B110

THREE PHASE

Up to 137kW | 400V ; 525V ; 1000V

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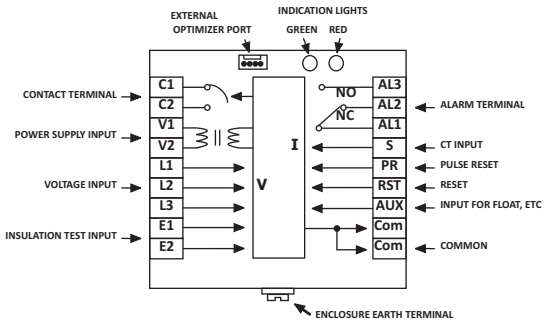
MOTORSCOPE®
THE RELIABLE ELECTRIC MOTOR GUARD

B110 MOTORSCOPE
With Built-In OPTIMIZER



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. With calibration 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.** A software package can be purchased to view this data. **DO NOT MOUNT THE UNIT IN FULL SUN.**

TECHNICAL SPECS

CONTROL VOLTAGE	V1-V2=110V; 230V; 400V; 525V ***Depending in the on-board transformer ordered.**
MOTOR VOLTAGE	L1-L2-L3=415V; 525V 1000V ***Depending on fitted controller. (1000V requires a voltage converter).**
POWER RANGE	1-80KW (415V) - 1 - 120KW (525V) ***For bigger motors a CT with a greater ratio must be used (Ex.500:1)**
FREQUENCY RANGE	40-70Hz
CONSUMTION	3 VA
RELAY OUTPUT	415V - 16A 525V-5A
ALARM OUTPUT	230V - 8A
COS PHI RANGE	0-1 Inductive
TEMP RANGE	-15 to 70°C
MECHANICAL	Weight: 1kg
DIMENSIONS	125 x 120 x 80 (LxBxH)
RESISTOR & CT	See Resistor & CT Ratio Values Column.

RESISTOR & CT RATIO VALUES

External CT: 250:1 2.5VA (22mm Inside Ø)

Current Range	Resistor over CT	CT Ratio
1-12A	32Ω	1
10-24A	16Ω	2
20-48A	8Ω	4
40-96A	4Ω	8
90-170A	2Ω	16

If the Amps are more than 170A, please use a C.T. with a ratio of 500:1.

SAFETY

The **MOTORSCOPE B110** and the enclosed Insulation Test Box, forms an integrated insulation test module. Each time before startup, the motor's leads are tested for earth-leakage currents. In the event that the leakage current is too high, the controller will not start the motor.

OTHER FEATURES

The **MOTORSCOPE B110** also sports the following features:

Alarm Relay:
To switch an alarm ON in error conditions.
Reset and Pulse Reset
Recovery Timer:
This timer can be adjusted to set the underload auto-restart time between 4 minutes & 16 hours.
Auxiliary Inhibit:
This input may be used to remotely switch the controller ON/OFF.
Real Time Clock:
This feature enables the storage of the exact time of the last 43 trips of accurate logging purposes.

PROTECTION

- **OVER- and UNDER-LOAD**
- **OVER- and UNDERVOLTAGE**
- **PHASE FAILURE**
- **PHASE SEQUENCE CHANGES**
- **PHASE IMBALANCE**
- **OVERHEATING (UNCONTROLLED STARTS)**
- **CAN'T CALIBRATE IN OVERLOAD**

OPTIMIZATION

The **MOTORSCOPE B110** features a complete integrated OPTIMIZER with a 32 character dot-matrix display. The OPTIMIZER is a tool which is used to display or alter various settings of the MOTORSCOPE B110 controller. Refer to the included OPTIMIZER's user manual.

CALIBRATION INSTRUCTIONS

1 Megger the motor & measure the winding resistances of the motor.

Only do steps 2 - 4 if not uncallibrated & B110 in a trip condition.

