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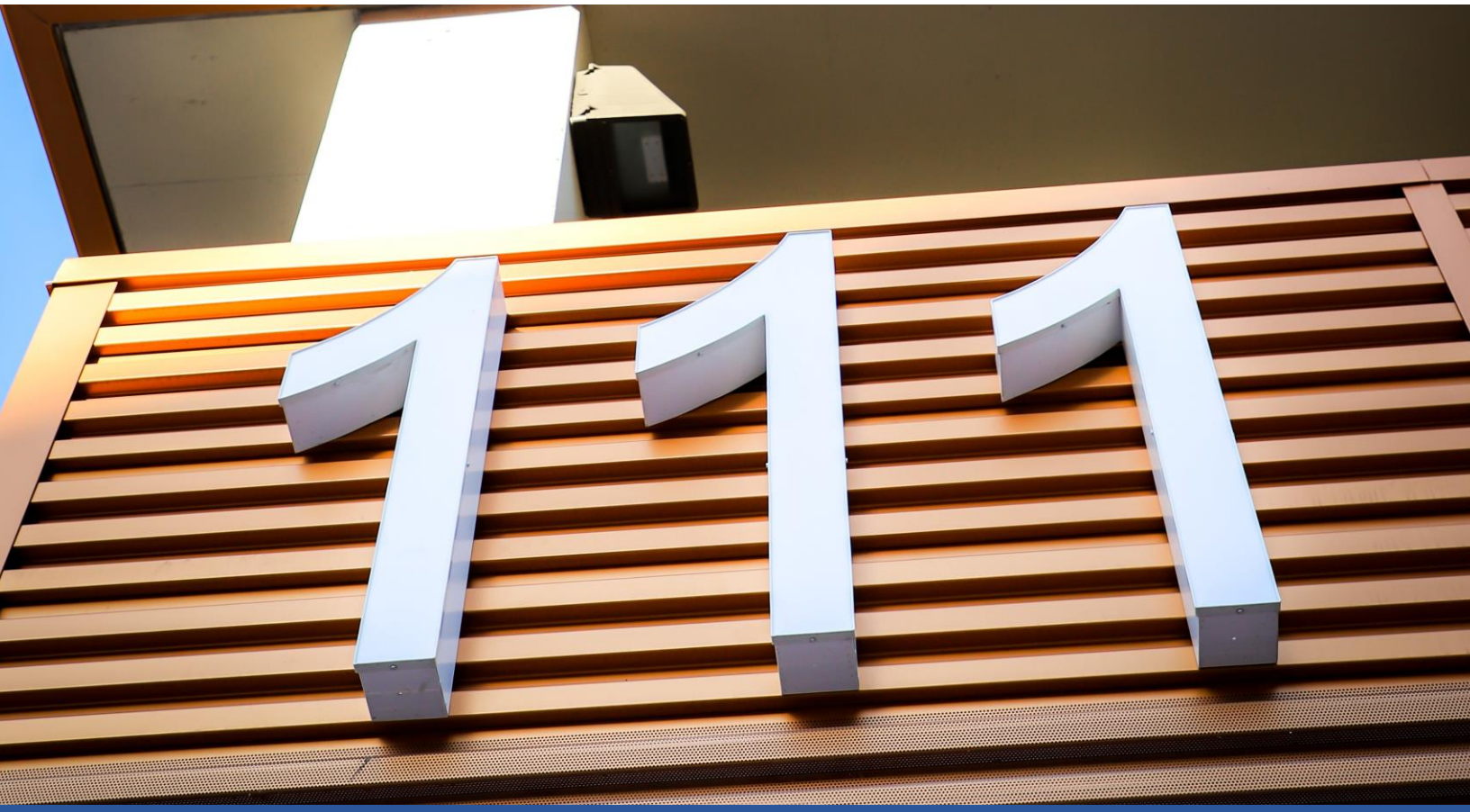

AN-861300

1-Wire Device Discovery

Document No.: AN-861300, Rev 1.00
Applicable Products: ComView NX(S/M/L/X)
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Introduction

ComView provides one 1-Wire port to let users measure temperature at up to 64 points using 1-Wire digital thermometer DS18B20 with ±0.5°C accuracy from -10°C to +85°C.

