Installation Instructions

Installing InView Marquee 2706-P9*x*C2-SC Message Displays

Catalog Number: 2706-P92C2-SC, 2706-P94C2-SC

PN: 1810610301 Spectrum Controls, Inc. Publication 0100267-02A1

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Spectrum Controls, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Spectrum Controls, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Spectrum Controls, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

WARNING 	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
NOTE 	Identifies information that is critical for successful application and understanding of the product.
SHOCK HAZARD 	Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
BURN HAZARD 	Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach high temperatures.

AVERTISSEMENT 	Actions ou situations risquant de provoquer une explosion dans un environnement dangereux et d'entraîner des blessures pouvant être mortelles, des dégâts matériels ou des pertes financières.
NOTE 	Informations particulièrement importantes dans le cadre de l'utilisation du produit.
DANGER D'ÉLECTROCUTION 	Les étiquettes ci-contre, placées sur l'équipement ou à l'intérieur (un variateur ou un moteur, par ex.), signalent la présence éventuelle de tensions électriques dangereuses.
RISQUE DE BRÛLLURE 	Les étiquettes ci-contre, placées sur l'équipement ou à l'intérieur (un variateur ou un moteur, par ex.), indiquent au personnel que certaines surfaces peuvent atteindre des températures particulièrement élevées.

Overview

These instructions show you how to mount InView 2706-92C2-SC and 2706-94C2-SC signs with NEMA Types 4, and 4X enclosures. These signs are intended for indoor use:

- Type 4 enclosures are intended to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water.
- Type 4X enclosures are intended to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water.

Environmental Requirements

Observe the following considerations:

- These displays are for indoor use only. They should not be exposed continuously to sunlight.
- They must not be hung in windows. Placing a sign in a window invalidates the warranty.
- Signs are suitable only for environments that are between 0º C and 55 ºC (32º F and 131º F).
- Displays must only be used in an environment where the humidity (non-condensing) does not exceed 95%.
- Install displays with at least 2.5 cm (1 inch) clearance on each end of the case, and at least 5.1 cm (2 inches) clearance above the case.
- Misuse of the product will void the warranty.

Wire and Safety Guidelines

Install the InView display conforming to all locally in effect, Electrical Safety Requirements for Employee Workplaces. In addition to the NFPA general guidelines, refer to the following:

- Careful cable routing helps minimize electrical noise. Route incoming power to the module by a separate path from the communication cables. Do not run the power and communication wires in the same conduit, or directly next to each other.
- Wire used for installation must be rated higher than 75° C (167 °F) or 15° C (59° F) above ambient temperature.

NOTE	You can configure your InView Communications module or Messaging software without having an InView display connected.

Description of the 2706-P92C2-SC and 2706-P94C2-SC Displays

There are two InView C2 models, 2706-92C2-SC and 2706-94C2-SC. These displays provide 10, user-selectable colors for fonts and bitmaps. The displays provide an 1800 NITs brightness level. Power consumption is also much lower than the previous models of P9 InView displays. The resolution is 6.25 mm versus 7.5 mm. You may scroll images and characters from right-to-left, or left-to-right, depending on the language. The displays comply with NEMA 4 and IP66 housing standards.

NOTE	Using the equipment in a manner not specified by Spectrum Controls, Inc. may impair the protection provided by the equipment. Mount the sign so that it is easy to disconnect power when servicing.

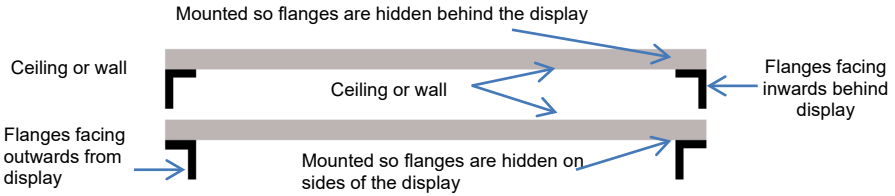
NOTE	If a display gets too hot during operation, the software is designed to reduce display brightness or shut the display off. For temperatures at which display reduces brightness and/or shuts down, refer to Temperature Protection in NEMA-rated enclosures.

