

BUSHING MONITOR INSTALLATION GUIDE

Condition Monitoring System



DOBLE ENGINEERING COMPANY

Doble Engineering Company Worldwide Headquarters
tel +1 617 926 4900
fax +1 617 926 0528
www.doble.com

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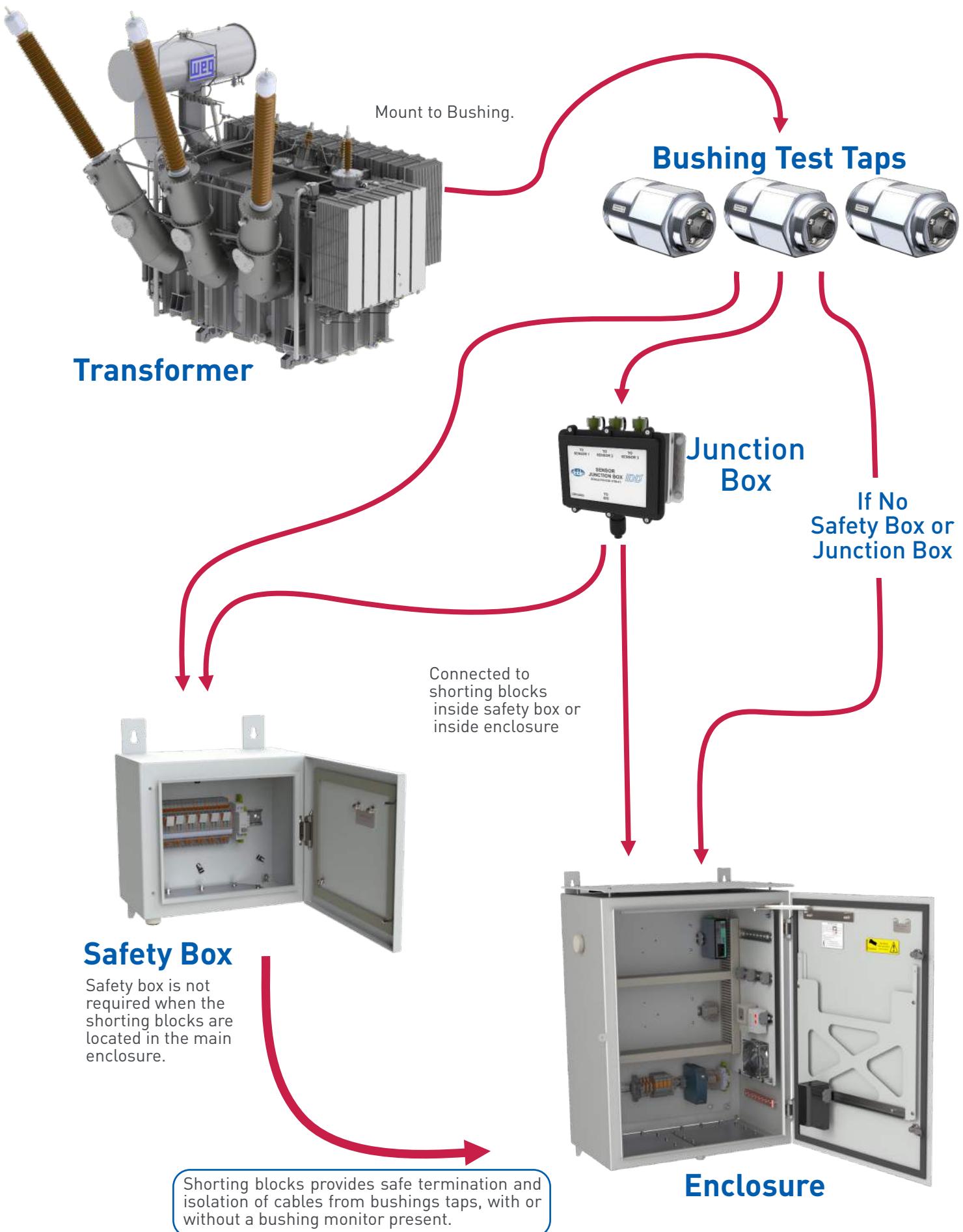
Step 1

Mount Enclosure and Safety Box

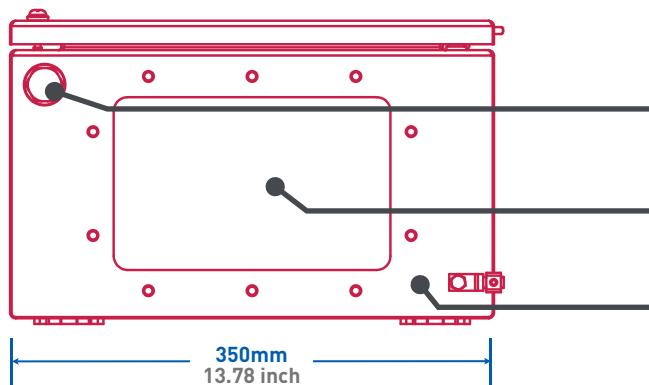
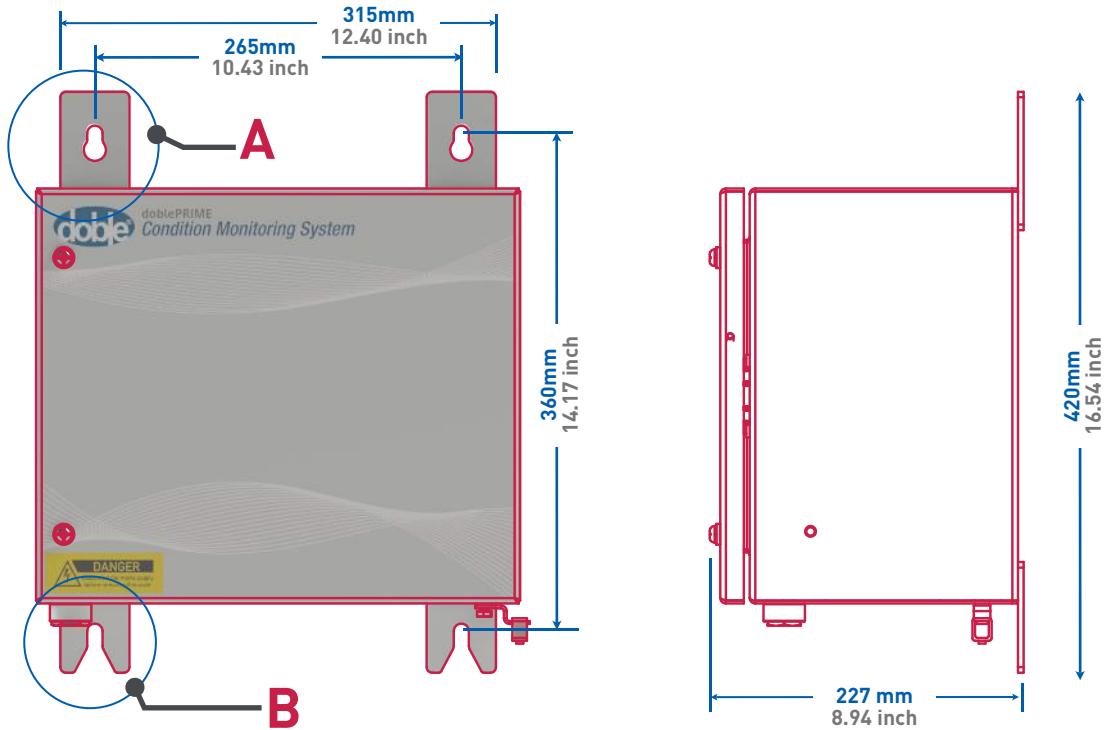
- Mount the doblePRIME Enclosure and the Safety Box (if required) close or near to the transformer.
- The location is restricted by the length of the bushing cable which has been ordered for the installation. If possible, accessible when the transformer is energized
- There are three different sizes of enclosures available
 - 100 size
 - 200 size
 - 300 size
- Mounting hardware (nuts, washers, bolts) are not supplied with any enclosure



