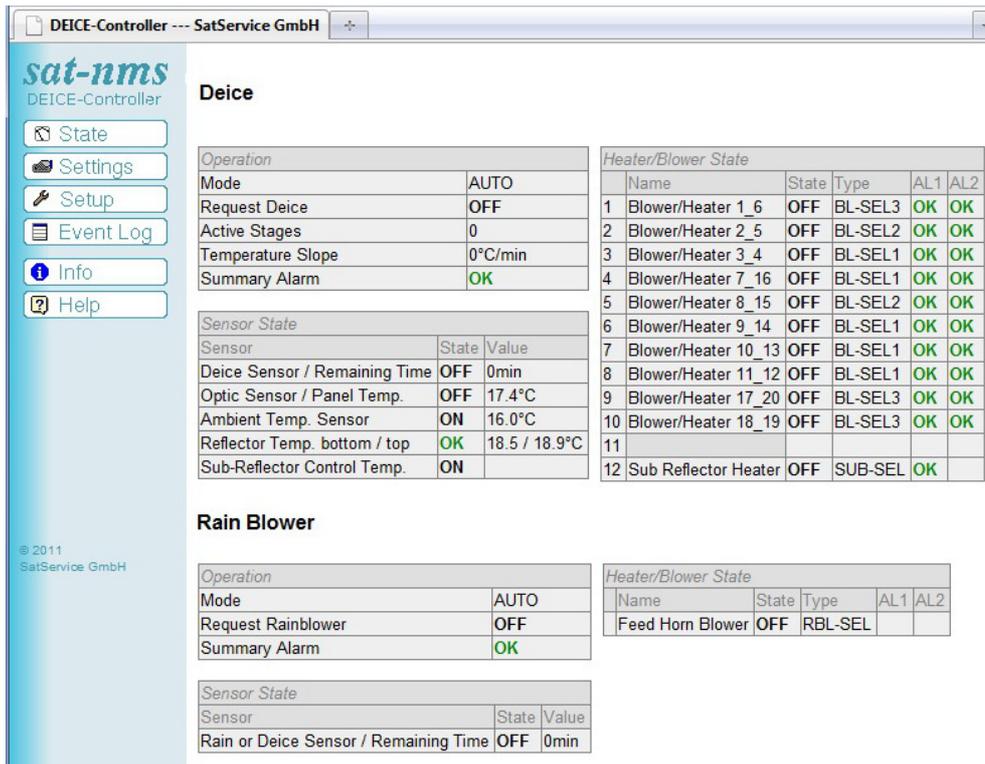


sat-nms Deice Controller

The **sat-nms** Deice Controller is designed for energy-saving and cost-efficient deicing of satellite ground station antennas. In order to interface to any type of antenna reflector, the unit controls up to 16 heater elements. Several environmental parameters and an adjustable slope are taken into account to optimize the deicing performance. The Deice Controller measures the reflector chamber temperature of the antenna and activates only necessary heater stages. If the antenna reflector reaches the final temperature, heaters are switched off for energy-saving purposes in contrast to classic deicing solutions.



The screenshot shows the web interface for the DEICE-Controller. It features a sidebar with navigation options: State, Settings, Setup, Event Log, Info, and Help. The main content is divided into two sections: Deice and Rain Blower.

Deice Section:

- Operation:** Mode: AUTO, Request Deice: OFF, Active Stages: 0, Temperature Slope: 0°C/min, Summary Alarm: OK.
- Sensor State:**

Sensor	State	Value
Deice Sensor / Remaining Time	OFF	0min
Optic Sensor / Panel Temp.	OFF	17.4°C
Ambient Temp. Sensor	ON	16.0°C
Reflector Temp. bottom / top	OK	18.5 / 18.9°C
Sub-Reflector Control Temp.	ON	
- Heater/Blower State:**

Name	State	Type	AL1	AL2
1 Blower/Heater 1_6	OFF	BL-SEL3	OK	OK
2 Blower/Heater 2_5	OFF	BL-SEL2	OK	OK
3 Blower/Heater 3_4	OFF	BL-SEL1	OK	OK
4 Blower/Heater 7_16	OFF	BL-SEL1	OK	OK
5 Blower/Heater 8_15	OFF	BL-SEL2	OK	OK
6 Blower/Heater 9_14	OFF	BL-SEL1	OK	OK
7 Blower/Heater 10_13	OFF	BL-SEL1	OK	OK
8 Blower/Heater 11_12	OFF	BL-SEL1	OK	OK
9 Blower/Heater 17_20	OFF	BL-SEL3	OK	OK
10 Blower/Heater 18_19	OFF	BL-SEL3	OK	OK
11				
12 Sub Reflector Heater	OFF	SUB-SEL	OK	

Rain Blower Section:

- Operation:** Mode: AUTO, Request Rainblower: OFF, Summary Alarm: OK.
- Sensor State:**

Sensor	State	Value
Rain or Deice Sensor / Remaining Time	OFF	0min
- Heater/Blower State:**

Name	State	Type	AL1	AL2
Feed Horn Blower	OFF	RBL-SEL		

The **sat-nms** Deice Controller can be used indoor or outdoor as stand-alone equipment via its web-based user interface, but interfaces also smoothly with the **sat-nms** MNC or any other Monitoring & Control and Network Management System either via Ethernet or serial interface via remote control. The web-browser interface provides a user-friendly interface to the operator for local remote-control.

