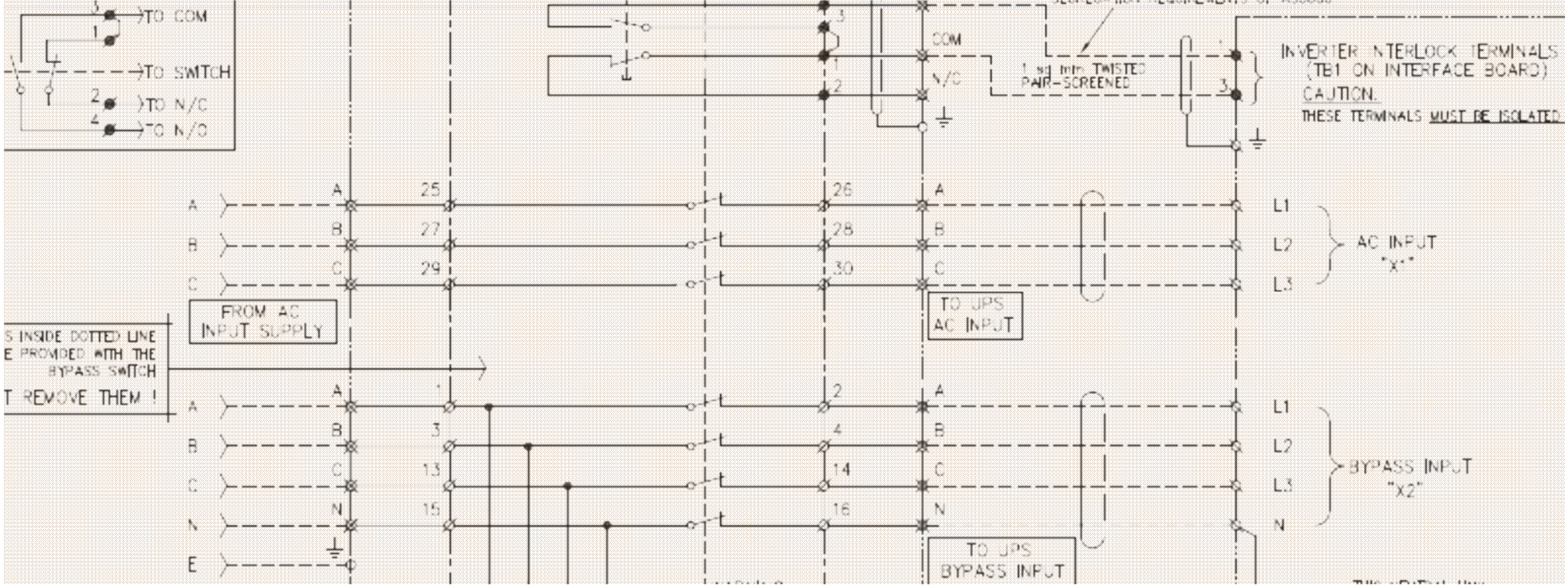
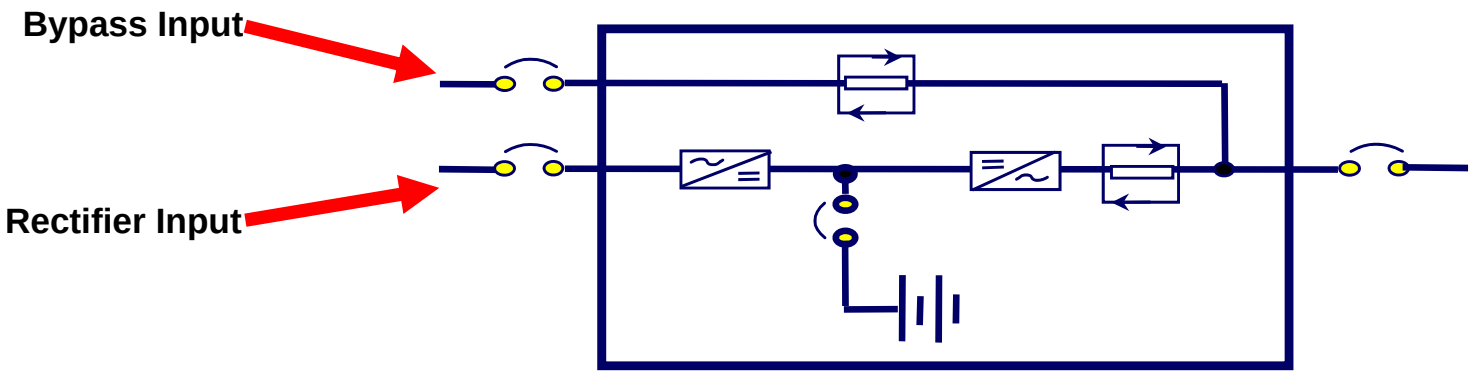


Maintenance Bypass Switches (ANZ)

MBS jargon made clear!

Powering Business Worldwide

First line of defence - Dual feed input



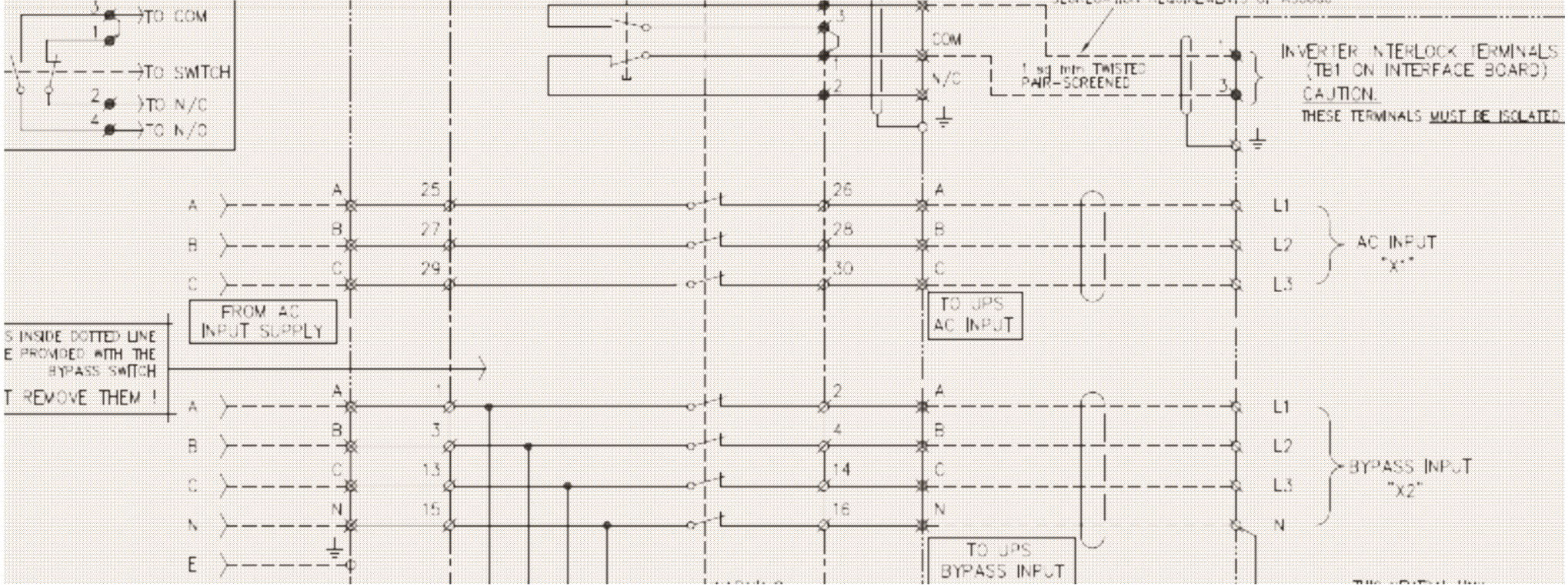
- If customer can't fit an MBS, dual inputs provides a cost effective means of increasing redundancy
- Dual feed input means that UPS can be installed with separate input cables for rectifier and bypass
- Should the upstream fusing clear, for example in rectifier input short circuit, dual feed allows UPS to go to by-pass, single feed will drop the load once batteries are drained

Dual feed is standard on all On Line models 6kVA and above, except 9E, 9SX/PX 5/6kVA, BladeUPS & 93E 20-80kVA

When to offer an external MBS?

