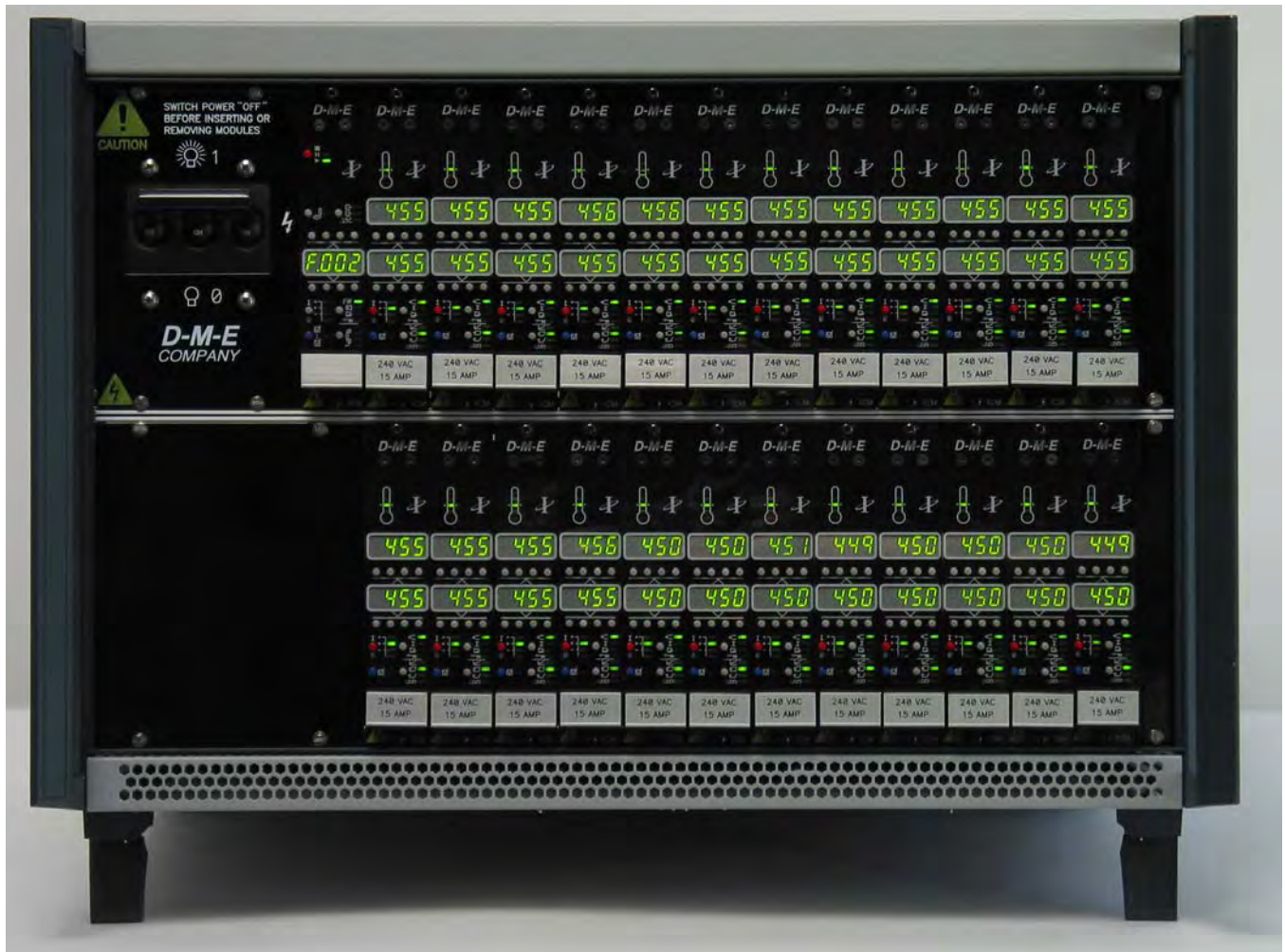




# The D-M-E Integrity™ Control System User's Guide

## For World Class Plastic Injection Molding



Integrity™ 24 Zone IMF2400 Mainframe, IFM1000 Frame Module and 24 Integrity ICM1502 Control Modules Shown



Integrity™ (Qty 2) IMC1215 Combined Power/TC Cables



Integrity™ (Qty 2) IMB1200 Mold Terminal Boxes

DME Company, 29111 Stephenson Highway, Madison Heights, MI 48071, [www.dme.net](http://www.dme.net)

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**29111 Stephenson Highway**  
**Madison Heights, MI 48071 USA**  
**www.dme.net**

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## **WARRANTY**

D-M-E Company warrants that this product will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If any such product proves defective during this warranty period, D-M-E Company, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. D-M-E Company shall not be obligated to furnish service under this warranty; a) to repair damage resulting from attempts by personnel other than D-M-E Company representatives to repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; or c) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

This warranty excludes replacement of fuses (in the 15 amp models) and damage to the module from the use of improper styles of fuses. Use only ABC type replacement fuses. The maximum allowable fuse rating is 15 amps. Lower ratings may be used for improved protection.

## **SAFETY**

D-M-E Company products have been designed to be safe and simple to operate. As with any electronic equipment, you must observe standard safety procedures to protect both yourself and the equipment.

### **To Prevent Injuries:**

- To avoid electrical shock or fire hazard, do not apply voltage to a terminal that exceeds the range specified for that terminal.
- To avoid mechanical injury, electrical shock or fire hazard, do not operate this product with covers or panels removed. All unused slots of a main frame must be covered with the appropriately sized blank panels.
- To avoid electrical shock or fire hazard, do not operate this product when wet.
- To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

### **To Prevent Product Damage:**

- Do not operate this product from a power source that applies more than the voltages specified.

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## 1. Integrity Main Frame Power Considerations

### 1.1. Hook Up Power Consideration

- A Local Licensed Electrician who knows the local electrical codes should perform the electrical hookup.
- Standard Operation Voltage is 240Vac Nominal 50/60Hz.  
Note: See Appendix B for information on Transformer Sizing for Higher supply Voltages. Also, one should consider that most Hot Runner Plastic Injection Molding Heaters are rated at 240Vac Nominal. If the supply is only 208Vac, the actual wattage that the heater is rated for will be lowered by 25%, ie - a 1,000Watt 240Vac heater running at 208Vac can only supply 750Watts. This can drastically slow down the heat-up rate or effect the ability to get the desired temperatures. See Appendix C for Voltage Correction Factors for heaters.
- The Main Frame Circuit Breaker Amperage Rating Determines the Maximum Available Power that the Frame can deliver.  
Note: A 100 Amp 3 Phase, 3 Wire breaker will allow all 12 zones of Temperature Control to run the full rated 15Amps. In a 24 zone Main Frame the 24 zones of Temperature Control would Average a Maximum of 7.5 Amps per Zone. Many molds do not require this much power and the electrician could figure out the requirements and externally fuse protect the Frame with a lower supply current. This would have to be figured out on a mold by mold basis. See Appendix A for an in-depth discussion on this subject.
- Wire Sizing is recommended to be de-rated for a Maximum Ambient Temperature of 135F inside the DME Main Frame.
- There are 4 different combinations for 240Vac power hookup.
  - (3 Phase Delta Type Power) 3 Power wires referenced to each other plus 1 Ground
  - (3 Phase Wye Type Power) 3 Power Wires Referenced to 1 Neutral Wire plus 1 ground
  - (Single phase Type Power) 2 power wires Referenced to each other plus 1 ground.
  - (Single phase Type Power) 1 Power wire Referenced to 1 Neutral wire plus 1 Ground.

**WARNING:** The sections following will discuss proper placement of the jumper straps. Improper jumper strap placement can cause power wires to be directly shorted to each other and/or with ground. The straps are located after the mainframes built in circuit breaker.

### 1.2. Getting the Covers off the Frame. ( NO POWER ATTACHED.)

- 1.2.1. Remove both side covers from the mainframe. They each have four small thumbnail type indents, which a small screwdriver can be placed under to pry the side covers off.
- 1.2.2. With both side covers off, the Top Cover can be removed by pulling from a side that was previously covered and lifting up off the top. Repeat with the other side of the top cover and the top cover should come off.
- 1.2.3. Single row 12 zone Frames will have a hinged power supply above the Power Input Hookup Lugs which can be swung up and out of the way. The Power Input Lugs are accessible with a 3/16" T-Handle Hex Wrench.

### 1.3. Example of Option A - (3 Phase Delta Power) 3 Power wires referenced to each other plus 1 Ground (no neutral)

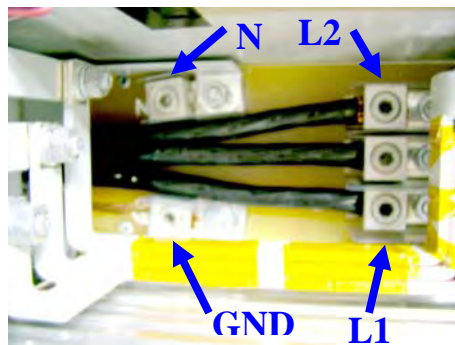


Fig. 1 - Power Input Hook-up Lugs.  
Use 3/16" T-Handle Hex Wrench  
Top View with cover removed.  
Option A Shown with Copper GND.  
Lugs accept 2/0 to 14 AWG Wire.



Fig. 2 - Input Power Configuration Straps.  
Use 10mm Deep-Well Socket Wrench.  
Back View with Power Entry Panel Off.  
Option A Configuration Straps Shown.

1.4. Power Hook up Options at a Glance. All Zones will Connected Properly - as Easy as 1 - 2 - 3.

Step 1) Arrange "Input Power Configuration Straps"

Step 2) Connect Your Power Wires to the "Power Input Hook Up Lugs"

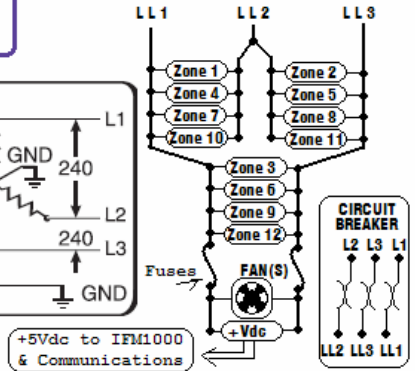
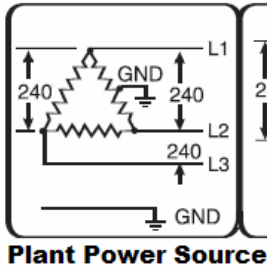
Step 3) Make Sure "Line Voltage Select for Fan" is in the proper position (230 or 115 Vac for Fans)

**DONE !!!**

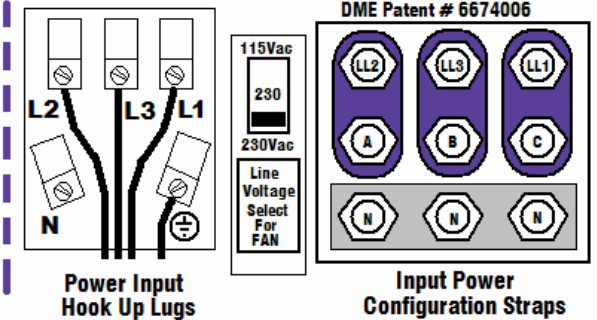
Thanks to the Patented "DME Input Power Configuration Straps and Buss Bar", there is no need to mess with rewiring individual zones !!! What a time saver !!! (Covered by DME Patent #6674006.)

**OPTION A**

**STANDARD 3 PHASE**



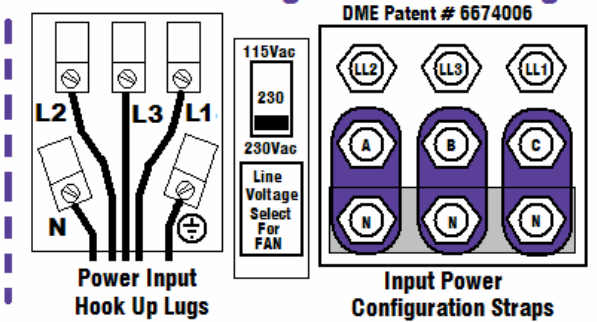
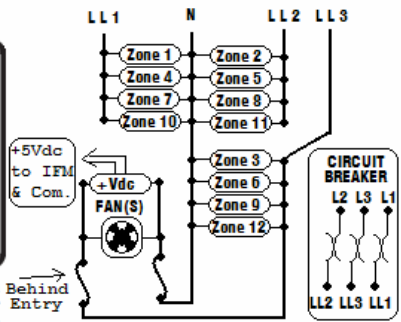
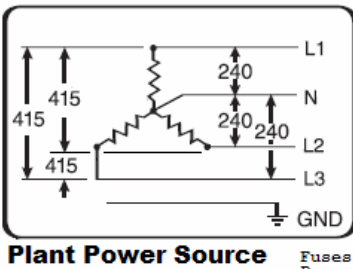
**208 - 240 VAC, Three Phase + Gnd  
Delta or "Y" Power Distribution**



**OPTION B**

**208 - 240 VAC TO NUTRAL  
380 - 415 VAC BETWEEN PHASES**

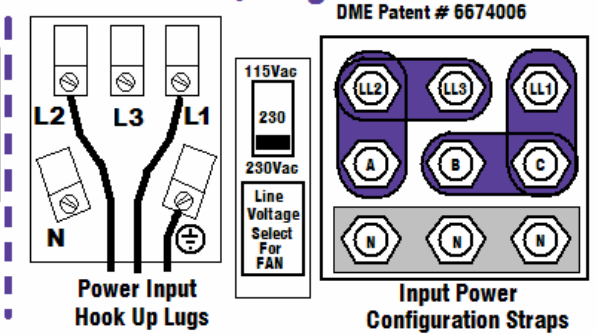
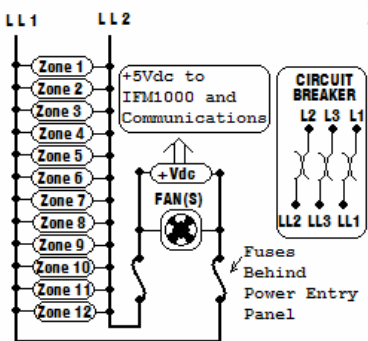
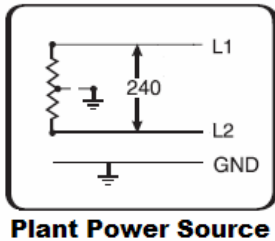
**208 - 240 VAC, Three Phase + Neutral + Gnd  
"Y" Power Distribution using the Neutral Leg**



