

IBAR HXA RANGE CATALOGUE



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WE ARE ANORD MARDIX.

From small beginnings, this family-founded business has grown into a global market leader with sites throughout EMEA, USA and APAC, offering critical power solutions to some of the most prestigious clients around the world.

Supplying a range of industries from financial institutions to data centres, our global team operates with one thing in mind; supplying our clients with **comprehensive engineering excellence** across our products and services.

In 2021, Anord Mardix became part of the Flex Industrial business unit, a \$24 billion diversified manufacturer with more than 160,000 employees worldwide.

Moving into 2023, Anord Mardix is leveraging a global supply chain and distribution network and expanding its global reach as a result.

The foundation of Anord Mardix is simple. We're built on good, solid engineering, and we have not only the processes in place, but the people, who can turn the concept of engineering excellence into a reality.

BUSBAR TRUNKING SYSTEMS

The IBAR range of power distribution busbar trunking system products has been developed to meet the growing demands of the critical power industry. Our highly skilled engineering teams and application engineers can tailor a solution to meet even the most demanding of requirements. Each system employs innovative designs which improve performance and reduce costs. From small scale to multi million pound projects - IBAR is the ideal choice.

IBAR HX is a range of high power busbar trunking systems. HX utilises a sandwich arrangement of individually insulated Copper (HXC) or Aluminium (HXA) busbars (using a specialist epoxy resin coating) which are contained within a unique two piece, IP55 rated, Aluminium trunking/housing.

All IBAR product is manufactured within the UK to the latest British Standards (BS EN 61439-6).

Feeder Busbar

There are many applications which require the ability to move large amounts of power. The most common of which is the feeding of power between transformers and low voltage switchboards and then further subdistribution. IBAR's HX range provides a high-power feeder busbar solution with busbar ratings ranging from 800A up to 6300A.

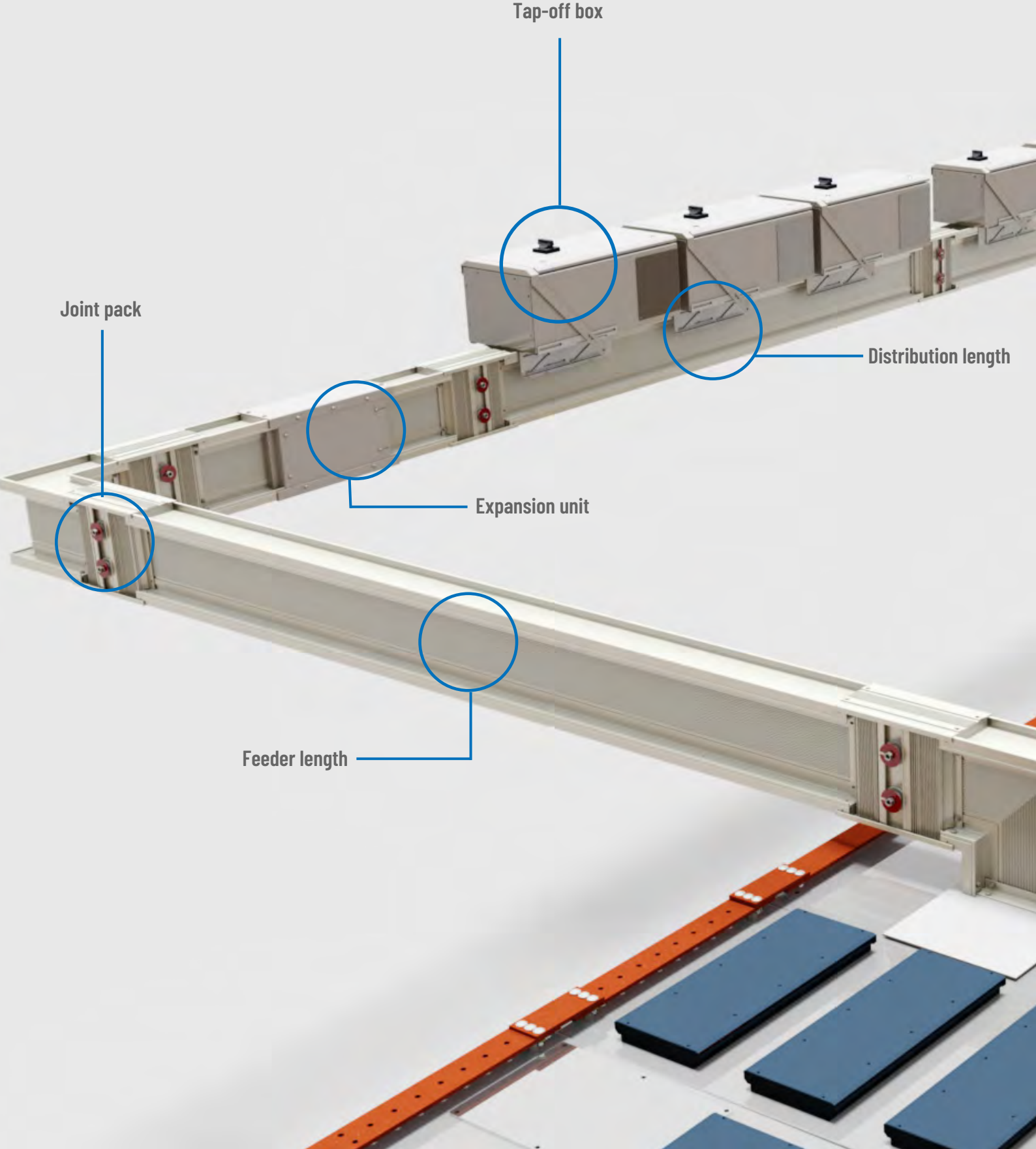
Each rating type can be supplied with between 3 and 6 conductive bars arranged in a sandwich type construction and insulated with a specialist epoxy resin coating. Configurations are available for 3-phase, 3-phase and neutral protected earth (for loads susceptible to harmonic distortion/leakage currents) and optional double rated neutral.

Distribution Busbar

Busbar trunking systems are favoured greatly over traditional fixed position cable installations due to the flexibility of the available tap-off locations.

The standard straight 3m lengths can be fitted with up to five specially engineered tap-off points at standard or custom locations. Each tap-off location features high integrity weld-bonded connection tabs.

This high-quality, high-conductivity connection means that on copper conductor systems only a single tap-off location is required for tap-offs of up to 630A.



