



Home Appliances





Lumberg [discover agility]



**Sustainability:
Third Generation**
| at Lumberg



We are an independent, family-run company based in Germany – and have been for over 83 years now. Our success is based on sustainable performance, technical solution competence – and our “passion for connections”.

With a track record of agile expertise, our products and systems solutions support an industrial environment – worldwide. We engineer and produce connectors and contact systems, electromechanical elements and mechatronic components of outstanding quality for your individual technical application. We focus on automotive, building technology, home appliances and mobile communications industries – let Lumberg put its decades of connector design and manufacturing experience to work for you.

DIN EN ISO 9001

ISO/TS 16949

DIN EN ISO 50001

DIN EN ISO 14001



Competence in Providing Solutions [connecting the world of tomorrow]



R & D:
Value Creating Innovation

| by Lumberg

M1

M2



The right idea, a neat construction, fully-equipped laboratories and precise system measurements are the primary steps in our developing projects. With state-of-the-art methods and technologies, we mobilize our established development expertise and our passion for feasibility for your product. It is not only about the creation of unique quality products. It is also about finding an answer for challenges where others fail to find a solution.

With our engineering-based-on-partnership maxim we manifest detailed and integrated made-to-measure solutions for you. How? By applying our comprehensive Home Appliance know-how and pairing it with our electrical and electromechanical engineering profession.

From a first talk about technology to the development, the design and the construction of a pre-production prototype, we are a strong and reliable development partner. And we use creative thinking to turn even individual design and product requests into prime "Made by Lumberg" development quality at our R&D center.



Washers

Freezers

Ovens

Dryers

Small Household Appliances

Stoves

Hoods

Dishwashers

Refrigerators

Microwaves





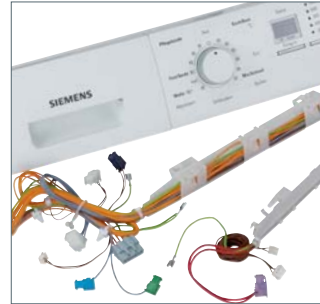
Advantage RAST [first choice in home appliances]

**Quality:
No Compromises**

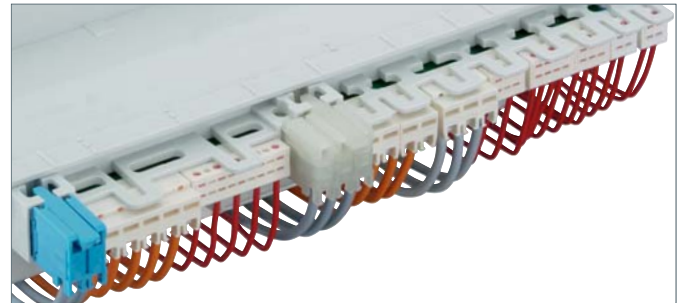
| by Lumberg



Lumberg is the specialist for RAST. 30 years ago, we contributed significantly toward the development of the RAST connector, to support the industry with eliminating errors in the production process due to mismatched connections, or with simplifying the assembly when mounting end devices, to pave the way for conformity. This became and has remained a standard to this day. We have continuously advanced the development of RAST connectors ever since. Today, we offer the broadest product range the market has to offer – for RAST 2.5 and RAST 5 systems.



- Protected against mismatching keying according to RAST standards
- Insulation displacement technology (IDT) up to 25 A
- RAST connectors for direct and indirect mating of 1 to 27 poles in the standard range
- Optional color coding for easy installation
- Broad standard program
- Special IDT terminals for flexible foil or varnished wire connections
- IEC 60335-1-certified glow wire resistance
- Deep knowledge of customer specific system solutions



Advantage RAST

kobold
VK200

More speed, greater flexibility,
added individuality

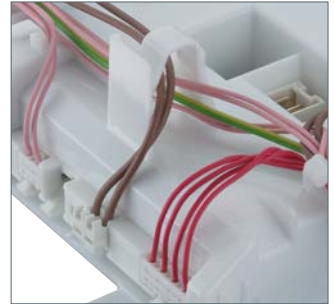
| by Lumberg





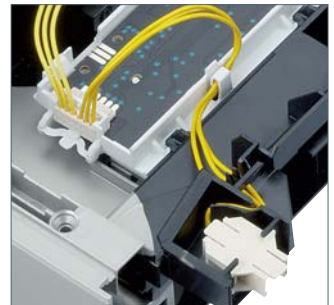
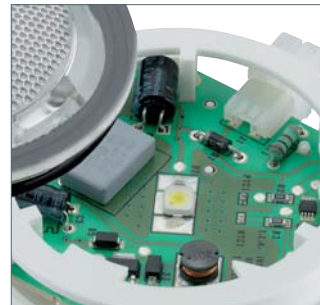
■ Quality Improvement in the Production Process

