

# AMWS | The First Ex-Stock Wiring Solution for Commercial Office Build



**Apex Wiring Solutions Modular Wiring System** replaces traditional wiring of electrical sub-circuits, with a rapid and easily installed range of advanced prefabricated connector and cable assemblies, reducing installation time by up to 70%.

A complete electrical installation is achieved quickly and safely by simply plugging the system components together.

With fully tested electrical connections straight to the site from a quality controlled environment there is almost no potential for error, meaning that snagging has limited impact on programme and testing is a much improved process.

Available directly from stock in either fully armoured, for maximum mechanical protection, or in a low cost LSOH sheathed cable extremely rapid installation can be achieved.

- From your design to fully installed in 7 days.

## The ONLY Ex-Stock Plug and Play System available today.

A typical LCM office project delivered to site in 24 hours of receiving order.

Autocad based "Takeoff" tool available to assist design.

Estimating tool available to assist costing and ordering.

### Reduced installation time

A proven record of reduced labour demand for sub-mains installations which equates to savings of up to 70% in most types of projects.

### Simplified Design

A full installation can be achieved using a very few components greatly simplifying design, estimating and installation.

### Connector Security

All products are supplied with either tool operated or hand operated locking devices where appropriate.

### Increased Flexibility

As building layouts change all system components are re-usable allowing for vastly improved flexibility.

### Accelerate Program

As project time-scales are significantly reduced Highly skilled personnel can be redeployed on multiple or new projects.

### Fully Scaleable

Product range is scale-able to suit installations from just a few outlets to major projects.

### Maintenance Free

Sealed system using *CAGE CLAMP* technology gives you a virtually maintenance free installation.

### Reduce Site Testing

As all components are fully tested before leaving our factory significant savings are achieved due to reduced snagging and miswires on site.

### Eliminate Wastage

A more accurate account of project requirements with accurate cable and accessory usage means that an electrical installation can be made without any scrap or over ordering

### Enhanced Profitability

The combination of all of these cost savings guarantees much greater profit potential on every project -whatever the size.

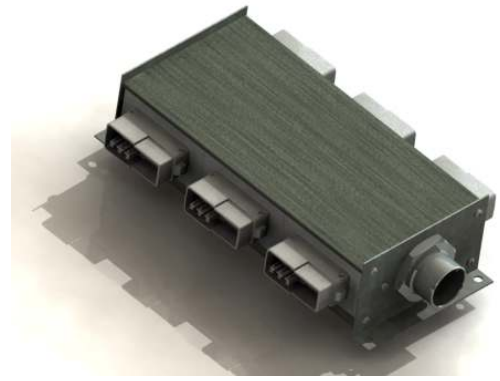


## MDB - Master Distribution Box

Available in 6 and 9 port configurations for multi-circuit zoned distribution of power and lighting circuits. The MDB is supplied pre-wired with a fully armoured, either steel or aluminium, multicore Home Run Cable.

MDB's can be either dedicated or combined lighting and power allowing greater flexibility in circuit configuration. Refer to table (a) for available ex-stock solutions.

Home Runs are available with single or dual bus cables offering full integration into the BMS system.