- When the UPS does not have an internal maintenance bypass
- When the UPS does have an internal maintenance bypass, but customer wants to be able to fully isolate power from the UPS cabinet, including incoming & outgoing connections
- When customer wants to be able to replace the UPS without shutting down the load
- When customer must have it, due to OH&S requirements
- **When you want to add value, safety and redundancy!**

Powering Business Worldwide



Internal/Integral Maintenance Bypass Switches

Powering Business Worldwide

Integral/Internal MBS: Is it included?

- “Hot Swap MBP” modular MBS Switch for all 1Ph ≤3kVA
- 9E - Standard internal MBS
- MX Frame – Standard Internal MBS in frame
- 9SX/9PX – Optional MBP fitted on rear of UPS
- 9155 8-30kVA – Optional Integral MBS
- 9355 8-40kVA – Optional Internal MBS
- BladeUPS - Standard MBS Contactor built into chassis
- 93E 15-80kVA – Standard Internal MBS (optional in other countries)
- 93E 80-120kVA – Standard internal MBS (optional in other countries)
- 93PS 8-40kW – Standard Internal MBS (optional in other countries)
- 93PM 30-50kW – Standard Internal MBS (optional in other countries)
- 93PM 80-150kW – Optional Internal MBS
- 93PR 75-200kW – Optional Internal MBS
- 9395 225-550kVA – Optional internal MBS

Note: Internal MBS is not used on Hot Sync models

Optional “Hot Swap MBP” – All UPS ≤3kVA, Tower or Rack

- Hotswap MBP can be plugged into any soft-wired UPS up to 3kVA
- MBP contains input/output connections and plugs into UPS power module
- Single Switch operation
- No Inverter Interlock, bypass switch is fast “Break-Before-Make”
- Specific on-UPS mounting points for Evolution Rack, EX, 5130 & 5PX, can also be mounted in rack (vertical or horizontal)
- Available with IEC or AU outlets
- Hard Wired version available

Integral MBP – 9SX/9PX (optional)

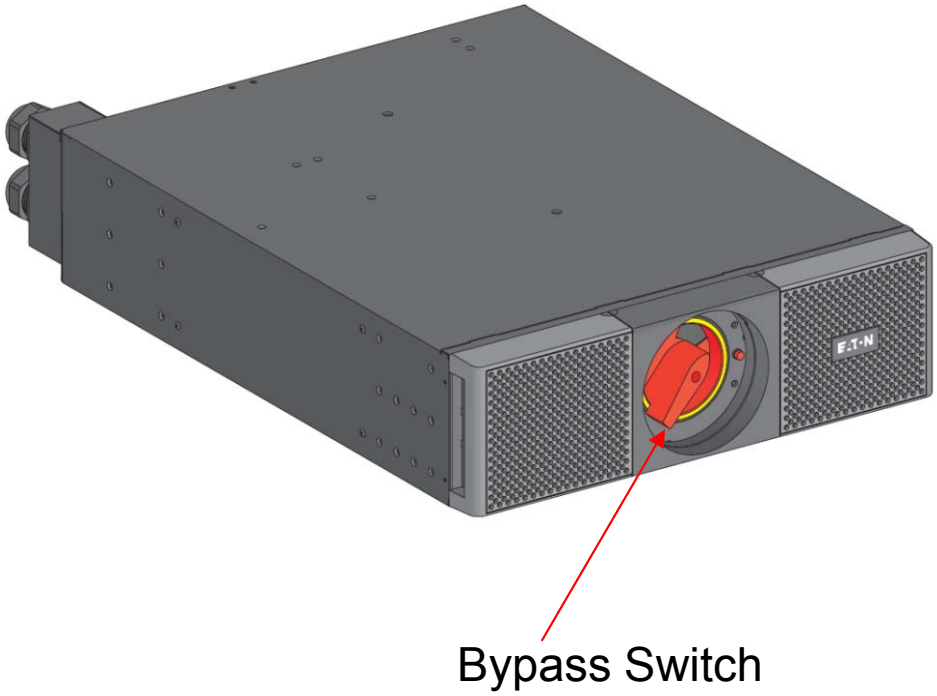
5/6kVA 1:1
with MBP
Fitted to rear
panel

8/11kVA 1:1
with MBP
Fitted to rear
panel

Bypass Switch

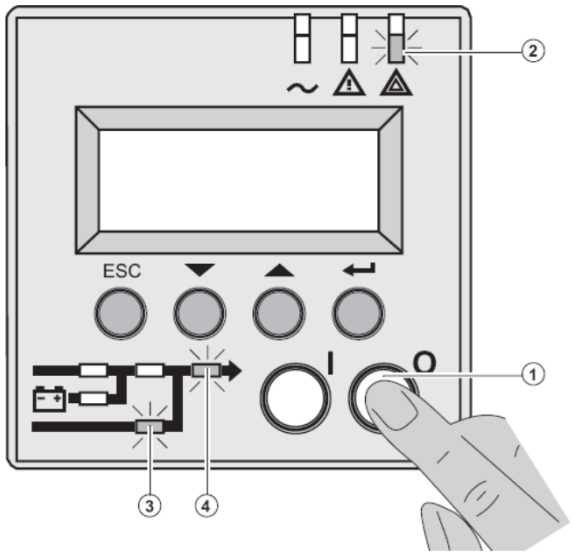
- Bypass module contains input/output connections and is hardwired to UPS power module
- MBP can be fitted to rear, side or top of UPS, or separately
- Single Switch operation
- UPS can be only wired for single input
- No Inverter Interlock, user must transfer to static bypass first. Comms from UPS to MBP provide visual indication UPS is on Static Bypass
- Output from MBP is hardwired + IEC output sockets
- Optional on all models 5, 6, 8 & 11kVA in 1:1 or 3:1 configuration

Integral MBS – 9PX Modular Easy (MEZ)

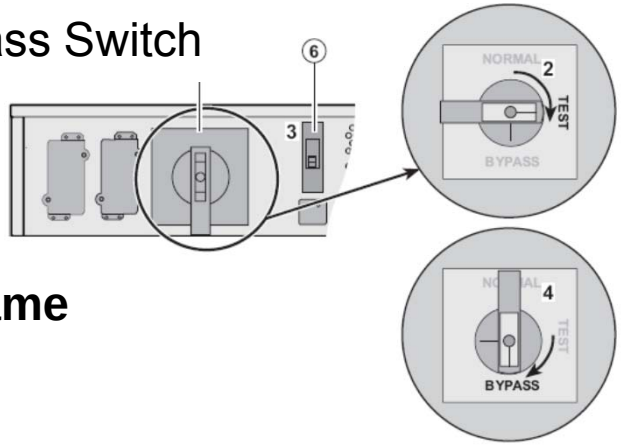


- Bypass switch built into front panel on Modular Easy
- Single Switch operation
- Bypass, Test & Normal positions with LED indication of UPS status
- No Inverter Interlock, user must transfer to static bypass first, MEZ provides switch status info to UPS
- Hardwired & IEC Outlets

