





Overview

Increasing competition means that the provision of powerful networks is becoming increasingly important for network operators. A prompt, flexible and cost-effective response to customer demands is the crucial factor in this field. The automatic FSA-PLUS distributors from KRONE AG are paving the way for new possibilities and advantages, such as:

- Saving operating costs, because manual jumpering is no longer necessary
- Prompt response thanks to separate access
- Always up-to-date information concerning the connection status
- Increased network availability thanks to remote testing of lines and switching operations
- Minimum network downtime thanks to effective and cost-saving trouble-shooting
- Increased network safety
- Protection against unauthorised access thanks to the possibility of encapsulated installation and integrated alarm functions
- Future-proof system thanks to transparent services (broadband services, such as HDSL and ADSL are supported)
- Possibility of outsourcing and offering services in network operations.

Options and advantages are often even more complex when looked at in detail. KRONE AG offers tailor-made solutions and engineering services for flexible use of physical networks.



Definitions and Main Features

The automatic FSA-PLUS (flexible, safe, automatic) distributors by KRONE permit remote-controlled jumpering of twisted-pair connections at their respective place of installation. Computerized, remote control is possible through dedicated or switched connections. This means that just a single control line is necessary to the first device of a cascade which then serves as the master unit.

Besides jumpering operations, FSA-PLUS distributors also permit the automated execution of other functions of conventional distributors, such as:

- Disconnecting lines
- Connecting lines
- Connecting service functions
- Testing towards the inside and outside
- Switching over in the event of a malfunction.

The main feature of remote-controlled FSA-PLUS distributors is their service-independence. What distinguishes them from commercially available, electronic distributors for digital data services is that FSA-PLUS distributors are also capable of switching both analogue voice signals, which are characterised by high ringing voltages and currents, as well as digital services. Since the physical transmission path is switched, switching between the service types is also possible without any restrictions.

Installation of the coupler modules in the distributors ensures unrestricted access, i.e. any connection at the network end can at any time be connected to any connection at the subscriber end.



Areas of Application

FSA-PLUS distributors are installed in public networks (e.g. MDFs, CCCs, terminating boxes) and in private networks (e.g. in the in-house area as building and floor distributors) at all distribution points of the line.

The FSA-PLUS system family includes a number of types with different connection capacities. Thanks to the flexible design of their enclosures, they can be easily integrated into standard environments. FSA-PLUS distributors are suitable for indoor and outdoor installation.

FSA-PLUS switchers are available which, in response to a corresponding control command in the event of a failure, permit the switching of a whole series of lines to previously defined alternative paths. The accessibility is here predefined in accordance with the given application.

FSA-PLUS switchers are preferably used in computer centres, banks, fire service and police dispatching stations, in air traffic control and in railways – in brief, wherever 100% availability of service lines must be ensured.



FSA-PLUS® Switcher Type Series (safety switch with a defined accessibility)

FSA-PLUS switchers are available with two different control variants:

switch control (FSA Control Unit, **FCU**)
computer control (Flexible Management Unit, **FMU**).

FSA-PLUS switchers can be optionally equipped with both alternatives. Retrofitting is also possible by exchanging the control board. In the case of the switch control variant, switching can be triggered either by a switch at the device or via a remote, isolated control switch (which can be up to several kilometres away, depending on the type of pair).

The following chart provides an overview of the types of FSA-PLUS switchers available, sorted according to switching capacity, control mode and expansion level.

The devices are based on a modular, basic version which can be supplemented by switching modules until the maximum capacity of 100 x 200 ports is reached.

The switching capacities shown in the table refer to pair connections. Switching of multi-pair services is also possible which means that the specified capacities are reduced accordingly.

It is also possible to combine devices in order to set up switchers with even larger switching capacities.

