

# **LSA-PLUS®**

## **Copper Connectivity Solutions For Telecommunication Networks**

KRONE LSA-PLUS® Series 2 & avaNTi Modules and Accessories



ADC LSA-PLUS® Series 2 & LSA-PLUS® avaNTi connection systems include Connection, Disconnection, Switching modules, MDF, Cable Termination blocks, Back-Mount frames, protection systems, Enclosures and other related accessories.

GENUINE  
**KRONE**  
PRODUCTS

## LSA-PLUS® Overview

The LSA-PLUS® Quick Connection System offers an integrated contact for use in all line plant and private network services.

|                               |                       |
|-------------------------------|-----------------------|
| <b>L</b> ötfrei               | No solder             |
| <b>S</b> chraubfrei           | No use of screws      |
| <b>A</b> bisolierfrei         | No insulation removal |
| -                             |                       |
| <b>P</b> reiswert             | Cost effective        |
| <b>L</b> eicht zu handhaben   | Easy to use           |
| <b>U</b> niversell andwendbar | Universal application |
| <b>S</b> icher und Schnell    | Secure and fast       |

ADC LSA-PLUS® connection systems include connection and switching modules for eight or ten pairs, all featuring the patented LSA-PLUS® insulation displacement connection (IDC) technology.

LSA-PLUS® connection systems support connection, line splitting, switching and earthing of connections in telecommunication and data networks. The contact is resistant to climatic and other environmental conditions. Technical contact security results in the formation of a gas-tight connection with very low transmission resistance. Special attention to maximum contact safety regardless of climatic and ambient conditions results in high degree of technical security through gas-tight, low resistance joint. Connection is made through the special insertion tool, assuring that the connection quality is always repeatable.

A wide range of accessories, including overvoltage protection, marking caps and test cords ensures that LSA-PLUS® systems can be used throughout the local loop, in main distribution frames, cross-connect cabinets, distribution points and at the customer premises.

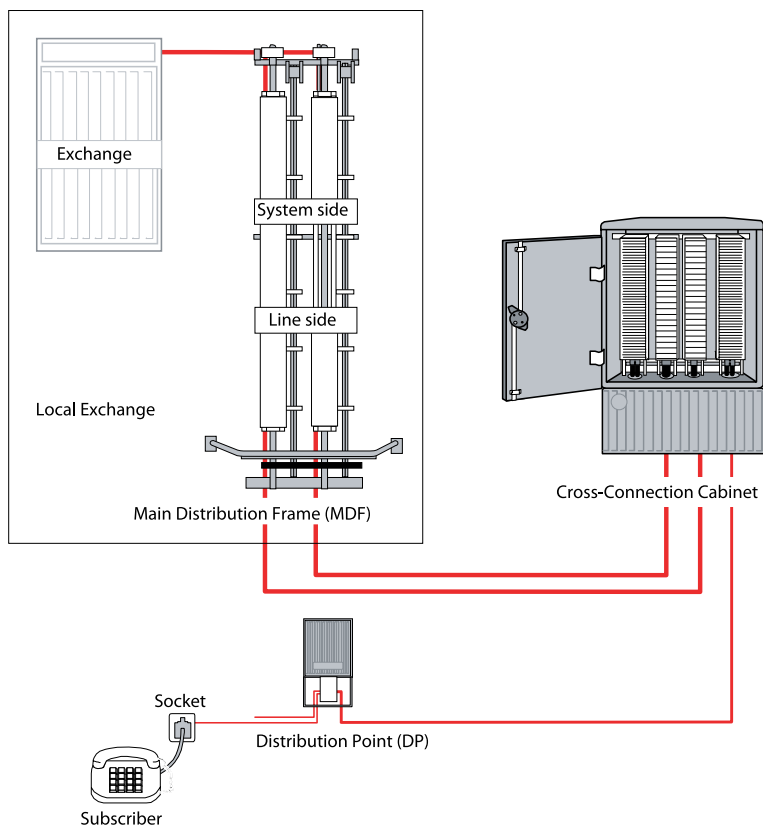
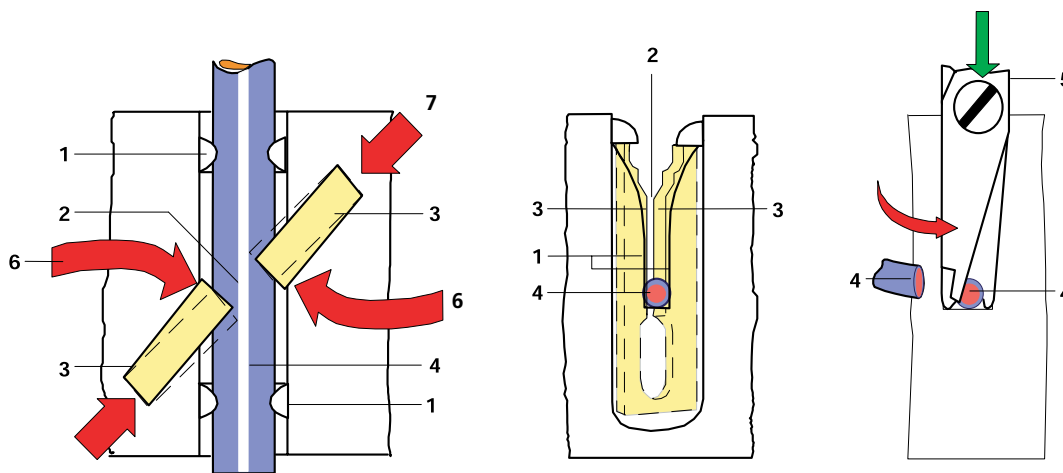


Fig- Local Loop Components

The ADC LSA-PLUS® contact functions in the same basic manner regardless of the type of module in which it is placed. Using the LSA-PLUS® insertion tool (5), the plastic insulated copper wire or jumper (4) is inserted into the contact slot (2). The contact slot contains contact tags (3) set at a 45-degree angle to the wire. Through the action of the tool, the contact tags twist in an axial movement and at the same time cut through the wire insulation and push the insulation material to both sides of the contact. Through material displacement and the subsequent torsional and restoring forces (6,7) of the contact tags, two permanent gas-tight surface areas are formed. This connection prevents any movement in the contact area that would undo the connection. For additional protection of the contact area, plastic clamping ribs (1) are provided above and below the connection area. These clamping ribs firmly grip the wire insulation, preventing any movement of the wire in the contact area. In the same termination process, the LSA-PLUS® insertion tool cuts the wire and insulation to the correct length. If the wire needs to be re-terminated, the LSA-PLUS® KRONE insertion tool has a swing-out hook, which is used to remove the wire from the contact.

### The LSA-PLUS® Quick Connection Technique

The Quick Connection Technique is a highly reliable and cost effective wire connection system for modern telecommunications and data networks. It is a comprehensive system built around the widely accepted 'KRONE' termination module with its range of built-in features. This is complemented with an extensive selection of accessories for protection, circuit identification and testing. The LSA-PLUS® system uses a unique Insulation Displacement Contact (IDC) technique which eliminates the need to wire-strip, solder or make screw terminations, and dramatically increases productivity. This system is supplied for connections in various fields like telecom and structured cabling.