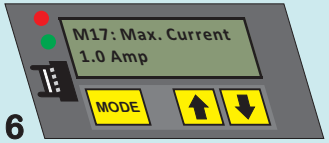
2 Go to Mode 0.
In Mode 0, press ↑ to ENABLE.

3 Press MODE + ↑ to Mode 22.
Press ↑ to select

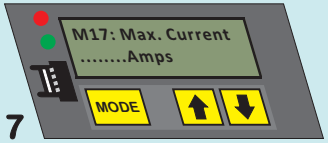
4 Screen displays:

5 Press MODE + ↓ to Mode 0.
Press ↑ to select ENABLED.

6 Display shows: M17: Max Current
1.0 Amps

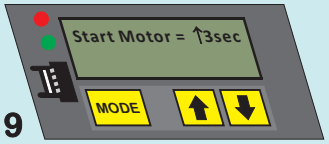


7 Press ↑ button to set max amps allowed for motor. *Max amps +10%*

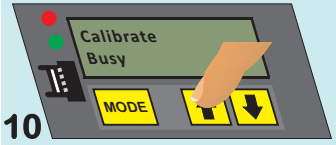


8 To save: Press MODE + ↑ to Mode 0.

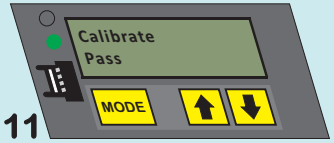
9 Press ↑ for 3 seconds to start.



10 Screen displays:

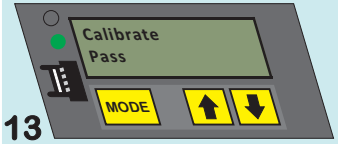


11 B110 is set & pump running.



12 After 2 minutes:
Press MODE + ↑ to Mode 22.

13 Screen displays:



14 Measure the motor current in ALL phases to see if it is within specifications.
If it is not within specifications, **switch the power off**. Then contact your supplier or our technical department.

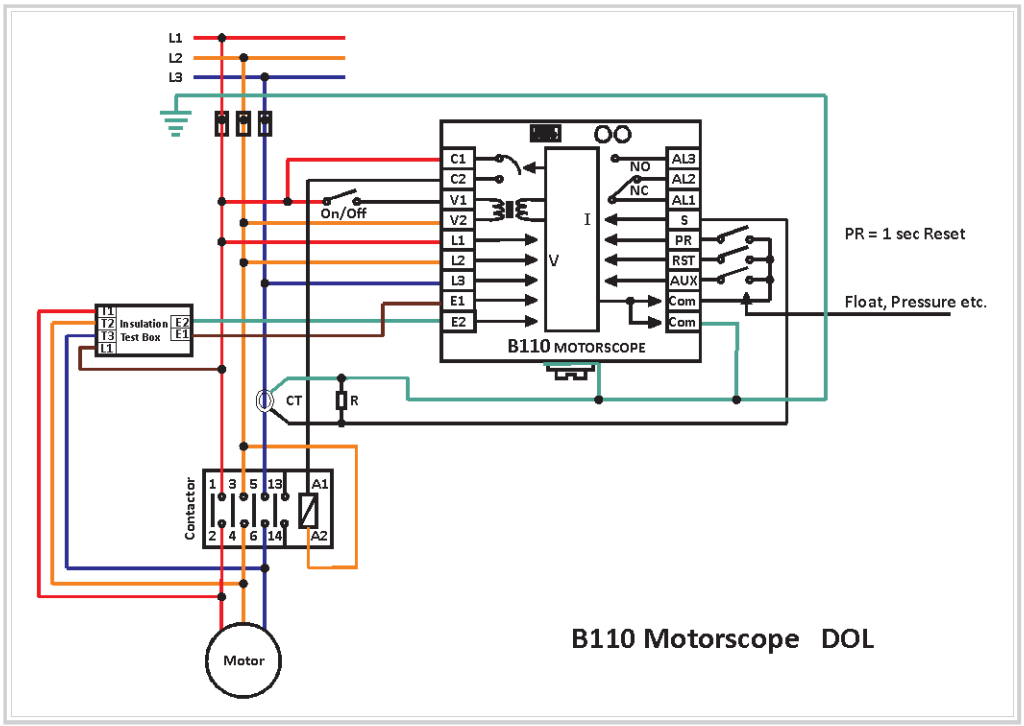
HOW TO SET ANY OF THE PROGRAMMABLE MODES

