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# **Autotech Controls M1950 Base Unit Instruction & Operation Manual**

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# 1. Introduction

Autotech's Model 1950 "integrates with intelligence" to provide an incredibly powerful functional unit that can be further customized with module additions including:

- I<sup>2</sup> • PLS™
- Die Protection
- Tonnage

The PLS, Die Protect, or Tonnage modules (detailed in separate manuals) may be plugged into any of the five back panel slots. Each PLS module can handle 16 outputs, the Die Protect Module provides 8 inputs, and the Tonnage Module can handle 4 sensors in any slot.

Because of the power of six microprocessors, the M1950 can perform six logical independent tasks, yet work in unison.

The M1950 sets a new milestone for user interface with:

- 2 line by 20 character LCD display
- 4-digit LED position display for most commonly used parameters such as position and RPM
- 20-key keypad with "hot keys" for quick access or programming while retaining Autotech's popular 5-key programming feature
- 100 Programs or set-ups
- 100-280 microsecond scan time
- Optical I/O isolation
- Short-circuit proof resolver with broken wire detection and self diagnostics
- Menu driven programming with simple English messages

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## 2. Specifications

### **Electrical/Mechanical Specifications**

Maximum Input Power .....	105-135 VAC, 50/60 Hz, 40 W
Operating Temperature .....	-10 to 130° F (-23 to 55° C)
Dimensions .....	(See dimensions on page 5)

### **Resolver Interface**

Position Transducer .....	Resolver, Autotech's Series RL100,E7R (2.5" dia. x 3.87" long, 3/8 shaft), or equivalent
Maximum Cable Length between Resolver and M1950 .....	2500 feet max, foil shielded, Autotech's CBL-10T22-xxxx, or equivalent
Maximum Resolver Shaft Speed .....	800 RPM

### **System Specifications**

Inputs .....	Supervisory, Brake Input and Brake Reset Inputs: Optically Isolated TRUE: Contact closure to VS- (common) FALSE: Open circuit
Outputs .....	Optically Isolated, N Type: Open collector, (P type optional) Sink Transistor; V-Max=50 VDC; Logic TRUE: Transistor ON, 1.1 V @ 100 mA; Logic FALSE: Transistor OFF, 0.1 mA; Leakage @ 50V

Fault output .....	Fail-safe output remains energized if there is no broken resolver wire and no internal processor faults.
Maximum Number of Modules per M1950 .....	5 total, per M1950
Motion Detector .....	Low motion limit up to 998 RPM, High Motion Limit up to 999 RPM Energizes when resolver RPM is between low and high limits
Brake Wear Monitor: .....	Fail Safe, Normally energized,
Danger Output .....	De-energizes when press stopping time (0-9.99 sec) exceeds programmed danger limit.
Caution Output .....	Energized when stopping time exceeds Caution Limit.
Brake Input .....	Brake timing starts when input becomes TRUE (Contact closure to Vs- (common)

### 3. Installation and Wiring

#### ***Necessary Equipment***

1. **M1950** — with mounting hardware
2. **Single Turn Resolver** — Autotech's RL100 Series, E7R or comparable resolver is recommended
3. **Resolver Interface Cable** — Autotech CBL-10T22-XXXXX cable, maximum length of 2500 feet is recommended.
3. **Output Cables** — 22 AWG with common shield
4. **Power Supply** — 11-30 VDC. Current consumption depends on the options used.

#### ***Single-Turn Resolver Mounting and Wiring***

Resolver wiring must be done as follows:

1. Use a twisted pairs cable with an overall foil shield. Strip the shielded cable 4" to 6". The twisted pairs must be wired per the specific resolver used in your application.

2. It is recommended that the shielded resolver cable be routed in its own conduit or cable tray. Make sure that the unshielded portion of the resolver wires is kept to a minimum and the shield is not touching anything else.
3. All shielded resolver cable must be kept a minimum distance of 2 inches from all motor wiring controlled by AC or DC drives.
4. All ground planes (chassis grounds) in the total system must be held to the same RF potential by good metallic connections to building frames, conduit or wiring trays.
5. The shield drain wires must be terminated by connecting to chassis ground at each end (and not connected to signal reference at any point in the system).
6. If the resolver is to be axially shaft driven, ensure that the shafts are aligned. Misaligned shafts can destroy resolver bearings.
7. If a pulley, coupling or sprocket is mounted to the resolver shaft, DO NOT hammer or press on the

shaft. DO NOT force-fit anything onto or off of the resolver shaft.

8. If the resolver is belt-driven or chain-driven, do not over tighten the drive belt or chain. Too much side loading (Radial) can destroy the resolver bearings.
9. The up-down direction of the resolver count (i.e., CW vs CCW rotation producing increasing count) can be reversed by switching the S1 and S3 wires on the resolver input terminal block.

### ***Autotech Resolver Mounting***

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Autotech resolvers are designed to operate reliably under extremely hostile environments such as continuous mechanical shock, vibration, extreme temperature and humidity changes, oil mist, coolant and solvents. Still, ordinary precautions should be taken to prevent damage to bearings of any rotation device to prolong their life.

1. It is recommended that the Autotech encoder mounting bracket (MMB-EN359-010) be used, wherever possible, for size 40 or 25 resolvers.
2. To maintain the NEMA 13 rating of the resolver, the following precautions must be taken:
  - Sealing compound must be used when fitting the conduit pipe.
  - The bearing seal must be checked once every six months and replaced if necessary. Lubricating the bearing seal periodically prolongs its life.

**Illustrations 2, 3 and 4** show resolver mountings.

### ***Grounding Essentials***

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Grounding is essential to the operation of the M1950. Follow the shielding and grounding techniques as shown in **Illustration 5**.

- Paint should be scraped from the surface around the mounting holes on BOTH the M1950 and the enclosure.
- A star washer should be used with the mounting bolt to ensure a good electrical connection between the M1950 chassis and the enclosure.
- The enclosure itself must have a GOOD EARTH GROUND CONNECTION. Even though metal conduits are excellent

conductors, they cannot be relied upon because of poor electrical connection at their termination points. Therefore, a separate #8 or thicker ground wire is essential. Earth ground is recognized as the central building ground for all electrical equipment and AC power (as defined in the National Electrical Code)

It is always a good idea to "ohm out" the grounding prior to finishing the installation.

