

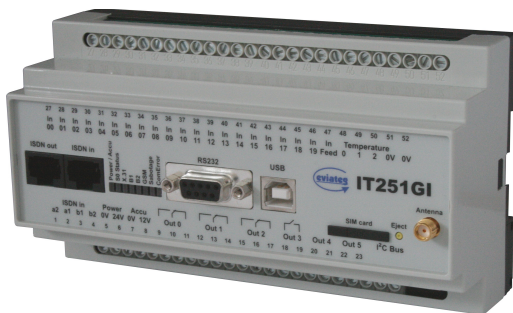


GSM/ISDN fault reporting device

IT251GI

IT251GI-VdS

IT251GI-OPC



Operation manual

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SAFETY INDICATION

Hardware and software of the IT251GI are not fault-tolerant and have not been developed or made to be used or retailed as online control system in hazardous environments where error-free operation is mandatory, eg use in nuclear facilities, flight control, communication systems, air traffic control, direct life support equipment or weapon systems, for which a malfunction may cause directly death, physical injury or severe bodily harm ("High Risk Activities").

eviateg GmbH explicitly dismisses any specific or indirect warranty for the suitability for High Risk Activities.

The transmission of alerts and fault reports is carried out by the particular network provider and cannot be guaranteed in case of technical modifications in the transport network. For this reason cyclic routine messages should be programmed.

eviateg GmbH assumes no liability for technical inaccuracies and reserves the right to make modifications for the purpose of technical progress.

Modifications, errors and omissions excepted.



Designated use

- The IT251GI is intended for an operation with Safety Extra Low Voltage (SELV) according to EN 60950 / VDE 0805.
- Other equipment connected to the IT251GI must meet the conditions of EN 60950 (Safety of Information technology equipment).
- The IT251GI is a GSM fault reporting device which can be used as switchgear and controlgear too. An operation is only allowed with an appropriate installation.
- The IT251GI is only provided for professional use and stationary installation in electric control cabinets.
- The installation has to comply with the electrotechnical rules.
- During switching on the IT251GI all risks by controlled equipment, eg unexpected start up of motors or unforeseen switching of voltages, must be prohibited.

Misuse

The IT251GI must not be used as a security relevant control requiring error-free operation, eg. use in nuclear facilities, flight control, communication systems, air traffic control, direct life support equipment or weapon systems, for which a malfunction may cause directly death, physical injury or severe bodily harm.

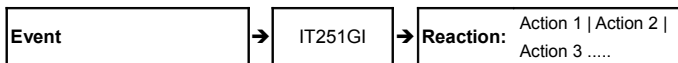
Unauthorised modifications, disassembling or changes to the product are disallowed.

For any consequence of misusing the IT251GI the eviateg GmbH disclaims liability and all warranty claims expire.

Functional principle

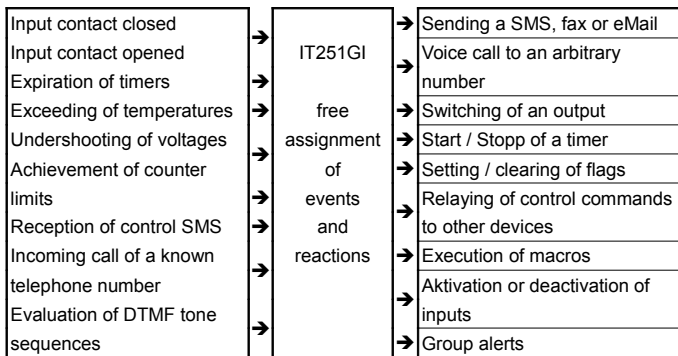
The IT251GI works according to the principle of event and reaction:

- The device detects a multitude of events.
- To each event there is a reaction assigned which is executed each time the event occurs.
- The reaction is composed of single actions put into execution consecutively.
- In the delivery status all reactions are empty and the IT251GI does not react to any event.
- Programming of the reactions can be done with the software „QuickSetup“ included in delivery.
- To utilise all features of the device the the configuration software „CONNY“ is also included in delivery.



