485

Design Guide

DOC.#002-301

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Introduction

This SI.FI 485 Design Guide was developed for you, our integration partner, and your clients. We have provided this simple guide to help assist in the design of a Screen Innovation wired shade system, and to a provide some best practices which can help yield the best possible performance from deployments.

Control – your way, at Screen Innovations we provide complete control of all your shade and screen products via both wireless and wired technologies. Whether you're utilizing a control system, a physical remote, or voice control, we'll have the right solution for every client.

Although there have been numerous advances in wireless technologies, a wired shading system provides more design choices regarding shade sizes for both width and drop as well as strength which can allow for a wider selection in fabrics and materials that can be used.

Wired systems also have historically proven to provide the absolute highest levels of system performance, robustness and overall reliability.

When wired systems are not possible, the next best choice is our Screen Innovations Zigbee 3.0 wireless solution. If you and your client have selected this option, then refer to our Zigbee 3.0 Design Guide.

Screen Innovations is not only our name, but it is really at the core of what we do every day. We develop innovative patent pending and state-of-the-art optics, motorization, and control technologies for both residential and commercial applications.

We have also attracted some of the world's finest partners for technology co-development, and co-marketing for industry leading and exclusive product solutions for the CEDIA®, AVIXA®, and Integrated Systems markets all over the world.

At Screen Innovations our goal is to make the experience of using technology Fun, seamless, and as invisible to the user as possible.

Our shading system motors and solutions were co-developed in an exclusive technology and partnership with worldwide leader of marketing Somfy the Silent motors.

What is a Wired Shade System?

Screen Innovations has developed a state-of-the art wired shade solution using the 485 for the most flexibly and robust shading solution in the industry

This system can use most any type of wiring infrastructure and topology from our power panels to silent and powerful motorized box and open roll shades.

We offer both indoor shade solutions in our Nano® and Veil lines as well as exterior shade solutions with our Zen™ motorized system that are all easy to design, deploy, install, and use.

What is SDN, and why does my client need it?

SDN stands for Somfy Digital Network® and was developed by Screen Innovation's exclusive CEDIA channel partner Somfy.

SDN is based on RS485 and in this guide, we refer to SDN as 485.

The 485 technology inside Screen Innovations shade products provide the ultimate

combination of luxury and performance for any lifestyle. Your client can also take advantage of automated features such as scheduling, sensor, or astronomical capabilities that can enhance or improve energy consumption, which can result in utility savings.

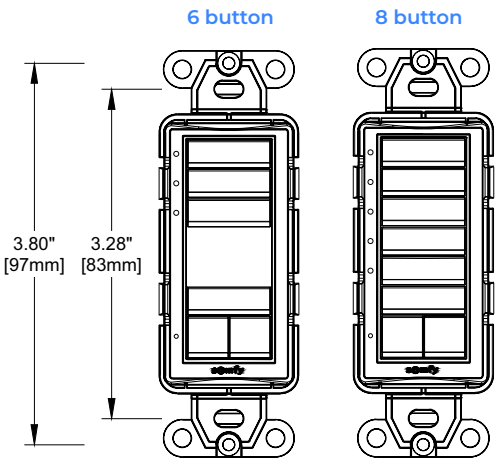
What control systems are compatible with SI's 485 system?

The Screen Innovations 485 system is compatible with all popular control systems in the market today including the following;