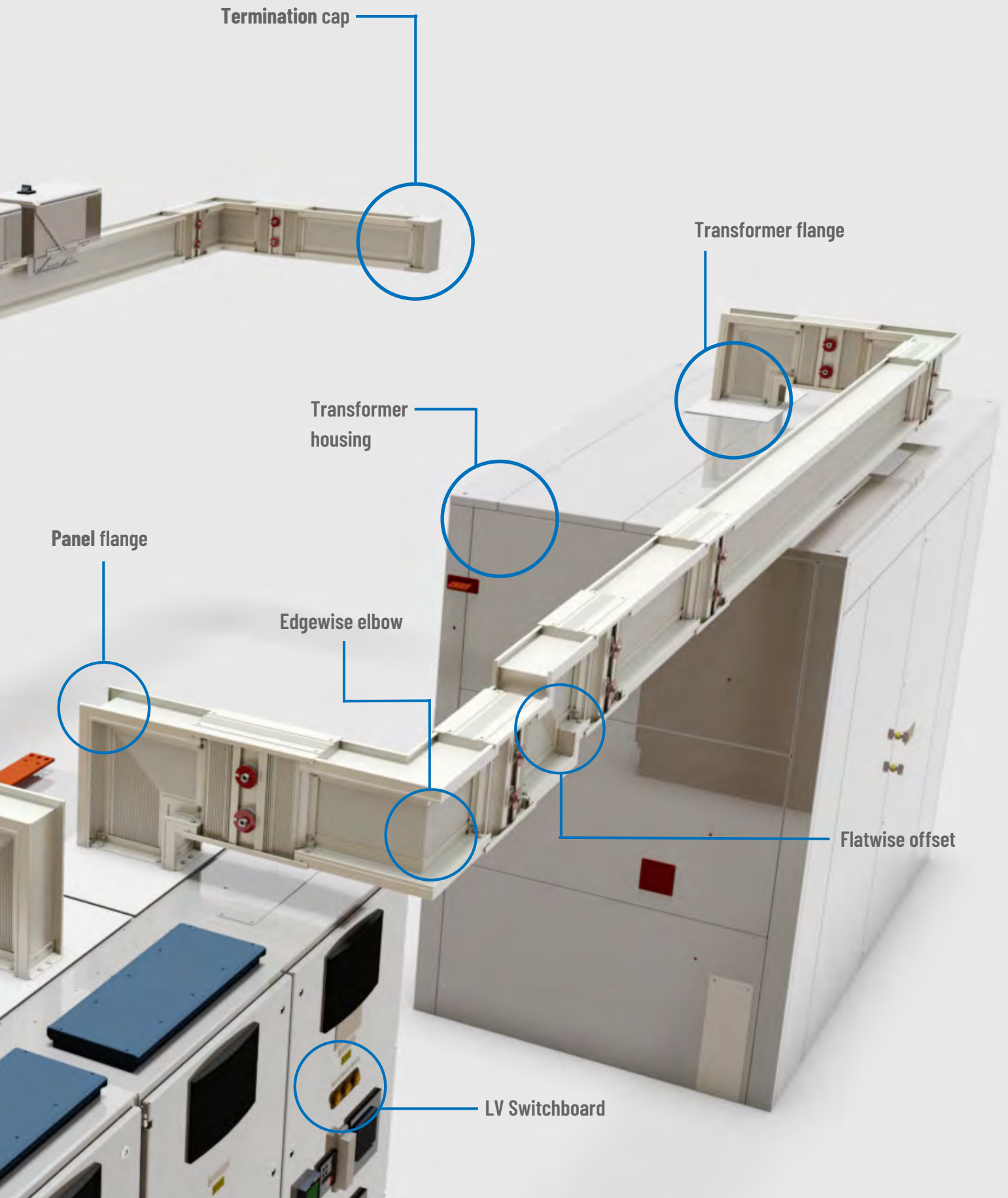
Joint pack

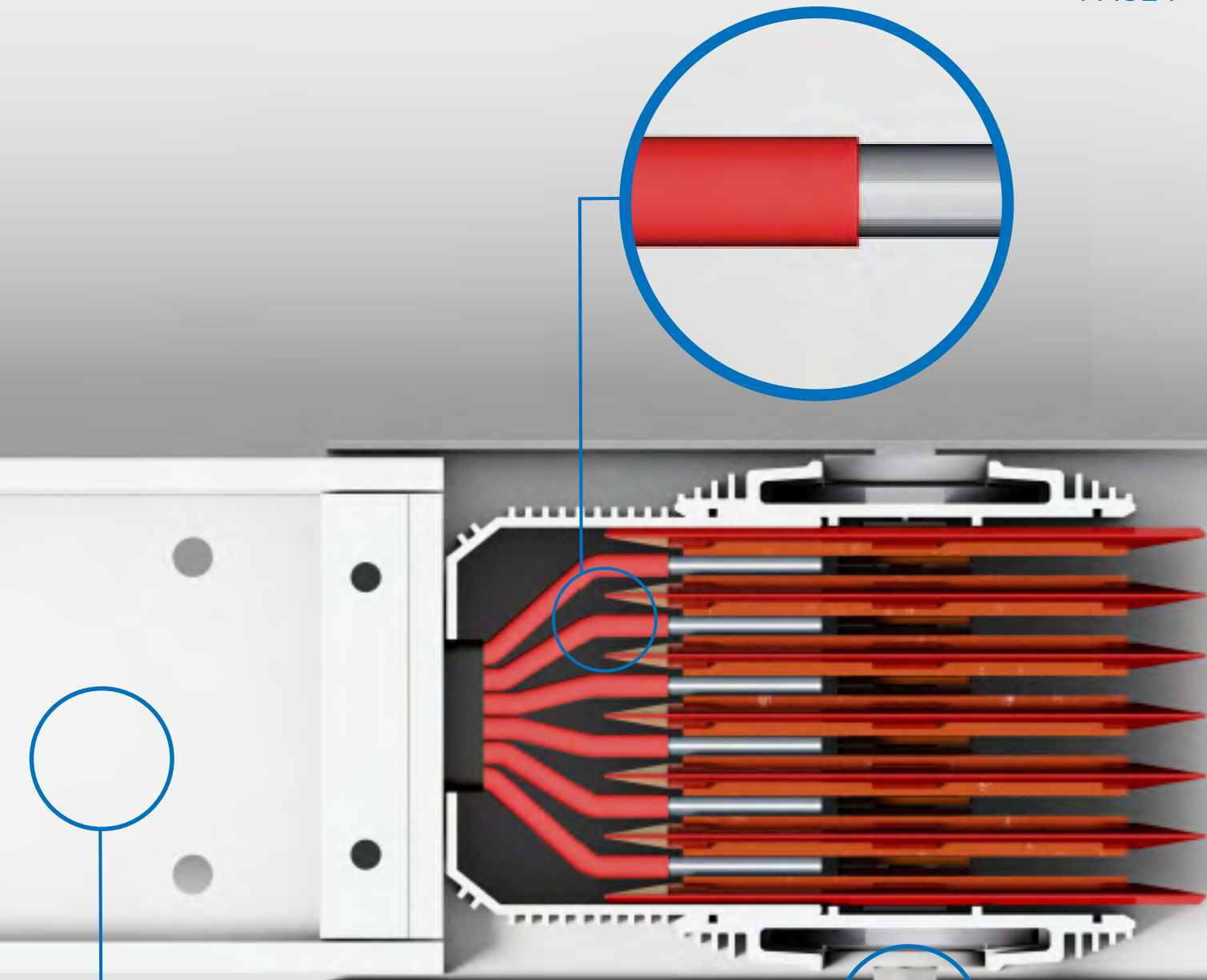
Tap-off box

Distribution length

Expansion unit

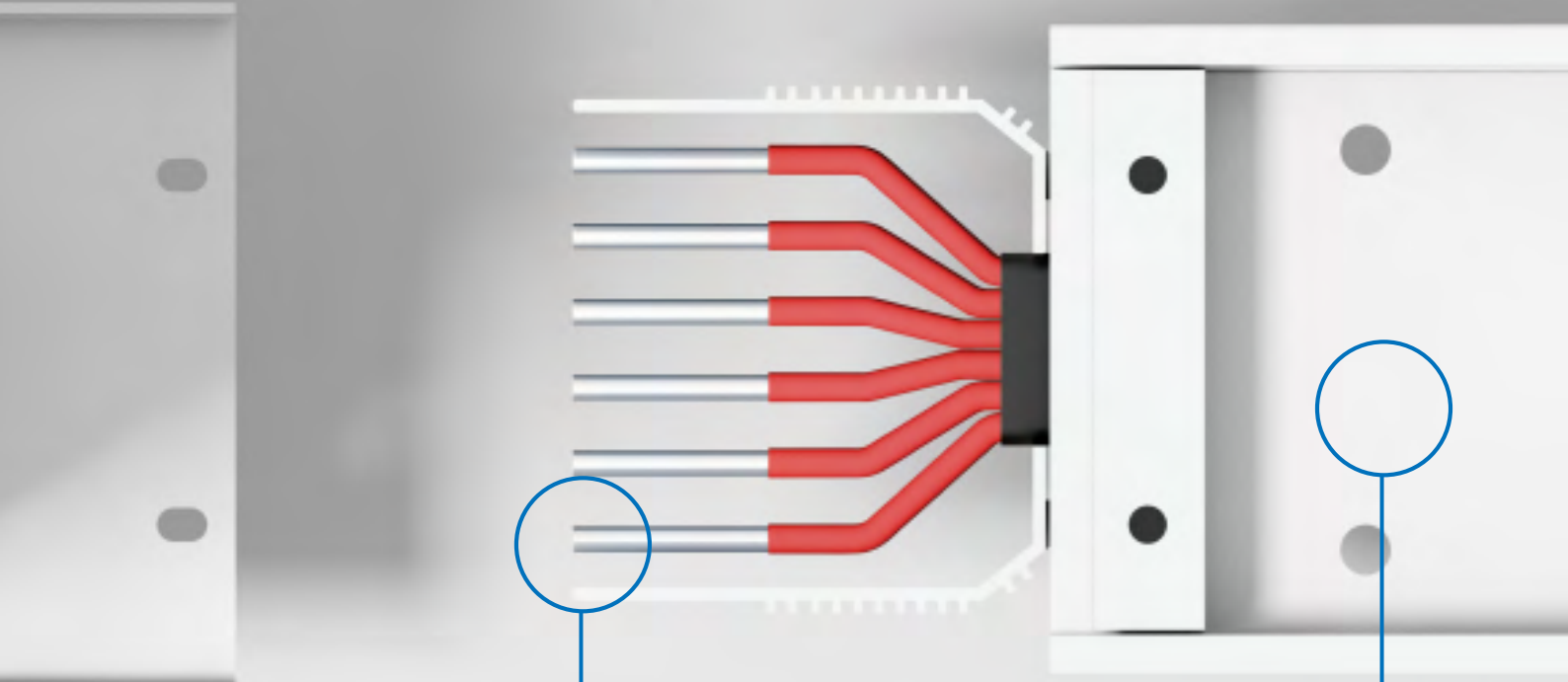
Feeder length





Polyester powder coated finish

Double headed shear nut



HXA Range 6101
Aluminium



Unique two piece IP55
Aluminium trunking case

TAP-OFFS (HX RANGE)

Tap-offs can be installed on to IBAR Distribution Busbar at any suitable tap-off location point. Tap-offs are typically used on vertical rising mains within multi-storey buildings to distribute power to each floor or area, the tap-off can be used to directly feed equipment or final circuits via a PDU or Distribution Board.

