



GO SCREWLESS WITH WAGO

David Draper– Product Manager

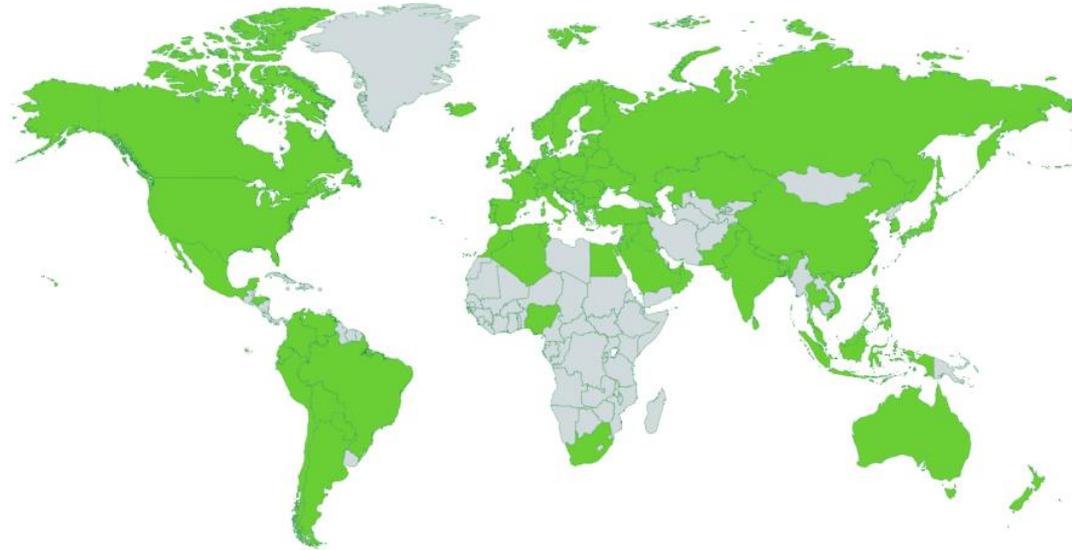


WHO ARE WAGO

BRAZIL
CANADA
MEXICO
USA

BAHRAIN
EGYPT
IRAN
IRAQ
JORDAN
KUWAIT
MOROCCO
OMAN
QATAR
SAUDI ARABIA
SOUTH AFRICA
UNITED ARAB
EMIRATES

AUSTRALIA
CHINA
INDIA
JAPAN
KOREA
NEW ZEALAND
SINGAPORE
TAIWAN
THAILAND
TURKEY
VIETNAM



ARMENIA
AUSTRIA
AZERBAIJAN
BELGIUM
BELORUSSIA
BULGARIA
CZECH REPUBLIC
DENMARK
ESTONIA
FINLAND
FRANCE
GERMANY
HUNGARY
ITALY
LATVIA
LITHUANIA
LUXEMBOURG
MOLDOVA
NETHERLANDS
NORWAY
POLAND
ROMANIA
RUSSIA
SLOVAKIA
SPAIN
SWEDEN
SWITZERLAND
TURKEY
UK & IRELAND
UKRAINE

**Invented the Leaf spring
connection in 1951**

Over 8,500 employees

80+ worldwide sites

Over 26,000 products

Turnover €1 Billion

WHY GO SCREWLESS

Problems with screws

VIBRATION

Can loosen if subjected to vibration and therefore require regular checks.

HEAT

Fluctuations in temperature can cause metals to expand & contract causing screws to loosen.

HUMANS

Wrong talk settings caused by poor installation techniques.

INDEPENDENT STUDY OF PANEL BUILDERS BY MCCANN FOUND:-

68% Use screw terminals of which only 8% used a torque screwdriver.

56% Had experienced loose screws of which 24% had to recall or visit site to fix.

Open door on 80mph Southend train 'due to loose screws'

© 27 November 2019



The door of the carriage was open for 23 minutes

Loose screws were to blame for a door being open on a passenger train going at 80mph (128km/h), a report found.

The train travelled 16 miles through Essex once the screws fell out, before a passenger alerted the driver.

A Rail Accident Investigation Board (RAIB) report said operator Greater Anglia had since found loose screws on "at least 60 doorways" in its fleet of refurbished class 321 carriages.

