C441 Motor Insight™ Overload Relay (120V Control Powered) Product Installation Leaflet

⚠DANGER

HAZARDOUS VOLTAGE CAN CAUSE ELECTRIC SHOCK AND BURNS. TO AVOID SHOCK HAZARD, DISCONNECT ALL POWER BEFORE ANY WORK IS PERFORMED ON THIS DEVICE. FAILURE TO DO SO WILL RESULT IN PERSONAL INJURY, DEATH OR SUBSTANTIAL PROPERTY DAMAGE

⚠AVERTISSEMENT

UNE TENSION ÉLECTRIQUE DANGEREUSE PEUT CAUSER DES CHOCS ÉLECTRIQUES ET DES BRÛLURES. POUR ÉVITER DES CHOCS ÉLECTRIQUES, DÉBRANCHER L'ALIMENTATION AVANT D'Y EFFECTUER DU TRAVAIL. L'INOBSERVATION DE CES INSTRUCTIONS ENTRAÎNERA DES BLESSURES CORPORELLES GRAVES, LA MORT OU DES DÉGÂTS MATÉRIELS SUBSTANTIELS.

Voltage Ratings

Motor Insight overload relay is powered by 120V control power between X1 - X2. This voltage range for the various models is given in the following table.

Table 1. Voltage Range

Nominal Rating	Catalog Number	Voltage
CONTROL POWER INPUT 110 - 120V	C441P3309NOUI-HVR C4410590NOUI-HVR	110 - 120 Vac; (50/60 Hz) +10% - 15%
Line Voltage	C441P3309NOUI-HVR C4410590NOUI-HVR	0 - 1200Vac

Wiring

Pass motor leads through Motor Insight overload relay CT pass through. If multiple passes of the motor leads are required, make sure that the current flow is from top to bottom through Motor Insight overload relay. If external CTs are used, pass the 5 amp secondary of the external CTs through Motor Insight overload relay internal CTs. See **Table 3A** for wrap and CT multiplier.

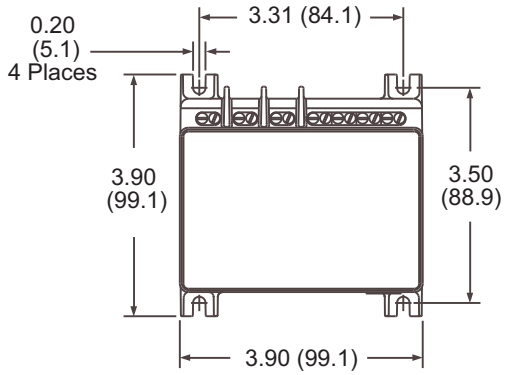


Figure 1. Mount with 10-32 Hardware Torque to 25 in-lb.

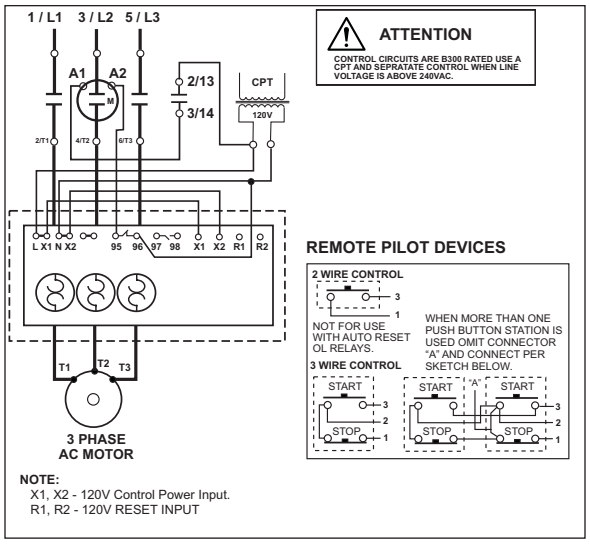


Figure 2. Typical Starter Application Sample Wiring Diagram

Motor Insight overload relay is factory set for manual reset operation. See **Table 5** for automatic reset operation.