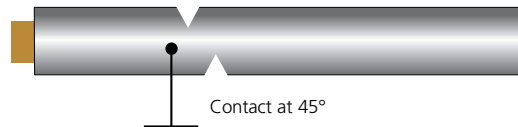
LSA-PLUS® Quick Connection Technique

1. Plastic clamping ribs
2. Contact slot
3. Contact tags
4. Wire
5. KRONE Insertion Tool.
6. Torsional forces on the contact
7. Restoring forces of the contact

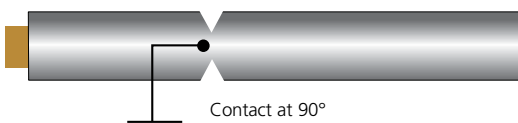
## Features & Benefits

The 3-point Insulation Displacement Connection (IDC) method of termination gives durable and long lasting connections.

1. Insulation clamping ribs hold wires firmly in position and isolate the contact area from vibration and other forms of mechanical stress.
2. Flexible silver-plated contacts\*, positioned at 45° angle across the axis of the wire, make a solid, gas tight connection.
3. Constant axial and torsion restoring forces, created by the unique contract and plastic housing, sustains a durable connection.



Positioning the contacts at a 45° angle leaves more wire between contact points and provides a reliable, stress resistant connection.

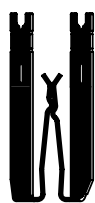


Positioning contacts at a 90° angle produces a point of weakness subject to possible breakage.

A correctly terminated IDC prevents:

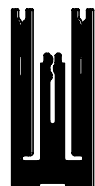
- Corrosion
- Loosening due to vibration
- High resistance connections
- Movement of the wire

If required, the connection can be redone easily and only the small portion of the wire must be removed. The connection can only be accomplished with the KRONE insertion tool, leading to greater contact security and assuring that when the connection is remade, no particles of insulation or wire remain in the connection area. Most importantly, the connection is repeatable. Every time a connection is made, the properties of the connection will be the same. The LSA-PLUS® IDC is a reliable, secure and quick contact method. The method has been proven as an electrically and mechanically sound method of connecting normal voice and data cabling.



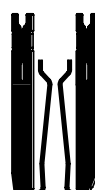
### DISCONNECTION CONTACT

S2 Disconnection Modules use a two piece contact (normally closed), with a convenient disconnection feature. By inserting a disconnect plug into a wire pair, you can temporarily or permanently disconnect the circuit. A Test Cord can be inserted into a pair to test each side (look both ways) of the circuit independently. This greatly accelerates fault identification. The centre contact point can also be used for monitoring or over voltage protection.



### CONNECTION CONTACT

Connection Modules have a one piece contact providing a continuous link between permanent wiring and jumper wiring, giving provision for monitoring access and overvoltage protection.



### SWITCHING CONTACT

Switching Modules house individual contacts and hence the circuits are disconnected when idle. By inserting plugs, cords or over voltage protection, the circuits can be connected when necessary.



\* Modules with Tin Plated contacts are also available.

## Testing

ADC products and components pass through rigorous tests to maintain a high quality standard.

| ADC Tests  | Quality Results   |
|--|---|
| <p><b>Contact resistance test</b><br/>A reliability test that indicates the reaction of the LSA-PLUS® contacts to a variety of test loads.</p>   | The quality of LSA-PLUS® contact is not compromised, even after repeated and tough loads.   |
| <p><b>Insulation resistance test</b><br/>Tests the resistance between the insulated contacts of connectors.</p>  | High insulation resistance is maintained even under extremely humid conditions.   |
| <p><b>Vibration resistance test</b><br/>Determines whether building vibrations and other load causes contact disturbance in the contacts.</p>  | No contact disturbance observed. A high contact and grip force is sufficient to maintain both the connector & the connection in the defined position. |
| <p><b>Contact pressure relief test</b><br/>Simulates artificial ageing by storing the contacts for longer periods at higher temperatures. The quality of the contact is subsequently tested.</p>                                 | No change in the LSA-PLUS® contact or housing that could impede functional or operational reliability   |
| <p><b>Temperature shock test</b><br/>Test to determine if frictional corrosion occurs under extreme temperature changes and whether temperature reactions in the connector housing has avoidable effects.</p>                    | Contact quality is not reduced, even under these extreme conditions.  |
| <p><b>Humidity resistance test</b><br/>Tests the effects of high humidity on contacts and insulation material.</p>   | Not even high humidity affects contacts or insulation resistance.   |
| <p><b>Corrosive atmosphere test</b><br/>Tests how the contacts react to the effect of harmful gases in an aggressive industrial atmosphere.</p>  | Most aggressive constituents in the atmosphere do not affect the quality of the contacts.   |
| <p><b>Long Term stability test</b><br/>ADC creates accelerated artificial ageing processes. This provides a solid base for highly accurate reports on the service life and behaviour of ADC contact under extreme conditions</p> | The unrestricted service life of ADC components for the normal life of a building/network is guaranteed   |

## LSA-PLUS® Series 2

### LSA-PLUS® ELECTRICAL DATA

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After four days exposure to a climate of 40° C and 93% relative humidity

|   |  |
|---|--|
| Insulation Resistance                                     | ≥5x10 <sup>4</sup> Ohms                            |
| Dielectric Strength                                       | ≥2000Vrms  |
| Current Rating  | ≥Current carrying capacity of terminated conductor |
| <b>LSA-PLUS® CONTACT</b>                                  |  |
| Contact Resistance  | 1mΩ ≤ 5mΩ guaranteed                               |
| Total Contact Resistance including Disconnection contacts | ≤ 10mΩ   |
| Contact Spring Force for Disconnecting contacts           | 3N (approx. 300g)                                  |
| Peak voltage (with pulses 1.2/50μ sec)                    | ≥ 3.6 V  |
| Impulse current (with pulses 8/20 μ sec)                  | 5 kA   |
| Number of Re-Terminations                                 | ≥200   |
| Coupling Capacitance Between Wires.                       | ≤1pF   |
| Plastic Housing Material                                  | Thermoplastic (PBT) UL 94, V-0                     |
| Oxygen Index  | ≥28%   |

