

Secondary injection tests cannot be executed if the circuit breaker is closed, and current or voltage is passing through the circuit breaker. It is mandatory that the circuit breaker be closed with no current or voltage being applied. If attempted to perform testing under these conditions the "Precondition Fail" error will appear.

1. Click Add test session to create a new user defined test session.

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E2.2-8200 Ekip Touch Black	TEST SESSONS			
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2. Populate the form for a new test session and click **OK**.

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3. Click the newly created test session under TEST SESSIONS and then click **Execute test** from the Area Test.

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4. A default test name will appear. Enter **Test name** and click **OK**.

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In the following screen the user can adjust phase currents and voltages and perform tests based on the inputted conditions. The protection settings/parameters will be based on the active protection settings of the circuit breaker.



5. **Enable** or **disable** phase currents (IL1, IL2, IL3, Ne) and voltages (V1, V2, V3) according to the test the user would like to perform by utilizing the **Enable** toggle on the left.

- 6. Select the field and adjust the values according to the test you want to perform and click **Start** in lower right corner to begin the test.
- A. Amplitude (absolute amperage).
- B. Relative Amplitude (multiplier of nominal current of the circuit breaker).
- C. Phase (Phase angle).

Example with only phase currents enabled and relative amplitude is 1.20 x the nominal current of the breaker on phase IL1.



If user receives pop-up message stating **"Test not available. Not connected through an ABB 'Test and Programming Key"** this indicates that only an Ekip Programming unit is being used and not the Ekip T&P unit.

7. The test is now being executed.

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8. Once the test has been completed click **View Test Report**.

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ZA Tools						

9. Below is an example of the Test Report based on the inputted conditions and active protection settings of the circuit breaker. The user then can **Export Table** to Excel and **Download** or **Print** the report as needed. Click the **back** to return to Test Area and repeat above steps for additional tests. The previously performed tests will be stored for future use.

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	E 2 200 A 240 27	Protection = 1 Threshold = 4.00 In	
		Preconditions All preconditions satisfied.	
	210 330 .	Test result	
	240 200	Test completed with trip. Protection. L tripped in 18780 ma.	
	Device descriptor: 162_ElvjpTouch_M4_v/3-43 enc	Ekp Connect version: 3.4.0.0 1/	
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Executing a ground fault test

Ground fault testing can be performed on circuit breakers with the "G" protection function enabled.

NOTE: Default setting for "G" Protection is disabled (ENABLE = OFF). Please enable and enter threshold as per coordination study prior to testing.

1. Select "Execute Test"

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E2.2-8200 Ekip Touch Black	151 953005				
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f Protections	L Politación Be technik 212/800 H New 221/9/9/1		□ × 1		
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2. Enter **Test name** and click **OK**.

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🔊 Modules	Test name Test name (descet if and		
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3. Disable phase voltages and decrease the current amplitude of phase IL2 to Zero "0". Click **Start** in lower right corner.



4. Once Test is completed Click View Test Report.



5. Below is an example of the Test Report based on the inputted conditions and active protection settings of the circuit breaker. The user then can **Export Table** to Excel and **Download** or **Print** the report as needed. Click the **back** to return to Test Area and repeat above steps for additional tests. The previously performed tests will be stored for future use.

ABB the provided Image: Stand Sta	Test Area > Test 1 > Ground Fault Decements	Device Tag name Relay Savah Namber Device settings Protection Settings Protection Settings	CD Taylome The Taylow The Taylow Taylow Protection = 1 Convertiops = 10 m. Taward 00 m. Protection = 0 Convertiops = 10 m. Taward 00 m. Parter 40 m. All preconditione satisfied. Material Stagged in H22 ms.	 Φ Φ 	• 5a
₩ Marketplace 28 Tools	Device descriptor: 162_EkipTouch_M_y543 enc C 1 > > Discriptor: 162_EkipTouch_M_y543 enc	Ekip Connect version: 3.4.0.0	17 Pet		
	5b	5c 5	d		

Executing a test sequence

A Test sequence allows the user to use a **Default sequence** or create a user defined **New test sequence** to test multiple conditions in a single test. During the test sequence the circuit breaker will not physically trip, it will only indicate that the circuit breaker would trip under the provided conditions.