- No false connections during device assembly due to individual keying
- Quality improvement paired with lower costs
- Reliability due to automatic testing of short circuit, current continuity, high voltage
- Destruction of damaged cable harnesses



■ Cost Reduction

- Low labor costs because of highly-efficient, fully automatic production and keying at cable harness machines
- High flexibility for easy changeover of connectors or cables



■ Reduced Development Time

- Efficient development due to modular molding tools and keying options
- Increased flexibility
- Flexible harness concept for rapid start of production for new appliance versions

■ Reduced Conductor Diameter

- Due to division into power and signal areas (RAST 2.5 and RAST 5)
- Due to smaller connector size (RAST 2.5) and direct mating





SmartSKEDD [IDT meets SKEDD]

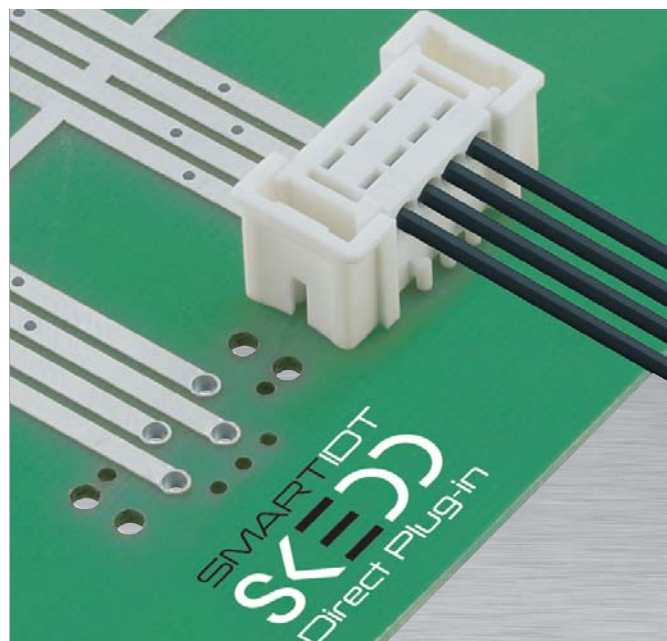
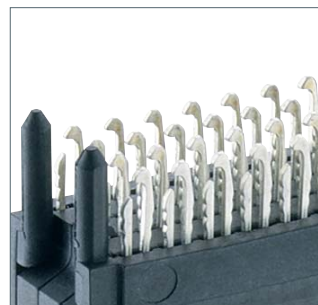
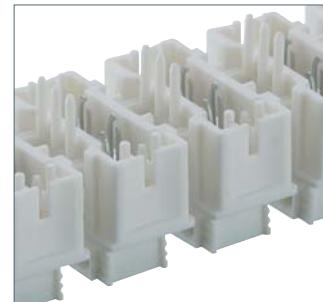
World Premiere:
Arbitrary Direct Mating
with the PCB in IDT

| by Lumberg only

Evolution meets revolution: While direct contacting to the edge of the printed circuit board with RAST connectors is one of our domains, we are now introducing a totally new type of connectors for our free program: reversible direct connectors that mate anywhere on the PCB using tried and tested insulation displacement technology.

SKEDD makes this possible. The individual contact comprises two contact tongues which, when inserted into plated-through holes in the PCB, retract evenly. The contact pressure forces from the two tongues then create a steadfast mechanical-electrical connection inside the plated-through hole – solderless.

Connectors can be mated and locked without tools, for total convenience when mounting entire sub-assemblies. This enables completely new designs since they can also be used right in the middle of a PCB or on the reverse. Here, reversible mating even facilitates for the first time the simple exchange of components during, for example, servicing. In conjunction with the established insulation displacement technology which supports all advantages in automated cable assembly and consequently, the convenient production of large quantities, our unique combo for your ideas right in the middle of the PCB is really smart – or simply: smart SKEDD.