**OPTION C**

**208 - 240 VAC SINGLE PHASE**

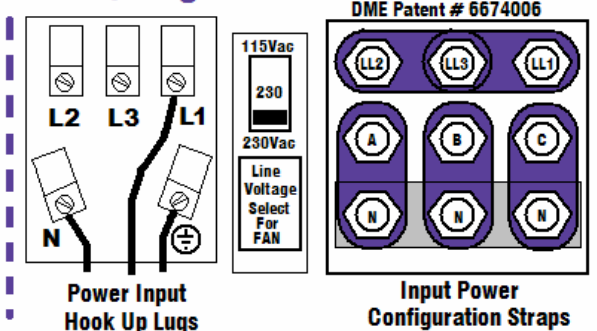
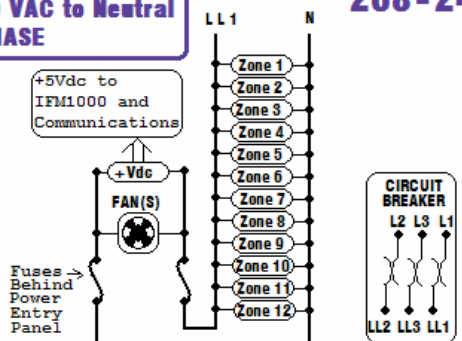
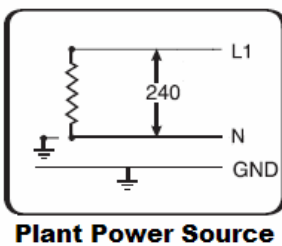
**208 - 240 VAC, Single Phase + Gnd**



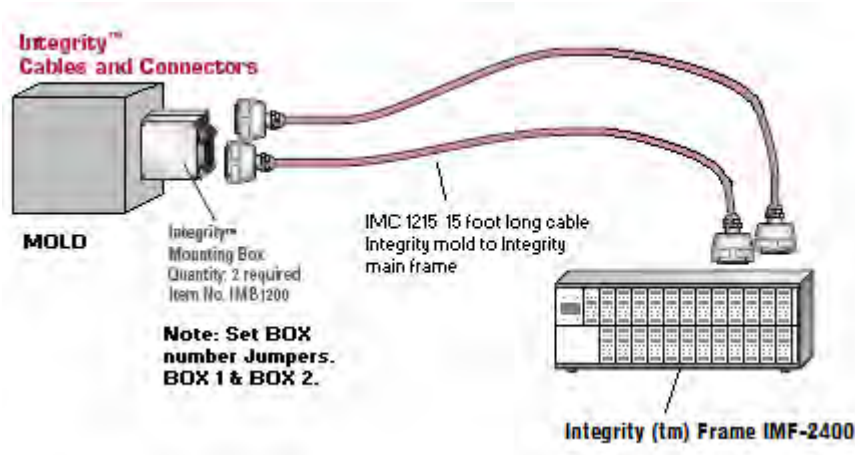
**OPTION D**

**208 - 240 VAC to Neutral SINGLE PHASE**

**208-240 VAC, Single Phase + Neutral + Gnd**



## 2. Integrity System Quick Start Guide - With Frame Module - Out of the Box



Power Up with Cable(s) Connected - Setup Mode

Engineering Units on Power Up - Degrees F

Cables connected and Mold at Room Temperature - Setup Mode

**FRAME MODULE**

- RED LED will light for no cable attached or System is turned OFF. Cannot change until a cable is connected to the mold.
- YELLOW LED will light when power up & Cable attached. It is in a Setup Mode to Adjust modules before starting. Flashes if Cable Type mismatch Alarm.
- GREEN LED will light when Operator pushes button from Setup Mode YELLOW LED to GREEN Run mode.

Display Process Temperature

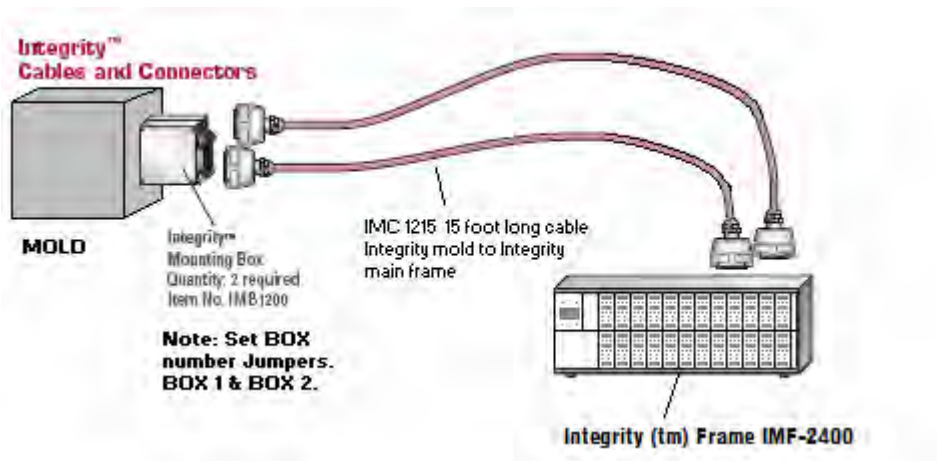
Automatic Setpoint

**ICM Module Power**

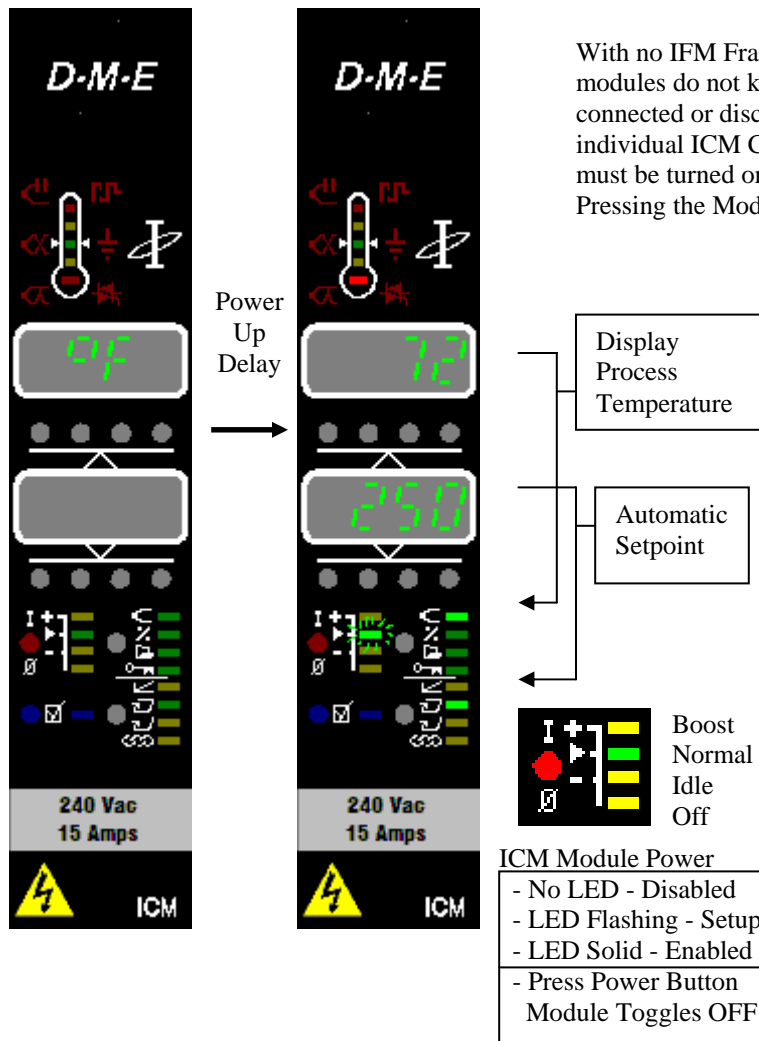
- No LED - Disabled
- LED Flashing - Setup
- LED Solid - Enabled
- Press Power Button Module Toggles OFF



### 3. Integrity System Quick Start Guide - Without Frame Module - Out of the Box

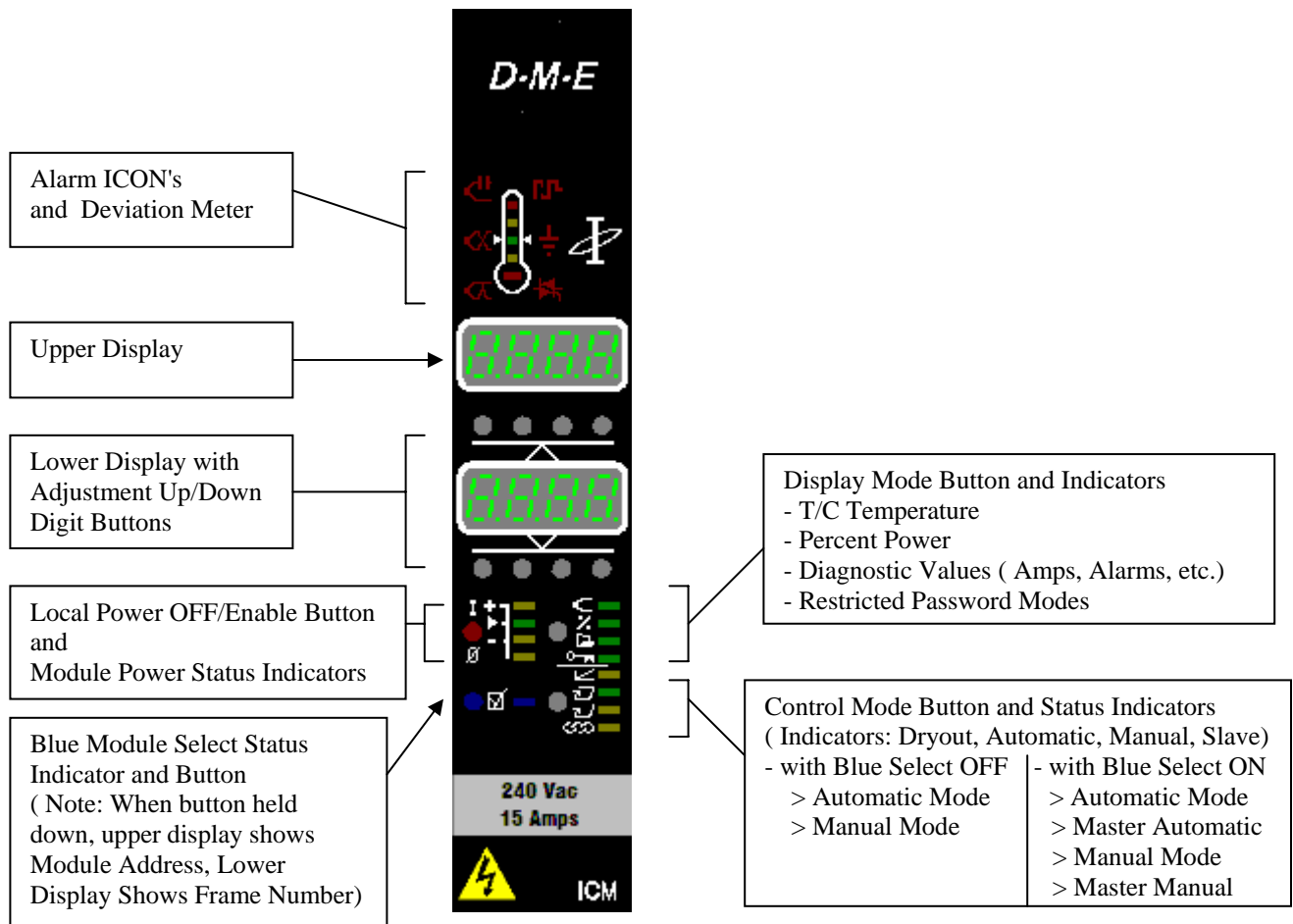


Engineering Units on Power Up - Degrees F      Mold at Room Temperature - Setup Mode

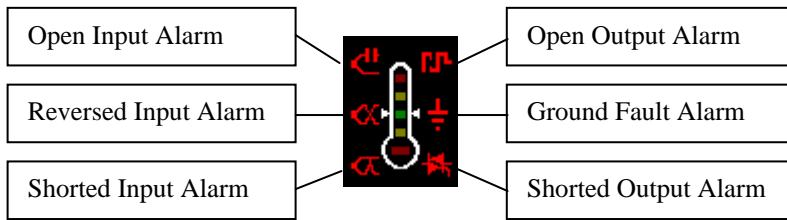
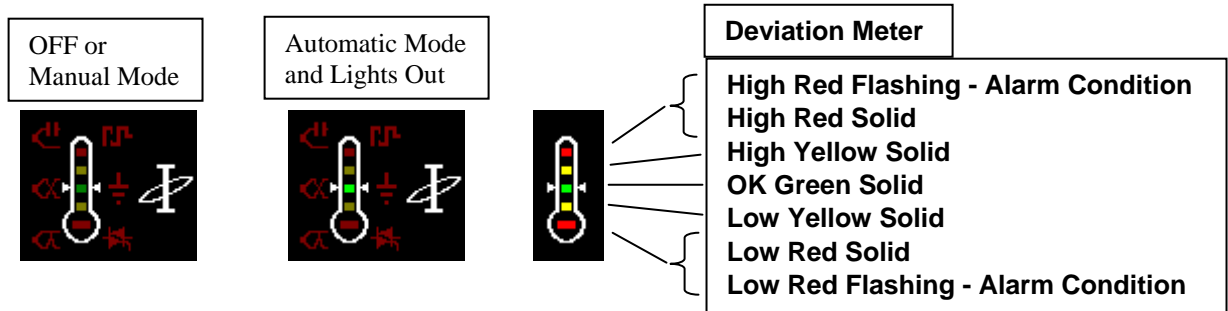