Integral MBS – MX Frame



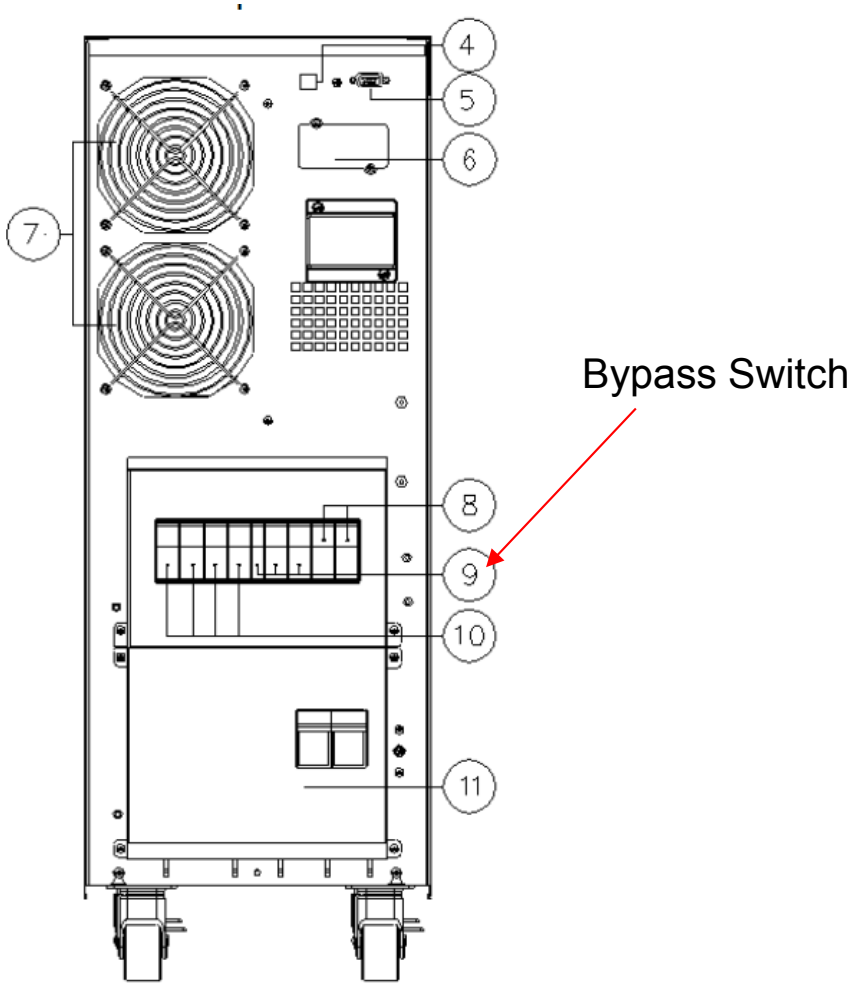
Bypass Switch



MX Frame

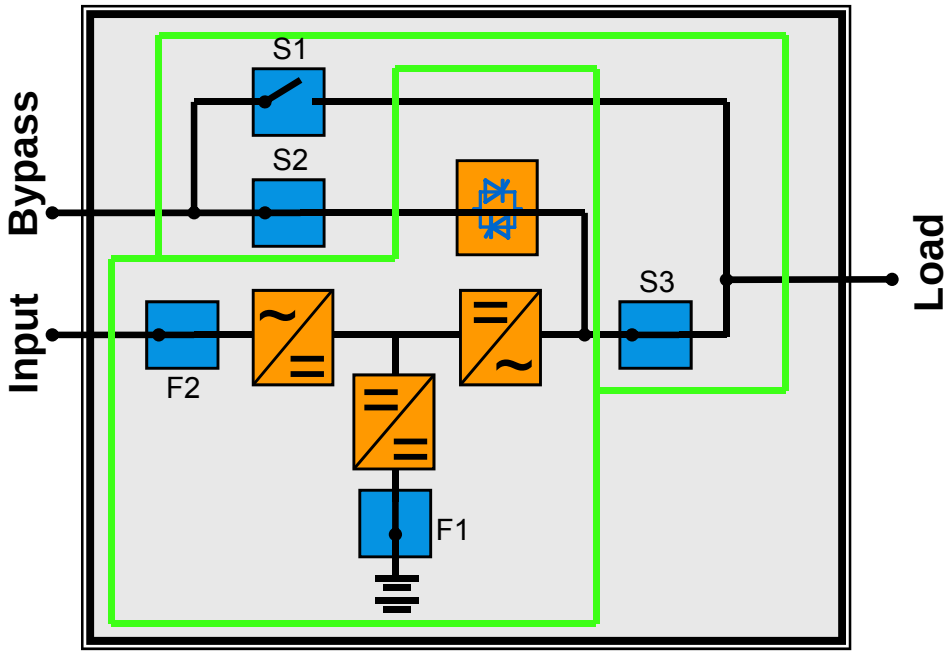
- Bypass switch built into rear panel on MX FrameSingle Switch operation
- MX Frame can be wired for single or dual inputs
- No Inverter Interlock, user must transfer to static bypass first
- Bypass switch on MX Frame can be padlocked in bypass position

Integral MBS – 9E 1Ph 6-20kVA



- Three Switch operation:
  - Input Switch
  - Output Switch
  - Bypass Switch
- No Inverter Interlock, user must first transfer UPS to static bypass.

Optional Integral MBS – 9X55 8-15kVA

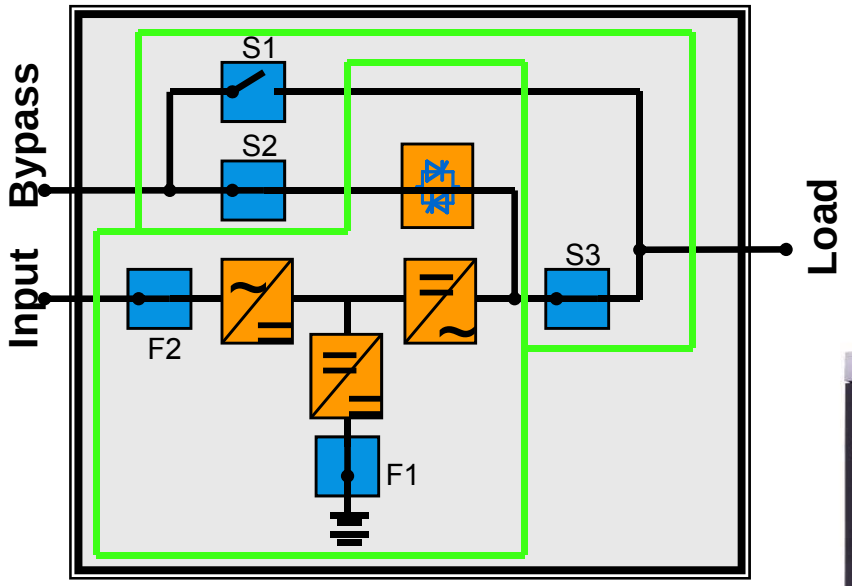


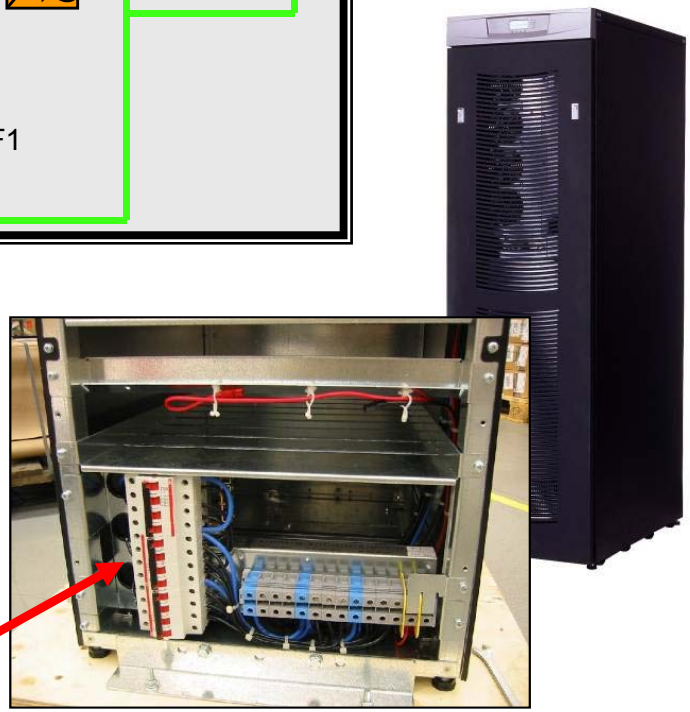
- 3 Switch operation
- Enables isolation of UPS electronics (upstream rectifier input CB must also be opened)
- UPS must be wired for dual input
- Available for:
  - 9155 8-15kVA
  - 9355 8-15kVA
- No Inverter Interlock, user must transfer to static bypass first
- Mechanical safeguard prevents accidental switching
- Add “-MBS” suffix to UPS part no. Must be minimum of “1B” cabinet configuration (1 battery compartment)