### ***Wiring and Power Connections***

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**Illustrations 6 and 7** show the module insertion and wiring terminal connections for all optional modules of the M1950. Terminal wiring for the Main Terminal is shown in **Illustration 8**. The following basic guidelines should be followed before attempting to wire the M1950.

1. No special tools are required for wiring input or output devices to the M1950. Screw clamp terminal connectors eliminate the need for wire lugs.
2. The 120 VAC input power neutral must be connected to terminal L1. Earth ground must be properly connected to the GND screw.
3. When the M1950 is mounted in an enclosure or a control panel, use separate conduit entrances for low voltage and 120 VAC wiring.

### ***Heat Considerations***

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The enclosure for the M1950 should be at least 14" deep and have a minimum of 4" clearance on all sides. No heat producing control or hardware should be mounted directly underneath the M1950.

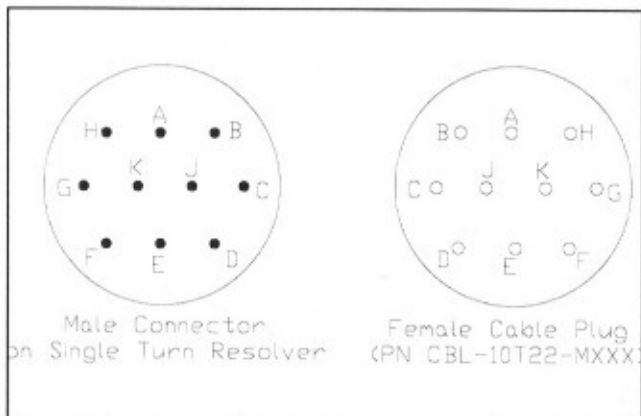
### ***Noise Considerations***

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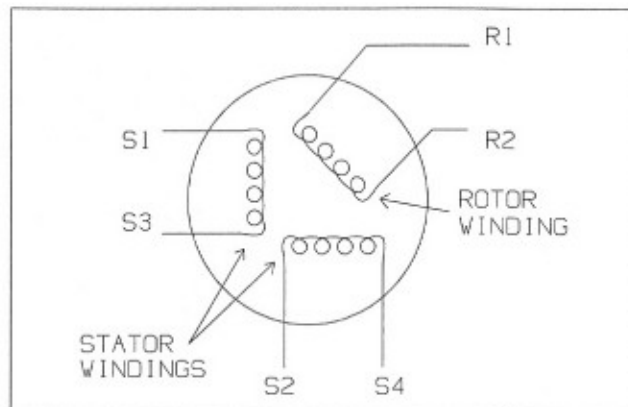
All motor starters, contactors or any other inductive or noise generating devices should be mounted in either a separate control panel or in a separate section of the M1950 enclosure, at least 12" away.

## Front Panel Mounting

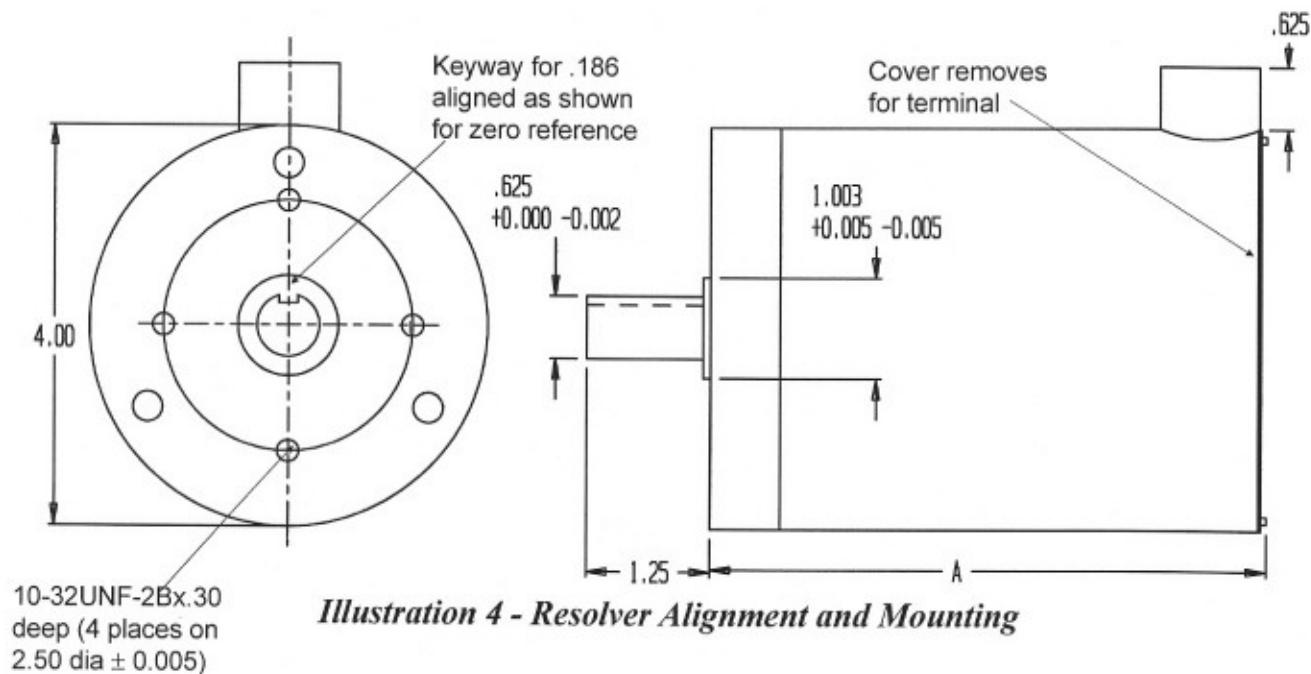
The M1950 is Front Panel Mounted using four 10-32 screws provided for installation. The unit should be mounted in the customer's control panel close to the other existing controls. **Illustration 7** provides dimensions for drilling mounting holes.