1. Click Execute test sequence.

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ଟି <mark>ର</mark> Scan	Area Test Add a new left section or under the relation before thereing left			
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2. Click **Check All** to perform the default Test sequence or click individual boxes based on the tests to be performed. Choose to **Edit** test conditions based on required testing by click the **Pencil Icon**. Click **Start** to being Test sequence.



3. Once Test sequence is completed Click **Yes** to view report.

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Configuration		Automatic test 2 TestImiqual s	Currents II.1 = 3750 0 A 00° II.2 = 3750 0 A 240 0° II.3 = 3750 0 A 120 0°	Voltages V1 - 277 1V 2100'' V2 - 277 1V 800'' V2 - 277 1V 300 0'	Tripped Protection 8 tripped in S3 ms Test trip time must be between 0 ms and 1000 ms		
Classic View		Automatic test 3 TextIment 3 = O Cole test sension.	Currents K_1 = 4220.0 A, 0.0 K_2 = 6220.0 A, 240.0 K_3 = 6220.0 A, 120.0	Voltages Vr = 277 1 V.210 0* V2 = 277 1 V.300 0* V3 = 277 1 V.330 0*	Tripped Protection I tripped in 29 ms Test trip time must be between 0 ms and 1000 ms		
		Automatic test 4	Currents LL = 12500 0.4.00° L2 = 12500 0.4.240 L3 = 12500 0.4.1200° Test completed Generale test sequence	re report? No	Tripped Interactive I in papers in use two Test trip time must be between 0 ms and 1000 ms		-•3
		Automatic test 5 g Test/mexul.3 s O Close test session:	Currents EL 1 = 18750 0 A, 0 0° EZ = 18750 0 A, 240 0° EL = 18750 0 A, 120 0°	Voltages V1 - 227 1 V, 210 0* V2 - 227 1 V, 80 0* V3 - 227 1 V, 330 0*	Tripped Protection I tripped in 28 ms Test trip time must be between 0 ms and 1000 ms		
		Automatic test 6		Voltagos V1 - 110.9 V, 0.0' V2 - 110.9 V, 240.0' V3 - 110.9 V, 120.0'	Not tripped in 3000 ms		
		Automatic test 7 g Test treeved 3 *		Voltages V1 = 560.3 V, 0.0" V2 = 560.3 V, 240.0" V3 = 560.3 V, 120.0"	Not tripped in 3000 ms		
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4. Below is an example of the Test Report based on the inputted conditions and active protection settings of the circuit breaker. The user then can **Export Table** to Excel and **Download** or **Print** the report as needed. Click the **back** to return to Test Area and repeat above steps for additional tests. The previously performed tests will be stored for future use.



Executing a trip test

Executing a trip test confirms that the internal connections between the trip unit, trip coil and operating mechanism are working properly.

1. Click Execute trip test.



2. Read Warning and Click Next to proceed with Trip test.

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D Information						
g] Monitoring						
Protections	Automatic test 7 Die Town Diack E2.2/8200 Nat report	14 Nov 2023 11:00:06		Default text sequence		
# Modules	Automatic test 6 Ekip Touch Black E2.2-8200 Nor topped	14 Nov 2023 11:07:56	Trip test			
	Automatic test 5 Ekip Touch Diak E2.2.6200 Tep I in 26	14 Nov 2023 11 07 48	Warning For safety reason, the current flow inside circuit breaker must be zero during testing.			
	Automatic test 4 Ekip Teuch Black E2.2.6200 Top I in 28	14 Nev 2023 11.07.40	Circuit breaker must be closed. Trip test will open circuit breaker.			⊜ D ×
	Automatic test 3 Exp fourh Back E2.2-8200 Exp Lin 39	14 Nov 2023 11:07:32				
	Automatic test 2 Exp Town Back \$2,2,6200 Top 5 in 53	14 Nov 2023 11.07.24		Nest Value		₽ B ×
	Automatic test 1 Exp Touch Black E2.2.8200 Not report	14 Nov 2023 11:07:12		Default hest sequence		📼 🗅 ×
	Ground Fault Big Touch Black E2 2 8200 Top G in 402	14 Nov 2023 09 59 56				, ⊂ (, ⊂
	L Protection Dig Touch Black E2.2 8200 Trip L in 18788	14 Nev 2023 09:50.15				, □ ×
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3. Select **Yes** or **No** to confirm if the circuit breaker has tripped and Click **Finish**.

