

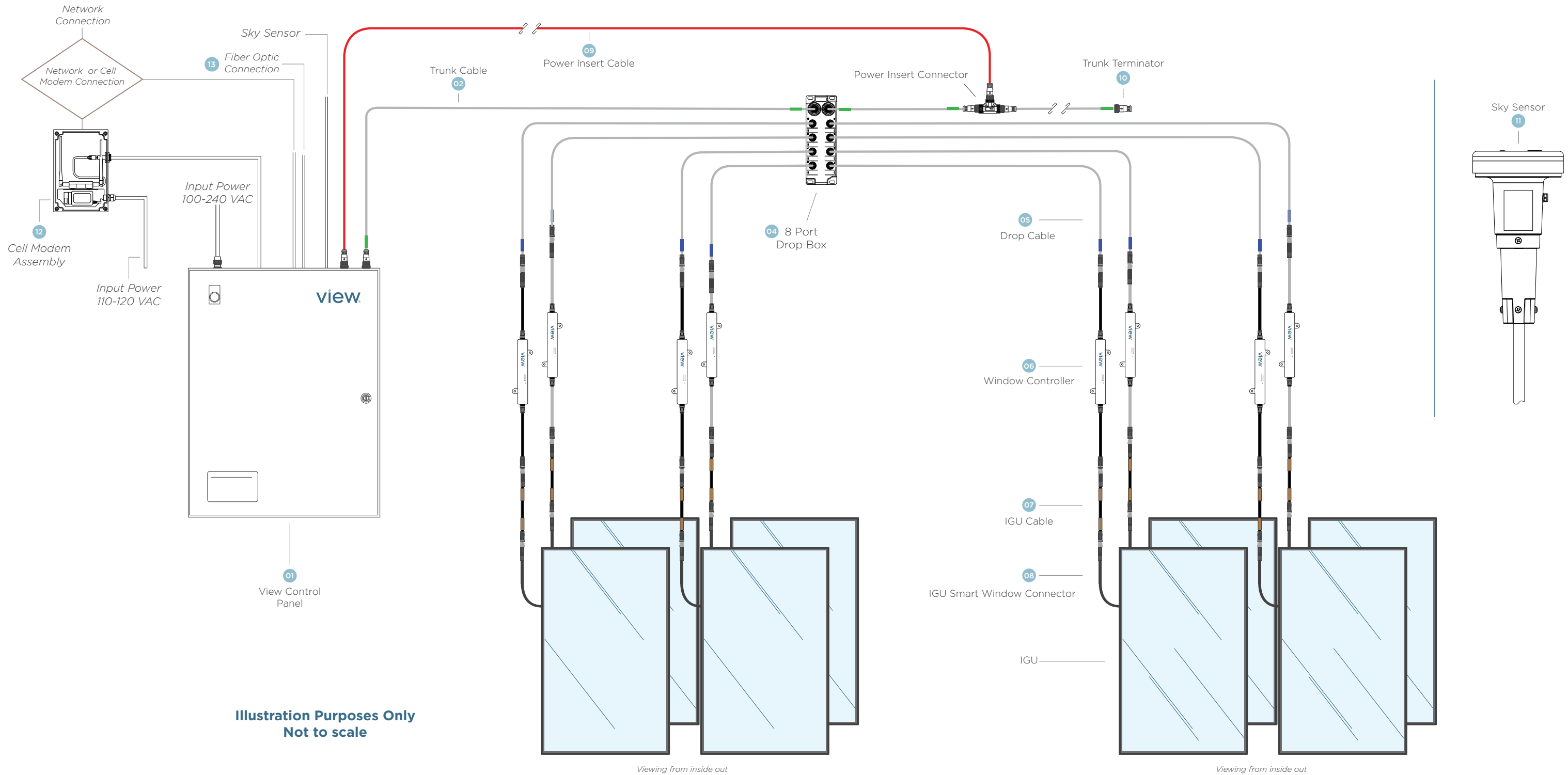
Controls Labor Estimating Guide (CSS only)

Shown below are the expected installation labor hours per device. We suggest using local market labor rates for project estimating.

