

MEDIUM VOLTAGE PRODUCTS

Operating Procedure Manual for Wireless Racking Solution.



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A. INTRODUCTION

This manual contains the information required to operate the wireless racking solution for withdrawable circuit breaker with pre-existed motorized racking arrangement.

In addition to this manual, it is necessary to refer the latest technical documentation, electric circuit and wiring diagrams, assembly, installation drawings, etc., because these are project & order specific.

This solution offers a dedicated set of electronic modules to operate the circuit breaker from a safe distance increasing the safety for personnel.

This solution improves employee's safety against electrical arcs, thanks to the safe distance between the circuit breaker and the operator. Immediate visual verification of the circuit breaker position with STATUS LEDs available on the remote-control unit.

Possibility to interrupt the racking operation in any moment using MTR-Cut-Off push button on the remote-control unit.

Wireless racking directly supports the core safety goals of NFPA 70E, because it increases operator distance from the arc-flash hazard zone, which is one of the highest-priority controls in electrical safety and reduces the human exposure by using the hierarchy of controls.

Therefore, wireless racking solution is the engineered control and best method to execute the circuit breaker operation.

B. IMPORTANT NOTES

1. This solution is applicable only to the ABB ELSE motorized racking solutions portfolio.
2. This solution shall be used only when close block interlock is available as per the standard interlock matrix.
3. **Each switchgear receiver unit must have a unique 6-digit code, which shall not be duplicated for any other switchgear within the same switchboard room.**
4. In order to maximize safety, during the racking of the circuit breaker, it is recommended to switch ON the auxiliary supply of only the specific receiver (using the selector switch) mounted on metering compartment door, to perform circuit breaker operations.
5. The auxiliary power supply to all other receiver units in the switchboard room shall remain in the OFF state. Ensure that only the dedicated/selected receiver is energized (ON).
6. During rack-IN/rack-OUT operations using the transmitter, a LOTO lock shall be applied to the switchgear door knob, to prevent any manual rack-IN/rack-OUT activity.
7. The MTR (Motor) Cut-Off button provided on the transmitter is intended solely to pause the Rack-IN or Rack-OUT operation during the racking process. For any other type of emergency, use the emergency switch/arrangement provided on the switchgear panel side.
8. Before installing this solution, ensure that CB rack-IN, rack-OUT, ON, and OFF operations are functioning electrically, using the existing panel-mounted push buttons.

