Sitraffic SST5 Stella

Outstation for local incident detection and warning
Increased road safety and improved traffic flow
With a Sitraffic® SST5 Stella unit installed at critical road sections, targeted hazard warnings can be generated right on site to prevent accidents and increase road safety. Sitraffic SST5 Stella is a cost-effective and future-proof alternative solution for specific applications such as weather detection, permanent traffic counters and congestion warning systems.

The benefits at a glance:

- Increased road safety
- Autonomous data collection
- Easy installation and integration in existing networks
- One technology for a wide range of applications

**Autonomous local data collection and traffic control**

Sitraffic SST5 Stella has been designed for autonomous collection and processing of traffic or environmental data, using them as the basis for reliable traffic sign switching decisions. The unit can be fed from a fuel cell, a solar panel and/or the night power used for street lighting, so it needs no mains connection of its own. This helps minimize installation time and infrastructure costs.

**Use of proven Siemens outstation technology guarantees Siemens quality standards**

Sitraffic SST5 Stella is based on the Sitraffic SST5 outstation and uses the same processor architecture. With this technology ensuring full compliance with the TLS standard, many projects can profit from Sitraffic SST5 Stella as a cost-saving alternative to previous solutions while benefitting from the same high degree of reliability as with our SST5.

**Key advantages**

With SST5 technology used as the system core for the different Sitraffic SST5 Stella applications, we can provide both weather and traffic detection applications on a shared basis. Moreover, Sitraffic SST5 Stella can be smoothly integrated in existing Siemens systems.

**Compact design makes for easy installation**

The compact dimensions of Sitraffic SST5 Stella and the use of a battery as a combined power and UPS unit allow the accommodation of the controller and its power and communication equipment in a single cabinet.
Sitraffic SST5 Stella can be installed as an autonomous standalone unit or integrated in existing or future Siemens traffic management systems. Using such an outstation as the core of an installation provides you with increased flexibility in expanding your detection network.

**Sitraffic SST5 Stella is a compact and favorably priced solution for smaller traffic management applications**

Since 1992, the Siemens family of outstations has successfully stood the test of everyday traffic in numerous systems realized in Germany, Austria and throughout the world. The addition of Sitraffic SST5 Stella has now opened up new areas of application:

- Weather detection and warning (SWISS)
- Speed limit and congestion warning
- Black ice warning
- Roadworks signaling
- Permanent traffic counters
- Fog warning
- Road de-icing service scheduling
- Wind warning
- Wrong-way driver detection

**Proven Siemens technology**

The limited number of components needed for Sitraffic SST5 Stella makes its installation fast and easy – perfect for temporary deployments. Siemens controllers use the proven SiTOS protocol to control a large number of different displays and detectors, and an open interface to communicate with third-party products and systems.

**Sitraffic ComBox5 Server (central data storage option)**

The autonomous Sitraffic SST5 Stella controller can be extended with an option for central data archival, based on the "ComBoxServer" software. The Sitraffic ComBox5 Server can connect with one or several Sitraffic SST5 Stella units, using a range of physical communication interfaces (TLS-TC57, TLSoIP). All telegrams sent via this communication channel can be recorded and archived in a database, sorted according to content and application, e.g. weather and environmental data (FG3) or traffic data (FG1). The data is stored in CSV file format (comma separated values) and made available to a wide variety of software programs, for instance Excel, for further processing.
Optimized features

**Energy-saving processor unit**
Processor performance has been tailored to the applications’ requirements: The energy-saving processor is powerful enough for all intended uses while reducing power consumption. The controller module analyzes the data collected by the sensors and detectors and activates the appropriate sign switching operations. The analysis parameters can be defined in line with the specific application and the sensors used and, if necessary, modified remotely at a later date.

**Proven outstation software**
The complete software package as per TLS 1992-2013 (Technische Lieferbedingungen Streckenstation) is available with Sitraffic SST5 Stella, allowing the connection of a wide array of data terminals. In addition, the service tool provides the same comprehensive end-to-end software download facilities to your field equipment that you had on the SST5.

**Communication interfaces**
Besides the V24 transmission methods used by TLS-compliant applications (with FME modem from Siemens), Sitraffic SST5 Stella can also be equipped with communication interfaces based on wireless, GPRS/UMTS or Ethernet technology. Distant detectors can use a radio link to communicate with Sitraffic SST5 Stella.
Environmental sensors
Sitraffic SST5 Stella can collect data from sensors for wind, precipitation, visibility, road surface condition, humidity and temperature. For connecting the sensors to Sitraffic SST5 Stella, serial and analog (Siemens DESI) interfaces are available. As sensors, especially those equipped with a heating device, have relatively high power requirements, a mains power supply is necessary.