#### 4. ICM - Integrity Control Module







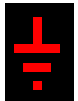

##### 4.1. ICM - Quick Over View



4.2. ICM - Alarm Icon's (also see - *Display Mode - Diagnostic Menu Display Items- Alarm Values in d.A.xx*)

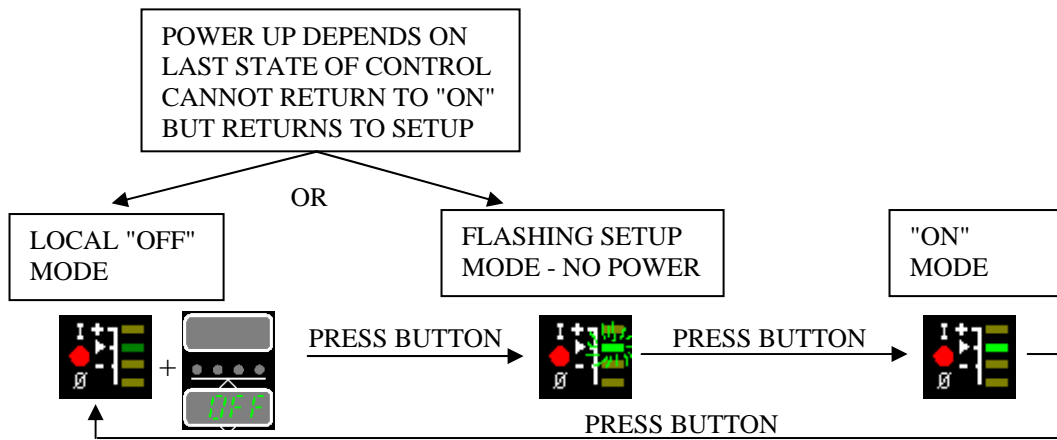


ICONS that cause Alarm Conditions - Disable Power ( If IFM Frame Module connected Alarm Horn ON )

- 
  - Deviation Meter: High Red Flashing - Alarm Condition  
Factory Default 1 > 40F, Factory Default 2 > 23C (User values vary per customer entry)  
Alarm will not be Flashing if a Downward Setpoint Change caused the condition
- 
  - Deviation Meter: Low Red Flashing - Alarm Condition  
Factory Default 1 < 40F, Factory Default 2 < 23C (User values vary per customer entry)  
Alarm will not be Flashing if Startup or an Upward Setpoint Change caused the condition
- 
  - Open Input Alarm ( formerly known as OPI )  
Thermocouple Input Opened and Temperature went full scale.
- 
  - Reversed Input Alarm - ( formerly know as BAC )  
Thermocouple Value Decreased and Temperature went to minimum scale.
- 
  - Shorted Input Alarm - ( formerly know as SHI )  
Factory 1 and 2 Default with Thermal Response Alarm Enabled and Minimum Thermal Heatup Rate at maximum power was not maintained; ie - no thermal response from thermocouple.
- 
  - Open Output Alarm - ( formerly known as OPO )
    - A. Applying power to heater and no minimum current in amps is detected.
      - check heater if it is resistively open
      - if heater ok, then check Triac and opto-isolator to see if they failed.
    - B. Power Relays are On and No Zero Cross - Blown Load Power Fuse.
- 
  - Ground Fault Alarm - ( formerly known as GFI )  
Current in Amps from One leg of outgoing power to heater does not match the incoming Current Amps from the other outgoing power leg. Heater could be shorted to another source and electrical shock could occur.
- 
  - Shorted Output Alarm - ( formerly known as SHO )  
Power Relays are Enabled and Output Power is 0% and the minimum current in amps is exceeded. Power Relays are Enabled and Current Exceeds the "Over Current Detection is exceeded (default is 15amps.)  
Alarm Latches until problem corrected. Heat Sink Temp Exceeded.

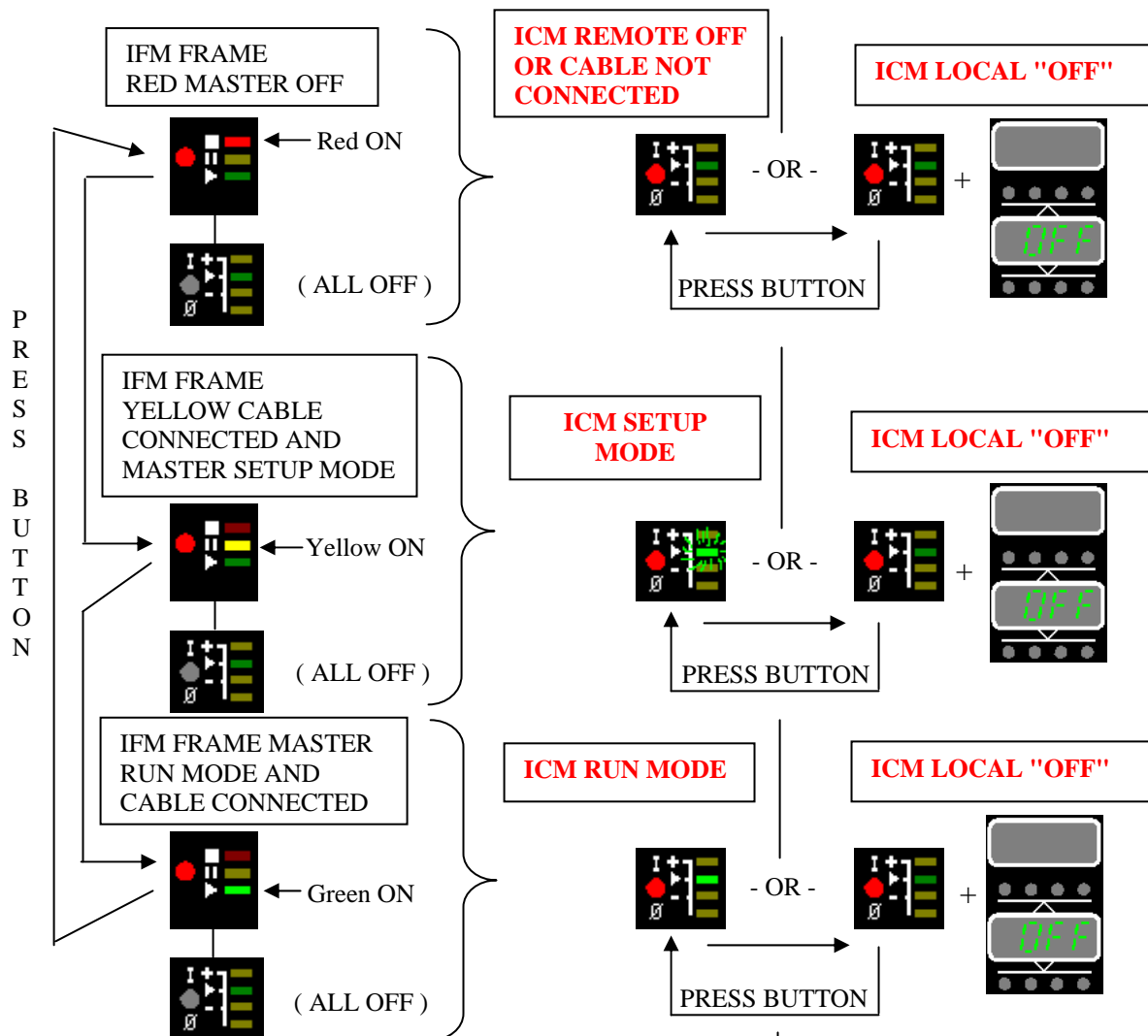
#### 4.3. Local Power Off/Enable Button and Module Power Status Indicators

➤ **No IFM Frame Module Attached**

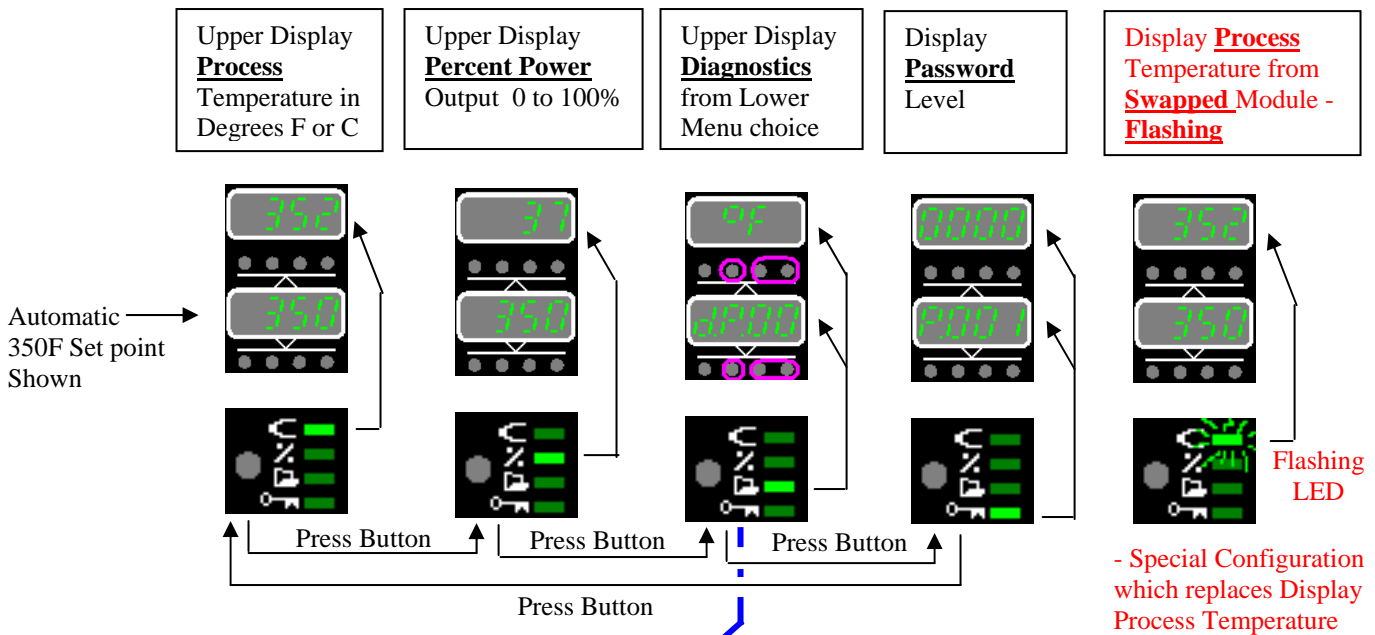


➤ **IFM Frame Module is Attached with ICM Temperature Control Modules in Frame**

IFM FRAME Module Powers up to either Master Off (Red LED) or Master Setup (Yellow LED)



4.4. Display Mode button and Indicators and Upper Display Overview



**Diagnostic Menu Display Items - Read Only**

*Process Values in d.P.xx*

<u>Lower Display</u>	<u>Upper Display</u>	<u>Description</u>
d.P.00	°F	Engineering Units ( Degrees F or Degrees C )
d.P.01	1. 51 **	Load Current in Amps (0.00 to 15.00) "Peak RMS Amps"
d.P.02	237 **	Line Voltage ( 85 to 265 Vac )
d.P.03	60	Hertz Detection ( 50 or 60 )
d.P.04	.01	GFI Ground Fault Amps ( )
d.P.05	355	Wattage of Heater Maximum Available (P=VxI)
d.P.06	158	Resistance of Heater in Ohms (R=V/I)
d.P.07	1	Mold Terminal Box Number if connected
d.P.08	5	Zone in Mold Terminal Box if connected

\*\* note: values will flash in Phase Angle firing mode when not accurate.

*Alarm Values in d.A.xx*

( also see - *ICM - Alarm Icon's* )

<u>Lower Display</u>	<u>Upper Display</u>	<u>Description</u>
d.A.00	nOnE	Alarm Horn ( "nOnE" or LA Latched Alarm or A Alarm )
d.A.01	OFF	Shorted Output Alarm ( On or OFF )
d.A.02	OFF	Open Output Alarm ( On or OFF )
d.A.03	OFF	Ground Fault Alarm ( On or OFF )
d.A.04	OFF	Shorted Input Alarm ( On or OFF )
d.A.05	OFF	Reversed Input Alarm ( On or OFF )
d.A.06	OFF	Open Input Alarm ( On or OFF )
d.A.07	OFF	Heat Sink Alarm ( On or OFF )
d.A.08	OFF	Load Fuse Failure Alarm ( On or OFF )
d.A.09	OFF	Deviation Horn Alarm (Process Deviation Band- On or OFF )
d.A.10	OFF	Over Current (Amps) Detection ( On or OFF )
d.A.11	OFF	Dryout Alarm - Dryout Lock Mode Only ( On or Off )

***Calibration Date Values in d.C.xx***

<b><u>Lower Display</u></b>	<b><u>Upper Display</u></b>	<b><u>Description</u></b>
d.C.00	2007	Year of Calibration xxxx
d.C.01	03	Month of Calibration xx
d.C.02	05	Day of the Month of Calibration xx

***Firmware Values in d.F.xx***

<b><u>Lower Display</u></b>	<b><u>Upper Display</u></b>	<b><u>Description</u></b>
		== DME catalogue model number
d.F.00	0001	ModelNumber ICM 1502
d.F.01	0001	ModelReleaseVersion
d.F.02	0000	ModelSpecialVersion
		== ICM software ==
d.F.03	0001	SoftwareReleaseVersion
d.F.04	0000	SoftwareMajorVersion
d.F.05	0000	SoftwareMinorVersion
		== DME CAN Protocol ==
d.F.06	0001	ProtocolReleaseVersion
d.F.07	0000	ProtocolMajorVersion
d.F.08	0000	ProtocolMinorVersion
		== ICM module types ==
d.F.09	03	NumberOfTypes
d.F.10	00	GlobalType
d.F.11	01	FamilyType
d.F.12	254	ICMType ( 254 = FE hex)