### LSA-PLUS® TECHNICAL DATA

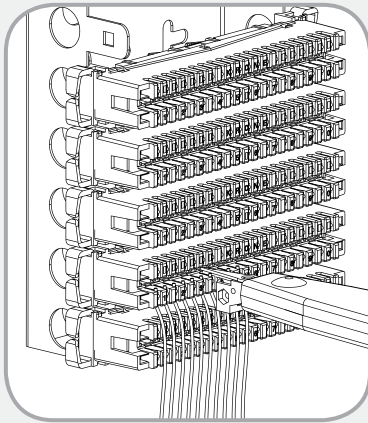
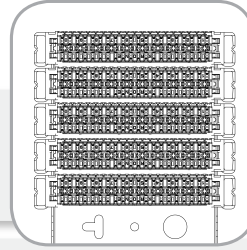
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Disconnection, Connection, Switching and Earth Modules for Plastic Insulated Copper Conductors

|  |   |
|--|---|
| Copper Conductor Diameter                                | 0.40 - 0.80mm. (AWG 26 - 20)  |
| Multistrand Conductor                                    | 7/0.2 - 7/0.32mm  |
| Insulation Diameter                                      | 0.70 - 1.50mm   |
| Number of Equal Diameter Solid Conductors Per Slot       | 2 max. (up to 0.65mm each)  |
| Number of Equal Diameter Multistrand Conductors Per Slot | 1 max.  |
| <b>ENVIRONMENTAL DATA</b>                                |   |
| Environment for use                                      | Indoors or enclosed cabinets outdoors with a minimum degree of protection to IP54 (IEC-529) |
| Storage temperature                                      | -40° to +90°C   |
| Operating temperature                                    | -20° C - +80° C   |
| Max. operating humidity                                  | 93% relative humidity non-condensing  |

## Installation for LSA-PLUS® S2 Modules

1. Fix the back mount frame in a vertical position on the MDF/ Exchange Room and ensure a safe earth connection is established, through the Bus Bar.

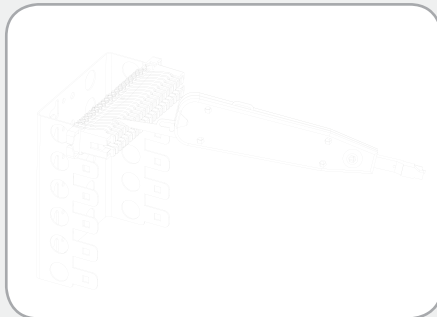


2. Introduce cable and strip the sheath (free conductor length should equal distance of furthest module+200MM). Then secure cable to the MDF Frame.

3. Form wires into 10-pair groups for each allocated position, by bringing inside the frame, through the cable entry holes.

### 4. Termination of wires.

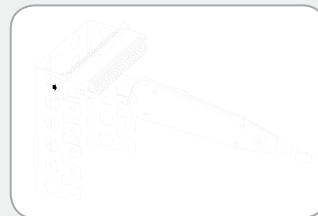
- Choose the bottom most slots on MDF to fit module.
  - Hold the module about 50 mm - 80 mm from allocated position on the back mount frame.
- Push wire bundle at least 150 mm through the module guide loop in the direction of the permanent side and retain by bending wires over.
  - Place module in allocated position (surplus wire in a loop).
  - Pull wires between the guide notches and lay it into the contact slots.
  - Terminate wires with the 'KRONE' Insertion Tool. Discard surplus wire.
  - Repeat procedure by fixing modules from bottom to top.



### 5. Jumpering

- Press jumper wires into the bottom row of contact slot (jumper side) and connect using the 'KRONE' Insertion Tool; (Pair 1-5 to the left side, pair 6-10 to the right side).
  - Lead jumper wires through jumper guide/ ring on either side of the module as required.
6. Wire can be removed using hook housed at the side of the 'KRONE' Insertion Tool.

7. To remove the module from backmount frame use the swing-out module extractor on the 'KRONE' Insertion tool. Press tags on backmount frame inwards at both ends and pull module forwards.



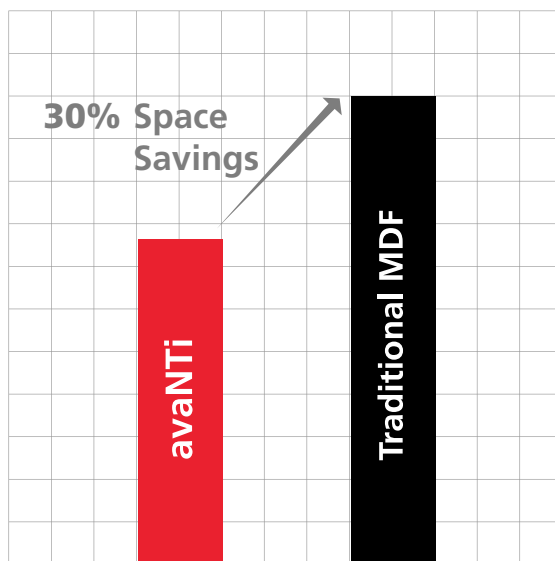


## FEATURES & BENEFITS

### The Space Saver

The expansion of mobile communication networks, the introduction of third generation mobile phone systems (3G, UMTS) and the steady growth of IP networks, have created a demand for bandwidth in both access and transmission networks. This in turn causes the extension of existing hubs and the installation of new hubs.

As a Telecom service provider, one of your prime concerns is to enhance your connection density. While you work towards achieving your goal of adding more connections, you must equip yourself with a connection system that meets the needs of Next Generation Networks. The first step towards a well-built network is to have a strong basic building block: a smart, next generation disconnection module-The LSA-PLUS® avaNTi.



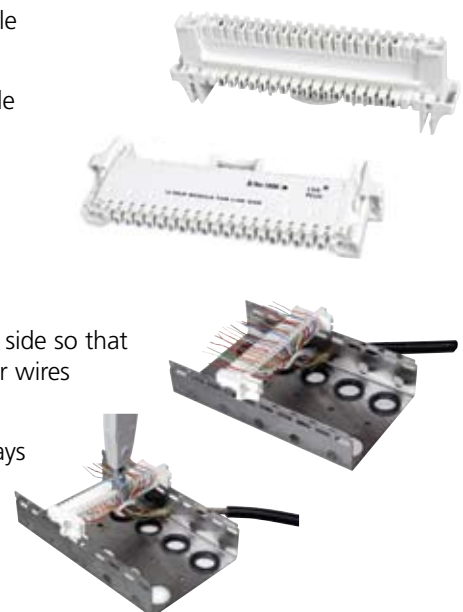
The LSA-PLUS® avaNTi helps save space and cut costs in comparison to a traditional MDF (Main Distribution Frame) thus broadening your network resulting in increased bottom line. The LSA-PLUS® avaNTi is an easy-to-use disconnection module that features a high connection density and requires only the traditional ADC LSA-PLUS® insertion tool to get it connected.

**Saves space.**  
**Stabilizes performance.**  
**Improves efficiency.**  
**Saves money.**  
**Easy to use.**

LSA-PLUS® Series 2 & avaNTi Modules and Accessories

### Unique Design, built for ease-of-use.

- The system side is situated at the back at a right angle - *no accidental access.*
- The test access and the jumper contacts are accessible from the front and very clearly arranged - *User-friendly activation*
- The modules are designed for mounting onto back-mount frames
- Compact MDF Tag blocks
- The cable wires are fed in from the back or from the side so that when the module has been installed, only the jumper wires are directly accessible.
- For any work on the cable side, the module can always be released from its installed position so that new wiring work can be done.
- The jumper space between the modules is just large enough to accommodate the cable and jumper sides in different planes.