Reading data from these DS18B20 devices is based on 1-Wire communication protocol which uses the device IDs for addressing on the bus. Each device is pre-programmed with a unique global 64-bit serial code ID in 28-xxxxxxxxxxxx format by its manufacturer (Dallas/Maxim/Analog Devices).

In most cases, the device ID is not known to the users, and it can be read only by special hardware and software tool, such as 1-Wire hardware adapter and its companion software utility.

Discover 1-Wire Devices is a utility that ComView provides to help users identify each DS18B20 device ID more conveniently. It is also a tool that users can use to troubleshoot 1-Wire networking issues such as missing devices due to loading or wiring.

This application note is intended to show users how to use Discover 1-Wire Devices utility to read a device ID and to troubleshoot 1-Wire networking issues.

This application note does not provide detailed description of how to use ComView, its connectivity and configuration, and other supporting information, as these are beyond the scope of this document. Refer to other resources for more details.

References:

[1]. ComView - User Guide

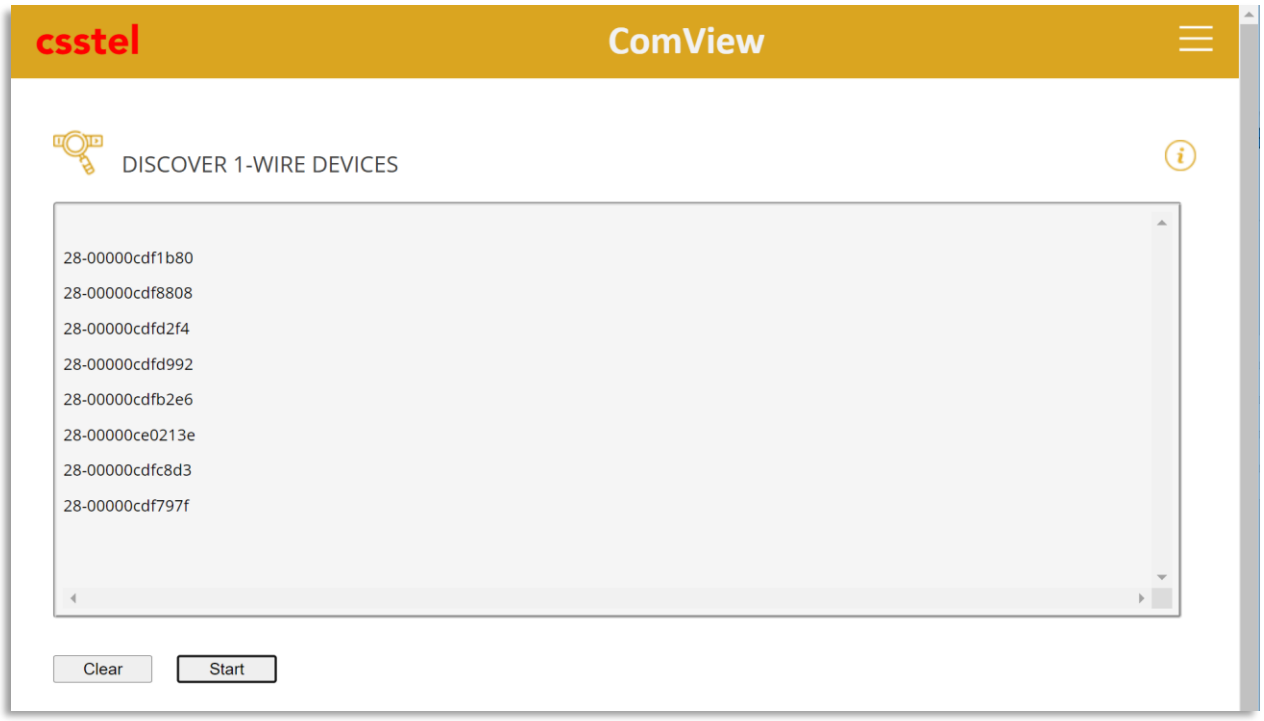
[2]. DS18B20 - https://www.analog.com/en/products/ds18b20.html