Mounting the 2706-P92C2-SC and 2706-P94C2-SC Displays

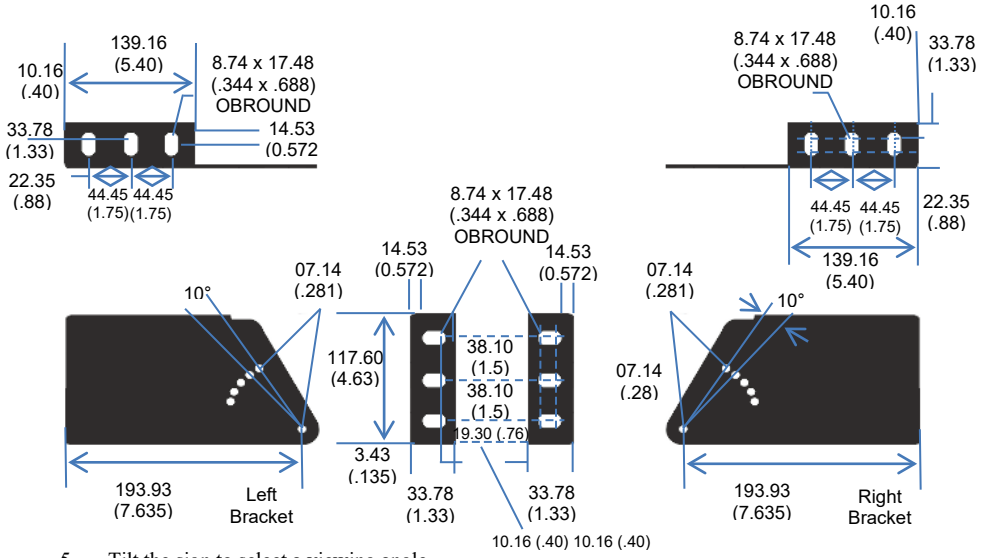
To mount the sign:

1. Attach the two sign brackets to a metal post, wall, ceiling, or other surface with sufficient weight bearing rating. It is preferable that you install the display on metal posts attached directly to studs. N**ever** install the brackets only on sheetrock with toggle bolts:
    - If installing directly onto a wall or ceiling, use two 5/16-inch lug bolts and washers per bracket, screwed at least one-inch into the center of wood studs. The washer must be snug against the bracket. The bracket must be snug against the sheetrock or other wall surface.
    - If a wooden stud is not available in the correct spot, use 3/4inch thick plywood or a 3/4-inch metal backing plate attached to studs to secure the bracket.

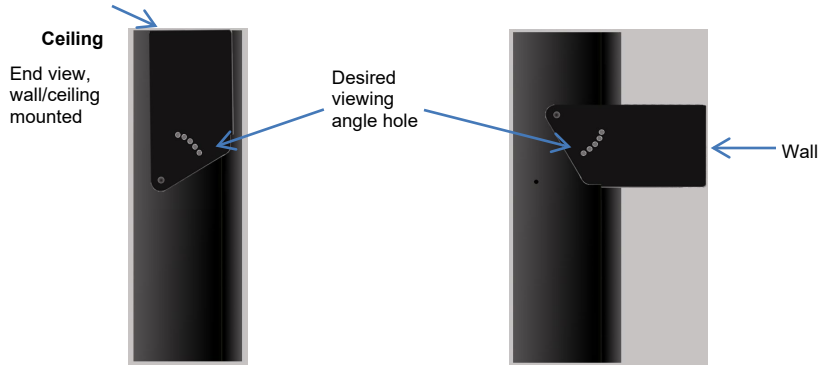
2. Be sure to place the brackets so the bracket flanges face appropriately as shown below. Mount the brackets the following distance apart (measured from the center of the mounting holes in each bracket):



3. Mount the sign onto the sign brackets using the two hex bolts supplied.
4. Insert the bolts into the far single holes first, until the desired viewing angle is determined. Dimensions are shown in mm (in) approximately.