Bushing Cable Connections



Safety Box



M20 Drain Plug -IP66 rated

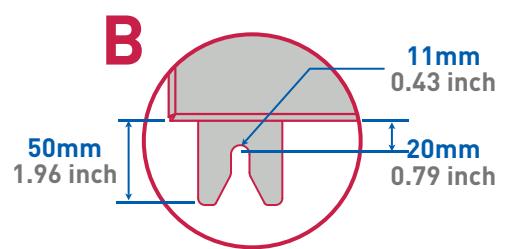
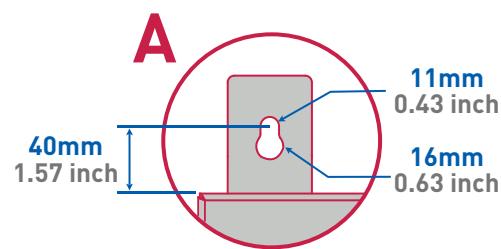
1 x Removable Gland Plates:
3mm aluminium gland plate

Ground/Earth external connection
Wire Range
#8 (3.2mm) to #2 (6.5mm) dia.

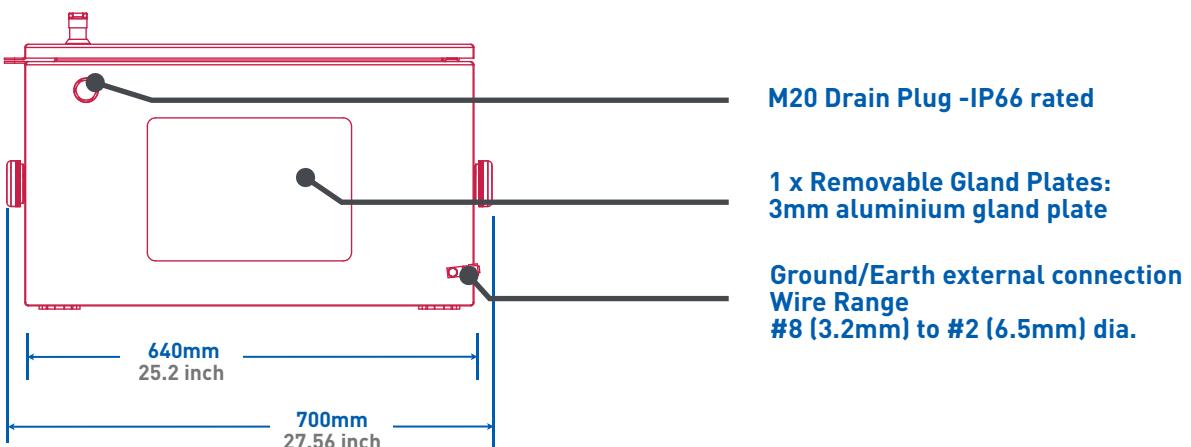
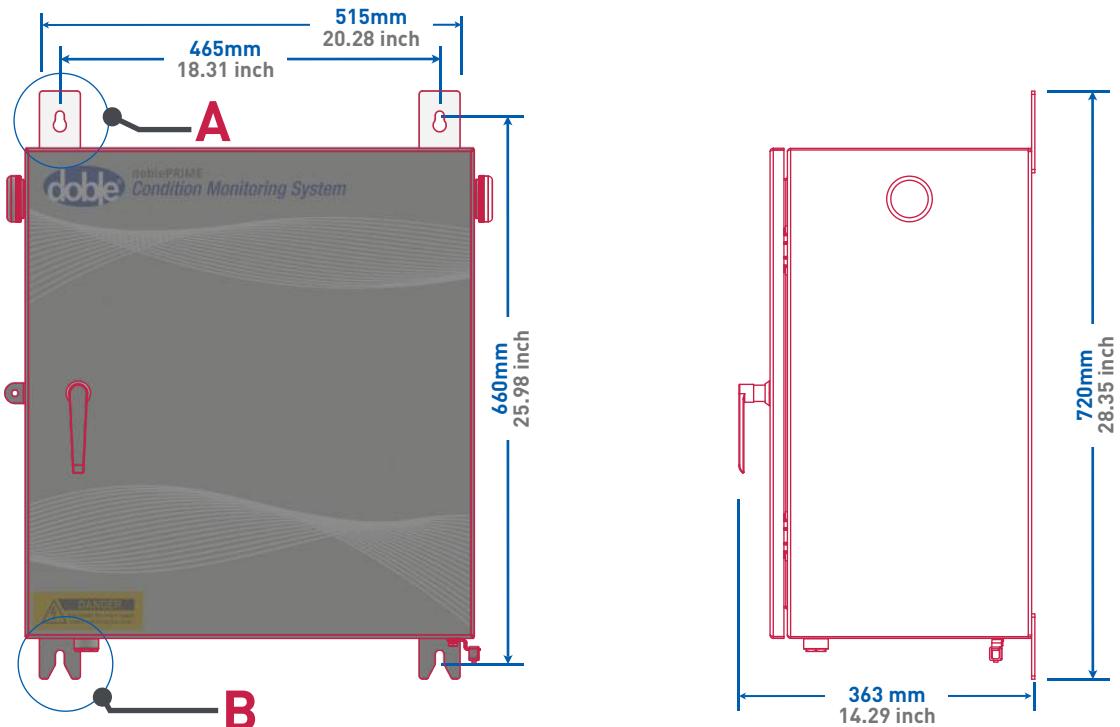


