

Technical Information

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Station Monitoring Unit SA129

Monitoring remote stations

The ROHDE & SCHWARZ Station Monitor Unit SA129 provides extensive capabilities for the supervision of remote stations.

Various sensors are available for monitoring the opening of windows or doors, temperature, relative humidity, smoke detection and power supply. The sensor messages are automatically transmitted by telephone to the station monitoring unit at the

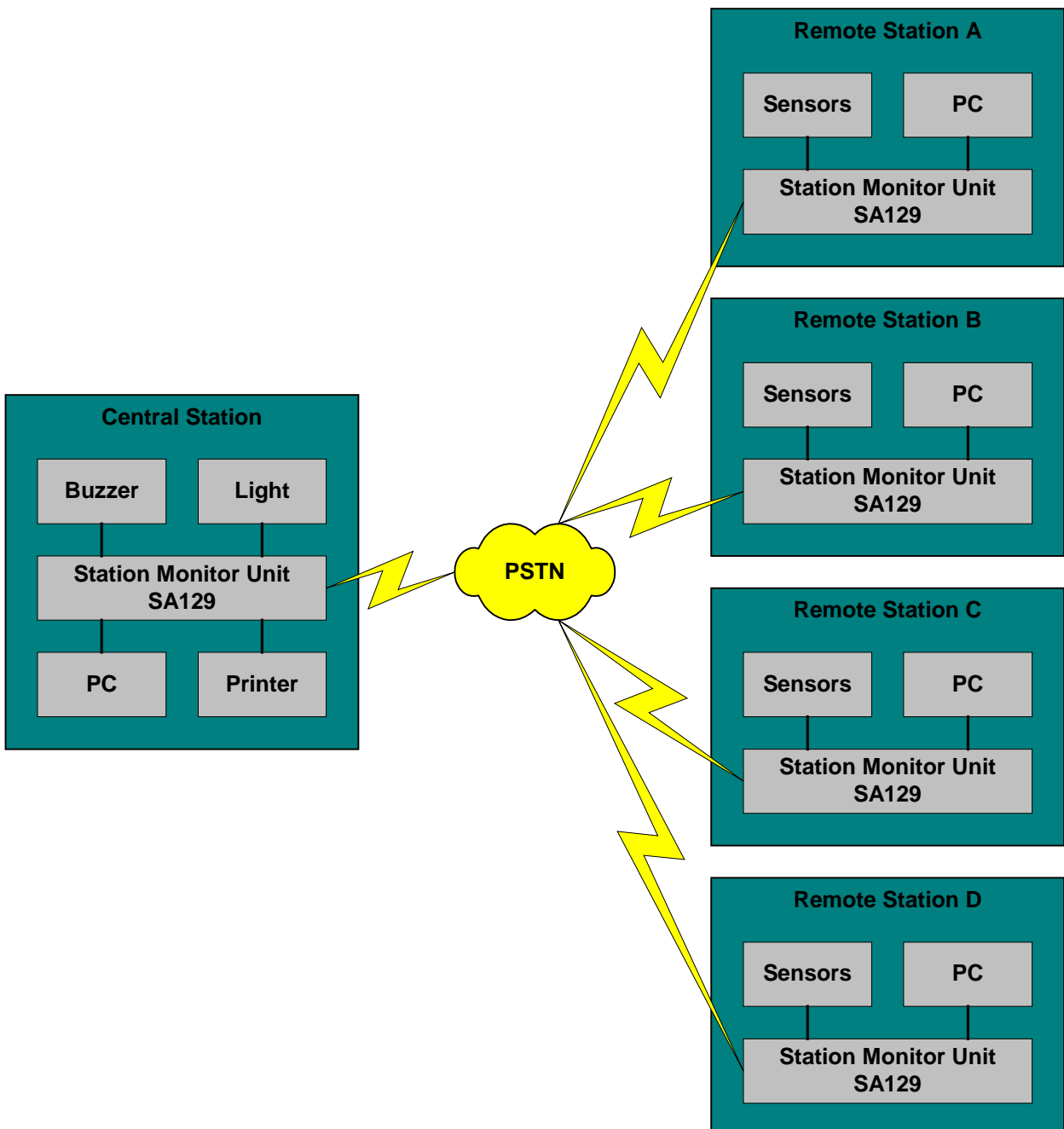
central station and output to an LCD display or printer or displayed by a light or acoustic signal.

