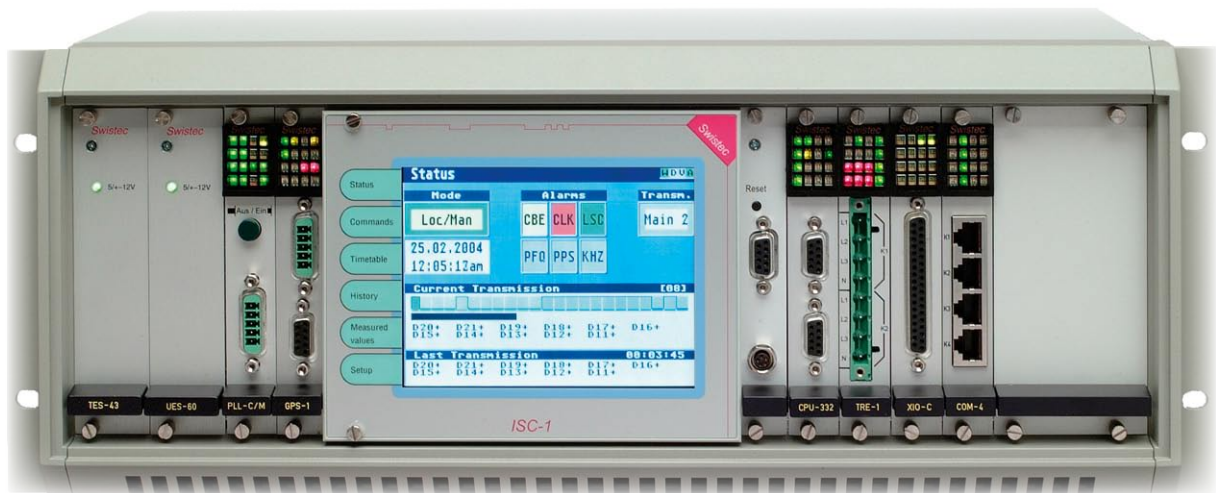


Local Control-Unit RKS-12

De-centralized intelligence for ripple-control transmitters



With the RKS-12, Swistec presents an approved control unit. As a consequence of its very flexible architecture, it can be integrated into all ripple-control systems.

Due to its freely programmable interfaces the RKS-12 can be coupled to all transmitter types and all routing technologies or control-units. The RKS-12 offers the following communication interfaces: V24, current loops, VFT-coupling circuits as well as dial-up and lease line connections via copper net, phone line or GSM.

When in tele-control mode, the unit is controlled via VFT-channels, secured data protocols in accordance with IEC 60870-5-101 (serial communication) or IEC 60870-5-104 (network communication).

Powerful processor systems with generous memory extensions allow for a complete storage of all variable schedules and extensive operation protocols.

The software that runs on the standard operating system MS-Windows supports modern and diverse programming of the complete unit and turns the RKS-12 into a powerful tool.

The potent software supports features that make the selection of modern data models for schedule planning, especially the free link of external process information via digital and analogue interfaces and internal time criteria, possible.

The calculation of astronomical calendar data used to control street lights is a standard software feature as is the administration of multiple transmitters of one RKS-12. The ability to manage and send out various bit patterns in inhomogeneous networks via one unit is remarkable. Our reference-list covers systems anywhere from one up to over 100 transmitters. State-of-the-art hard- and software architecture leads to a flexibility that also supports unique system configurations.

Optionally, the operation of the AF-system can be monitored on an LCD-display. Necessary tasks can quickly, easily and reliably be conducted in local-control mode via touch-screen.

- ✓ Supports all ripple-control bit patterns and ripple-control transmitters
- ✓ Data transmission in accordance with IEC 60870-5-101 via VFT-channels, integrated modems or TCP/IP-connections
- ✓ Powerful ways of schedule management via time and event evaluations
- ✓ Comfortable local control via integrated LCD-touch panel or laptop
- ✓ EMV-tested and CE-certified in accordance with IEC 1000-4-xx
- ✓ Interface to online printers
- ✓ Also available as a portable unit.

ISC-1

Colour Display and Input Device

(Optional RKS-12-feature)



The ISC-1 with its easy-to-use touch-sensitive colour display offers a clear overview over local ripple-control processes.

The ISC-1 is designed in such a way that the ripple-control system can be completely controlled on-site without requiring a hook-up to a notebook.

In addition, the ISC-1 supports a setup of the GPS-receiver (Swistec) or GPS-167SV (Meinberg) as well as all its relevant information. As a consequence, lower-cost GPS-receivers without display can be used so that the investment into an ISC-1 pays off very quickly.