**12KG
26LBS**

PRODUCT WEIGHT
Assuming enclosures is fully populated



100 size enclosure

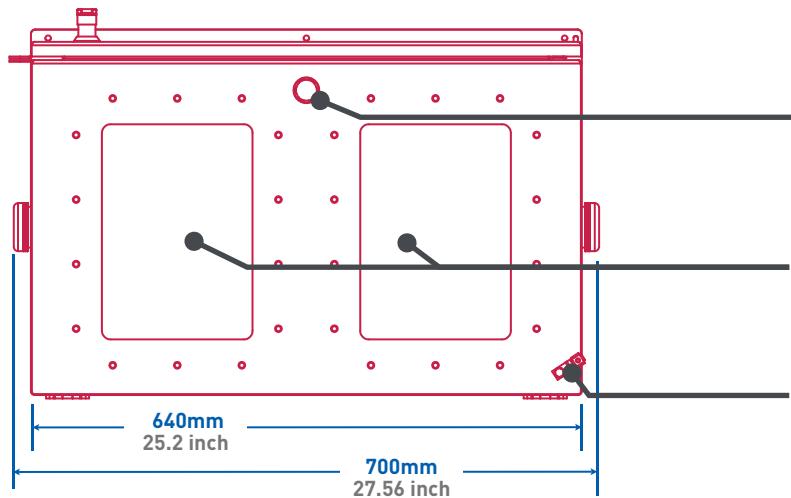
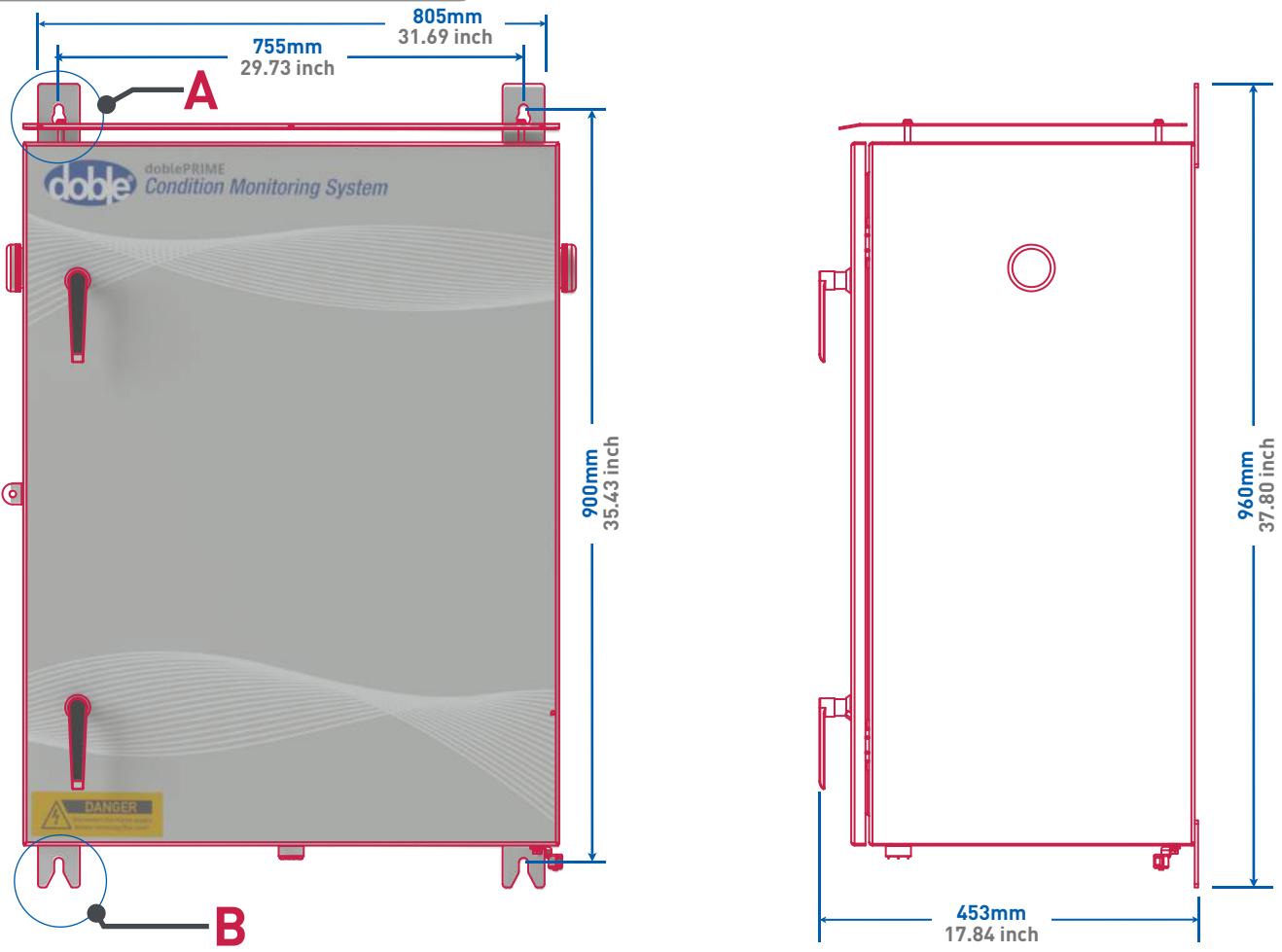


PRODUCT WEIGHT
Assuming enclosures is fully populated

37KG
82LBS



200 size enclosure

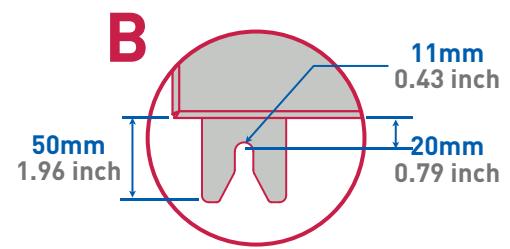
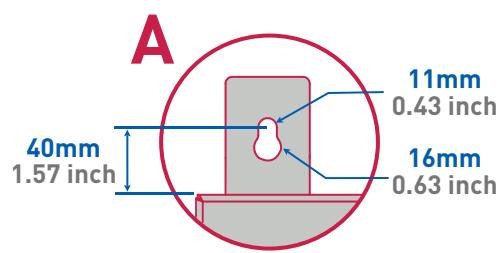