⚠WARNING AVERTISSEMENT

AUTOMATIC RESET IS NOT INTENDED FOR TWO-WIRE CONTROL DEVICES.

CE DISPOSITIF DE REENCLENCHEMENT AUTOMATIQUE NE CONVIENT PAS AUX COMMANDES À DEUX CONDUCTEURS.

Powering Business Worldwide

Terminal Connections

Motor Insight overload relay provides the following terminal connections. NC 95/96 contact is open when the device is unenergized.

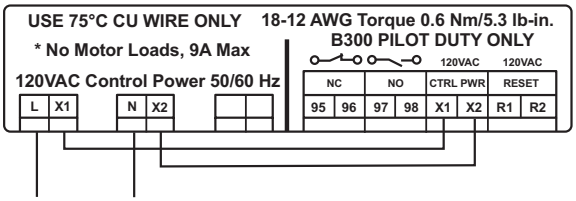


Figure 3. Terminal Connection Diagram

Table 2. Terminal Connection Specifications

Name	Designation	Input	Description
Control Power	L1, L2 L, N	93.5 - 132Vac	Voltage input - X1*, X2*, = 120V - Tie X1 to X1 - Tie X2 to X2 - Inputs should have short circuit protection - Terminal provided for wiring control power transformer (9A maximum capacity).
Fault Relay	95/96	UL® 508 B300	- 95/96 Contact opens when the unit is faulted or unpowered.
Programable Auxiliary Relay*	97/98	UL® 508 B300	-97/98 Contact closes when the unit is faulted or unpowered.
Reset Input	R1 R2	120 Vac +10%/-15%	Fault Reset Input.

* See section 6.7 of Users Manual MN04209001E for instructions to configure the programmable auxiliary relay, which changes the behavior of the relay from the default and allows for greater flexibility and alarming.

⚠CAUTION!

THE OPENING OF BRANCH-CIRCUIT PROTECTIVE DEVICE MAY BE AN INDICATION THAT A FAULT HAS BEEN INTERRUPTED. TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CURRENT-CARRYING PARTS AND OTHER COMPONENTS OF THE CONTROLLER SHOULD BE EXAMINED AND REPLACED IF DAMAGED. IF BURNOUT OF THE ELEMENT OF AN OVERLOAD RELAY OCCURS, THE COMPLETE OVERLOAD RELAY SHOULD BE REPLACED.

⚠ATTENTION

LE DÉCLENCHEMENT DU DISPOSITIF DE PROTECTION DES DÉRIVATIONS PEUT SIGNIFIER QU'UN COURANT DE DÉFAUT A ÉTÉ INTERROMPU. POUR RÉDUIRE LE RISQUE D'INCENDIE OU DE CHOC ÉLECTRIQUE, LES PIÈCES PORTEUSES DE COURANT ET LES AUTRES COMPOSANTS DE LA COMMANDE DOIVENT ÊTRE VÉRIFIÉS ET REMPLACÉS S'ILS SONT ENDOMMAGÉS. SI L'ÉLÉMENT PORTEUR DE COURANT DU RELAIS DE SURCHARGE GRILLE, LE RELAIS DE SURCHARGE ENTIER DOIT ÊTRE REMPLACÉ.

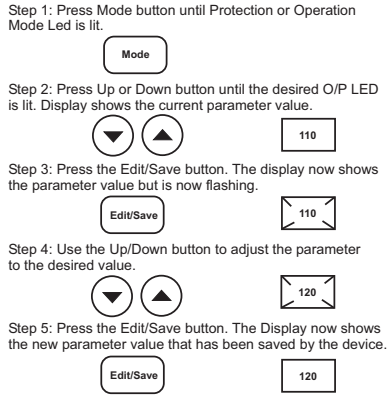
Initial Configuration

On initial power-up, Motor Insight overload relay displays a "rOF" message. This indicates that the fault relay is OFF. Configure the device for the application prior to resetting the device.

To turn the fault relay OFF, press the Trip button.

