Sontay®
Four Elms Road · Edenbridge
Kent · TN8 6AB · UK

Key benefits

- Slim design for room applications
- Digital connectivity using smart protocols
- Tool free installation
- No additional programming tool required
- Extensive user interface options
- Configurable input and output options

Technical Overview

Save time and cost on installation through smart connectivity. The SC series of Smart Sensors represents the next generation of total environmental sensing in one single device. The product range is designed to make installation, commissioning and operation simple and quick, while offering a comprehensive and universal range of user-configurable settings to allow the perfect fit of product and control requirements.

Features	Benefit
RS-485 data bus interface supports the communication protocols BACnet MS/TP and Modbus RTU	Low cost and robust RS-485 wiring Save on expensive physical inputs and outputs on the BMS controller. Flexibility to suit any BACnet or Modbus based control system in the industry. BACnet: Interoperability between different vendors equipment. BACnet: Approved and standard protocol by ANSI, ASHRAE and ISO.
DIP switch configuration of network parameters	BACnet MS/TP or Modbus RTU selectable via DIP switch. Wide range of different baud rates and MAC addresses selectable.
Auto-baud rate detection (BACnet only)	Detects the set baud rate of the network and adjusts the device baud rate automatically after start-up.
Auto device instance configuration (BACnet only)	Automatic device instance configuration provides out-of-the box functionality for smaller projects.
Full environmental sensing in on single device	Up to 7 sensing variables: Temperature, relative humidity, carbon dioxide, indoor air quality (TVOC), carbon monoxide, light level and PIR presence detection. Any sensors ordered with temperature and relative humidity offer psychrometric values: Enthalpy, dew point and absolute humidity.
Pluggable spring cage terminal blocks	Tool less cable termination in robust and pluggable terminal blocks. Installation time reduced to seconds, rather than minutes.
On board LED indication and advanced built-in self-test facilitates checking the sensors and the networks health status	Power LED, Error LED and BACnet/Modbus LEDs allow simple commissioning and fault finding. LEDs switch off after 15 minutes to avoid light intrusion in space applications.
All configurations can be made via the BACnet or Modbus network	No separate equipment or configuration tool is required.
Extensive user interface options, optional LCD screen and freely configurable 3-colour traffic light LED	Local control in the room allow room users to adjust control parameters and increase the comfort. The LCD screen keeps room occupants informed about the current sensing variables. 3-colour traffic light LED can be configured to indicate any sensing variables, such as CO2 levels, or any value via the network. The source and switching points are user configurable.
One configurable digital and analogue input by default in each sensor	The digital input can be configured as a volt free contact (NO or NC contact definition), for e.g. external occupancy detectors or fan proving switches, or pulse counting input for metering products. The pulse counting format uses contact de-bounce and is filtered. The analogue input can be configured as an additional thermistor (10K3A1) input or a 0-10Vdc input.
Two digital and three analogue outputs can be ordered as an option. The on-board test button overrides the analogue outputs.	Digital outputs intended to switch plants on/off and can be configured to be driven by the network or the momentary switch option. The analogue outputs can be configured to map sensor variables or any network value. For safety purpose, configurable fallback values can be set and override the outputs if there is a network problem. Test button allows simple identification of the output connection.

General Specification

Supply voltage	24Vac/dc ±10%
Electrical connections	Pluggable spring loaded terminal block min. 0.2mm2, max. 1.5mm2
Communication	RS-485 (EIA-485) Protocol selectable via DIP switch
BACnet MS/TP	9k6, 19k2, 38k4, 76k8 or auto baud rate detection
Modbus RTU	9k6, 19k2, 38k4 or 57k6 baud rate 8 data bits, no parity 2 stop bits / odd parity 1 stop bit / even parity 1 stop bit selectable via DIP switch

Measurement ranges

T	-20 min to +110 max units (°C or °F), 5 pre-set ranges plus user configurable range
RH	0 to 100% RH
CO2	0 to 2,000 or 5,000ppm
IAQ	0 to 1,000ppb TVOC
CO	0 to 500ppm
LL	0-10,000 lux
PIR	PIR occupancy status