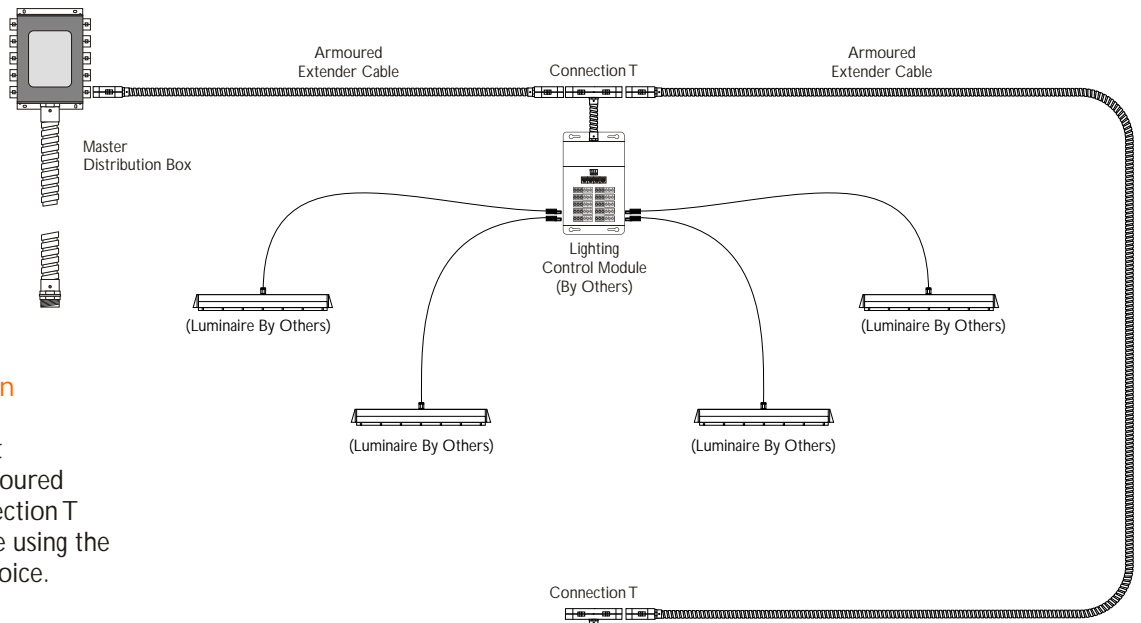


Type	Number of Circuits	Lighting Ports	Power Ports	Orientation	Integral Bus	Length	Port Configuration	Part Number
Armoured	9	7	2	Vertical	Y	10m		5.2.1.555555220.41.100
	9	7	2	Vertical	Y	15m		5.2.1.555555220.41.150
	9	7	2	Vertical	Y	20m		5.2.1.555555220.41.200
	9	7	2	Vertical	Y	25m		5.2.1.555555220.41.250
	9	7	2	Vertical	Y	35m		5.2.1.555555220.41.350
	9	7	2	Vertical	Y	45m		5.2.1.555555220.41.450

### Available Options - Manufactured To Order

- Home Run Lengths from 11m to 50m
- 6 or 9 port Dedicated Lighting MDB, Dedicated Power MDB, Combined Lighting and Power (6 = 3 x Lighting, 3 x Power or 9 = 6 x Lighting, 3 x Power)
- Separate Bus Cable for separate control of power circuits
- Dedicated Bus Port for projects where BMS system control is designated separately from AC power.
- Pluggable Home Run & Pluggable 3 Phase Distribution Board



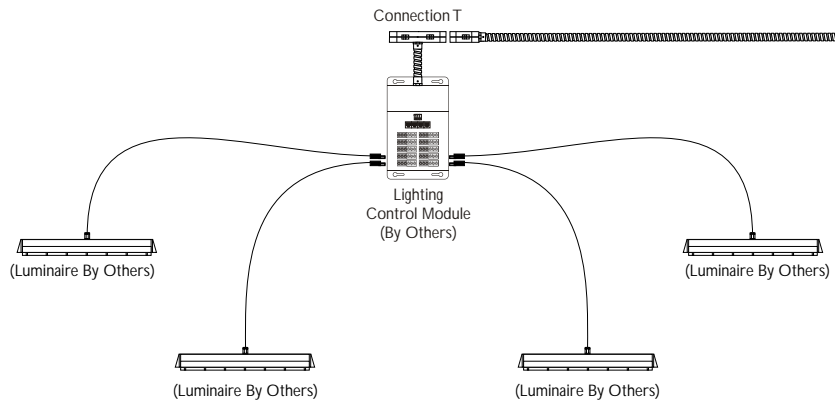


## Typical Lighting Application

Using an MDB for multi-circuit distribution, a network of Armoured Extender Cables with a Connection T pre-wired to the infrastructure using the Lighting Control Module of choice.