- Despite the generous jumper channels, the modules are mounted with a bare minimum pitch of 17.5mm.
- The LSA-PLUS® avaNTi tag block for 100/64/128 pair comprises of 10/8 pair modules, set of side mount label holders, number plugs, stainless steel back-mount frame and fixing elements. The modules are mounted on the back mount frame and can be installed on the MDF verticals or cross connection cabinets/pillars. The module pitch is 17.5mm which contributes to a space saving of about 30%
- The LSA-PLUS® avaNTi offers 4-pole test cords, special cords with over voltage protection for test purposes. On one end is a plug designated for the LSA-PLUS® avaNTi module, equipped with a snap-in element. On the other end are 2 or 4 sockets for 4mm plugs (banana plugs). The 4-pole cord has been especially designed to measure the incoming or outgoing signals in the LSA-PLUS® avaNTi disconnection modules.
- The LSA-PLUS® avaNTi is equipped with single pair protection plug fitted with 3-pole GD tube and PTC resistors for over voltage and over current protection. This acts as a complete protection component, which, when inserted into the LSA-PLUS® avaNTi disconnection module, achieves complete protection meeting ITU K.12 and K.20 standards.

### Backmount frame options

Two forms of backmount frames are available:

- Custom built frames of arbitrary length.*
- Standard Back mount frame as below:*
  - 10 way for 100 pair block*
  - 8 way for 64 pair block*
  - 16 way for 128 pair block*

### Enhanced Efficiency

The LSA-PLUS® avaNTi can be used to enhance your efficiency levels manifold. The various areas of its application are:

- At sites where many copper wires have to be distributed
- In high density MDF's (1600 pairs in 3.5 meters or 1000 pairs in 2.2 meters)
- At sites where active components also have to be installed and space becomes premium. For eg. DLC's, ONU's
- In cross connection cabinets
- In co-location rooms where there is very little space available
- Where access to the module's cable side needs to be restricted
- In co-location rooms, individual access for operators required for switching work, without access to cabling of other operators

### Security features for protection

- It protects your cable wiring from accidental access during jumper work
- It provides you with a secure investment for the future
- 30% less mounting pitch (17.5mm) than that of traditional Series 2 modules for cross connection cabinets, without any loss in robustness
- High degree of modularity in arrangement
- Connection errors completely avoided

### Identification and Marking Facilities

The side label holders fixed on the right hand side jumper guide of the module fitted with plug numbers serves to identify cable pairs as well as the block. The top label holder is in black colour and bottom most in red. The rest are in grey colour for easy identification of block in a 1600/1000 pair MDF verticals. Red coloured marking caps are available for marking important jumper pairs wherever required. Dummy plugs are available to prevent accidental disconnection of important lines. Disconnection plugs are available to disconnect lines from the active network.



## TECHNICAL DATA

### Module Specifications

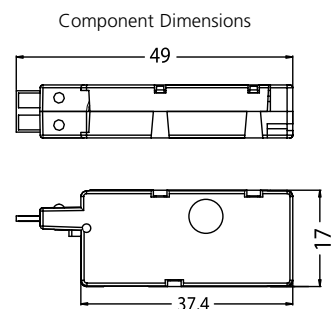
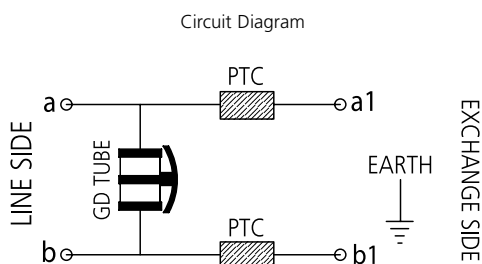
|                                  |  |
|----------------------------------|--|
| <b>Contact Resistance</b>        | ≤2.5 mΩ  |
| <b>Insulation Resistance</b>     | >50000 MΩ  |
| <b>Plastic</b>                   | PBTP UL94 Rated VO   |
| <b>Contact Material</b>          | Brass Alloy  |
| <b>Contact Re-Terminations</b>   | 0.4mm (26 AWG) 1 conductor per contact ≥ 200 re-terminations<br>0.5mm (24 AWG) 1 conductor per contact ≥200 re-terminations<br>0.63mm(22 AWG) 1 conductor per contact ≥200 re-terminations |
| <b>Conductor Diameter Range</b>  | 0.4 to 0.63mm  |
| <b>Insulation Diameter Range</b> | 0.7 to 1.5mm   |
| <b>Operational Temperature</b>   | -20 to +80°C   |
| <b>Mounting Pitch</b>            | 17.5mm   |
| <b>Contact Stability</b>         | satisfying IEC 352 Part 4  |
| <b>Electrical safety</b>         | satisfying EN 60950, Conforms to CE low-voltage guidelines   |

| Product                                | Width | Height | Depth |
|--|-------|--------|-------|
| LSA-PLUS® avaNTi module                | 130.0 | 17.5   | 40.0  |
| 100 pair MDF tag block                 | 130.0 | 180.0  | 70.0  |
| 100 pair MDF tag block with protection | 130.0 | 180.0  | 105.0 |
| 64 pair MDF tag block                  | 130.0 | 145.0  | 70.0  |
| 128 pair MDF tag block                 | 130.0 | 285.0  | 70.0  |

Product Dimensions (in mm)

### Single Pair Protection Plug for avaNTi MDF (1600 pairs Per vertical)

|  |  |
|--|--|
| <b>Max. Operating voltage (a/b-e, a-b) <math>V_{max,e}</math></b>      | 180 V  |
| <b>Nominal DC spark-over voltage <math>V_{sdcn}</math></b>             | 180-300 V  |
| <b>Impulse spark-over voltage @1 kV/μs (a/b-e)</b>                     | <900 V   |
| <b>Impulse life time (300 times 10/1000μs, alternating polarity)</b>   | 100 A  |
| <b>Nominal arrester surge current (8/20 μs; a/b-e)</b>                 | 5 kA   |
| <b>Nominal arrester alt. discharge current (50hz,1s; a/b-e)</b>        | 5 A <sub>rms</sub>   |
| <b>Fail safe response time @ 5 A<sub>rms</sub></b>                     | <5 Secs  |
| <b>Max. Operating current (a-a'/b-b') @ 25°C</b>                       | 120 mA   |
| <b>Rated line resistance (a-a'/b-b') @ 145mA, 25°C</b>                 | 6-25 Ω   |
| <b>Resistance balance</b>  | <0.5 Ω   |
| <b>Max. Switching Current of PTC @ <math>V_{max}=230V_{rms}</math></b> | 3 A <sub>rms</sub>   |
| <b>Max. Switching Time of PTC @ 1A<sub>rms</sub></b>                   | 2.5 Secs   |
| <b>Capacitance (1MHz/1V<sub>rms</sub>; a/b-e, a-b)</b>                 | <1.50 pF   |
| <b>Insulation resistance @ 100V(a-b, a-e, b-e)</b>                     | >1000 MΩ   |
| <b>Operating temperature</b>   | -20°...+60°C   |
| <b>Storage temperature</b>   | -40°...+80°C   |
| <b>Electrical characteristics</b>                                      | ITU-T K.12 compliant   |
| <b>Mechanical characteristics</b>                                      | Sinusoidal wave acc. To IEC 68-2-6   |
| <b>Climatic characteristics</b>  | DIN IEC 68 part 2-2/3 (thermal resistance)<br>DIN IEC 68 part 2-1(cold resistance) |



## Ordering Information

### LSA-PLUS® Series 2 Modules and Accessories

#### MODULES

#### KRONE LSA-PLUS® Series 2 Disconnection Module

Disconnection module for 8/10 pair with disconnection contact. Disconnect contact used for opening the circuit. Testing is possible in both directions. Can accept 3 or 5 point protection elements.