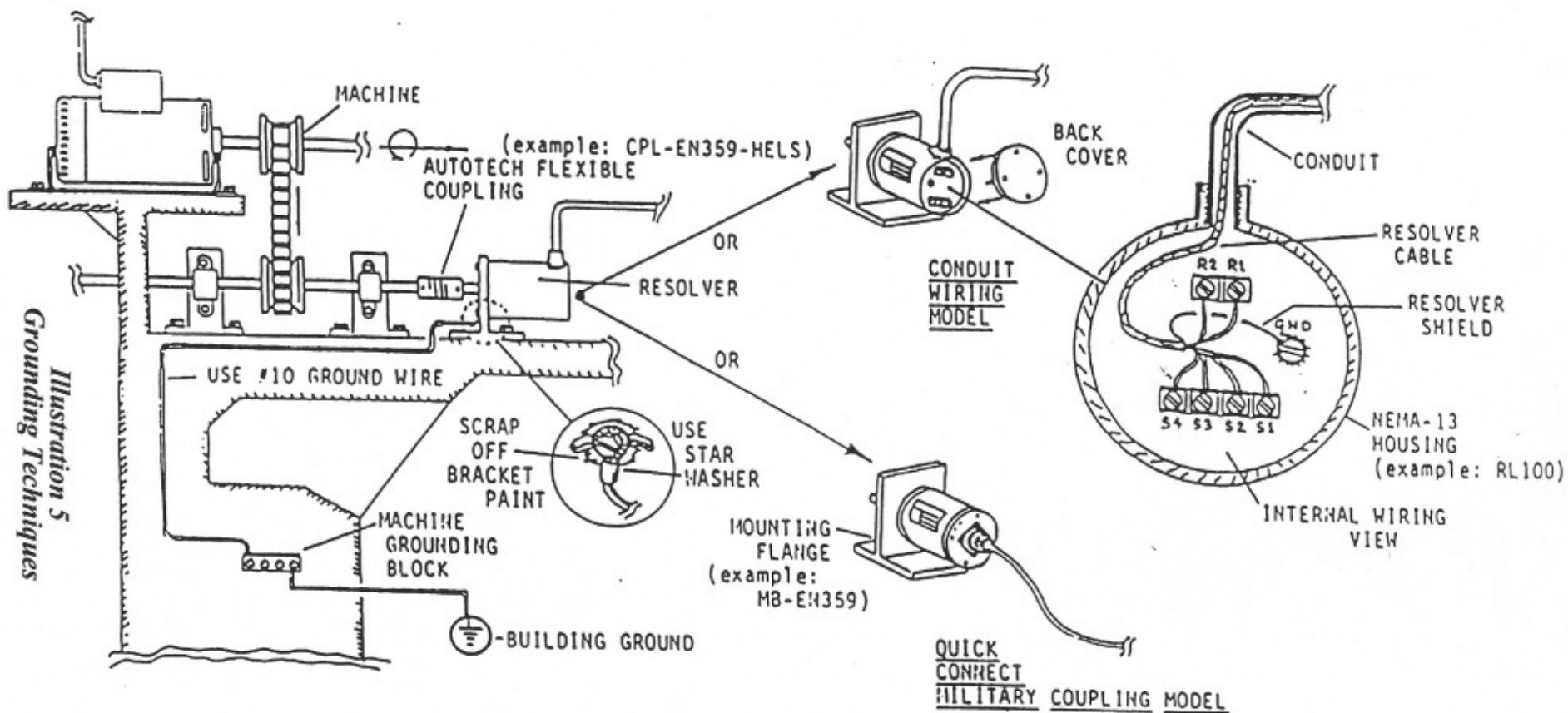
**Illustration 2 -  
Autotech Resolver Connections**



**Illustration 3  
Resolver Windings**



**Illustration 4 - Resolver Alignment and Mounting**



(all connections and grounding automatically made when the connector locks onto the resolver)

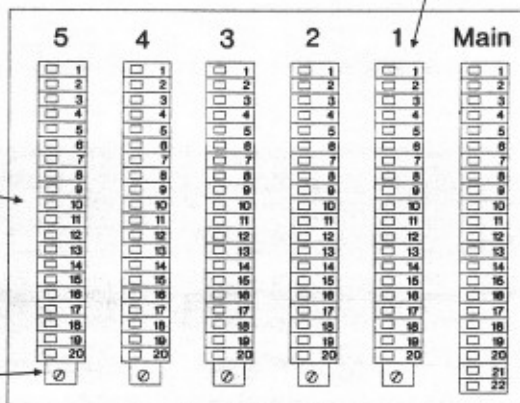
## Module Insertion In Rear of M1950

Special Modules may be installed in any Slot (1 through 5):  
 PLS (maximum of 3)  
 Tonnage (maximum of 2)  
 Die Protection (maximum of 3)

Slot Numbers:  
 Modules may be placed in any of the slots. Module Numbers are used during Module Selection in the programming mode.

Modules should be inserted in to the slots with the mounting screw on the bottom.