SPRING CONNECTIONS

Benefits

MAINTENANCE

All our products are free from maintenance and certain ranges can be used in inaccessible locations in accordance with BS5733

HEAT

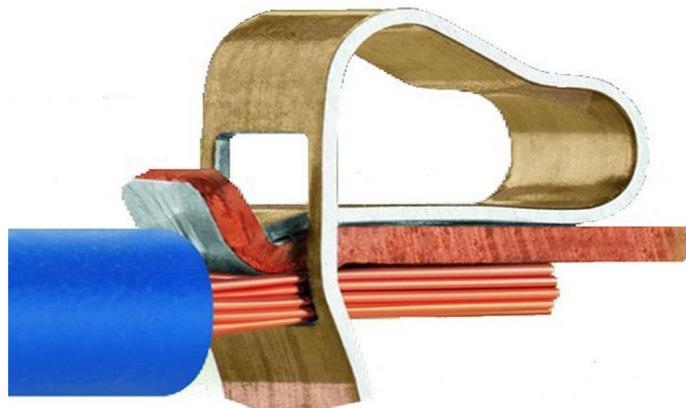
Springs move and adapt with fluctuations in temperature ensuring a constant connection.

VIBRATION

Springs keep a constant connection even in high vibration applications.

TORQUE

Springs remove the need for any torque special equipment as the correct torque is automatically applied to the conductor.



ELECTRICAL INTERCONNECTIONS

Installer Connectors



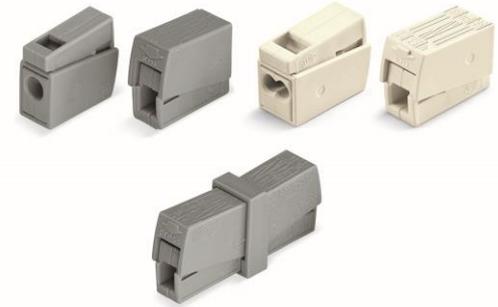
Push Wire
2773 Series

4mm ²	450V – 32A
0.75 – 4mm ²	Solid
1.50 – 4mm ²	Stranded



Lever
221 Series

4mm ²	450V – 32A
0.20 – 4mm ²	Solid & Stranded
0.14 – 4mm ²	Fine stranded
6mm ²	450V – 41A
0.50 – 6mm ²	Solid, Stranded & Fine stranded



Lighting
224 Series

Installation side	400V – 24A
Lighting side	1 – 2.5mm ² Solid
	0.5-2.5mm ² Solid & Fine stranded

PRODUCT ROLLOUT - 221- 4 / 6 MM² FOR EX E

Technical data connectors

Current / Status of approvals:

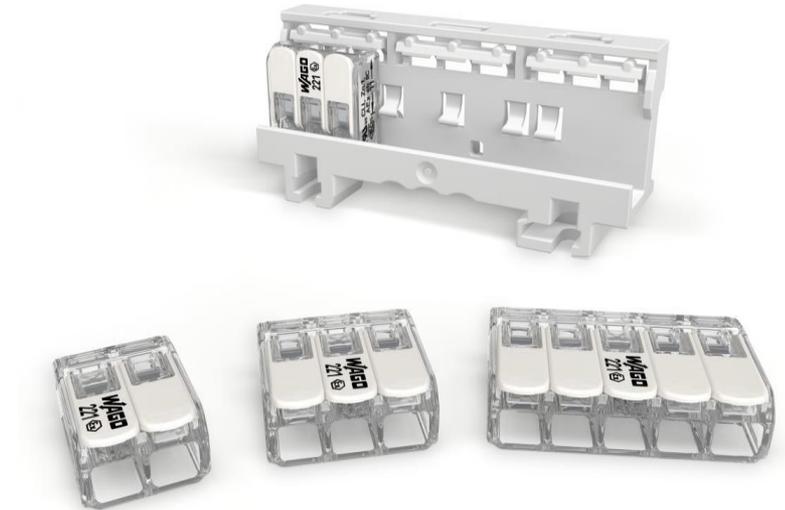
Type	ATEX / IECEx		UL/CSA Ex	
				
221-482	24,5 A (derating)	certificates available	20 A	certificates available
221-483	32 A		20 A	
221-485	32 A		20 A	
221-682	37 A	Tests are passed, certificates in preparation	30 A	
221-683	37 A		30 A	
221-683	37 A		30 A	

Cross section

Cross section	221-48x	221-68x
ATEX, IECEx	0,14 - 4mm ² f 0,2-4mm ² e,m	0,5mm ² - 6 mm ² e,m,f
UL Ex	AWG 24-12 sol. / str.	AWG 20-10 sol. / str.