10 Pair



8 Pair

#### Ordering Information

| Description   | Pack Qty. | Product No.   |
|---|-----------|---------------|
| <b>KRONE LSA-PLUS® Series 2 Disconnection Module 2/10</b> | 1         | 6089 2 011-02 |
| KRONE LSA-PLUS® Series 2 Disconnection Module 2/8         | 1         | 6036 2 002-00 |

#### KRONE LSA-PLUS® Disconnection Module 2/5

Disconnection module for 5 pair with disconnection contact. Disconnect contact used for opening the circuit. Testing is possible in both directions.



#### Ordering Information

| Description                                       | Pack Qty. | Product No.    |
|---|-----------|----------------|
| KRONE LSA-PLUS® Series 2 Disconnection Module 2/5 | 1         | 6904 2 204- 00 |

#### KRONE LSA-PLUS® Earth Module

For connecting drain wires to an earth contact without soldering, wire-stripping or the use of screws.



#### Ordering Information

| Description                              | Pack Qty. | Product No.   |
|--|-----------|---------------|
| <b>KRONE LSA-PLUS® Earth Module 2/30</b> | 1         | 6036 2 006-00 |
| KRONE LSA-PLUS® Earth Module 2/38        | 1         | 6089 2 017-07 |

LSA-PLUS® Series 2 & avaNTi Modules and Accessories



## BACK MOUNT FRAME

### Back Mount Frame CT Block

Back Mount Frame 2/10 for cabinets and pillars. For mounting LSA-PLUS® modules 2/10.



#### Ordering Information

| Description                  | Pack Qty. | Product No.   |
|------------------------------|-----------|---------------|
| Back Mount Frame 2/10 6 way  | 1         | 6901 2 006-14 |
| Back Mount Frame 2/10 11 way | 1         | 6901 2 006-13 |

### Back Mount Frame Series 2 for 2/8 and 2/10 modules

Back Mount Frame (stainless steel) 2/10 or 2/8 to mount LSA-PLUS® modules. For indoors, you can use directly on to MDF's, Walls, Wall Mount Frames, boxes. For outdoors, you can use it on weather proof out door distribution boxes.



#### Ordering Information

| Description                   | Pack Qty. | Product No.   |
|-------------------------------|-----------|---------------|
| Back Mount Frame 2/10, 1 way  | 1         | 6442 3 230-01 |
| Back Mount Frame 2/10, 2 way  | 1         | 6050 3 230-02 |
| Back Mount Frame 2/10, 3 way  | 1         | 6050 3 230-03 |
| Back Mount Frame 2/10, 5 way  | 1         | 6050 3 230-05 |
| Back Mount Frame 2/10, 10 way | 1         | 6442 3 230-10 |
| Back Mount Frame 2/10, 11 way | 1         | 6442 3 230-11 |
| Back Mount Frame 2/8, 9 way   | 1         | 6441 3 230-09 |
| Back Mount Frame 2/8, 17 way  | 1         | 6441 3 230-17 |

## MDF (MAIN DISTRIBUTION FRAME) TAG BLOCKS

### MDF Tag Block 100 pair

MDF Tag Blocks 2/10 for 100 pair with 10 LSA-PLUS® disconnection Modules for use on "Line Side" (subscriber) of MDF's.



#### Ordering Information

| Description                  | Pack Qty. | Product No.   |
|------------------------------|-----------|---------------|
| MDF Tag Block 22.5 mm. Pitch | 1         | 6901 1 001-01 |
| MDF Tag Block 25 mm. Pitch   | 1         | 6901 1 001-11 |

## MDF Tag Block 64 & 128 Pair

MDF Tag Blocks 2/ 8 for 64 pair with 8 LSA-PLUS® disconnection Modules for use on "Exchange Side" (Switch) of MDF's.



### Ordering Information

| Description            | Pack Qty. | Product No.   |
|------------------------|-----------|---------------|
| MDF Tag Block 64 pair  | 1         | 6901 1 002-11 |
| MDF Tag Block 128 pair | 1         | 6901 1 102-11 |

## CT Block for cross connect cabinets

CT Blocks for 100 and 50 pairs, for pillars and cross connect cabinets with LSA PLUS® disconnection or Connection modules.



### Ordering Information

| Description                           | Pack Qty. | Product No.   |
|---------------------------------------|-----------|---------------|
| CT Box,100 pair connection modules    | 1         | 6901 1 006-00 |
| CT Box,100 pair disconnection modules | 1         | 6901 1 106-02 |
| CT Box, 50 pair connection modules    | 1         | 6901 1 107-01 |
| CT Box, 50 pair disconnection modules | 1         | 6901 1 107-02 |

## PROTECTION SYSTEMS

Over voltage and Over current protection components that satisfies all safety requirements of modern telecommunication systems.

### Single Pair Protection Plug (IPM)

This provides both voltage and current protection for single pair on line side. The primary protection is built in by 3 pole GD Tube. The over current protection is provided by Positive Thermal Coefficient resistor (PTC).



### Ordering Information

| Description                 | Pack Qty. | Product No.   |
|-----------------------------|-----------|---------------|
| Earth Bar 2/10              | 1         | 69053320-00   |
| Single pair protection plug | 1         | 6905 2 604-01 |

## Protection Magazine 10 pair

This provides voltage protection for 10 pairs on line side. The magazine can house up to ten 3 pole GD Tubes.