Same as 9X55 “Basic” External MBS, but fitted to rear of UPS

Note: Switches are “non-auto” circuit breakers

Internal MBS – 9X55 20-40kVA





MBS

S1, S2, S3

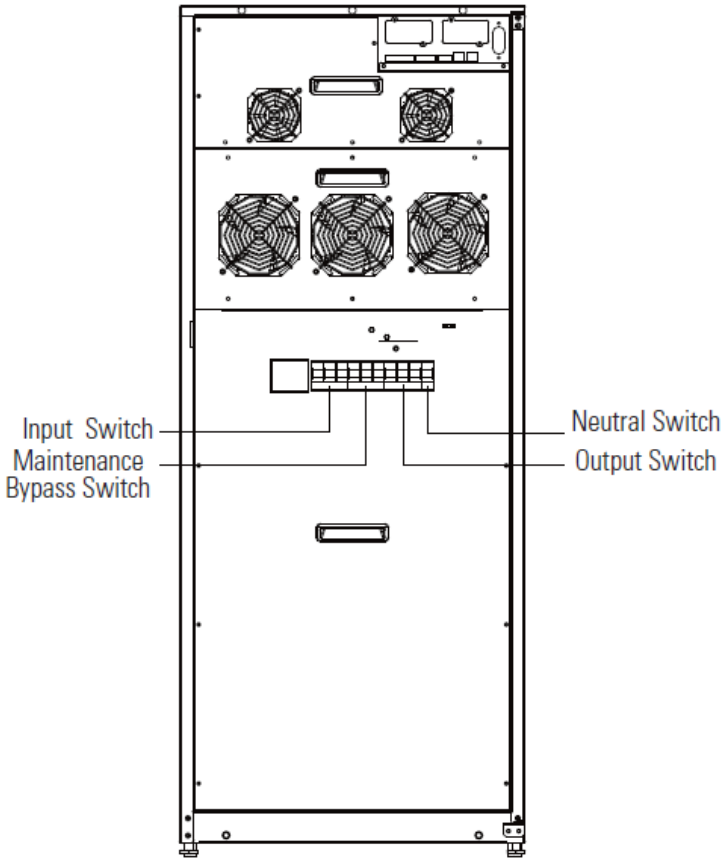
Note: Switches are "non-auto" circuit breakers

- Factory fitted option*
- 3 Switch operation
- UPS can be wired for dual or single input
- Enables full isolation of UPS electronics, only if wired for dual input
- No Inverter Interlock, user must transfer to static bypass first
- Mechanical safeguard prevents accidental switching
- Bypass Switch must be disabled or removed for Hot Sync operation

*standard in ANZ

Powering Business Worldwide

Internal MBS 93E 15-80kVA

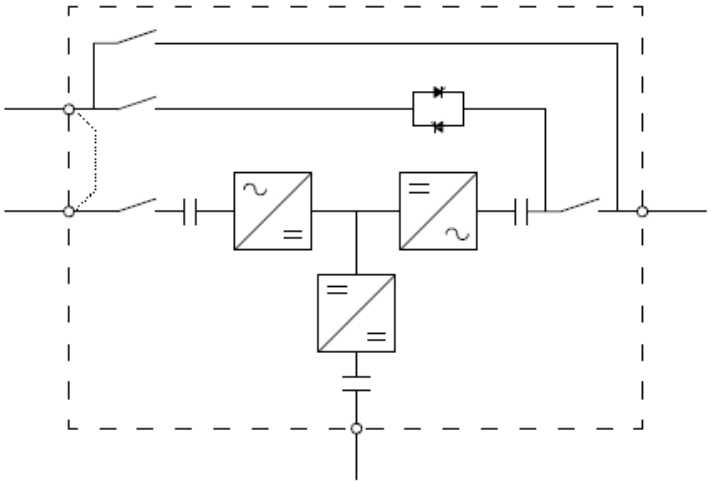


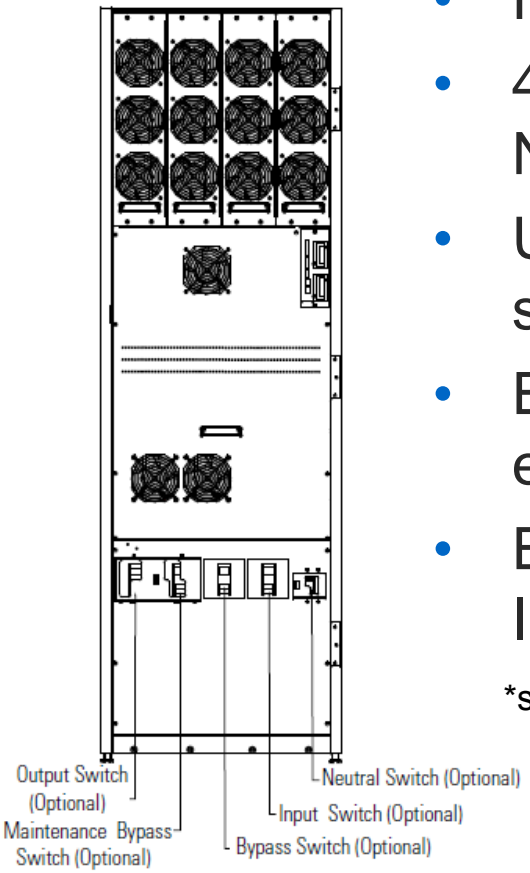
93E 15-40 kVA Single Input
(Example for 30 kVA)

- 3 Switch operation (plus Neutral Switch)
- Enables full isolation of UPS electronics
- Electro-mechanical Inverter Interlock (Sliding blocking bracket activates limit switch)
- Optional dual input

Internal MBS 93E 80-120kVA

80-120kVA Dual Input, optional Maintenance Bypass





- Factory fitted option*
- 4 Switch operation (plus Neutral Switch)
- UPS can be wired for dual or single input
- Enables full isolation of UPS electronics
- Electro-mechanical Inverter Interlock