Programming Set Points

Motor Insight overload relay is easy to configure. Viewing and editing protection set points can be performed in the Protection and Operation Mode. The following steps outline the procedure for modifying any of the set points.



Configuring the Thermal Overload Protection Feature

Motor Insight overload relay features electronic motor overload protection. This feature protects the motor and power wiring against overheating caused by excessive current for extended periods of time.

The trip current is programmed by entering the motor full load amperes (FLA) using the Motor FLA parameter. The trip class (5 to 30) is set using the Trip Class parameter.

The FLA range of the overload relay can be modified with the use of multiple turns through the CTs or with the use of external CTs. Use the following tables to appropriately configure the device for the application. If the application requires the FLA range to be extended, program the CT multiplier first.

Table 3A. FLA Range

Current Range	Catalog Number	Motor FLA	Number of Conductors Through CT	CT Multiplier
.33 – 9	C441P3309NOUI-HVR	.33 - 1.5 .4 - 1.8 .5 - 2.25 .67 - 3.0 1 – 5 2 – 9 60 – 135 120 – 270 240 – 540	6 5 4 3 2 1 1 1 1	6 5 4 3 2 1 150 - (150:5) 300 - (300:5) 600 - (600:5)
5 – 90	C441059ONOUI-HVRI	5 – 22.5 6.67 – 30 10 – 45 20 – 90	4 3 2 1	4 3 2 1

Important Note: After an overload trip, Motor Insight relay cannot be reset until the thermal model decays to a thermal capacity that is thermally safe for a motor restart. Cycling the power does not reset the thermal model.

Table 3B. Service Factor FLA Setting

Service Factor	Motor FLA Setting
>1.15	Enter the motor nameplate FLA
=1.10	Enter the FLA as (1.1* nameplate FLA/1.15)

Fault Codes

After a trip, Motor Insight overload relay will indicate the Trip reason with a Fault Code on the display and by illuminating the appropriate Protection/Operation (P/O) LEDs.

Table 6. Fault Codes

Fault	Code	User Interface			Notes
		Mode LED	P/O LED	Display	
Number of Restarts Exceeded	1	Operation	Fault Reset Tries & Load Reset Tries	rEt	Could result from excessive motor or load faults.
Remote Off	2	None	None	rOF	Relay turned off (network or UI).
Contactor Failure	3	Protection	Current Unbalance %	F.03	Voltage and current phase loss.
Low Power (kW)	15	Protection	Low Power (kW)	F.04	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
Motor Overload	5	Operation	Trip Class	F.05	
Ground Fault	6	Protection	Ground Fault (A)	F.06	
Current Unbalance	7	Protection	Current Unbalance %	F.07	
Current Phase Loss	8	Protection	Current Unbalance %	F.08	Current phase loss without voltage phase loss.
Reserved	9				
High Power (kW)	10	Protection	High Power (kW)	F.10	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
Overvoltage	11	Protection	Overvoltage (V)	F.11	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
Undervoltage	12	Protection	Undervoltage (V)	F.12	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
Voltage Unbalance	13	Protection	Voltage Unbalance %	F.13	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
Jam	14	Protection	Jam Trip %	F.14	
Under Current	4	Protection	Under Current %	F.15	
Phase Rotation	16	Protection	Phase Rotation	F.16	
Other					Consult User Manual.

Display Messages

The following display messages may appear on Motor Insight overload relay user interface to indicate status.

Table 7. Display Messages

Message	Description
rOF	The relay has been turned off.
rSt	The Restart Delay is timing down. Caution — an auto-reset attempt is pending.
rEt	The number of auto-resets attempts has been exceeded. A manual reset is required.
ub	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
HI	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
LO	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
1PH	Only for applications between 120V - 660V are these settings applicable. Reference USER Manual MN04209001E for configuration.
gnd	A ground fault condition has been detected. This message will flash with the displayed parameter in the alarm-no-trip mode.
OFF	The protection parameter is disabled.
999	The display parameter exceeds the display range.

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