System Partnership [collaborative performance]

Success:
Shared Solution

|with Lumberg





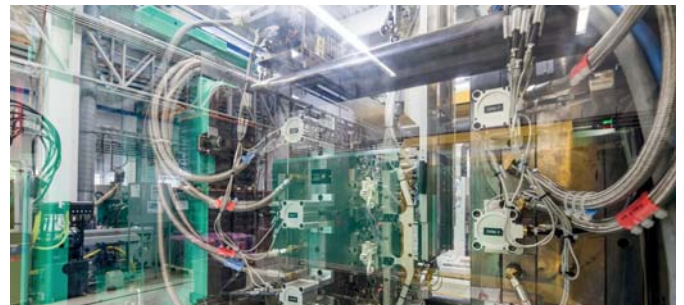
Products, solutions, services – with our business segments clearly mapped-out and focusing on technological challenges that we know inside out, we concentrate on your application-specific requirement. With solutions that accommodate everything from catalog products to individual product innovation in closest cooperation with you.

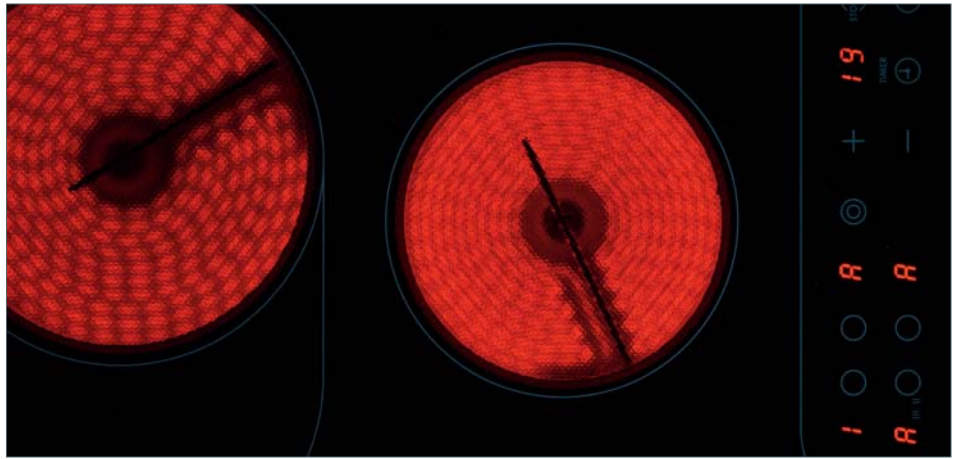
We do more than connectors – we design and develop full products and sub-assemblies for you while coordinating product requirements and specifications with you and other suppliers involved. We develop and clarify technical interfaces and control the process.

Our range of manufacture gives us more speed, greater flexibility and added individuality. Good for you to know – in case things are “really urgent”.

Our key technologies are punching, bending, injection molding and assembly – we process a variety of metals and plastics – and we design and build assembly lines for the actual connection.

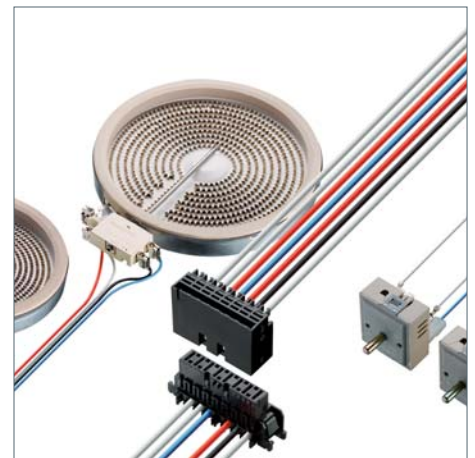
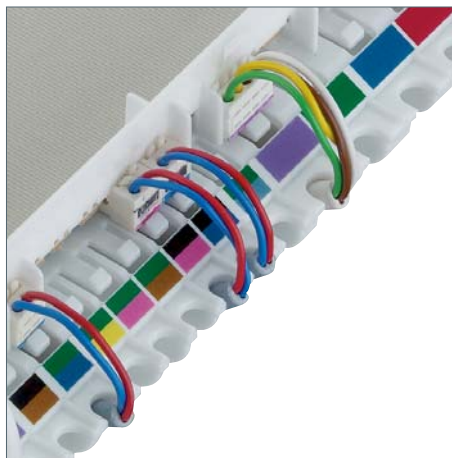
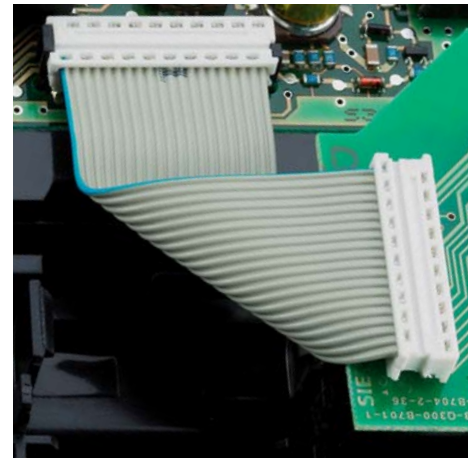
The right systems technology, degree of automation, product implementation, product planning, efficiency-creating measures and process improvements are our day-to-day business for the lifecycle of your customized product.