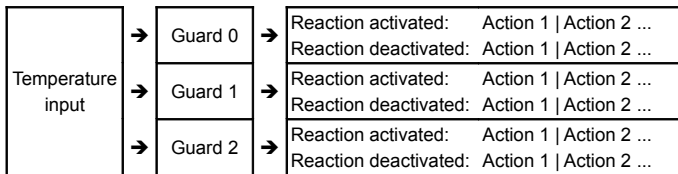
Examples for events:

Example for actions:

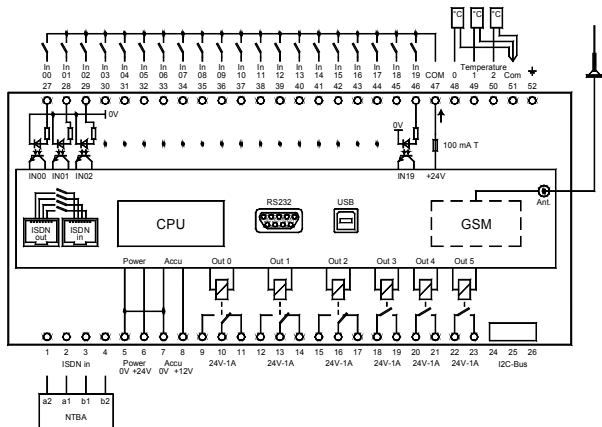


Principle of measuring temperatures

- Each temperature input has three software guards assigned.
- A guard monitors the temperature value and compares it with an adjustable limit.
- When the value falls below the limit or exceeds it, the „Activated“ or respectively „Deactivated“ reaction is executed.



Block diagram



Picture 1: Block diagram of the IT251GI

Terminal connections

Terminal	Marking	Description
1..4	ISDN in	ISDN S ₀ bus
5,6	Power	12 to 24V DC / 0.18 A (0.35 A with battery charging)
7,8	Accu	Connection for the emergency power battery (internal trickle charging circuit)
9..23	Out 0..5	Relais outputs 0 to 5 (rating see „Technical Data“)
24..26	I ² C Bus	Interface for I ² C extension modules
27..46	In00..19	Digital inputs for potential separated contacts
47	In Feed	+24V terminal for feeding of the digital inputs
48..50	Temperature	Temperatur inputs for digital temperature sensors
51, 52	0V	Reference potential for the temperature sensors

Hints:

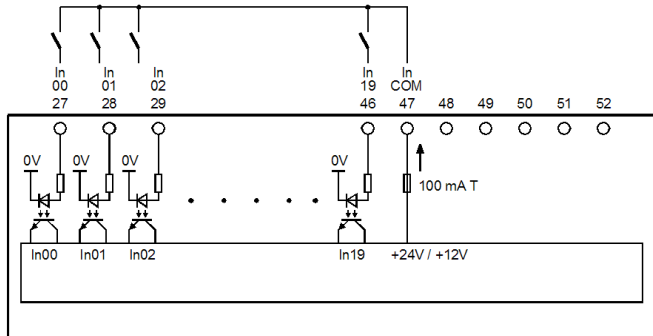
- The contacts 3 to 6 of the **ISDN in** jack are directly connected with the terminals 1 to 4, so that the ISDN line can be connected to screw-type terminals as well.
- A sabotage break is only equipped in devices with VdS protocol. In all other versions of IT251GI the jacks **ISDN in** and **ISDN out** are connected permanently with each other.

Switching inputs

In order to drive the digital inputs **In 00** to **In 19** the correspondent terminal (27 to 46) must be connected to **In Feed** (terminal 47) via a switching contact.

In Feed provides a voltage between +12 V and +24V which is necessary for driving the internal optocouplers.

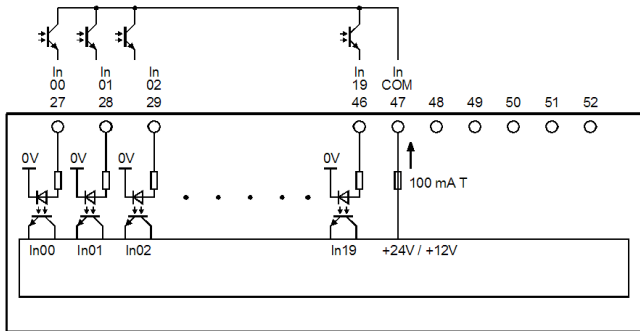
The voltage on terminal **In Feed** is internally derived from the power supply and protected with a resettable fuse. For each closed input there flows a current of about 2 to 4 mA.



Picture 2: Connecting switching contacts to the inputs

Driving the inputs can be done with potential-free optocoupler outputs as well (see picture 3).

Open collector transistor outputs are ground referenced and can not be used for driving the inputs.



Picture 3: Driving the inputs with floating optocoupler outputs

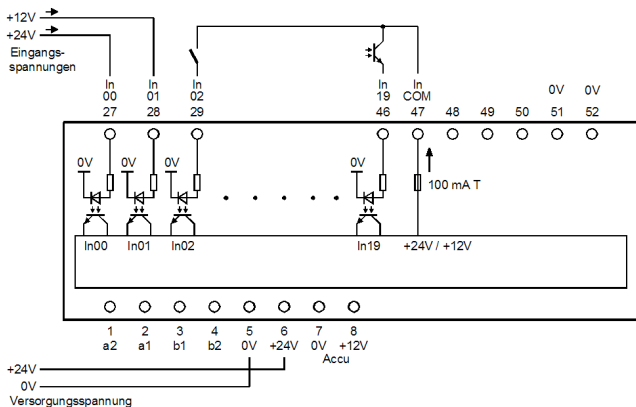
An open input of the IT251GI is evaluated as **deactivated** and a closed input as **activated**.

