

Maintenance Bypass Switch

Alphapower

The MBSW is a manual maintenance bypass switch designed to isolate AC input and output to allow for routine UPS maintenance without load interruption. The purpose of the MBSW is to 'bypass' the UPS and supply mains power to critical load/s; once the maintenance is complete, the load/s are transferred back to the UPS and return to normal operation. Only AC input and output are isolated in this switch; the DC supply from batteries is not isolated as the batteries have an independent circuit breaker.

The make before break design guarantees no interruption to the load/s since the switch is fitted with an electro-mechanical mechanism between itself and the UPS to prevent incorrect or accidental operation. The shaft in the contact is locked by a solenoid which is electrically coupled with the UPS 'load on bypass' relay meaning the switch cannot be operated unless the load is manually transferred to bypass mode on the UPS front panel first.

Some key features include:

- Continuous power to equipment
- Eliminates operation downtime
- Make before break transfer topology
- Electro-mechanical switch to ensure safe operation



Product Specifications

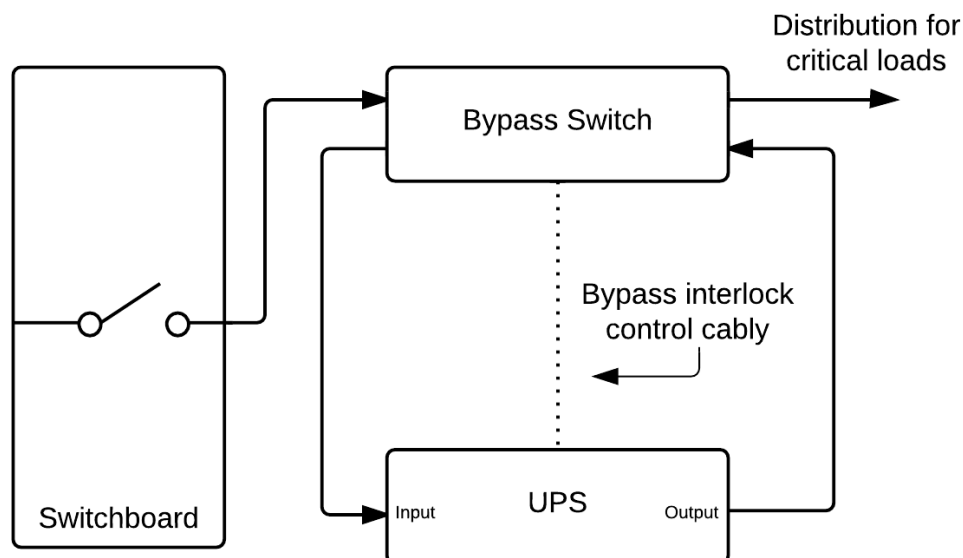
Single Phase

UPS Power Rating	Current Rating	Dimensions (W x D x H)	Material	Weight Kg (lbs.)
6kVA	32A	190 x 130 x 380 mm 7.5" x 5.11" x 15"	Plastic	10 (22)
8kVA	40A	190 x 180 x 380 mm 7.5" x 7.1" x 15"	Plastic	11 (24.3)
12kVA	63A	280 x 180 x 380 mm 11" x 7.1" x 15"	Plastic	11 (24.3)
20kVA	100A	400 x 300 x 600 mm 15.8" x 11.8" x 23.6"	Metal	33 (72.8)

Three Phase

UPS Power Rating	Current Rating	Dimensions (W x D x H)	Material	Weight Kg (lbs.)
20	32	300 x 210 x 400 mm 11.8" x 8.3" x 15.8"	Metal	18 (39.7)
25	40	400 x 300 x 600 mm 15.8" x 11.8" x 23.6"	Metal	30 (66.1)
40	63	400 x 300 x 600 mm 15.8" x 11.8" x 23.6"	Metal	30 (66.1)
60	100	380 x 350 x 600 mm 15" x 13.8" x 23.6"	Metal	33 (72.8)
100	150	600 x 400 x 800 mm 23.6" x 15.8" x 31.5"	Metal	38 (83.8)
200	315	800 x 500 x 600 mm 31.5" x 19.7" x 23.6"	Metal	42 (92.6)

UPS and Switch Interlock



Installation and Operation



This switch must be installed and serviced by qualified personnel ONLY



This switch has more than one live circuit. AC power may be present even if there is no power supplied from AC mains

Description of UPS external bypass switch

The purpose of the MBSW is to isolate the UPS from loads and equipment whilst the UPS is under repair or maintenance.