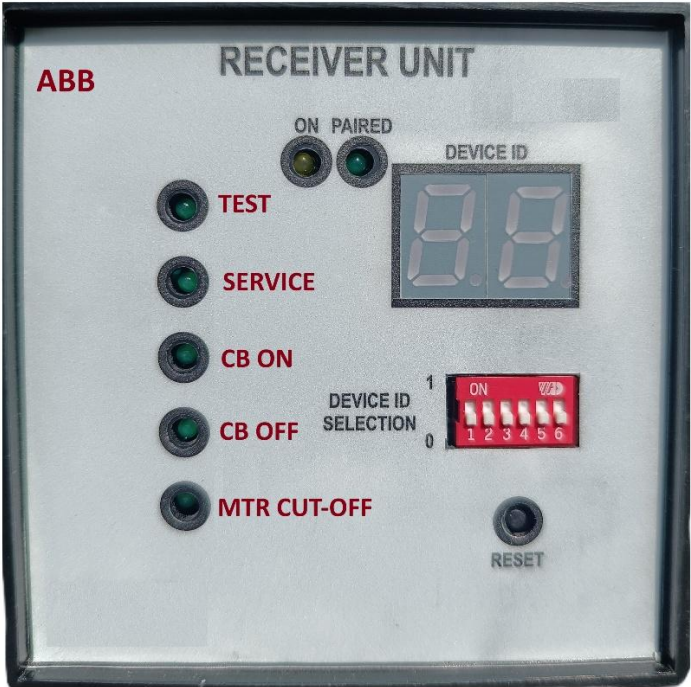
C. STANDARD OPERATING PROCEDURE

1. Connect the Aux supply to the product
2. Note down the 6-digit DIP switch setting of the receiver, same is displayed on the receiver in 2-digit numeric format.
3. Set the DIP switch of the transmitter according to the receiver's 6-digit number (refer to the DIP switch setting & Decimal number table).
4. Turn ON the transmitter unit by pressing ON/OFF switch.
5. Check the Power ON LED and the battery voltage level of the transmitter.
6. Enter the two step authentication codes.
7. Ensure that the same receiver 2-digit decimal number is visible on both the transmitter and receiver.
8. Wait for 30 seconds to allow pairing between the transmitter and the identified receiver.
9. If pairing does not execute in the first attempt, then press the RESET button of the transmitter and wait another 30 seconds.
10. Ensure that the Paired LED glows on both units. If not, repeat Step 9.
11. Once pairing is successful, move outside the arc flash boundary from the panel and perform the required CB operation.
12. For consecutive operations (RackIN, RackOUT, or ON/OFF), a deliberate 15sec delay is assigned.
13. Therefore, ensure the "READY FOR OPERATION" indicator on the transmitter is ON, before proceeding with the next command.

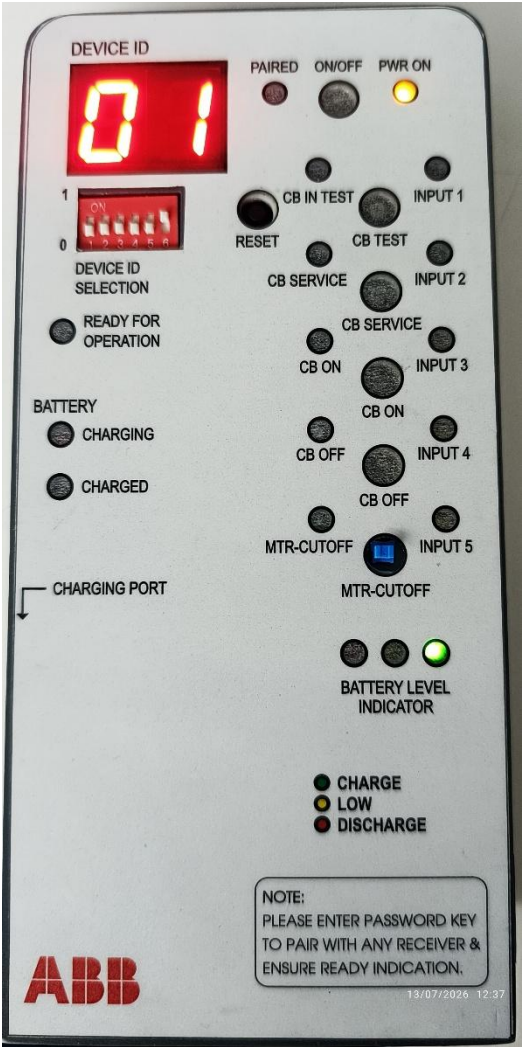
14. Wireless RackOUT operation from transmitter.
 - A. Press TEST button of transmitter and wait for few seconds to complete the CB rackOUT operation.
 - B. Ensure TEST LED indication on transmitter.
15. Wireless RackIN operation from transmitter.
 - C. Press SERVICE button of transmitter and wait for few seconds to complete the CB rackIN operation.
 - D. Ensure SERVICE LED indication on transmitter.
16. Wireless CB ON operation from transmitter.
 - E. Press CB ON button of transmitter and wait for few seconds to complete the CB CLOSE operation.
 - F. Ensure CB ON LED indication on transmitter.
17. Wireless CB OFF operation from transmitter.
 - G. Press CB OFF button of transmitter and wait for few seconds to complete the CB OPEN operation.
 - H. Ensure CB OFF LED indication on transmitter.
18. Wireless racking motor cutoff operation from transmitter.
 - I. Press MTR-Cutoff button of transmitter to pause the rackIN/OUT process in case of any observations.