M20 Drain Plug -IP66 rated

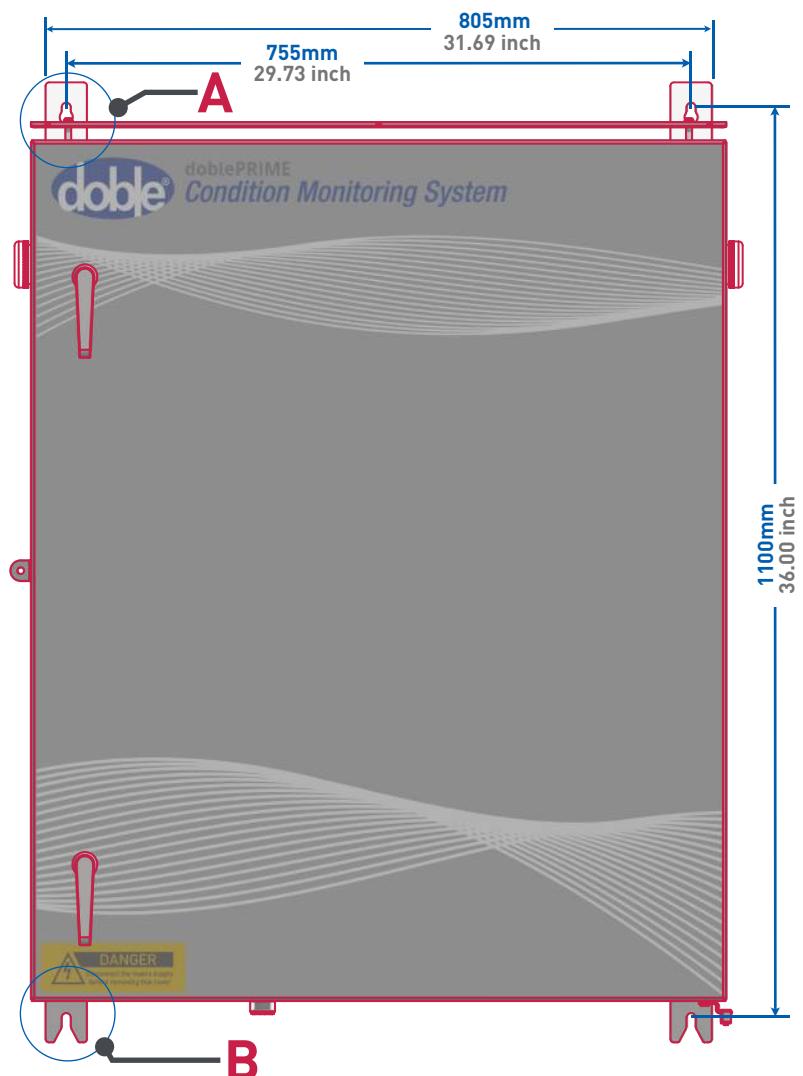
2 x Removable Gland Plates:
3mm aluminium gland plate

Ground/Earth external connection
Wire Range
#8 (3.2mm) to #2 (6.5mm) dia.

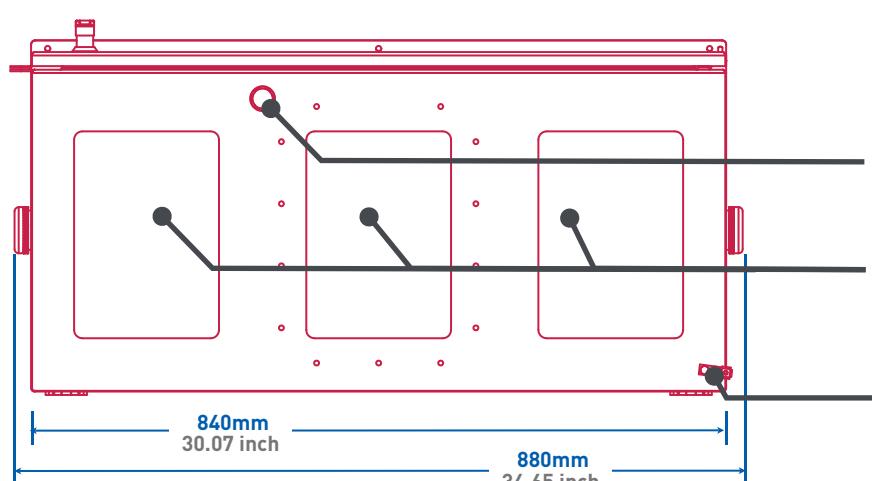
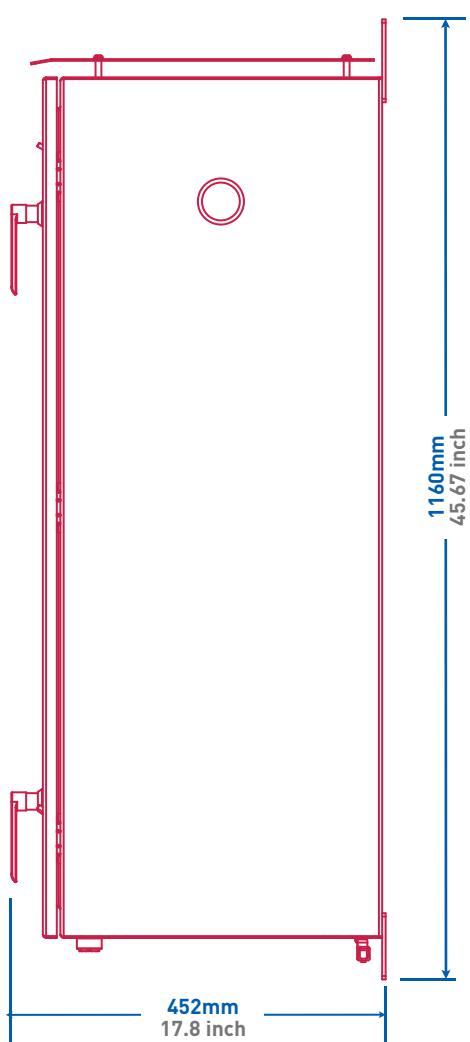
**85KG
188LBS**
PRODUCT WEIGHT
Assuming enclosures is fully populated