The physical, external switch has 4 positions:

- **OFF:** AC power to both critical load equipment and UPS is switched off
- **UPS:** Normal operating position; AC mains are connected to the UPS which provides conditioned AC power to critical loads. In the case of AC mains failure, the UPS provides AC power to load/s until the batteries become completely depleted or until the fault is resolved
- **TEST & BYPASS:** power to critical load equipment is fed directly from the AC mains and AC mains are also supplying power to the UPS for testing
- **BYPASS:** power to critical load equipment is fed directly from the AC mains and the power to the UPS is disconnected

Switching between **UPS** and **TEST & BYPASS** positions is make-before-break AND the connection is electrically interlocked thus preventing incorrect switching; switching between **UPS** and **TEST & BYPASS** positions is only possible when the UPS is in bypass mode.

Installation

The following 5 sets of power and control cables must be installed

1. Power cable from mains supply to **Mains Input** terminals of the switch
2. Power cable from **To UPS Input** terminals of the switch to the UPS input
3. Power cable from UPS output to the **From UPS Output** terminals of the switch
4. Power cable from **Output to Load** terminals of the switch to critical load/s
5. Interlock control cable between **Bypass Signal from UPS** connector on the switch and the **Bypass Signal** on the UPS (either a 2-pin round connector on the UPS or a 2-pin green connector on the AS400B card)

NOTE: the interlock control cable supplied with the switch is 1.8m, if required the cable can be extended or replaced with a longer cable.

Operation of MBSW

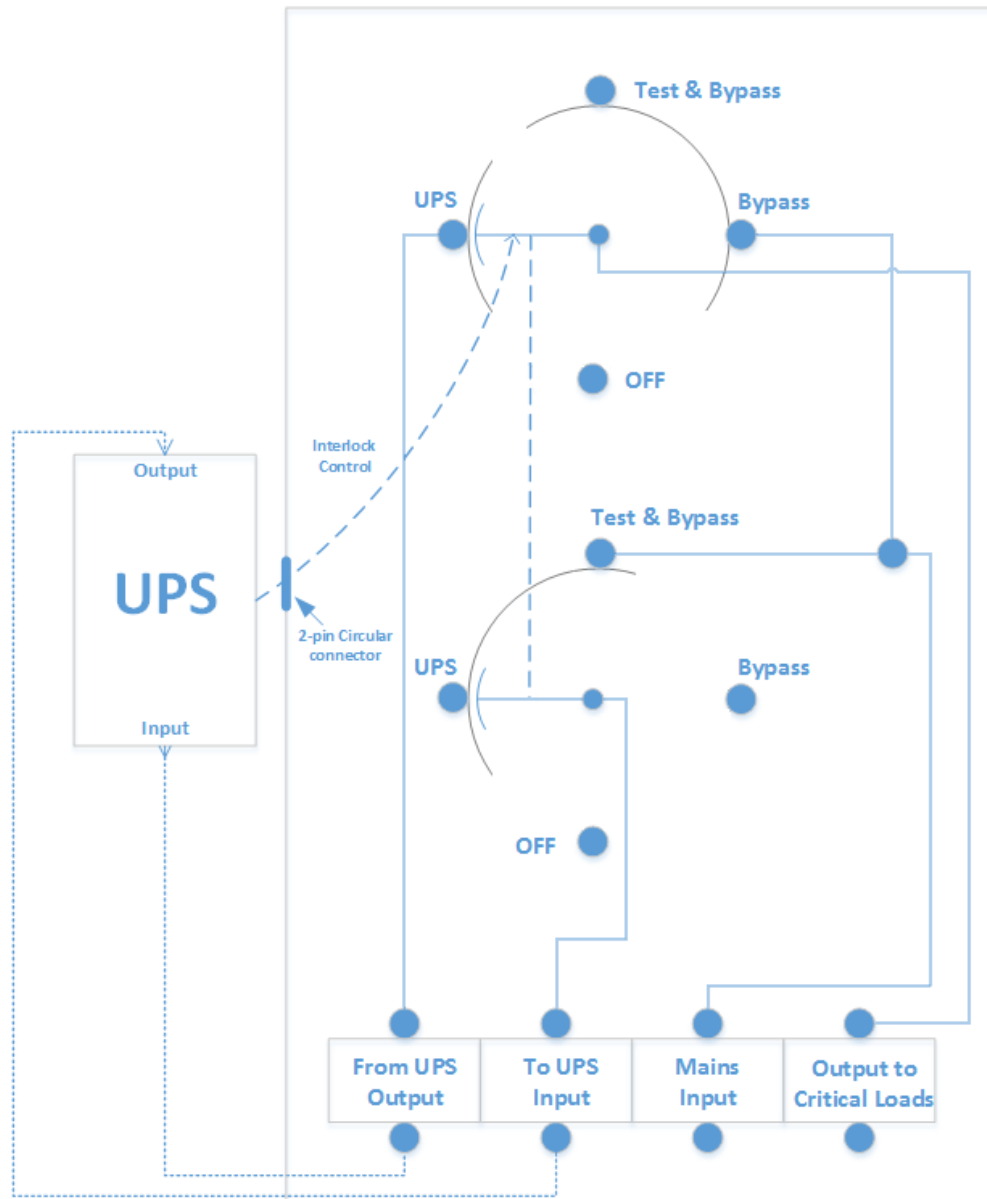
- Switching from **UPS** to **TEST & BYPASS**
 - Ensure the UPS is in bypass mode and the **BYPASS** LED is on. If the UPS is in **ON-LINE** mode, it should be switched to **BYPASS** mode using the following procedure:
 1. On the UPS front panel, press and hold the **FUNC** button for 2 seconds; the LCD display should show **O/Power Factor Volt Set**
 2. Press the **FUNC** button 5 times (until the LCD shows **Manual Bypass**) then press **ENTER** and a message on the LCD should show **Bypass OFF**
 3. Press the **FUNC** button to toggle the LCD to show **Bypass ON** and press **ENTER**. The UPS will switch to **BYPASS** mode; the **ON-LINE** LED should turn off and the **BYPASS** LED should turn on
 - After the UPS is in **BYPASS** mode, the **BYPASS** switch can be turned from the **UPS** position to the **TEST & BYPASS** position. At this point the AC mains are simultaneously supply both the critical loads and the UPS