Traffic detectors
Overhead detectors enable the collection of traffic data such as vehicle speed, vehicle classes and number of vehicles. The detectors use serial interfaces for communicating with the outstation. The power requirements of triple radar detectors are low enough to allow solar power solutions.

Versions
The outstation is available in three different versions.

Sitraffic SST5 Stella
SST5 Stella with plastic cabinet for pole mounting:
- SST5 Stella basic version without mains connection module. A 12/24 V power supply unit can be added for connection to a solar panel or a fuel cell, for instance.
- SST5 Stella basic version with mains connection module (with 100...240 V AC supply and 24 V DC mains adapter).
- SST5 Stella basic version with mains-based UPS = night power or connection to street light (115...240 V AC supply and 24 V DC mains adapter + battery).

Sitraffic SST5 Stella SC
SST5 Stella SC (SC = Slim Case) for integration in 1L/2L cabinets or other, in an IP54-protected plastic slim case with transparent lid:
- SST5 Stella basic version with mains connection module (with 100...240 V AC supply and 24 V DC mains adapter)

As an option, SST5 Stella SC is available with FMR or TC65.

Sitraffic SST5 Stella MK
SST5 Stella MK (MK = Mounting Kit) is designed for installation in 1L/2L cabinets or other housings suitable for IP54:
- SST5 MK basic version
- SST5 MK basic version with FMR
- SST5 MK basic version with TC65

The Mounting Kit is supplied without housing. SST5 Stella MK includes a mains connection module (100...240 V AC supply and 24 V DC mains adapter).

Connection of variable message signs
All Sitraffic SST5 Stella versions are equipped for connection with variable message signs or prismatic signs via Siemens controllers. When the sensors/detectors report the defined trigger values for congestion, fog or wind, SST5 Stella can locally initiate the display of the corresponding driver warnings.
Local fog warning system for motorways and for area-wide detection of low-visibility conditions in urban areas

Features
For increased traffic safety in case of fog and other environment-related low-visibility conditions, a fog warning function can be integrated in Sitraffic SST5 Stella on high-risk sections such as road dips, wooded areas or other danger spots to switch the connected variable message signs accordingly and warn drivers in advance of the hazardous conditions.

The first Sitraffic SST5 Stella in the line of outstations processes the values measured by the environmental sensors and, using established communication standards (GPRS, UMTS, LTE etc.), transmits them to a second Sitraffic SST5 Stella for display on a variable message panel. For remote data retrieval and archiving, the data can either be stored in the Sitraffic SST5 Stella itself or transmitted to a traffic control center. The modular design allows easy and cost-effective system extension.

Benefits
- Uses dependable Siemens SST5 technology
- Can be integrated in existing Siemens traffic management systems
- Operators can benefit from their experience with the SST5 outstation and with other Sitraffic SST5 Stella applications

Power supply
The local fog warning function based on Sitraffic SST5 Stella can be implemented as a standalone solution with a battery pack powered either via the street lighting grid (streetlight connection) or using a solar panel.
Local permanent traffic counting station for recording moving traffic according to vehicle-specific data

Features
The local traffic counting station based on Sitraffic SST5 Stella is a reliable, field-proven system for traffic data recording. It is easy to install and operate and provides very accurate counting functions in connection with commercially available detectors. All standard detector types (e.g. induction loops, triple technology and infrared detectors) are supported. Sitraffic SST5 Stella is an affordable solution for realizing permanent local traffic counting functions. Moreover, the system can be expanded to provide area-wide traffic data recording.

The modular design allows easy and cost-effective system extension. For remote data retrieval and archiving, the data can either be stored in the Sitraffic SST5 Stella itself or passed on to a traffic control center, using established communication standards such as GPRS, UMTS, LTE etc.

Benefits
• Uses dependable Siemens SST5 technology
• Can be integrated in existing Siemens traffic management systems
• Operators can benefit from their experience with the SST5 outstation and with other Sitraffic SST5 Stella applications

Power supply
The permanent traffic counting station based on Sitraffic SST5 Stella can be implemented as a standalone solution with a battery pack powered either via the street lighting grid (streetlight connection) or using a solar panel.

*Instead of loop detectors, other detection technologies can be used, for instance infrared detectors, triple technology.
Local speed monitoring system for the detection and display of speed limit violations

Features
For increased traffic safety at accident hot spots, a local speed monitoring and warning system can be realized with the Sitraffic SST5 Stella outstation to alert drivers to excessive speeds. Sitraffic SST5 Stella processes the values registered by the local detectors and, in case of a speed limit violation, activates a variable message sign that is connected directly to the controller.