ABB Ekip Connect 34.0.0	ⓒ Test Area			Đ.	Ф :	
Scan	Area Test Add a new test session or select an existing test session + Add test session + Execute test + Exec	s before starting test. ute test equence 🚽 Execute bijs test				
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Dashboard	DEFAULT SESSION 14 Nov 2023 12 rests Lest test 2 Aug 2023 12:40:28	Trin test				
G ^C Configuration	DEFAULT SESSION TESTS Select all Download selected Remove selected Older	Trip test completed				
Protections S Modules	TEST 12 Ekie ISIG 0000000ABB SACE Trip linst in 2	Has circuit breaker tripped /				3a
Classic View	Automatic test 7 x12/4 x74 LSIG Not tropped					
	XT2/4 XT4 LSIG Not troped Automatic test 5	Back	Finish			3b
	ALZe ATR LSNS Trip I in 28 Automatic test 4 XT2/4 XT4 LSIG Trip I in 27	2 Aug 2023 12:22:03	Unitati les regience			
	Automatic test 3 XT2/4 XT4 LSIG Not tripped	2 Aug 2023 12:21:53	Default test sequence			
+ Service	Automatic test 2 xT2/4 xT4 LSIG Nor trepped	2 Aug 2023 12:21:42	Default test sequence			
₩ Marketplace	Automatic test 1 XT2/4 XT4 LSIG Not tripped	2 Aug 2023 12:21:31	Default test sequence			
Tools	TEET A					

Executing breaker test from trip unit HMI

Please reference 1SDH001316R1002 for Emax 2 & XT7, 1SDH002039A1002 for XT5, 1SDH002031A1002 for XT2 & XT4.

Below is a list of possible testing options via the HMI of the trip unit.

Test	menu

Menu	Submenus	Description, parameters and Commands
Autotest	_	Autotest command
Trip Test	-	TRIP command
Text CB	-	Close CB, Open CB
Ekip Signalling 4K ¹	-	Module autotest command
Ekip Signaling 2K ¹	Ekip Signaling 2K-1 ¹	Module autotest command
	Ekip Signaling 2K-2 ¹	
	Ekip Signaling 2K-3 ¹	
ZoneSelectivity ²	S Protection ³	Input, Force Output, Release Output
	G Protection ^₄	
Rc Test⁵	-	Test Instructions

¹ Available if one or more Ekip Signalling modules are connected and detected by Ekip Touch

² Available if Ekip Touch in on with auxiliary supply

 3 Available with S and/or S2 and/or D protection enabled, for S protection the set curve must be t=k

⁴ Available with G and/or D protection enabled and curve t=k available with G and/or Gext and/or MDGF and/or D protection enabled and curve t=k ⁵ Available if the Ekip CI modulke is connected and detected by Ekip Touch



Step 1. Press "Home" button

Step 2. Select "Settings"



3. Select "Test"



4. Enter Password



Zero appears in the first PIN box. Press **Confirm** to accept **zero** Repeat for the next three PIN boxes On the 5th PIN box change from **zero** to **one** (press the up triangle), then press **Confirm**



5. Select "Auto Test"

This test will check the function of the trip unit HMI.

6. Select "Trip Test"



7. Press "**iTest**"



Once Trip Test is completed press iTest again to clear.

8. Press "Test CB"



9. Press "**Close CB**" and "**Open CB**" respectively to open and close the circuit breaker. Please note that electrical accessories needed for this test must be installed and powered in the circuit breaker.



10. Press "**Ekip Signalling**". Depending on the signaling module(s) installed they will show up here. If no signaling modules are installed this section will be blank.



11. Press "Auto Test"



During this test the outputs of the signaling module will open and close and the LED indicators will come on and go off.

12. Press "ZoneSelectivity(68)"



As needed to test Zone Selectivity work through the menu options. For reference please use 9AKK107991A2521 ZSI Zone Selectivity Interlock



References

1SDH001316R1002 1SDH002039A1002 1SDH002031A1002 9AKK107991A2521 Instructions for using Ekip Touch for Emax 2 & XT7, Instructions for using Ekip Touch for XT5, Instructions for using Ekip Touch for XT2 & XT4. ZSI Zone Selectivity Interlock





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