- Switching from **TEST & BYPASS** to **BYPASS** (and vice versa)
 - Switching between these two positions is unrestricted. Once the switch is turned to **BYPASS** the UPS input will be disconnected and the loads continue to be powered by the AC mains supply

- Switching from **TEST & BYPASS** to **UPS** position
 - Ensure the UPS is in **BYPASS** mode and the **BYPASS** LED is on. If the UPS is in **ON-LINE** mode, follow the steps above to transfer it to **BYPASS** mode.
 - To switch from **BYPASS** mode to **ON-LINE** mode on the UPS, follow the steps below
 1. On the UPS front panel, press and hold the **FUNC** button for 2 seconds; the LCD display should show **O/P Volt Set**
 2. Press the **FUNC** button 5 times (until the LCD shows **Manual Bypass**) then press **ENTER** and the display should read **Bypass ON**
 3. Press the **FUNC** button to toggle the LCD display to show **Bypass OFF** and press **ENTER**. The UPS will switch from **BYPASS** mode to **ON-LINE** mode after a short delay; the **BYPASS** LED should turn off and the **ON-LINE** LED should come on
 - The critical load is now connected to and protected by the UPS

- Switching between **OFF** and **UPS** positions, and between **OFF** and **BYPASS** positions
 - Switching between **OFF** and **UPS** positions on the switch and the **OFF** and **BYPASS** positions is unrestricted.

***NOTE:** when in the **OFF** position, the AC power to both the critical load/s and the UPS is switched off*



External Maintenance Bypass Switch Hardwired



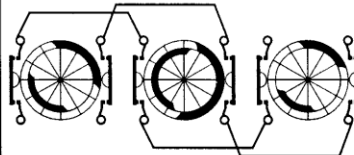
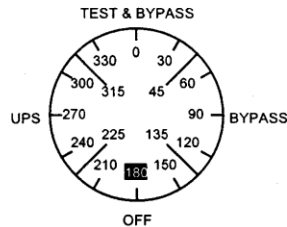
Kraus & Naimer
BLUE LINE switchgear

C42

AU90A3

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Escutcheon Plate



Switching Angle		90	2	4	6	8	10	12	14	16	18	20	22	24
Total switching Angle		360	UPS	UPS			load	load						
	OFF	180												
		195												
		210												
		225												
		240												
	UPS	255												
		270												
		285												
		300												
		315												
		330												
	TEST & BYPASS	345												
		0												
		15												
		30												
		45												
		60												
	BYPASS	75												
		90												
		105												
		120												
		135												
		150												
		165												
Look	600	Pcs.	Optional Extras						Jumpers					
Mounting	VE-V													
Escutcheon Plate														
Handle	G251													
Latch. Mech.	E304													
Stop	-----													
Stop degree														
No. of Stages	3													
Master data	1													
Reference	WATERS													
Date	2009-08-04 23:52	V140 TO INTERLOCK BETWEEN UPS AND UPS & TEST POSITIONS FREE TO TURN BETWEEN ALL OTHER POSITIONS												
Modify Date														
Cust. NO.														
Company														