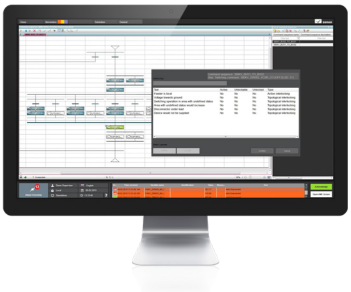
Command Sequencer

Configure complex command sequences – without any PLC programming at all

The Command Sequencer is a tool that can be used to configure, test and execute command sequences. The sequences for the automation of substations are configured in a graphical editor with excellent usability. PLC programming is not necessary. This ensures error-free working efficiency and flexibility.



The Command Sequencer is used for the configuration of command sequences. It consists of a graphics editor, in which the commands (steps) of a command sequence can be arranged consecutively. These sequences can be tested, executed and amended if required. PLC programming for command sequences is thus no longer necessary; the user can configure, test and amend them himself.

HOW THE COMMAND SEQUENCER WORKS

The smallest unit of a command sequence is a step. A step is a command that is executed manually if the Command Sequencer module is not used. A step is considered completed if the corresponding switching action has been executed, for example if the switching device has reached the expected end position. Several steps arranged one after the other result in a command sequence.

The command sequence is either started in the Command Sequencer editor directly or by means of a zenon function. The zenon function allows a command sequence to be triggered remotely. While a command sequence is running, the step that is currently being executed is colored in the Command Sequencer editor or its status is shown clearly by means of a symbol. The user thus knows the status of the command sequence at any time.

COMPLEX COMMAND SEQUENCES

The Command Sequencer is also ideal for the configuration of complex sequences:

- **Parallel branches:** The parallel branching of command sequences allows simultaneous execution of switching commands. At the end of the parallel branching, the steps run back into one strand. This can speed up the command sequence.
- **Transitions and alternative branches:** Transitions check conditions (such as interlocking conditions) and run these in alternative branches accordingly. This provides additional certainty.
- **Use two-stage commands as one-stage:** There are manual commands that require two-stage command input. In an automated command sequence, this can stop the sequence in order to wait for user input, which may not be desirable. Therefore, there is the possibility to suppress this action in a command sequence and the command sequences can operate all its way through without stopping (e.g. for remote operation).
- **Skip steps that already have the intended status:** Steps can be checked at the start to see whether the desired status is already reached. If this is the case, the step is skipped and the next one is started. This saves time.

FAST FACTS

- Configure complex command sequences
- No PLC programming required for command sequences
- Create and test command sequences in simulation mode
- Teaching: recording of the command sequence during operation in the single-line diagram

TEACHING

The easiest way to create a sequence is with the help of teaching. Here, the system learns the command sequence in that the user carries out the actions in the usual single-line diagram, in simulation mode. The Command Sequence Editor records the actions; subsequent tests can then be carried out. The created command sequence can then be used immediately.

TESTING COMMAND SEQUENCES IN SIMULATION MODE

The simulation mode allows the testing of the command sequences that have been created in the single-line diagram. The sequence is started and the user checks directly whether the command sequence triggers the right commands.

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Uses pre-defined command actions	▸ A step in the command sequence constitutes a command action that is also available for manual operation.
Starting and ending command sequences	▸ Start directly in the Service Engine or via a zenon function (allows remote-control starting without on-site operation) ▸ Automated ending of command sequences for special events (such as a protective trip)
Execution of the sequences	▸ Automatic mode ▸ Step mode (semi-automatic – command input stops at each step; the steps must be confirmed individually)
Complex sequences	▸ Parallel branches ▸ Alternative branches ▸ Transitions ▸ Treat two-stage commands as one-stage commands ▸ Skip steps that are already in the target state
Switching device allocation	▸ Avoids concurrent use by several operators ▸ Operating security
User Management	▸ Subject to zenon user management ▸ Unique assignment of areas of responsibility possible
XML import/export	▸ Integrated ▸ For the transfer from one system to another (if there is no direct network connection, for example)
Simulation and test	▸ Create and test the command sequence in a simulation environment ▸ Offline: without a connection to the real switching devices
Teaching	▸ Recording of a command sequence during manual operation ▸ Carried out in the simulation environment ▸ Such as macro recorder