# Installation Instructions

# Installing InView Marquee 2706-P4xC2-SC Message Displays



Catalog Number: 2706-P42C2-SC, 2706-P44C2-SC

Inside	Page
Important User Information	2
Overview	3
Environmental Requirements	3
Wire and Safety Guidelines	3
Description of the InView P42C2-SC and 2706-P44C2-SC Displays	4
Parts List	6
Sign Specifications	7
Wiring the 2706-P42C2-SC and 2706-P44C2-SC Displays	7
Mounting the 2706-P42C2-SC and 2706-P44C2-SC Displays	15
2706-P4xC2 Display Language Messaging Format Codes	20
EMI Compliance	20
Certifications	21
Additional Resources	21
Getting Technical Assistance	22

## 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.

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

	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.

	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.
	Informations particulièrement importantes dans le cadre de l'utilisation du produit.
	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-P42C2-SC and 2706-P44C2-SC signs with NEMA Type 12 enclosures.

## **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 0 °C and 55 °C (32 °F and 131 °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 Electrical Safety Requirements for Employee Workplaces in effect locally. In addition to the NFPA general guidelines, use the following guidelines:

• 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.

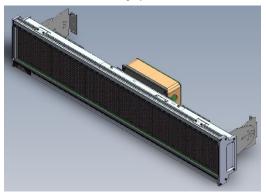
- Where power and series communications wires must cross, the intersection should be perpendicular.
- Shield all serial communication wires. Connect the shield to ground at only one point.



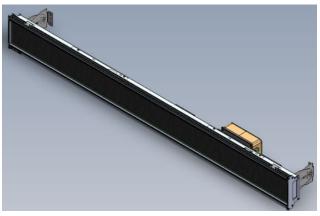
You can configure your InView Communications module or Messaging software without having an InView display connected.

# Description of the 2706-P42C2-SC and 2706-P44C2-SC Displays

InView 2706-P42C2-SC Display:



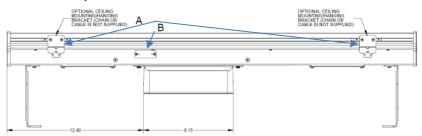
InView 2706-P44C2-SC Display:



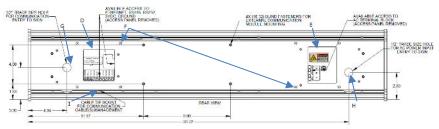
InView 2706-P42C2-SC and 2706-P44C2-SC displays both provide 1200 NITs brightness level. Power consumption is also much lower than the previous models of 2706-P4xC InView displays. The resolution for both displays is 7.6 mm (0.3 in). The displays provide 10, user-selectable colors for fonts and bitmaps. You may scroll images and characters from right-to-left, or left-to-right, depending on the language. The displays comply with NEMA 12 housing standards.

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#### 2706-P42C2-SC Top View



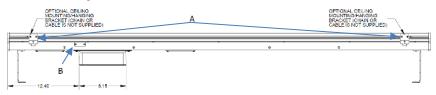
2706-P42C2-SC Rear View with Rear Access Panel Covers Removed



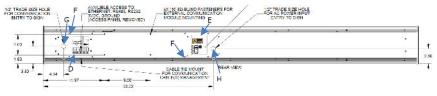
## 2706-P42C2-SC Bottom View

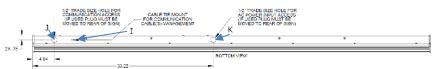


#### 2706-P44C2-SC Top View



2706-P44C2-SC Rear View with Rear Access Panel Covers Removed





## 2706-P44C2-SC Bottom View

## Parts List

Item	Name	Description
А	Ceiling Mount	Optional ceiling mount. Attach provided hanging brackets here.
В	Micro SD Card Access Panel	Removal panel to access Micro SD card.
С	Rear Bracket Mount	Attach wall mounting brackets at this location.
D	Rear Communication Access Panel	Removable panel to access RS-232, RS- 484, or Ethernet communication input connections.
Е	Rear Power Access Panel	Removal panel to access 12 to 240 VAC power input connection.
F	Rear Access Panel Screws	8 to 32 Phillips screws. Take care not to lose screws.
G	Communication Entry Point	<sup>1</sup> / <sub>2</sub> -inch trade size hole (.875-inch) for AC power wiring entry.
Н	Power Entry Point	<sup>1</sup> / <sub>2</sub> -inch trade size hole (.875-inch) for AC power wiring entry. Power cable and grommet are customer-supplied.
Ι	Cable Tie Wrap Mount	Tie wrap mount for cable management (if needed)
J	Alternative Communication Entry Point	Alternative ½-inch trade size holes (.875- inch) for communication wiring with removable watertight plug. (If used replace into rear communication entry point (G)).
K	Alternative Power Entry Point	Alternative <sup>1</sup> / <sub>2</sub> -inch trade size holes (.875- inch) for power wiring with removable watertight plug. (If used replace into rear power entry point (H)).