5. Tilt the sign to select a viewing angle.
6. To hold the sign in place, insert the remaining bolts into the desired viewing angle hole on each bracket.



NOTE	Keep a minimum 2.54 cm (1.0 in.) clearance on all sides of the sign and 5.1 cm (2.0 in.) above the sign for adequate ventilation.

Back-to-Back Mount

To connect the sign:

1. Attach the brackets to the sign in the ceiling mount position with the hex bolts supplied:

2. Match the signs together back-to-back and connect them together using a total of six 5/16-inch bolts and nuts (not supplied).
3. Attach chains (not supplied) to the top mounting holes of the bracket to hang the signs from the ceiling.

NOTE	Use chains capable of supporting 4 times the total weight of the signs.

Wiring the 2706-P92C2 and 2706-P94C2-SC Displays

WARNING

Hazardous voltage.

Contact with high voltage may cause death or serious injury.

Always disconnect power to the InView display prior to servicing.

Maintain separation of circuits. Route the incoming power directly to the power connections terminal block.

Do not run the power wiring over the logic board.

ATTENTION

Tension dangereuse.

Toucher un câble a haute tension peut provoquer la mort ou des blessures graves.

Sortir la prise d'alimentation de l'afficheur avant de le réparer**.**

Maintenir la séparation des câbles.

Brancher le câble d’alimentation directement au bornier d’alimentation électrique.

Ne pas faire cheminer le câble d'alimentation le long de la carte

NOTE

Wiring instructions apply to both displays unless indicated.

Wiring method must be in accordance with:

- In the United States, the National Electrical Code, NFPA 70, and the National Fire Alarm and signaling Code, NFPA 72.
- In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32.