Distribution busbar and tap-offs are also common place within manufacturing or industrial environments where shop floor layouts are dynamically changed to meet the current production demands.

IBAR tap-offs incorporate a unique quick connect™ actuation system that automatically operates the IP4X tap-off point shutters (tap-off points are IP55 rated whilst the covers are in place). The tap-off is simply positioned onto the busbar at a tap-off location and the levered operation clamps the unit, ensuring correct engagement every time. Once the installation is complete the tap-off cannot be removed, or the door opened, whilst the tap-off circuit breaker is in the ON position.

IBAR's standard range of tap-offs are available with options for all major component manufacturer's protective devices such as Schneider Electric, ABB, Terasaki & Siemens.

Our range of tap-offs include a fully welded steel enclosure and feature multiple cable glanding plates and fully shrouded neutral and protected-earth bars. All tap-off doors and breaker connection shrouds are available with Anord Mardix Thermagrid technology, to facilitate safe thermal imaging of the circuit breaker and connections whilst live.

METERING

Metering and control options can be built into the IBAR HX range tap-off boxes to enable remote (PLC) management of motorised breakers in load-shedding activities or to provide requisite monitoring or MID approved tenant metering for landlord's billing requirements.

Breaker status' or power consumption data can be incorporated within SCADA and Power Management head end systems. Metering solutions are inclusive of all major meter manufacturers such as Schneider Electric, Janitza, Socomec, ABB and Autometers.

The IBAR HX range of distribution busbar trunking solutions can also be supplied with optional integrated Modbus and/or Ethernet comms channel.

Schneider Electric - PM5110

The PowerLogic PM5110 power meter is the new benchmark in affordable, precision metering. The ideal fit for high-end cost management applications. It provides the measurement capabilities needed to allocate energy usage, perform tenant metering and sub-billing, pin-point energy savings and optimise equipment efficiency and utilisation. It also performs a high level assessment of the power quality in an electrical network.

Schneider Electric - PM5111 (MID APPROVED)

The PM5111 offers Class 0.5S for active energy metering and compliance to regulations EN50470-1/3 (MID), IEC 61557-12, IEC 62053-21/22 and IEC 62053-23.

Schneider Electric - iEM3255 (MID APPROVED)

More than just kWh meters, the iEM3255 meter provides a full view of energy consumption with full four-quadrant measurement of active and reactive energy delivered. Additionally, extensive real-time measurements (V, I, P, PF) give users greater detail on their energy usage. Where required support of multiple tariffs gives customers the flexibility to match the billing structure of their utility.

The iEM3255 offers Class 0.5S for active energy metering and compliance to regulations EN50470-1/3 (MID), IEC 61557-12, IEC 62053-21/22 and IEC 62053-23.

Ethernet Comms Modules

Moxa Ethernet Gateway typically required one per every twenty two devices. Each ethernet gateway requires only a single ethernet cable (fibre also available) wiring back to a network switch for integration.

Typically the uplink connection to the installations meter/PMS/BMS network is made via an ethernet switch within the source switchboard or other suitable SCADA/PMS outstation panel.

TAP-OFF INSTALLATION

IBAR HX range tap-off boxes have been designed to be easily installed and utilise a unique actuation system.

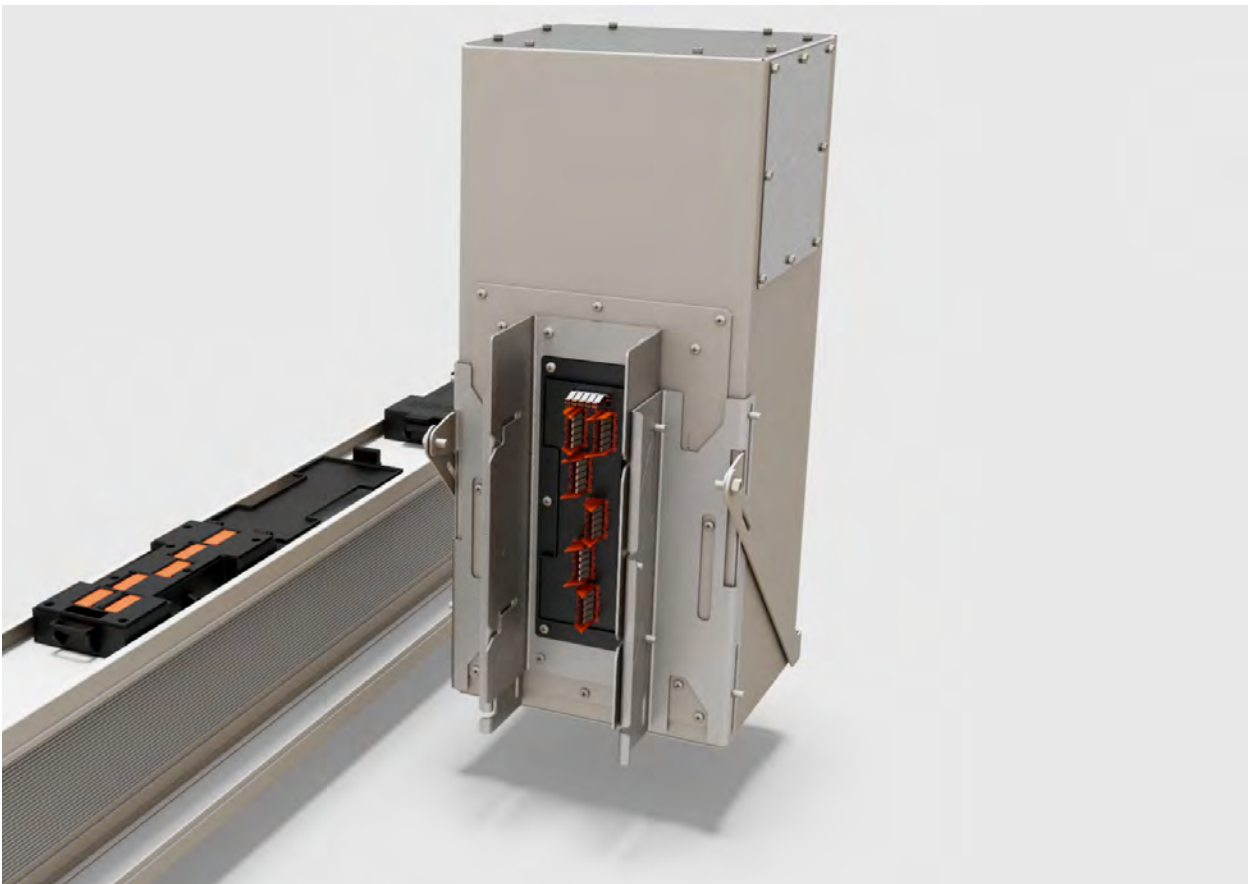
First, the tap-off location cover on the busbar is opened (removing any security fixings), the tap-off circuit breaker is then turned to the off position and the tap-off box outer door is removed (un-coupling any in-door meters/ controls).

This allows the actuating handle to be raised, the busbar tap-off location pins can then enter the locating mechanism on the tap-off box.

Secondly, once correctly located, the actuating handle is lowered which draws the tap-off assembly in toward the tap-off location point.