For remote data retrieval and archiving, the data can either be stored in the Sitraffic SST5 Stella itself or passed on to a traffic control center, using established communication standards such as GPRS, UMTS, LTE etc. Of course, Sitraffic SST5 Stella can also transmit the data directly to a radar-based monitoring system or to a police station for further processing.

Benefits
- Uses dependable Siemens SST5 technology
- Can be integrated in existing Siemens traffic management systems
- Operators can benefit from their experience with the SST5 outstation and with other Sitraffic SST5 Stella applications

Power supply
The speed monitoring and warning station based on Sitraffic SST5 Stella can be implemented as a standalone solution with a battery pack powered either via the street lighting grid (streetlight connection) or using a solar panel. The modular design allows easy and cost-effective system extension.
## Technical specification

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<th>Standards</th>
<th>TLS 93-2012, CE certificate</th>
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<td>Mechanical features</td>
<td>Pole-mountable cabinet; unit mounted on the backplane or on a 35 mm top-hat rail</td>
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| Power supply               | • 100...240 V at 50 Hz (single-phase) or 12/24 V DC  
                             | • 115...240 V at 50 Hz (single-phase) or 12/24 V DC (solar power, off-peak power, fuel cell, etc.) |
| Control module/processor   | IRC assembly (CPU with 800 MHz, 512 MB flash disk, 128 MB RAM) |
| Interfaces                 | 1 × 100 MBit Ethernet, 5 serial COMs (of these 2 × RS485/422 isolated),  
                             | 38 digital I/Os (of these 3 × 24 V inputs und 3 × Open Collector High-Current outputs),  
                             | 1 × special bus extension (e.g. for Profibus, Profinet, CAN, ...), 2 × analog 20 mA inputs |
| Traffic data               | LD4-F loop detector, overhead detectors, detectors with digital output, communication with detectors via: RS485, RS232, LAN, digital or wireless connection (license-free waveband) |
| Weather/ environmental data| Brightness sensor, environmental and weather data sensor (precipitation, temperature, road surface condition, wind and other environmental data), data on chemical substances or pollutants (NO, NO\textsubscript{2}, NO\textsubscript{x}, PM\textsubscript{xx}), noise level (sound pressure level), communication with sensors via: RS485, RS232, LAN or analog |
| Variable message signs     | VMS based on LED chain or matrix technology with new lamp switch controller IRC/LDBR (design in compliance with VDE 0832, incl. power- and voltage-monitored outputs and dynamic self-tests, but not totally failsafe) prismatic signs, flashing signal heads, traffic light systems, DiVista displays, ... |
| Operational messages       | Some versions include a power supply/UPS module; all TLS-specified operational messages possible |
| Roadside equipment control | E.g. barriers/gates, height measurements, in-pavement lighting, ... |
| Ramp metering              | E.g. ALINEA, RWS or RE |
| Car-to-infrastructure      | Communication between vehicle and infrastructure |
| Communication              | FSK (Siemens FMR), fiber optic cable, wireless link, WLAN, GPRS or UMTS |
| Touch panel                | Optional fully graphical display with 320 × 240 pixels for convenient manual operation |
| Service/commissioning       | Software upload from ComBox5 to SST5 Stella and the connected data terminals, for instance VMS via the controller’s corresponding service interface or via FTP (wire-bound or wireless) |
| Tools                      | PC-based diagnosis tool; service app for Android smartphones |
| Other                      | GPS clock (used for instance to synchronize standalone systems) |
| Temperature range          | –40 to +80 °C (without heater) |
| Dimensions/weight          | Sitraffic SST5 Stella (50 × 50 × 30 cm)/ca. 5 kg  
                             | Sitraffic SST5 Stella SC (25 × 14 × 25 cm)/ca. 3 kg  
                             | Sitraffic SST5 Stella MK (25 × 14 × 25 cm)/ca. 2 kg |
| Applications               | • Outstation compliant to TLS 93-2012 (controller, input/output concentrator)  
                             | • Mobile congestion warning systems  
                             | • Traffic management system  
                             | • Weather detection systems (e.g. fog or wind warning system)  
                             | • Speed monitoring and warning systems  
                             | • Permanent traffic counters as per TLS and BASt  
                             | • Urban traffic counters, e.g. at freeway ramps or Park&Ride lots |
The information in this document contains general descriptions of the 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.