Another application of the SA129 involves reinitializing a remote-controlled system by interrupting the power supply, the system process controller being shut down beforehand to prevent data loss.

Introduction

A station monitor system consists of one Station Monitor Unit SA129 in the control station and one SA129 per remote station at up to four remote stations. The SA129 in the central station functions as a status display and remote control console. The SA129 in the remote station scans the connected sensors and executes the remote control commands received from the SA129 in the central

station. If a remote SA129 detects a change in the status at one of the sensors, it sends a message to the SA129 in the central station, where the status is displayed.



Example of a station monitor system with one central station and four monitored remote stations

Description

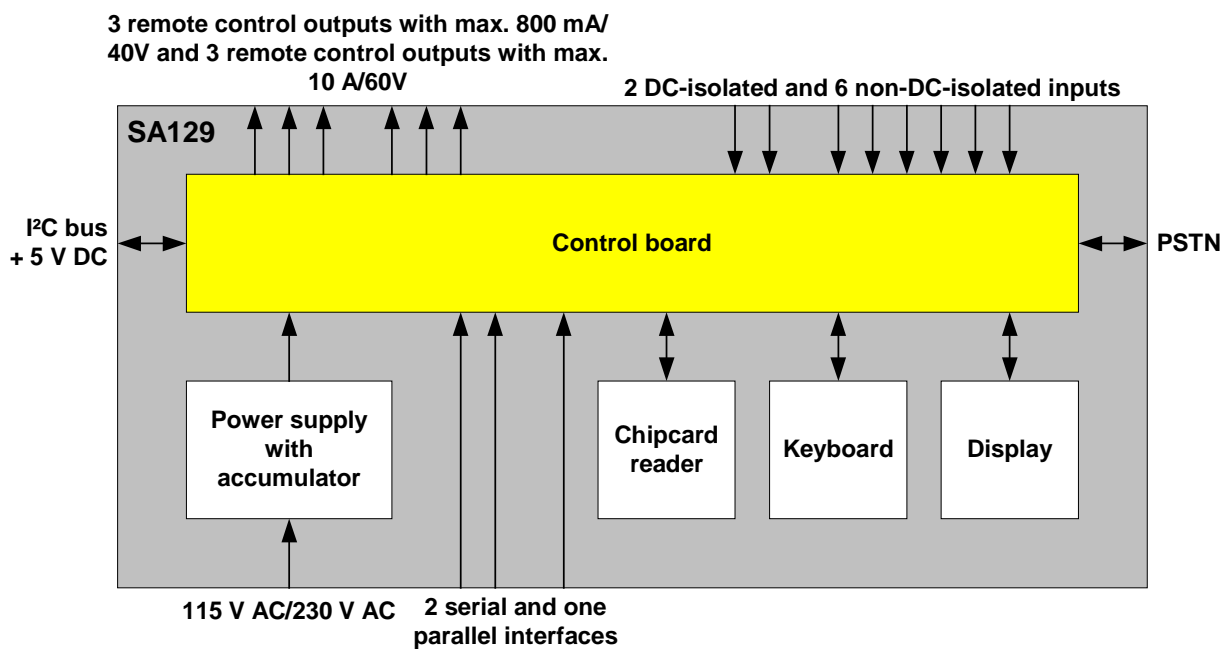
The Station Monitor Unit SA129 is available as a 19" rackmount model or as a 19" desktop unit. In case of a power failure, an integrated battery ensures operation of the SA129 for up to 24 hours.

Status messages and RC commands are transmitted via normal dialled PSTN lines. The line should be dedicated to the SA129 only, so that this line is independent of other communication lines. Sequences of DTMF tones are used for the information transfer between the SA129 units, similar to the interrogation of a telephone answering machine. This simple mode guarantees secure operation even under poor line conditions.

isolation. In this mode, the two inputs accept voltages from 4 to 28 VDC. In the configuration, it is possible to define whether the dead or live state corresponds to the OK state for the two inputs.