Sign model number	Pitch	LED rows	LED columns	LED colors	Brightness (typical)	Dimensions L × W × H	Weight (approx.)	Input voltage and power draw
2706- P42C2- SC NEMA 12	7.6 mm 0.3 in	16	120	RGB		94.5 × 8.1 × 18.8 cm 37.2 × 3.2 × 7.4 in	5.17 kg. 11.40 lb.	100-240 VAC at 0.7-0.3 A maximum
2706- P44C2- SC NEMA 12	7.6 mm 0.3 in	16	240	-	1200 NITS	185.9 × 8.1 × 18.8 cm 73.2 × 3.2 × 7.4 in	9.66 kg. 21.3 lb.	100-240 VAC at 1.1-0.5 A maximum

## Sign Specifications

# Wiring the 2706-P42C2-SC and 2706-P44C2-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.

# WARNING 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 Power to the Display

Wiring method must be in accordance with:

In the United States, the National Electrical Code, NFPA 70, and the National Fire

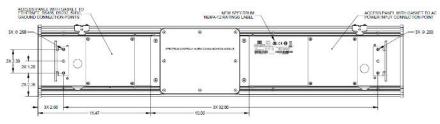
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Alarm and signaling Code, NFPA 72.

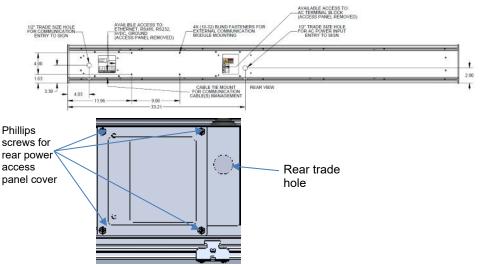
• In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32.

> 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.

1. If necessary, disconnect power to the InView P4xC2 display.



- 2. To access the display's rear power access panel, remove the 4, 8-32 Phillips screws holding the panel in place, and remove the cover.
- 3. Retain the screws in a safe place.



4. The InView Display power terminal block is rated for wire ranges of 20 to 6 AWG for the power wiring. Two trade holes are provided for wiring (on rear and underneath of display). Choose the appropriate entry point for your installation location. If you choose to use the trade hole underneath the display, make sure you transfer the watertight hole plug and re-install it in the rear trade hole. Pull the electrical wires through the trade hole. Ensure you follow all applicable, local,

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NOTE

electrical codes for completion of the wiring.

- 5. Wire the external power to the rear access power panel as shown. Strip the electrical wires back 6.35 mm (0.25 in), or as needed. Insert the wires into the appropriate terminal connection using the image and table provided.
- 6. Tighten the screws to a maximum of 0.79 N-m (7 in-lbs.):



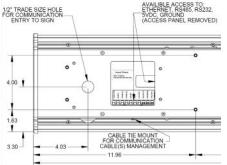
Wire Color	Wire Name	
BLACK	Line (Hot) connect to L	
WHITE	Neutral connect to N	
GREEN	Ground connect to G	

- 7. In order to comply with Part 15 of FCC Rules, attach one of the provided ferrites around the incoming power wiring. Secure with one of the provided tie wraps to the tie wrap anchor.
- 8. Replace the rear access power panel by inserting the 4 8-32 Phillips screws. Tighten to a maximum of 1.13 N-m (10.00 in-lbs.).

## Wiring Communications to the Displays

Wire the Comms module power and communications into the displays as follows:

 Remove the 4, 8-32 Phillips screws holding the rear communication access panel. Retain the screws in a safe place.



- 2. Choose the <sup>1</sup>/<sub>2</sub>-inch trade hole to remove for your installation location. Two are provided.
- 3. Route wiring provided in the two-part cable installed inside the Comms module for power and communication through one of the cable glands provided on the Comms module and through the trade hole in the display that provides the most convenient access to the communication terminal block.