### Ordering Information

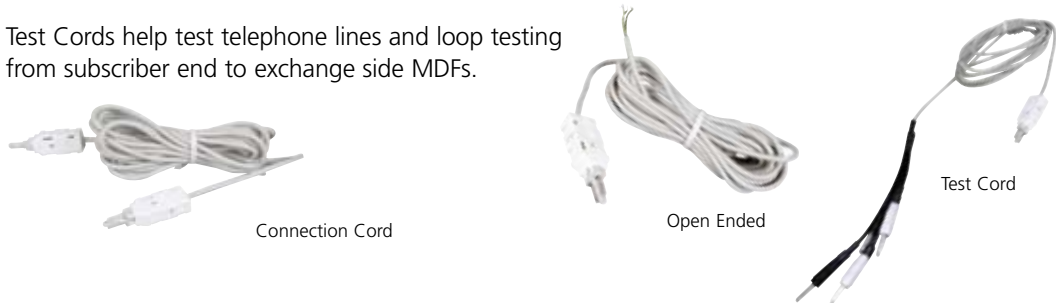
| Description      | Pack Qty. | Product No.    |
|------------------|-----------|----------------|
| Magazine 10 pair | 1         | 6089 2 023 -01 |

## ACCESSORIES

Accessories for testing telephone lines, local loop. Label holders, marking caps & disconnection plugs.

### TestCords

Test Cords help test telephone lines and loop testing from subscriber end to exchange side MDFs.



### Ordering Information

| Description   | Pack Qty. | Product No.   |
|---|-----------|---------------|
| <b>Test Cord 2/2, 2 pole open ended with 1 plug 2/2</b> | 1.5m      | 6624 2 071-00 |
|   | 3.0m      | 6624 2 071-03 |
|   | 6.0m      | 6624 2 071-06 |
| <b>Test Cord 2/2, 2 pole with 2 banana Plugs</b>        | 1.5m      | 6624 2 061-00 |
|   | 3.0m      | 6624 2 061-03 |
|   | 6.0m      | 6624 2 061-06 |
| <b>Connection Cord 2/2 2 pole with Plugs</b>            | 1.5m      | 6624 2 081-00 |
|   | 3.0m      | 6624 2 081-03 |
|   | 6.0m      | 6624 2 081-06 |
| <b>Test Cord 2/4, 4 pole open ended with 1 plug 2/4</b> | 1.5m      | 6907 2 001-00 |
|   | 3.0m      | 6907 2 001-03 |
|   | 6.0m      | 6907 2 001-06 |
| <b>Test Cord 2/4, 4 pole with 4 banana Plugs</b>        | 1.5m      | 6907 2 501-00 |
|   | 3.0m      | 6907 2 501-03 |
|   | 6.0m      | 6907 2 501-06 |
| <b>Connection Cord 2/4 4 pole with 2 plug</b>           | 1.5m      | 6907 2 301-00 |
|   | 3.0m      | 6907 2 301-03 |
|   | 6.0m      | 6907 2 301-06 |

## Disconnection Plugs

Used for disconnecting single subscriber line or for simultaneous disconnection of all subscriber lines in LSA-PLUS® disconnection module 2/10.



### Ordering Information

| Description                | Pack Qty. | Product No.   |
|----------------------------|-----------|---------------|
| Disconnection Plug 1 pair  | 1         | 6089 3 055-00 |
| Disconnection Plug 10 pair | 1         | 6089 3 130-01 |

## Marking Caps

Single Pair marking cap for marking important lines in LSA-PLUS® connection or disconnection modules 2/10.



### Ordering Information

| Description  | Pack Qty. | Product No.   |
|--------------|-----------|---------------|
| Marking Caps | 1         | 6089 3 006-00 |

## Dust Cover

This dust cover protects the LSA-PLUS® module installations in groups of 100 pairs against destructive dust deposits.



### Ordering Information

| Description                         | Pack Qty. | Product No.   |
|-------------------------------------|-----------|---------------|
| Dust Cover 2/10 deep, for 100 pairs | 1         | 6092 3 034-00 |
| Dust Cover 2/10 flat, for CT Block  | 1         | 6092 3 016-00 |

## Label Holder

Directly mounted on to the Back Mount Frame. Fixing on the first or last position on the BMF is recommended.



### Ordering Information

| Description       | Pack Qty. | Product No.   |
|-------------------|-----------|---------------|
| Label Holder 2/10 | 1         | 6092 2 012-01 |
| Label Holder 2/8  | 1         | 6901 2 010-02 |



## Plug Numbers

For identification of LSA-PLUS® S2 modules.



### Ordering Information

| Description      | Pack Qty. | Product No.   |
|------------------|-----------|---------------|
| Printed 0...9    | 1         | 6900 3 017-00 |
| Printed 10...100 | 1         | 6900 3 018-00 |

## KRONE\* Insertion Tool

The insertion tool can be used for terminating wires (jumper and UGC). It can also be used to remove modules and wires from tag blocks.



### Ordering Information

| Description    | Pack Qty. | Product No.   |
|----------------|-----------|---------------|
| Insertion Tool | 1         | 6089 2 003-00 |

## INDOOR DP BOXES

### Kronnection Boxes

Kronnection Boxes are available in three compact sizes suitable for surface installation. Boxes are made up of a self extinguishing polystyrene material.



### Ordering Information

| Description                   | Pack Qty. | Product No.   |
|-------------------------------|-----------|---------------|
| Kronnection Box I, 30 pair    | 1         | 6436 1 013-20 |
| Kronnection Box II, 50 pair   | 1         | 6406 1 015-20 |
| Kronnection Box III, 100 pair | 1         | 6437 1 020-20 |

### Metal Connection Boxes

Metal Boxes are available in three compact sizes suitable for surface installation. Boxes are made of CRCA sheet and come with a powder coating.



### Ordering Information

| Description                   | Pack Qty. | Product No.   |
|-------------------------------|-----------|---------------|
| Metal connection box 30 pair  | 1         | 6901 1 500-01 |
| Metal connection box 50 pair  | 1         | 6901 1 500-02 |
| Metal connection box 100 pair | 1         | 6901 1 500-03 |

\* Modules to be ordered separately

## OUTDOOR / INDOOR BOXES

### Kronnection Box A-30

The Kronnection Box A-30 is designed to accommodate up to 30 pairs both in indoor and outdoor installation. They are made of glass fiber reinforced polyester. It protects the installed devices against dust and rain water (protection according to IP 54). The box can be mounted directly on the wall or on a pole with a pole mounting bracket.



#### Ordering Information

| Description | Pack Qty. | Product No.   |
|-------------|-----------|---------------|
| Box A-30    | 1         | 6902 1 001-42 |

## MAIN DISTRIBUTION FRAMES

This type of frame has the module installation for the line and system sides vertically in a single profile frame.

This allows jumpering within a single vertical row.