300 size enclosure



316 Stainless Steel Enclosure with painted finish

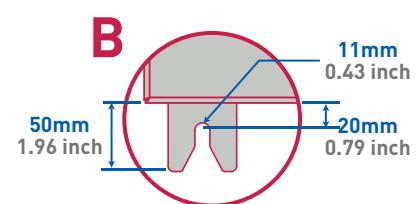
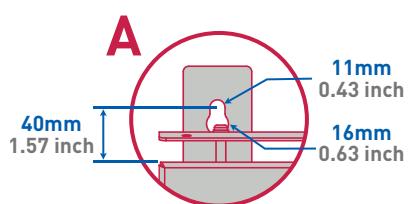


M20 Drain Plug -IP66 rated

**3 x Removable Gland Plates:
3mm aluminium gland plate**

**Ground/Earth external connection
Wire Range
#8 (3.2mm) to #2 (6.5mm) dia.**

**120KG
265LBS**
Assuming enclosures is fully populated



Step 2

Mount Enclosure and Safety Box

■ Make holes in baseplate for cable glands

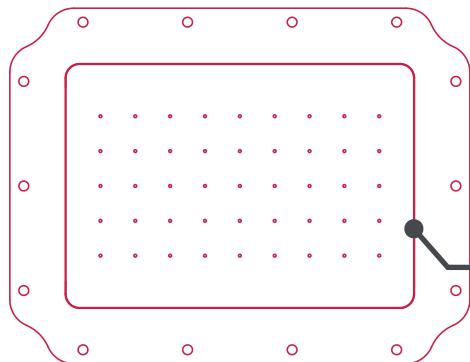
- Bushing sensor cables
- Reference Voltage(s) (if used)
- Power
- Comms/relays/Light tower

■ Connect:

- Connect enclosure ground lug to the to the transformer tank ground or the station ground.
- Power
- Comms/relays/Light tower

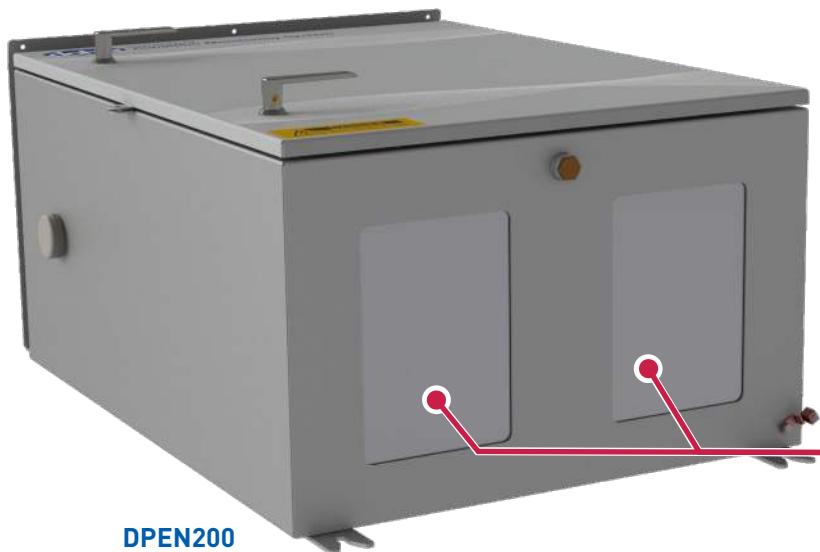


Gland Plate Kits available



Any holes made in gland plates must fall within boundary mark to maintain IP rating

Boundary mark



Removable Gland Plates:
located on bottom of units

DPEN200

Step 3

Make holes in Safety Box baseplate

- If the Safety Box is present then make holes in baseplate for cable glands
 - Bushing sensor cables
 - Power



Step 4

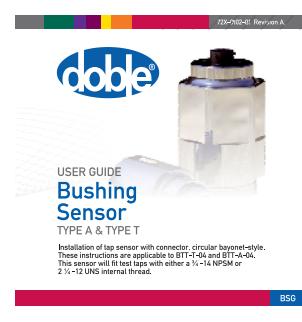
Bushing Test Taps

- Check for obstructions
- Remove tap cover
- Check for oil/grease/dirt and clean if necessary
- Check tap is ungrounded with multimeter (resistance)
- Measure C1 (if possible) and C2 with multimeter (capacitance)

Step 5

Install Bushing Test Taps

- Refer to Bushing Sensor Type A and T User Guide 72X-0102-01 For information about bushing sensor installation



Step 6

Lay the Sensor Cables

- The new bushing sensor cables can be installed by laying them in the cable tray or pulling them through conduits.
- Route the cables from the Bushing Test Taps to the Safety Box.
- If there is no Safety Box, route the cables directly to the enclosure.

Step 7

Connection the Safety box to the Enclosure

- The Safety Box is not for installations where the shorting blocks are fitted in the enclosure.
- If the Safety Box is required, then route the bushing sensor cables to it first. After that, route the bushing sensor cables from the Safety Box to the enclosure.
- Refer to Safety Box Quick Guide 72X-0151-01 for information about installation of the Safety Box and cable connection



Step 8

Test the cable continuity

- Test the cable continuity and connection from the Bushing Test Taps to the Bushing Set connector using the test kit, per installation checklist.
- Refer to Bushing Test Box User Guide 72X-0113-01 For information about BTA and cable testing



Step 9

Voltage References - TPF

- Cabling from CCVT(s) only need to be wired into the enclosure if an IDD101 or Calisto T1 is present and True Power Factor measurement is required.
- There is a specific set of fused terminals for the voltage inputs in the enclosure.