4. If the bottom ½ inch trade hole is to be used, remove the watertight hole plug and reinstall it in to the rear ½ inch trade hole.



Only connect one type of communication type to the display at a time.

 Connect the incoming communication wire(s) to the appropriate terminals or connection point within the Rear Access Panel Communications terminal compartment. Terminal connection points are shown below:

Pin	Description
1	EGROUND
2	SHIELD
3	RS485-(A)
4	RS485-(B)
5	RS485T
6	5VDC
7	GROUND
8	RS232TXD
9	RS232RXD
10	GROUND

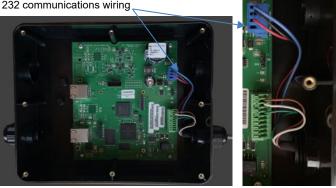


Only connect one type of communication type to the display at a time.

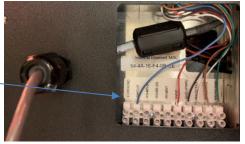
Terminal connection points for communication types are listed below.

#### **RS-232** Communication:

Comms Module with power and RS-232 communications wiring



Display with power and RS-232 communications wiring from Comms Module



1. Connect the incoming serial wires from the Comms module to the following terminal connection points:

Pin Number	Terminal Connection Point
2	BLUE: Shield
8	WHITE: RS232TXD
9	BROWN: RS232RXD
10	GREEN: RS232GND

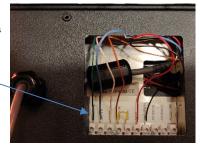
- For the RS-232 connection, a wire gage between 24 AWG (minimum) and 18 AWG (maximum) is required. Tighten the terminal connection points to a maximum of 0.56 N-m (5.00 in-lbs.).
- 3. To comply with Part 15 of the FCC rules attach one of the provided ferrites around the incoming RS-232 wire(s), and secure with one of the provided tie wraps to the tie wrap anchor. The ferrite must be attached to the sign.

#### **RS-485** Communication:

Comms Module with power and RS-485 communications wiring



Display with power and RS-485 communications wiring from Comms Module



1. Connect the incoming serial wires from the Comms module to the following terminal connection points:

Display Pin Number	Terminal Connection Point
1	GREEN: EGROUND
2	BLUE: SHIELD
3	WHITE: RS485-(A)
4	BROWN: RS485-(B)
Jumper between 4 and 5	YELLOW: RS485T/RS485-(B)

- Shielded RS-485 cable is recommended. Connect the shield of the cable to the SHIELD terminal.
- 3. 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.
- For the RS-485 connection, a wire gage between 24 AWG (minimum) and 18 AWG (maximum) is required. Tighten the terminal connection points to a maximum of .056 N-m (5.00 in-lbs.).

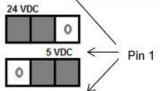
WARNING	Hazard of damage to electronic equipment.
$\wedge$	Failure to ensure that jumper J2 is in the correct position for the voltage supplied to the InView Comms module can result in damage to the module circuitry.
	Before applying power to the InView Comms Module, check that the jumper is in the correct position for your application.
WARNING	Danger de dommage pour l'équipement électronique.
$\Lambda$	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.

#### **Power Connections in Comms Module:**

1. Jumper J2 settings are shown as labeled on the Comms Module board and in 24 VDC or 5 VDC positions.

Check jumper J2 is correctly positioned for your application:





2. Connect the incoming power (Black and Red), serial (White and Brown), and GND (Green) wires from the Comms module to the terminal block as shown:

Communications Connector (on Display) Pin	Stranded wire from Comms Module Cable 6010 <i>nn-nn</i>	Connectors on InView Comms Module J1
6: 5VDC	RED + 5 V Power	<b>J1</b> Pin 2
7: GND(PWR)	BLACK: Supply GND (-5 V)	<b>J1</b> Pin 3
2: Shield	BLUE Chassis Ground	<b>J1</b> Pin 4

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2. Mount the cable grip to the InView display housing, tighten the locknut finger-tight, and rotate an additional 1/2 turn.