Service temperature range:

-55 ... + 105°C



ELECTRICAL INTERCONNECTIONS

Installer Connectors – Accessories



WAGOBOX

- WAGOBOX
- WAGOBOX 221-4
- WAGOBOX Light
- WAGOBOX Capsule
- WAGOBOX XL
- WAGOBOX XLA



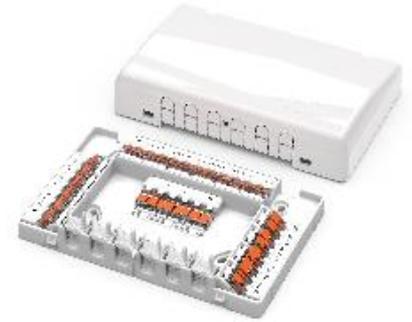
Spelsberg

- Abox with 222 Series
- Abox with 221 Series



Wiring Centre

- MBOX L32 Wiring Centre
32 Conductors

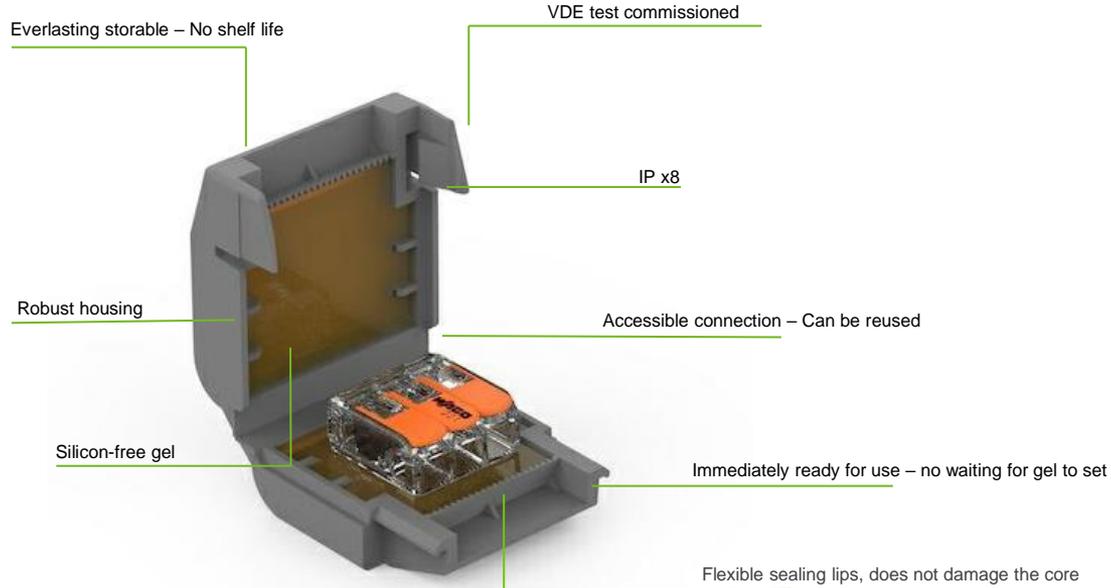


Large wiring centre

- L60 (207-4301)
60 Conductors

WAGO GEL BOXES FOR CONNECTORS

Features and benefit



Space Saving due to compact size

Easy handling

Complete system of Gel box & connector tested by VDE

DIN VDE V 0606-22-100

IPX8 protection from moisture & water ingress

Flexible sealing lips prevent conductor damage

Fast to install with no waiting for gel to harden

No shelf life on gel

Silicone Free

Suitable for 221, 2273 & 27773 series connectors

Not affected by temperature fluctuations