The voltage on terminal **In Feed** is exclusively intended for feeding the inputs and may not be used for additional loads.

Mixed operation of inputs

The inputs of an IT251GI can be driven directly with **+12 V DC** or **+24 V DC** signals as well.

Thus a mixed mode utilising external voltages, switching contacts and optocoupler outputs is possible as well (see picture 4).



Picture 4: Driving inputs with external voltages, contacts and optocouplers

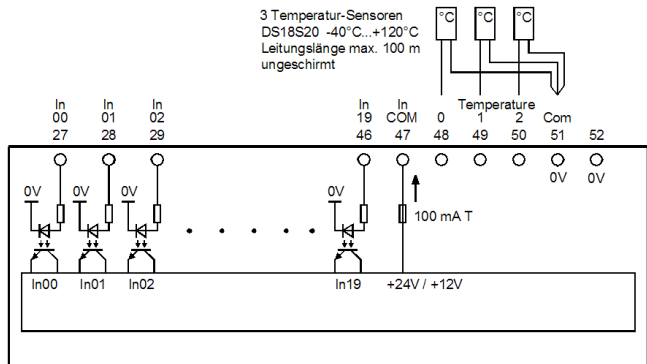
Temperature sensor inputs

The IT251GI has three inputs for active digital temperature sensors (DS18S20 type, not scope of delivery). The maximum length of each connecting cable can be up to 100 m.

The temperature measurement range of the IT251GI is from $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$. Between $-10\text{ }^{\circ}\text{C}$ and $+85\text{ }^{\circ}\text{C}$ the accuracy is $\pm 0.5\text{ }^{\circ}\text{C}$, below this range $\pm 2\text{ }^{\circ}\text{C}$.

The temperature inputs have a resolution of $0.5\text{ }^{\circ}\text{C}$ and the measurement interval is 1 second.

The connecting cable should be an unshielded, twisted pair copper wire $\varnothing 0.5$ to 0.8 mm . The maximum length is about 100 m.



Picture 5: Connecting digital temperatur sensors DS18S20 to the IT251GI

Battery charging circuit

In order to send alarm messages in spite of main power interruption the IT251GI can be powered with an 12 V backup battery. The battery has to be connected to the terminals **0V** and **12V** (terminals 7 and 8). As long as the supply voltage is at least 21 V, the battery is charged with the integrated charging circuit. Charging is done with about 350mA up to a final charging voltage (13.6 to 13.8 V). If this voltage is reached, the IT251GI switches over to trickle charging mode.

The charging circuit is reverse-polarity protected and short-circuit-proof and can be used for rechargeable batteries with capacities from 2 to 12 Ah. There must not be connected additional consumer loads in parallel to the backup battery.

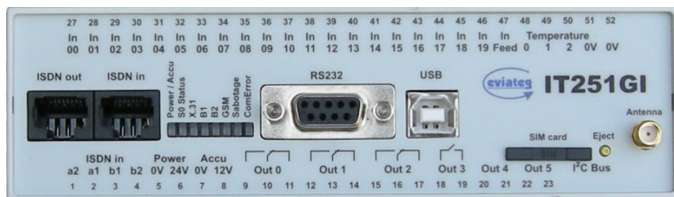
Hint: When the 24 V main power is interrupted, the battery terminal voltage must be at least 12.0 V to continue operation battery powered.

Battery operation will work until a voltage of about 11.2 V is reached; below that value the low voltage protection will shutdown the device.

Realtime clock

All devices of the IT251GI family have an integrated real time clock with automatic Daylight Saving Time / Standard Time readjustment. When the device is connected to ISDN, time is adjusted automatically when sent from the ISDN network operator on outgoing connections.

