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Every Supra is fitted with our new



or the Built-In Optimizer for your convenience!

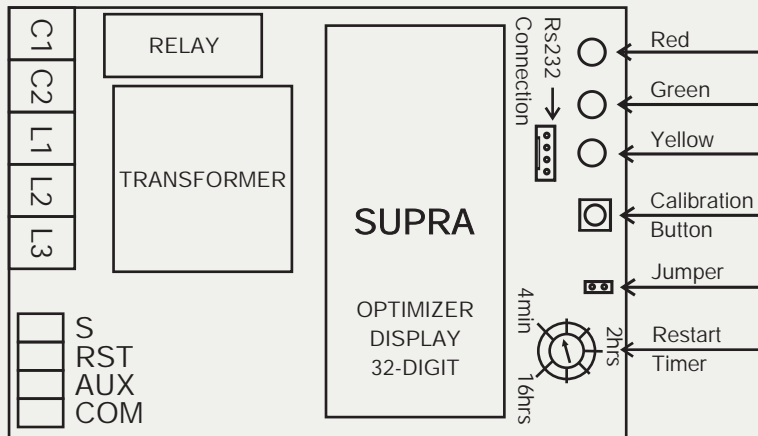
\* Specify which one when placing your order!



**PROTECTION**

OVER- and UNDER-LOAD • OVER- and UNDERVOLTAGE  
PHASE FAILURE • PHASE SEQUENCE CHANGES • PHASE IMBALANCE  
OVERHEATING (Uncontrolled Starts) • CAN'T CALIBRATE IN OVERLOAD

**PHYSICAL LAYOUT**



**MOTORSCOPE®**  
THE RELIABLE ELECTRIC MOTOR GUARD

**SUPRA**

THREE PHASE / UP TO 37KW / 400V

[www.nistcontrol.com](http://www.nistcontrol.com)

**GENERAL INFORMATION**

The power used by a working system varies with the application but must stay within safe limits. Power consumption outside of this range indicates a faulty motor or system. The load or power consumption is measured at the input to the motor. When the calibration button is pressed, with the jumper in place, the MOTORSCOPE defines the safe range for the system. The motor must, at that time, run under normal working conditions. The power supply has to be correct and stable, this is checked continuously.

The MOTORSCOPE keeps the motor running as long as the safe limits are not exceeded. The MOTORSCOPE has a RS232 output for serial communication with our OPTIMIZER or a PC. The OPTIMIZER is used to improve settings, as an installation aid and for more detailed fault indication. The OPTIMIZER can carry the data of the last 43 motor stops to be transferred to a PC or laptop.

**DO NOT MOUNT THE UNIT IN FULL SUN!!**

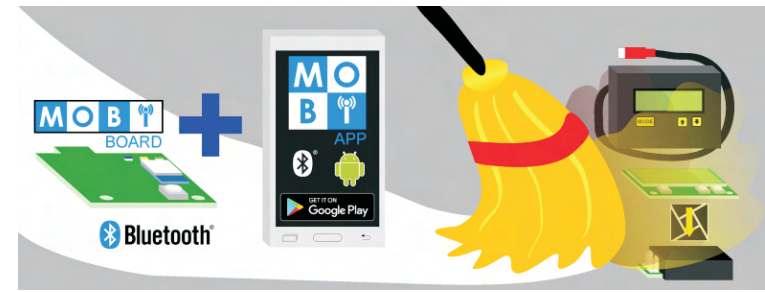
**TECHNICAL SPECS**

MOTOR VOLTAGE : L1- L2- L3 = 400V / 525V  
CURRENT RANGE : Up to 15 Amp x CT Ratio  
POWER RANGE : 1 - 37kW  
FREQUENCY RANGE : 40 - 70 Hz  
CONSUMPTION : 3VA  
RELAY OUTPUT : 400V -16A  
COS PHI RANGE : 0 - 1 Inductive  
TEMP RANGE : -15 to +70° C  
MECHANICAL : Weight ±500g  
DIMENSIONS : 85 x 130 x 50mm

**CT RESISTOR TABLE**

Current Range	Resistor Value	CT Ratio
1 - 12 Amp	= 32 Ohm	= 1
1 - 24 Amp	= 16 Ohm	= 2
12 - 48 Amp	= 8 Ohm	= 4
24 - 96 Amp	= 4 Ohm	= 8
48 - 192 Amp	= 2 Ohm	= 16

Scan This QR Code To Be Directed To Our YouTube Channel To View A Full Demo Video Or Short Tutorial Videos



The combination of the Mobi App and Mobi Board replaces the Optimizer, Downloader and Downloader Windows program.

The Mobi App (for Android™) acts as a Graphical User Interface to the the Mobi Board. The Mobi Board provides a Bluetooth® wireless interface to Motorscope® Products.

**HOW TO DOWNLOAD THE APP:**

1. Use your Smart Device and go to the App Store / Google Play.
2. Search for "Nist MOBI"
3. Choose Install -> Accept -> Open  
(The Mobi App will open. Choose the Motorscope you wish to view.)
4. All variables will be visible.