Protects against moisture damage in sealed enclosures

ELECTRICAL INTERCONNECTIONS

NEW PRODUCTS

One Rail-Mount Terminal Block Family

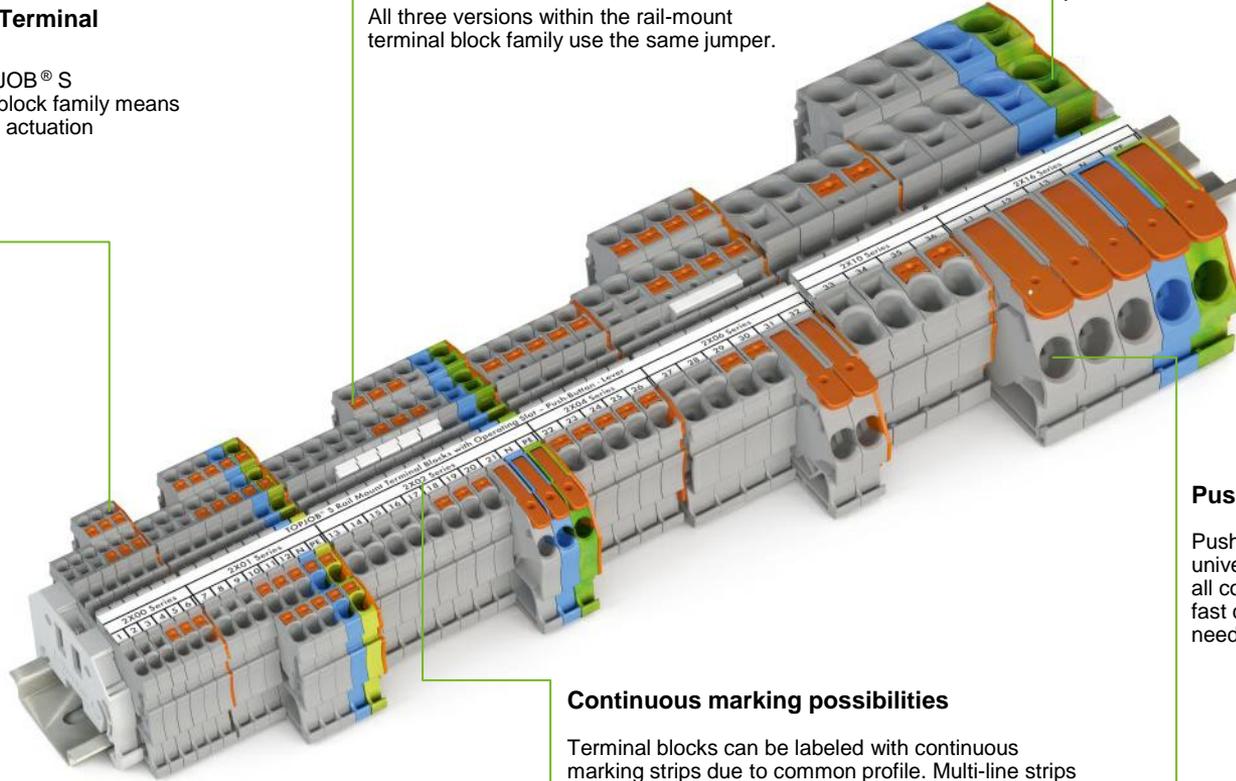
The extended TOPJOB® S rail-mount terminal block family means there are now three actuation versions.

3 versions
in
1 family

One jumper range

All three versions within the rail-mount terminal block family use the same jumper.

Test slots



Through Terminals
Disconnect Terminals
Transformer (CT) Terminals
Fuse Terminals
Diode Terminals
Base Terminals & Component Plugs
X-COM S System
Sensor and Actuator Terminals

Push-in Technology

Push-in CAGE CLAMP® is the universal connection technology for all conductor types. For especially fast connections with no tools needed.

Continuous marking possibilities

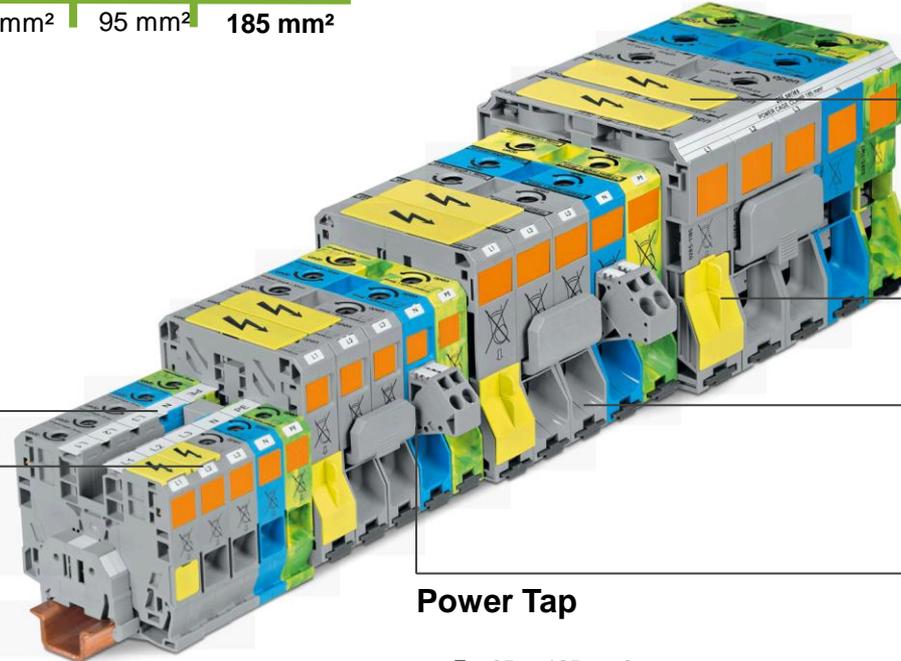
Terminal blocks can be labeled with continuous marking strips due to common profile. Multi-line strips can be printed using the smartPRINTER.