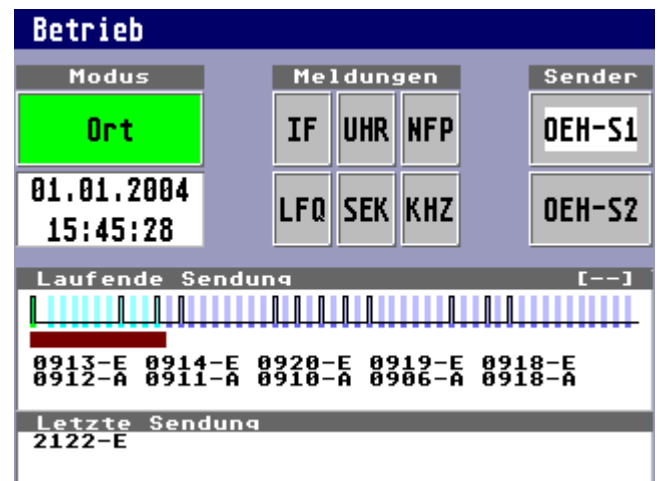
The six hotkeys to the left of the display guarantee a quick access to all ripple-control issues:

Status	Displays the current operating status
Commands	Fast, structured access to all ripple-control commands for manual transmissions
Timetable	Displays the timetable that has been stored in the RKS-12
History	Displays the operation protocol and stores errors
Measured Values	Displays current measured values of ripple-control processes and of the optional GPS-receiver
Setup	Command unit settings, including the optional GPS-receiver

All operations can be secured via a password.

With the hotkey „Status” the following tasks of the complete ripple-control process of the RKS-12 can be selected, displaying:

- Status: central or local operation
- Date and time
- Incoming system messages, e.g. status of the GPS-receiver
- Status of ripple-control transmitter
- Previously and currently running transmission with bit pattern.



The hotkey „Commands” allows a quick overview over all ripple-control commands.

The combination of commands and how they are named is customer-specific. It can easily be adjusted or supplemented - also from the central unit. This results in a user interface that is easy to use - even for users with little or no previous experience.

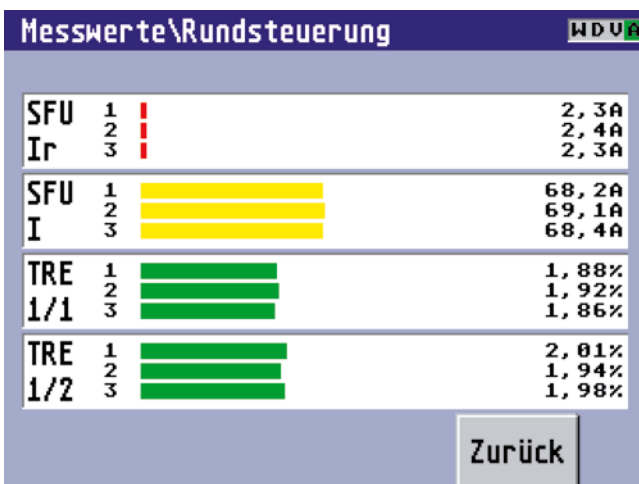


The overview displays the current status of all commands including target/actual-conflicts. Once a command has been selected in the display, it can be turned ON or OFF and its current status on all transmitters as well as its timetable can be displayed.

Several commands can be combined to one transmission via the transmission buffer.

The ISC-1 clearly displays the current measured values of the ripple-control processes on the RKS-12:

- Transmitter back current (SFU I_r)
- Transmitter output current (SFU I)
- Audio frequency level within the network (TRE).



Technical data

- ¼ VGA LCD with 320x240 pixels and 256 colours
- Touchpanel for complete display area and additional 6 hotkeys
- CCT backlight (the integrated screensaver automatically turns itself off if not used)
- Supply voltage 5V ± 5% at a general current consumption of 700mA
- Thermal operating condition: up to an ambient temperature of 50°C
- System inherent configuration menus
- Alarm contacts that report malfunctions to an external warning system
- Information on malfunctions is stored in an internal buffer
- Watchdog, system voltage and system signals.



GPS-1

(Optional RKS-12-feature)

Ripple-control operations in fully intermeshed networks require phase-locked pilot frequency. Preferably, this pilot frequency is generated from a GPS-signal. The signals that are transmitted from the rotating satellite of the Global Positioning Systems are used to obtain exact global time information, irregardless of the location. Thus, different frequency generators can be operated at various locations phase-synchronized.

Receivers like these are offered by various manufacturers - the technology is reliable and easy-to-use.

One main aspect of the installation of clock modules lies in the mounting of the antenna outside of a building.



Swistec's new clock module, GPS-1, has a Meinberg-clock (types GPS-166 and GPS-167) compatible slot configuration. In addition, it offers the following extensions that are essential for ripple-control tasks, free of charge:

- ✓ Photometric cell integrated in the external antenna in order to derive switching points for street lighting control, also in emergency mode.
- ✓ Temperature sensor integrated in the external antenna in order to calculate charging times for night-time charge storage heaters.



A big advantage of integrating all measured values in one system lies in the simple structural handling.

All information is transferred via a 50 Ohm coaxial cable, type RG-58. The inside unit of GPS-1 needs to be plugged into a subrack type RKS-12, FWK-870 or alike. Modifications are not necessary. All plugs are compatibel and can therefore be used. Optionally, the module can be equipped with the following features:

- ✓ Additional DCF-receiver integrated in the outdoor antenna in order to derive the legal time (daylight saving time) and as source for redundancy to the GPS-system
- ✓ Flanch-connect a measuring unit to determine wind speed.

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