Three of the six remote control outputs are open-collector outputs (current sinks) with a dielectric strength of 40 V and a maximum current drain of 800 mA. The remaining three outputs are MOSFET switches with a maximum current drain of 10 A and a dielectric strength of 60 V.

The two types of outputs can be separately configured such that they switch either the internal supply voltage of 12 VDC or an external voltage corresponding to their dielectric strength.



Block diagram of Station Monitor Unit SA129

The Station Monitoring Unit SA129 has eight sensor inputs and six remote control outputs. Six of the eight inputs are optocoupled but not DC-isolated (low active). The polarity of the inputs can be logically inverted by means of appropriate entries on the chip card. The remaining two inputs can be set separately to the same operating mode by means of jumpers or used in complete potential

The jumpers of the three MOSFET outputs can be set so that their active circuit is completely isolated from the SA129.

The above described remote control outputs and sensor inputs are brought out to a 25-contact D-SUB connector together with three ground contacts and three 12 V contacts. In parallel, the

three MOSFET outputs are available on a high-current connector fitted with screw connections.

The I²C bus, together with the chassis and the internal 5 VDC supply voltage, is brought out via a 4-contact MiniDIN connector to which one or more temperature sensors are connected.

The SA129 has two serial RS-232 interfaces. The COM1 interface can be used to transfer the status signals to a superordinate system. The COM2 interface is used to read from and write to the chip card.

When the SA129 is used as a control station, an EPSON-compatible printer can be connected to the LPT interface. The status messages received together with the time of the day are logged by this printer. The interface is also used to update the device firmware.

Configuration via Chipcard

The basic firmware of the SA129 is the same for each unit. Customer and system-specific information is defined and stored on a chip card via a configuration tool running under Windows 2000 / Windows NT 4.0. Only a null modem cable connected to the SA 129 is required to read from and write to the chip card.

The following information is stored on the chip card:

- ◆ Type of application (central station or remote station)
- ◆ Names of stations and their telephone numbers
- ◆ Number of sensor inputs used
- ◆ Number of remote control outputs used and their polarity (high or low active)
- ◆ Language (ASCII)
- ◆ Text to be output to the display

- ◆ Limit values for temperature monitoring
- ◆ Important parameters of national PSTN networks, which are not in line with standards

SA129-S Sensor Set

Since the number and type of sensors and switch units (relays) required largely differ for the remote control functions, these parts are not part of the SA129 supplied. Rohde & Schwarz offers a set of the most frequently used parts as an option.