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.	
WARNING	Danger de dommage pour l'équipement électronique.	
$\mathbf{\Lambda}$	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.	
NOTE	The 2706-PENETM2C2-SC communication modules are provided	
	with cable PN 6010104- <i>nn</i> , (3 meters long). The cable combines power and serial communications. Power for the communications module comes from display terminals #6 and #7. Serial	

using terminals #8 and #9.

communications are via RS-232 from the module to the display

- 3. Tighten the cable grip cap until the cable is securely fastened.
- 4. Replace the rear panel power cover with the 4 screws and tighten the screws to 2.7 N-m (24 in-lbs.).
- 5. Connect the power supply to a power source.
- 6. If you press the reset button in the module, the module restarts, initializes, and displays the Communications Module's MAC address, its Ethernet IP address, and its Gateway IP addresses as part of the associated InView display.
- 7. Write down the values. Example: 192.168.1.100
- Connect your PC to the other end of the Ethernet network cable installed in ETH1 on the Comms module and start an Internet browser.
- 9. In the Address field, type in the IP address you obtained from the display to which the Comms Module is connected.
- 10. Example entry only. Your value will be different: 192.168.1.100
- 11. The InView User Interface starts up.
- 12. If needed, re-enter the IP address in the Browser.

13. The InView User Interface software starts up and provides you with a login screen. Enter the default password:

#### spectrum

The main InView User Interface View window appears.

- 14. Use the online help to finish setting up your InView and display.
- 15. Follow directions. If needed, click **Help** button for specific instructions:



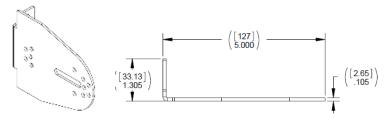
## Mounting the 2706-P42C2-SC and 2706-P44C2-SC Displays

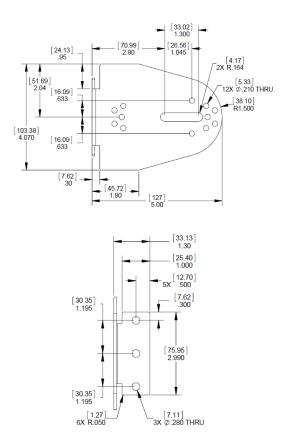
Sign installation must be performed by qualified personnel. Wall mounting brackets and fasteners are provided with the display. Hardware to fasten the display to the wall or ceiling is not provided as the appropriate fasteners must be used for brick, stone, or wood etc.

NOTE	If you use the equipment in a manner not specified by Spectrum Controls, Inc. may impair the protection provided by the equipment.
	The factory-applied finish is must not be altered or changed.
	Mount the sign so that it is easy to disconnect power when servicing.
	Always disconnect the communications cable(s) before disconnecting power.
	Modifying the sign housing voids the warranty.

## Mounting Displays on a Wall

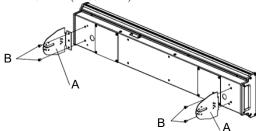
Wall mount brackets dimensions are as follows:





To mount the sign:

 Attach the wall mounting brackets to the sign using 4 10-32 × 3/8-in Phillips screws. Tighten to 2.71 N-m (24.00 in-lbs.):

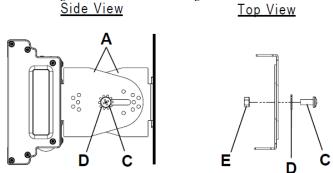


 Attach the two remaining sign brackets to a metal post, wall, ceiling, or other surface with sufficient weight bearing rating. It is preferable that you install the display on metal posts attached directly to studs. Never install the brackets only on sheetrock with toggle bolts.

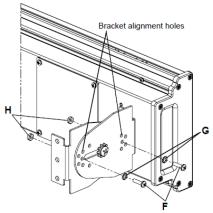
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PN: 1778600501

- 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 3/4-inch thick plywood or a 3/4-inch metal backing plate attached to studs to secure the bracket.
- 3. Ensure the wall brackets align with the brackets on the sign.
- 4. Attach the mounting brackets on each end of the sign to each other as shown below:



- 5. Use 2 5/16-18×3/4-in Phillips screws (C), and the 2 5/16 lock washers (D) through the mounting holes as shown below. Secure with the 2, 5/16-18 nuts (E).
- 6. DO NOT tighten the nuts at this time.
- 7. Match the alignment holes of the brackets on the sign with the holes of the brackets on the wall so that the sign is at the desired viewing angle.
- Fasten the mounting brackets together using the 4, 10-32×3/4-inch Phillips screws (F), the four #10 lock washers (G), and the 4 10-32 lock nuts (H) through the selected alignment holes on each end of the sign.
- 9. Tighten to 2.71 N-m (24.00 in-lbs.).