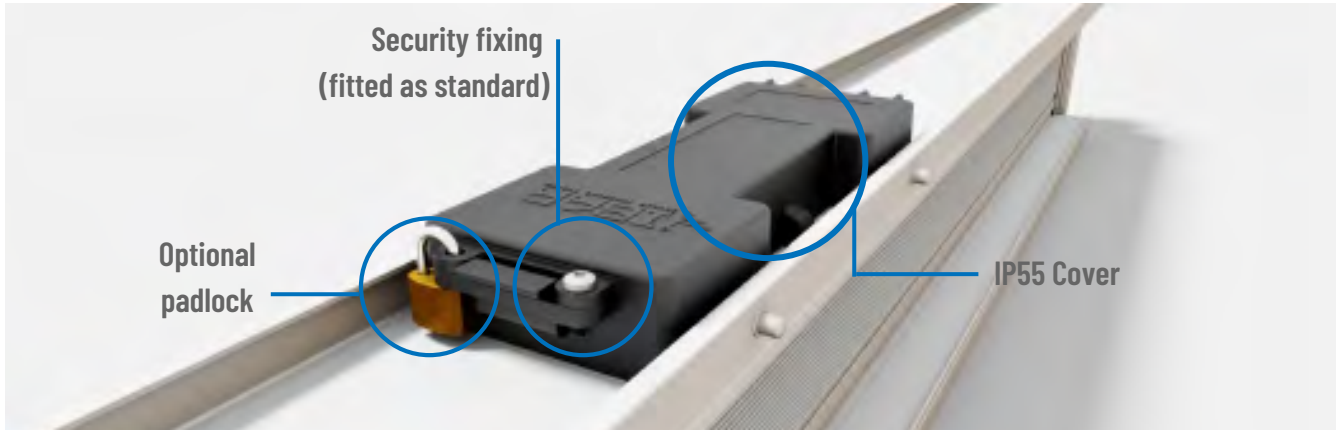
The tap-off box shutter actuators then open the safety sprung shutters on the busbar tap-off location, allowing the sprung clamps to access the busbar tabs. The case earth connection is made first, followed by the integral phase and neutral conductors.

Any cabling can then be terminated via the integral glanding plates (or via optional built-in plug sockets), then following successful testing and commissioning procedures the door can be replaced and the circuit breaker closed.



TAP-OFF INSTALLATION

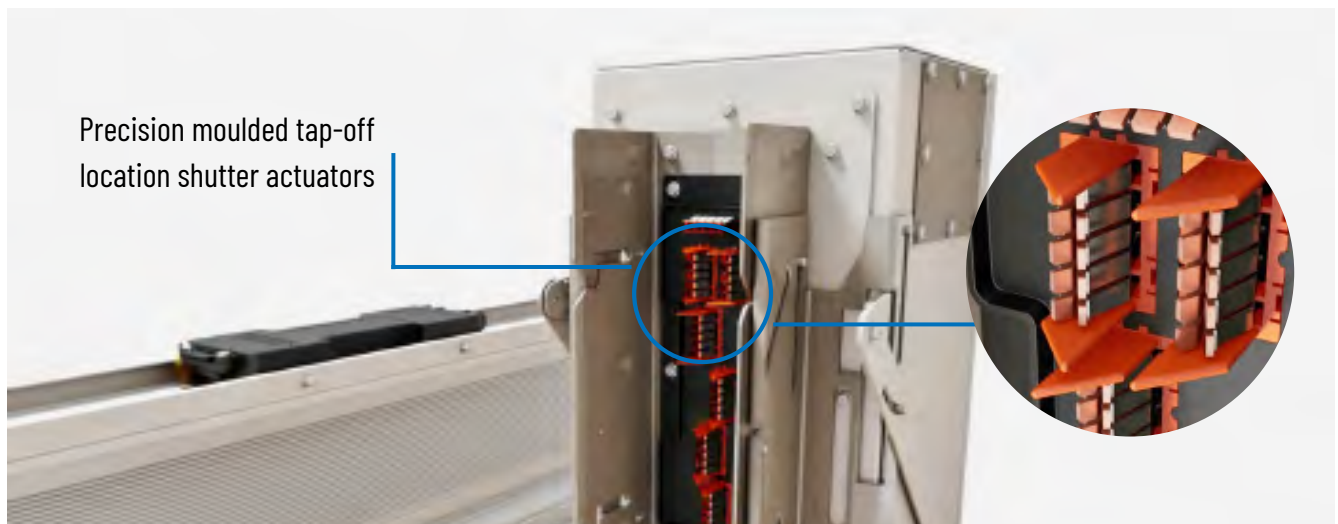
Tap-off location in fully locked off state (padlock and security bolt)



Close-up of tap-off location with IP55 cover hinged down/removed



Tap-off showing rear connections and tap-off location shutter actuating blades



TAP-OFF TECHNICAL OVERVIEW

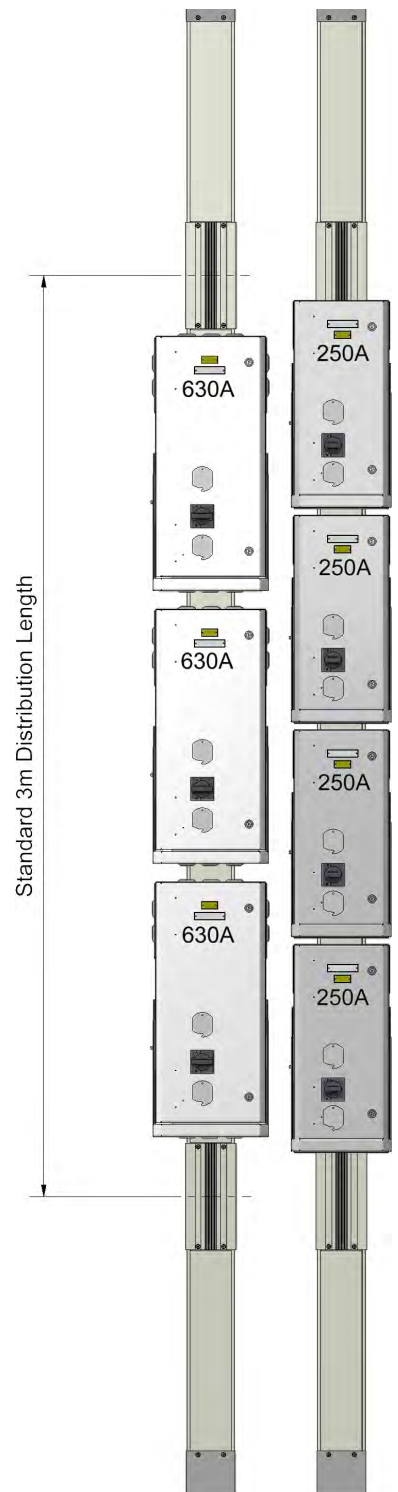
Plug-in style tap-off units are used to quickly and easily distribute power to loads or secondary distribution systems e.g. other busbar or PDU.

IBAR tap-offs incorporate a unique quick connect™ actuation system that automatically operates the IP4X tap-off point shutters (tap-off points are IP55 rated whilst the covers are in place). The tap-off is simply positioned onto the busbar at a tap-off location and the levered operation clamps the unit ensuring correct engagement every time. Once the installation is complete the tap off cannot be removed, or the door opened, whilst the tap-off circuit breaker is in the ON position.

The tap-off points are made from durable, self-extinguishing, halogen free performance polymers with padlock rings on the hinged cover to enable additional security if required. Moisture, dust and dirt are prevented ingress to IP55 whilst the covers are closed and whilst a tap-off unit is connected. The plug-in tap-offs are interchangeable between busbar systems provided the configuration is the same.

Safety and operation of MCCB style tap-offs

- Units cannot be plugged in or removed with the door closed
- Door cannot be opened with MCCB in ON position (MCCB type dependent)
- Units can only be fitted in the correct orientation to suit the phase rotation of the bar
- Earth make first and break last through an extended earth contact design
- No live parts accessible when door is open (IP2X)



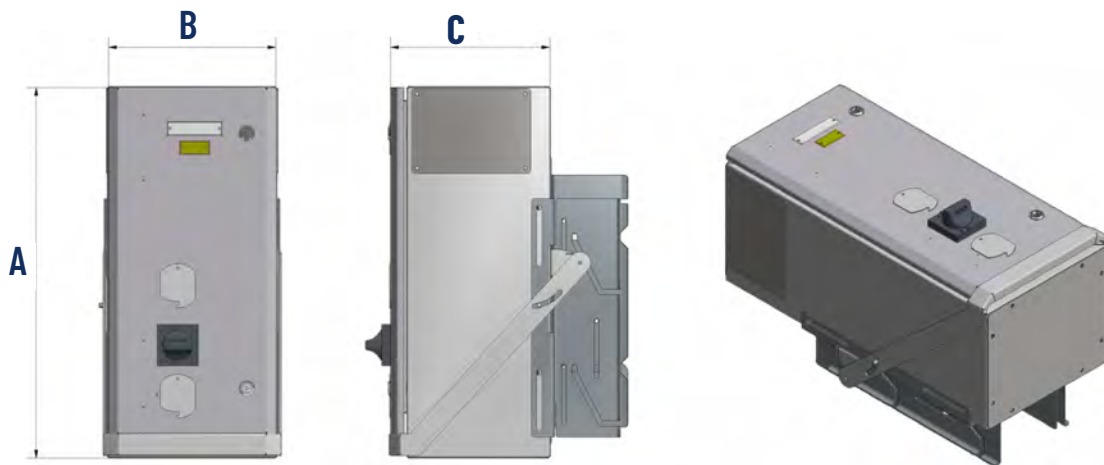
TAP-OFF TECHNICAL OVERVIEW

Features and Benefits

- IP55 as standard with no accessories required
- Standard MCCB units are fitted with fixed, front connected devices with extended rotary handles
- Fully welded construction for maximum rigidity
- Standard glanding areas on end and sides of box directly opposite the incoming MCCB terminals
- Available with galvanised steel or aluminium gland plates (G or A)