485

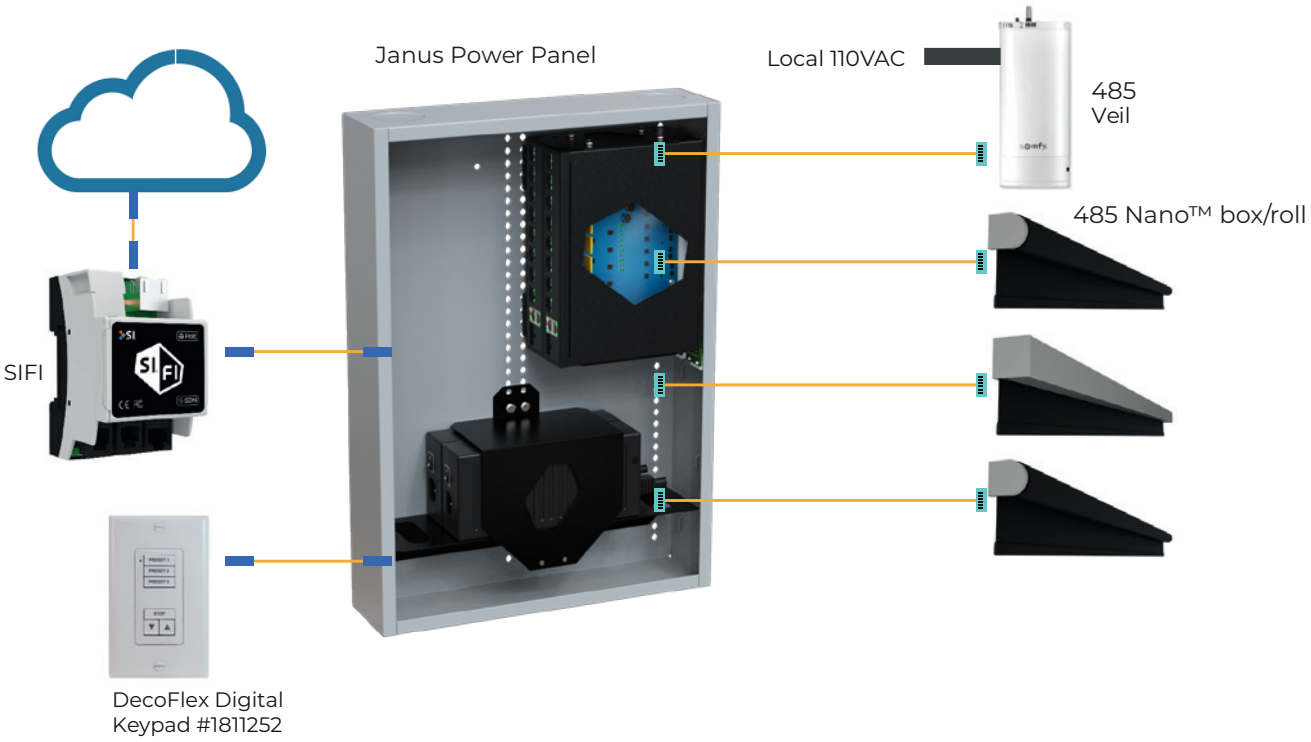
What 485 control options do I have?

Screen Innovations offers several types of keypads controls. These options should be considered even if you have a 3rd party control system. A best practice should be that all sub systems should be able to stand alone regardless of the control system status.



What components are part of a typical 485 system?

A 485 system consists of 485 shades, Janus data hubs, a 485 Gateway, and other 485 devices (such as keypads.)



Where do I power the shades & terminate the home run wire?

Screen Innovations provides a head-end product called the Janus data hub.

How many shades can I connect to a Janus data hub?

Each Janus data hub can connect up to 8 shades.

If I have more than 8 shades, can I connect multiple Janus data hubs?

Yes, you would connect the 485 regulated OUT to the 485 regulated IN on the next power panel.

What are the maximum number of shades I can have on an isolated segment of an 485 system?

The maximum shades you can place on any single isolate bus segment would be 255 shades.

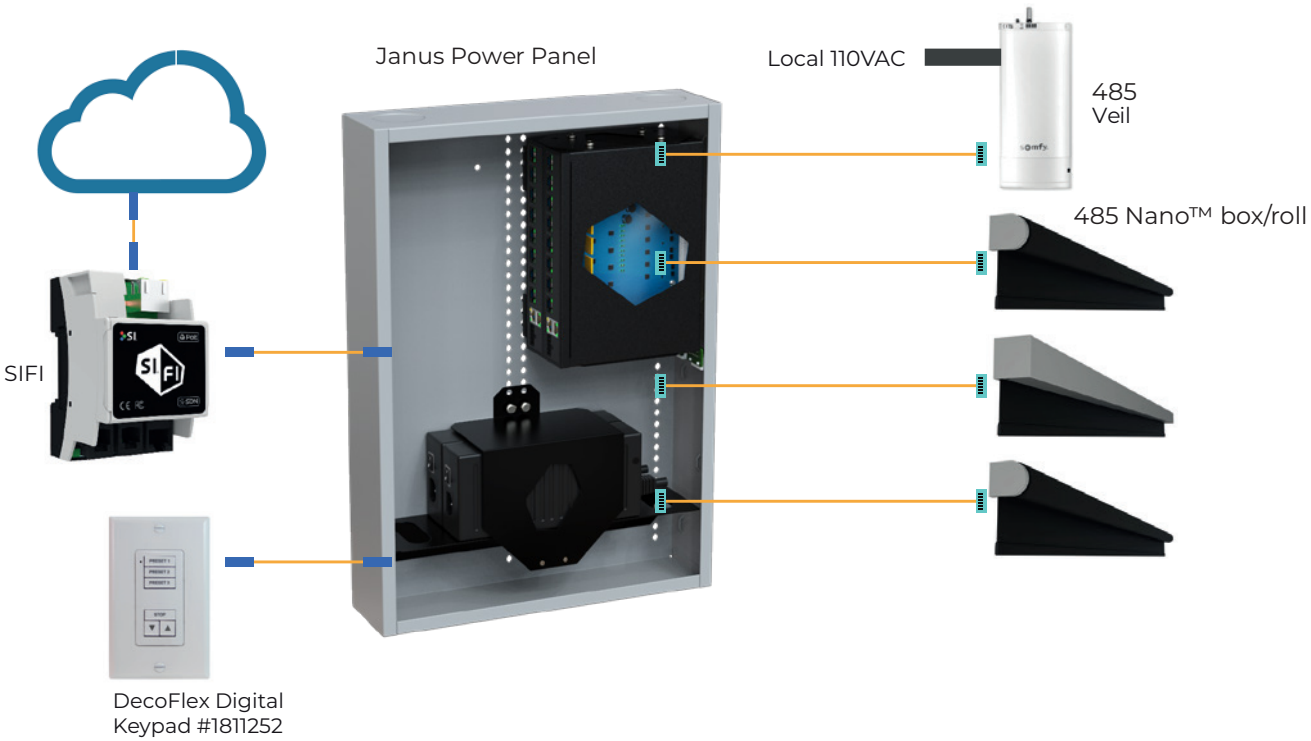
What if I need more than 255 shades in my project?