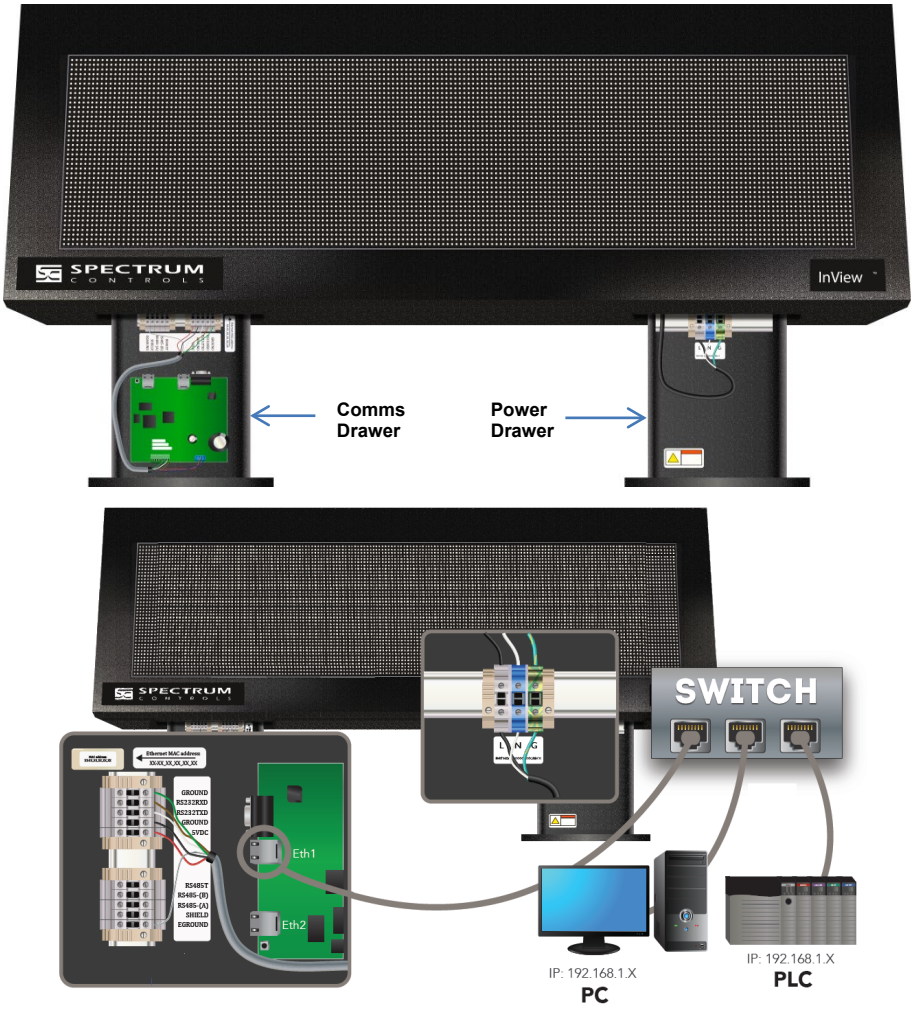
NOTE

The InView Display terminal blocks in the left-hand drawer are rated for wire ranges of 26 AWG to 12 AWG for the Comms Module serial and power wiring connections to the InView display.

Use appropriate conduit fittings and connections to route wires for power and communication into the power access compartment. Ensure a provided ferrite is properly installed on the cables as shown in the supplied photos.

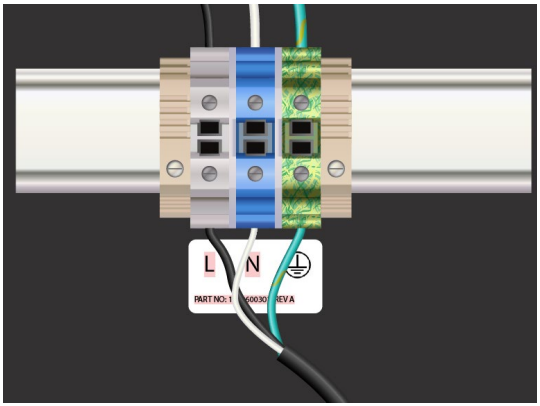
Ensure you follow all applicable, local, electrical codes for placing wiring cable in conduit outside the display.

1. If necessary, disconnect power to the InView display.
2. Loosen the right-hand drawer by unscrewing its 4 screws until you can pull the drawer out. Set the screws aside for later step.



3. Connect power conduit through the power drawer conduit opening on the left side of the drawer. Pull wires through the conduit and wire as shown below. Ensure you follow all applicable, local, electrical codes for completion of the wiring.
4. The InView Display power terminal block in the right-hand drawer is rated for wire ranges of 20 to 6 AWG for the power wiring. Strip the electrical wires back 6.35 mm (0.25 in).

5. Insert the wires into the appropriate terminal connection as shown below and tighten the screw to 1.47 to 1.7 N-m (13 to 15 in-lbs.). Enlarged label is shown following image below:



Wire Color	Wire Name
BLACK	Line (Hot) connect to L (White terminal)
WHITE	Neutral connect to N (Blue terminal)
GREEN	Ground connect to G (Green and Yellow terminal)

Install a Communications Module

If you are installing a Communications Module in the display drawer, use the following procedure to install, wire, and set up either RS-232 or RS-485 serial communications between the Comms module and the display. (Refer to the 0300289-0*n_nn*(Users_Guide_InView_COMMS_MODULE) manual) for full documentation on all Comms Modules, including these displays:

NOTE	Cable tie locations are supplied within the drawer to help ensure loose wires are not obstructed by adjacent mechanical obstructions.

1. Unscrew the four screws on the front of the two drawers located on the bottom panel of the InView display. The padding on the inside of the drawer fronts may allow you to leave the screws in the drawer front.
2. Pull out both drawers to their fullest extent.

3. If necessary, remove the previous Comms module and set aside.
4. In the left-hand drawer (as you face the display), install the Comms module on the mounting stands located at the front of the drawer, using the supplied standoffs and screws.
5. Torque the screws to 0.68 Nm (6 in-lb.).