Step 10

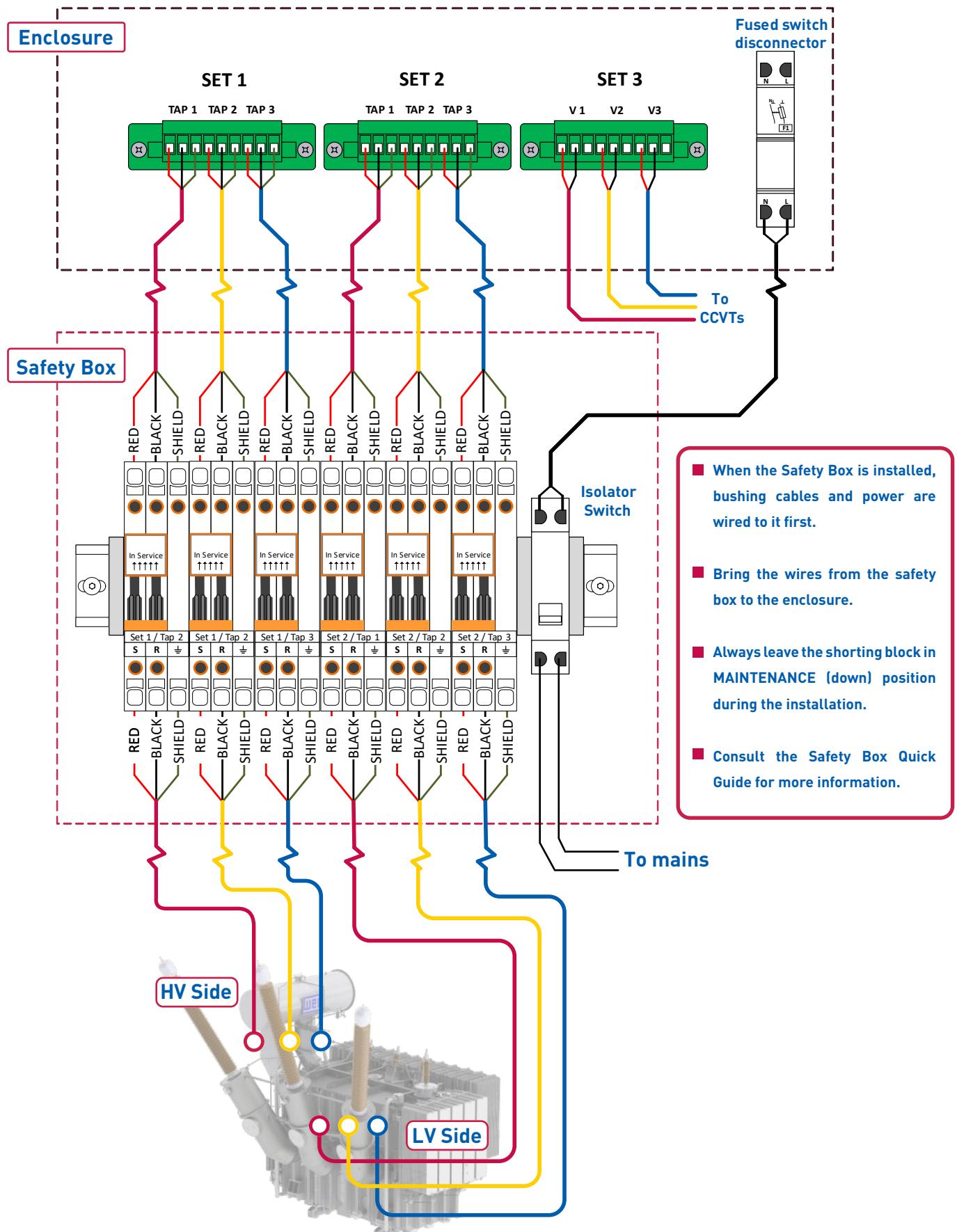
Commissioning

- You are ready for commissioning the system after all cables are installed and tested.
- Check if the mains voltage is correct and then power up the enclosure.
- Refer to the Quick Guide according to the monitor fitted in the enclosure for information about the device and setting up the communication.
 - doblePRIME IDD Quick Guide 72X-0059-01
 - doblePRIME PD Guard Quick Guide 72X-0110-01
 - Calisto T1 Quick Guide 75A-0321-01

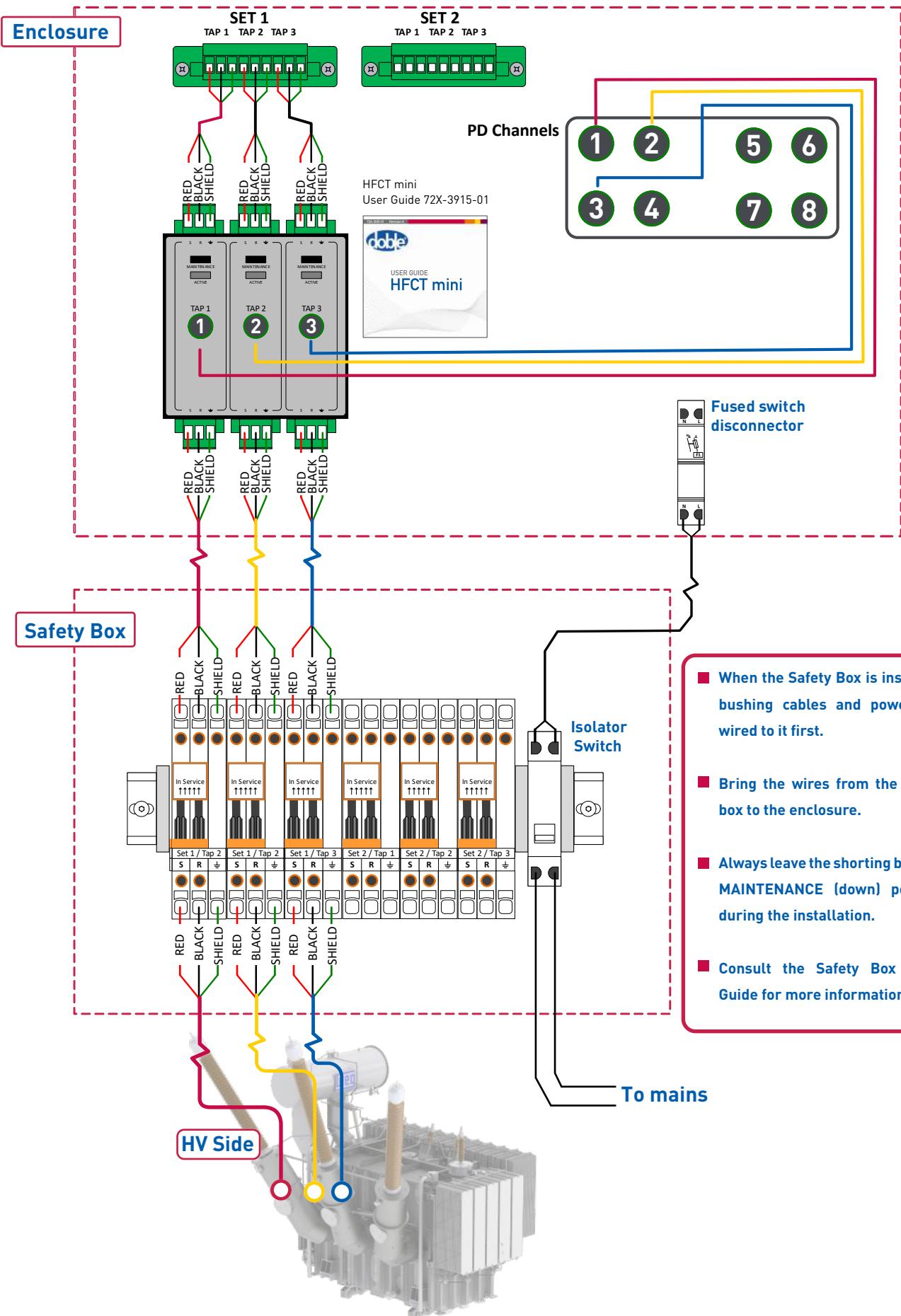


Bushing Wiring Example:

Monitoring 2 Bushing Sets and Voltage References for TPF

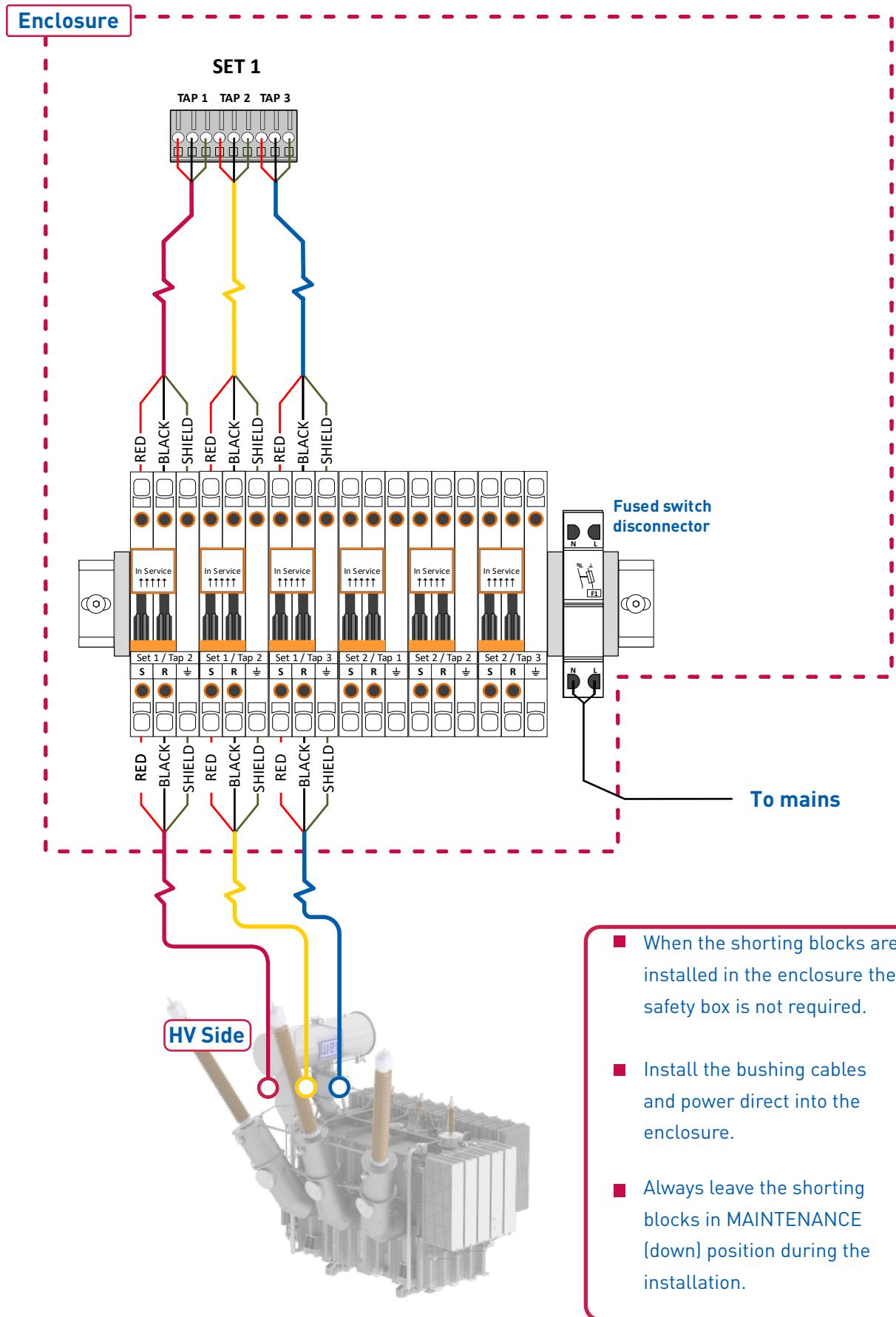


Bushing Wiring Example: Monitoring 1 Bushing Set & PD Measurements

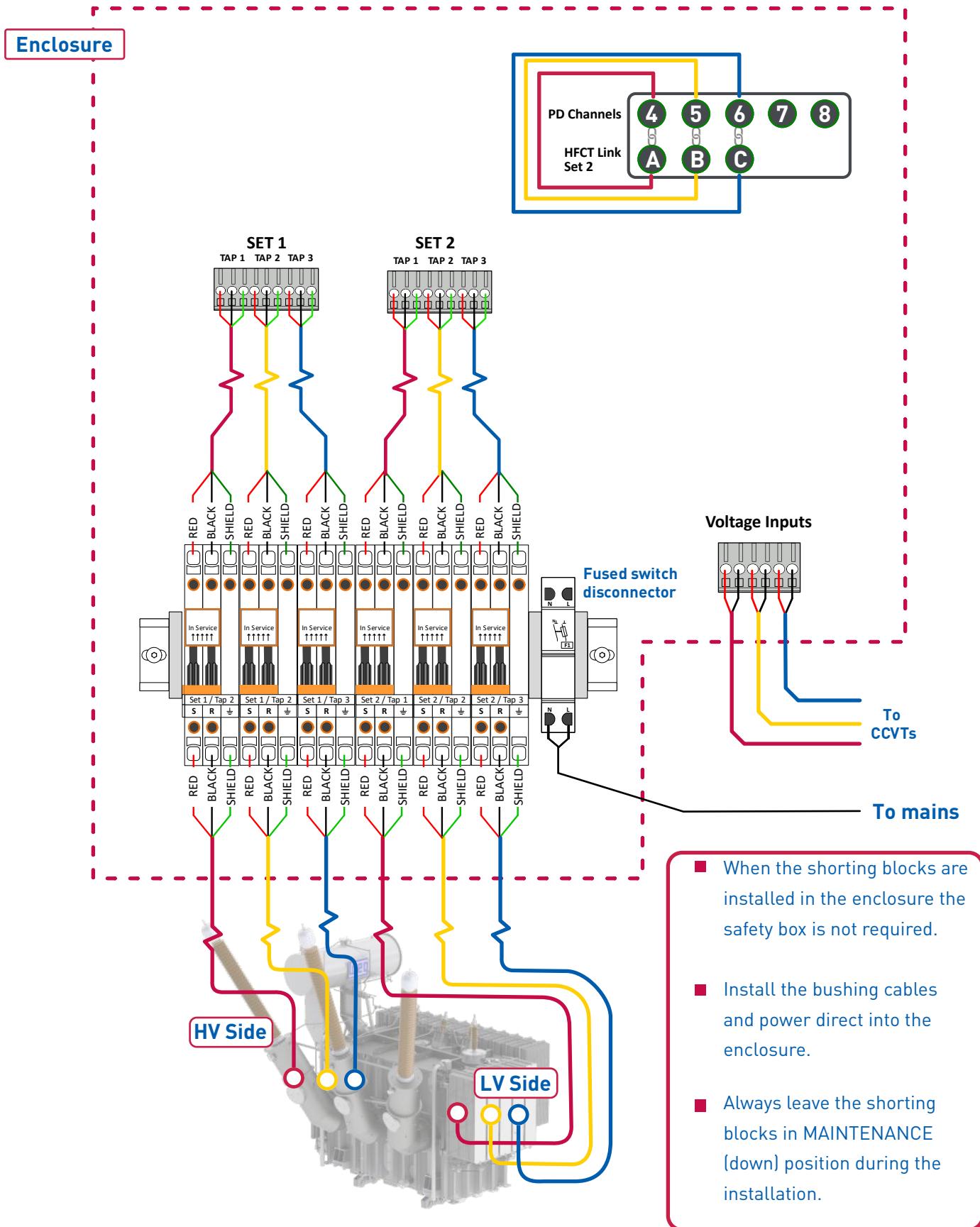


Bushing Wiring Example:

Monitoring 1 Bushing Set, typical Calisto T1 configuration



Bushing Wiring Example:
Monitoring 2 Bushing Set, PD Measurements
and Voltage References for TPF
typical Calisto T1 configuration



Spare Parts



030-2261-01
Nylon Door Stay kit