10. Tighten the two 5/16 nuts (E). See step 5 for reference. Tighten to 2.71 N-m (24 in-lbs.).



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

## Mounting Displays on a Ceiling

Sign installation must be performed by qualified personnel. Ceiling mounting brackets and fasteners are provided with the display. These brackets allow the customer to hang the sign with the appropriate braided wire or chain or rope, etc. Hardware to fasten the display to the wall or ceiling is not provided as the appropriate fasteners must be used for brick, stone, or wood etc.

NOTE	If you use the equipment in a manner not specified by Spectrum
	Controls, Inc., this may impair the protection provided by the equipment.
	The factory-applied finish must not be altered or changed.
	Mount the sign so that it is easy to disconnect power when servicing.
	Always disconnect the communications cable(s) before disconnecting power.
	Modifying the sign housing voids the warranty.

The maximum weight of the displays is 5.17 kg (11.40 lbs.) for the 2706-P42C2-SC, and 9.66 kg (21.30 lbs.) for the 2706-P44C2-SC. This is the weight of the displays only, without the attached 2706-PENETM2C2-SC Comms Module. The module, with its attached bracket adds 1.32 kg (2.6 lbs.) to the weight of the display.

#### WARNING

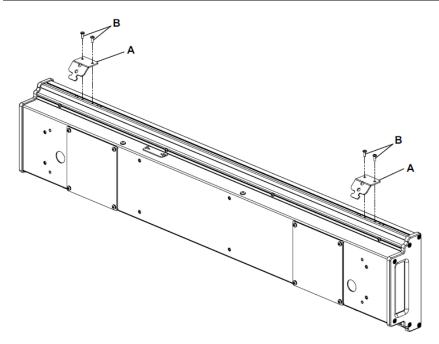


## HAZARD of injury to personnel or damage to equipment.

Be sure to place the ceiling brackets so the ceiling bracket flanges face appropriately as shown below.

Failure to place the ceiling brackets correctly will result in the sign failing to stay in place when hung from its chains.

- A indicates bracket(s).
- B indicates bracket screws.



Hardware to attach the sign to the ceiling varies based on the type of material (concrete, brick, wood) and is not included.

Installers must use the following guidelines:

- The hardware for attaching to the mounting surface must be rated for the mounting surface.
- Hardware for attaching to the mounting surface, including hanging chains, must be capable of supporting the weight of the sign.
- The display cannot be installed directly to drywall, plasterboard, or any other fragile supports.
- The ceiling, or the ceiling-mounted support system must be capable of supporting at least four times the weight of the sign.
- Attach the ceiling mounting brackets (A) to the sign using the 4 6-32×3/8-inch Phillips screws (B) as shown. Tighten to 1.3 N-m (10 in-lbs.).

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

# 2706-P4xC2 Display Language Message Formatting Codes

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

Mode					
Description	ASCII	Hex			
Rotate right	А	41			
Justification	Justification				
Description	ASCII	Hex			
Right	^^2	1E32			
Message Attributes					
Description	ASCII	Hex			
20High	^Z2	1A32			
20Fancy	^Z4	1A34			
40High	^Z<	1A3C			
40Fancy	^Z=	1A3D			
Character Color					
Description	ASCII	Hex			
RGB Color	^\Zırıggbb	1C5Arrggbb 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:

- UL 60950-1
- CSA C22.2 No. 60950-1
- EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
- IEC 60950-1:2005 + Am 1:2009 + Am 2:2013
- FCC Part 15 Class A compliance

CE compliance to:

• EMC:

EN	55032
TD T	55025

- EN 55035
- LVD:

EN 60950-1:2006+A2:2013

UKCA compliance to:

- EMC:
  - BS EN 55032:2015
  - BS EN 55035:2017
- LVD:

BS EN 62638-1:2014+AC:2015

CMIM compliance to:

- EMC:
  - NM EN 55032
  - NM EN 55035
- LVD:
  - NM EN 60950-1:2014

## Additional Resources

Resource	Description
InView Communication Module User Manual, Publication 0300289- <i>nn</i>	Provides all setup information for the InView Communications module.
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.

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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 www.spectrumcontrols.com.



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