#### Advantages:

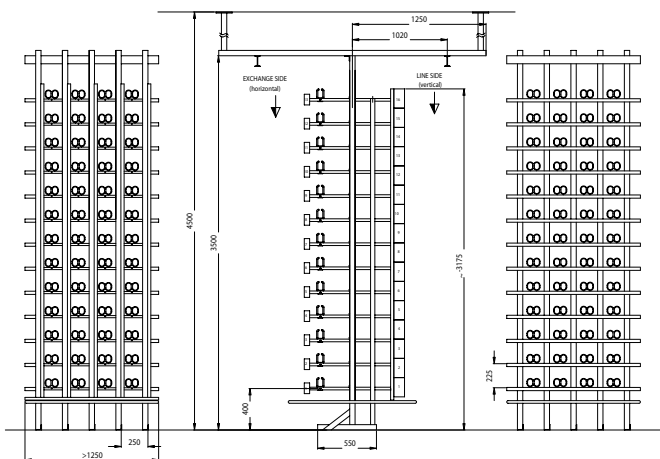
- Modular, space-saving installation
- Optimal adaptation to available space
- Minimal installation time, since the frame is delivered pre-assembled

### MDF frame to terminate 1000 pairs, 3.5 meters

Preferred frame variant for 1000 pairs for accommodation of 10 pair LSA-PLUS® modules on the line side and 8 pair LSA-PLUS® module horizontally on the system.

#### Ordering Information

| Description                    | Pack Qty. | Product No.   |
|--------------------------------|-----------|---------------|
| Set of 5 verticals (Main)      | 1         | 6901 2 100-05 |
| Set of 4 verticals (Main)      | 1         | 6901 2 100-04 |
| Set of 3 verticals (Expansion) | 1         | 6901 2 003-03 |
| Set of 2 vertical (Expansion)  | 1         | 6901 2 100-02 |



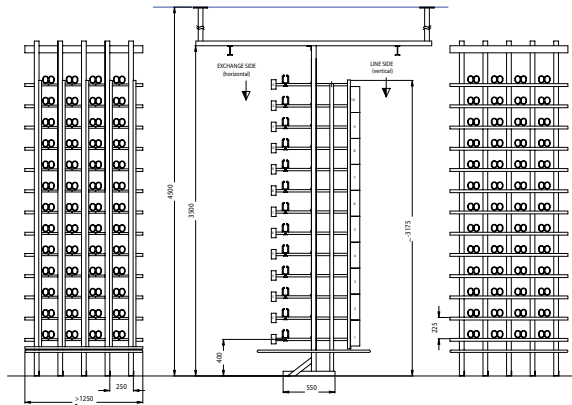
MDF Frame to terminate 1000 pairs, 3.5 meters

### MDF frame to terminate 600 pairs, 3.2 or 2.2 meters

Preferred frame variant for 1000/600 pairs for accommodation of 10 pair LSA-PLUS® modules on the line side and 8 pair LSA-PLUS® module horizontally on system side.

#### Ordering Information

| Description                    | Pack Qty. | Product No.   |
|--------------------------------|-----------|---------------|
| Set of 5 verticals (Main)      | 1         | 6901 2 600-15 |
| Set of 4 verticals (Main)      | 1         | 6901 2 600-04 |
| Set of 3 verticals (Expansion) | 1         | 6901 2 600-03 |
| Set of 1 vertical (Expansion)  | 1         | 6901 2 600-02 |



MDF Frame to terminate 1000/600 pairs, 3.2 meters

# Ordering Information

## LSA-PLUS® avaNTi Modules and Accessories

### MODULES

#### LSA-PLUS® avaNTi Modules

Disconnection module for 8/10 pair with disconnection contact. Disconnect contact used for opening the circuit. It can accept 3 or 5 protection elements.



#### Ordering Information

| Description                                | Pack Qty. | Product No.   |
|--|-----------|---------------|
| LSA-PLUS® avaNTi Disconnection Module 2/10 | 1         | 6904 2 501-01 |
| LSA-PLUS® avaNTi Disconnection Module 2/8  | 1         | 6904 2 502-01 |

#### MDF Tag Blocks

MDF Tag Blocks 2/10 for 100 pair with 10 avaNTi disconnection modules for use on "Line Side" (subscriber) of MDF's



#### Ordering Information

| Description                            | Pack Qty. | Product No.   |
|--|-----------|---------------|
| LSA-PLUS® avaNTi MDF Tag Block 100pair | 1         | 6901 1 103-11 |

#### Backmount Frames

Backmount Frame to mount avaNTi modules 2/8 or 2/10. In indoors, use directly on the MDF, Walls, Wall Mount Frames, boxes as well as weather proof out door distribution boxes.



#### Ordering Information

| Description             | Pack Qty. | Product No.   |
|-------------------------|-----------|---------------|
| Backmount Frame, 3 way  | 1         | 6905 3 436-03 |
| Backmount Frame, 8 way  | 1         | 6908 3 436-08 |
| Backmount Frame, 10 way | 1         | 6908 3 436-10 |
| Backmount Frame, 16 way | 1         | 6908 3 436-16 |

LSA-PLUS® Series 2 & avaNTi Modules and Accessories



## MDF Tag Blocks

MDF Tag Blocks 2/ 8 for 64/128 pair with 8 avaNTi disconnection modules for use on "Exchange Side" (Switch) of MDF's



| Ordering Information                       |           |               |
|--|-----------|---------------|
| Description                                | Pack Qty. | Product No.   |
| LSA-PLUS® avaNTi<br>MDF Tag Block 64 pair  | 1         | 6901 1 103-12 |
| LSA-PLUS® avaNTi<br>MDF Tag Block 128 pair | 1         | 6901 1 103-13 |

## Protection

This provides both over voltage and over current protection for single pair on line side.

| Ordering Information        |           |               |
|-----------------------------|-----------|---------------|
| Description                 | Pack Qty. | Product No.   |
| Single pair protection plug | 1         | 6905 2 609-02 |
| Set of 10 with Earth bar    | 1         | 6905 1 609-02 |
| Earth bar                   | 1         | 6905 3 609-03 |



## ACCESSORIES

### KRONE Insertion Tool

The insertion tool can be used for terminating wires (jumper and UGC). It can also be used to remove modules and wires from tag blocks.



| Ordering Information |           |               |
|----------------------|-----------|---------------|
| Description          | Pack Qty. | Product No.   |
| Insertion Tool       | 1         | 6089 2 003-00 |

### Test Cord

Test Cords help test telephone lines and loop testing from subscriber end to exchange side MDFs.



| Ordering Information                                |           |               |
|---|-----------|---------------|
| Description   | Pack Qty. | Product No.   |
| Test Cord 2/4 4 pole with protection - 6mtrs        | 1         | 6907 2 703-06 |
| Test Cord 2/4 4 pole with 4 banana plugs - 1.5 mtrs | 1         | 6907 2 702-00 |
| Test Cord 2/4 4 pole with 4 banana plugs- 6mtrs     | 1         | 6907 2 702-06 |



\* Modules to be ordered separately

## Disconnection Plug

Used for disconnecting single subscriber line or for simultaneous disconnection of all subscriber lines in LSA-PLUS® avaNTi disconnection module 2/10. Single Pair marking cap for marking important lines in LSA-PLUS® avaNTi connection or disconnection modules 2/10.