Options

- Cable spreader boxes for side or end entry
- Metering for landlord applications, MID (ofgem) approved
- BMS Monitoring of breaker status and/or metering
- Remote open/ close of MCCB
- Fused switches
- Integral socket arrangements with fixed or whip type sockets
- Integrated distribution boards
- Choice of RAL colour finished (Standard Light Grey RAL 7035)



Typical Dimensions

100-250A Tap-off:

A = 580mm

B = 310mm

C = 294mm

Typ. 35kg

400-630A Tap-off:

A = 829mm

B = 360mm

C = 329mm

Typ. 46kg

IBAR HXA TECHNICAL OVERVIEW

Rated Current In [A]		800	1000	1250	1600	2000	2500SS	2500	3200	4000
Rated operating voltage	Ue [V]	1000								
Rated insulation voltage	Ui [V]	1000								
Frequency	f [Hz]	50/60								
Degree of protection	IP	55								
Casing material		Aluminium								
Conductor arrangement		Sandwich								
Conductor profile		Rect. Full radius corner								
Conductor material		Main Bar - Electrical Grade 6101 / Joints - Electrical Grade 6101								
Conductor surface treatment		Plain								
Conductor Insulation		Epoxy UL94								

Dimensions		800	1000	1250	1600	2000	2500SS	2500	3200	4000
Casing overall dimensions	W x H [mm]	155 x 115	155 x 140	155 x 170	155 x 205	155 x 260	155 x 310	155 x 370	155 x 440	155 x 550
Conductor dimensions	W x D [mm]	55x6	80x6	110x6	145x6	200x6	250x6	2x110x6	2x145x6	2x200x6
Conductor CSA	CSA [mm ²]	322	472	652	862	1192	1492	1305	1725	2385
Weight (3 conductors)	p [kg/m]	11.5	13.7	16.4	19.6	24.8	27.0	34.0	40.3	50.3
Weight (4 conductors)	p [kg/m]	12.8	15.5	18.8	22.5	28.9	32.0	35.6	46.5	58.8
Weight (5 conductors)	p [kg/m]	14.1	17.3	21.1	25.5	33.0	38.0	44.0	52.6	67.3
Weight (6 conductors)	p [kg/m]	15.4	19.1	23.5	28.4	37.1	43.0	48.9	58.7	75.8

Fault Rating		800	1000	1250	1600	2000	2500SS	2500	3200	4000
Rated short-time current for three-phase fault (1s)	I _{cw} [kA] rms	25	50	65	80	100	100	100	120	120
Allowable peak current for three-phase fault	I _{pk} [kA]	55	110	143	176	220	220	220	264	264
Rated short-time current for single-phase fault (1s)	I _{cw} [kA] rms	15	30	39	48	60	60	60	72	72
Allowable peak current for single-phase fault	I _{pk} [kA]	33	63	85.8	100.8	132	132	132	158.4	158.4
Rated short-time withstand current for protective circuit (case) (1s)	I _{cw} [kA] rms	15	30	39	48	60	60	60	72	72
Allowable peak current for protective circuit fault (case)	I _{pk} [kA]	33	63	85.8	100.8	132	132	132	158.4	158.4



IBAR HXA TECHNICAL OVERVIEW

Phase Conductor Characteristics (50Hz *)		800	1000	1250	1600	2000	2500SS	2500	3200	4000
Mean resistance at 20°C ambient	R ₂₀ [mΩ/m]	0.103	0.0702	0.0509	0.0385	0.0278	0.0222	0.0254	0.0192	0.0139
Mean resistance at rated current & 35°C ambient	R [mΩ/m]	0.1208	0.0824	0.0597	0.0451	0.0326	0.0267	0.0298	0.0226	0.0163
Mean reactance at rated current	X [mΩ/m]	0.0241	0.02	0.0171	0.0149	0.0126	0.0113	0.0085	0.0074	0.0063
Mean impedance at rated current & 35°C ambient	Z [mΩ/m]	0.1232	0.0848	0.0621	0.0475	0.035	0.029	0.031	0.0238	0.0175

Line to Line Volt Drop *		800	1000	1250	1600	2000	2500SS	2500	3200	4000
Load Power Factor - 1.0	mV/A/m	0.1046	0.0714	0.0517	0.0391	0.0283	0.0231	0.0258	0.0195	0.0141
Load Power Factor - 0.9	mV/A/m	0.1033	0.0718	0.0529	0.0408	0.0302	0.0251	0.0265	0.0204	0.0151
Load Power Factor - 0.8	mV/A/m	0.0962	0.0675	0.0502	0.039	0.0292	0.0244	0.0251	0.0195	0.0146
Load Power Factor - 0.7	mV/A/m	0.0882	0.0623	0.0467	0.0365	0.0276	0.0232	0.0234	0.0183	0.0138

*Line to Line Volt Drop in Millivolts/Amp/Metre at 50Hz and 35°C Ambient Temperature with the load spread over the busbar trunking system run. For load concentrated at one end double the figures in the table.

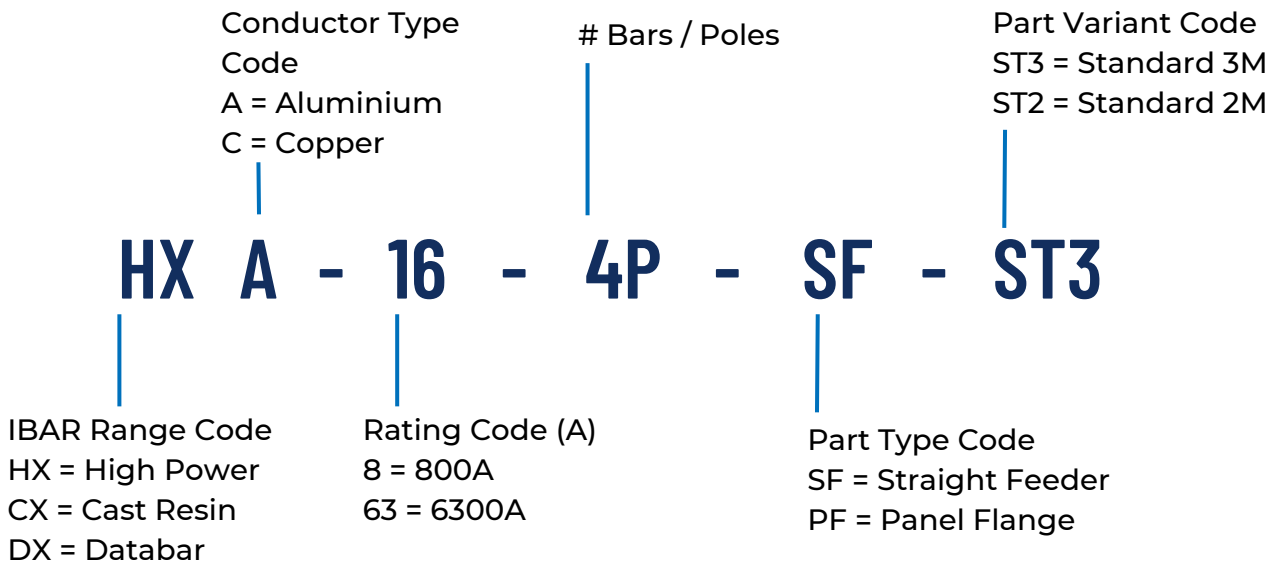
Figures stated in accordance with BS EN 60439-2.



IBAR HXA PARTS AND ACCESSORIES

Part Numbering Guide

CF Centre Feed	FB Fire Barrier Joint	PR Phase Rotation
CM Combination	JP Pack Elbow	SD Straight Distribution
CX Custom	LE Edgewise Elbow	SF Straight Feeder Tee
EC End Cap	LF Flatwise Neutral	TF Flatwise Transformer
EF End Feed	NR Rotation Panel	TX Flange Offset
EX Expansion	PF Flange	ZE Edgewise Offset
		ZF Flatwise



IBAR HXA PARTS AND ACCESSORIES

Straights

Straights are one of the most common parts of any trunking system. Custom lengths can be manufactured to suit each application requirement within the ranges below. Feeder type busbar is used for end to end transmission and distribution type incorporates tapping outlets for connection of tap off units.