Mounting Screw

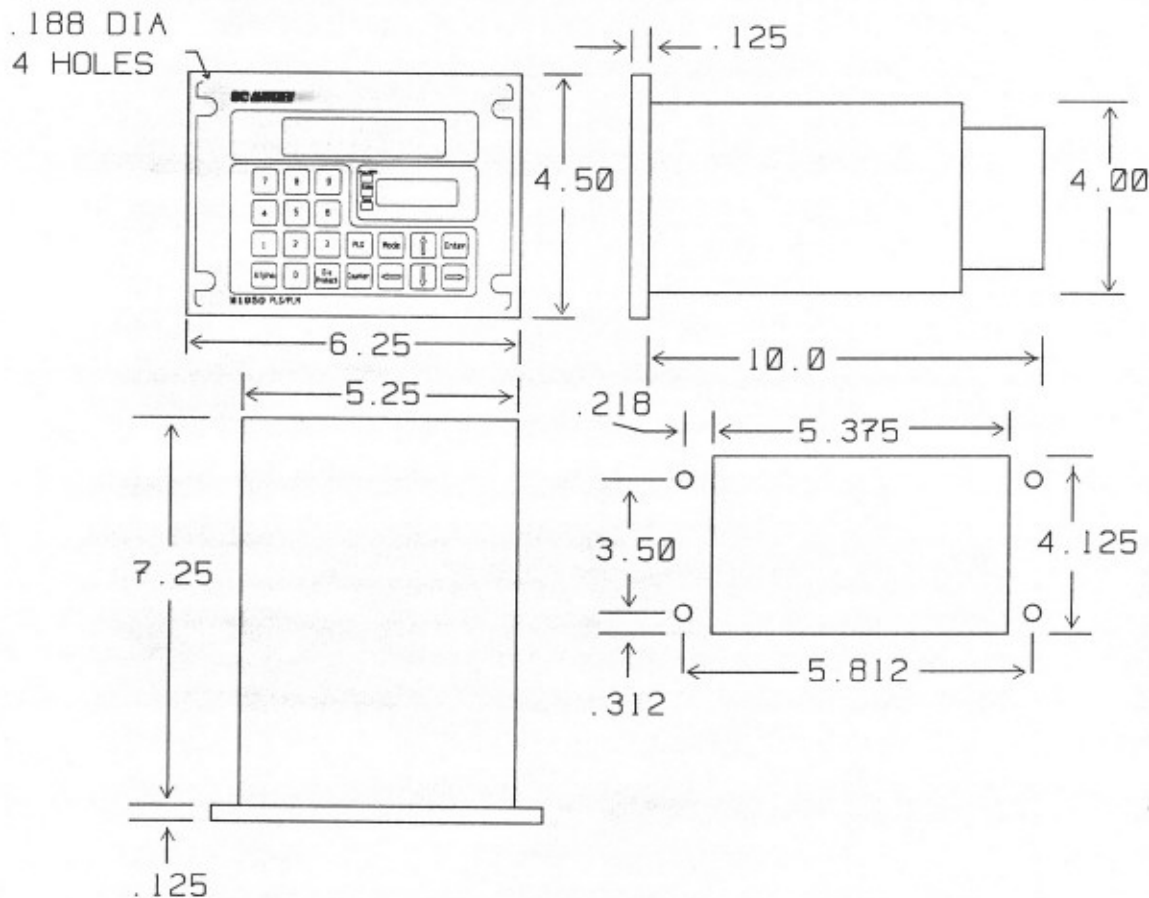


Main Terminal Block  
 • 22 Terminals on M1950  
 • AC power, Resolver, Program Enable, Supervisor Input, Brake Input and Output, Motion and Fault Outputs are wired to Main Terminal Block

**Illustration 6**  
**Rear Module Insertion**

NOTE: This illustration refers to the terminals on the modules and not the connectors on the motherboard.

## M1950 Mounting Dimensions





## Main Terminal Block Connections

Refer to **Illustration 8** to wire the Main Terminal Connections.

Main Terminal #	Designation	Function/Description
1	Earth Ground	
2	L1 (120 VAC, Neutral)	120V input and ground power connections
3	L2 (120 VAC, Hot)	
4	+5V	Output to supply power to Tonnage Module
5	+12V	Output to supply power to Tonnage Module
6	-12V	Output to supply power to Tonnage Module
7	Brake Wear Danger Output	Fail-safe
8	Fault	Fail-safe output. De-energize output if broken resolver wire or internal processor fault detected
9	Motion	Output. Active when RPM is between low and high motion limit.
10	Vs+ (11-30V)	Input from customer Power Supply for Outputs 7, 8, 9, and 13
11	Brake Clear	Input. Active when connected to Vs-, R1, and customer GND.
12	Brake Input	Input. Active Low
13	Brake Wear Caution Output	Output. Brake Motion Fault detected. (See SET6 and SET7 Sections on Brake Limits)
14	Supervisor 1	Input Active LOW.
15	Supervisor 2	Must be to customer GND. (See Section 4, Program Management)
16	Program Enable	
17	R1 (Rotor-Resolver Wiring) to Connector Pin F (Green/Black wire)	R1 - Wired to External Power Vs- and Resolver R1 Wire Refer to Resolver Manual for Resolvers other than Autotech for wiring.
18	R2 (Rotor-Resolver Wiring) to Connector Pin E (Green wire)	
19	S1(Stator-Resolver Wiring) to Connector Pin D (Yellow/Black wire)	
20	S2(Stator-Resolver Wiring) to Connector Pin B (Yellow Wire)	
21	S3(Stator-Resolver Wiring) to Connector Pin C (Yellow Wire)	

22 S4(Stator-Resolver Wiring) to Connector Pin A (Blue Wire)



To change the resolver ascending count direction, reverse the S1 and S3 connections.

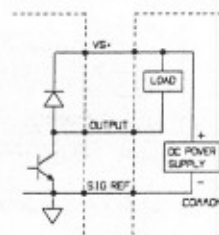
## M1950 Main Terminal Block Wiring

1	Earth GND	
2	L1 (120 VAC, Neutral)	
3	L2 (120 VAC, HOT)	
4	D +5V Output	To supply power to Tonnage Module
5	D +12V Output	
6	D -12V Output	
7	Brake Danger Output (Fail-safe)	
8	Fault (Output)	
9	Motion (Output)	
10	Vs+ 11-30 V input from customer PS for 7-9, 13	
11	Brake Clear Input (Active Low)	
12	Brake Input (Active Low)	
13	Brake Caution Output	
14	Prog Enable 1	Active LOW Inputs
15	Prog Enable 2	
16	Supervisor	
17	R1 Green/Black External power VS- and Resolver R1 wire	RESOLVER WIRING R=Rotor S=Stator
18	R2 Green	
19	S1 Yellow/Black	
20	S2 Blue/Black	
21	S3 Yellow	
22	S4 Blue	

Resolver	Connector Pin	Resolver	Connector Pin
R1	F	S2	B
R2	E	S4	A
S1	D	GND	G
S3	C		

(Note: To change the resolver ascending count direction, reverse the S1 and S3 connections.)