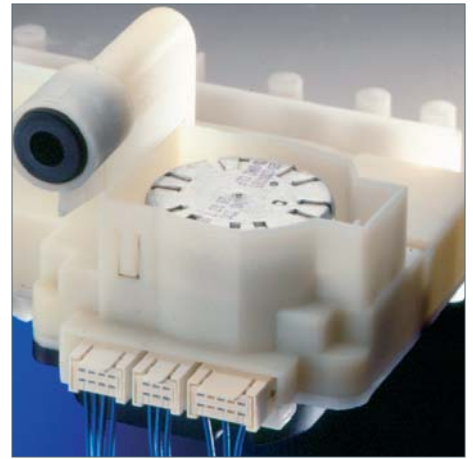




Ideas

You know what to expect from us: a lot.





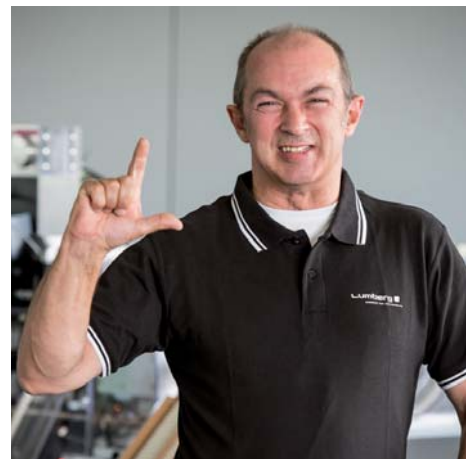
Agility

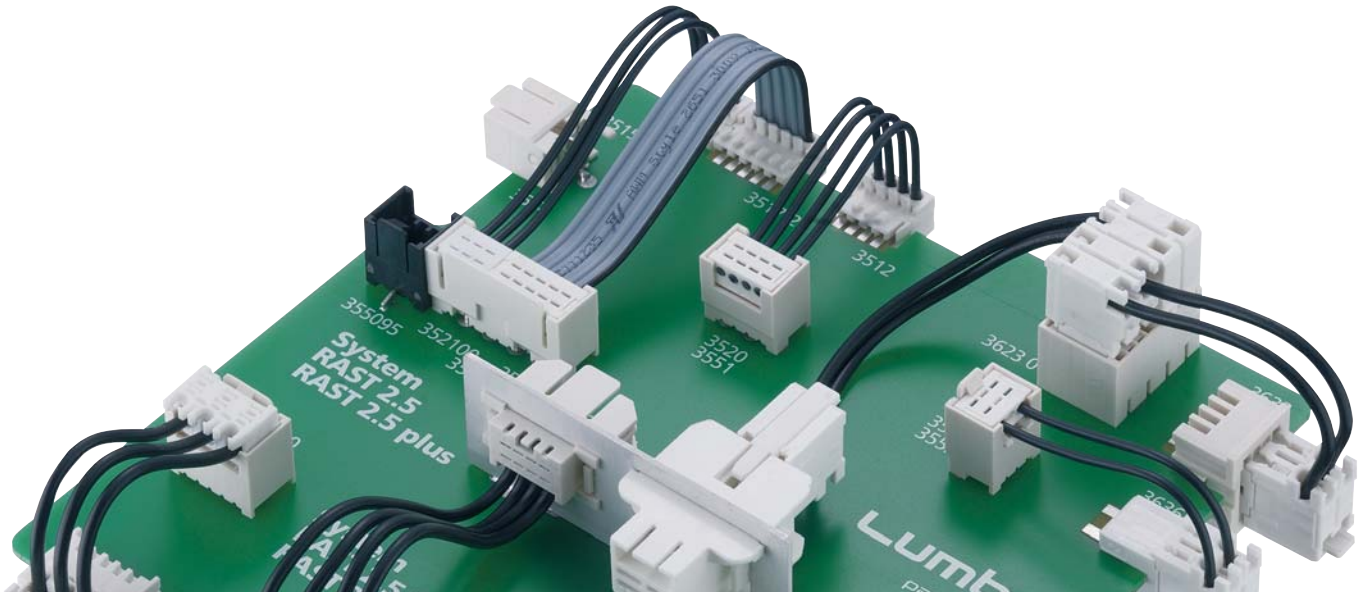
We have more speed,
 greater flexibility, more
 individuality.