If your project has more than 255 shades, then first call SI so we can help you with the design of this deployment.

Do I need a gateway for a 485 shade system?

Yes, you will need to use a Screen Innovations exclusive part called SI.FI. Only one gateway is needed for every 255 devices.

This gateway can be powered by a standard bus power supply and connects to your standard 802.3 Ethernet. The gateway can be din rail mounted and rack mounted din rails are available.



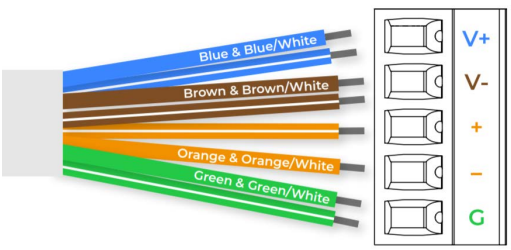
The 485 gateway has two primary functions on a 485 network. First and foremost, it is your limit setting tool for all the shades. Secondly, it is the single point of contact for control of all your shades for 3rd party control systems.

What kind of wire do I need to pull and how long can I run it?

You can use most any kind of wire for 485 shade deployments. The gauge and type of wire will determine how large of a shade you can use and the distance you can pull the wire from. 485 technology uses a 5-conductor wire as standard, and this wire is designed in a home run start-type topology from the shades to the power panel(s) at the head-end. Please reference the wire chart below to help you determine the appropriate wire gauge for specific wire lengths for each shade.

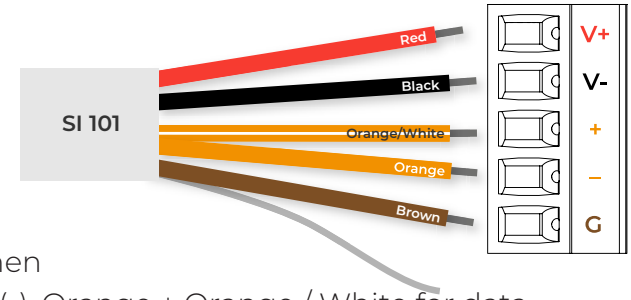
Job Title	150’	200’	240’	300’
SI 101 (14AWG x2) + (22AWG x3)			✓	
SI 102 (14AWG x2) + (22AWG x3) plenum			✓	
SI 201 UTP (CAT6) min 23AWGx8	✓			
Somfy 9020126 (14AWG x2) + (22AWG x3)			✓	
Somfy 9020127 (14AWG x2) + (22AWG x3) plenum			✓	
LUTRON-RED (18AWGx5) + (16AWGx2)		✓		
LUTRON-P-RED (18AWGx5) + (16AWGx2) plenum		✓		
LUTRON-YEL (22AWGx2) + (18AWGx2)	✓			
LUTRON-WHT (18AWGx4)	✓			
LUTRON-GRN (18AWGx2) + (22AWGx2)	✓			
ELAN-CM-VIA (18AWGx2) + UTP (CAT5e)	✓			
AMX AXLINK (18AWGx2) +(22AWGx2)	✓			
AMX AXLINK-P (18AWGx2) +(22AWGx2) plenum	✓			
Crestron NP-BK-B500 (18AWGx2) + (22AWGx2)	✓			
Crestron HP-NP-TL-SP1000 (12AWGx2)+(22AWGx2)				✓

How do I terminate the wire for CAT5/6 cables?



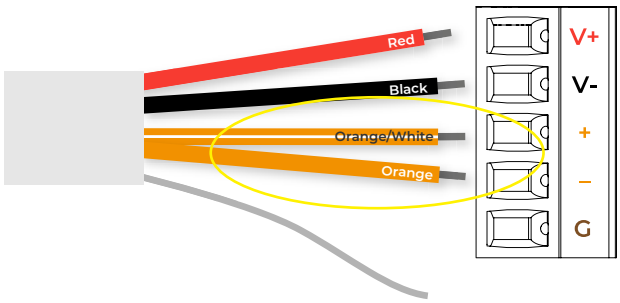
For UTP wires, please use the Blue pair as Power positive +, the Brown pair as Power negative -, the Green pair as the data ground, the Orange wire as the data negative (-), and the Orange + Orange / White wire as the data positive (+). The maximum run is 150’

How do I terminate the wire for 5 conductor cables?