**Illustration 8**



**Illustration 9 - N Type Output**



## 4. Programming the M1950

### Programming Overview

Autotech prides itself in user-friendly programming — a result of **display prompted commands**. This manual is provided for the first-time user as a complete reference for understanding the features of the Programmable Limit Switch. See additional manuals for Die Protection, and Tonnage Monitoring.

The 20 key keypad and alpha-numeric display are used for programming the M1950. Programming is menu driven. The display will show several choices. A blinking choice on the display prompts the user to make changes to the value (if necessary). Choices are selected as follows:

- ARROW (RIGHT or LEFT) keys move the cursor selection from one choice to the other. The UP and DOWN arrow keys are used for programming.
- ENTER key will select and save the choice.
- MODE key is context dependent. This key steps to the next programmable display in the programming sequence or returns to the previous or first screen in the sequence.

The numeric values may be entered in two ways:

- Enter the number directly using number keys; entry is accepted only after pressing of **ENTER** key.
- Up arrow/Down **ARROW** keys to increment or decrement values. Values are modified immediately, however they are not saved until ENTER is pressed.



Before any programming may be done, the PE (Program Enable) must be TRUE (LOW). Supervisor 1 and 2 must be TRUE (LOW) for some modes. (See **Program Management**)

The M1950 stores up to 100 die setups or programs. Each program can be given a **name** not exceeding 8 characters. A program includes the complete set-up information for PLS, Die Protect and Tonnage monitor for a die. When a die is changed in the press, entering the right Die ID will automatically load all the set-up information, which has been previously programmed for the Die ID.

### Mode Reference Charts

Each display is considered to be a different mode. Detailed descriptions of each mode, displays and key responses, are described in this Section.

A user will typically follow all or part of the steps when using the M1950. Once the resolver and sensors have been mounted, follow the Setup (**SET1-SET8**) procedures in this section. Setup needs to be done only once for the unit, unless the resolver or sensors are changed.

### Program Management

To manage programs, Program Enable and Supervisor inputs must be low. The table below lists the programs which are controlled by these inputs.

Security Type	Program Controlled
Program Enable allows user to modify values	<b>All Modes</b>
Supervisor 1	<b>SETUP:</b> Default LED Display, Scale Factor, Offset, Hi/Lo Motion Limits, Brake Danger Limit, Brake Caution Limit, Top Stop Angle
Supervisor 1 and 2	Three levels of Tonnage Supervisory Management are available. See <b>Tonnage Manual</b> .

System Security is provided on the Main Terminal Block located on the back of the unit (Terminals 14-16) as Supervisory 1 and 2 or Program Enable. These may be installed as remote “key switches” and must be tied to Vs– for the user to access parts of the system as shown.

### Default Displays

The default display depends on which modules have been installed and the mode the M1950 was in when the power was shut off. If the last mode before power interruption was not one of the PLS, DPS, or Tonnage modes, the M1950 comes up in the **Pos/Tach default display**. This display will show the current position

**Tons:** Displays sum of peak tonnage from all sensors

**Arrow Keys**  
Adjusts parameter values while the display indicates all current parameter values

and RPM of the shaft (angle in degrees with relation to the resolver zero reference definition).

<b>Tool # 1:</b>	<b>NAME</b>
<b>POS=100</b>	<b>RPM = 10</b>

If the last mode before power interruption was one of the PLS modes, the M1950 comes up in the **Channel Status Display** (See PLS1).

<b>CH = 01</b>	<b>02</b>	<b>03</b>	<b>04</b>
<b>ST = OFF</b>	<b>ON</b>	<b>OFF</b>	<b>ON</b>

## Change, Edit, Setup Program Menu

From the Pos/Tach display, press the **MODE** key to display the **Change, Edit, and Setup Program Menu**. This display allows for choosing the programming path to be followed:

<b>TOOL# 1:</b>	<b>NAME</b>
<b>Change</b>	<b>Edit      Setup</b>

- **Change:**  
Changing the Tool#; Searching for a Tool # or name; Renaming, Deleting, or Copying a Program.
- **Edit:**  
Editing the set-up program for the optional modules: PLS, DPS, or TON
- **Setup:**  
Setting the default LED display, scale factor, offset, motion limits, brake caution and danger limits, and top stop angle.

Key Pressed	Response
ARROW keys	• Moves the cursor from one choice to another. (The changeable option will be blinking.)
ENTER key	• Save the selection
Up and Down Arrow Key or Numerical Keys (For Numerical values: user must ENTER to save)	• Increments or decrements values
MODE key	• Returns to Default Display

## Hot Keys



### IMPORTANT NOTE:

The GRAY KEYS, PLS and Die Protect, are

“hot keys” which may be pressed to access either mode at any time.

Pressing the PLS key or Die Protect key will access the Edit Menu Display. If multiple PLS or DPS modules are installed, the user selects which module he wishes to edit. An example of this display is shown below:

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>PLS</b>	<b>PLS</b>	<b>DPS</b>	<b>TON</b>	

## SETUP MODE

### SET1 — Default LED Display

The default for the Indicator LED's and Display located on the front panel of the I<sup>2</sup>•PLS are set by this menu.

#### Default LED Display Pos/Tach Time Tons

- **Pos/Tach:**  
**Position** is displayed when the RPM is less than 5  
**Tach** is displayed while the resolver is moving above 5 RPM
- **Brake:** Displays stopping time in seconds
- **Tons:** Displays sum of peak tonnage from all sensors

Key Pressed	Response
RIGHT OR LEFT ARROW keys	• Scrolls between flashing positions on the display
ENTER	• Saves the selection
MODE	• Moves to next mode (SET2)