*standard in ANZ

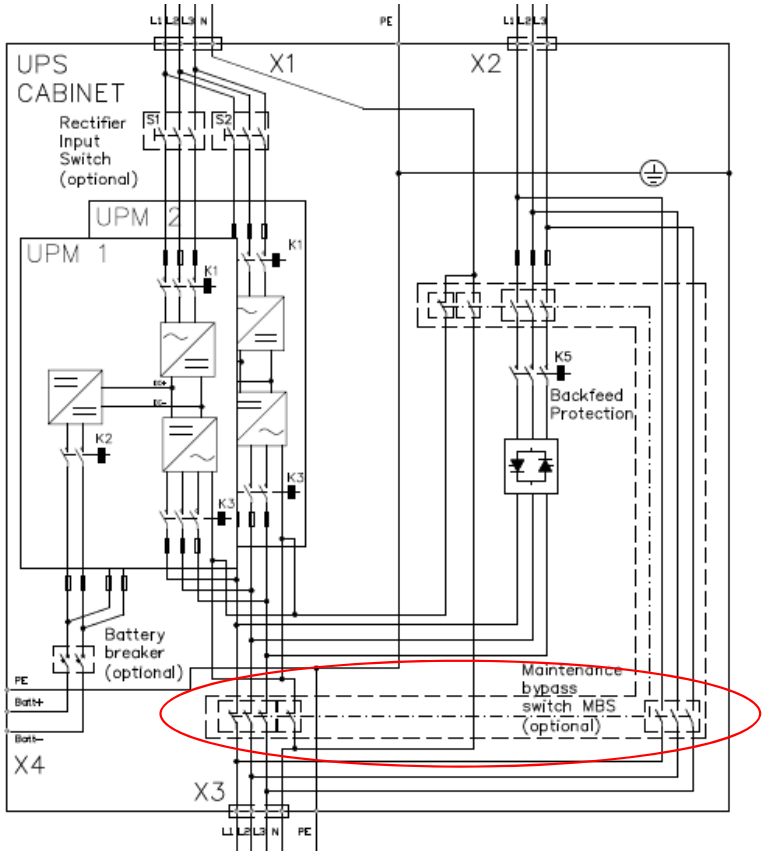
Powering Business Worldwide

Internal MBS 93PM 30-50kW

Picture shows cover plates removed

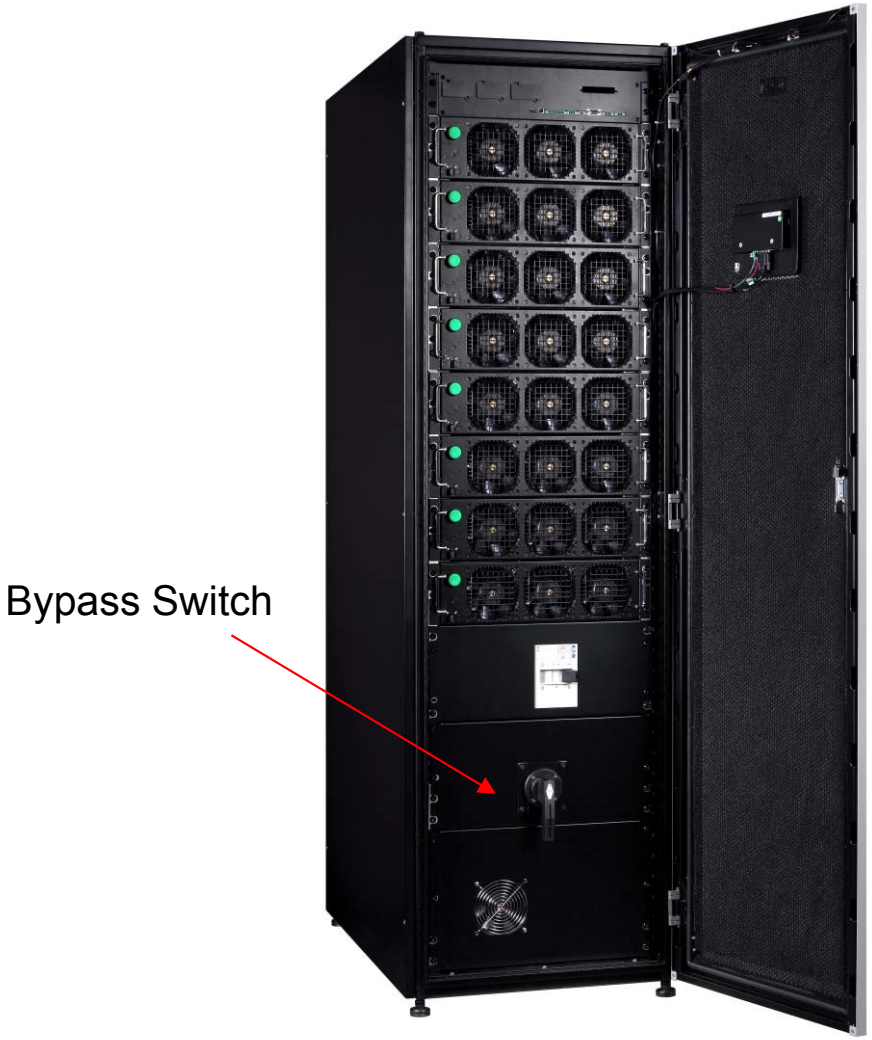
- Single rotary switch
- “Normal”, “Test” & “Bypass” positions
- Enables full isolation of UPS electronics
- Mechanical cover plate to prevent operation (must be removed with use of tools)
- UPS must be transferred to static bypass first (via control panel)

Internal MBS 93PM 80-150kW



- Single rotary switch
- “Normal”, “Test” & “Bypass” positions
- Enables full isolation of UPS electronics
- Mechanical cover plate to prevent operation (must be removed with use of tools)
- UPS must be transferred to static bypass first (via control panel)