## Local Configurations d.L.xx

Menu	Description	Upper Display		Customer Range
d.L.00	Source of Running Configuration	F1	F2	F1 = Deg. F Default, F2 = Deg. C Default, U1.....,U9 = custom configurations
d.L.01	Engineering Units - Deg F/C	0	1	0=F(50-1200F),1=C(10-650C)
d.L.02	Sensor Type	1	1	0=none, 1=J T/C, 2=K T/C
d.L.03	GACF Boost Enable	1	1	0=disabled, 1=enabled
d.L.04	GACF Boost Value	50	25	+1 to +255 (Deg F/C)
d.L.05	GACF IDLE Enable	1	1	0=disabled, 1=enabled
d.L.06	GACF IDLE Value	212	100	Refer to Engineering Units Deg F/C
d.L.07	GACF OFF Enable	1	1	0=disabled, 1=enabled
d.L.08	AutoSetPointMode	0	0	0=Normal, 1= Enable fixed +/- Adj. Bands
d.L.09	Auto Setpoint Fixed +Adj.	450	235	>-Adj. (Refer to Engineering Units Deg F/C)
d.L.10	Auto Setpoint Fixed -Adj.	400	200	<+Adj. (Refer to Engineering Units Deg F/C)
d.L.11	ManualSetpointMode	0	0	0=Normal, 1=Enable fixed +/- Adj. Bands
d.L.12	Manual Setpoint Fixed +Adj.	15	15	1 to 100 >-Adj. ( percent power )
d.L.13	Manual Setpoint Fixed -Adj.	5	5	0 to 99 < +Adj. ( percent power )
d.L.14	Automatic Boost Enable	0	0	0=disabled, 1=enabled
d.L.15	Automatic Boost Value	50	25	+1 to +255 (Deg F/C)
d.L.16	Lights Out Enable	0	0	0=disabled, 1=enabled
d.L.17	Auto Bumpless Transfer Enable	1	1	0=disabled, 1=enabled
d.L.18	Maximum Power Auto Mode	100	100	25 to 100 ( percent power upper limit )
d.L.19	Maximum Power Manual Mode	100	100	25 to 100 ( percent power upper limit )
d.L.20	Over Current Detection	15	15	3 to 15 amps
d.L.21	Thermal Response Alarm Enable	1	1	0=disabled, 1=enabled
d.L.22	Thermal Response Normal/Slow	0	0	0=Normal, 1=Slow Response (large manifolds)
d.L.23	Deviation Meter: High Red Flashing	30	17	3-255 >High Red Solid (Units per Deg F/C)
d.L.24	Deviation Meter: High Red Solid	20	11	2-254 >High Yellow Solid (Units per Deg F/C)
d.L.25	Deviation Meter: High Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)
d.L.26	Deviation Meter: Low Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)
d.L.27	Deviation Meter: Low Red Solid	20	11	2-254 >Low Yellow Solid (Units per Deg F/C)
d.L.28	Deviation Meter: Low Red Flashing	30	17	3-255 >Low Red Solid (Units per Deg F/C)
d.L.29	Dryout Type	0	0	0=Step Start:Zero Cross, 1=Patented GF1; Phase Angle Fire
d.L.30	Dryout Lock	1	1	0=No Lock, 1=Locked Dryout
d.L.31	Controller Control Output	0	0	0=Zero Cross Triac Firing, 1=Phase Angle Triac Firing, 2=Time Proportion
d.L.32	2)Time Proportion-Cycle Time	10	10	10 to 60 seconds
d.L.33	2)Time Proportion-Minimum On Time	1	1	0.1 to 60.0 seconds increments of 100 milliseconds
d.L.34	2)Time Proportion-Minimum Off Time	1	1	0.1 to 60.0 seconds increments of 100 milliseconds
d.L.35	PID Overshoot Control Enable	1	1	0=disabled, 1=enabled
d.L.36	PID Control Type	1	1	0=Monitor Mode, 1=Legacy PID, n/a 2=Select PID, 3=Operator Tune, n/a 4=AutoTune
d.L.37	3) Operator Tune - Gain	100	100	Only when d.L.36 PID Control Type = 3 Operator Tune
d.L.38	3) Operator Tune - Reset	100	100	Only when d.L.36 PID Control Type = 3 Operator Tune
d.L.39	3) Operator Tune - Derivative	0	0	Only when d.L.36 PID Control Type = 3 Operator Tune
<b>d.L.40</b>	<b>Process Loading Area</b>	<b>1</b>	<b>1</b>	<b>0=reload original values, 1=reload last changed values for d.L.41 - d.L.46</b>
d.L.41	First Time Autotune Bit	0	0	Not Available
d.L.42	Autotune PID Proportional Band	0	0	Not Available (Gain )
d.L.43	Autotune PID Integration	0	0	Not Available (sample time)
d.L.44	Autotune PID Derivative	0	0	Not Available ( currently not used )
d.L.45	First Time Bumpless Bit	0 fixed	X	X=0 for original values, X can only become 1 when stable %Power learned
d.L.46	Bumpless Transfer Value	0 fixed	X	X=0 for original values, X becomes stable % Power when learned
<b>d.L.47</b>	<b>GUI Loading Area</b>	<b>1</b>	<b>1</b>	<b>0=reload original values, 1=reload last changed values for d.L.48 - d.L.56</b>
d.L.48	T/C Swap Enable Bit	0	0	
d.L.49	T/C Swap Frame ID	0	0	
d.L.50	T/C Swap Address ID	0	0	
d.L.51	Groups Enable Bit	0	0	
d.L.52	Group Number	1	1	
d.L.53	Layers Enable Bit	0	0	
d.L.54	Layer Number	1	1	
d.L.55	Calibrated T/C Trim Enable Bit	0	0	
d.L.56	Calibrated T/C Trim Value	0	0	
<b>d.L.57</b>	<b>Operator Loading Area</b>	<b>1</b>	<b>1</b>	<b>0=reload original values, 1=reload last changed values for d.L.58 - d.L.60</b>
d.L.58	Auto Setpoint	212	100	
d.L.59	Manual Setpoint	7	7	
d.L.60	Slave's Trim % Power Value	0	0	
d.L.61 - d.L.98		0	0	Not Used
d.L.99	End of Recipe	0	0	Read Only ( 0 = cancel, 1= save when in configuration mode only)

#### 4.5. Control Mode Button and Status Indicators Overview

##### 4.5.1. No Button Presses, Just Status Indicators

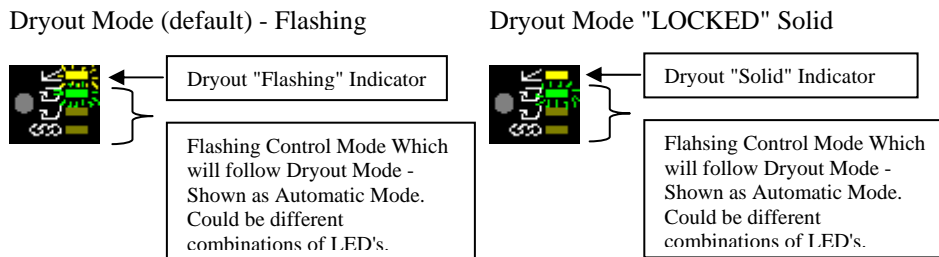
- Automatic Mode



- Manual Mode



- Dryout Modes ( power up control mode which applies power to heater to bake moisture out)



- Master Modes ( sends % power to Slaves linked to it)

Master Automatic Mode



Master Manual Mode

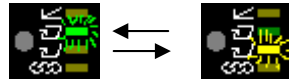


- Slave Mode ( gets % Power from Master Module )



- Bumpless Transfer Mode ( Alarm T/C Failure Mode to use last obtained stable % power )

Automatic and Manual Mode LED Alternate Flashing when in Bumpless Transfer



##### 4.5.2. Button Presses with "NO BLUE SELECT" Light

Blue Select OFF



Auto



Press

Manual



Press

##### 4.5.3. Button Presses with "BLUE SELECT" Light ON

Blue Select ON



Auto



Press

Master/Auto



Press

Manual



Press

Master/Manual

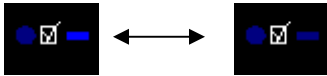


Press

#### 4.6. Blue Module Select Status Indicator and Button Overview



4.6.1. Select Individual Modules - Press Select Button to Toggle On then OFF.

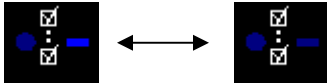


Note that while Pressing the Select Button Down, the Upper display shows the Modules Address and the Lower Display shows the Frame ID. ( ie. Upper "A.002", Lower "F.001" which means Frame 1, Module 2)

4.6.2. Range Select Modules

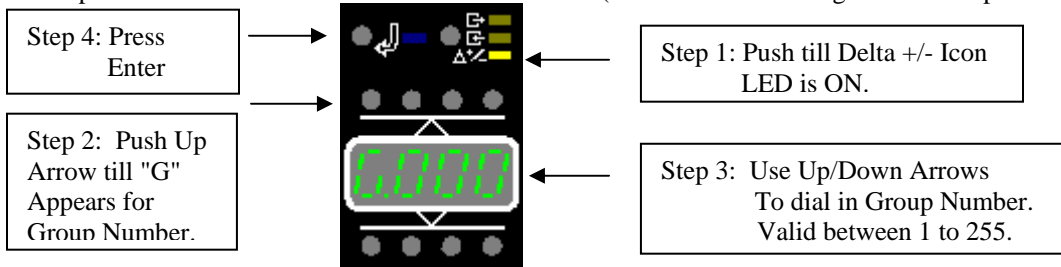
Same procedure above, except, hold the First Module Select Button Down then press a second module Select button down. All the modules with Frame ID's and Module Address which fall within this range will toggle their BLUE SELECT LEDS.

4.6.3. Select All/Deselect All from the IFM Frame Module. Turns ALL Modules BLUE LEDS ON or OFF.



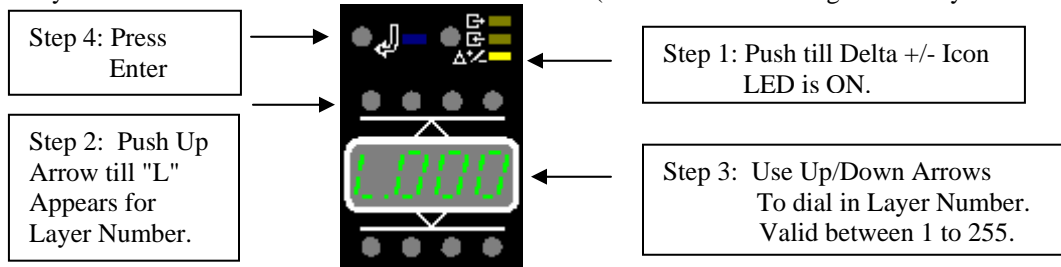
Note that while Pressing and holding this button down, ALL modules Upper display shows the Modules Address and the Lower Display shows the Frame ID. (ie. Upper "A.002", Lower "F.001" means Frame 1, Module 2)

4.6.4. Group Select Modules from the IFM Frame Module. (Needs Custom Configuration Group Number for ICM's)



Any ICM modules which Matches this Group number will toggle it's Blue Select LED ON/OFF.

4.6.5. Layer Select Modules from the IFM Frame Module. (Needs Custom Configuration Layer Number for ICM's)



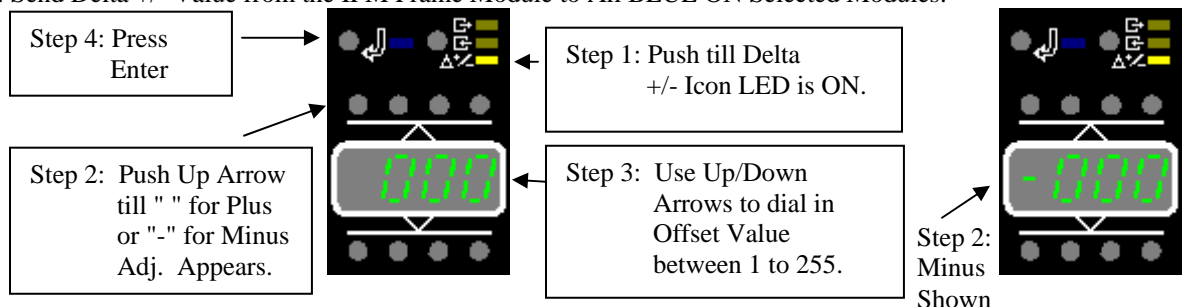
Any ICM modules which Matches this Layer number will toggle it's Blue Select LED ON/OFF.

4.7. Making Changes multiple Blue Selected Modules

4.7.1. Make change from one module for All Selected Modules

Make a set-point change on one BLUE ON Selected module then PRESS and HOLD it's Select Button until all the BLUE LED's go OFF. New Set-point should be on all Selected modules and the BLUE LED's are now OFF.

4.7.2. Send Delta +/- Value from the IFM Frame Module to All BLUE ON Selected Modules.



ICM modules with BLUE LED's ON will add or subtract the Offset value from it's current Auto Set-point.

4.8. Lower Display with Adjustment Up/Down Digit Buttons Overview

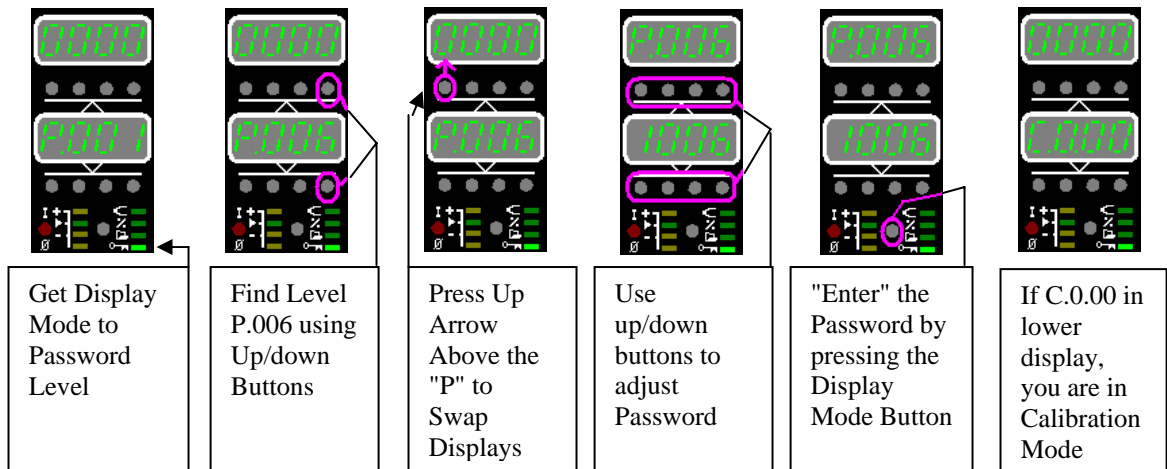
4.8.1. Use the buttons above and below the lower display to adjust the individual digit on this display.