[3]. Guidelines for Reliable Long Line 1-Wire Networks - https://www.analog.com/en/technical-articles/guidelines-for-reliable-long-line-1wire-networks.html

Discover 1-Wire Devices Utility

Users can access Discover 1-Wire Devices utility by navigating the ComView web interface to UTILITIES -> DISCOVER 1-WIRE DEVICES.

Discover 1-Wire Devices web page is shown below with sample values after clicking on 'Start':



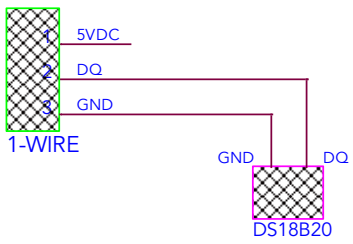
The values shown are the 8 IDs of DS18B20 1-Wire devices connected to the 1-Wire port of ComView and detected by the utility.

Click 'Clear' to clear the display and click 'Start' to start a new device discovery session.

Discover DS18B20 Device ID

ComView uses a 1-Wire bus controller DS2482-100 from Analog Devices to provide accurate 1-Wire communication and timings with external DS18B20 devices.

The 1-Wire physical interface is a 3-pin screw terminal as shown below with discrete DS18B20 device and its typical final cable assembly:



1-Wire Port

DS18B20

To discover the device ID:

- Disconnect any connection to the 1-Wire port, if present
- Connect one DS18B20 device or assembly to the 1-Wire Port as below:
  - Data pin/wire to DQ of the 1-Wire port
  - Ground pin/wire to GND of the 1-Wire port
  - Vcc to 5VDC of the 1-Wire port
- On the Discover 1-Wire Devices web page, click 'Start' to read the device ID
- Log the ID and label the device
- Disconnect the device from the 1-Wire port
- Click 'Clear' to clear the display
- Repeat the above steps for other devices

TIME DELAY:

- There will be some time delay in detecting the next device after disconnecting the previous one
- Clear the display, click 'Start', and check the ID being displayed to make sure it's from a new device and not the previous one due to time delay

Discover DS18B20 Devices

Discover 1-Wire Devices utility helps users in wiring and verifying their 1-Wire network.

The operational integrity of the 1-Wire network depends on network loading which involves cable weight (total length) and the number of devices connected to the network (refer to reference [3] for more detailed discussion on this topic). This network loading must be checked to make sure it is within the 1-Wire controller capability to drive the bus to communicate with the devices.

It is advisable that during the 1-Wire network buildout, users are to add one DS18B20 device at a time and use Discover 1-Wire Devices utility to check whether the device is visible on the network. This is done by simply clicking on 'Start' on the web page and check the device ID presence in the list. Continue this process until all required devices are connected to the network or when a device starts to be missing.

Summary

This application note illustrates how ComView Discover 1-Wire Devices utility helps users quickly and conveniently discover the 1-Wire device ID and what devices are visible on the network. It is a productivity tool that can save users time in deploying and troubleshooting the 1-Wire network.

About CSSTEL

CSSTEL is a privately held developer and manufacturer of ComView hardware and software solutions for secure, remote infrastructure site management since 1997 with installations in over 30 countries around the world.

We offer ComView solutions that are scalable and customizable to monitor and manage virtually the entire spectrum of remote site infrastructure and site conditions.

We help telecom service providers, carriers, financial institutions, healthcare providers, government agencies, utilities, and other public and private sector organizations maintain constant visibility and control over their remote site infrastructure.

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Revision History

Revision	Date	Description
1.00	2023-01-08	Initial release

*** End of document ***