Alternatively, scan the appropriate QR code:



**HOW TO USE THE APP:**

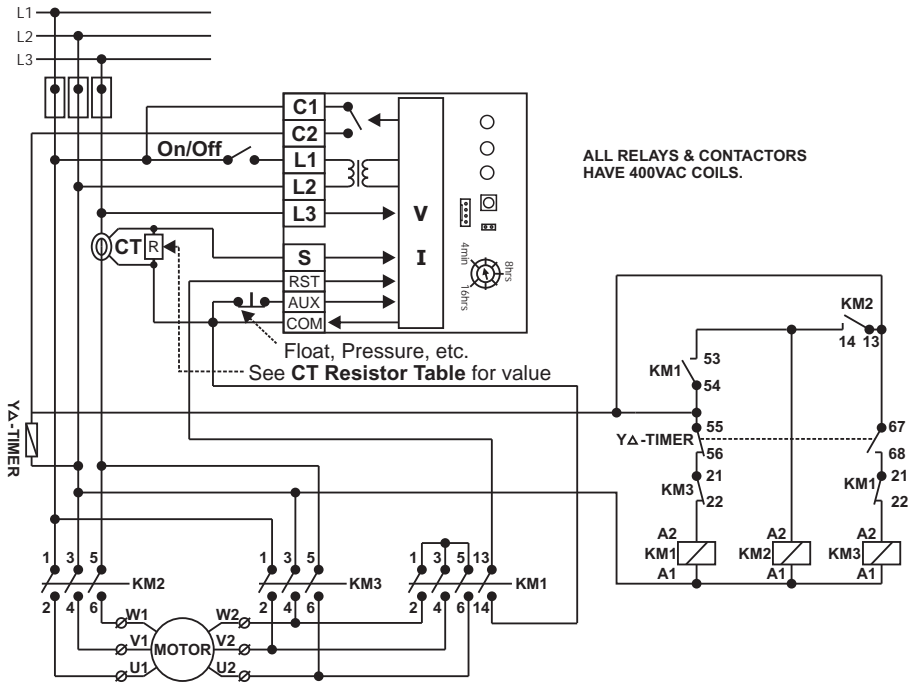
2. Tap on ≡ at the top left corner and choose "Tutorial".

**CALIBRATION WITH MOBI BOARD:**

**ALWAYS START WITH STEPS 1+2, EVEN WHEN ALREADY UNCALIBRATED**

1. With the Motorscope switched OFF, make sure the jumper is connected on both pins.
2. Hold in Calibration Button while switching the Motorscope ON. All three LED's must come ON. (Meaning UNCALIBRATED).
3. Connect with the Mobi App to the Motorscope.
4. The Mobi App will show "Uncalibrated".
5. Press "Calibrate" to follow the Calibration Wizard.

## STAR/DELTA AUTOMATIC CONTROL

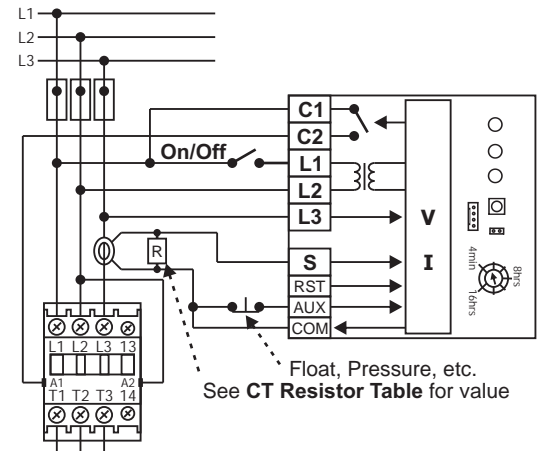


## INSTALLATION INSTRUCTIONS

1. Connect the incoming power (L1, L2 and L3) and C1, C2 and S to the Supra as indicated on the applicable diagram below.
2. Connect the outgoing power to the motor as per diagram (Contactor output).
3. When all connections are properly fastened, proceed with the First Time Calibration.

## CONNECTION DIAGRAMS

### Direct On Line



IF ANY ERRORS  
OCCURRED DURING  
START-UP, SEE THE  
POSSIBLE  
EXPLANATIONS  
AT THE BOTTOM.