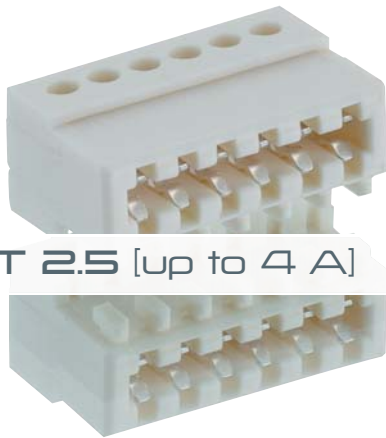
Your Success
is based on their skills.





Home Appliances Connector Systems

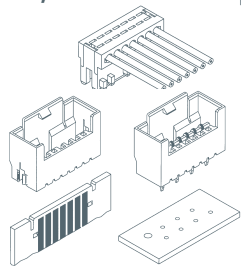




RAST 2.5 [up to 4 A]

- Direct and indirect mating
- Insulation Displacement Technology (IDT)
- Keying to avoid mismatching according to RAST 2.5 standards, single or double-row
- Locking options

RAST 2.5 connectors, insulation displacement technology



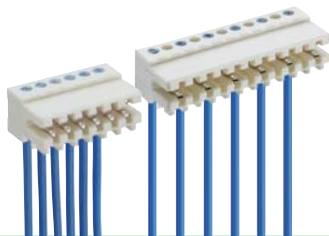
■ Direct mating with or without guide frame

■ Indirect mating with pin header

3520–3523

RAST 2.5 connectors, direct and indirect mating, insulation displacement technology pitch 2.5/5.0 mm

3521 · 3523 standard version
3520 · 3522 with interior locking

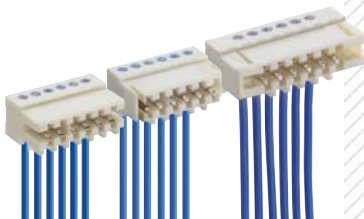


4 A – 32/250 V AC – GWT 750 °C – 2-20 poles

3510–3518

RAST 2.5 connectors, direct mating, insulation displacement technology, with/without keying rib and closed sides pitch 2.5/5.0 mm

3510 · 3511 standard version
3512 · 3513 locking by lateral locking hooks
3515 · 3516 locking by locking hooks
3517 · 3518 locking by locking toes

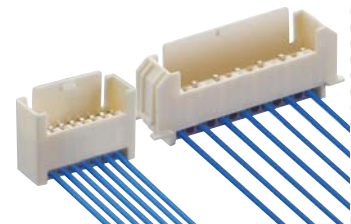


4 A – 32/250 V AC – GWT 750 °C – 2-20 poles

3541–3546

RAST 2.5 (chassis) tab headers, insulation displacement technology, with locking latch pitch 2.5/5.0 mm

3541 · 3542 standard version
3545 · 3546 for panel mounting

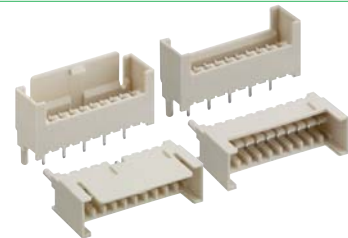


4 A (6A with **3570**) – 32/250 V AC – GWT 750 °C – 2-20 poles

3550–3557

RAST 2.5 pin headers pitch 2.5/5.0 mm

upright with spigot
3550 · 3552 with locking latch
3551 · 3553 with interior locking
angular
3554 · 3556 with locking latch
3555 · 3557 with interior locking

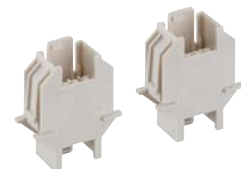


4 A (**355...V167** up to 10 A) – 32/250 V AC – GWT 750 °C – 2-20 poles

83545 · 83546

RAST 2.5 double chassis pin headers, with locking latches pitch 2.5/5.0 mm

83545 2.5 mm
83546 5.0 mm



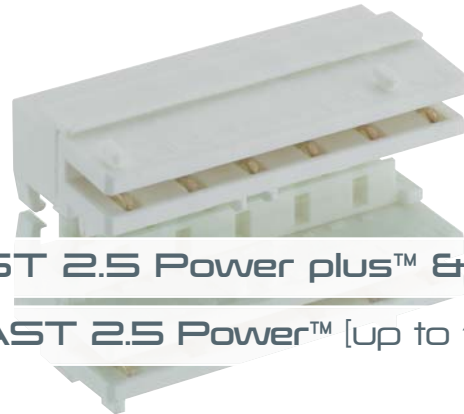
4 A – 160/400 V AC – GWT 750 °C – 3-4 (**83545**), 2 (**83546**) poles