User interface options

SP	0-100%, user configurable
FS	Off, Lo, Med, Hi, Auto
MS	Active/Inactive
LCD	To show T, RH, CO2 and IAQ values on a LCD screen 20 character state text editable and change of status via network
LED	"Traffic light" LED user configurable for any sensing variable or network value

Input options

AI	Analogue Input 0-10Vdc linear or NTC thermistor (10K3A1) sensor
DI	VFC or pulse count

Output options

AO	3x Analogue Output 0-10V, configurable
DO	2x Digital Output, 24Vac Triac, configurable

EMC Compliance

Emissions	EN 61000-6-3:2007+A1:2011
Immunity	EN 61000-6-2:2005

Ambient

Temperature	0 to +50°C
RH	0 to 95% non-condensing

Housing

Material	ABS (flame retardant)
Colour	Polished white finish
Dimensions	115 x 85 x 30mm
Protection	IP30
Country of origin	UK

Sensing Characteristics

Temperature T

Accuracy (20 to 40°C)	±0.5°C	
Long term stability	<0.02°C p.a.	
Response time	5 to 30 seconds (τ 63%)	

Humidity RH

Type	ASIC	
Accuracy (at 25°C)	20 to 60% RH ±3% RH	10 to 90% RH ±4% RH
Long term stability	<0.5% RH p.a.	
Response time	8 sec. (τ 63%) @ 25°C 1 m/s airflow	

Carbon Dioxide CO_2

Type	NDIR with ABC logic, user configurable
Measurement interval	2 seconds
Accuracy	±70ppm ±3% of reading
Pressure dependency	+1.6% reading per kPa deviation from normal pressure
Response rate	2 minutes by 90%

Indoor Air Quality IAQ

Type	MEMS Siloxane, TVOC (Total Volatile Organic Compounds)
Accuracy	Typical ±15% of measured value
Conditioning period	7 days

Carbon Monoxide CO

Type	Electrochemical sensor
Accuracy	Typical ±7% fsd.
Baseline offset	<±10ppm equivalent
Response time	max. 60 seconds (t90)

Light level LL

Type	Photodiode

Occupancy PIR

Type	Passive infrared
Detection distance	5 meters
Detection area vertical	100°
Detection area horizontal	82°

WEEE Directive:
At the end of the products useful life please dispose as per the local regulations.
Do not dispose of with normal household waste.
Do not burn.

CE

The products referred to in this data sheet meet the requirements of EU Directive 2014/30/EU

Part codes

Part code											Description
				x	x	x	x	x	x		**Space Temperature**
											Configuration sensing options RH/CO2:
				0							- none
				1							- RH
				2							-CO2
				3							-CO2 and Traffic Light LED
				4							- RH and CO2
				5							- RH and CO2 and Traffic Light LED
											Configuration sensing options CO/IAQ:
					0						-none
					1						-CO
					~~2~~						~~-IAQ~~
					~~3~~						~~-CO and IAQ~~
											Configuration user indication:
						0					- none
						1					-LCD Display
SC	-	S	-			2					- Light Level sensor
						3					- PIR sensor
						4					- Light Level and PIR sensor
											Configuration interface options:
							0				- none
							1				- SP
							2				- MS
							4				- SP and MS
							5				- SP and FS
							6				- FS and MS
							7				- SP, MS and FS
											Configuration Digital Outputs:
								0			- none
								1			- 2x DO
											Configuration Analogue Outputs:
									0		- none
									1		- 3x AO

Installation

Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

Note: Sontays range of Smart Sensors are not suitable for use in swimming pool & spa applications. Sensors used in these types of applications are not covered under Sontays warranty terms. Chemicals used in swimming pool & spas can contaminate the humidity element, which results in a reduced service life.

1. Select a location on a wall of the controlled space which will give a representative sample of the prevailing room condition. Avoid sitting the sensor in direct sunlight, on an outside wall or near heat sources. An idea mounting height is 1.5m from the floor.

2. Undo the tamperproof screw at the bottom of the housing and remove the front panel from the base.

3. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or standard recessed back box. The base plate is suitable for EU & North America fixings.