Single Construction



Double Construction

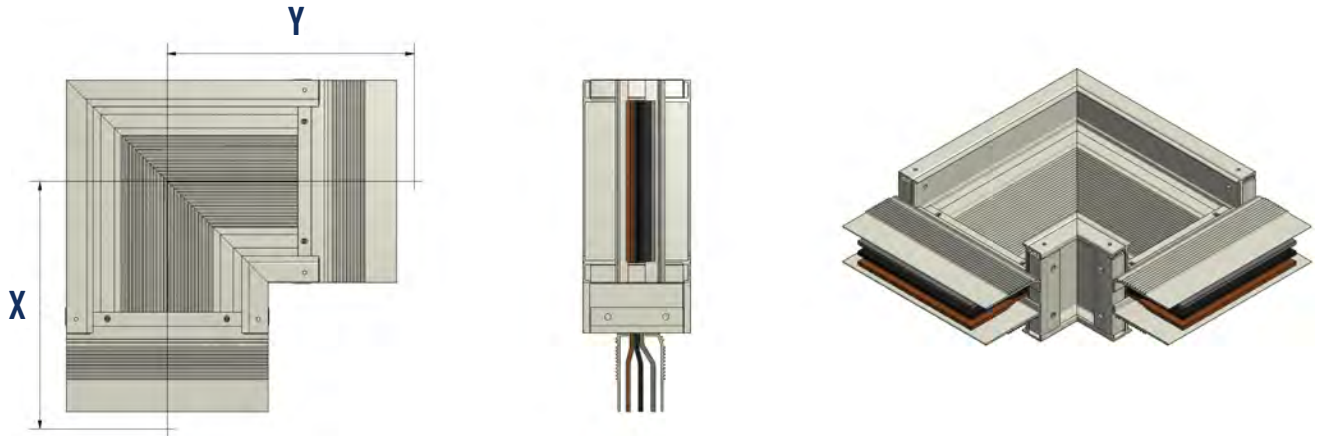


Standard lengths = 3m, 2m and 1m. Min. X = 0.5m, Max. X = 3m. W = 155mm

IBAR HXA PARTS AND ACCESSORIES

Flatwise Elbows

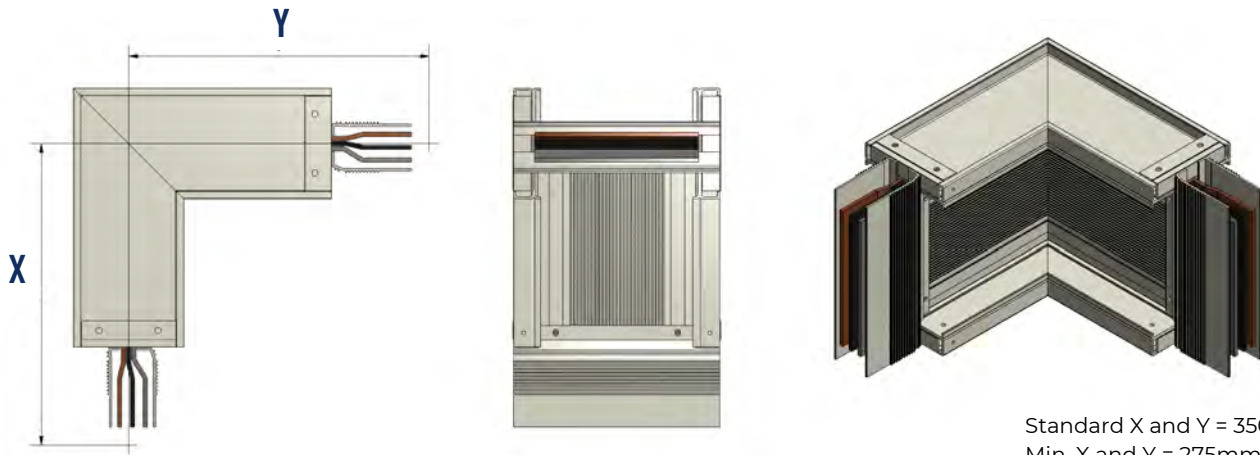
Flatwise elbows are used to make directional changes to busbar runs usually at 90° to the direction of travel. In addition to providing left and right elbows in standard 90°, it is possible to have custom angles manufactured.



Rating (Amps)	Stack	Standard mm		Min	Max
		X	Y	X & Y	X & Y
800	Single	350	350	250	700
1000	Single	350	350	260	700
1250	Single	350	350	275	700
1600	Single	350	350	300	700
2000	Single	350	350	325	700
2500 SS	Single	500	500	400	700
2500	Double	500	500	400	700
3200	Double	500	500	425	700
4000	Double	500	500	475	700

Edgewise Elbows

Edgewise elbows are used to make directional changes to busbar runs usually at 90° to the direction of travel. In addition to providing left and right elbows in standard 90° it is possible to have custom angles manufactured.

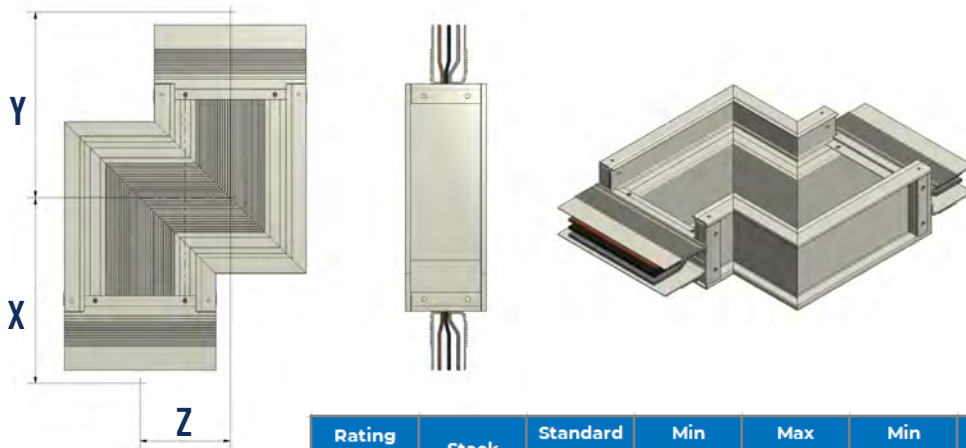


Standard X and Y = 350mm
 Min. X and Y = 275mm
 Max. X and Y = 600mm

IBAR HXA PARTS AND ACCESSORIES

Flatwise Offsets

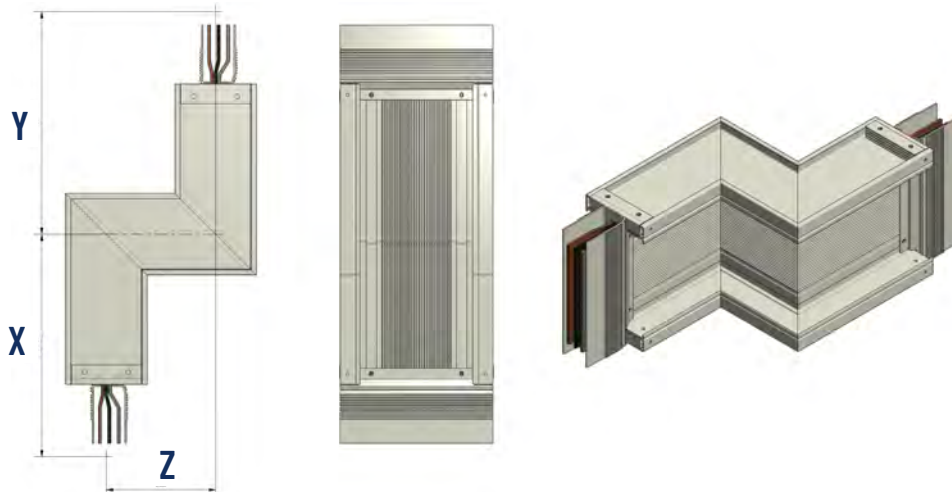
Offsets are commonly used to avoid small obstructions and obstacles that the use of two elbows would make inefficient. The four variants of offsets are edgewise left/ right and flatwise left/ right.



Rating (Amps)	Stack	Standard	Min	Max	Min	Max
		X & Y	X & Y	X & Y	Z	Z
800	Single	350	250	650	50	700
1000	Single	350	260	650	50	700
1250	Single	350	275	650	50	700
1400	Single	350	275	650	50	675
1600	Single	350	300	650	50	640
2500 SS	Single	450	400	650	50	650
2500	Double	500	400	650	50	675
3200	Double	500	425	650	50	640
4000	Double	500	475	650	50	570

Edgewise Offsets

Offsets are commonly used to avoid small obstructions and obstacles that the use of two elbows would make inefficient. The four variants of offsets are edgewise left/ right and flatwise left/ right.