For 5-conductor cables, please use the largest gauge in the bundle for power. These may be colored Red and Black, but even if they are not, use the largest gauge for power. Use the Brown wire when available for data ground, Orange for data negative (-), Orange + Orange / White for data positive +. Do not connect the drain or any shields. This is the same for plenum or non-plenum wire types. Please see the chart for maximum wire lengths.

How do I terminate the wire for 4 conductor cables?



For 4-conductor cables, please use the largest gauge in the bundle for power. These may be colored Red and Black, but even if they are not, use the largest gauge for power. Use a jumper wire from the data ground to the power supply negative ground, Orange for data negative (-), and Orange + Orange / White for data positive (+). Do not connect the drain or any shields. This is the same for plenum or non-plenum wire types. Please see the chart for maximum wire lengths.

What if I only have 2 conductors?

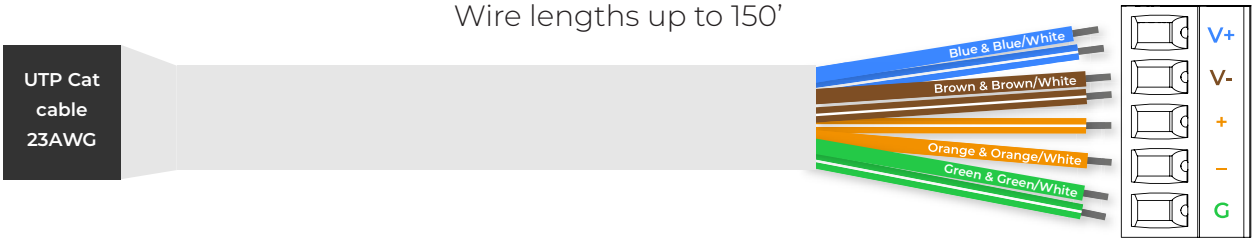
SI has developed a shade codec called Fontus which converts any project with only 2 wires to the 5 wires needed for 485.

Contact the SI technical support teams for more information on wire types, colors, and wire lengths.

What are some common pre-wire types and colors?

Wire Topology
UTP Cat Cable 23AWG(Q-Motion/Crestcat)

Wire lengths up to 150’

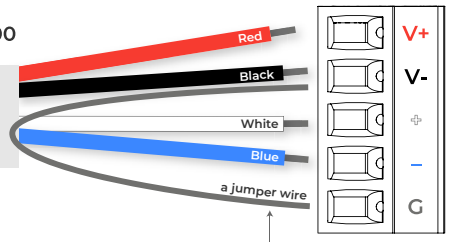


Wire Topology
4 Conductor (Crestnet)

Wire between Janus terminal block face and the motor

CRESNET-NP-BK-B500

Crestnet Wire 2@18AWG + 2@22AWG



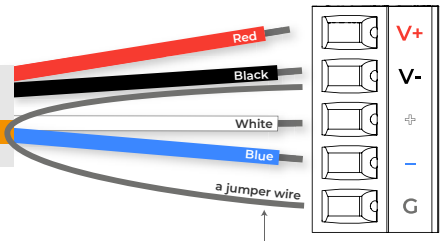
Wire length up to 150’

Do not connect Drain Wire

Please connect a jumper wire between the V- with the G for this type of wire

CRESNET-HP-NP-TL-SP1000

2@12AWG + 2@22AWG



Wire length up to 300’

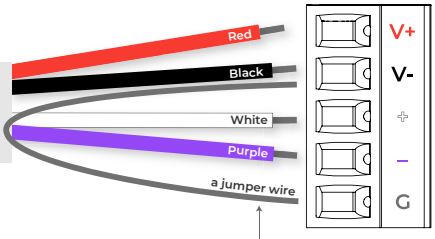
Do not connect Drain Wire

Please connect a jumper wire between the V- with the G for this type of wire

Wire Topology
4 Conductor (Lutron)