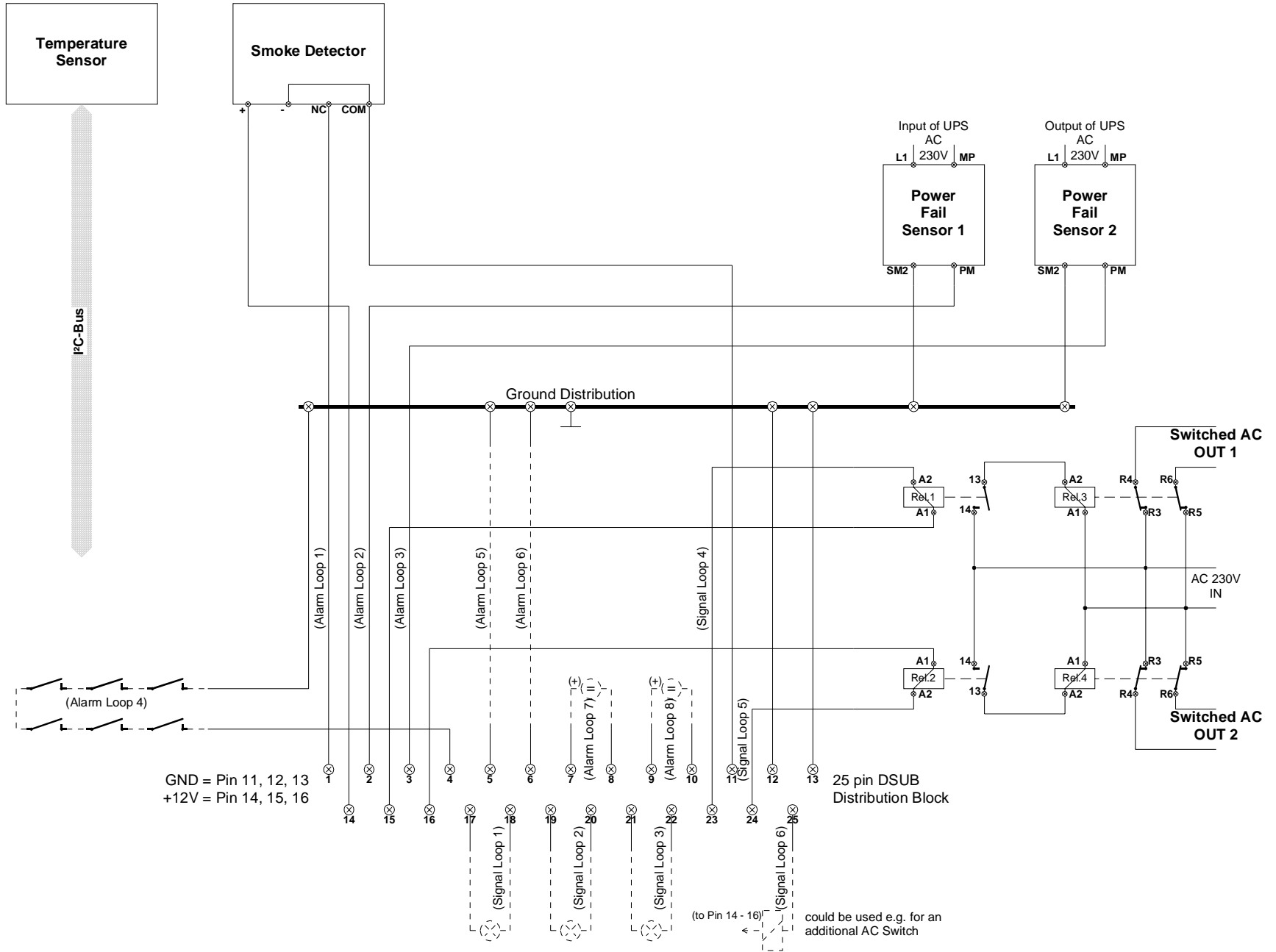
This set is accommodated in a prewired installation box, which can be wall-mounted. This box contains two 230 VAC voltage monitoring units, two 230 V / 16 A automatic power cutouts for switching on/off a single-phase AC circuit as well as a screw terminal strip for connecting all remaining I/O lines.

The set also contains several common door and window contacts, a photoelectric smoke alarm, a temperature sensor and a 5 m long cable for connecting the SA 129. All of these parts are designed for use in the remote stations.

For use in the central station, the set contains a red warning lamp and an acoustic alarm generator.

Since the installation of the sensors and signalling units depends on the conditions prevailing in the building, the set does not include any cables for this purpose. The installation which is easy can be performed by any local fitter. It can of course be carried out by the Rohde & Schwarz field personnel if the customer desires.

Example of connection for the SA129-S



Extensions

In addition to the sensors of Sensor Set SA129-S, there are other sensors which form a useful extension of a SA129 system. Some examples are given below:

- ◆ Sensor for DC-current and DC-voltage monitoring (for monitoring the charging state of batteries on emergency power supply units)
- ◆ Sensor for monitoring aircraft obstruction lights (on large antenna masts)
- ◆ Sensor for monitoring the air flow, e.g. filter-change warning for air-conditioning plants and ventilation units (the signalling contacts are provided on many units)
- ◆ Motion detector on PIR (passive infra red) basis or radar
- ◆ Sensor for wind-speed monitoring (on large antenna systems)
- ◆ Hygrostate and additional thermostats for monitoring the ambient air conditions.

These sensors can be either added by the user or selected and integrated by Rohde & Schwarz during system installation against separate invoice.