Operating elements on the front panel



Jack / LED	Function
Jack „ISDN out“	Normally connected to jack „ISDN in“ only for IT251GIV: in case of tampering cut-off („Sabotage break“)
Jack „ISDN in“	Connected to the Network Termination (NTBA) of the ISDN access
LED Power/Accu	Indication of powersupply: - green: powered with 24V - red: powered from backup battery

LED S ₀ Status	Indication of an activated ISDN access (Layer 1)
LED X.31	Indication of X.31 connections
LED B1	Indication of an occupied channel B1
LED B2	Indication of an occupied channel B2
LED GSM	<ul style="list-style-type: none"> • blinking with a 1:1 rate: GSM module is not registered • flashing each 5 s: GSM module is registered to the network • permanently on: active data connection over GSM • permanently off: GSM module swswitched off (eg no SIM)
LED Sabotage	only for IT251GIV: indication of a sabotage break
LED ComError	only for IT251GIV: indication of VdS communication errors
Jack RS232	serial RS232 interface for programming the IT251GI and for data communication in modem mode
Jack USB	USB interface for programming the IT251GI and for data communication in modem mode (alternative to the RS232 interface). The USDB interface is only active if there is noch device connected to the RS232 jack.
SIM card	Only for devices with GSM: Slot for the SIM card. The SIM card holder can be ejected by pressing the yellow Eject knob with a pointed item.
Jack Antenna	Only for devices with GSM: SMA jack for connection of GSM antennas

Technical specifications

Dimensions	86 mm (L) * 155 mm (W) * 63 mm (H)
Weight	ca. 330 g
Operating voltage	12 bis 24 V DC (bei Akkuladung mindestens 21 V DC)
Current consumption	max. 180 mA (about 350 mA with battery charging)
Backup battery	external / 12 V / 2 to 7.5 Ah / charging rate about 350 mA
Service temperature	-20 °C to +55 °C
Humidity	0 to 70%, non-condensing
Degree of protection	IP20
GSM modem	Quadband 850/900/1800/1900 MHz
SIM card	Mini SIM (25 * 15 mm)
Terminals	49 screw-type terminals 1.5 mm ²
Inputs In0..In19	20 switching inputs, max. input voltage 24 V DC
Temperature inputs T0...T2	Installation of max. 3 digital temp. sensors DS18S20, max. distance 100 m, measurement range -40°C to +85°C
Outputs Out0...Out5	Relais outputs 48 V Max switching power: 60 W Max switching current: 2 A 30 V DC / 1 A 48 V DC Max switching voltage: 48 V AC/DC
Extension bus	I ² C bus
Alarm events (selection of supported events)	<ul style="list-style-type: none"> • switching operation on inputs • expiry of internal timers or counts • incoming calls from known calling parties • on exceeding or falling below temperature / voltage / current thresholds • evaluation of self-defined DTMF tone sequences • evaluation of password protected control SMS • loss of main power supply
D channel protocols	DSS1, X.31
B channel protocols	X.75SLP, V.110, V.120, HDLC-UI, PPP, T.70-NL, Transparent, ISO8208 (X.25 DTE-DTE)
SMS and Pager protocols	TAP and UCP protocol with automatic gateway routing (country dependent), fixed net SMS, SMS over GSM

Fax and eMail	transmission of fax and eMail per SMS (depending on the network and service provider)
Number pool	up to 256 numbers, groupable in up to 32 alert groups
Message text pool	10 text blocks per 512 bytes, macro capable
Programming/update	via RS232, USB and GSM
VdS 2465 protocol (only IT251GI-VdS)	Version 03/1999, up to 10 VdS centrals, free programming of addresses / address extensions / priorities, free assignment of inputs to centrals

Konformitätserklärung

gemäß der EMV-Richtlinie 2014/30/EU (elektromagnetische
Verträglichkeit) vom 26. Februar 2014

Hiermit erklären wir, dass das Gerät

IT251GI GSM/ISDN-Störmeldegerät

in seiner Konzeption und Bauart sowie in der von uns in Verkehr
gebrachten Ausführung den grundlegenden Sicherheits- und
Gesundheitsanforderungen der EMV-Richtlinie 2014/30/EU entspricht.
Bei einer mit uns nicht abgestimmten Änderung des Gerätes verliert
diese Erklärung ihre Gültigkeit.

Zur Beurteilung herangezogene Normen:

- DIN EN 60950: 2011
Elektrische Sicherheit informationstechnische Einrichtungen (ITE-Geräte)
- DIN EN 55 022: 2011
Störaussendung informationstechnische Einrichtungen (ITE-Geräte)
- DIN EN 55 024: 2011
Störfestigkeit informationstechnische Einrichtungen (ITE-Geräte)
- DIN EN 61000-3-2: 2010
Störfestigkeit gegen statische Entladungen (ESD)
- DIN EN 61000-3-3: 2009
Störfestigkeit gegen elektromagnetische Felder

eviateg GmbH
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Norderstedt, den 05.01.2015



Thomas Plagens, Geschäftsführer

Disposal instruction

The IT251GI may neither be delivered at the collection points for the recycling of electrical or electronic equipment nor may it be disposed at a container which is collected from an electronic vendor for recycling purposes.

The device can be returned to the vendor or can be disposed by the user on his own cost in an environmentally compatible manner.

Norderstedt, 2016-04-14

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