Standard X and Y = 350mm
 Min. X and Y = 275mm
 Max. X and Y = 600mm
 Min Z = 75mm
 Max Z = 700mm

IBAR HXA PARTS AND ACCESSORIES

Straight Panel Flanges

Panel flanges are the standard fittings used to make connections to other items of LV equipment such as switchboards and transformers etc. Each rating of flange has set dimensions for the cutout and fixing points that are supplied on drawings with each unit. Phase rotation from other equipment to a busbar system needs careful coordination and all phase details must be highlighted and approved at design stage.



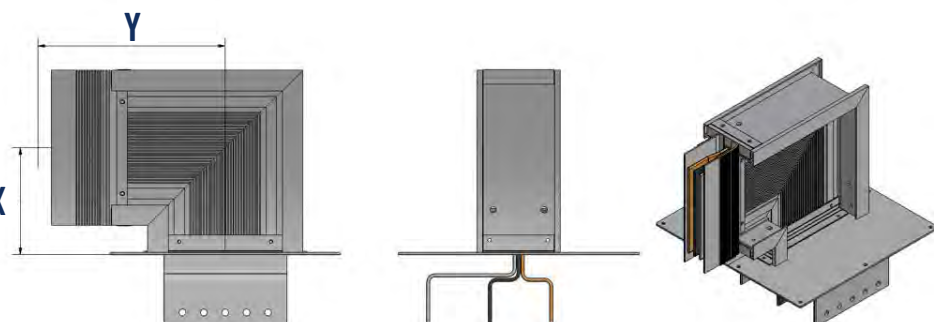
Standard / Min. X = 250mm, Max. X = 800mm

Flatwise Panel Flanges

Panel flanges are the standard fittings used to make connections to other items of LV equipment such as switchboards and transformers etc. Panel flanges with integrated 90° change of direction allow for low headroom applications and are available in flatwise and edgewise formats.

Each rating of flange has set dimensions for the cut out & fixing points identical to that of straight type units the details of which are supplied on drawings with each unit. Phase rotation from other equipment to a busbar system needs careful coordination and all phase details **X** must be highlighted and approved at design stage.

Rating (Amps)	Stack	Minimum		Maximum	
		X	Y	X	Y
800	Single	115	250	800	500
1000	Single	115	260	800	500
1250	Single	115	275	800	500
1600	Single	165	290	800	500
2000	Single	190	325	800	500
2500 SS	Single	200	400	800	500
2500	Double	240	400	800	500
3200	Double	280	425	800	500
4000	Double	350	475	800	500

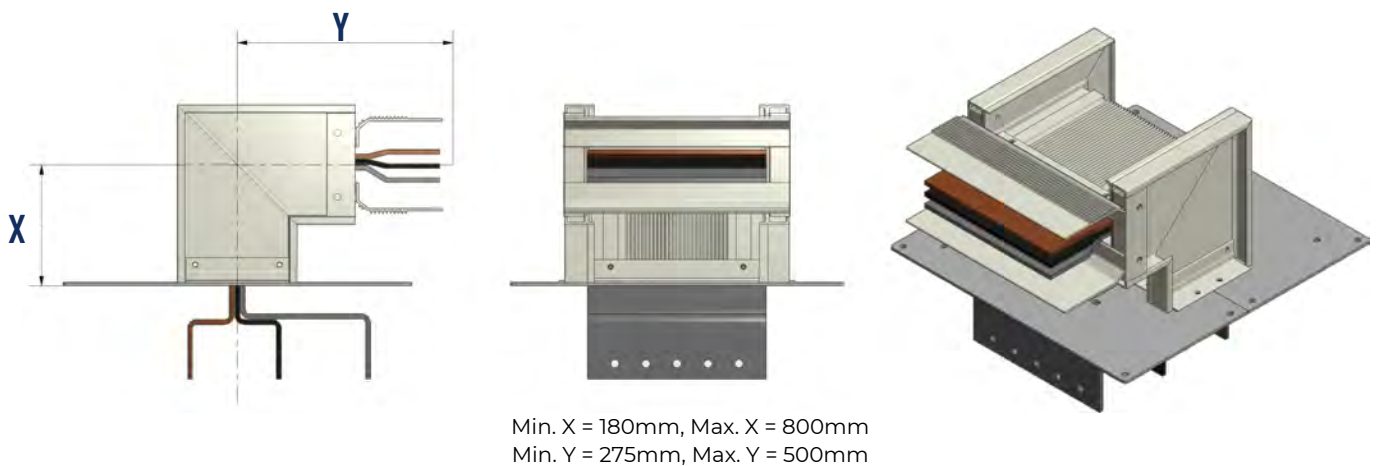


IBAR HXA PARTS AND ACCESSORIES

Edgewise Panel Flanges

Panel flanges are the standard fittings used to make connections to other items of LV equipment such as switchboards and transformers etc. Panel flanges with integrated 90° change of direction allow for low headroom applications and are available in flatwise and edgewise formats.

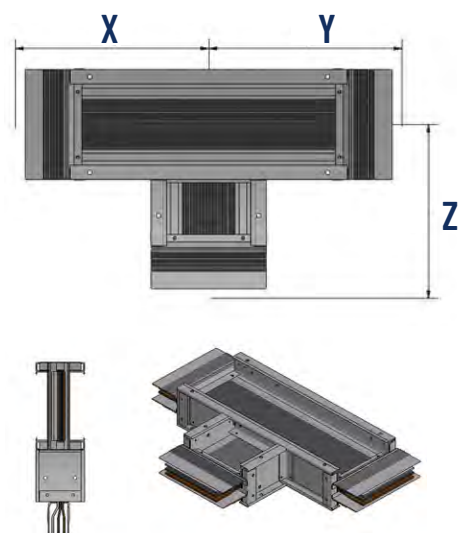
Each rating of flange has set dimensions for the cut out & fixing points identical to that of straight type units. The details of which are supplied on drawings with each unit. Phase rotation from other equipment to a busbar system needs careful coordination and all phase details must be highlighted and approved at design stage.



Min. X = 180mm, Max. X = 800mm
 Min. Y = 275mm, Max. Y = 500mm

Flatwise Tees

Tee units are used to make branched busbar runs. The tee units create a 90° branch to accommodate multiple end supply points from a single source and can, in certain applications, be a more efficient way of creating a widespread distribution backbone. Tees are available in compact form in flatwise construction.



Rating (Amps)	Stack	Standard	Min	Max	Min	Max
		X & Y	X & Y	X & Y	Z	Z
800	Single	350	250	650	250	700
1000	Single	350	260	650	270	700
1250	Single	350	280	650	280	700
1600	Single	350	300	650	300	640
2000	Single	350	325	650	325	570
2500 SS	Single	500	400	650	400	600
2500	Double	500	400	650	400	675
3200	Double	500	450	650	450	640
4000	Double	500	475	650	475	570