WARNING 	**Hazardous voltage.** **Contact with high voltage may cause death or serious injury.** Always disconnect power to the InView display prior to servicing. Maintain separation of circuits. Route the incoming power directly to the power connections terminal block. Do not run the power wiring over the logic board.

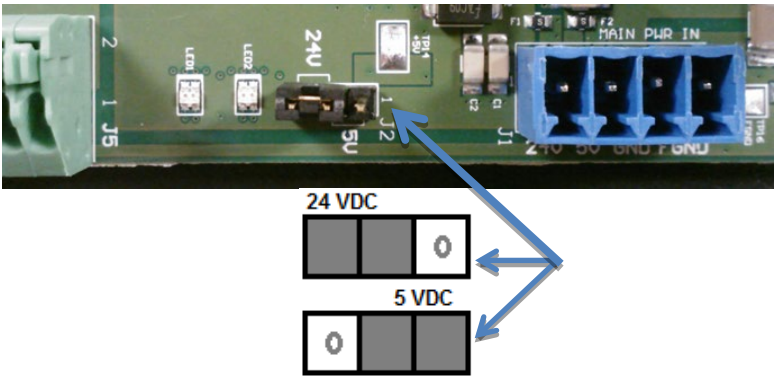
ATTENTION 	**Tension dangereuse.** Tout contact avec une tension élevée peut entraîner la mort ou des blessures graves. Déconnectez toujours l'alimentation de l'afficheur avant toute opération de maintenance.

WARNING 	**Hazard of damage to electronic equipment.** **Failure to ensure that jumper J2 is in the correct position for the voltage supplied to the InView Comms module can result in damage to the module circuitry.** Before applying power to the InView Comms Module, check that the jumper is in the correct position for your application.

ATTENTION 	**Danger de dommage pour l'équipement électronique**. **S'assurez que le cavalier J2 est dans la position correcte pour la tension fournie au module de communication InView sinon cela pourrait entrainer des dommages a l'ensemble des circuits du module.** InView en tension, vérifiez que le cavalier est dans la position de voltage adequat pour votre application.

6. Jumper J2 settings on the Comms module board are shown as labeled, and in 24 VDC or 5 VDC positions.

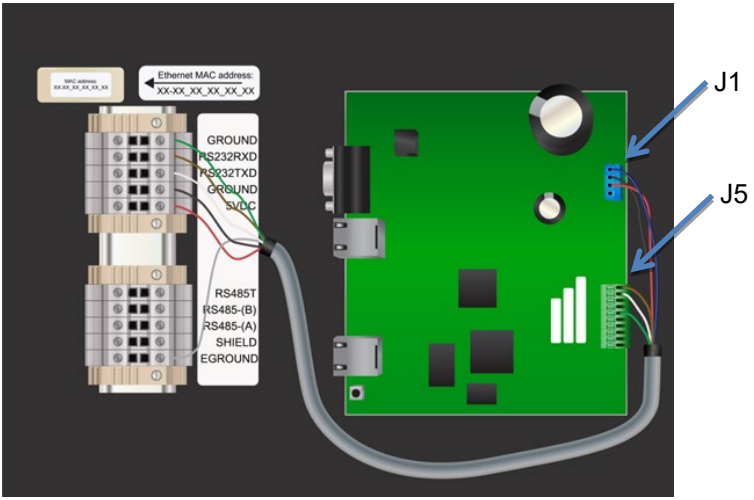
Check jumper J2 on the Comms Module is correctly positioned in the default jumper setting of 5 VDC:



7. In the same drawer in which you install the Comms module board, route a user-supplied CAT5 network cable through the cable grip and locknut that is provided. Connect the CAT5 cable to the Comms module by plugging in the Ethernet cable to the **Ethernet1** RJ-45 connector as shown. Connect the other end of the cable to an unmanaged switch.