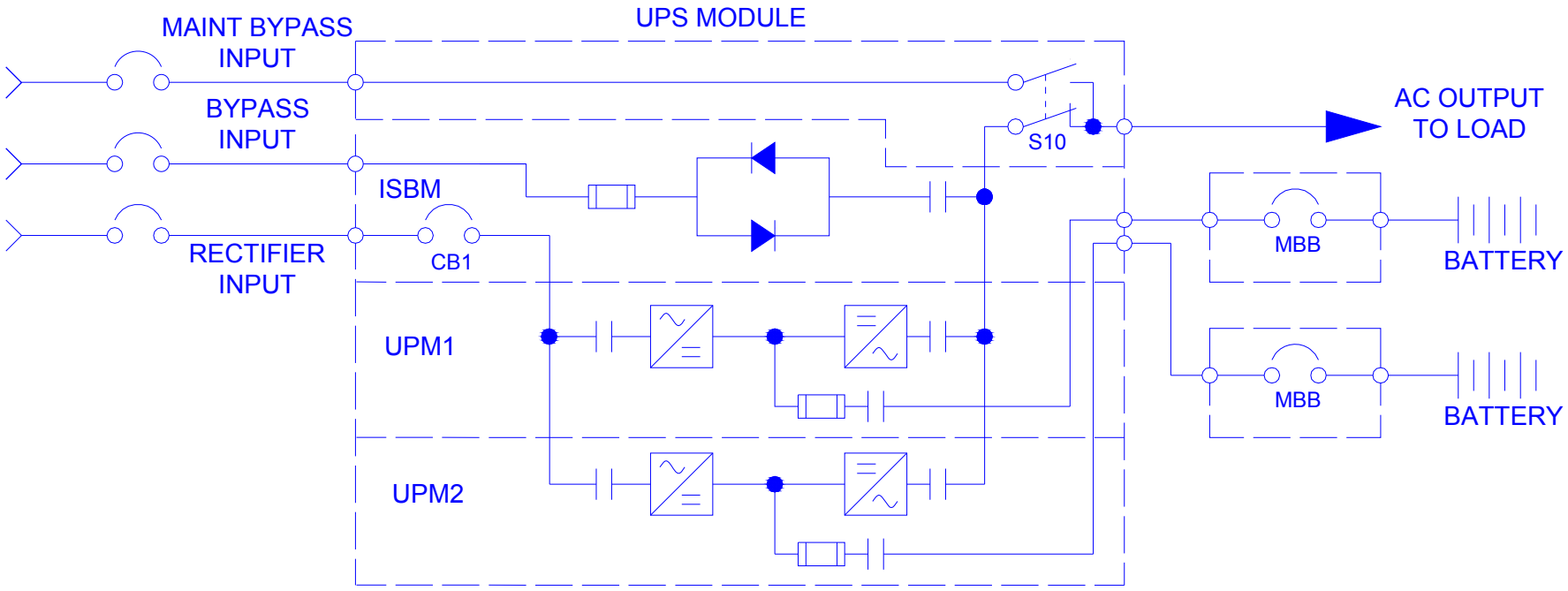
Internal MBS 93PR 200kW

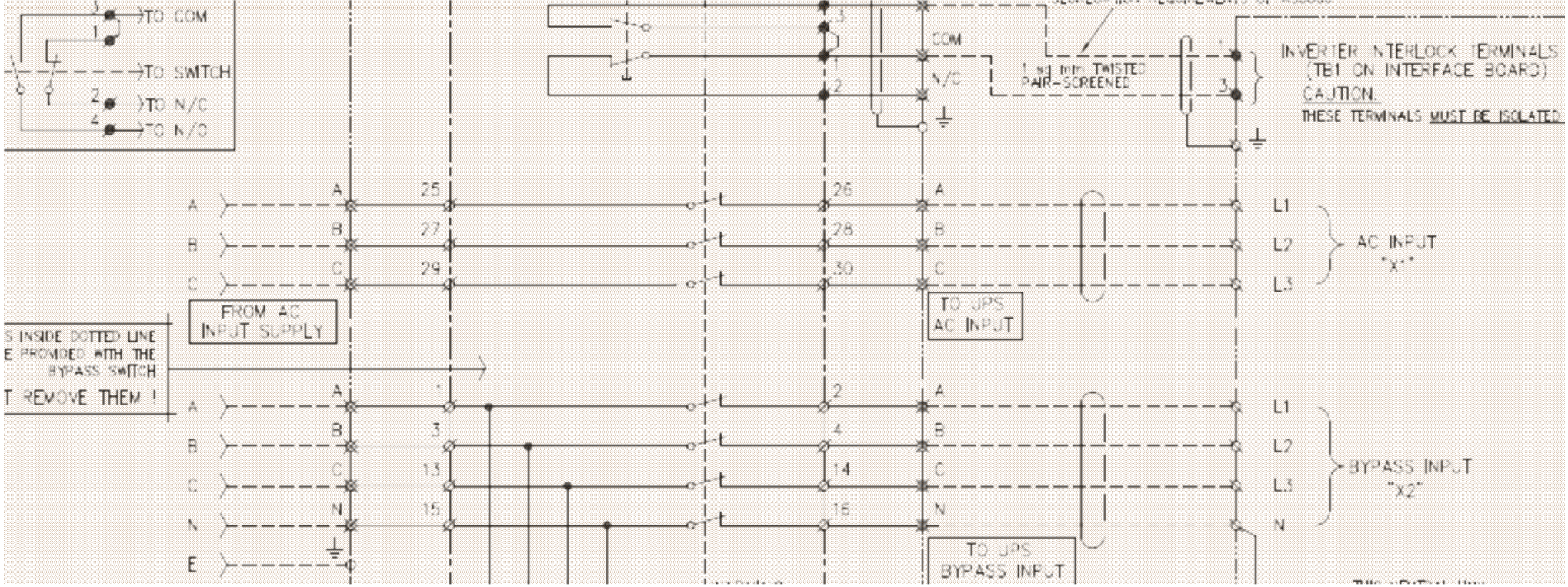


- Single rotary switch
- “Normal”, “Test” & “Bypass” positions
- Enables full isolation of UPS electronics
- Mechanical cover plate to prevent operation (must be removed with use of tools)
- UPS must be transferred to static bypass first (via control panel)

Optional Internal MBS – 9395 225-550kVA

- Single Switch operation
- Internal “Tail End” switch Enables full isolation of UPM
- Enables isolation of ISBM when UPS module has dual inputs
- Optional in:
  - 225/275/450/550kVA, except Hot Sync models
  - Factory fit only (Finland, not available on China models)

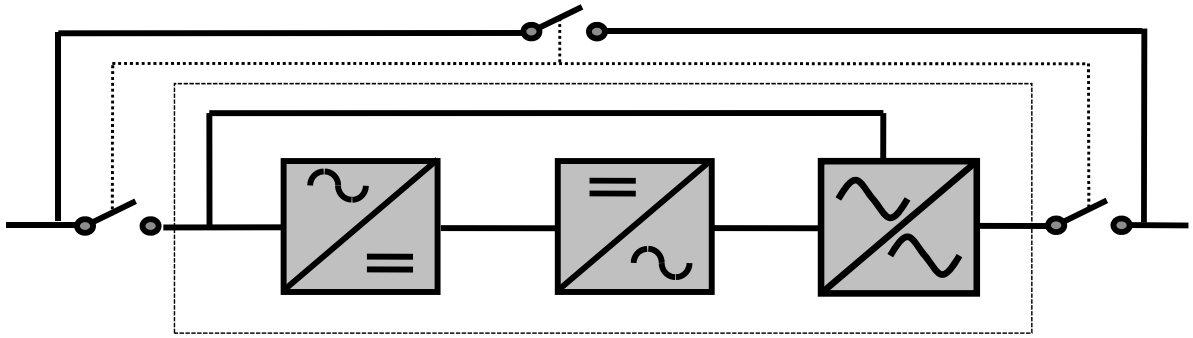




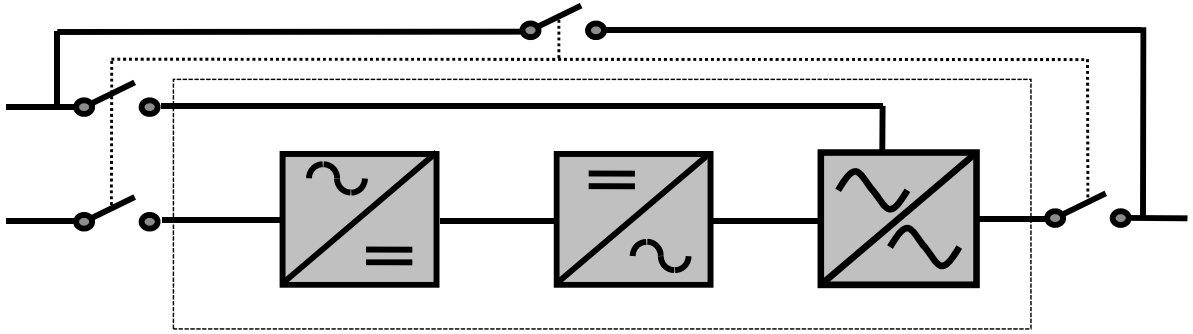
External Maintenance Bypass Switches

Powering Business Worldwide

“Wraparound” MBS – Single Switch



“Wraparound” Bypass – Single Input



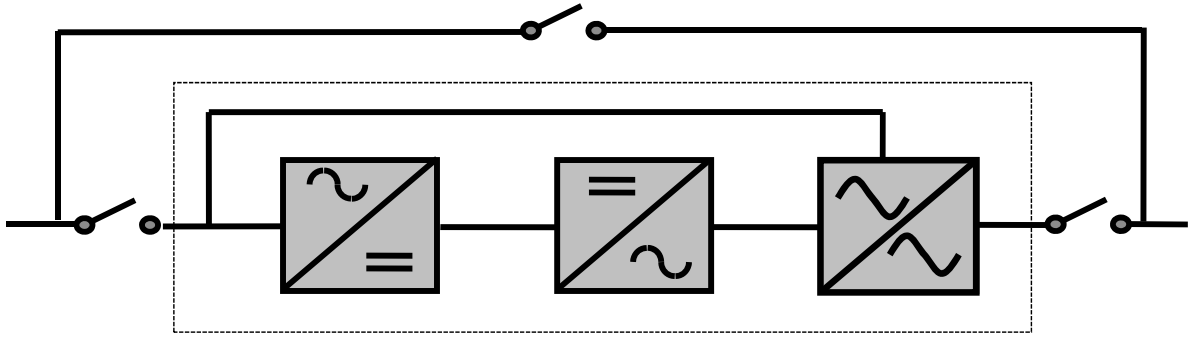
“Wraparound” Bypass – Dual Input

*9130 ≤3kVA, 9SX/9PX 5/6kVA & 9E not available with dual input

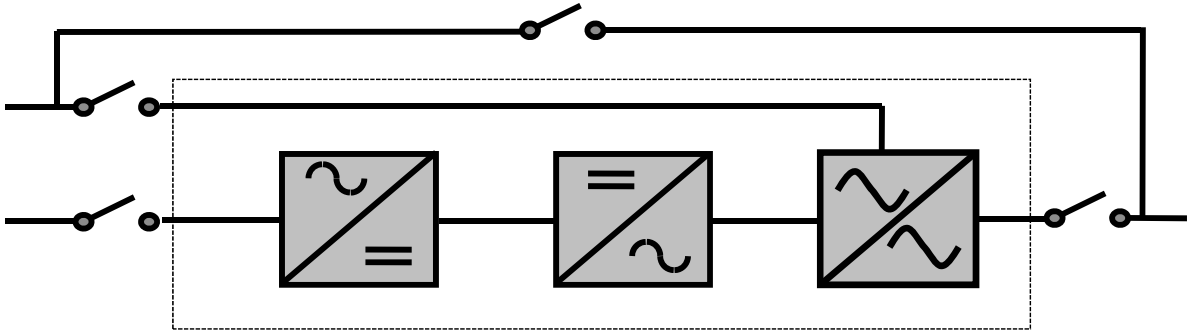
- Single switch, multi-position: prevents out of sequence operation
- Enables complete isolation of UPS
- Available for Single or Dual input UPS
- Available for:
  - 9130 all models*
  - 9170+*
  - 93E & 93PM up to 100kVA
  - 9X55 & 93PS all models
  - EDX 3Ph
- Inverter Interlock used on above models except 9SX/9PX, MX Frame & 9E