- 4.8.2. Special use of the buttons will be described in the special processing modes where required, such as in Calibration Mode or other Password Level Modes.
- 4.9. ICM - Password Level P.001 - Reset - Normal Control Mode ( Simulates a Power Off then On sequence.)
- 4.9.1. Password to invoke this level is 1001. (See Password Level 6 for the first 5 thumbnails but enter this password.)
- 4.9.2. This mode basically forces a reset on the module which would be like turning power off then on.
- 4.10. ICM - Password Level P.002 - Select Recipe (F1-Deg F, F2-DegC, or U1 to U9 custom Recipes.)
- 4.10.1. Password to invoke this level is 1002. (See Password Level 6 for the first 5 thumbnails but enter this password.)
- 4.10.2. The Lower Display should show "F2".
- 4.10.3. Use Up/Down Arrows to select the Recipe you wish to load. F1,F2, U1, U2, U3, U4, U5, U6, U7, U8 or U9.
- 4.10.4. Press the "enter" or Display Mode button. The Upper Display will show your Entry Value.
- 4.10.5. The Lower Value will Show 0. Enter 1 to load into the LOCAL memory and run, or 0 to cancel the entry.
- 4.10.6. Press the "enter" or Display Mode button to finish. The module will either return to normal display mode or "Reboot" with the New Selected Recipe Choice.
- 4.11. ICM - Password Level P.003 - Copy one Recipe to a Custom Recipe U1, U2, U3, U4, U5, U6, U7, U8 or U9.
- 4.11.1. Password to invoke this level is 1003. (See Password Level 6 for the first 5 thumbnails but enter this password.)
- 4.11.2. The Lower Display should show F1.U3 which is default for sending a copy of Factory Default F1 to U3.
- 4.11.3. Use up/down arrows to change the source to the destination recipe (ie F1.U3 has source F1 going to U3).
- F1 is the Factory Default for Degrees F.
  - F2 is the Factory Default for Degrees C.
  - L1 is currently running in "LOCAL" memory in the controller which has the latest set-point changes, etc.
  - U1 thru U9 are available for user custom configurations. (these have a default shipped from the factory but can be changed per the customers needs.
- NOTE: Updating a Custom Recipe U1 thru U9. Lets say you have been using U3 as a custom recipe and have made operator adjustments to set-points. These values are stored in the LOCAL memory and NOT the original U3 recipe memory. Even though on power up, the new information can be read from the LOCAL, the LOCAL is not the U3 custom recipe. You have to copy the L1.U3 to update the U3 memory with the current operator changes in the LOCAL. Why update? If you change recipes, then the LOCAL memory will be over-written and the stored information will be lost. Reloading U3 will get the original recipe as stored, NOT the LOCAL memory as modified while being used in production.
- 4.11.4. When you have your select 'source.destination' correct, then press "enter" or the Display Mode button. The displays will swap and the lower display will allow a 0 for cancel or change to 1 for perform copy. Press Enter or Display Mode button to invoke your choice and return to normal display.
- 4.11.5. NOTE: This only copied one recipe to another. It did not reload a different recipe, you must go to Password Level 2 and select which recipe to load.
- 4.12. ICM - Password Level P.004 - Configure Customer User Recipe ( See Appendix C: Recipe Configuration Details and Worksheets.)
- 4.12.1. Password to invoke this level is 1004. (See Password Level 6 for the first 5 thumbnails but enter this password.)
- 4.12.2. The Lower Display will show " U.0.00 ". Where U.x.00 the x is the user recipe 1 through 9.
- 4.12.3. Use up/down arrows to select your recipe U.1.00 thru U.9.00.
- 4.12.4. When you have selected the desired recipe, Press the "enter" (Display Mode) Button to select the recipe.
- 4.12.5. The Display will now show " U.1.01" . U.1. is the recipe to modify, U.1.01 where .01 is the step or parameter that is showing in the upper display.
- 4.12.6. NOTE: U.1.01 through U.9.01 have step U.x.01 showing in the upper display set to either 0 for Deg F, or 1 for Deg C. It is recommended to start with a recipe which has your desired engineering units to begin with. If you change engineering units, the values in you recipe will NOT change, you will have to change each parameter.
- 4.12.7. General Rules: To select a step to change, use the up arrow button above the "U" in the U.1.01 recipe. This swaps the recipe to the upper display and puts the adjustable parameter in the lower display. Now use the setpoint up/down arrows to adjust this parameter. When done, press the "enter" (display mode key) to enter and swap the displays back. Keep making changes to the desired steps until complete.
- 4.12.8. To End: go to step 99. Ie - U.1.99, press the up arrow button above the "U", in the lower display type 1 to save changes to this recipe and enter 0 cancel this procedure. Press the "enter" (display mode) button to finish. The module will either save the recipe or cancel the recipe and reboot with the previous defaulted recipe. It will NOT necessarily use this recipe. You must go to Password Level 2 and enter this recipe number to load it, it has just been modified and stored.
- 4.13. ICM - Password Level P.005 - Define Customer Passwords ( NOT IMPLEMENTED.)
- 4.13.1. Password to invoke this level is 1005. (See Password Level 6 for the first 5 thumbnails but enter this password.)

4.14. ICM - Password Level P.006 - Calibration Mode ( Will not control in this mode. )

\*\*\* NOTE: These routines must be followed exactly in order to prevent problems.

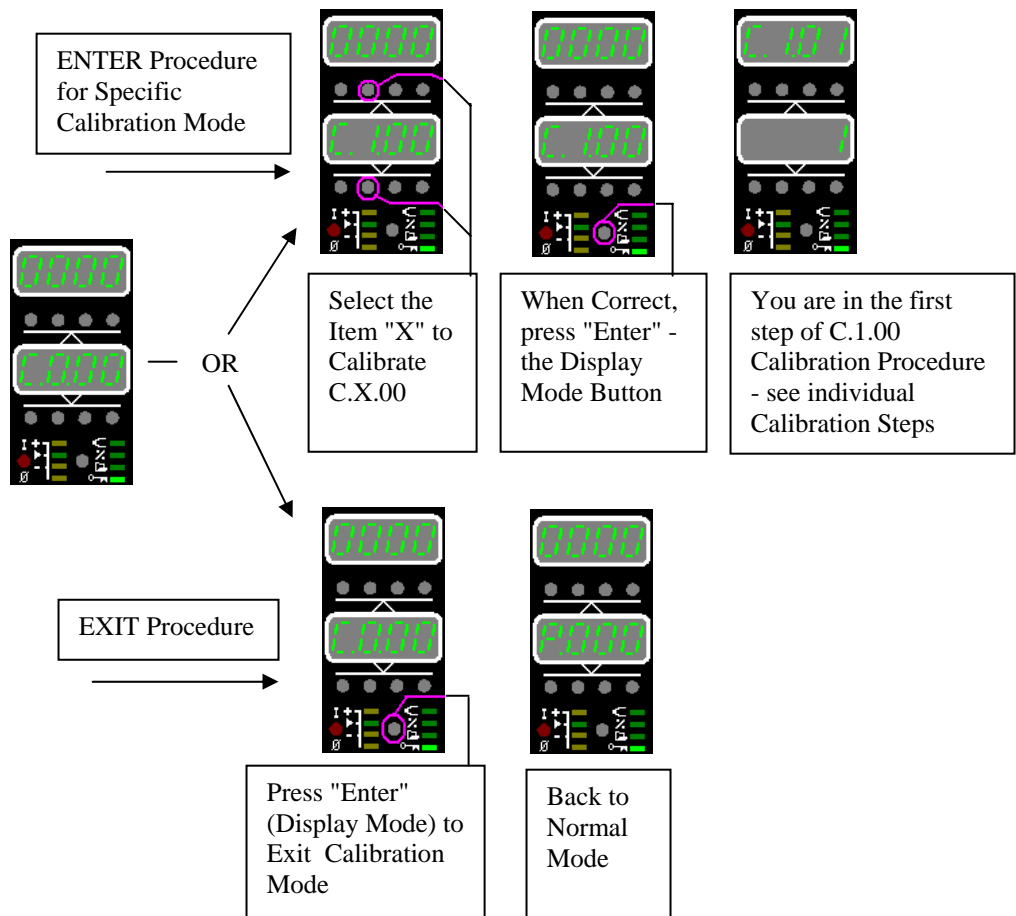
4.14.1. How to Enter Calibration Mode Through Password Level P.006; Password to invoke this level is 1006.



The Following are the Calibration Mode Selections

- C.1.00 Thermocouple Calibration
- C.2.00 Load Current in Amps
- C.3.00 AC Volts Calibration
- C.4.00 Ground Fault "GFI" Calibration
- C.5.00 TC CAL Verification

See the appropriate section following to get details on each Calibration routine.



#### 4.14.2. C.1.00 Thermocouple Calibration - done in Degrees F only.

- C.1.01 => 1 = J type T/C being used for calibration in Degrees F  
2 = K type T/C being used for calibration in Degrees F  
Press Enter
- C.1.02 => Enter Actual Room Temperature in Degrees F, press enter
- C.1.03 => Short Input on white expansion connector 0 milli-volts, press enter
- C.1.04 => Connect 35.000 milli-volts to Input on white Expansion, press enter.
- C.1.05 => Upper display will show actual millivolts. Press Enter when satisfied.
- C.1.06 => Upper display will show actual CJC Room Temperature in Degrees F.
- C.1.07 => Input 500F for Current T/C type from a calibrated source and press enter. This will make the final minor offset adjustments.
- C.1.08 => Upper display will show the current calculated Thermocouple reading in Degrees F.  
End (upper) 0 (lower) in the lower display either 1= save new calibration values or  
0 = discard new calibration values. Press enter to then proceed.
- C.1.00 in lower display 0 in upper. Select Specific Calibration Mode or Exit Calibration Mode procedure.

#### 4.14.3. C.2.00 Load Amps Calibration

- C.2.01 => Enter in lower display the actual Load Current in Amps. Press enter.
- C.2.02 => Upper display will show the current calculated Amps reading. Press enter when satisfied.
- End (upper) 0 (lower) in the lower display either 1= save new calibration values or  
0 = discard new calibration values. Press enter to then proceed.
- C.2.00 in lower display 0 in upper. Select Specific Calibration Mode or Exit Calibration Mode procedure.

#### 4.14.4. C.3.00 AC Volts Calibration

- C.3.01 => Enter in lower display the actual AC rms Voltage. Press enter.
- C.3.02 => Upper display will show the current calculated AC Volts rms reading. Press enter when satisfied.
- End (upper) 0 (lower) in the lower display either 1= save new calibration values or  
0 = discard new calibration values. Press enter to then proceed.
- C.3.00 in lower display 0 in upper. Select Specific Calibration Mode or Exit Calibration Mode procedure.

#### 4.14.5. C.4.00 Ground Fault "GFI" Calibration

- C.4.01 => Enter in lower display the actual Ground Fault Current in Amps.  
Press enter.
- C.4.02 => Upper display will show the current calculated Ground Fault Current in Amps reading. Press enter when satisfied.
- End (upper) 0 (lower) in the lower display either 1= save new calibration values or  
0 = discard new calibration values. Press enter to then proceed.
- C.4.00 in lower display 0 in upper. Select Specific Calibration Mode or Exit Calibration Mode procedure.

#### 4.14.6. C.5.00 Calibration Date Entry Storage ( this is not necessary but helpful for ISO )

- C.5.01 => Enter 4 digit Year Code ( ie Year 2005 ) Press enter.
- C.5.02 => Enter 2 digit Month Code ( ie - 11 for November ) Press enter.
- C.5.03 => Enter 2 digit Day Code ( ie - 14 for the 14th day of the month )  
Press enter.
- End (upper) 0 (lower) in the lower display either 1= save new calibration values or  
0 = discard new calibration values. Press enter to then proceed.
- C.5.00 in lower display 0 in upper. Select Specific Calibration Mode or Exit Calibration Mode procedure.

#### 4.15. ICM - Password Level P.007 - Try to Recovering from Recipe Error by loading original.

- 4.15.1. Password to invoke this level is 1007. (See Password Level 6 for the first 5 thumbnails but enter this password.)

NOTE: On power up, recipes load from a LOCAL copy in memory. The LOCAL copy can allow the operator to keep the last changes to setpoints and other operator variables. If the LOCAL copy gets corrupted, which should not happen, using this password level loads the original Recipe that the operator was using. Ie- if custom Recipe U3 was chosen from Password Level 2, then it will copy the contents of U3 and place them in the LOCAL memory. This LOCAL memory is where operator changes are kept track of. If the operator changes a setpoint, LOCAL is changed, NOT U3. If this LOCAL memory gets corrupted, then this password attempts to recover by reloading a fresh U3 recipe into the LOCAL. It should be close to what was last used.

- 4.16. ICM - Password Level P.008 - Force Factory Default Calibration Constants - Need to Recalibrate!!!
  - 4.16.1. Password to invoke this level is 1008. (See Password Level 6 for the first 5 thumbnails but enter this password.)
  - 4.16.2. This attempts to recover from "FEr2" message, which are EEPROM checksum errors.

