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The information in this document contains general descriptions of technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

SWING Answers for infrastructure.

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency of infrastructure has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

www.siemens.com/swing

Planning a SWING network – example "patio"

The elevator is located on our office floor. Now, the network nodes cannot communicate through the elevator shaft because of the patio. To do so, we have two nodes in the same room separated by a wall. The gateway is in another room separated from this room by a wall.

A maximum range of 40 m is achieved when the wireless devices can communicate through the elevator shaft. This application example shows an office floor with an elevator. Between all devices, the wireless communication might be hindered by the patio because there are two walls to cross. By placing the gateway in another room separated from this room by a wall, the wireless devices can communicate through the elevator shaft. The elevator is located on a different floor, which is why the elevation from detector to gateway is the same as in our example. The distance between the gateway and the farthest detector is one hop and the farthest detector is placed at 60 m. The farthest detector cannot be reached if the gateway is placed in another room separated from this room by a wall.

Maximum protection with easy-to-plan technology

Reliability at its best

Simple planning rules make planning a SWING network easy. The whole system is easy to plan due to: High level of safety, easy planning life safety. This building has a patio in the middle. A significant contribution. A meshed network also excludes the risk of an open short circuit. And because all wireless devices communicate with their neighboring devices, also the risk of a neighboring device becoming a bottleneck is avoided.

Maximum protection with easy-to-plan technology

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Node functionality of all wireless devices – each detector and manual call point works as a node, which means that shorter and stronger radio links can be planned. This facilitates planning, allows a high level of freedom and flexibility for cost-efficient installation and offers reliability at its best.

Streamlined portfolio – consisting of a gateway, one detector that fits all requirements and a manual call point. SWING is the first radio fire detection technology with its own unique ASA technology leadership. Siemens once again proves its innovation power and offers your customers the best fire safety and combining it with its technology leadership.

Planning a SWING network – example "glass elevator"

By introducing mesh technology into radio fire detection and highest flexibility: offers your customers the best fire safety and combining it with its technology leadership. Siemens once again proves its innovation power.
Mesh technology – as safe as cable

Mesh technology basics

- Node: Wireless device, e.g. SWING detector or Siemens manual call point
- Link between two wireless devices: 868 MHz SRD-band (20 channels), 433 MHz WP-band (20 channels)
- Hop: Link between two wireless devices
- Up to 3 hops allowed between farthest node and gateway

SWING mesh technology – an enormous leap from traditional to innovative technology

- Two hops (multi-hop)
- Up to 3 hops allowed between farthest node and gateway
- Each node has two frequency bands: 868 MHz SRD-band and 433 MHz WP-band

Multi-hop and 2-path communication

- The mesh technology offers the same safe connection as a loop with two paths
- Information is transmitted from node to node until it reaches the radio gateway
- Every network node communicates with two or more network nodes

Safe as a loop – intelligent multi-hop communication with two paths

- Each network node communicates with its neighbors
- Use of multi-hops allows large and reliable transmission distances throughout the whole system
- At least two different paths (different hops and nodes) are always available – independent of an alarm. They continuously look for an optimal connection. If one connection is lost, the network node will automatically look for a possibility to maintain the connection or find another path. Disruptions can be caused, for example, by other radio devices working in the same frequency band or physical obstacles like walls.

Mesh technology – safe from disruptions

Network nodes check constantly whether two connections are available – normally, node-to-node connection and node-to-gateway connection. If one connection is lost, the node automatically switches to the other connection. Disruptions can be caused, for example, by other radio devices working in the same frequency band or physical obstacles like walls.

Change of channel or frequency band

In case of a disturbance, a network node dynamically changes its frequency band to a different frequency band to avoid interferences and makes sure communication still works. 2 frequency bands. If change of channel is not successful, the node searches within one frequency band.

Intelligent routing

In case of a disturbance, a network node dynamically changes its frequency band to a different frequency band to avoid interferences and makes sure communication still works. 2 frequency bands. If change of channel is not successful, the node searches within one frequency band.

Mesh network planning – easy and reliable

Three simple planning steps

1. Net size – The transmission distance of up to 90 m between gateway and the farthest detector.
2. 1. Net size
   - Max. 16 gateways per loop/stub
   - Max. 30 network nodes per gateway
   - Max. 16 gateway per loop/stub
   - Max. 90 m transmission distance
   - Max. 2.28 m radius

Transmission distance spanning 5 floors

In case of a disturbance, a network node dynamically changes its frequency band to a different frequency band to avoid interferences and makes sure communication still works. 2 frequency bands. If change of channel is not successful, the node searches within one frequency band.

ASATechnology – best protection without false alarms

(1) The signals recorded by the sensor are evaluated by a set of 6 statistical algorithms. The signals are compared with preprogrammed criterion. With the selection of an alarm parameter set, the algorithms can be influenced – and the false alarm rate can be reduced. The parameter set is selected on the basis of the actual environment and the risk assessment. The risk assessment includes the characteristic of effective walls, the building structure and the individual risk. The optimal parameter set is selected taking the individual risks and the existing environment into account.

(2) The result is unique to the detector and cannot be influenced by outside factors.

(3) The parameter sets can be selected according to the application guideline. They are preprogrammed automatically. The appropriate ASATechnology parameter set can be used to measure the specific challenge and the best document. The appropriate ASATechnology parameter set.

Data recorder

New data

Recording of the raw data

Analysis and problem solving

Alarm

Real-time interpretation

Raw data

Recording of

Data recorder

ASATechnology

Original

Danger signal

ASA

No alarm

Alarm

Detection of the sensor

2. Real-time interpretation of the situation and
   - Automatic influencing of parameters

3. Result

4. Alarm

1. The signals recorded by the sensor are evaluated by a set of 6 statistical algorithms. The signals are compared with preprogrammed criterion. With the selection of an alarm parameter set, the algorithms can be influenced – and the false alarm rate can be reduced. The parameter set is selected on the basis of the actual environment and the risk assessment. The risk assessment includes the characteristic of effective walls, the building structure and the individual risk. The optimal parameter set is selected taking the individual risks and the existing environment into account.

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