Offering quicker and easier plug and play installation will generate time and cost savings.

The inbuilt flexibility of a modular system means that a room (or floor) can be completely reconfigured as all components from the MDB can be changed or re-positioned without major disruption.



Armoured Lighting Extender Cables (Male to Female)

Number of Cores	Number Poles	Connector Configuration	Length	Armoured
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	4m	4.1.6C.6C.3.040
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	6m	4.1.6C.6C.3.060
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	8m	4.1.6C.6C.3.080
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	10m	4.1.6C.6C.3.100
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	15m	4.1.6C.6C.3.150
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	20m	4.1.6C.6C.3.200



LSOH Lighting Extender Cables (Male to Female)

Number of Cores	Number Poles	Connector Configuration	Length	LSOH
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	4m	3.1.6C.6C.3.040
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	6m	3.1.6C.6C.3.060
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	8m	3.1.6C.6C.3.080
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	10m	3.1.6C.6C.3.100
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	15m	3.1.6C.6C.3.150
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	20m	3.1.6C.6C.3.200

Available Options - Manufactured To Order

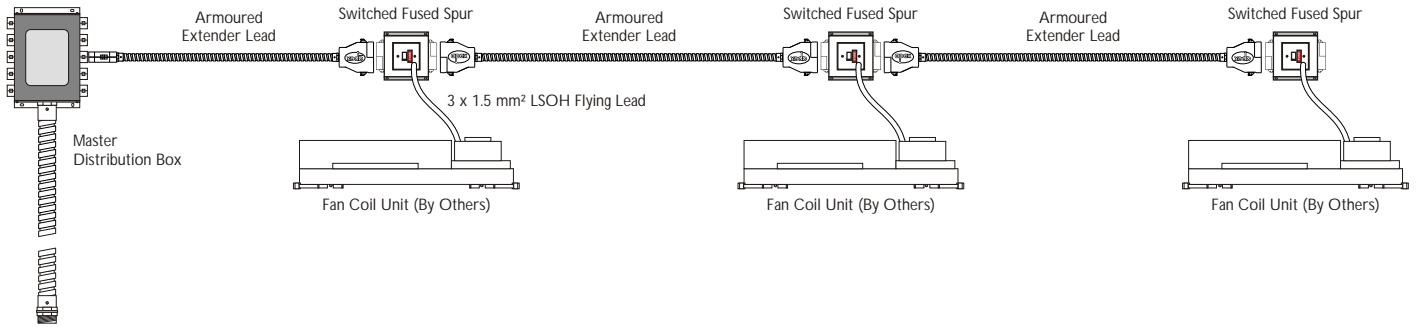
Lead Lengths from 1m to 25m

## Connection T

Number of Cores	Number Poles	Connector Configuration	300mm Armoured Tail	100mm 6491B Tail
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	6.2.1.6C.3.003	6.2.2.6C.3.001

Available Options - Manufactured To Order

Lead Lengths upto 3m



### Armoured Extender Cables (Male to Female)

Number of Cores	Number Poles	Connector Configuration	Length	Armoured
3	3	3 L = Brn, E = Grn/Y, N = Blue	4m	4.1.3L.3L.4.040
3	3	3 L = Brn, E = Grn/Y, N = Blue	6m	4.1.3L.3L.4.060
3	3	3 L = Brn, E = Grn/Y, N = Blue	8m	4.1.3L.3L.4.080
3	3	3 L = Brn, E = Grn/Y, N = Blue	10m	4.1.3L.3L.4.100
3	3	3 L = Brn, E = Grn/Y, N = Blue	15m	4.1.3L.3L.4.150
3	3	3 L = Brn, E = Grn/Y, N = Blue	20m	4.1.3L.3L.4.200