### Ordering Information

| Description                            | Pack Qty. | Product No.   |
|--|-----------|---------------|
| <b>Disconnection Plug 1 pair (red)</b> | 1         | 6904 3 501-16 |
| Disconnection Plug 10 pair (grey)      | 1         | 6904 3 501-18 |
| <b>Marking cap 1 pair (red)</b>        | 1         | 6089 3 006-00 |
| <b>Dummy plug 1 pair (black)</b>       | 1         | 6904 3 501-17 |

## Wiring Accessories for BMF (Back Mount Frame)

The LSA-PLUS® avaNTi termination outrigger is helpful in terminating ground cable on the module with ease.



### Ordering Information

| Description                                   | Pack Qty. | Product No.   |
|---|-----------|---------------|
| <b>LSA-PLUS® avaNTi termination outrigger</b> | 1         | 6901 3 007-44 |

## MAIN DISTRIBUTION FRAMES

MDF is the interface between the subscriber cables coming from the local network (line side) and the switching equipment in the exchange (system side). ADC MDFs are available in a free standing version. (On request available in wall-secured version too).

The MDFs are delivered pre-assembled thus minimising installation time.

### MDF Frame to terminate 1600 pairs\*, height 3.5 meters

#### Ordering Information

| Description                      | Pack Qty. | Product No.   |
|----------------------------------|-----------|---------------|
| <b>Set of 5 verticals (Main)</b> | 1         | 6901 2 164-05 |
| Set of 4 verticals (Main)        | 1         | 6901 2 164-04 |
| Set of 3 verticals (Expansion)   | 1         | 6901 2 164-03 |
| Set of 2 vertical (Expansion)    | 1         | 6901 2 164-02 |

### MDF frame to terminate 1000 pairs\*, height 3.5 meters

#### Ordering Information

| Description                      | Pack Qty. | Product No.   |
|----------------------------------|-----------|---------------|
| <b>Set of 5 verticals (Main)</b> | 1         | 6901 2 162-05 |
| Set of 4 verticals (Main)        | 1         | 6901 2 162-04 |
| Set of 3 verticals (Expansion)   | 1         | 6901 2 162-03 |
| Set of 2 vertical (Expansion)    | 1         | 6901 2 162-02 |

### MDF frame to terminate 1000 pairs\*, height 2.2 meters

#### Ordering Information

| Description                      | Pack Qty. | Product No.   |
|----------------------------------|-----------|---------------|
| <b>Set of 5 verticals (Main)</b> | 1         | 6901 2 163-05 |
| Set of 4 verticals (Main)        | 1         | 6901 2 163-04 |
| Set of 3 verticals (Expansion)   | 1         | 6901 2 163-03 |
| Set of 2 vertical (Expansion)    | 1         | 6901 2 163-02 |

\* As per TEC spec



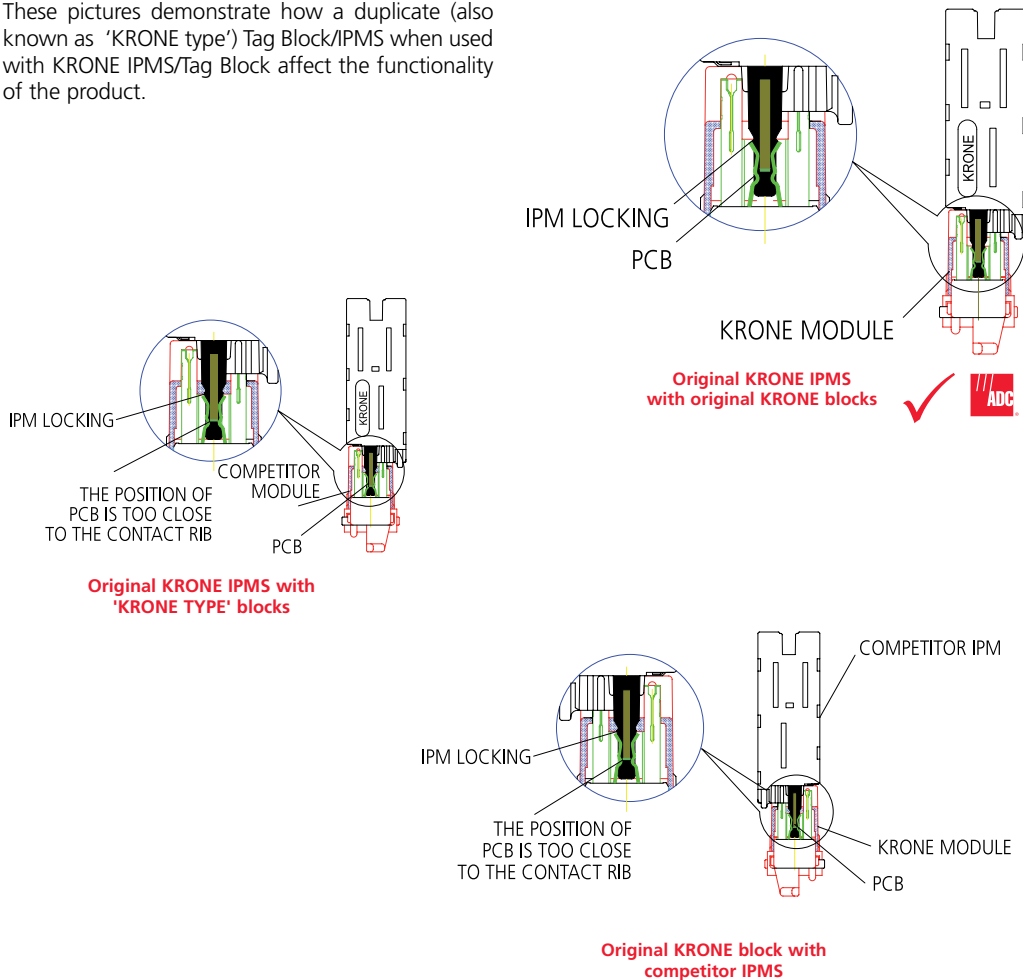


## KRONE type is NOT KRONE\*

It is observed that there are duplicates of original KRONE\* products being sold in the market passing off as original KRONE\* products. Using these duplicate products affects the functionality and quality of your network. Please ensure you use original KRONE\* products for an efficient network. Original KRONE\* products are sold ONLY through authorised distributors\*.

In accordance with TEC specifications, KRONE\* MDF's are supplied as a package unit which includes the frames, line and exchange side tag blocks, IPM's for protection, insertion tools and test cords and disconnection plugs. This is done because the design ensures 100% compatibility of accessories provided by KRONE with the KRONE\* MDF's.

These pictures demonstrate how a duplicate (also known as 'KRONE type') Tag Block/IPMS when used with KRONE IPMS/Tag Block affect the functionality of the product.



LSA-PLUS® Series 2 & avaNTi Modules and Accessories



**[www.adc.com/in](http://www.adc.com/in)**

Corporate Office & Factory: P B No. 5812, 10 'C' II Phase, Peenya, BANGALORE - 560 058. India  
Ph: +91 80 2839 6101 / 6291, Fax +91 80 2372 2753 Toll Free: 1800 425 8232

For a listing of ADC India's sales office locations, please refer to our website

ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota USA 55440-1101

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