Powering Business Worldwide

“Wraparound” MBS – Multi Switch



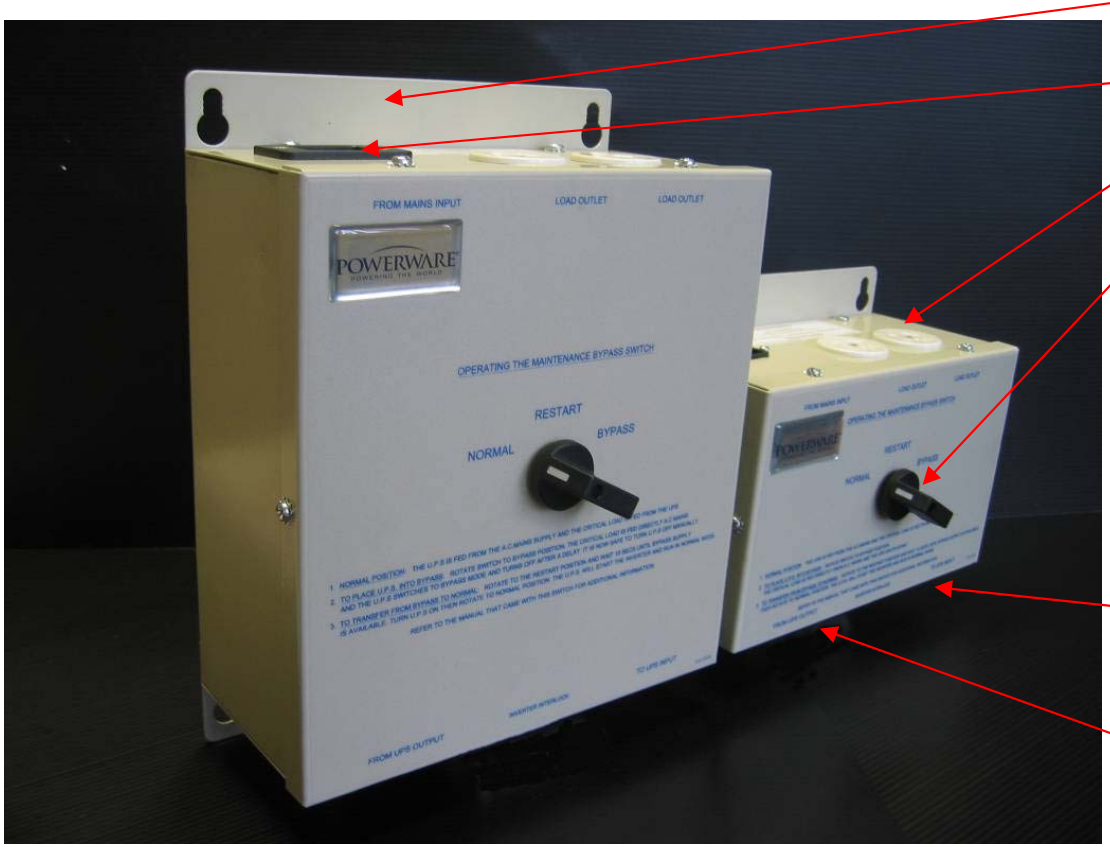
“Wraparound” Bypass – Single Input



“Wraparound” Bypass – Dual Input

- 3 or 4 separate switches
- Enables complete isolation of UPS
- Available for Single or Dual input UPS
- Custom made in enclosures or incorporated into customer switchboard
- Can be designed with or without interlocks

ANZ 9130 Soft Wired Wraparound MBS

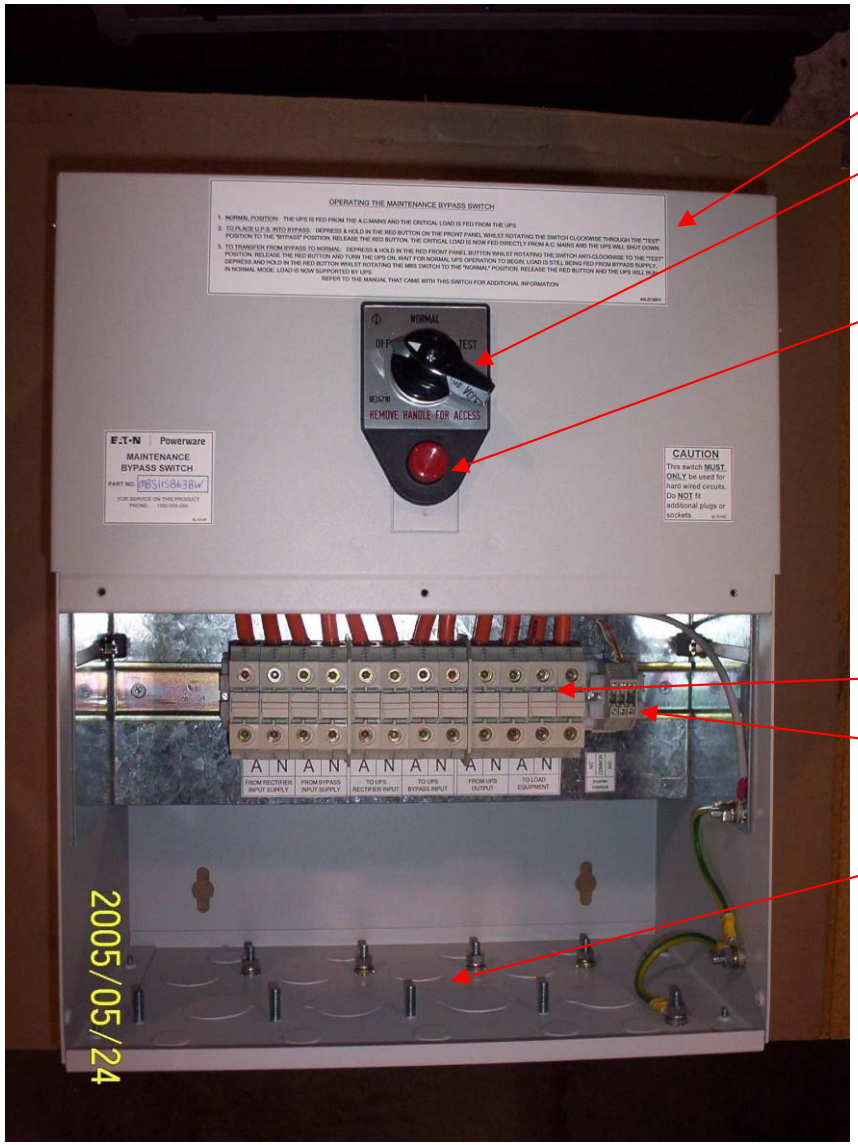


3kVA Model 2kVA Model

Note: Colour changed to Black

- Metal Enclosure
- IEC Input Connector
- 2 x AUST Outputs
- Rotary Switch
  - Normal, Restart, Bypass
- IEC Male & Female connectors for UPS Connections
- Inverter Interlock terminals
- “Restart” position activates interlock
  - (AU models of 9130 have EPO port configured as “Force to Bypass” input)

ANZ EDX 3Ph, 9X55, 9E & 9390 Wraparound MBS



- Metal Cabinet
- Single switch
  - Off, Normal, Test, Bypass
- Electro-Mechanical Interlock: button or key.
  - (Pressing button or turning key activates auxiliary contact which is used to transfer UPS to static bypass)
- Prewired Power Terminals
- Interlock terminals
- Bottom cable entry
- Operating instructions provided on cover
- **Note: Now painted Black!**

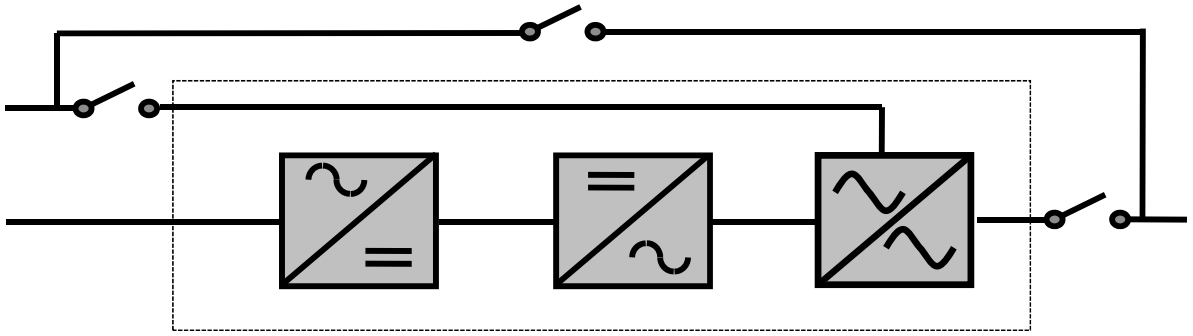
ANZ Wraparound MBS

- Press Button to release switch (Standard)