The LED labelled as “**INPUT**” glows momentarily, when a function button is pressed, indicating that the command has been transmitted.

The operator can verify the status of Circuit breaker on the transmitter unit, with the help of STATUS LED indications.

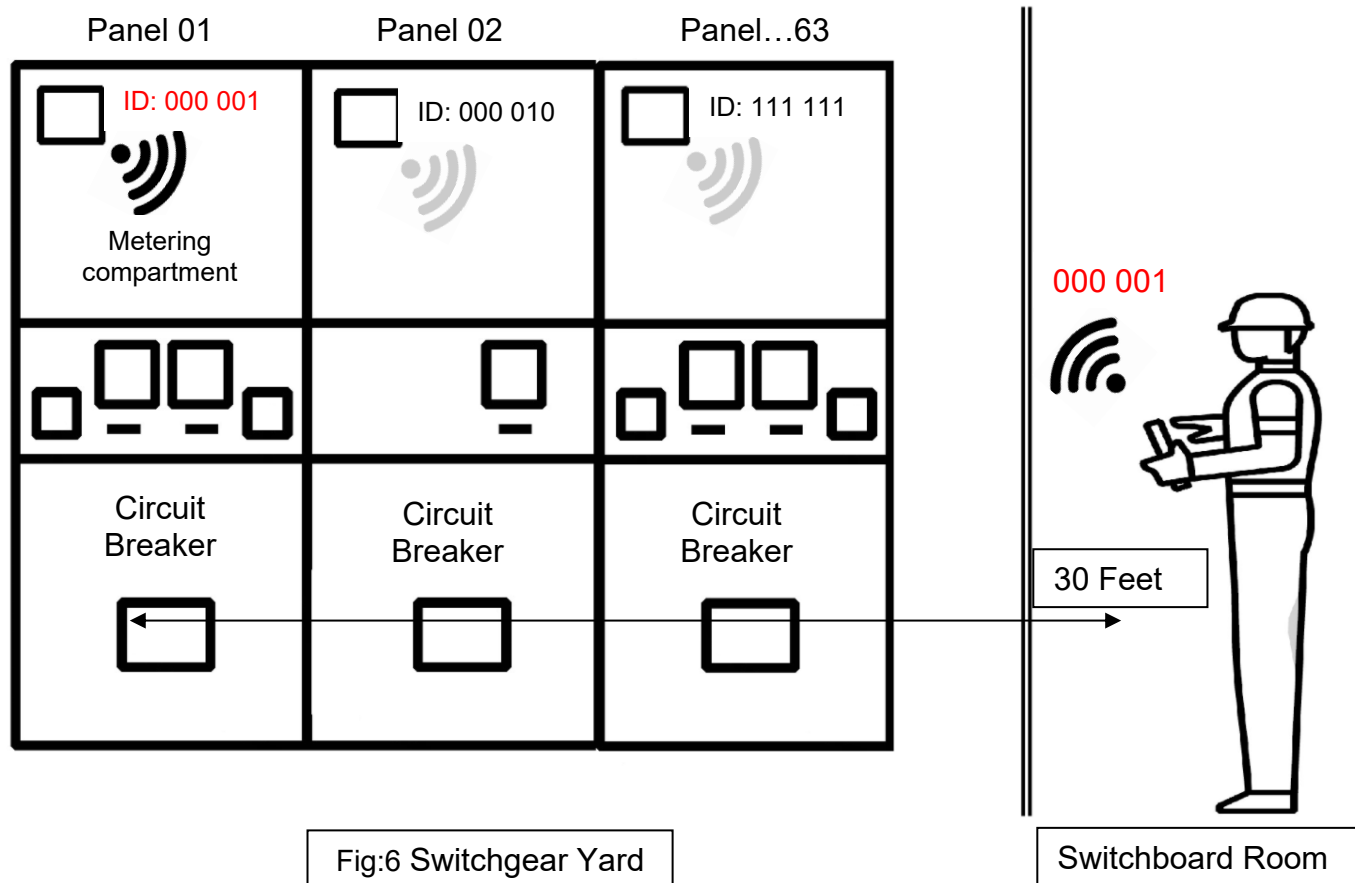


Receiver Unit



Transmitter Unit

D. SWITCHGEAR PANEL SELECTION



DIP Switch Setting: -

Panel Number	DIP Switch Setting					
	SW1	SW2	SW3	SW4	SW5	SW6
1	0	0	0	0	0	1
2	0	0	0	0	1	0
3	0	0	0	0	1	1
4	0	0	0	1	0	0
5	0	0	0	1	0	1
6	0	0	0	1	1	0
7	0	0	0	1	1	1
8	0	0	1	0	0	0
9	0	0	1	0	0	1
10	0	0	1	0	1	0
11	0	0	1	0	1	1
12	0	0	1	1	0	0
13	0	0	1	1	0	1
14	0	0	1	1	1	0
15	0	0	1	1	1	1
16	0	1	0	0	0	0
17	0	1	0	0	0	1
18	0	1	0	0	1	0
19	0	1	0	0	1	1
20	0	1	0	1	0	0

Number	DIP Switch Setting					
	SW1	SW2	SW3	SW4	SW5	SW6
21	0	1	0	1	0	1
22	0	1	0	1	1	0
23	0	1	0	1	1	1
24	0	1	1	0	0	0
25	0	1	1	0	0	1
26	0	1	1	0	1	0
27	0	1	1	0	1	1
28	0	1	1	1	0	0
29	0	1	1	1	0	1
30	0	1	1	1	1	0
31	0	1	1	1	1	1
32	1	0	0	0	0	0
33	1	0	0	0	0	1
34	1	0	0	0	1	0
35	1	0	0	0	1	1
36	1	0	0	1	0	0
37	1	0	0	1	0	0
38	1	0	0	1	1	0
39	1	0	0	1	1	1
40	1	0	1	0	0	0
41	1	0	1	0	0	1