Conductors 0.14mm up to 25mm²

HIGH-CURRENT TERMINAL BLOCKS FOR DIN-RAIL

Series	285			
Cross section	35 mm ²	50 mm ²	95 mm ²	185 mm ²

125A – 353A



Marking

- WMB markers are suitable for all high-current terminal blocks

Safety

Protective warning marker

- Clearly indicate high-voltage applications.

- Yellow, detachable covers shield the jumper slots and/or unused conductor entries, making them touch-proof

Risk of Injury!

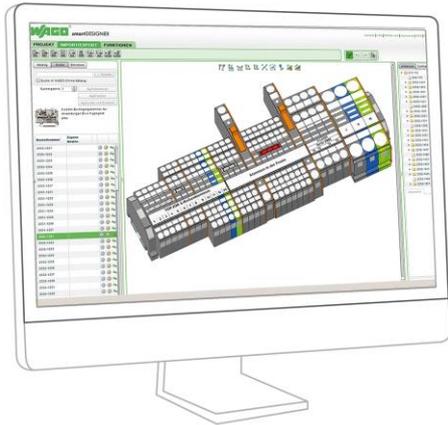
- Keep fingers out of the conductor entry hole!

Power Tap

- For 35 to 185 mm²
- Provides safe and easy power distribution to additional loads
- Insert the unwired tap before actuating the spring for termination

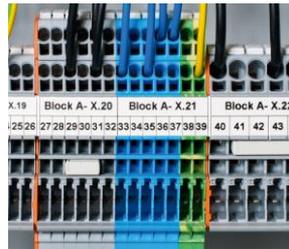
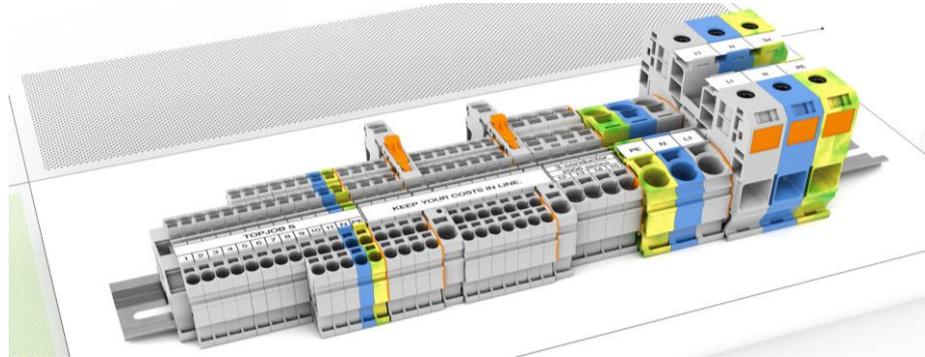
ELECTRICAL INTERCONNECTIONS

SMART WAGO



smartDESIGNER

Free design software



smartMARKING

Free marking software



smartPRINTER

Multi media printer

ELECTRICAL INTERCONNECTIONS

PCB and Connectors



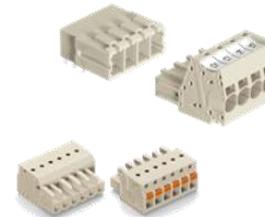
picoMAX[®]