4. Feed cable through the hole in the base plate of the housing, unplug the terminal block from the PCB and terminate the cores at the loose terminal block. Leave some slack inside the unit as required.

5. Plug the terminal block on the pins header on the PCB. Check polarity and orientation. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.

6. Before powering the sensor, ensure that the supply voltage is within the specified tolerances

7. Allow 3 minutes before checking functionality, and at least 30 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise.

To perform an accurate comparison between a transmitter output and a portable reference, it is essential that the two probes are held adjacent for a minimum of 30 minutes in a stable RH environment. Only in this way can speed of response and temperature factors be eliminated. It is not uncommon for test instruments and transmitters to disagree by 10% RH or more when site measurements are taken incorrectly. 'Slings' or other mechanical hygrometer should not be used as a reference.

Electrical Connections:

24V	Supply 24Vac/dc	**DO1**	Digital Output 1
0V	Supply 0V (Common 0V)	**DO2**	Digital Output 2
AI	Analogue Input	**0V**	Common 0V
DI*	Digital Input	**OP1**	Analogue Output 1
A+	RS-485 A+	**OP2**	Analogue Output 2
B-	RS-485 B-	**OP3**	Analogue Output 3

IMPORTANT!   The DI (*) can be configured to VFC or Pulse Counting. If configured for Pulse Counting do not connect 0V!

Terminal Block

For easier installation, the terminal block can be detached from the PCB.
When used with ferrules it doesn't require any tools to release the spring loaded terminal block. When used with stranded cable, push in the orange latch to compress the spring load. Feed in the wire and release the spring to secure the wire connection.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.
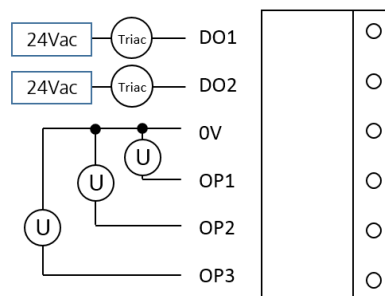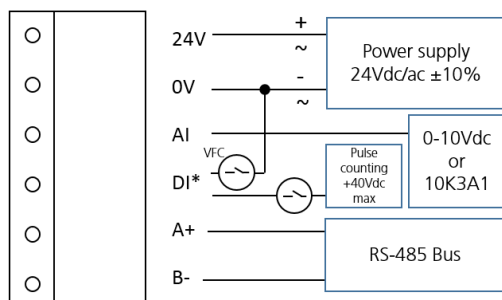
PCB Layout and wiring diagram
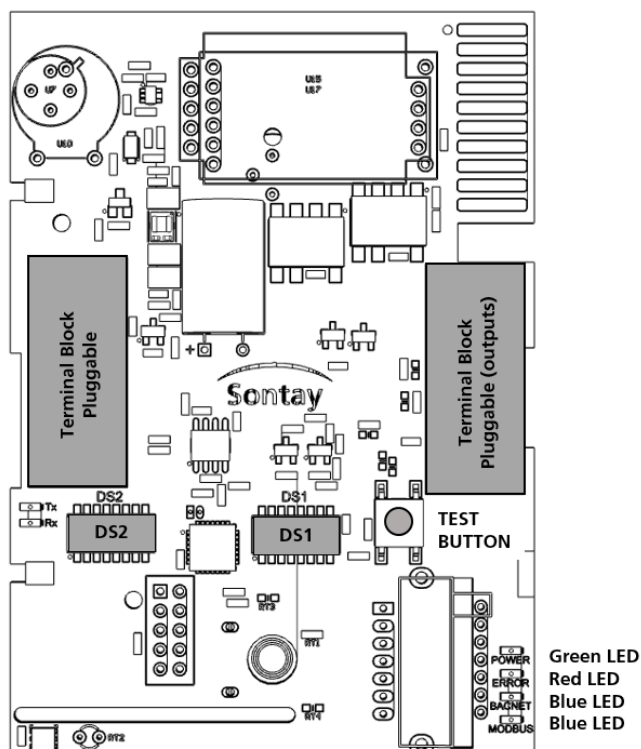
When using the digital input as a VFC, the VFC contacts should be connected across the DI terminal and the common 0v terminal, i.e. active low.