PITCH
2.5/5 mm



RAST 2.5 plus™ [up to 4 A]

PITCH
5 mm



RAST 2.5 Power plus™ & RAST 2.5 Power™ [up to 10 A]

352100 · 352300

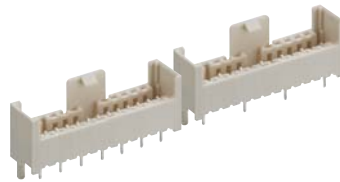
RAST 2.5 plus™ connectors, direct and indirect mating, insulation displacement technology, with double-sided keying pitch 2.5/5.0 mm



4 A – 80/250 V AC – GWFI 850 °C/GWIT 775 °C – 3-11 poles

355099 · 355299

RAST 2.5 plus™ pin headers, upright, with locking latch and positioning spigots, with double-sided keying pitch 2.5/5.0 mm

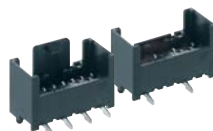


4 A – 32/250 V AC – GWT 750 °C – 3-11 poles

355095–355395

RAST 2.5 plus™ pin headers, upright, in surface mount technology (SMT), with one or two positioning spigots, with double-sided keying 2.5/5.0 mm

355095 · 355295 with locking latch
355195 · 355395 with interior locking



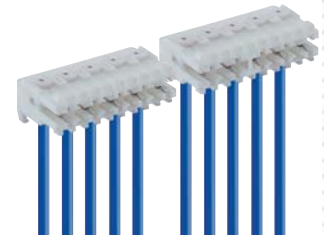
4 A – 250/500 V AC – GWT 750 °C – 3-7 poles

357000 · 357600

RAST 2.5 Power plus™ connector, direct and indirect mating, insulation displacement technology, with double-sided keying

357000 direct and indirect mating

357600 direct mating, with/without locking, with/without keying rib and closed sides



6 A (10 A indirect mated 2-4-pole) – 400 V AC – GWFI 850 °C/GWIT 775 °C – 2-8 poles

357099

RAST 2.5 Power connector, direct and indirect mating, insulation displacement technology, with double-sided keying



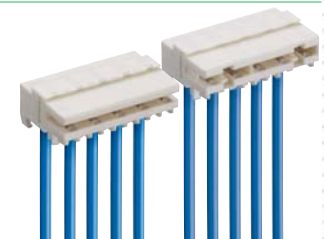
6 A (10 A indirect mated 2-5-pole) – 400 V AC – GWT 750 °C – 2-10 poles

3570 · 3575

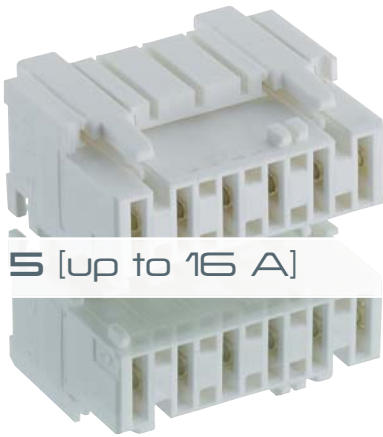
RAST 2.5 Power connector, insulation displacement technology

3570 direct and indirect mating

3575 direct mating, with/without locking, with/without keying rib and closed sides



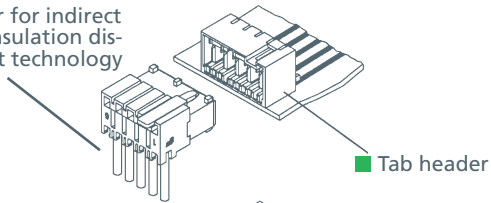
6 A (**3570** 10 A indirect mated 2-5-pole) – 400 V AC – GWT 750 °C – 2-10 poles



RAST 5 [up to 16 A]

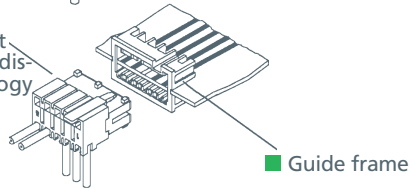
- Direct and indirect mating
- Insulation displacement technology (IDT) or screw clamp
- Keying to avoid mismatching according to RAST 5 standards
- Color keying facilitates assembly and servicing
- Special versions for higher ambient temperatures