42	1	0	1	0	1	0
43	1	0	1	0	1	1
44	1	0	1	1	0	0
45	1	0	1	1	0	1
46	1	0	1	1	1	0
47	1	0	1	1	1	1
48	1	1	0	0	0	0
49	1	1	0	0	0	1
50	1	1	0	0	1	0
51	1	1	0	0	1	1
52	1	1	0	1	0	0
53	1	1	1	1	0	1
54	1	1	0	1	1	0
55	1	1	0	1	1	1
56	1	1	1	0	0	0
57	1	1	1	0	0	1
58	1	1	1	0	1	0
59	1	1	1	0	1	1
60	1	1	1	1	0	0
61	1	1	1	1	0	1
62	1	1	1	1	1	0
63	1	1	1	1	1	1

Table 3

E. RECEIVER INBUILT INTERLOCK LOGIC

Required Status Indication on Transmitter						Possible CB operation	
SN	Condition	CB TEST Status Indication	CB SERVICE Status Indication	CB ON Status Indication	CB OFF Status Indication	Button Pressed	Operation
1	1	✓	⊗	⊗	✓	R1- Test Pos	⊗
2						R2- Service Pos	✓
3						R3- CB ON	✓
4						R4- CB OFF	⊗
5	2	✓	⊗	✓	⊗	R1- Test Pos	⊗
6						R2- Service Pos	⊗
7						R3- CB ON	⊗
8						R4- CB OFF	✓
9	3	⊗	✓	⊗	✓	R1- Test Pos	✓
10						R2- Service Pos	⊗
11						R3- CB ON	✓
12						R4- CB OFF	⊗
13	4	⊗	✓	✓	⊗	R1- Test Pos	⊗
14						R2- Service Pos	⊗
15						R3- CB ON	⊗
16						R4- CB OFF	✓
17	5	⊗	⊗	⊗	⊗	R1- Test Pos	⊗
18						R2- Service Pos	⊗
19						R3- CB ON	⊗
20						R4- CB OFF	⊗

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