When using the digital input as a pulse counting input, the input should be connected across the DI terminal and is active high.
Do NOT connect a pulse input across the DI terminal and common 0v.

The output override button can be used to manually override the mapped analogue outputs (if fitted) and the sensor input values.

– Press the override button for > 2 seconds. The mapped analogue values and the values in the BACnet AIs or Modbus registers go to 100% of range.

– Press the override button again for > 2 seconds. The mapped analogue values and the values in the BACnet AIs or Modbus registers go to 50% of range.

– Press the override button again for > 2 seconds. The mapped analogue values and the values in the BACnet AIs or Modbus registers go to 0% of range.

– Pressing the override button again returns the sensor to normal automatic outputs. If the override button is not pressed for more than 15 seconds, the sensor returns to normal automatic outputs.

DIP switches and LED's

1. Set network settings using the network DIP switch DS2.

Setting	DS2 - 1	DS2 - 2	DS2 - 3	DS2 - 4	DS2 - 5	DS2 - 6	DS2 - 7	DS2 - 8
Auto-baud (BACnet only)	-	-	**On**	-	-	-	-	-
9600 Baud Rate	Off	Off	Off	-	-	-	-	-
19200 Baud Rate	**On**	Off	Off	-	-	-	-	-
38400 Baud Rate	Off	**On**	Off	-	-	-	-	-
57600 (Modbus) / 76800 (BACnet) Baud Rate	**On**	**On**	Off	-	-	-	-	-
Modbus Network	-	-	-	**On**	-	-	-	-
BACnet Network	-	-	-	Off	-	-	-	-
No Parity - 2 Stop Bits	-	-	-	-	Off	Off	-	-
Odd Parity - 1 Stop Bit	-	-	-	-	**On**	Off	-	-
Even Parity - 1 Stop Bit	-	-	-	-	Off	**On**	-	-
No Parity - 2 Stop Bits	-	-	-	-	**On**	**On**	-	-
No RS485 termination	-	-	-	-	-	-	-	Off
RS485 termination	-	-	-	-	-	-	-	**On**

IMPORTANT!
– DS2-5 and DS2-6 have no effect if DS2-4 is set to BACnet.
– Auto-baud only works in BACnet mode.
– Only set DS2-8 to ON if the sensor is the last device on the RS-485 bus.

The example above shows DS2 set for BACnet, 78k6 baud.

2. Set MAC address DIP switch DS1.

IMPORTANT: Changing any DIP switch setting while the sensor is powered will cause the sensor to reboot.

Address	DS1 - 1	DS1 - 2	DS1 - 3	DS1 - 4	DS1 - 5	DS1 - 6	DS1 - 7	DS1 - 8
0	Off	Off	Off	Off	Off	Off	Off	Off
1	**On**	Off	Off	Off	Off	Off	Off	Off
2	Off	**On**	Off	Off	Off	Off	Off	Off
4	Off	Off	**On**	Off	Off	Off	Off	Off
8	Off	Off	Off	**On**	Off	Off	Off	Off
16	Off	Off	Off	Off	**On**	Off	Off	Off
32	Off	Off	Off	Off	Off	**On**	Off	Off
64	Off	Off	Off	Off	Off	Off	**On**	Off
128	Off	Off	Off	Off	Off	Off	Off	**On**

For a full list please see the Annex on the last two pages of this user manual.
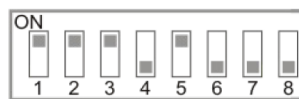
The example above shows DS1 set for an address of 23.

3. Note the LED for fault finding and validating the installation:

IMPORTANT: All the LEDs apart from Power (green) will go off after being powered for 15 minutes.