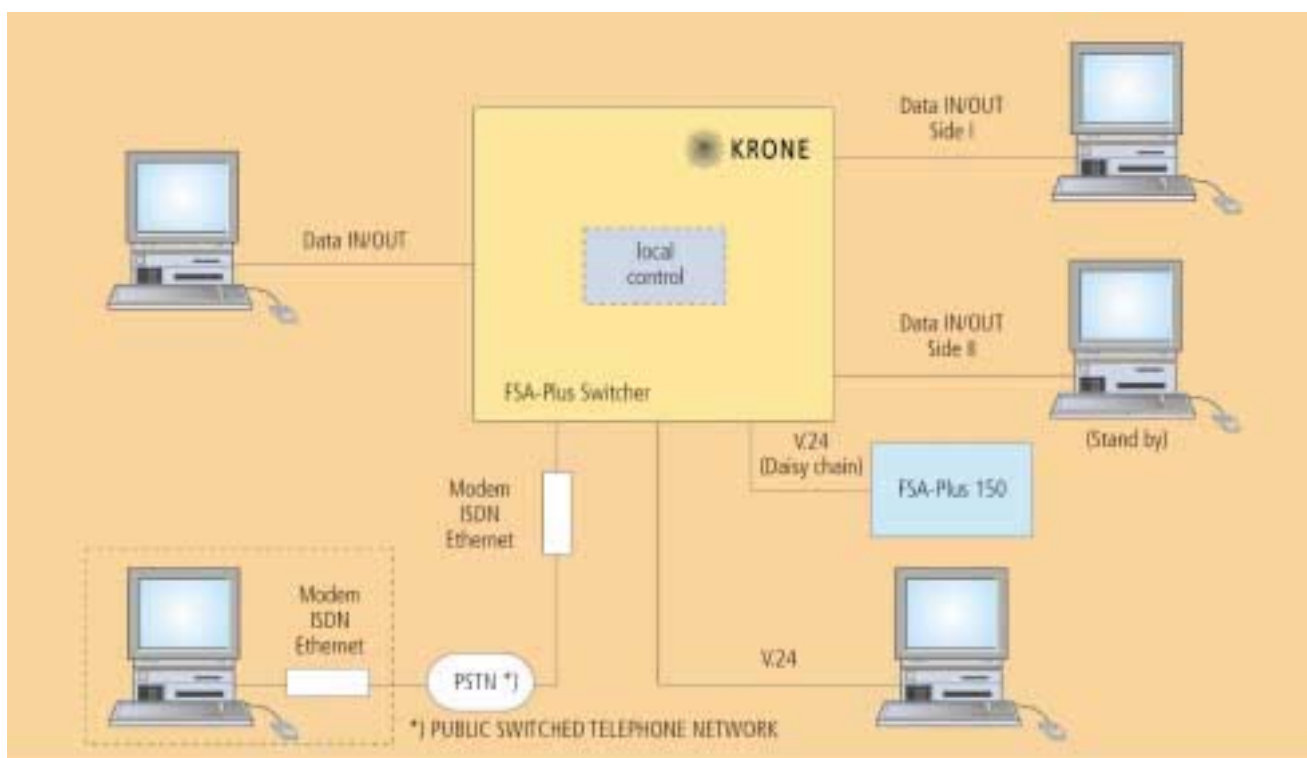
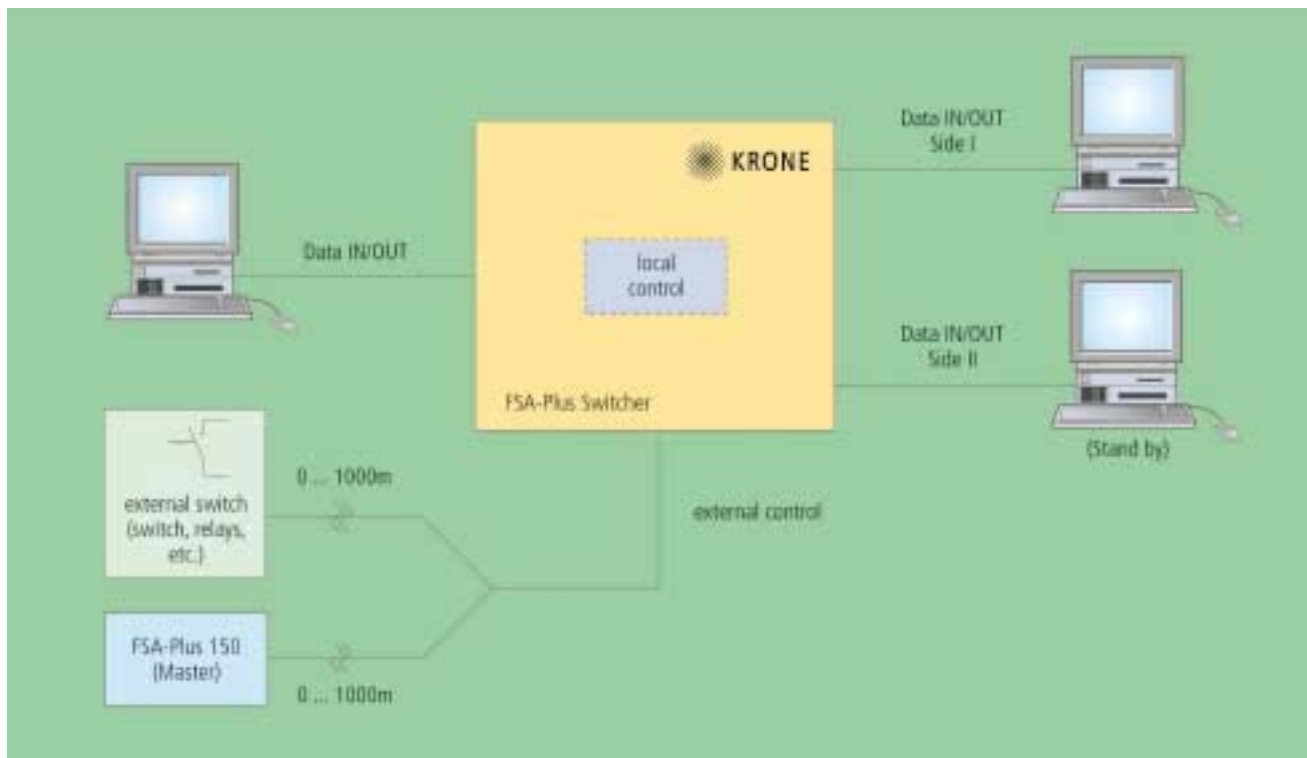
Type characteristics Switching capacity	Switch control = FCU-Version (description)	Computer control = FMU-Version (description)	Number of necessary expansion kits
020 x 040	FCU basic version	FMU basic version	0
040 x 080	FCU basic version	FMU basic version	1
060 x 120	FCU basic version	FMU basic version	2
080 x 160	FCU basic version	FMU basic version	3
100 x 200	FCU basic version	FMU basic version	4
100 x 200	FCU complete version	FMU complete version	0