PCB Terminal Blocks



SMD PCB Terminal Blocks

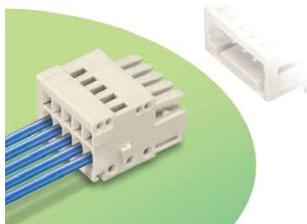


MULTI CONNECTION SYSTEM



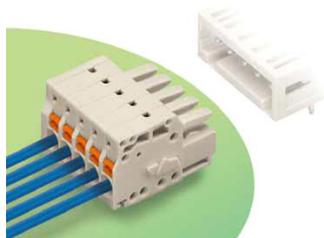
Power Terminal and
Connector Blocks

OVERVIEW MULTI CONNECTION SYSTEM



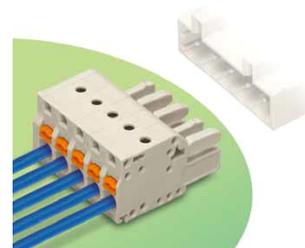
Micro

Pin Spacing 2,5 mm / 6 A
Conductor size 0,08 mm² - 0,5 mm²



Mini

Pin Spacing 3,5 mm / 10 A
Conductor size 0,08 mm² - 1,5 mm²



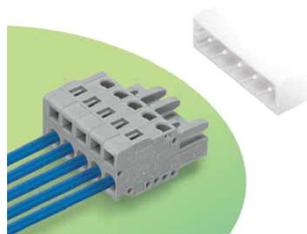
Midi

Pin Spacing 5 mm / 7,5 mm / 16 A
Conductor size 0,08 mm² - 2,5 mm²



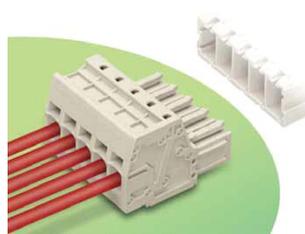
Mini HD

Pin Spacing 3,5 mm / 10 A
Conductor size 0,08 mm² - 1,5 mm²



Midi Classic

Pin Spacing 5 mm - 7,62 mm / 16 A
Conductor size 0,08 mm² - 2,5 mm²



Maxi

Pin Spacing 7,62 mm / 41 A
Conductor size 0,5 mm² - 10 mm²

PRODUCT FEATURES

MCS MAXI 16 – 832 Series

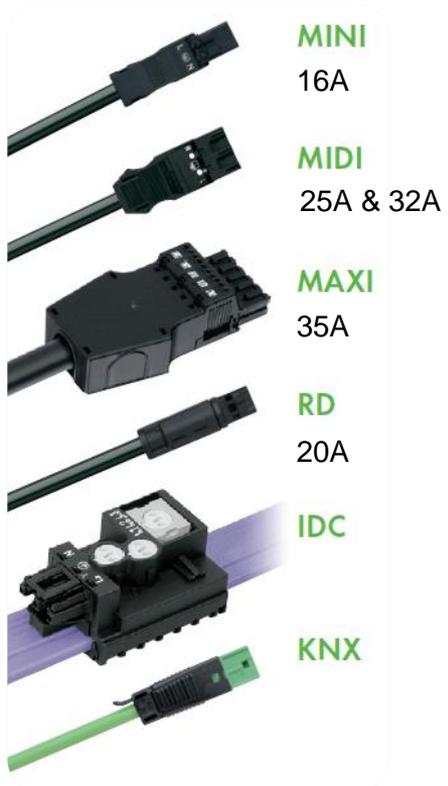
System Features

- Conductors up to 25 mm²
- Wire-to-Board and Wire-to-Wire
- Mating directions: 0 °, 90 ° and 180 ° to PCB
- Test possibilities: 0° and 90° to wire entry side
- Optional interlocking and coding
- 100% protected against mismatching
- Approved to IEC/EN 60335-1 (household appliance standard)
- Approved to IEC/EN / UL 61800-5-1 (electrical power drive systems)