Function	Colour	Description
Power	Green	Directly run from device power, lit when device is powered
Error	Red	Lit when self-test errors are detected
RS-485-TX	Green	Flash (~25ms per transfer) to indicate RS-485 data transactions in the given direction
RS-485-RX	Yellow	
BACnet	Blue	Indicates which network protocol is in use, errors have occurred if neither are lit. BACnet LED will flash whilst the auto-baud process is in progress
Modbus	Blue	

Trouble-Shooter's Guide

Symptom	Cause	Actions
No BACnet MS/TP Communications	PCB not powered	Check green power LED. Apply power to PCB observing correct polarity.
	BACnet not selected using DS2-4	Observe that the BACnet LED is ON. Check that DS2-4 is set to OFF.
	Incorrect address setting	Set a unique, valid address.
	Duplicate device instance	The device instance is "662" + the MAC address. Check that the device instance is correct and unique on the network.
	120Ω terminator (DS2-8) set ON	Only set the 120Ω terminator ON if the sensor is the last on the RS-485 bus.
	Incorrect baud rate	Check the baud rate switches (DS2-1 to DS2-3)
	Incorrect RS-485 wiring	Ensure A+ on the sensor is connected to A+ one each sensor and/or MS/TP master
No Modbus RTU Communications	PCB not powered	Check green power LED. Apply power to PCB observing correct polarity.
	Incorrect address setting	Set a unique, valid address.
	Modbus not selected using DS2-4	Observe that the Modbus LED is ON. Check that DS2-4 is set to ON.
	120Ω terminator (DS2-8) set ON	Only set the 120Ω terminator ON if the sensor is the last on the RS-485 bus.
	Incorrect baud rate	Check the baud rate switches (DS2-1 to DS2-3)
	Incorrect parity and stop bit settings	Check the parity and stop bit switches (DS2-5 to DS2-6)
	Incorrect RS-485 wiring	Ensure A+ on the sensor is connected to A+ one each sensor and/or RTU master