Available Options - Manufactured To Order

### LSOH Extender Cables (Male to Female)

Number of Cores	Number Poles	Connector Configuration	Length	LSOH
3	3	3 L = Brn, E = Grn/Y, N = Blue	4m	3.1.3B0.3B0.4.040
3	3	3 L = Brn, E = Grn/Y, N = Blue	6m	3.1.3B0.3B0.4.060
3	3	3 L = Brn, E = Grn/Y, N = Blue	8m	3.1.3B0.3B0.4.080
3	3	3 L = Brn, E = Grn/Y, N = Blue	10m	3.1.3B0.3B0.4.100
3	3	3 L = Brn, E = Grn/Y, N = Blue	15m	3.1.3B0.3B0.4.150
3	3	3 L = Brn, E = Grn/Y, N = Blue	20m	3.1.3B0.3B0.4.200

Available Options - Manufactured To Order

### Armoured Connection Cables (Male to Free end)

Number of Cores	Number Poles	Connector Configuration	Length	Armoured
3	3	3 L = Brn, E = Grn/Y, N = Blue	1m	4.1.3L.00.4.010
3	3	3 L = Brn, E = Grn/Y, N = Blue	2m	4.1.3L.00.4.020
3	3	3 L = Brn, E = Grn/Y, N = Blue	3m	4.1.3L.00.4.030

Available Options - Manufactured To Order

### LSOH Connection Cables (Male to Free end)

Number of Cores	Number Poles	Connector Configuration	Length	LSOH
3	3	3 L = Brn, E = Grn/Y, N = Blue	1m	3.1.3B0.000.4.010
3	3	3 L = Brn, E = Grn/Y, N = Blue	2m	3.1.3B0.000.4.020
3	3	3 L = Brn, E = Grn/Y, N = Blue	3m	3.1.3B0.000.4.030

Available Options - Manufactured To Order

### Spur Connection Units

Number of Cores	Number Poles	Connector Configuration	Switched Fused Spur
3	3	3 L = Brn, E = Grn/Y, N = Blue	6.3.3L.3.020

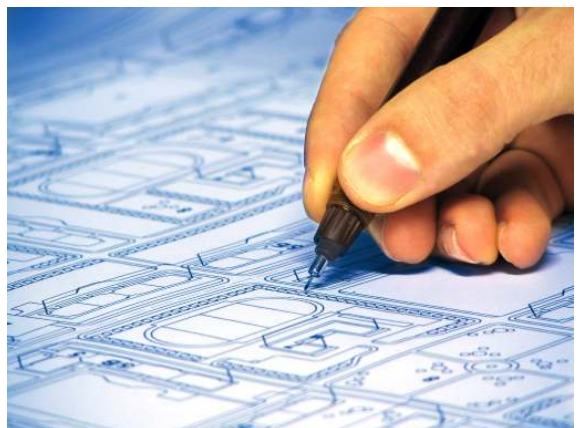
Available Options - Manufactured To Order

Connection Lead in 1.5mm<sup>2</sup> Cable  
Connection Lead in lengths from 1m to 3m

### Typical Power Application

Creating a 'spine' of power distribution cables is achieved quickly and safely using only a very small number of components.

With Fused Spur Units, available in switched and unswitched variants, enabling a isolating connection to Fan Coil Units, Heaters and Chillers, essential maintenance or repair can be made without any impact on other devices on the same circuit.



## LCM Connection Cables

Available in Wago, Wieland GST18i, Wieland EST18i, Ensto ALP and Ensto D2 connector configurations, connection cables to suit the all the current devices from all LCM suppliers are available.

Contact our sales office with details of your LCM for assistance on selection.