Connecting Power Wiring Between Comms Module and Display

1. Use the images and tables provided next, along with the supplied Comms Module cable, to connect the display terminal power in the left-hand drawer to the installed Comms module.
2. The InView Display terminal blocks in the left-hand drawer are rated for wire ranges of 26 AWG to 12 AWG for the Comms Module power connections to the InView display.
3. Ensure you follow all applicable, local, electrical codes for placing wiring cable in conduit outside the display.
4. Connect the Comms Module power wiring to the display using the diagram and table below:



Stranded wire from Comms Module Cable 6010*nn-nn*:	Connect to following pins on InView Comms Module J1:	Connect to Display Terminal Block Connector:
BLACK: Supply GND (-5 V)	J1 Pin 3	BLACK: GROUND
RED + 5 V Power	J1 Pin 2	RED: 5VDC

Connecting RS-232 Wiring Between Comms Module and Display

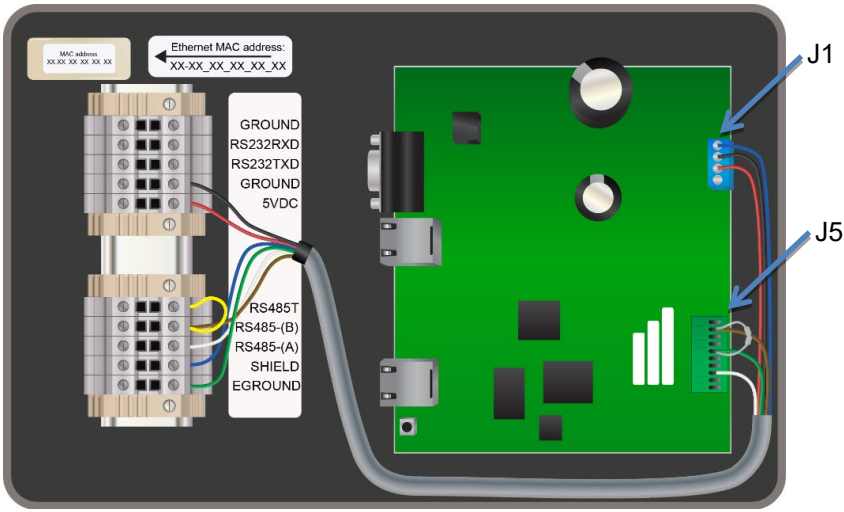
1. Use the table provided, along with the supplied Comms Module cable, to connect the display RS-232 serial wiring in the left-hand drawer to the installed Comms module.
2. The InView Display terminal blocks in the left-hand drawer are rated for wire ranges of 26 AWG to 12 AWG for the Comms Module serial wiring connections to the InView display. Ensure you follow all applicable, local, electrical codes for placing wiring cable in conduit outside the display.

J5 Pinout	For RS-232, connect the following:	For RS-485, connect the following:
1	CD	
2	TXD	T-/R-
3	RXD	
4	N/C	N/C
5	Isolated Common/Signal Ground	Isolated Common/Signal Ground
6	N/C	N/C
7	CTS	
8	RTS	T+/R+
9	RI	
10	Frame/Shield Ground	

Important	The 2706-P*x*K-SC Comms modules are powered through the serial cable by the display (series A).

Connecting RS-485 Wiring Between Comms Module and Display

1. Connect the Comms Module power and RS-232 communications wiring to the display using the image provided below and the table provided above:

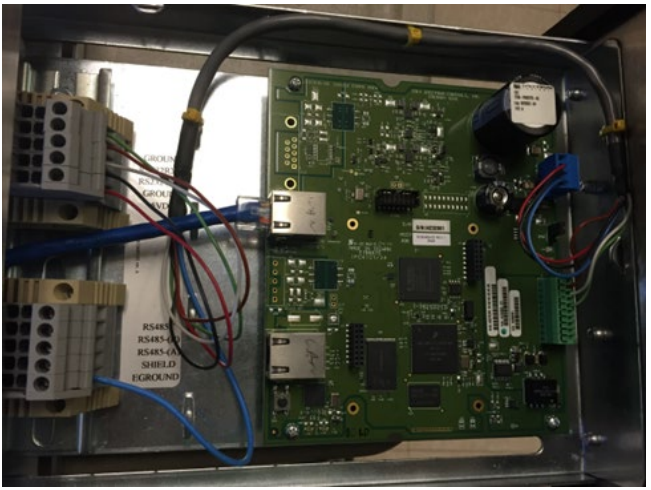


2. Terminate both ends of all RS-485 buses. The last sign in an RS-485 bus should be terminated by placing a jumper between the RS-485T and RS-485-(B) terminals. The jumper wire (yellow) is not included. The Comms Module should be terminated with a 120-ohm resistor between RS-485-(A) and RS-485-(B) as shown in the photos above.

Completing Comms Module Installation

1. Route the Comms cable and tie down the cable as shown below. The cable must be kept above the board until it is past the slots in the drawer. Individual wires must also be kept clear of the slots. The InView Comms Module screws must be torqued to 0.68 N-m (6.0 in-lbs. ±0.100).
2. Route sixteen inches of the Ethernet cable inside the closure and between the two terminal blocks as shown.

This avoids a tight curve in the cable. If needed, shorten the cable:



3. Replace the drawers using the 4 screws. Torque the screws to 1.8 N-m (16 in-lbs.) for NEMA 4 models, and 3 N-m (26.5 in-lbs.) for NEMA 4X models.
4. Connect the InView display to a power source.

Important	After the module has fully booted up, if needed you can press the reset button for 5 seconds, which will restart the module and display its network configuration, including the IP address, on the InView sign.

5. Write down the values. Example: **192.168.1.100**
6. Connect your PC and PLC to the unmanaged switch with a CAT5 cable and start an Internet browser.
7. In the Browser Address field, type the IP address you obtained from the display to which the Comms Module is connected.
8. Example entry only. Your address may be different: **192.168.1.100**
9. The InView User Interface software starts up and provides you with a login screen. Enter the default password:

   spectrum
10. The main InView User Interface View window appears.
11. Use the online help to finish setting up your InView and display.
12. Follow directions. If needed, click the **Help** button for specific instructions:

NOTE	Cable tie locations are supplied within the drawer to help ensure loose wires are not obstructed by adjacent mechanical obstructions.

Specifications

Display Specifications	2706-P92C2-SC	2706-P94C2-SC
Active Display Area	39.37 in × 9.84 in (100 cm × 25 cm)	68.90 in × 9.84 in (175 cm × 25 cm)
Array/ Pixel pitch	160 × 40 pixels/ 6.25 mm pitch	280 × 40 pixels/ 6.25 mm pitch
Lines of Text/ Character height/ Max characters per line	40H/1 line/9.9 in/7 32H/1 line/7.25 in/20 20H/2 lines/4.75 in/8 16H/2 lines/3.56 in/20 3 lines/3.0 in/13 4 lines/2.25 in/20 5 lines/1.75 in/24	40H/1 line/9.9 in/12 32H/1 line/7.25 in/35 20H/2 lines/4.75 in/14 16H/2 lines/3.56 in/35 3 lines/3.0 in/13 4 lines/2.25 in/20 5 lines/1.75 in/24
Default Brightness Setting	1,800 Nits	
Colors	10 colors	
Viewing Distance	450 ft (137 m)	
Character Set	Standard and extended ASCII	
Physical Dimensions	44.8 in W 15.7 in H 5.2 in D 113.8 mm W 39.9 cm H 132 cm D	74.3 in W 15.7 in H 5.2 in D 188.8 cm W 39.9 cm H 13.2 cm D
Unit Weight	62 lbs./28.13 kg	94 lbs./42.60 kg
Packaged (Shipping) Weight	74 lbs./33.64 kg	111 lbs./50.45 kg
Electrical and Environmental Specifications		
Input Voltage	100-264 VAC 50/60 Hz	100-264 VAC 50/60 Hz
Power Consumption (blank display)	20 W	35 W
Typical Power Consumption (35% lit) Full brightness	50 W	90 W
Typical Power Consumption (35% lit) Default brightness	35 W	62.5 W