Annex – DIP Switch settings MAC address

Address	DS1.1	DS1.2	DS1.3	DS1.4	DS1.5	DS1.6	DS1.7	DS1.8	Address	DS1.1	DS1.2	DS1.3	DS1.4	DS1.5	DS1.6	DS1.7	DS1.8
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	128	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	129	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	130	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	131	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	132	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	133	ON	OFF	ON	OFF	OFF	OFF	OFF	ON
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	134	OFF	ON	ON	OFF	OFF	OFF	OFF	ON
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	135	ON	ON	ON	OFF	OFF	OFF	OFF	ON
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	136	OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	137	ON	OFF	OFF	ON	OFF	OFF	OFF	ON
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	138	OFF	ON	OFF	ON	OFF	OFF	OFF	ON
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	139	ON	ON	OFF	ON	OFF	OFF	OFF	ON
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	140	OFF	OFF	ON	ON	OFF	OFF	OFF	ON
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	141	ON	OFF	ON	ON	OFF	OFF	OFF	ON
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	142	OFF	ON	ON	ON	OFF	OFF	OFF	ON
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF	143	ON	ON	ON	ON	OFF	OFF	OFF	ON
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	144	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	145	ON	OFF	OFF	OFF	ON	OFF	OFF	ON
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	146	OFF	ON	OFF	OFF	ON	OFF	OFF	ON
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	147	ON	ON	OFF	OFF	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	148	OFF	OFF	ON	OFF	ON	OFF	OFF	ON
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	149	ON	OFF	ON	OFF	ON	OFF	OFF	ON
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	150	OFF	ON	ON	OFF	ON	OFF	OFF	ON
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF	151	ON	ON	ON	OFF	ON	OFF	OFF	ON
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	152	OFF	OFF	OFF	ON	ON	OFF	OFF	ON
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF	153	ON	OFF	OFF	ON	ON	OFF	OFF	ON
26	OFF	ON	OFF	ON	ON	OFF	OFF	OFF	154	OFF	ON	OFF	ON	ON	OFF	OFF	ON
27	ON	ON	OFF	ON	ON	OFF	OFF	OFF	155	ON	ON	OFF	ON	ON	OFF	OFF	ON
28	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	156	OFF	OFF	ON	ON	ON	OFF	OFF	ON
29	ON	OFF	ON	ON	ON	OFF	OFF	OFF	157	ON	OFF	ON	ON	ON	OFF	OFF	ON
30	OFF	ON	ON	ON	ON	OFF	OFF	OFF	158	OFF	ON	ON	ON	ON	OFF	OFF	ON
31	ON	ON	ON	ON	ON	OFF	OFF	OFF	159	ON	ON	ON	ON	ON	OFF	OFF	ON
32	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	160	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
33	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	161	ON	OFF	OFF	OFF	OFF	ON	OFF	ON
34	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	162	OFF	ON	OFF	OFF	OFF	ON	OFF	ON
35	ON	ON	OFF	OFF	OFF	ON	OFF	OFF	163	ON	ON	OFF	OFF	OFF	ON	OFF	ON
36	OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	164	OFF	OFF	ON	OFF	OFF	ON	OFF	ON
37	ON	OFF	ON	OFF	OFF	ON	OFF	OFF	165	ON	OFF	ON	OFF	OFF	ON	OFF	ON
38	OFF	ON	ON	OFF	OFF	ON	OFF	OFF	166	OFF	ON	ON	OFF	OFF	ON	OFF	ON
39	ON	ON	ON	OFF	OFF	ON	OFF	OFF	167	ON	ON	ON	OFF	OFF	ON	OFF	ON
40	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	168	OFF	OFF	OFF	ON	OFF	ON	OFF	ON
41	ON	OFF	OFF	ON	OFF	ON	OFF	OFF	169	ON	OFF	OFF	ON	OFF	ON	OFF	ON
42	OFF	ON	OFF	ON	OFF	ON	OFF	OFF	170	OFF	ON	OFF	ON	OFF	ON	OFF	ON
43	ON	ON	OFF	ON	OFF	ON	OFF	OFF	171	ON	ON	OFF	ON	OFF	ON	OFF	ON
44	OFF	OFF	ON	ON	OFF	ON	OFF	OFF	172	OFF	OFF	ON	ON	OFF	ON	OFF	ON
45	ON	OFF	ON	ON	OFF	ON	OFF	OFF	173	ON	OFF	ON	ON	OFF	ON	OFF	ON
46	OFF	ON	ON	ON	OFF	ON	OFF	OFF	174	OFF	ON	ON	ON	OFF	ON	OFF	ON
47	ON	ON	ON	ON	OFF	ON	OFF	OFF	175	ON	ON	ON	ON	OFF	ON	OFF	ON
48	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	176	OFF	OFF	OFF	OFF	ON	ON	OFF	ON
49	ON	OFF	OFF	OFF	ON	ON	OFF	OFF	177	ON	OFF	OFF	OFF	ON	ON	OFF	ON
50	OFF	ON	OFF	OFF	ON	ON	OFF	OFF	178	OFF	ON	OFF	OFF	ON	ON	OFF	ON
51	ON	ON	OFF	OFF	ON	ON	OFF	OFF	179	ON	ON	OFF	OFF	ON	ON	OFF	ON
52	OFF	OFF	ON	OFF	ON	ON	OFF	OFF	180	OFF	OFF	ON	OFF	ON	ON	OFF	ON
53	ON	OFF	ON	OFF	ON	ON	OFF	OFF	181	ON	OFF	ON	OFF	ON	ON	OFF	ON
54	OFF	ON	ON	OFF	ON	ON	OFF	OFF	182	OFF	ON	ON	OFF	ON	ON	OFF	ON
55	ON	ON	ON	OFF	ON	ON	OFF	OFF	183	ON	ON	ON	OFF	ON	ON	OFF	ON
56	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	184	OFF	OFF	OFF	ON	ON	ON	OFF	ON
57	ON	OFF	OFF	ON	ON	ON	OFF	OFF	185	ON	OFF	OFF	ON	ON	ON	OFF	ON
58	OFF	ON	OFF	ON	ON	ON	OFF	OFF	186	OFF	ON	OFF	ON	ON	ON	OFF	ON
59	ON	ON	OFF	ON	ON	ON	OFF	OFF	187	ON	ON	OFF	ON	ON	ON	OFF	ON
60	OFF	OFF	ON	ON	ON	ON	OFF	OFF	188	OFF	OFF	ON	ON	ON	ON	OFF	ON
61	ON	OFF	ON	ON	ON	ON	OFF	OFF	189	ON	OFF	ON	ON	ON	ON	OFF	ON
62	OFF	ON	ON	ON	ON	ON	OFF	OFF	190	OFF	ON	ON	ON	ON	ON	OFF	ON
63	ON	ON	ON	ON	ON	ON	OFF	OFF	191	ON	ON	ON	ON	ON	ON	OFF	ON
64	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	192	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON

Address	DS1.1	DS1.2	DS1.3	DS1.4	DS1.5	DS1.6	DS1.7	DS1.8
65	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF
66	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF
67	ON	ON	OFF	OFF	OFF	OFF	ON	OFF
68	OFF	OFF	ON	OFF	OFF	OFF	ON	OFF
69	ON	OFF	ON	OFF	OFF	OFF	ON	OFF
70	OFF	ON	ON	OFF	OFF	OFF	ON	OFF
71	ON	ON	ON	OFF	OFF	OFF	ON	OFF
72	OFF	OFF	OFF	ON	OFF	OFF	ON	OFF
73	ON	OFF	OFF	ON	OFF	OFF	ON	OFF
74	OFF	ON	OFF	ON	OFF	OFF	ON	OFF
75	ON	ON	OFF	ON	OFF	OFF	ON	OFF
76	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
77	ON	OFF	ON	ON	OFF	OFF	ON	OFF
78	OFF	ON	ON	ON	OFF	OFF	ON	OFF
79	ON	ON	ON	ON	OFF	OFF	ON	OFF
80	OFF	OFF	OFF	OFF	ON	OFF	ON	OFF
81	ON	OFF	OFF	OFF	ON	OFF	ON	OFF
82	OFF	ON	OFF	OFF	ON	OFF	ON	OFF
83	ON	ON	OFF	OFF	ON	OFF	ON	OFF
84	OFF	OFF	ON	OFF	ON	OFF	ON	OFF
85	ON	OFF	ON	OFF	ON	OFF	ON	OFF
86	OFF	ON	ON	OFF	ON	OFF	ON	OFF
87	ON	ON	ON	OFF	ON	OFF	ON	OFF
88	OFF	OFF	OFF	ON	ON	OFF	ON	OFF
89	ON	OFF	OFF	ON	ON	OFF	ON	OFF
90	OFF	ON	OFF	ON	ON	OFF	ON	OFF
91	ON	ON	OFF	ON	ON	OFF	ON	OFF
92	OFF	OFF	ON	ON	ON	OFF	ON	OFF
93	ON	OFF	ON	ON	ON	OFF	ON	OFF
94	OFF	ON	ON	ON	ON	OFF	ON	OFF
95	ON	ON	ON	ON	ON	OFF	ON	OFF
96	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
97	ON	OFF	OFF	OFF	OFF	ON	ON	OFF
98	OFF	ON	OFF	OFF	OFF	ON	ON	OFF
99	ON	ON	OFF	OFF	OFF	ON	ON	OFF
100	OFF	OFF	ON	OFF	OFF	ON	ON	OFF
101	ON	OFF	ON	OFF	OFF	ON	ON	OFF
102	OFF	ON	ON	OFF	OFF	ON	ON	OFF
103	ON	ON	ON	OFF	OFF	ON	ON	OFF
104	OFF	OFF	OFF	ON	OFF	ON	ON	OFF
105	ON	OFF	OFF	ON	OFF	ON	ON	OFF
106	OFF	ON	OFF	ON	OFF	ON	ON	OFF
107	ON	ON	OFF	ON	OFF	ON	ON	OFF
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249	ON	OFF	OFF	ON	ON	ON	ON	ON
250	OFF	ON	OFF	ON	ON	ON	ON	ON
251	ON	ON	OFF	ON	ON	ON	ON	ON
252	OFF	OFF	ON	ON	ON	ON	ON	ON
253	ON	OFF	ON	ON	ON	ON	ON	ON
254	OFF	ON	ON	ON	ON	ON	ON	ON
255	ON	ON	ON	ON	ON	ON	ON	ON

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