■ Connector for indirect mating, insulation displacement technology



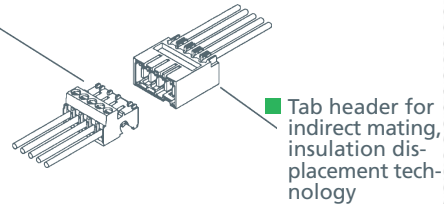
■ Tab header

■ Connector for direct mating, insulation displacement technology



■ Guide frame

■ Connector for indirect mating with screw terminals



■ Tab header for indirect mating, insulation displacement technology

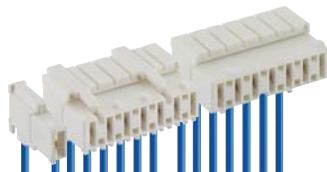
3623–3628

RAST 5 connectors, insulation displacement technology

3623 · 3625 with exterior locking

3626 · 3627 with interior locking

3628 chassis connector with interior locking



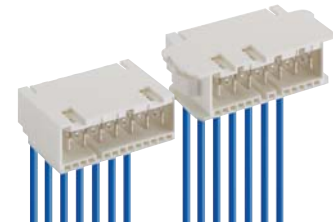
10 A (**3625 · 3627** 16 A, **3628** 12 A) – 250 V AC – GWT 750 °C (except **3628**) – 1-12 (**3625 · 3627** 1-4, **3628** 8) poles

3647 · 3648

RAST 5 (chassis) tab headers, insulation displacement technology

3647 standard version

3648 for panel mounting



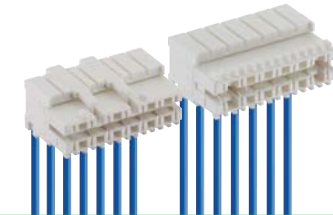
10 A – 250 V AC – GWT 750 °C – 2-8 poles

3633 · 3636

RAST 5 direct connectors, insulation displacement technology

3633 with exterior locking on guide frame

3636 with/without keying rib and closed sides, with/without locking on printed circuit board



6 A – 250 V AC – GWT 750 °C – 2-12 poles

3641–3645

RAST 5 tab headers

3641 upright with spigot

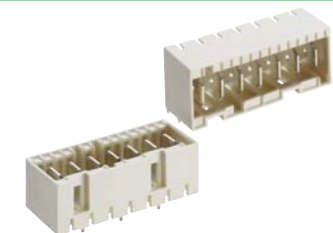
364197 pottable version

3642 angular with upper side locking
angular with lower side locking

3643 standard version

3644 higher version with spigot

3645 higher version without spigot



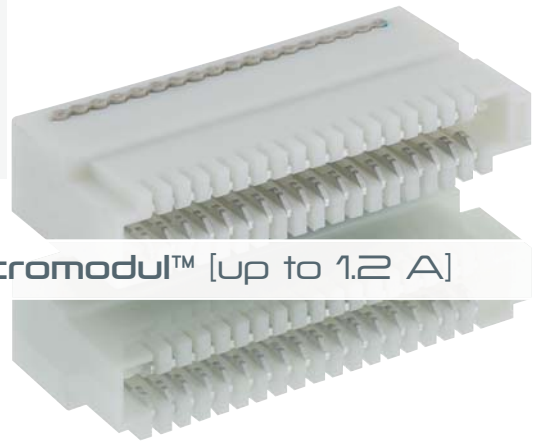
10 A (**364...V167** 16 A) – 250 V AC – GWT 750 °C – 2-12 poles

PITCH
7.5 mm



RAST 7.5 Power™ [up to 25 A]

PITCH
1.27 mm



Micromodul™ [up to 1.2 A]

3690

RAST 7.5 Power™ connector, indirect mating, insulation displacement technology, with exterior locking



25 A – 500 V AC – GWT 750 °C – 1-2 poles

3695

RAST 7.5 Power™ tab header, upright with spigot



25 A – 630 V AC – GWT 750 °C – 2-4 poles

302299

Micromodul™ connector, direct mating, insulation displacement technology, with locking by means of locking hooks and toes, with closed sides



1.2 A – 125 V AC – GWT 750 °C – 4-22 poles

MICAL... · MICA

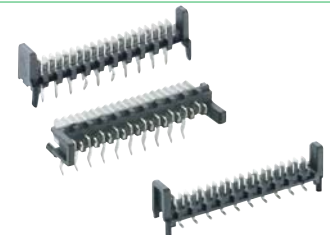
Micromodul™ (solder-in) connector, indirect and indirect mating, insulation displacement technology, with locking



1.2 A – 32 V AC – 4-20 (all even) and 26 poles

MICS... · MICS/SMD

Micromodul™ tab headers, upright/angular, with/without retaining hooks and press-fit spigots



1.2 A – 160 V AC (**MICS/SMD** 80 V AC) – 4-20 (all even) and 26 poles

Efficient Harnessing



HZ...