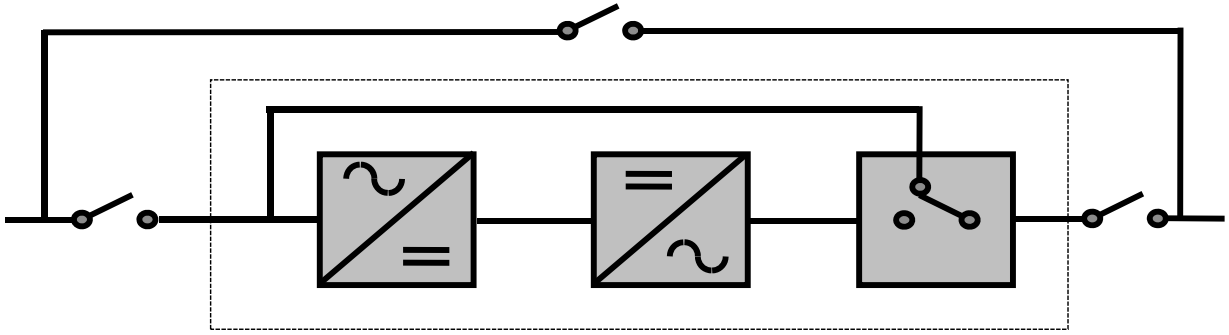
- Optional Padlock facility (“PL” suffix)

- Optional Key Switch Interlock (“KL” suffix)

“Basic” MBS (9X55 8-15kVA)



“Basic” Bypass separate inputs



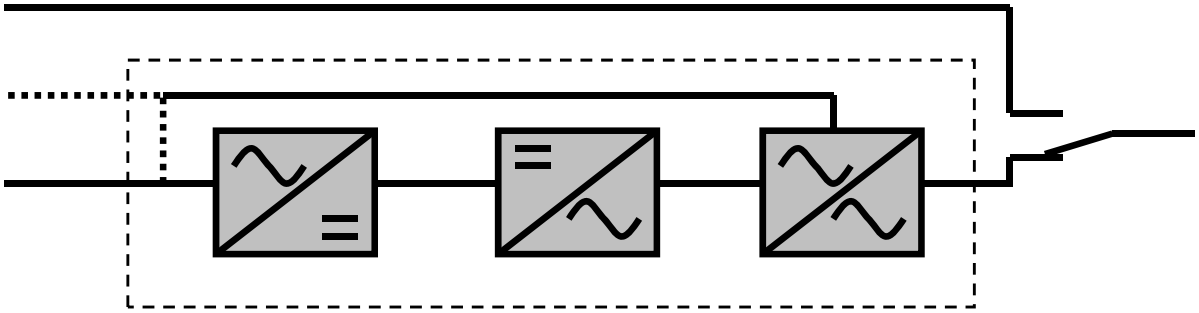
“Basic” Bypass single input

9155MBS15kVA (same unit that is fitted to rear of UPS in “-MBS” models. Wall-mountable)

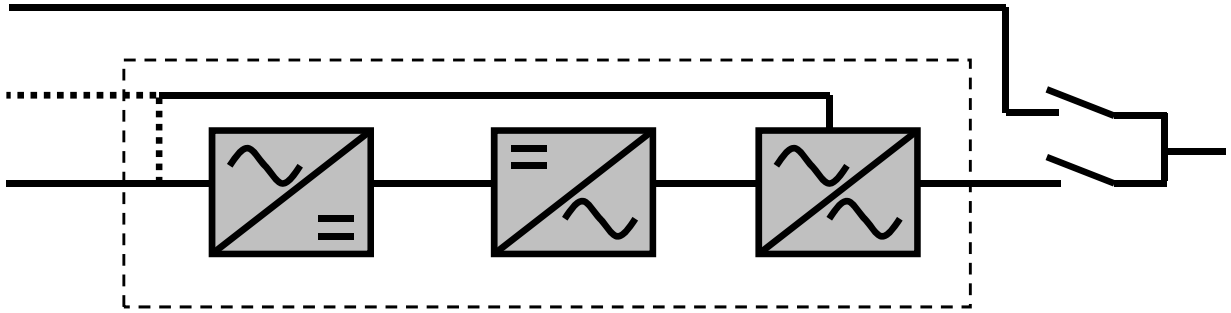
- Enables complete isolation of UPS
- UPS must be wired for dual input
- Available for:
  - 9155 8-15kVA models
  - 9355 8-15kVA
  - EDX 1/1Ph 6-10kVA
- 9155 version is same for either 1 or 3 phase rectifier
- No Inverter Interlock
- Mechanical safeguard to prevent accidental switching

Powering Business Worldwide

“Tail End” MBS



“Single Switch Tail End” Bypass

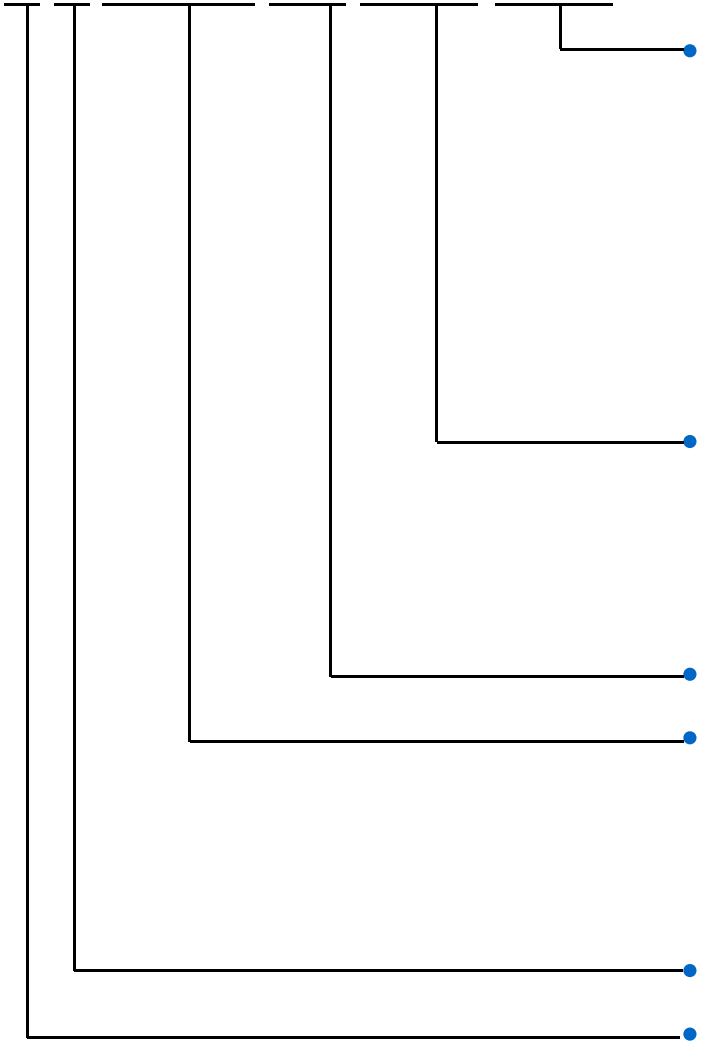


“Two switch Tail End” Bypass

- Enables complete isolation of UPS
- Requires separate source from switchboard
- No need to run cables to and from MBS and UPS
- Single switch on Australian versions
- Two switches on Finland versions
- Lower cost than wraparound

ANZ MBS Nomenclature

MBS31NSB40BWKL



- Suffix:
  - KL = Key Lock (in place of pushbutton)
  - PL = Padlockable handle
  - NI = No Interlock
  - AUX = Auxiliary contacts on all positions
  - Combinations: KLAUX, PLAUX, KLPL, KLPLAUX etc.
- Cable Entry:
  - BW = Bottom Wired
  - TW = Top Wired
  - TB = Top & Bottom Wired
- Amp Rating
- Configuration:
  - NSB = Single input, wraparound
  - SB = Dual input, wraparound
  - TE = Tail End
- Output Phase: 1 = 1Ph, 3 = 3Ph
- Rectifier Input Phase:
  - 3 = 3Ph, 1 = 1Ph, X = 3 or 1 Ph


Powering Business Worldwide