Key Features

- Significant Electricity Saving
- Allows very cost-efficient Deicing
- All loop Parameters software-configurable
- Ethernet (SNMP & HTTP) Interface
- User Interface via integrated Web-server
- RS232 Interface
- Interfaces for up to 16 hot plates
- Temperature Measurement with external PT1000 Sensors
- Integrated Alarm/ Event Logging
- Mounted on a DIN-Rail
- Interfaces to any higher level MNC System

Applications

- Efficient de-icing Control Sequence
- Controlling and Monitoring of Heater States
- Monitoring of Temperature States

Contact Information

SatService
Gesellschaft für Kommunikationssysteme mbH

Hardstrasse 9, D-78256 Steisslingen, Germany
Phone +49 7738 99791 10,
Fax +49 7738 99791 99
E-Mail sales@satservicegmbh.de

www.satnms.com www.satservicegmbh.de

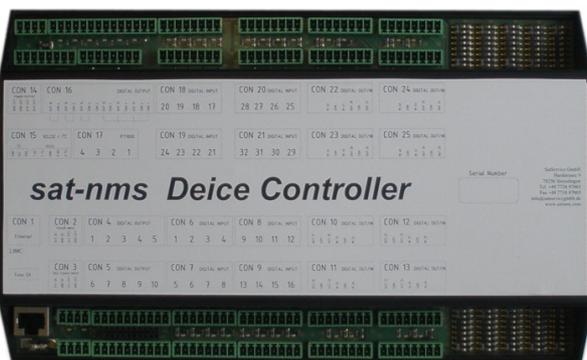
Technical Specification

General Interfaces

System Interfaces		All Interfaces (except Ethernet-Interface) have to be connected via Mini Combicon MCV1.5/XX-G-3.5
External Temperature Measurement	4x	External PT1000 Sensors with Accuracy +/-3°C; Range: -40 to +60°C
Internal Temperature Measurement	1x	Internal On-chip-sensor; Accuracy +/-3°C
Internal Clock/ Calendar		Real-time Clock/Calendar. If power supply is missing, a Goldcap Capacitor keeps the Clock running for min. 7 Days
Digital Input	48x	Opto-Coupler, Indication Current: ~3mA @ 24V DC
Digital Output	16x	6x Relay Contacts: max. continuous Current: 1A, max. continuous Voltage: 24V DC 10x Photomos-Relays, per Relay max. continuous Current: 130mA, max. continuous Voltage: 48V, On-state-resistance ~250hm
Interfaces for Heater Switch Deicing Control Deicing Indication	8x	Maximum peak-switching Current: 5A Opto-Coupler, Indication Current: ~3mA @ 24V DC
Power Output	1x	24V DC, max 500mA
RS232	1x	Serial Remote Monitoring & Control Interface
Ethernet	1x	RJ45, 10/100-Base-T, via HTTP GET Requests and SNMP

Electrical and Mechanical Specification, Environmental Conditions

Supply Voltage	24 V unregulated D/C
Power Consumption 24V DC	Max. 150mA
Power Consumption 24V EXT	Max. 450mA
Humidity	Up to 90% non-condensing
Temperature Range	5° to 50°C
DIN-Rail Module	264 x 165 x 60 mm
Weight	1.5 kg



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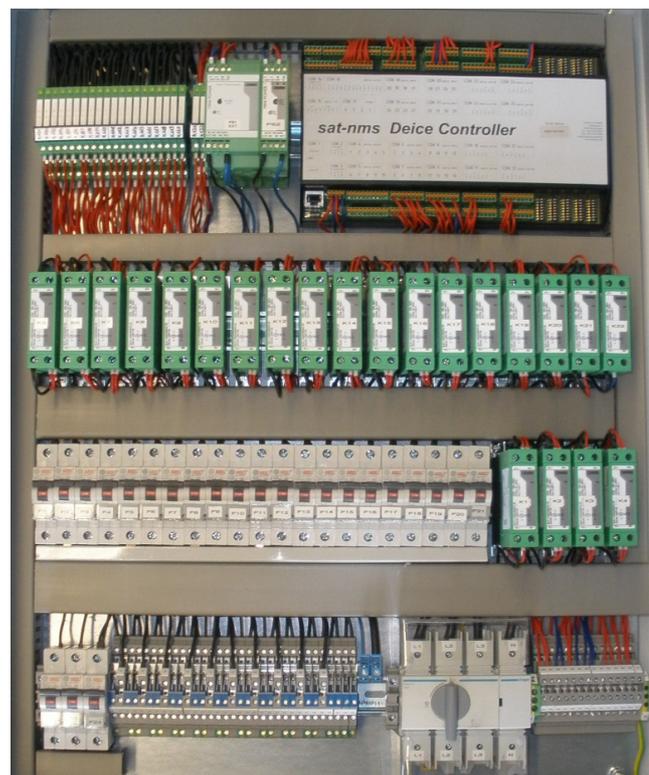
Operation Parameter

Parameter	Value
Operation Mode Deice	AUTO
Operation Mode Rainblower	AUTO

Loop Parameter

Parameter	Value
Internal Temperature Threshold	20 °C
Ambient Temperature Threshold	5 °C
Temperature Slope Threshold	1 °C per min.
Measurement Interval	30 secs.
Temperature Hysteresis	3 °C
Delay Deice Sensor	30 min.
Delay Rain Sensor	10 min.

Operational Parameters



Example: Antenna Deicing Cabinet