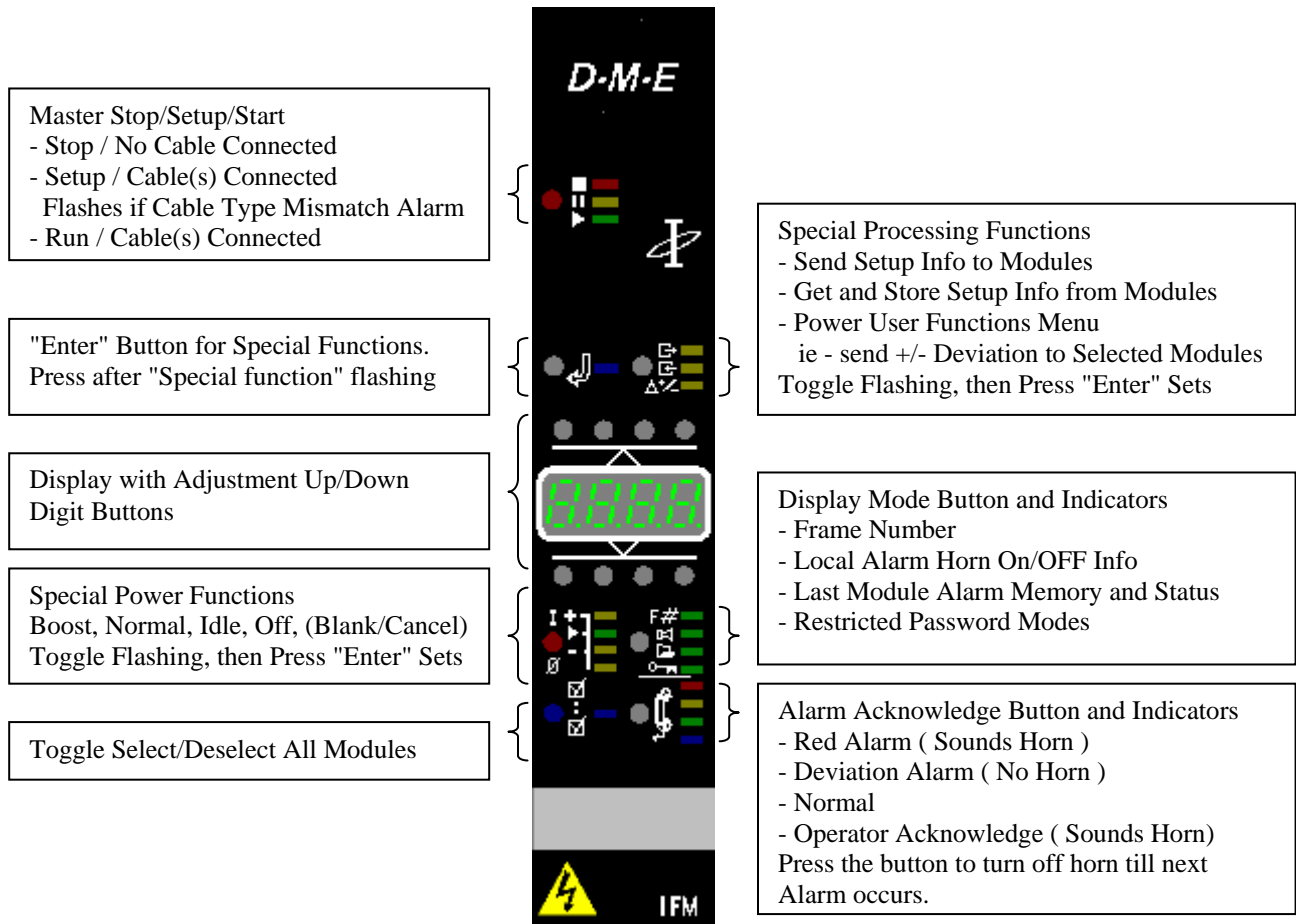
Typically will only occur when new software is Flashed into the module by DME and variables are Added to the Calibration sections of the memory. Could happen if corruption of the memory occurs.
- 4.17. ICM - Password Level P.009 - Force DME Factory Mode for all User Recipes - U1 through U9.
  - 4.17.1. Password to invoke this level is 1009. (See Password Level 6 for the first 5 thumbnails but enter this password.)
  - 4.17.2. This will over-write all current user configurations Recipes U1 thru U9 and return them to Factory Defaults.
- 4.18. ICM - Password Level P.0.10 - Operator Display Panel Test Mode.
  - 4.18.1. Password to invoke this level is 1010. (See Password Level 6 for the first 5 thumbnails but enter this password.)
  - 4.18.2. Stage 1: Turn ON all LED's on Display
  - 4.18.3. Stage 2: Press any Operator Panel Button Once - goes into "Scroll ONE LED" at a time mode.
  - 4.18.4. Stage 3: Press any Operator Panel Button Once - goes into I/O test Mode.

Press/release one button at a time and watch the UPPER associated LED turn ON/OFF.  
Lower display Left Three digits show Module Address as Detected.  
Lower display Right Most Digit shows Misc. I/O on board.  
Upper "-" shows I/O status of Heat sink temperature alarm  
Middle "-" shows I/O status of Frame Data Input Line  
Lower "-" shows I/O status of Frame Clock Input Line
  - 4.18.5. Stage 4: Press both the Enter and the Special Power button together to exit. These buttons are both just below the Down Adjustment buttons for the setpoint entry.
- 4.19. Jumper on pins 4&5 causes FRAM to Factory Defaults. Should never be used except in rare occasions.

Module will need re-calibration and module will loose all stored recipes. Will be returned to Factory conditions, not off the shelf conditions which would add calibration procedures to this. This should only be done if module will not run or light up. Check Module Fuses first and try another module in same slot.
- 4.20. ICM1502 - Part Numbers and Spare Parts

## 5. IFM - Integrity Frame Module

### 5.1. IFM - Quick Over View



### 5.2. IFM - In a Frame with Multiple ICM Modules

#### 5.2.1. Display Mode Function ( Press Button to Scan the 4 different Display Functions in Normal Use.)

##### Frame Number LED

Shows the current setting for the Frame Number " F.001 " factory default, frame #1  
Can be changed through password level 1.

##### Local Alarm Horn On/Off Info LED

Shows status of the built in Alarm Horn " H. On " Enabled or " H.OFF " Disabled.

This allows the Internal Horn to Always Sound or Always be Silenced.

It does not effect the External contacts, they always Work if Alarms Exist.

Password Level 3 Controls this function

1=Horn Disabled "off" ( Internal Horn Will never Sound on an Alarm )

2=Horn Enabled "on" ( Internal Horn Will Always Sound on an Alarm )

3=user selectable. factory default ( Operator Can Turn Horn " H. On " or " H.OFF " )

(Operator Uses the Right Most Up/Down Set-point Adjust Button to Turn On or OFF)

(Operator should use the Alarm Acknowledge to silence the Horn, only use this function to turn Off the Horn if trouble shooting a problem that continually triggers to horn.)

**Last Module Alarm Memory and Status LED**

- When this Display Mode LED is ON, the Display shows the Module Address that sent the last Alarm.  
 Ie - A.001 in the display indicates that the first module in "THIS" Frame caused the last alarm
- **Additional "b" Information** by De-Pressing the Setpoint Adjustment Button below the "A" in A.001.  
 When pressed and held will show b.xxx where xxx is alarm status bits which are defined as follows.
- **Additional "c" Information** by De-Pressing the Setpoint Adjustment Button Below the Right most digit.  
 Ie - A.001, Press and hold the button below the "1" to see the "c" information.  
 When pressed and held will show C.yyy where yyy is alarm status bits which are defined as follows.

**Alarm Message Additional Information Decoding for ICM-1502/1501 Temperature Control Modules**

" b.xxx " Left Down Setpoint Adjust Button Held		Decimal Value	" C.yyy " Right Down Setpoint Adjust Button Held	
xxx in decimal			yyy in decimal	
Binary Bit Position	Binary Bit Position Description	If Binary x=1	Binary Bit Position	Binary Bit Position Description
x000 0000	Reserved for future use	128	x000 0000	Reserved for future use
0x00 0000	Heat Sink Temp Alarm 1=Alarm, 0=OK	64	0x00 0000	Reserved for future use
00x0 0000	Open TC Alarm 1=on, 0=off	32	00x0 0000	Over Current Alarm
000x 0000	Reverse TC Alarm 1=on, 0=off	16	000x 0000	SmartStart (TM) Dryout Error Alarm
0000 x000	Shorted TC Alarm 1=on, 0=off	8	0000 x000	Load Fuse Failure
0000 0x00	Ground Fault Alarm 1=on, 0=off	4	0000 0x00	Temperature Deviation Alarm
0000 00x0	Open Output Device 1=on, 0=off	2	0000 00x0	Horn Alarm Old
0000 000x	Shorted Output Device 1=on, 0=off	1	0000 000x	Horn Alarm

**Conversion Lookup Table Decimal 0-255 to Binary (use b.xxx or C.yyy to lookup xxx or yyy to get Binary)**

0 00000000	40 00101000	80 01010000	120 01111000	160 10100000	200 11001000	240 11110000
1 00000001	41 00101001	81 01010001	121 01111001	161 10100001	201 11001001	241 11110001
2 00000010	42 00101010	82 01010010	122 01111010	162 10100010	202 11001010	242 11110010
3 00000011	43 00101011	83 01010011	123 01111011	163 10100011	203 11001011	243 11110011
4 00000100	44 00101100	84 01010100	124 01111100	164 10100100	204 11001100	244 11110100
5 00000101	45 00101101	85 01010101	125 01111101	165 10100101	205 11001101	245 11110101
6 00000110	46 00101110	86 01010110	126 01111110	166 10100110	206 11001110	246 11110110
7 00000111	47 00101111	87 01010111	127 01111111	167 10100111	207 11001111	247 11110111
8 00001000	48 00110000	88 01011000	128 10000000	168 10101000	208 11010000	248 11111000
9 00001001	49 00110001	89 01011001	129 10000001	169 10101001	209 11010001	249 11111001
10 00001010	50 00110010	90 01011010	130 10000010	170 10101010	210 11010010	250 11111010
11 00001011	51 00110011	91 01011011	131 10000011	171 10101011	211 11010011	251 11111011
12 00001100	52 00110100	92 01011100	132 10000100	172 10101100	212 11010100	252 11111100
13 00001101	53 00110101	93 01011101	133 10000101	173 10101101	213 11010101	253 11111101
14 00001110	54 00110110	94 01011110	134 10000110	174 10101110	214 11010110	254 11111110
15 00001111	55 00110111	95 01011111	135 10000111	175 10101111	215 11010111	255 11111111
16 00010000	56 00111000	96 01100000	136 10001000	176 10110000	216 11011000	
17 00010001	57 00111001	97 01100001	137 10001001	177 10110001	217 11011001	
18 00010010	58 00111010	98 01100010	138 10001010	178 10110010	218 11011010	
19 00010011	59 00111011	99 01100011	139 10001011	179 10110011	219 11011011	
20 00010100	60 00111100	100 01100100	140 10001100	180 10110100	220 11011100	
21 00010101	61 00111101	101 01100101	141 10001101	181 10110101	221 11011101	
22 00010110	62 00111110	102 01100110	142 10001110	182 10110110	222 11011110	
23 00010111	63 00111111	103 01100111	143 10001111	183 10110111	223 11011111	
24 00011000	64 01000000	104 01101000	144 10010000	184 10111000	224 11100000	
25 00011001	65 01000001	105 01101001	145 10010001	185 10111001	225 11100001	
26 00011010	66 01000010	106 01101010	146 10010010	186 10111010	226 11100010	
27 00011011	67 01000011	107 01101011	147 10010011	187 10111011	227 11100011	
28 00011100	68 01000100	108 01101100	148 10010100	188 10111100	228 11100100	
29 00011101	69 01000101	109 01101101	149 10010101	189 10111101	229 11100101	
30 00011110	70 01000110	110 01101110	150 10010110	190 10111110	230 11100110	
31 00011111	71 01000111	111 01101111	151 10010111	191 10111111	231 11100111	
32 00100000	72 01001000	112 01110000	152 10011000	192 11000000	232 11101000	
33 00100001	73 01001001	113 01110001	153 10011001	193 11000001	233 11101001	
34 00100010	74 01001010	114 01110010	154 10011010	194 11000010	234 11101010	
35 00100011	75 01001011	115 01110011	155 10011011	195 11000011	235 11101011	
36 00100100	76 01001100	116 01110100	156 10011100	196 11000100	236 11101100	
37 00100101	77 01001101	117 01110101	157 10011101	197 11000101	237 11101101	
38 00100110	78 01001110	118 01110110	158 10011110	198 11000110	238 11101110	
39 00100111	79 01001111	119 01110111	159 10011111	199 11000111	239 11101111	

**Restricted Password Modes LED**

- When the LED is on, it shows a Password Level. See Individual IFM Password Level Section.

**5.2.2. Alarm Acknowledge Function - Silences Internal Latched HORN until New Alarm.**

- This Button should be the preferred way to Silence the Internal Alarm Horn. The other method for the "Local Alarm Horn On/OFF Info Feature" should only be used when an operator is debugging a currently re-occurring alarm and wants to totally shut the Internal Horn OFF until appropriate, otherwise this feature is On.

- When the Internal Alarm Horn Sounds, Pressing this button will silence the Horn Until the Next New Alarm Occurs.

- The RED Alarm LED may be ON or OFF. If ON -a module is in Alarm; if OFF - no modules are in Alarm



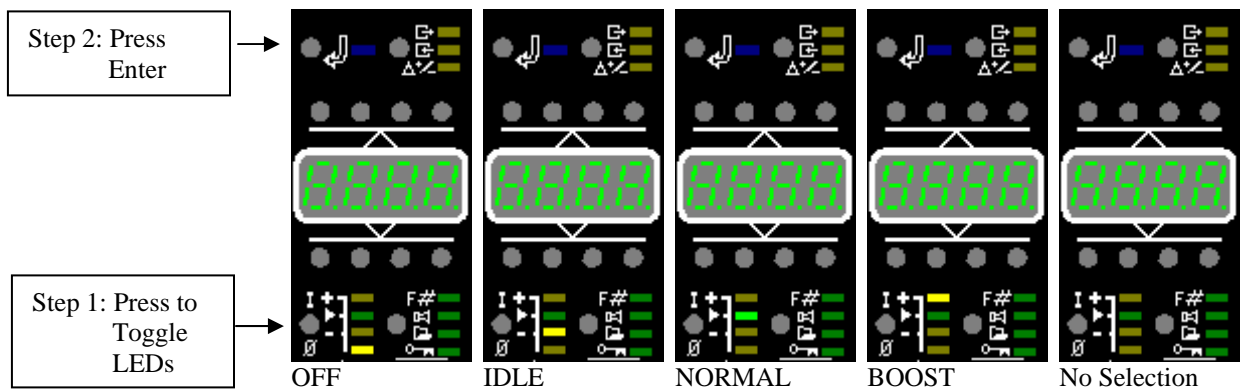
**5.2.3. Select/Deselect All Function. Turns ALL Modules BLUE LEDS ON or OFF.**



Note that while Pressing and holding this button down, ALL modules Upper display shows the Modules Address and the Lower Display shows the Frame ID. (ie. Upper "A.002", Lower "F.001" means Frame 1, Module 2)

**5.2.4. Special Power Functions - OFF, IDLE, NORMAL, BOOST**

Pressing the Special Power Functions Button Will Toggle one LED FLASHING. When function is what the operator wants, Press the Enter Button and LED will Go Solid.