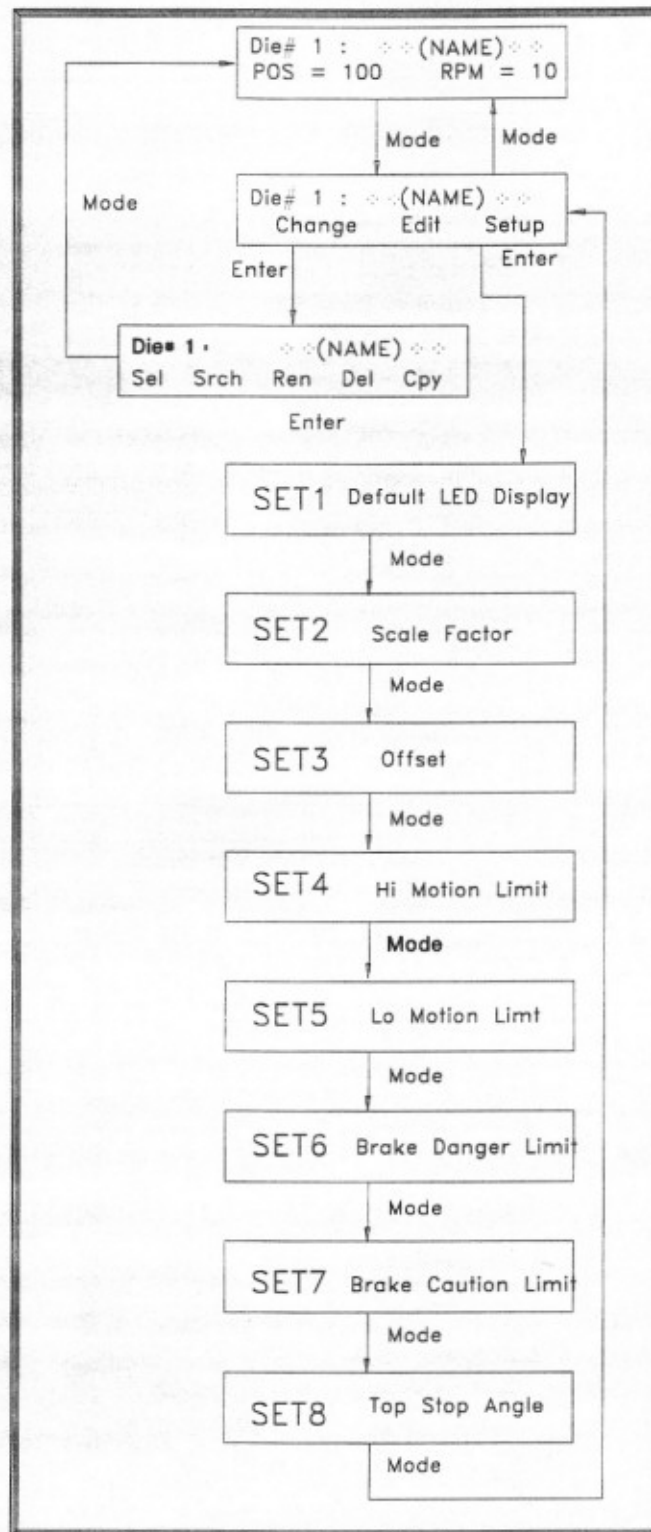
### SET2 - Scale Factor

<b>Scale Factor</b>	<b>=</b>	<b>359</b>
<b>Enter New:</b>		<b>399</b>

The scale factor is common to all programs. The scale factor is number of counts per turn minus one. Thus if you want to work in degrees, the desired counts per turn is 360, and therefore the scale factor will be 359.


# Setup Mode

Detailed descriptions of each Mode (SET#) are found in Sections SET1 through SET8



SET\_MODE 11/18/93

**Illustration 11 - Setup Mode**

 The Scale factor is fixed at 359 if a Tonnage Module is used.

Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
ENTER	• Saves the selection
MODE	• Moves to SET3, Offset
ENTER	• Enter must be pressed to save the Scale Factor

### SET3 — Offset


**Pos = 100      Offset = 1**  
**Enter New:                      2**

The offset is a number that is added to the resolver position to align it electronically to any desired machine position, such as machine zero. The offset is common to all programs. The screen shows current offset (position includes offset).


Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
ENTER	• Saves the new value
MODE	• Moves to SET4, Hi Motion Limit

### SET4 — Hi Motion Limit

**Hi Motion Limit = 100**  
**Enter New:                      220**

 The Low Motion Limit must be **less than** the High Motion Limit.

Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
MODE	• Accepts programmed value and moves to SET5, LO Motion Limit

 **IMPORTANT NOTE:**  
 The MOTION OUTPUT is activated when the RPM is between the LO and HI Motion Limits.

### SET5 — Lo Motion Limit

**Lo Motion Limit = 10**  
**Enter New:                      5**


Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
MODE	• Accepts programmed value and moves to SET6, Brake Danger Limit

### SET6 — Brake Danger Limit

**Brake Danger Limit**  
**Old = 2.34                      New = 5.63**

The Brake Danger Limit is the maximum number of SECONDS allowed for the shaft to stop turning after the brakes are applied.

This measurement can warn of brakes that are wearing out and need to be replaced for safety reasons.

 **IMPORTANT NOTE:**  
 Brake Input is low voltage DC, therefore the 120 VAC Brake Signal must be converted to low voltage DC.

The "DC Brake" signal may be wired into the Brake Input (**Main Terminal Block, Connector 12**).

- ON (120 VAC power): clutch is engaged
- OFF (120 VAC power): Brake engaged and timing begins

Upon receiving the OFF signal, the Brake Stop Timer begins counting. If the shaft fails to stop before reaching the Danger Limit, the relay output (**Terminal 7, Main Terminal Block**) will de-energize. When stopped, the brake timer may be cleared by asserting the Brake Reset Input (**Terminal 11, Main Terminal Block**).

Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
MODE	• Accepts programmed value and moves to SET7, Brake Caution Limit



## SET7 — Brake Caution Limit

**Brake Caution Limit**  
Old = 2.34      New=5.63

The Brake Caution Limit is the number of seconds allowed for the shaft to stop turning after the brakes are applied before a “caution brake wear” output is energized. The Caution Output, **Main Terminal Block, Terminal 13** will energize when the braking time exceeds the seconds programmed.

Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
MODE	• Accepts programmed value and moves to SET8, Top Stop Angle

## SET8 — Top Stop Angle

**Top Stop Angle = 340**  
**Enter New**

The M1950 allows the user to program the resolver shaft angle value to stop at a predetermined point to ensure that the die is in its uppermost position when movement stops. This angle is particularly important for Die Protect modules and controls the point where the top-stop output is activated in case of a fault.