Manual tongs for termination and keying of RAST and Micromodul™ connectors



stroke capacity **HZ** ca 240 discrete conductor/h, **KHP** ca 450 discrete conductor/h

KHP...

Knuckle-joint press for termination of RAST and Micromodul™ connectors



HA...

Semi-automatic harnessing machines for termination of RAST and Micromodul™ connectors, modular set-up, flexible extendible



stroke capacity ca 1.200 discrete conductor/h

VARICON...

Fully automatic harnessing machines for termination of RAST and Micromodul™ connectors, for flexible harness configurations

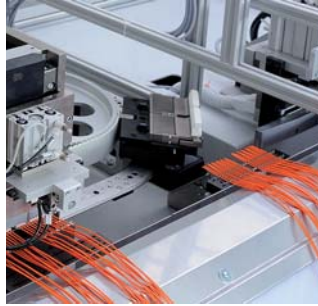
- Highly efficient connector loading
- Highly efficient cable loading
- Flexible cable processing
- Quality assurance



stroke capacity ca 17.000 contacts/h

HA35f... · HA357f... · HA36f...

	HA...f-KC-KT	HA...f-HV	HA...f-RK-CA-KC-KT	HA...f-RK-CA-KC-KT-HV	HA...f-RK-CA-HV
Connectors	351..., 351...-2, 352..., 357..., 362..., 363...				
State of delivery of connectors	in chain				
Processable conductor	discrete conductor, ribbon cable				
Stroke capacity	ca 1.200 discrete conductors per hour				
Cable color detection 7+1 (CA)			X	X	X
Verification of insertion pattern and line end position	X	X	X	X	X
Storage of insertion patterns	X	X	X	X	X
High-voltage test (HV)		X		X	X
Cutting and vacuum extraction device for connector chain interlinks (RK)			X	X	X
Keying cutting (KC)	X		X	X	
Keying test (KT)	X		X	X	
Automatic feeding of connectors	X	X	X	X	X



VARICON 1000

VARICON 7000-RD

VARICON 7000

Connectors	302299, MICA, MICAL, MICALD	RAST 2.5 (351..., 352...; VARICON 7000-RD also 354...), RAST 2.5 plus™ (352...00), RAST 2.5 Power plus™ (357...00), RAST 5 (362..., 363...)	
State of delivery of connectors	in chain	in chain	in chain
Processable conductor	ribbon cable	discreter conductor	discreter conductor
Stroke capacity	ca 1.200 discrete conductors per hour	ca 10.500 contacts per hour	ca 17.000 contacts per hour
Details	<ul style="list-style-type: none"> - Processing modules for mass termination - Testing units for quality control - Type U, type Z, hybrid 	<ul style="list-style-type: none"> - 2 different RAST systems loadable in parallel - Decollating of connectors and cutting of RAST keyings - 12 cable barrels mountable in parallel - 4 different cables loadable in parallel (different types, sections, colors) - 1-to-n (U-type) and 1-to-1 (Z-type) harnesses - Crossed cables, bridged contacts and varying pitches in one harness - Variable cable lengths in one harness (min. 200 mm, max. 2500 mm) - Mechanical testing units including RAST keying and cable end position tests - Electrical testing units, including continuity, high-voltage/short-circuit tests - Distruction of reject parts - Cable bending unit for RAST 2.5 Power plus™ and RAST 5 - Produced harnesses hanging straight or in loop for manual unloading - Especially short changeover times 	<ul style="list-style-type: none"> - 2 different RAST systems loadable in parallel - Decollating of connectors and cutting of RAST keyings - 24 cable barrels mountable in parallel - 8 different cables loadable in parallel (different types, sections, colors) - 1-to-n (U-type) and 1-to-1 (Z-type) harnesses - Crossed cables, bridged contacts and varying pitches in one harness - Variable cable lengths in one harness (min. 200 mm, max. 2500 mm) - Mechanical testing units including RAST keying and cable end position tests - Electrical testing units, including continuity, high-voltage/short-circuit tests - Distruction of reject parts - Cable bending unit for RAST 2.5 Power plus™ and RAST 5 - Produced harnesses hanging straight or in loop for manual unloading - Especially short changeover times - Main process units duplicated for maximum performance and output

www.lumberg.com · home-appliance@lumberg.com