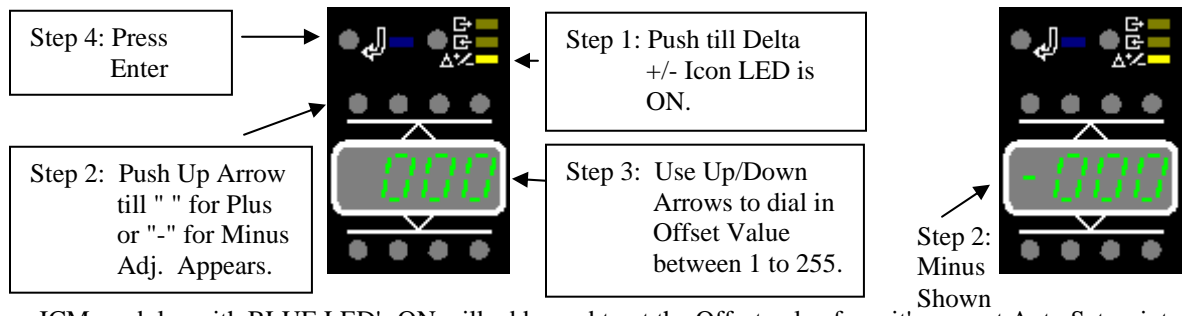


Any ICM modules which Matches this Configuration Function Enable Feature will change to this mode, otherwise, then will default to NORMAL. Only one alternate YELLOW LED state per system plus Default GREEN is allowed.



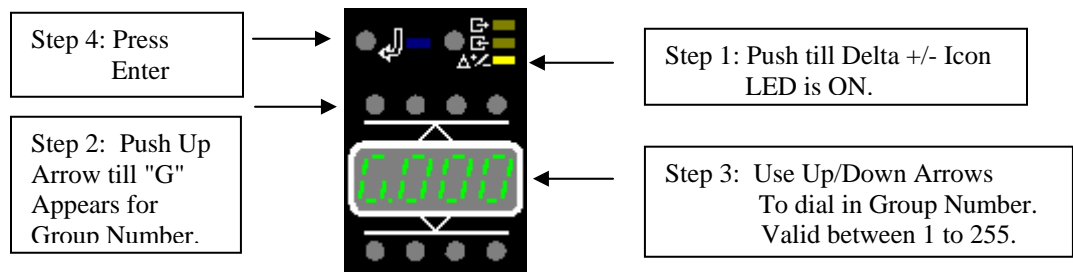
5.2.5. Special Processing Functions - Send Delta +/-, Group Select, Layer Select.

**Send Delta +/- Value to All BLUE ON Selected Modules.**



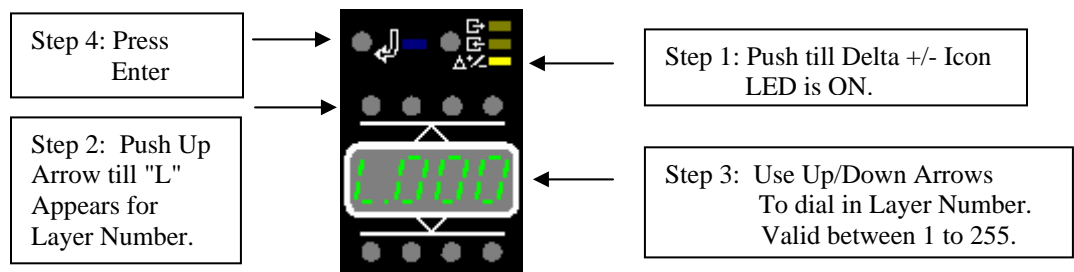
ICM modules with BLUE LED's ON will add or subtract the Offset value from it's current Auto Set-point.

**Group Select Modules. (Needs Custom Configuration Group Number Match In ICM Modules)**



Any ICM modules which Matches this Group number will toggle it's Blue Select LED ON/OFF.

**Layer Select Modules. (Needs Custom Configuration Layer Number Match in ICM Modules)**



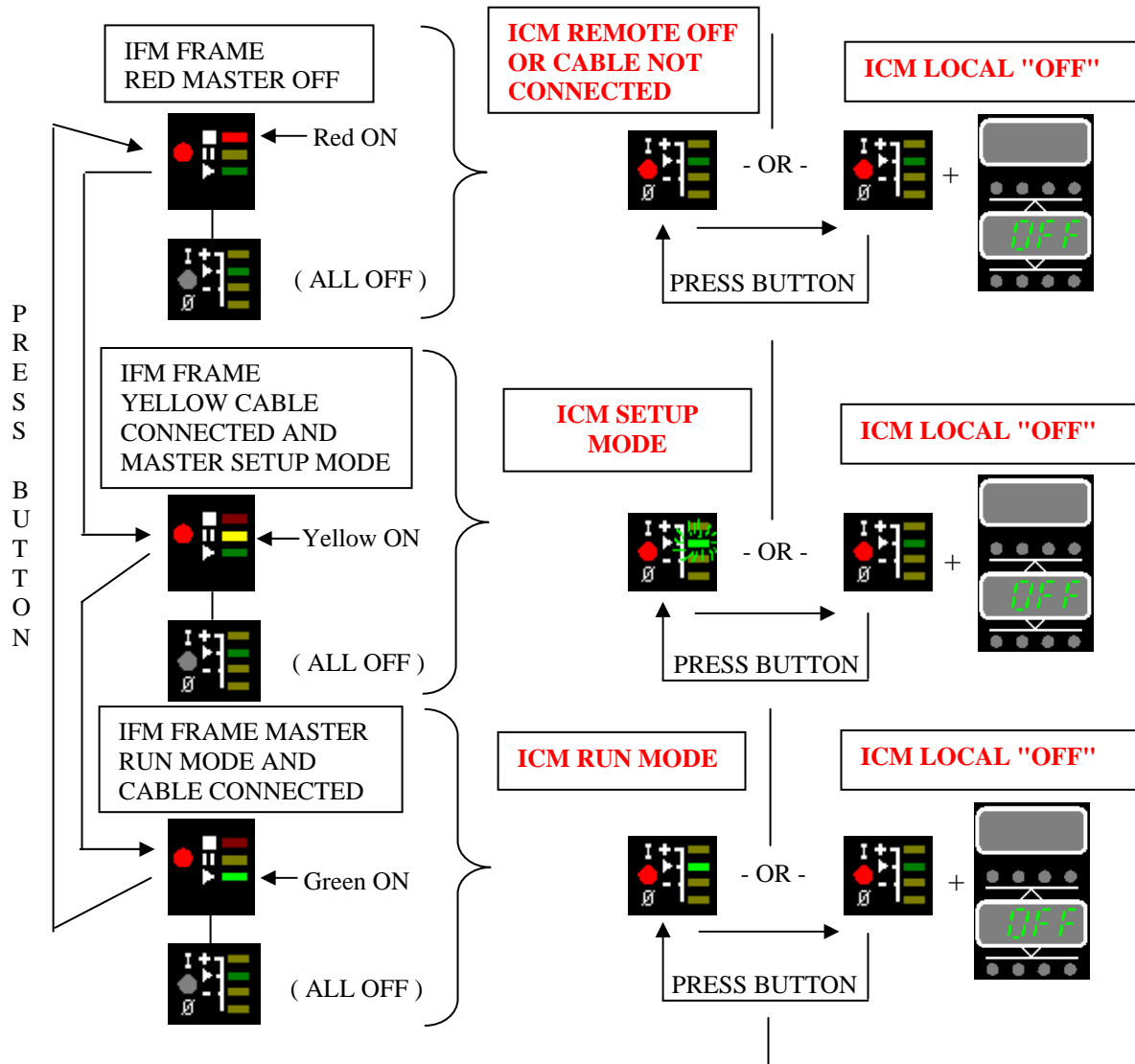
Any ICM modules which Matches this Layer number will toggle it's Blue Select LED ON/OFF.

5.2.6. Enter Button for Special Functions

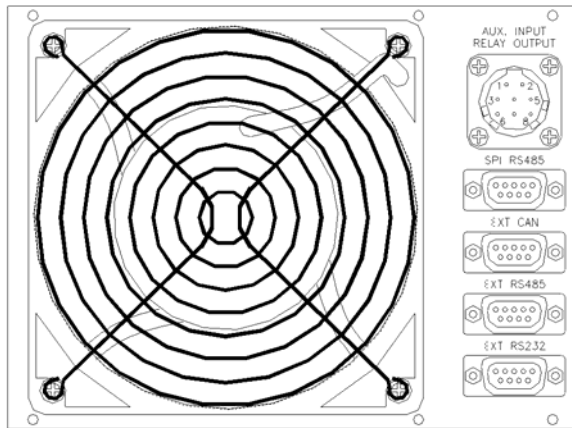
See use in 4.21.4 Special Power Functions - OFF, IDLE, NORMAL, BOOST and 4.21.5 Special Processing Functions - Send Delta +/-, Group Select, Layer Select.

5.2.7. Master Stop/Setup/Start Function

- **IFM Frame Module is Attached with ICM Temperature Control Modules in Frame**  
 IFM FRAME Module Powers up to either Master Off (Red LED) or Master Setup (Yellow LED)



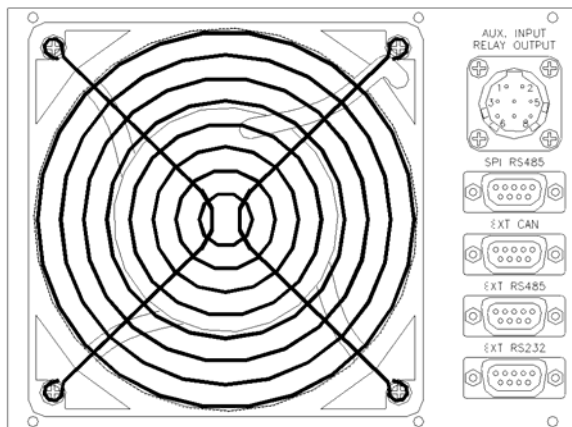
5.3. IFM - Running with Multiple Frames and IFM modules



Daisy Chain Cable 1 to 1 using DME Catalog Number ICAN-1700. If more than 2 Frames are connected, use additional DME Catalog Number ICAN-1700 cables to Daisy Chained them together.  
 Each IFM Frame Module **MUST BE UNIQUE**, ie - F.001, F.002, . . . F.00x.  
**Do NOT Exceed 3 Ft. Length of Cable!!!!**  
**Keep Cables as Short As Possible.**

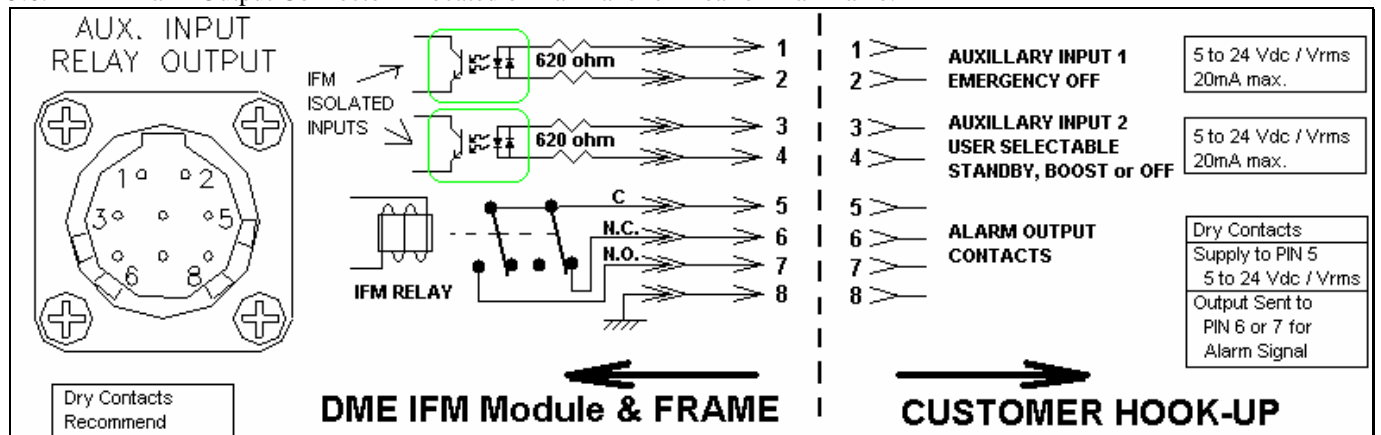
5.4. IFM - SPI ( Society of Plastics Industry ) Interface Port ( Not Implemented )

5.5. IFM - DMECAN GUI Interface Port when it becomes available.



DME GUI (Graphical User Interface ) Computer System Connects Here, see the DME GUI Manual.  
 Daisy Chain Cable 1 to 1 using DME Catalog Number ICAN-1700. If more than 2 Frames are connected, use additional DME Catalog Number ICAN-1700 cables to Daisy Chained them together.  
 Each IFM Frame Module **MUST BE UNIQUE**, ie - F.001, F.002, . . . F.00x.  
**Do NOT Exceed 3 Ft. Length of Cable!!!!**

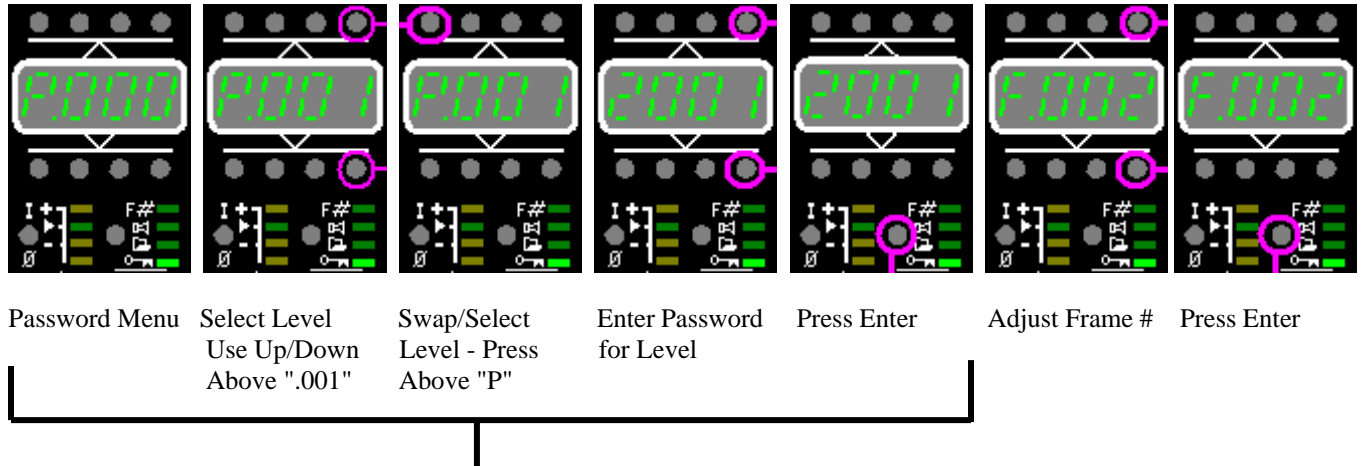
5.6. IFM - Alarm Output Connector - Located on Fan Panel on Rear of Mainframe.