Note: Labor times shown are based on averages of past View projects and are for comparison purposes only. Estimators should use their best judgment to estimate time and labor costs for bidding purposes based on the quantity of View glass windows, total number of devices, and all cabling:

Device / Task	Qty	Recommended Labor Hours
Control Panel (CP)	Per CP	4 hours each
Sky Sensor	Per Sky Sensor	8 hours each
Trunk Segments, TEE connectors and DB8's	Per Pattern	45 minutes per pattern
Power Insert Cables (home runs from control panel)	Per Power Insert	4 hours each
Window Controllers	One per IGU	15 minutes each
Drop Cables	One per IGU	15 minutes each
IGU Cables	One per IGU	15 minutes each
Test each IGU	One per IGU	5 minutes each
Connect control panels together	Per CP	1 hour each
Connect "Master" control panel to customer network	One per Site	4 hours each
Install cell modem	One per Site	1 hour each
Functional Hardware Testing (FHT) / Commissioning / Trade Support	Per CP	20 hours each
Review & Training of View Interconnect Drawings	Master CP and each additional CP	2 hours plus 15 minutes for each additional CP
Procurement of installation supplies	Master CP and each additional CP	2 hours plus 15 minutes for each additional CP
Cable management: Velcro, Zip Ties, etc.	Per CP	4 hours each
Labeling (Trunk cables, Power Insert cables and IGU cables)	Per CP	4 hours each
Un-package equipment, cables and get organized	Per CP	1 hour each

Diagram of the View Controls with Drop Box



**Illustration Purposes Only
Not to scale**

Diagram of the View Controls without Drop Box

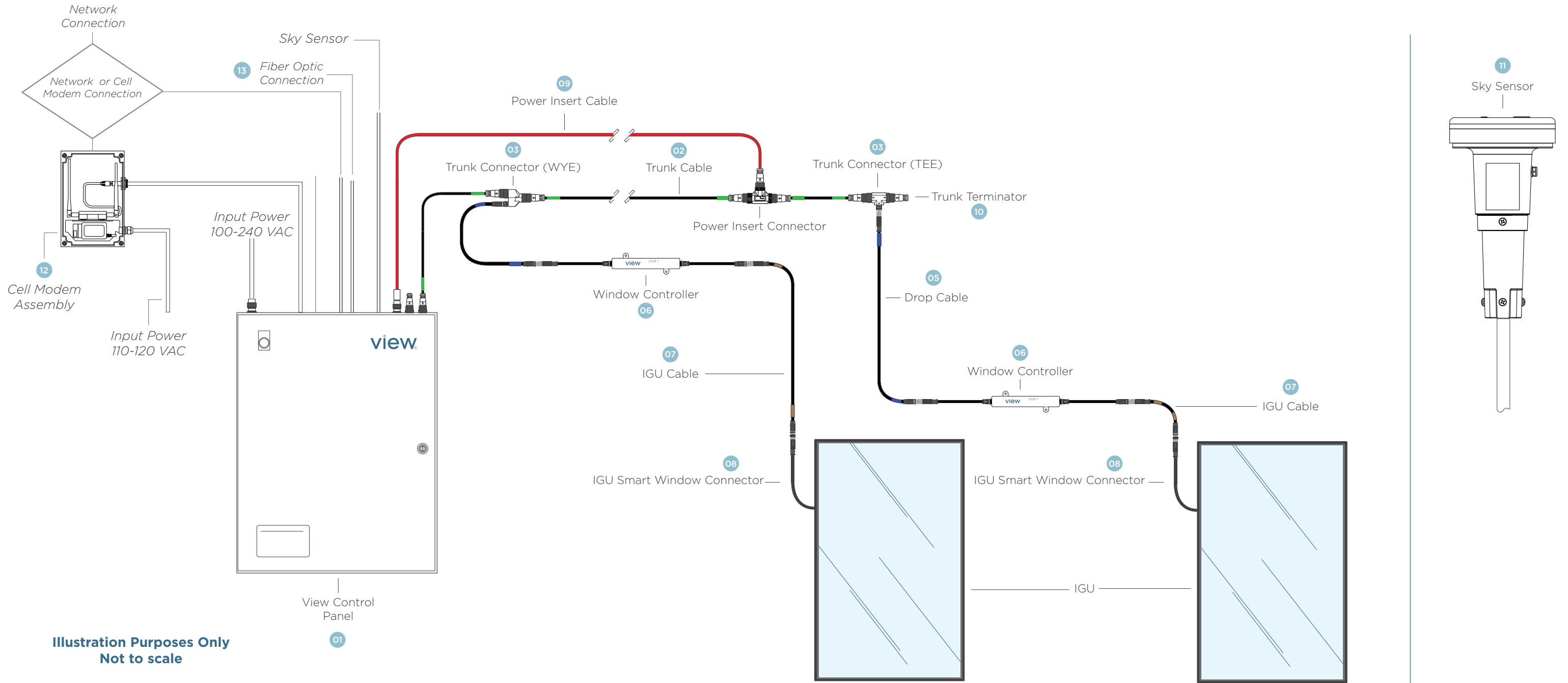


Illustration Purposes Only
Not to scale

Viewing from inside out

Components Description

Cabling System

The View cabling system uses a trunk line/drop line network topology. In this topology, the trunk cable carries both power and data through the entire length of the installation. Drop cables are then tapped off of the trunk cable using trunk connectors at locations where window controllers are installed. The window controllers are then connected to individual IGU units via an IGU cable. **Note:** Component data sheets will supersede the information found here.