Software extensions

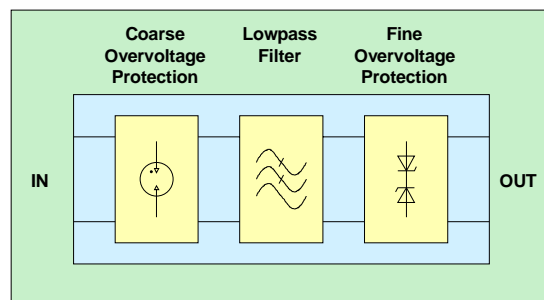
In many countries, there are service providers for object monitoring. These companies usually provide PSTN alarm access points with DTMF-based protocols. The SA129 can be connected to such a company after consultation.

Telephone Filter SA129Z2

During operation, several stations are often interconnected via telephone lines to transfer audio signals and data. The lines used for this purpose are not optimally protected against electromagnetic interference. As a result, there are often various kinds of interference on these lines, which can be divided into two categories:

- ◆ Overvoltage caused by electrostatic discharges such as lightning strokes in the vicinity of telephone lines (no direct strokes). Such transients cause short-time interference, which may cause errors during data transfer. High-energy transients can even destroy the connected terminals.
- ◆ Spurious signals due to strong electromagnetic signals caused by transmit systems such as broadcasting transmitters or radio links in the vicinity of telephone lines. Overhead telephone lines can have the same effect as antennas for such signals. If the received spurious signal is demodulated by the terminal (e.g. telephone or modem) and superimposed on the useful signal, the broadcast signal is audible in addition to the useful signal itself and often disturbs the technical evaluation of the useful signal.

The Telephone Filter SA127Z2 has been developed to counteract the two types of interference. It is looped into the telephone line near its entry point in the building in front of the terminals and connected to the building earth.



Block diagram

Specifications

Interfaces

POWER IN
COM 1 and 2

LINE
AF
(Service)
LPT
I/O 1A

power plug (X100)
D-SUB plug, 9 pins (X1 to X2)
standard serial interface (RS232), default 9600 bits/s
PSTN RJ-11 6P/4C (Western) (X3)
D-SUB jack, 15 pins (X4), not connected
MINI DIN, 6 pins (X5), for service purpose only
D-SUB jack, 25 pins (X6)
D-SUB jack, 25 pins (X20)
6 optocoupled inputs, low active, common ground

2 optocoupled inputs, low active,
common ground or fully insulated,
4 to 28 VDC in insulated mode

3 open collector outputs (current sinks) 800 mA,
using the 12 VDC internal supply
or an external supply up to 40 VDC

3 high current MOSFET outputs,
using the 12 VDC internal supply
or an external supply up to 60 VDC

if externally supplied, the outputs can be jumpered to
fully insulated operation at a current of up to 10 A.

I/O 1B

10 pole screw clamps (X10)
gives parallel access to the 3 high current outputs of
X20

I²C BUS 1
Loudspeaker
Display
Keypad
Chipcard reader

MINI DIN, 4 pins (X30)
integral loudspeaker for PC and telephone monitoring
LCD, 4 lines by 20 characters with LED backlight
12 numeric keys + 4 function keys + up/down keys
for standard ISO chipcards,
card type "2048 bytes/I²C bus"

General data

Rated temperature range
Limit temperature range
Storage temperature range
Humidity
Sinusoidal vibration
Random vibration
Shock
EMC

+5 °C to +45 °C
0 °C to +50 °C
-20 °C to +70 °C
95% relative humidity at +40 °C
5 Hz to 150 Hz
10 Hz to 300 Hz
40 g shock spectrum
meets EMC directive of EU (89/336/EEC)
and German EMC law

Safety
Quality standard

meets EN60950 / VDE0805
developed and manufactured in compliance with
ISO 9000

Power supply

115 / 230 VAC selectable / 50 to 60 Hz / 55 VA,
internal accumulator 12 VDC, 7 Ah

Dimensions (W x H x D)

19" rackmount, 2 HU – 427 mm x 89 mm x 370 mm
484 mm x 89 mm x 395 mm (overall)

Weight

9.6 kg

Ordering Information

Basic versions

Station Monitor Unit 19" rack mount	SA129 Model 02	3024.4011.02
Station Monitor Unit desktop	SA129 Model 03	3024.4011.03

Options

Sensor Set	SA129-S	3024.4263.02
Further Sensors		on request

Extras

Telephone Filter	SA129Z2	3023.1519.02
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