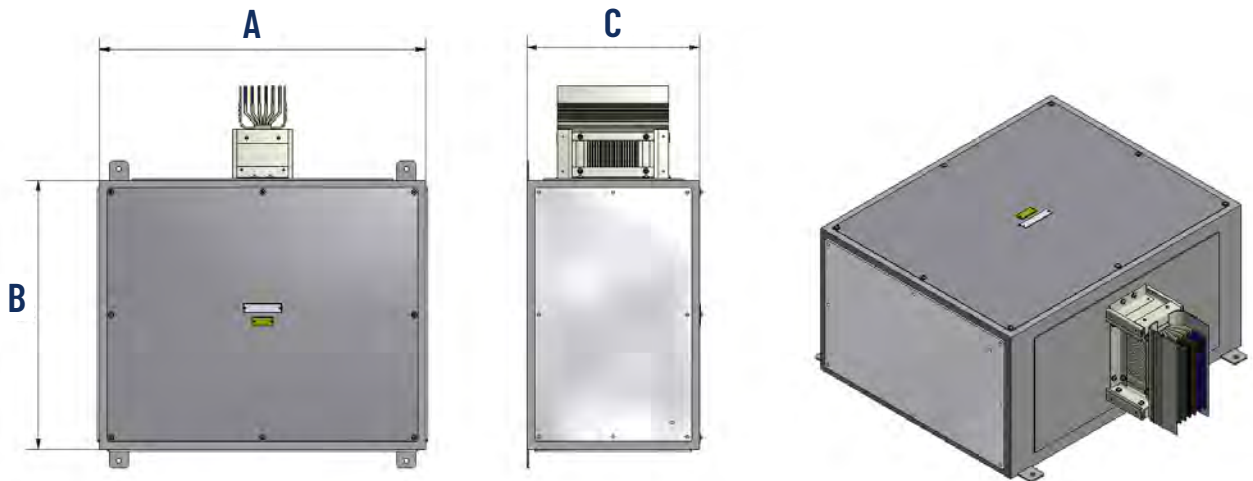
IBAR HXA PARTS AND ACCESSORIES

Connection Boxes

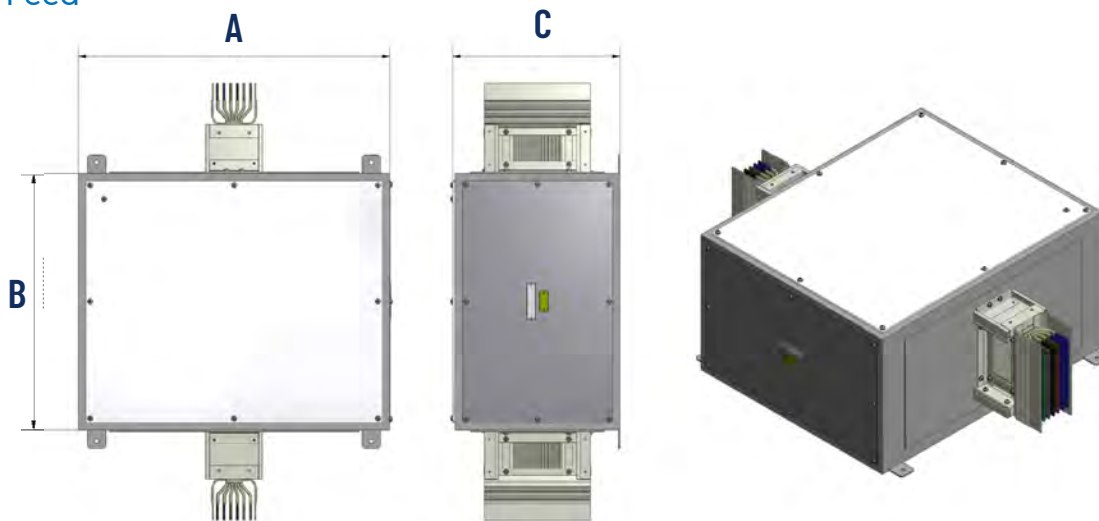
Centre feed units are used to connect cables to feed a busbar run. A centre feed unit can be situated somewhere along the busbar run feeding power to both branches that connect whereas an end feed unit is positioned on one end of a run / branch. Side and bottom glanding areas allow for the greatest flexibility when it comes to cabling the unit.

The size of an end feed is generally governed by the size, type and number of cables being connected. See below for the standard sizes available. Special sizes and configurations can be designed to suit particular applications.

End Feed



Centre Feed



Single Stack Busbar : A = 600mm, B = 600mm, C = 350mm
 Double Stack Busbar : A = 600mm, B = 800mm, C = 650mm

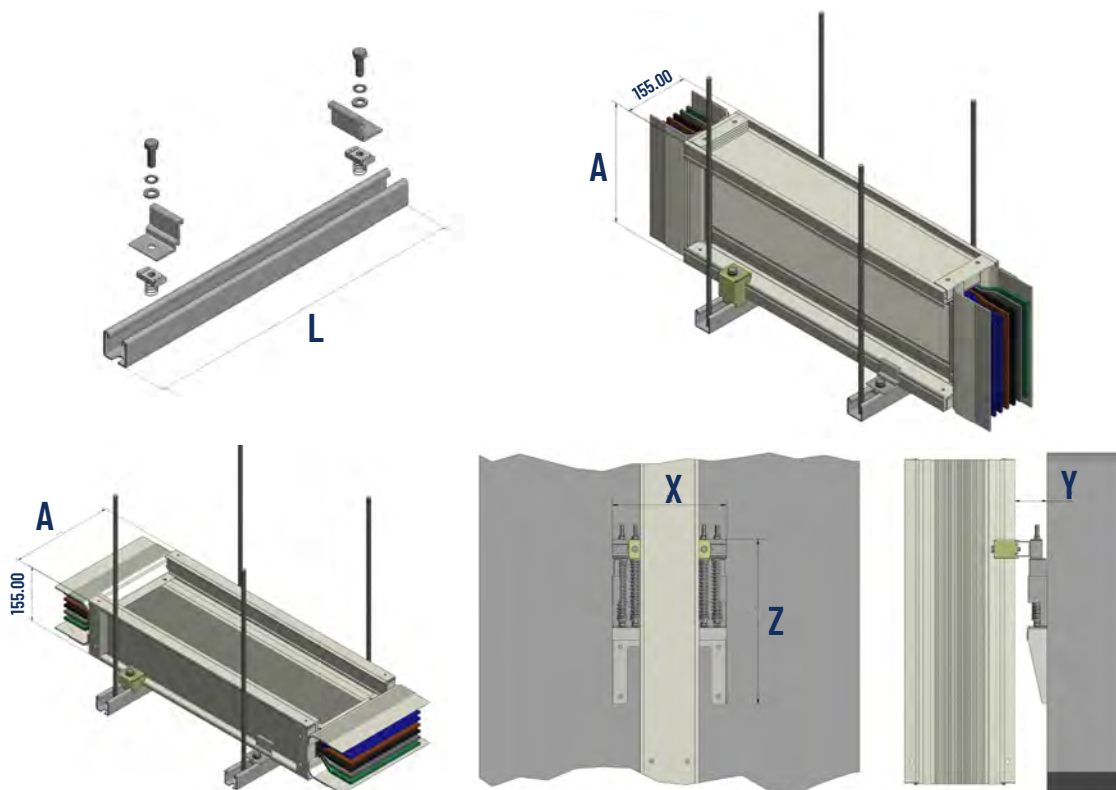
IBAR HXA PARTS AND ACCESSORIES

Hangers and Fixings

Correct mounting of the busbar trunking run is a critical element of ensuring a trouble free system. The IBAR HX system has a range of mounting and clamping hardware that is fully compatible with the widely available Unistrut system.

Horizontal installations will make use of the universal fixing clamp that is able to accommodate flatwise and edgewise orientations and fixed clamps that are typically used on long, straight runs where expansion needs to be controlled. Both of these clamps fit onto standard 41x41mm Unistrut as illustrated below.

Vertical riser installations make use of the fixed clamps and proprietary spring brackets used to distribute load evenly across the building structure and isolate the bar from excessive vibration or building movement.



iControl Cloud

Every IBAR element is supplied with an iControl Cloud tag, this enables components to be referenced within a particular busbar run together with arrangement drawings, commissioning reports and lifecycle servicing reports to be uploaded and retained for the life of the asset.

iControl Cloud can be extended to include any other asset, full details are available online at: www.iconcontrol-cloud.com

VISUAL REFERENCE GUIDE

Feeder Lengths

Standard lengths

- 3m
- 2m
- 1m



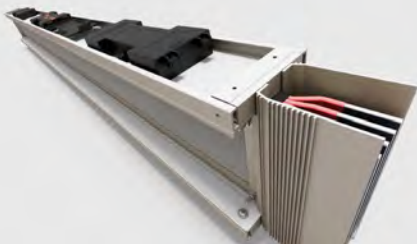
Edgewise Installation Brackets



Flatwise Installation Brackets



Distribution Lengths



Up to 5no. tap-off points per 3m length

Vertical Hangars



Flatwise Elbow



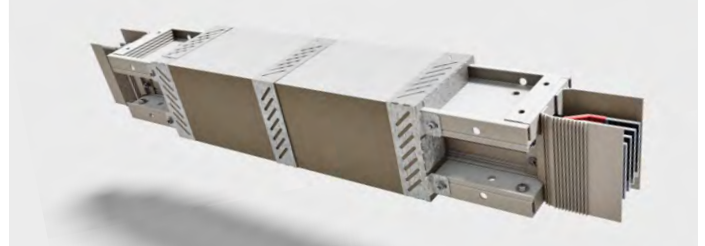
Edgewise Elbow



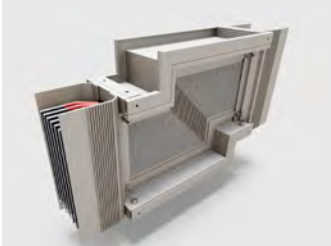
Custom Elbow



4 Hour Fire Barrier



Flatwise Offset



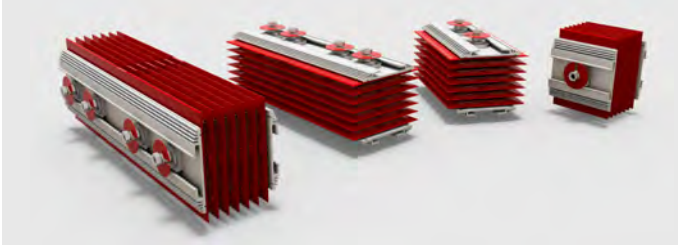
Combination Elbow / Offset



Expansion Unit



Joint Packs



Transformer / Parallel Flange



Panel Flange



Flatwise Elbow Panel Flange



'Tee' Section



End Feed



End Cap



Centre Feeder