Display Specifications	2706-P92C2-SC	2706-P94C2-SC
Maximum Power Consumption Full brightness	160 W	280 W
Enclosure Rating	NEMA 4/IP66	NEMA 4/IP66
Operating Temperature	-0˚ C to 60˚ C (32˚ F to 140˚ F)	
Storage Temperature	-25˚ C to 70˚ C (-13˚ F to 158˚ F)	
Relative humidity (operating)	5% to 95% non-condensing	

2706-P9*x*C2 Display Language Message Formatting Codes

The following message formatting codes have been added for the C2 displays:

Mode		
Description	**ASCII**	**Hex**
Rotate right	A	41
Justification		
Description	**ASCII**	**Hex**
Right	^^2	IE32
Message Attributes		
Description	**ASCII**	**Hex**
20High	^Z2	IA32
20Fancy	^Z4	IA34
40High	^Z<	IA3C
40Fancy	^Z=	IA3D
Character Color		
Description	**ASCII**	**Hex**
RGB Color	^\Zrrggbb	IC5Arrggbb Where: rr=ASCII hex value (00 - FF) for red channel gg=ASCII hex value (00 - FF) for green channel bb=ASCII hex value (00 - FF) for blue channel
Character Width/Height		
Description	**ASCII**	**Hex**
Bold	^Q^]01	111D3031

EMI Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with installation guidelines, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Certifications

Certifications are listed below:

CE compliance to:

- EMC:
  - EN 61131-2:2007
  - EN 61000-6-4:2007+A1:2011
  - EN 61000-6-2:2005
  - EN 55032
  - EN 55035
  - EN 61000-3-2:2006
  - EN 61000-3-3:2013
- LVD:
  - EN 61010-201:2013
  - EN61131-2:2007

UKCA compliance to:

- EMC:
  - BS EN 61131-2:2007
  - BS EN 61000-6-2:2005+AC:2005
  - BS EN 61000-6-4:2007+A1:2011
  - BS EN 61000-3-2:2014
  - BS EN 55032:2015
  - BS EN 55035:2017
- LVD:
  - EN IEC 61010-2-201:2018 EN 55022:2010

CMIM compliance to:

- NM EN 61000-6-4:2014
- NM EN 61000-6-2:2014
- NM EN 55032
- NM EN 55035
- NM EN 61000-3-2:2015
- NM EN 61000-3-3:2015

Additional Resources

Resource	Description
InView Communications Module User Manual, Publication 0300289-0*n_nn*	Provides all setup information for the InView Communications modules.
All other InView Manuals	https://spectrumcontrols.com.
Declaration of Conformity	https://spectrumcontrols.com.

You can view or download publications at https://www.spectrumcontrols.com

Getting Technical Assistance

Note that your display contains electrostatic components that are susceptible to damage from electrostatic discharge (ESD). An electrostatic charge can accumulate on the surface of ordinary wrapping or cushioning material. **In the unlikely event that the display should need to be returned to Spectrum Controls, Inc., please ensure that the unit is enclosed in approved ESD packaging (such as static shielding/metallized bag or black conductive container).** Spectrum Controls, Inc. reserves the right to void the warranty on any unit that is improperly packaged for shipment.

RMA (Return Material Authorization) form required for all product returns.

Please note that Spectrum Controls, Inc. contracts with Rockwell Automation TechConnect telephone support. There is no cost to Spectrum Controls, Inc. customers to use this technical support as the service is funded by Spectrum Controls, Inc. for all InView customers.

For further information or assistance, please contact your local distributor, or call the Spectrum Controls, Inc. technical support at:

- United States: 1-440-646-6900
- United Kingdom: 01-908-635-230
- Australia: 1-800-809-929
- Mexico: 001-888-365-8677
- Brazil: 55-11-3618-8800
- Europe: +49-211-41553-630

or send an email to support@spectrumcontrols.com

If you would like a manual, you can download a free electronic version from the Internet at https://www.spectrumcontrols.com

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