1.	Mode 0 : Press ↑ to ENABLED.
2.	Move to the desired Mode that you wish to change by pressing MODE and ↑ / ↓.
3.	Press ONLY ↑ or ↓ to change the value inside that mode.
4.	To store values, press MODE and ↓ to Mode 0.
5.	Press ONLY ↑ for 3 seconds to program new value.

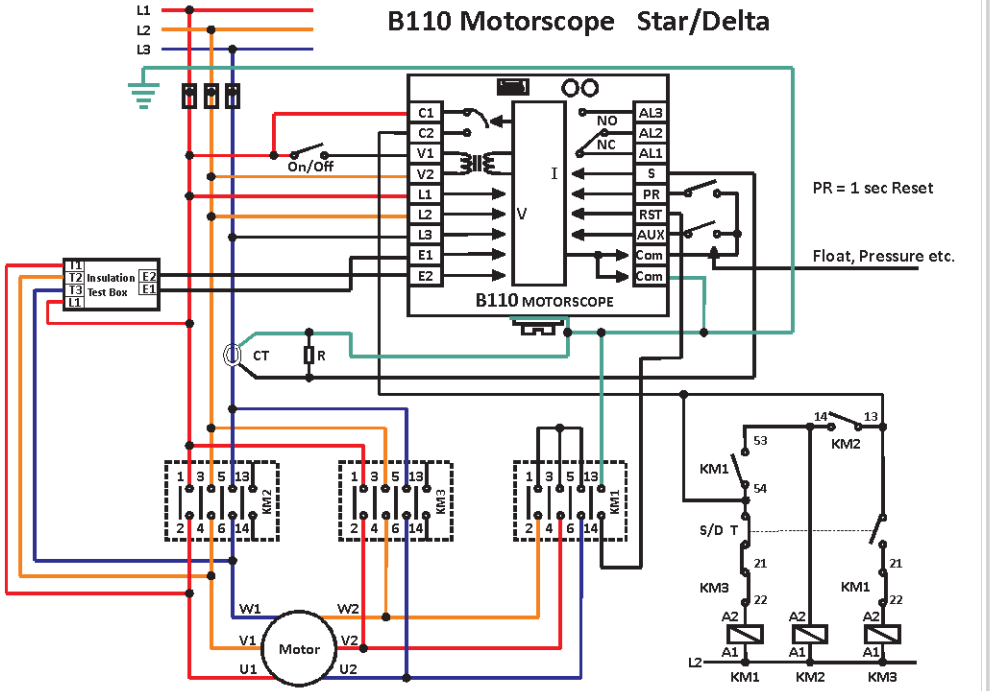
ADVANCED SETUP

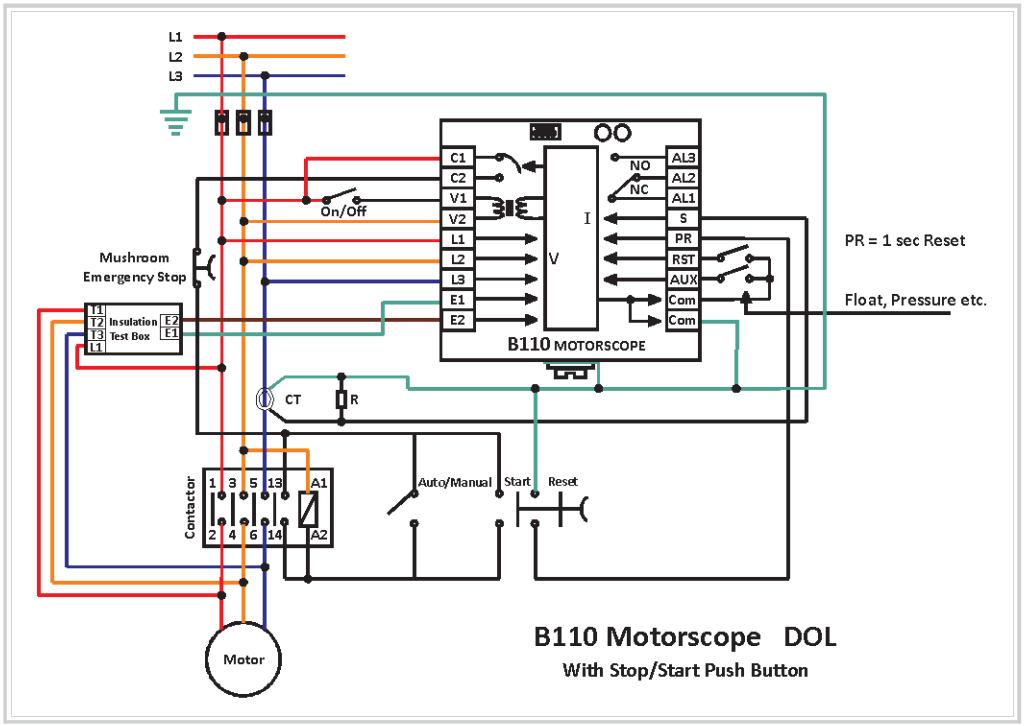
1.	Before continuing, first do the BASIC SETUP on the first page.
2.	To improve on the settings, the following modes are programmable:

M23	Date & Time
M21	Pwr L.Limit (Low Limit) or Dry run limit.
M20	Pwr H.Limit (High Limit) or Overload limit on Watts.
M17	Max. Current (Max. Amps).
M16	Trip Data (Download & Trip Data Display).
M15	Min Ph.Angle (Overload on Min Phase Angle). See Mode 6 for real time Phase Angle.
M14	U/L Allow T. (Underload Allow timer) or (Seconds allowed for RUN DRY).
M13	O/L Allow T. Overload Allow timer) or (Seconds allowed for OVERLOAD).
M12	Startup.Tmr (Default 3s startup) or (Yp to 9s for Star/Delta, Soft Start application).