Wire between Janus terminal block face and the motor

Lutron Wire 2@18AWG + 2@20AWG



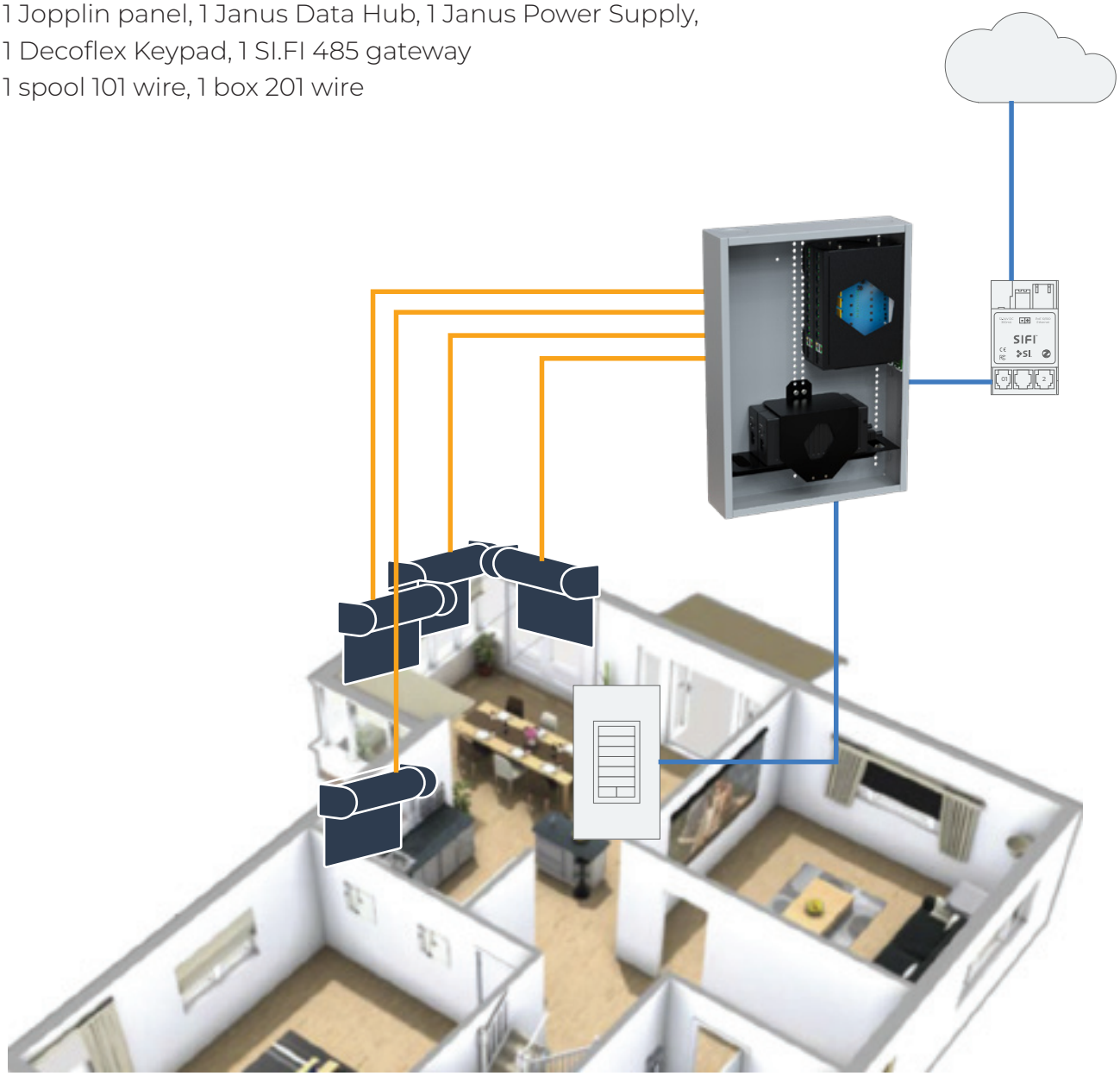
Wire length up to 150’