## POSSIBLE ERRORS AT FIRST TIME CALIBRATION

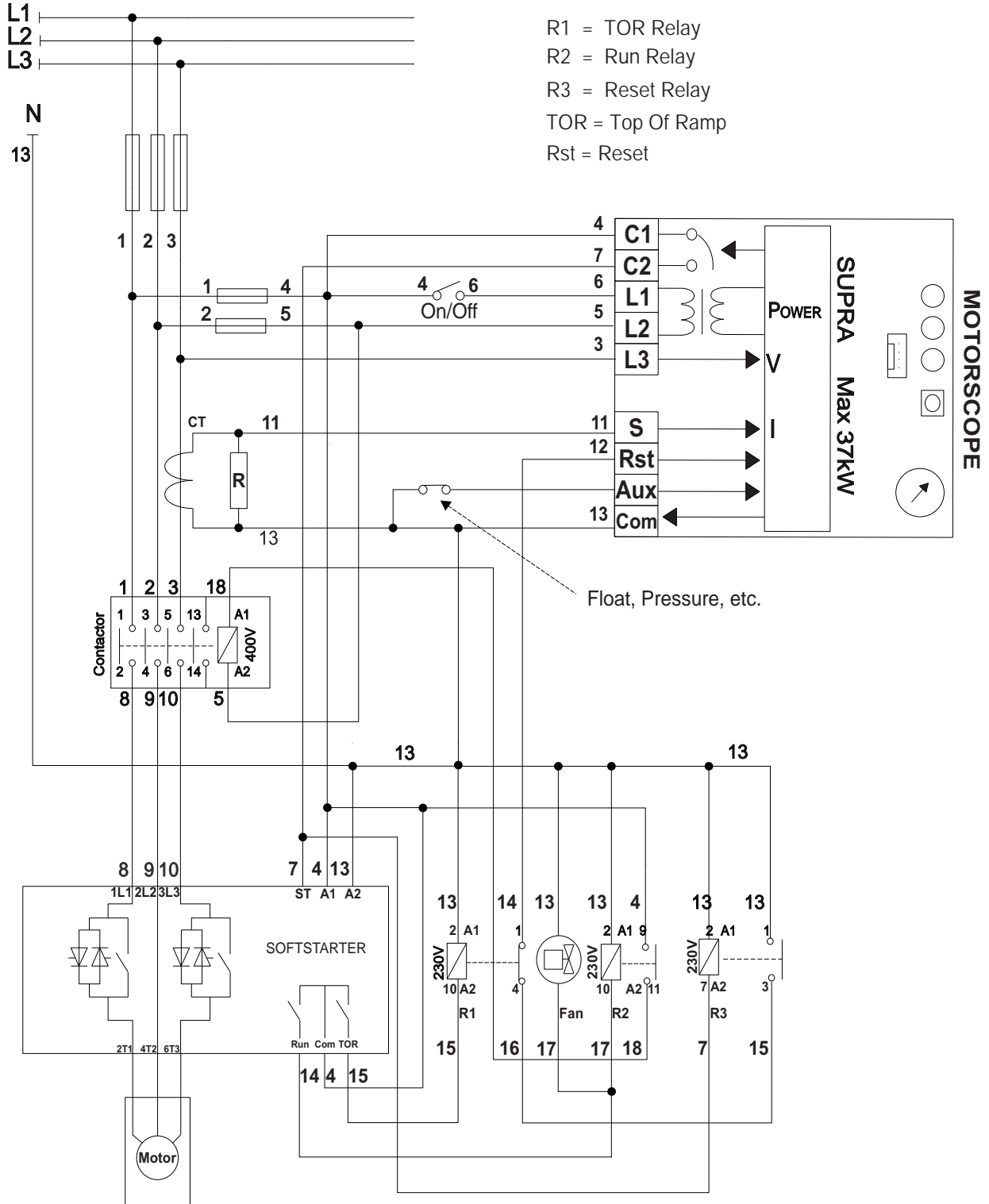
○ LIGHT OFF ✱ LIGHT FLASHING

NOTE: Start fault finding by checking that all wires and compressed copper connections are properly connected, and that the motor is calibrated at it's normal running condition.

LED Indications	Reason	Possible cause	Solution
✱ ✱ ○	Red & Yellow light flashing	Voltage fault (When the supply voltage recovers and stays within the safe limits for 15 min, normal operation resumes.)	Supply voltage incorrect Connect Earth ( ) to COM. Phone your power supply company.
○ ✱ ○	Yellow light flashing	Underload / Restart Timer	Borehole dry Broken belt/shaft Set restart-timer for borehole to refill. Contact your motor's supplier.
● ✱ ○	Red constant & Yellow flashing	Current Fault	Over Current Current exceeds the safe limit.
○ ✱ ✱	Yellow & Green light flashing	Start Delay	Too rapid restart Leave on, unit restarts automatically.
● ● ○	Red & Yellow constant	Phase rotation error	2 Phase wires interchanged Check motor rotation Interchange 2 phase wires at input power connector. Interchange 2 motor leads at output from contactor.
● ○ ○	Red constant	Overload	Low voltage at motor Overload Use a larger diameter cable to motor Check system or contact supplier.
○ ● ○	Yellow constant	Underload	Borehole dry Broken belt/shaft Set restart-timer for borehole to refill. Contact your motor's supplier.
	CT in incorrect phase	Wiring error	Check that CT is connected in L3.

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SUPRA & SOFTSTART/SOFTSTOP



- R1 = TOR Relay
- R2 = Run Relay
- R3 = Reset Relay
- TOR = Top Of Ramp
- Rst = Reset