### Connection Cables (Male to Free end)

Number of Cores	Number Poles	Connector Configuration	Armoured	LSOH	Wieland GST18i	Wieland GST18i & CP Hood	Ensto ALP	Ensto D2
3	3	3 L = Brn, E = Grn/Y, N = Blue	4.1.3K.00	3.1.3A0.000	3.1.3A1.000	3.1.3A4.000	3.1.3A2.000	3.1.3A5.000
3	4	4 1 = Brn, E = Grn/Y, N = Blue		3.1.3D0.000	3.1.3D1.000			
3	4	4 2 = Brn, E = Grn/Y, N = Blue		3.1.3E0.000	3.1.3E1.000			
3	6	3 3 L = Brn, E = Grn/Y, N = Blue	4.1.3J.00	3.1.3J0.000				
3	6	3 3 L = Brn, E = Grn/Y, N = Blue			3.1.3J1.000			
4	4	4 1 = Brn, 2 = Blk, E = Grn/Y, N = Blue	4.1.4G.00	3.1.4A0.000	3.1.4A1.000			
4	6	3 3 L = Brn, P = Blk, E = Grn/Y, N = Blue	4.1.4C.00	3.1.4G0.000	3.1.4G1.000	3.1.4G4.000		
4	6	3 3 L = Brn, P = Blk, E = Grn/Y, N = Blue		3.1.4M0.000	3.1.4M1.000			
4	6	3 3 L = Brn, P = Blk, E = Grn/Y, N = Blue		3.1.4U0.000				
4	6	3 3 L = Brn, P = Blk, E = Grn/Y, N = Blue			3.1.4U1.000		3.1.4U2.000	3.1.4U5.000
5	5	5 1 = Brn, 2 = Blk, 3 = Red, E = Grn/Y, N = Blue	4.1.5G.00	3.1.5A0.000				
5	6	3 3 L = Brn, 1 = Blk, 2 = Red, E = Grn/Y, N = Blue		3.1.5E0.000				
5	6	3 3 L = Brn, 1 = Blk, 2 = Red, E = Grn/Y, N = Blue			3.1.5E1.000	3.1.5E4.000		
5	6	3 3 L = Brn, 0v = Blk, Dim = Red, E = Grn/Y, N = Blue					3.1.5E2.000	3.1.5E5.000
5	6	3 3 L = Brn, 2 = Blk, 3 = Red, E = Grn/Y, N = Blue			3.1.5K1.000	3.1.5K4.000		
5	6	3 3 L = Brn, 2 = Blk, 3 = Red, E = Grn/Y, N = Blue						
5	6	3 3 L = Brn, 1 = Wht, 2 = Red, E = Grn/Y, N = Blue		3.1.5U0.000				
5	6	3 3 L = Brn, 2 = Red, 3 = Wht, E = Grn/Y, N = Blue			3.1.5U1.000			
5	6	3 3 L = Brn, 0v = Wht, Dim = Red, E = Grn/Y, N = Blue					3.1.5U2.000	3.1.5U5.000
5	6	3 3 L = Brn, Lon = Blk, Lon = Wht, E = Grn/Y, N = Blue	4.1.6C.00	3.1.6C0.000				
6	6	3 3 L = Brn, 1 = Blk, 3 = Red, 3 = Wht, E = Grn/Y, N = Blue		3.1.6E0.000				
6	6	3 3 L = Brn, 1 = Wht, 3 = Red, 3 = Blk, E = Grn/Y, N = Blue			3.1.6E1.000	3.1.6E4.000		
6	6	3 3 L = Brn, LM = Wht, 0v = Blk, Dim = Red, E = Grn/Y, N = Blue					3.1.6E2.000	3.1.6E5.000
6	6	3 3 L = Brn, 1 = Wht, 2 = Blk, 3 = Red, E = Grn/Y, N = Blue			3.1.6K1.000	3.1.6K4.000		
6	6	3 3 L = Brn, 1 = Wht, 2 = Red, 3 = Blk, E = Grn/Y, N = Blue			3.1.6L1.000			
6	6	3 3 L = Brn, 1 = Wht, 2 = Blk, 3 = Red, E = Grn/Y, N = Blue			3.1.6M1.000			
6	6	3 3 L = Brn, 1 = Wht, 2 = Red, 3 = Blk, E = Grn/Y, N = Blue		3.1.6U0.000				
6	6	3 3 L = Brn, 1 = Blk, 2 = Red, 3 = Wht, E = Grn/Y, N = Blue			3.1.6U1.000			
6	6	3 3 L = Brn, LM = Blk, 0v = Wht, Dim = Red, E = Grn/Y, N = Blue					3.1.6U1.000	3.1.6U5.000