M11	U/L Timer (Underload Timer) or (Setable H: min before switch on after an Underload/Dry Run
M10	CT Ratio (Current multiplication Ratio).
M9	AUX type (Auxiliary Input can be set to react on a normally closed/normally open contact - Potential Free).
M8	Delay Timer (Prevents overheating from too many starts). Press ↑ + ↓ together to disable or enable. 4 Trips @ 4 x CT Ratio (Time). This counts down while the motor is running or stationary. Programmable (Enabled/Disabled).
M0	Programming Enabled/Disabled.
NEW M24	Password. Press ↑ or ↓ to change. (Disabled by Default) The password is a binary code from 0 - 15 stated in 1's and 0's. For Example: Optimizer Code = 10 Password = 1 0 1 0 1 0 1 0 = 10 $2^0 = 1$ $2^1 = 2$ $2^2 = 4$ $2^3 = 8$ 2^3 2^2 2^1 2^0 8 4 2 1 x x x x 1 0 1 0 → This is the password to enter into the Optimizer. 8 + 0 + 2 + 0 = 10 The Optimizer states: Code = 3 Put in the password 0 0 1 1



B110 Motorscope DOL





B110 Motorscope DOL

With Stop/Start Push Button

CAN ALSO BE USED ON WITH A SOFT STARTER!
SEE DIAGRAM ON THE NEXT PAGE.