030-2290-01
Drain Plug



030-2416-01
Handle



030-2291-01
Cable Management



030-2287-01
Earth/Ground Tag



030-2415-01
Ground/Earth Bar



030-2286-01
**Safety Box,
Gland Plate**



030-2414-01
**Enclosure,
Gland Plate**

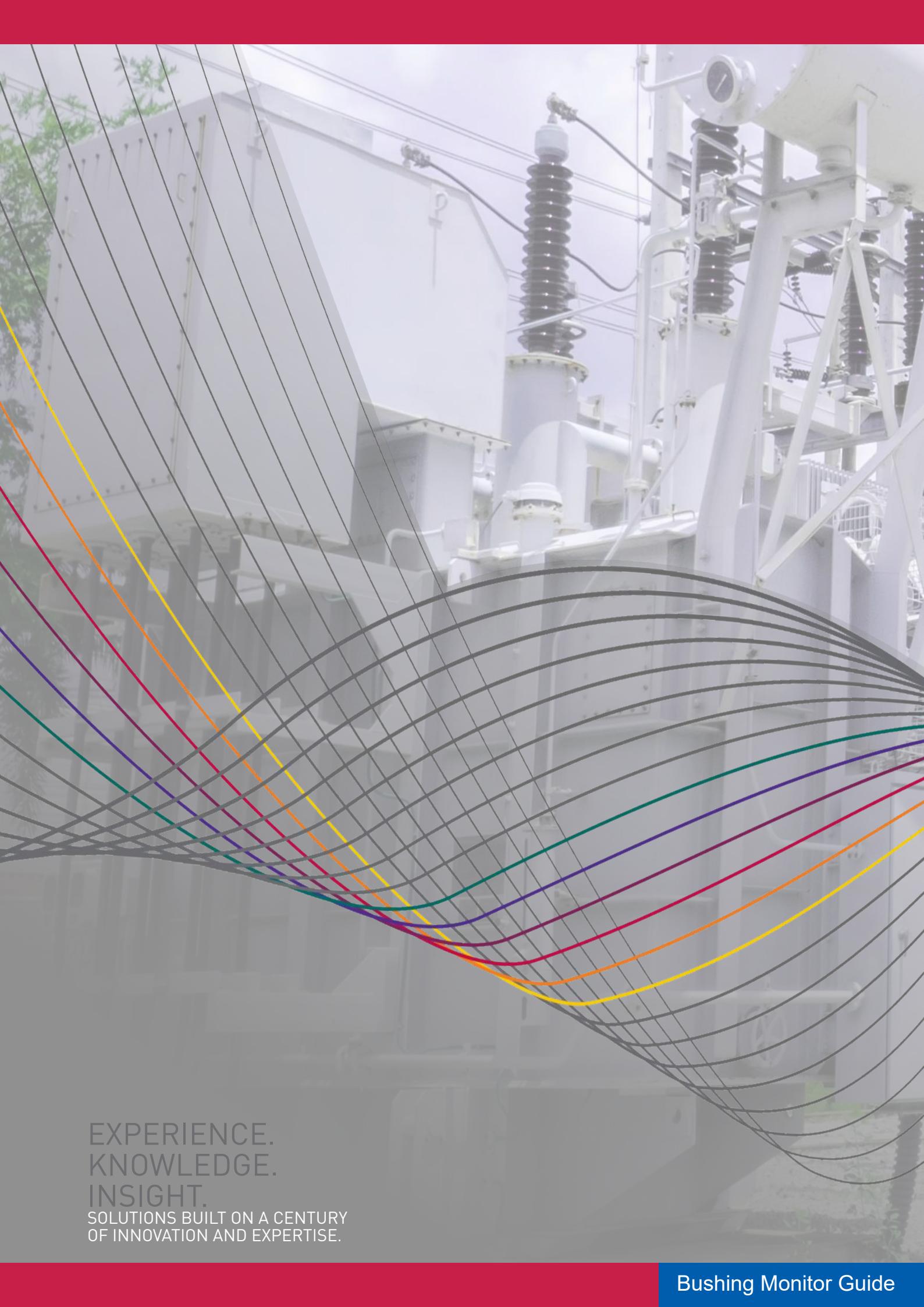


384-0281
Fuse 5x20 3.15A

384-0282
Fuse 10x38 10A



Doble Engineering Company Worldwide Headquarters
tel +1 617 926 4900
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Bushing Monitor Guide