Do not connect Drain Wire

Please connect a jumper wire between the V- with the G for this type of wire

Example System #1

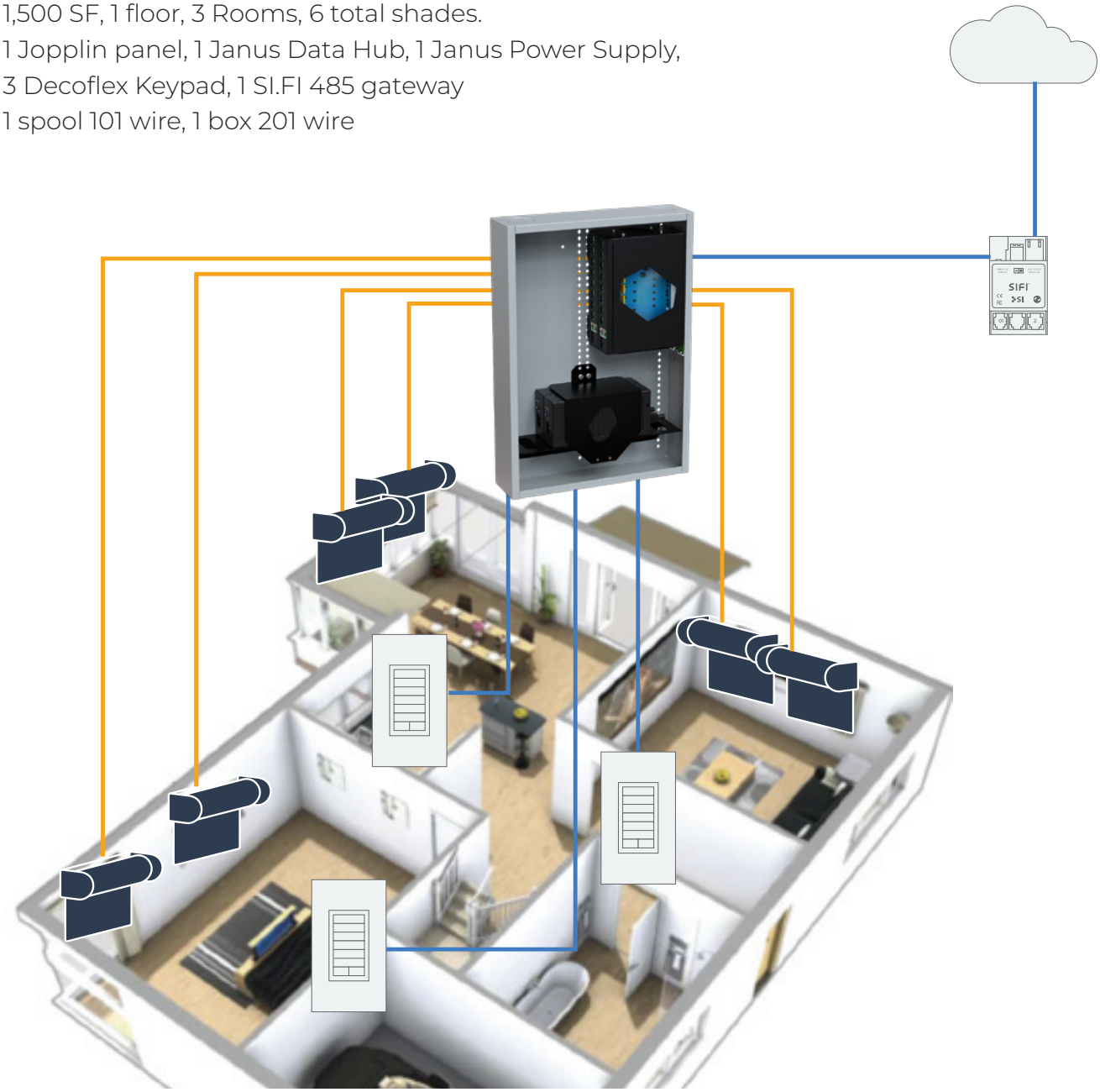
1,500 SF, 1 floor, 1 Room, 4 total shades.
1 Jopplin panel, 1 Janus Data Hub, 1 Janus Power Supply,
1 Decoflex Keypad, 1 SI.FI 485 gateway
1 spool 101 wire, 1 box 201 wire



Jopplin	1
SI 101 WIRE spool	1
SI 201 WIRE spool	1
Janus data hub	1
Janus power supply	1
485 Keypad	1
SI.FI	1

Example System #2

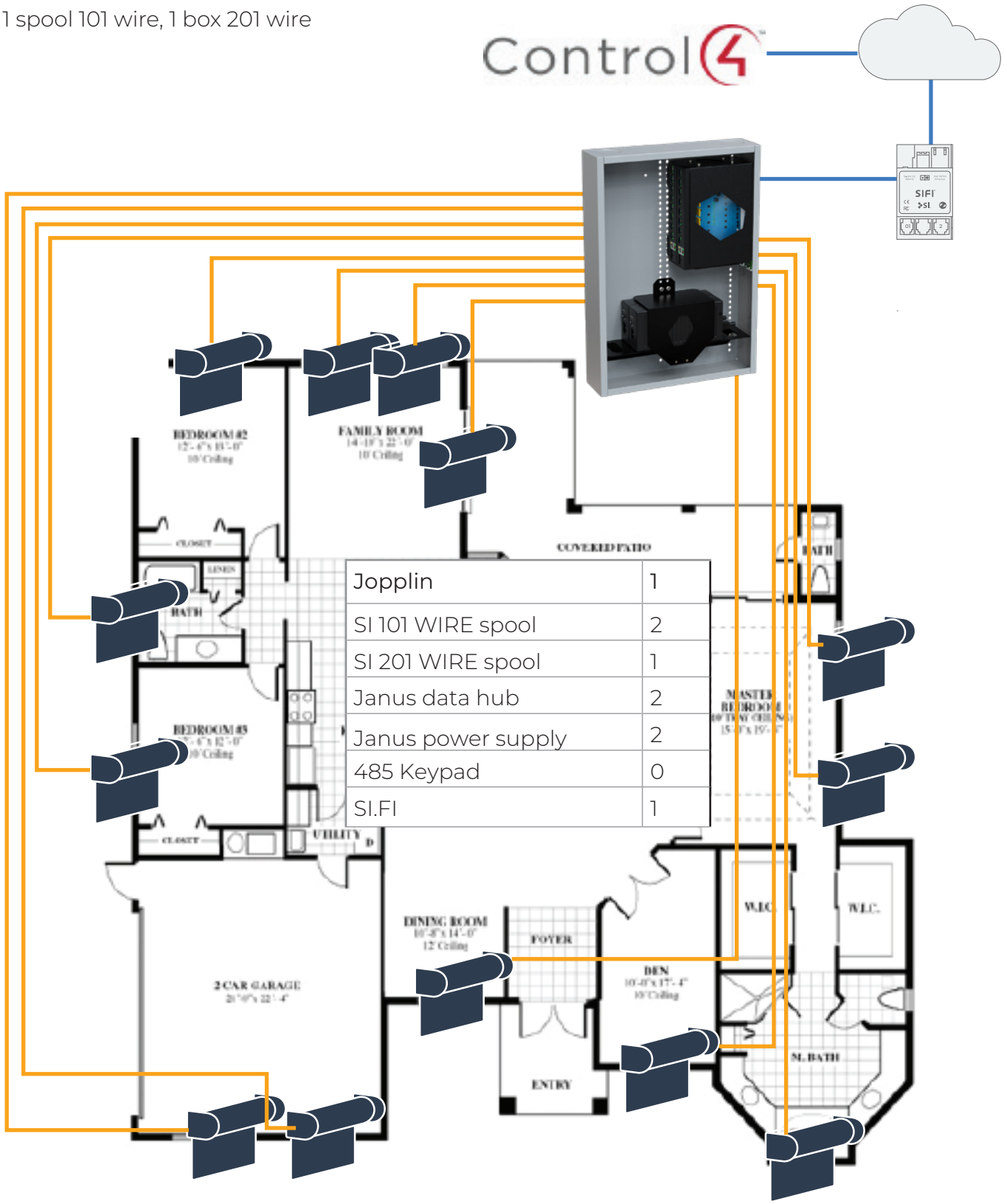
1,500 SF, 1 floor, 3 Rooms, 6 total shades.
1 Jopplin panel, 1 Janus Data Hub, 1 Janus Power Supply,
3 Decoflex Keypad, 1 SI.FI 485 gateway
1 spool 101 wire, 1 box 201 wire