NOTES

C.T. RATIO _____

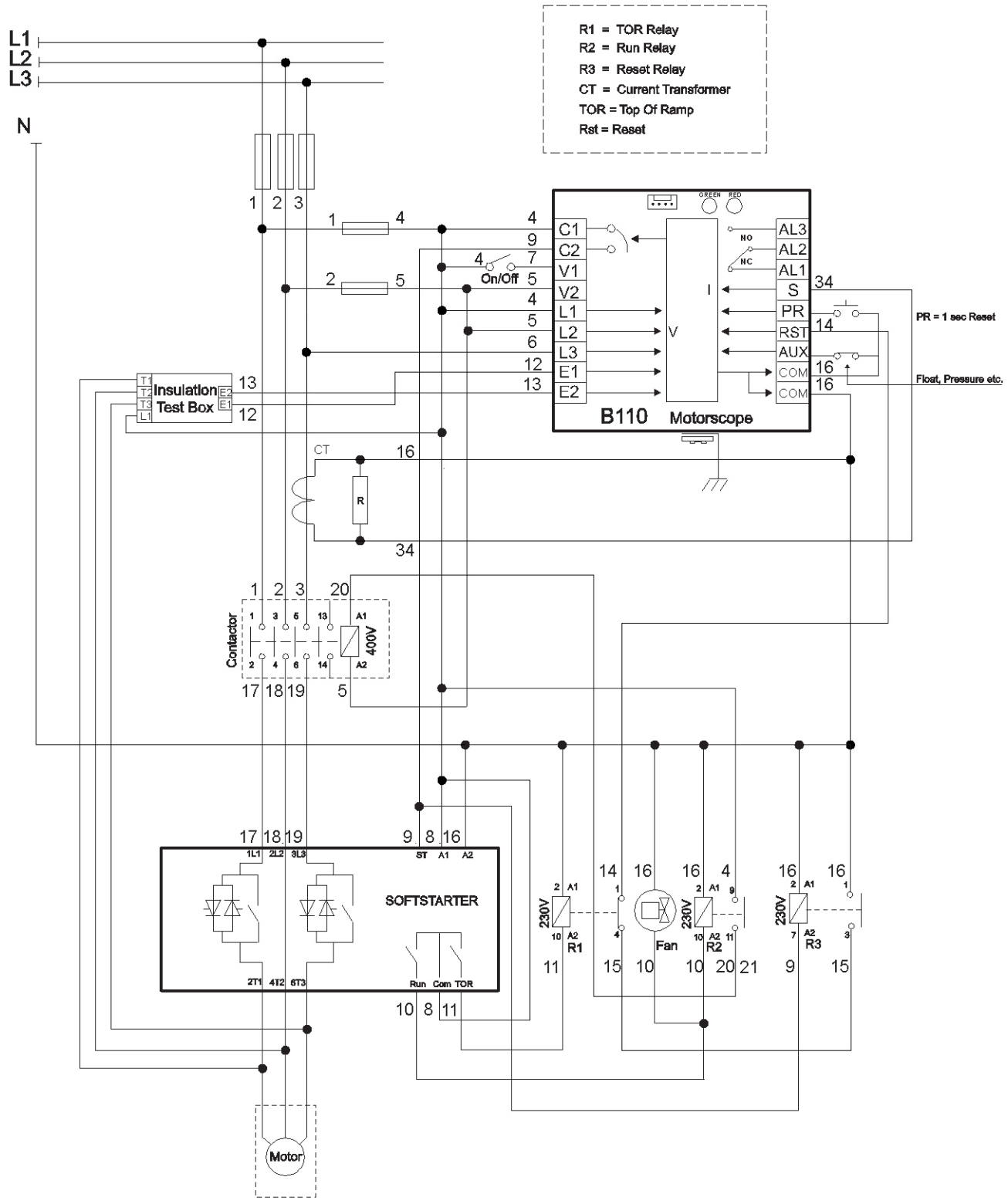
HI LIMIT _____

LOW LIMIT _____

PHI (PHASE ANGLE) _____

GENERAL _____

SOFTSTART & SOFTSTOP DIAGRAM



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