The angle programmed includes the offset, if any, as explained in **in SET3**.

Key Pressed	Response
NUMERICAL, UP or DOWN ARROW keys	• Fine tunes the flashing value on the display
MODE	• Accepts programmed value and returns to the Change/Edit/Setup menu.

## Change Menu

**Illustration 12** shows the programming display flowchart for Change. **The following keys will be used in this menu:**

Key Pressed	Response
UP ARROW key	<ul style="list-style-type: none"><li>• To begin searching for the entered name or number</li><li>• To change the Tool # being searched for</li></ul>
During Search: If there is more than one matching name found, continual pressing of the UP ARROW key will scroll through the selections. After the last name found, “No Match Found” will flash on the display before returning to the Die Name Search display. The search may be repeated to select the correct name when it appears.	
NUMERICAL or ALPHA keys	• To change the values
ENTER key	• To accept the selection
MODE	• Accepts programmed value and moves to SET7, Brake Caution Limit
DOWN ARROW key	• Recalls the entered name . The user may modify it if necessary.

To enter this menu, move the blinking cursor to “Change” in the Change, Edit, Setup Program Menu by using the right **ARROW** key.

### C1 — Select/Search Menu

Press **ENTER**. This new display (named **Select /Search Menu** in this manual) allows for either Selecting or Searching for a new or existing setup; Renaming, Copying, or Deleting the current program.

**Tool # 1:            NAME**  
**Sel Srch Ren Del Cpy**

Press **ENTER** to select the desired operation.

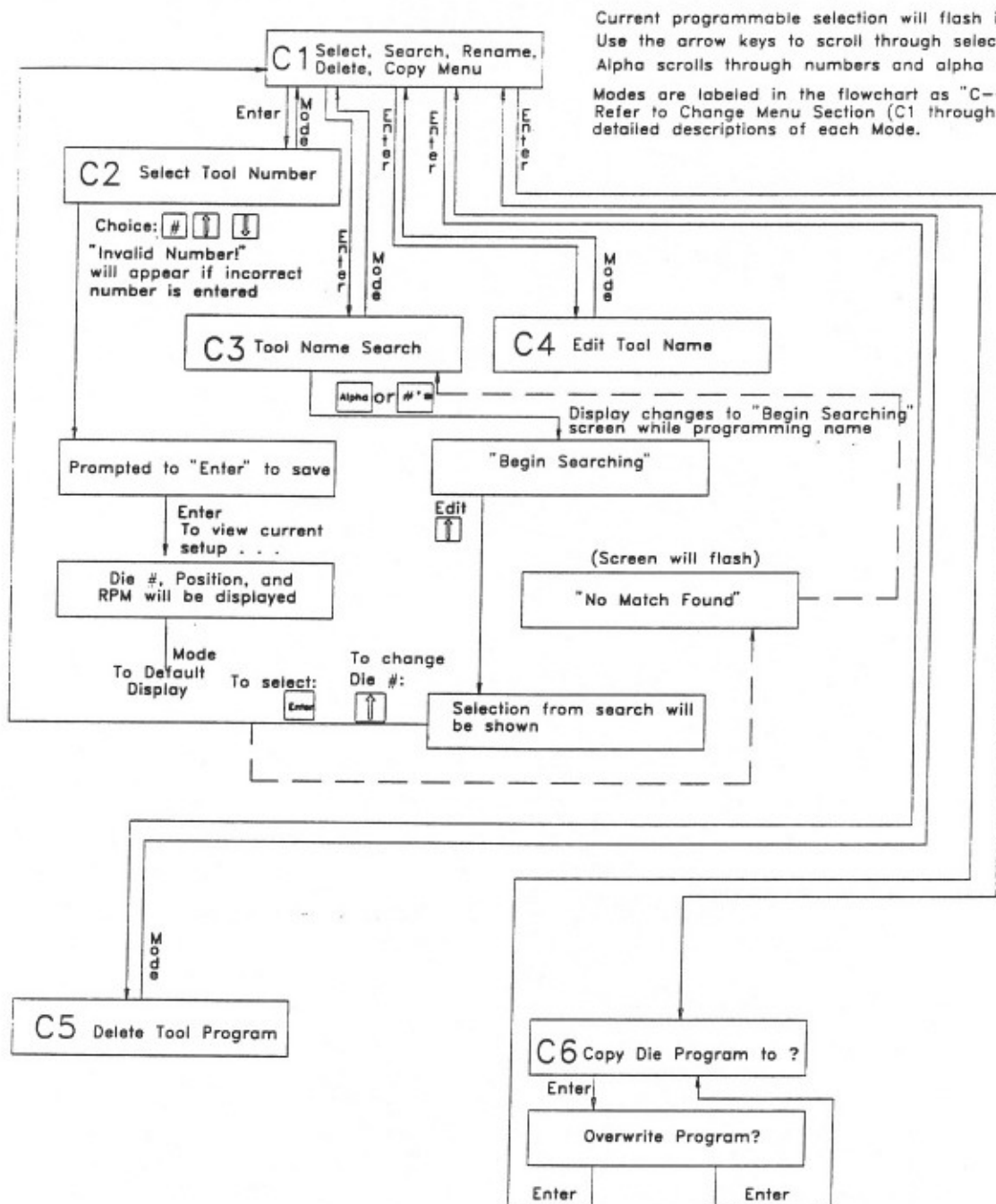
### C2 — Select Tool Number

With the blinking cursor on “Sel” in the **Select/Search Menu**, press the **ENTER** key. The Select Die Number will appear on the display.

**Tool # 1:            NAME**  
**Select Die Number**



# Change Mode



**Illustration 12**  
**Change Modes**

Press the **numbered keys** or up or down **ARROW** keys to change the Die number selection. If an incorrect value is entered, "Invalid number!" will flash on the screen.

 Valid Tool Numbers are 1 - 100.

Press **ENTER**; the Pos/Tach display will appear.


<b>Tool # 1:</b>	<b>NAME</b>
<b>POS=100</b>	<b>RPM = 10</b>

Press **MODE** to return to the Change/Edit/Setup Program Menu display.