WINSTA®

WINSTA® Ranges



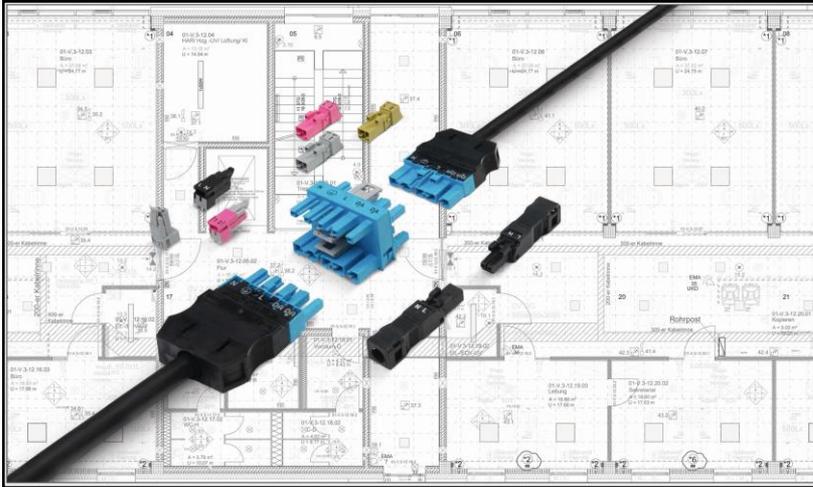
Offices / Hospitals / Hotels



Modular Housing

SYSTEM BENEFITS

Why Modular



Reduced Installation Time

- Typical site saving can be as high as 70% compared with traditional wiring methods for final circuit distribution

Simplified design

- Lighting and Power are easily designed on a per circuit basis for estimators, planners and installers.

Fewer Components

- Simplified design means fewer components and easier on site management.

Free From Maintenance

- All cables terminated in the innovative WAGO CAGE CLAMP® connections.

Reduce Site Testing

- All components are fully tested and labelled off site thus reducing on site issues.

Fully Scalable

- From small refurbishments to large scale hospitals and office blocks.

Eliminate Wastage

- Through accurate design and project management there should be minimal surplus material thus reducing the cost of wastage.

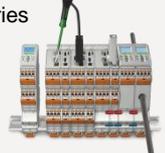
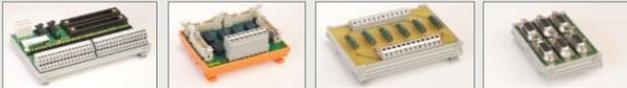
Enhanced Profitability

- By reducing both the install time and materials required along with the design certainty, accelerated program, reduction of labour, greater profitability and cost certainty can be achieved.

Improved Health and safety

- By reducing the exposure of site staff to the prolonged need for 'working at heights' and to the requirements of extended use of cutting and drilling tools there should be a considerable drop in the number of related accidents.

INTERFACE PRODUCTS

JUMPFLEX® signal conditioners	857 Series 	2857 Series 	Configuration options 	Accessories 	3 phase power monitor 
EPSITRON® power supplies	Power supplies 787 (2787 Pro 2) 		System modules 787 Series 		
Relays and optocouplers	<ul style="list-style-type: none"> • 857 Series • 859 Series • 788 Series • 858 Series • 286 > 2042 Series 				
Interface modules	Interface modules 289 Series 	System wiring 706 & 704 Series 	Custom solutions 		
Current and energy measurement technology	Current Transformers, 855 Series 		Rogowski coils and voltage taps 855 Series 	Current and Rogowski signal conditioners 857 Series 	Current sensors 789 Series 

AUTOMATION PRODUCTS

Software	<p>Engineering Software</p> 	<p>Runtime Software</p> 	<p>Mobile Software (apps)</p> 	<p>Software Solutions (Applications)</p> 	<p>Cloud/IoT solutions</p> 
Operation & Monitoring	<p>Touch Panel 600 Web Panels & Control Panels</p> 				
Controllers	<p>Controllers 750 / 750 XTR</p> 	<p>PFC100 Controllers</p> 	<p>PFC200 / PFC200 XTR Controllers</p> 	<p>PFC200 G2 Controllers</p> 	
I/O Systems	<p>WAGO-I/O-SYSTEM 750</p> 	<p>WAGO-I/O-SYSTEM 750 XTR</p> 			
Infrastructure Solutions	<p>Industrial Switches</p> 	<p>Radio Technology</p> 	<p>Sensor/Actuator Boxes</p> 	<p>IP67 FIELD I/O</p> 	<p>Services</p> 

TOOL NEWS 2019

Stripping Tools for Cable Sheath



Stripping Tools for Single Conductors



Test and Measurement Devices



Crimping Tools



CONNECT WITH US TODAY

Thank you for watching our go screwless webinar, we hope you have found it informative.

If you have further questions please contact us on:-

Technical Support; 01788 568 008 – ukmarketing@wago.com

Customer Service; 01788 568 008 – uksales@wago.com

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