Jopplin	1
SI 101 WIRE spool	1
SI 201 WIRE spool	1
Janus data hub	1
Janus power supply	1
485 Keypad	3
SI.FI	1

Example System #3

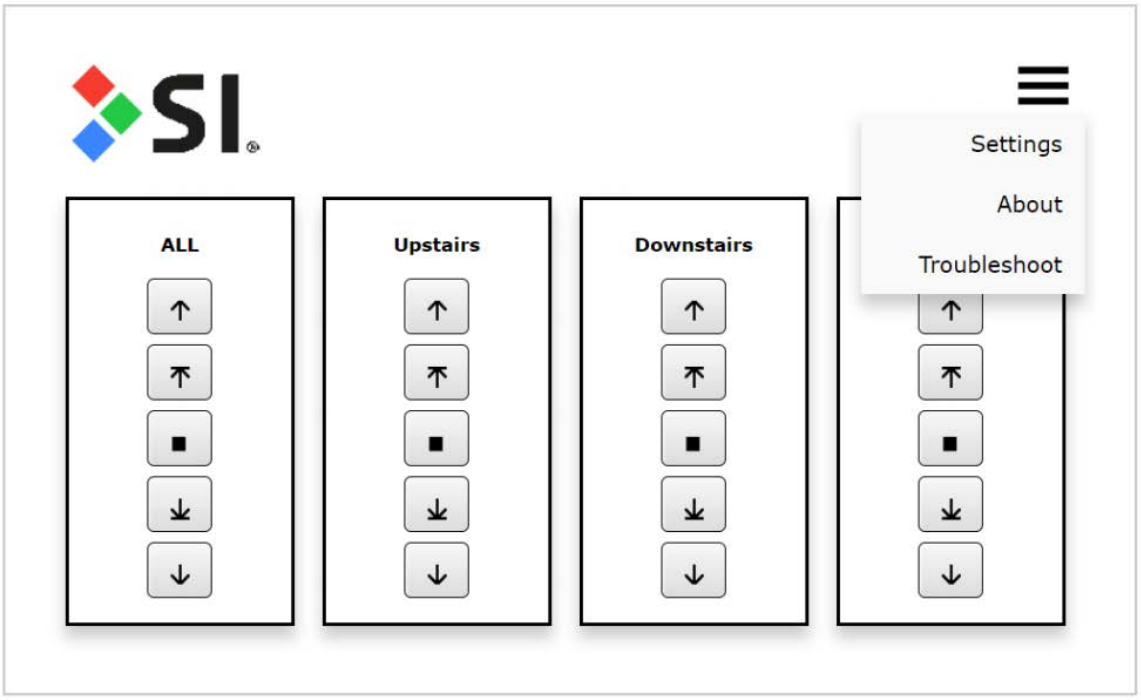
2,900 SF, 1 floor, 9 Rooms, 13 total shades.
1 Jopplin panel, 2 Janus Data Hubs, 2 Janus Power Supplies,
1 SI.FI 485 gateway, Controlled by Control4 system
1 spool 101 wire, 1 box 201 wire