### C3 — Search for Tool Name

With the blinking cursor on "**Srch**" in the **Select/Search Menu**, press the **ENTER** key.

<b>Tool #???:</b>	<b>????????</b>
<b>Die Name Search</b> <⬅➡>	

 Tool Names may have up to 8 characters. The search may be made by partial name for any of the characters.

Press the **ALPHA** or **numbered keys** to change the Tool Name or Tool number selection. The display changes automatically to the "Begin Searching" screen while programming the name or number.

<b>Tool# ???:</b>	<b>????????</b>
<b>Begin Searching</b> <⬅➡>	

- Press the **UP ARROW** key to begin searching for the entered name.

<b>Tool# :</b>	<b>NAME</b>
<b>&lt;Enter&gt; to Select</b> <⬅➡>	

- Press the **ENTER** key to accept the selection.
- **If a match is found:**
  - > If a "search by partial name" was made and there is more than one possibility of a tool with the same partial name, press the **UP ARROW** key to continue searching for more. After the last name has been scrolled, "No Match Found" will flash on the display.
  - > The display will return to the **Select/ Search Menu**.

> Repeat the search, if needed, to select the correct name.

- **If a match is not found:**

> **NO MATCH FOUND!** will flash before the display returns automatically to the Change Die ID Program Menu display.

> Press the **DOWN ARROW** key to recall the entered name and modify it, if necessary.

### C4 — Rename Die ID

With the blinking cursor on "**Ren**" in the **Select/Search Menu**, press the **ENTER** key The following display appears:

<b>Tool #</b>	<b>NAME</b>
<b>Edit Die Name</b>	

- With the blinking cursor in the desired position on the display, change the Die Name by pressing the **NUMERICAL keys** or scroll through the alpha characters by pressing the **ALPHA** key
- Press the **ENTER** key to accept the selection.
- Press **MODE** to return to the Change Die ID Program menu display.

### C5 — Delete Tool Program

With the blinking cursor on "**Del**" in the **Select/Search Menu**, press the **ENTER** key.


- Press the **UP ARROW** or **NUMERICAL** keys to change the Die number selection.
- Press the **right ARROW** key to move the blinking cursor through the menu.
- With the blinking cursor on either **YES** or **NO**, press the **ENTER** key to accept the desired selection.
- Press the **MODE** key to return to the **Select/Search Menu** display.

### C6 — Copy Die ID

With the blinking cursor on "**Cpy**" in the **Select/Search Menu** display, press the **ENTER** key.

<b>Tool# :</b>	<b>NAME</b>
<b>To ???</b>	

- Press the **UP ARROW** or press the **NUMERICAL** keys to change the Die number selection.
- Press the **right ARROW** key to move the blinking cursor through the menu.
- Press **ENTER** to accept selection.

 This mode will copy the entire program from the Tool # selected to the "???". This includes PLS, DPS, and Tonnage programs for this Tool.

### Overwrite Program? YES                      NO

- With the blinking cursor on **YES**, press **ENTER** to accept copying the program to the selected die and return to the Change Die ID Program Menu, OR
- With the blinking cursor on **NO**, return to the previous display to reprogram the "copy to" information, OR
- Press **MODE** to ESCAPE with no overwrite made to the program.

## Edit Menu (PLS, DPS and Ton)

Through the Edit Menu, PLS, DPS and TON Module program parameters are edited. The M1950 allows

for five plug-in modules to be installed in any of the five open ports in the rear of the unit. The modules may be placed in any open port, however the configuration allows for a maximum of:

- Five Die Protection modules
- Three Tonnage modules
- Five PLS modules

The selection of **EDIT** in the Change/Edit/Setup Program Menu allows for editing all programming parameters on any modules which have been installed. The M1950 will display the modules plugged into the system in the Editing Program Menu. (See **Illustration 6, Module Insertion**) If multiple PLS or DPS modules are installed, pressing the PLS key or Die Protect key will access a display which allows the user to choose which module to edit. This display is similar to this:

<b>DIE# :</b>	<b>NAME</b>
<b>Change</b>	<b>Edit      Setup</b>

To program a module, move the blinking cursor on the **selected module** in the Menu, then press the **ENTER** key.

A detailed description of the programming sequence for each module is provided in separate manuals.

## 5. How to Order

### 1. I<sup>2</sup> PLS

SAC-M1950-010 ..... Base unit to support PLS, Die Protection and Tonnage at Angle  
 SA2-M1950-010 ..... Base unit, 220-240VAC, 50/60 Hz AC power input  
 SA4-M1950-010 ..... Base unit, 24 VAC power input  
 SAC-M1950-01A ..... Base unit to support PLS, Die Protection and Peak Tonnage

## 6. Warranty

### WARRANTY

Autotech Corporation warrants its products to be free from defects in materials or workmanship for a period of one year from the date of shipment, provided the products have been installed and used under proper conditions. The defective products must be returned to the factory freight prepaid and must be accompanied by a Return Material Authorization (RMA) number. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

The customer agrees to hold Autotech Controls harmless from, defend, and indemnify Autotech Controls against damages, claims, and expenses arising out of subsequent sales of Autotech Controls' products or products containing components manufactured by Autotech Controls and based upon personal injuries, deaths, property damage, lost profits, and other matters which Buyer, its employees, or subcontractors are or may be to any extent liable, including without limitation penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (p.l. 93-637), as now in effect or as amended hereafter.

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Autotech Controls' products are carefully engineered and rigorously tested to provide many years of reliable operation. However any solid-state device may fail or malfunction sometime. The user must ensure that his system design has built-in redundancies if Autotech Controls' product is being used in applications where a failure or malfunction of the unit may directly threaten life or cause human injury. The system should be so designed that a single failure or malfunction does not create an unsafe condition. Regularly scheduled inspections, at least once a week, should be made to verify that the redundant circuits are fully functional. All faults should be immediately corrected by repair or replacement of the faulty unit. In addition, the user may have to comply with OSHA, ANSI, state or local standards of safety. The user of Autotech Controls' products assumes all risks of such use and indemnifies Autotech Controls against any damages.

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