01 Control Panel

Wall-mounted enclosure (21" x 29" x 9") that contains the power supplies, master controller, as well as auxiliary connections such as Ethernet and external sensors. At least one control panel is required for each installation. Each control panel can support up to 256 window controllers. For larger or multi-floor installations, multiple control panels may be required. **Each Control Panel requires a dedicated 20-amp circuit (20-amp@120 VAC or 10-amp @240VAC).**

Specifications for Control Panel:

Input	AC 100-240V \pm 15%
Frequency	50-60 Hz \pm 6%
Output	Class 2 24 VDC

02 Trunk Cable

Pre-terminated cables fitted with 7/8", 5-pin connectors. Simple, hand-screw connection with no special tools required.

Specifications for Trunk Cabling:

- Max combined length approx. 1,500'
- Available in lengths from 1' to 160' (meter or fractional meter increments)
- Available in standard and plenum rated cables

03 Trunk Connectors

Used to connect drop cables to the trunk cable. Connectors available in both "Tee" and "Wye" configurations for installation flexibility.

04 8-Port Drop Box

A network distribution component used to connect multiple Drop Cables to a Trunk Line. The distribution component will have 8 Drop Cable connection ports.

05 Drop Cable

Provides power and data to the window controller. Ties into the trunk cable via the trunk connector.

Specifications for Drop Cabling:

- Available in lengths from 1' to 32.9' (meter or fractional meter increments)
- Available in standard and plenum rated cables

06 Window Controller

Facilitates power transmission to each IGU. Connected to a drop cable on one end and an IGU cable on the other end. Must be installed at an accessible, environmentally-controlled location. Typically one window controller is installed per IGU.

Specifications for Window Controllers:

Input	24 VDC
Output	Range between \pm 5 VDC
Dimensions	4-5/8" x 3/4" x

07 IGU Cable

Connects a window controller to the IGU Smart Window Connector cable.

Specifications for IGU Cabling:

- Available in lengths from 1' to 100' (meter or fractional meter increments)
- Available in standard and plenum rated cables
- Max combined length from the WC to the IGU is 100'

08 IGU Smart Window Connector

Each IGU receives power from the control system through an IGU Smart Window Connector. The Smart Window Connector connector is embedded with a digital ID that is unique to that IGU's dimensions and specifications.

Specifications for IGU Smart Window Connector:

- -12" length located 3" from corner. Location changes based on shape and dimensions. See IGU data sheet for exact location.
- Requires 7/8" hole size

09 Power Insert Cable

Transmits power from a power source to the trunk line via a

power insert connector. The power insert cable is 14/4 wire (14-AWG/4-conductor) spool options.

For long trunk lines, power inserts may be required to provide appropriate power. The power inserts can originate from:

1. Power output ports from the control panel
2. Standalone power injection panel (not shown in diagram)

Specifications for Power Insert Cabling:

- Field wireable power insert cables available in up to 1,000' spools
- One power insert is typically required after every (24) window controller connections
- All power insert cables are plenum rated

10 Trunk Terminator

Installed at the end of each trunk line and also all unused trunk ports at the View control panel.

11 Sky Sensor

Used to detect external light and temperature levels. Data from the sensor is transmitted to the control panel for Intelligence. It is typically mounted on the roof top.

Specifications for Sky Sensor:

- Connects to View control panel via CAT5 cable
- Mounts to rooftop, must be clear of obstructions, 360-degree view of the horizon

12 Cell Modem

Used as a temporary network connection to the View Site Ops monitoring system. Requires 110/120VAC 60Hz.

13 Fiber Kit

For connection of multiple control panels on a site: Two optional fiber-optic kits are available for network connectivity greater than 328'.

Specifications for Fiber Kit:

- Multi Mode fiber for distances greater than 328' but less than 1500 feet.
- Single Mode fiber for distances greater than 1500 feet.
- Maximum 2 Fiber Kits per Control Panel.