Order No.	FCU-Version	Pack
6341 1 022-00	FSA-PLUS Switcher basic version 20x40	1 pc
6341 2 022-00	FSA-PLUS Switcher expansion kit 20x40	1 pc





Schematic Overview of the Control Variants for the FSA-PLUS Switcher



Technical Specifications

FSA-PLUS distributor (full accessibility)

• Jumpering attributes

Jumper capacity Type specific
from 7 to 7 pairs up to a
maximum of 49 to 98 pairs;
by combining devices, a higher
jumper capacity can be achieved

Jumper time $4.5 \pm 0.5\text{ms/jumper process}$

Minimum pause between
two jumpering operations
(single) 3 seconds

Maintaining jumpered
state during power failure Jumper remains uninterrupted
(bistable relay)

Conductor diameter 0.4 mm – 0.8 mm

Max. jumpered voltage 220 VAC/200 VDC

Max. jumpered current 1 A

Max. jumpered power 60 WAC/30 WDC

• Transmission system attributes

Fulfills the recommendations of Cat. 3 and also the former Cat. 4

• Conforms to standards

EMC EN 50082-1
IEC 801-2, Level 4
IEC 801-3, Level 4
IEC 801-4, Level 4

Radio interference,
conductor connected EN 55022/8, class B
FCC-B (I out > 30%)

Security standards EN 60950, UL 1950
CSA 22.2 No. 950

• Power requirements

Input voltage 85 – 264 VAC or
40.5 – 57 VDC and
50 – 72 VDC

Short-circuit stability
of the secondary side Power limiting (long term)

FSA-PLUS (pre-defined accessibility) switcher

• Switching attributes

Jumper capacity 20 to 40 pairs per coupler
card, max. 100 to 200 pairs
(5 coupler cards); by combining
devices, a higher
switching capacity can be achieved

Jumper time $4.5 \pm 0.5\text{ms/jumper process}$

Minimum pause between
two jumpering operations
(single) No restrictions

Minimum pause between
switching operations
(long term) > 250 ms

Maintaining switched con- Switched state remains
dition during power failure uninterrupted (bistable relay)

Switch conductor Ø 0.4 mm – 0.8 mm

Max. switched voltage 220 VAC/200 VDC

Max. switched current 1 A

Max. switched power 60 WAC/30 WDC

• Transmission system attributes

Fulfills the recommendations of Cat. 3 and also the former Cat. 4

• Conforms to standards

EMC EN 50082-1
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