**Rated Voltage:**

For any number of poles:  
400V / 6kV / 3. IEC60664

Air and creepage distances 5.5mm (Distance to contact surfaces)

**Rated Current:**

Max. 25A, depends on the following conductor cross sections:  
4.0mm<sup>2</sup> - 25A, 2.5mm<sup>2</sup> - 20A, 1.5mm<sup>2</sup> - 16A

**Conductor Cross Section:**

0.5mm<sup>2</sup> - 4mm<sup>2</sup> standard and fine-stranded wires

**Through Resistance:**

Approx. 0.5m<sup>2</sup> between male and female contacts

**Approval :**

VDE 0628, DNV, UL (CCA procedure for Europe)

**Under Preparation:**

VDE 0627, EN / IEC 61 535, LR, GL

**Type of Protection(With strain relief housing) :**

Plugged: IP 2XC

**Unarmoured Cable (Without Bus)**

LSOH sheathed cable with stranded conductors generally to BS7211

**Armoured Cable :**

Aluminium overwrapped 6491B LSOH cable with stranded conductors generally to BS7211

**Bus Cable:**

Belden equiv LSOH 8471 and 8719 screened

**Stripped Cable End :**

Sheathing stripped length: 100mm

Conductor stripped length: 9mm

**Plugging Cycles (Wago) :**

200 cycles, without load

100 cycles, with resistive load  $I_N = 25 A$ , tested

**Insertion and Withdrawal Forces (Male with Female Wago Connector) :**

Plugging: approx. 20 - 40N (depending on the number of poles)

Disconnection without locking device: 20 - 35N

Retention force with locking device: > 120N

**Protection Against Mismatching : (MDB / Spine Cables)**

100% protected against:-

a.) Mismatching connectors having different number of poles

b.) 180° mismatching

c.) Staggered mismatching

d.) Mating of one pole connectors:

**Coding : LSOH Wago**

With or without variable coding according to the types of applications

**Locking Devices : LSOH Wago**

A factory mounted device is fitted on all male connectors ensuring, that when mated, connectors are locked together

**Locking Devices : Armoured :**

A factory mounted device is supplied on all connector housings that can be either spring or screw operated giving a hand or tool operated locking solution.

**Materials**

Insulation parts (except cable)	Nylon 6.6 V0 halogen free
Contacts (Wago)	Copper or copper base alloy, surface refined
Clamping Springs (Wago)	CrNi steel
Armoured Casings	Galvanised Steel Plate
Port Housing	Light weight Die Cast Aluminium Alloy
Armoured Connector Housing	Light weight Die Cast Aluminium Alloy
Screws	Steel, galvanised and chromated

**Fire Resistance :**

Upon request

**General Information :**

Preceding ground (earth) contacts, with three phase current,  
PE precedes N and N precedes L

**Continuous Working Temperature :**

85° C

PVC cable for temperatures - 70° C

Insulating parts for temperature - 105° C

## WARNING

There are no user serviceable parts in any products detailed in this guide. Refer all servicing issues to qualified personnel.

To reduce the risk of fire or electrical shock do not expose any of the products herein to moisture or water. Do not allow foreign objects to enter any part of the system.

The use of pre-fabricated cable assemblies and wiring accessories does not supercede the need for final inspection and testing as required by BS7671, the IEE Wiring Regulations 16th Edition.

It is the responsibility of the persons installing the equipment to ensure that the project is correctly installed and tested to the current guidelines outlined in these standards before a completion certificate can be produced.

## Declaration of conformity

The Apex Wiring Solutions Modular Wiring System has been designed and independently tested to be in compliance with :-