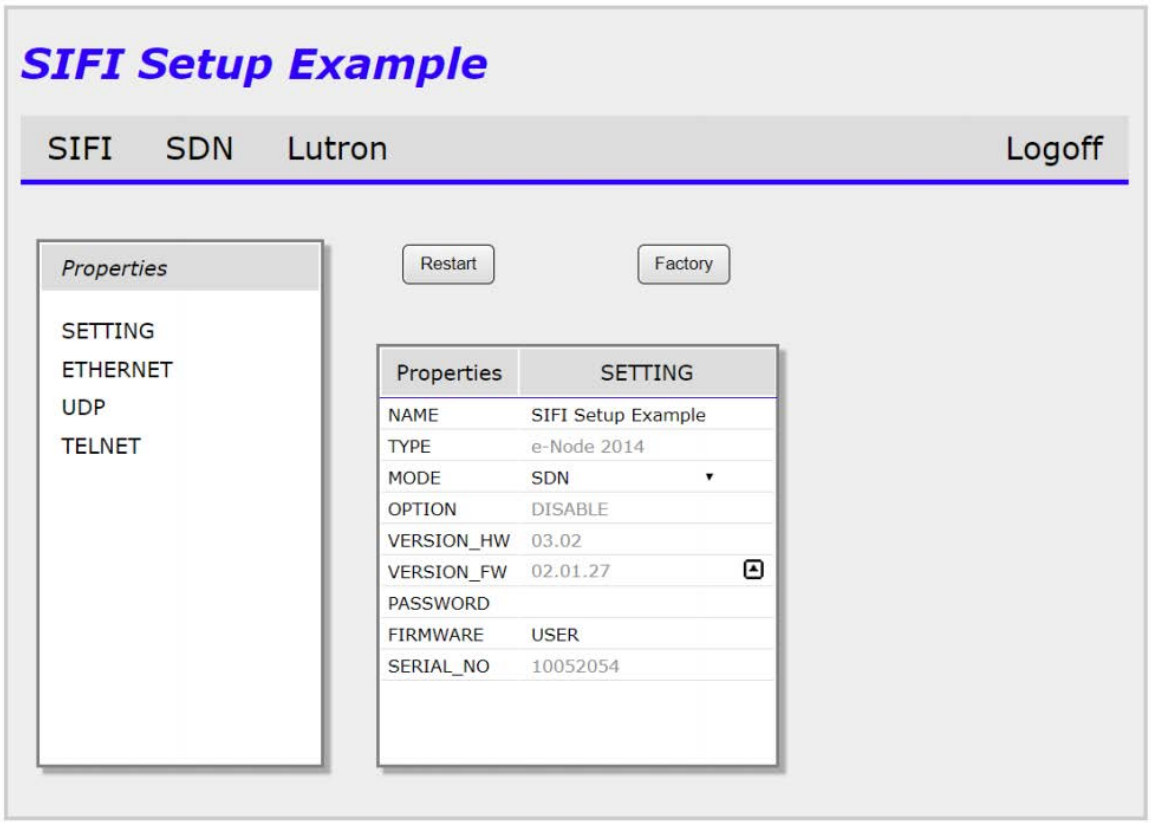


Jopplin	1
SI 101 WIRE spool	2
SI 201 WIRE spool	1
Janus data hub	2
Janus power supply	2
485 Keypad	0
SI.FI	1

How do I set the motor limits with SI.FI?

Using a standard web browser, connect to the IP address of a SI.FI to gain access to the provisioning software called PILOT. You will have the ability to test and control your system from this connection.





What commands are available for use with 3rd party control?

The 485 technology API allows you to control one or more shades and or groups. You can send commands to send the shades up, down, stop and preset selections (my) you can also create and send scenes and you can receive unsolicited feedback and incremental controls and absolute position.

We have software modules for all popular control systems and these also may include sample programs and demo graphics for touch panels.

If you would like to have access to all commands, download the free String Calculator at the below link and this will give you the hex commands to all commands and queries for any status feedback.

https://www.somfypro.com/services-support/software

What tools and parts should I have on my truck when deploying a 485 shade system?

When installing 485 shades, a best practice is to have extra parts such as additional 485 gateways, USB to 485 adapters, a limit setting tool, and extra 6 and 8 button Decoflex keypads.

It is also a best practice to have an extra Wireless router, access points, and 4G or better hot spot for advanced diagnostics or remote assistance.

Introducing flow, a secret weapon that will change your life.

As a Screen Innovations dealer, you have access to the industry's first complete Shade Builder tool called FLOW™.

This innovative and exclusive dealer tool will help ensure your designs have everything needed to quote, sell and complete the job right the first time and every time.

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