5.7. IFM - Pager Serial Output Port ( Not Implemented )

## 5.8. IFM - Password Levels

Following procedure shows how to change Frame Module Frame Number to F.002.



Follow Procedure for Entering Password Levels Below.

### 5.8.1. Password Level 1 - Frame Number Valid 1-223, default 1.

➤ Each Integrity Frame Module Must be unique. This procedure allows the operator to change the Frame Number.

- 5.8.1.1. Enter Password Level P.001
- 5.8.1.2. Enter Password for this Level = 2001
- 5.8.1.3. Adjust Frame Number F.xxx to desired value. Ie F.002. Note: all units reboot.
- 5.8.1.4. Press Enter and you are done. Back to P.001.

### 5.8.2. Password Level 2 - Machine ID Valid 0-9999, default 1.

➤ Each Injection Molding Machine Station can be identified with a unique number. Useful in future expansion products.

- 5.8.2.1. Enter Password Level P.002
- 5.8.2.2. Enter Password for this Level = 2002
- 5.8.2.3. Adjust Machine ID # xxxx to desired value. Ie factory default = 1.
- 5.8.2.4. Press Enter and you are done. Back to P.002.

### 5.8.3. Password Level 3 - Horn Alarm Function

➤ This feature controls the preference of the internal Horn Alarm Operation.

- 5.8.3.1. Enter Password Level P.003
- 5.8.3.2. Enter Password for this Level = 2003
- 5.8.3.3. Adjust the Internal Horn Preference mode
  - 1=Horn Disabled "off" ( Internal Alarm Horn Will Never Sound )
  - 2=Horn Enabled "on" ( Internal Alarm Horn Will always sound on new alarm)
  - 3=user selectable. factory default ( operator will be able to select on or off )
- 5.8.3.4. Press Enter and you are done. Back to P.003.

#### 5.8.4. Password Level 4 - External Input 2 Function show "EI2.x"

- This feature controls the preference of the External Contact Input #2 from the rear of the mainframe. It allows the selection of one of the Special Power Functions, Idle/Standby Heat, Boost or Off to be activated by the external input #2.

- 5.8.4.1. Enter Password Level P.004
- 5.8.4.2. Enter Password for this Level = 2004
- 5.8.4.3. Adjust the Internal Horn Preference mode
  - EI2.1 = Standby, factory default
  - EI2.2 = Boost
  - EI2.3 = OFF

- 5.8.4.4. Press Enter and you are done. Back to P.004.

#### 5.8.5. Password Level 9 - Force Factory Defaults

- Return Integrity Frame Module to the Factory Default.

- 5.8.5.1. Enter Password Level P.009
- 5.8.5.2. Enter Password for this Level = 2009
- 5.8.5.3. Press Enter and you are done. Back to P.001. Note: all units reboot

#### 5.8.6. Password Level 10 - Run Display Test Sequence. Diagnostics for buttons and display digits.

Password to invoke this level P.010 is 2010.

Stage 1: Turn ON all LED's on Display

Stage 2: Press any Operator Panel Button Once - goes into "Scroll ONE LED" at a time mode.

Stage 3: Press any Operator Panel Button Once - goes into I/O test Mode.

Press/release one button at a time and watch the Display associated LED turn ON/OFF.

Stage 4: Press both the Enter and the Special Power button together to exit. These buttons are both just below the Down Adjustment buttons for the setpoint entry.

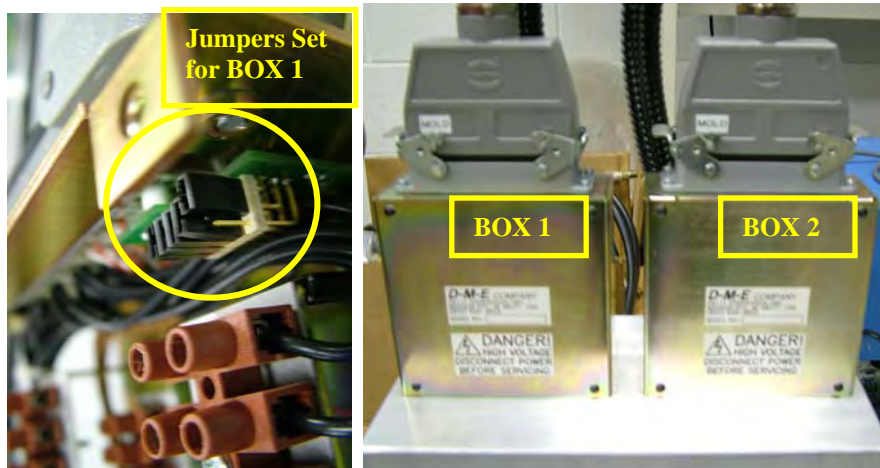
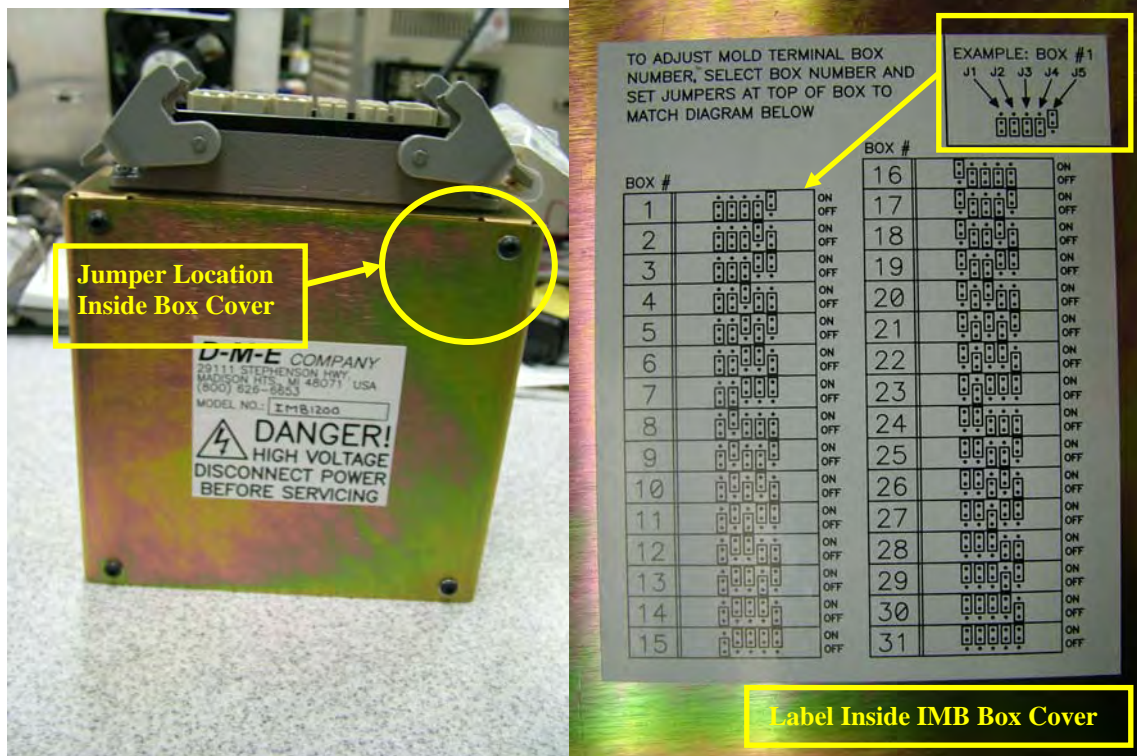
- 5.8.7. Jumper on pins 4&5 causes FRAM to Factory Defaults. Should never be used except in rare occasions. Module will loose stored recipe conditons and will be returned to Factory Default conditions. This should only be done if module will not run or light up. First have a qualified electrician to check the internal 5 volt supply behind the main breaker and the Option/Fan fuses behind the power entry rear panel. Make sure POWER IS COMPLETELY DISCONNECTED from the Integrity system before this servicing type work.

#### 5.9. IFM1000 - Part Numbers and Spare Parts

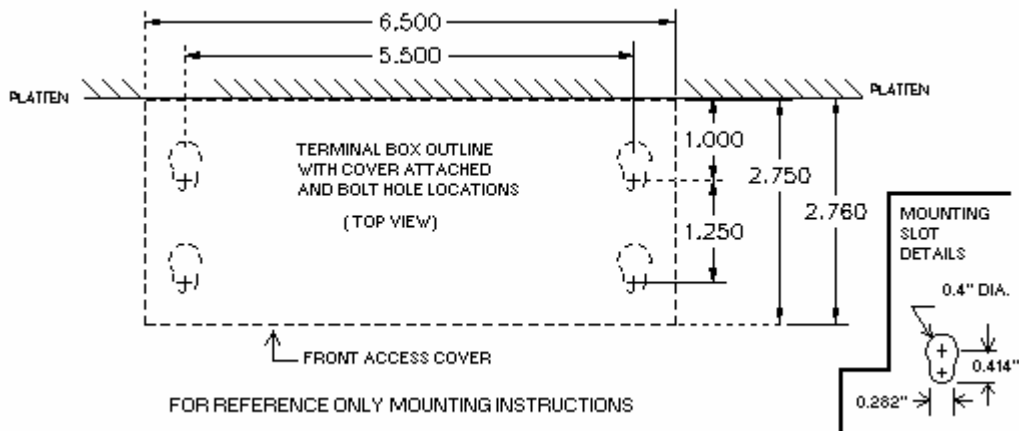
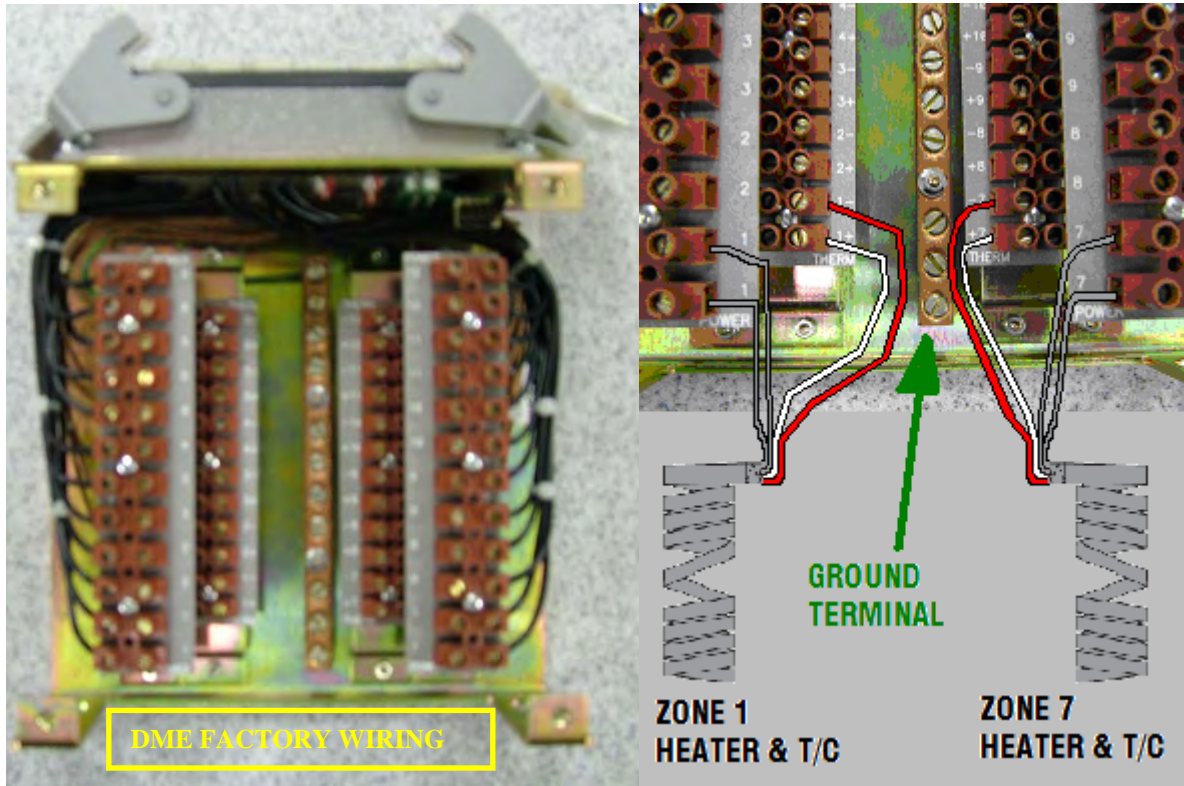
## 6. IMB-1200 - Integrity Mold Box

### 6.1. IMB - Setting the "BOX NUMBER" Configuration Jumpers

Each Mold Terminal Box needs a unique "BOX Number" and the customer must set them when installing the boxes on the Mold. See the pictures below to set the box numbers. Always start with Box #1, then 2, etc.

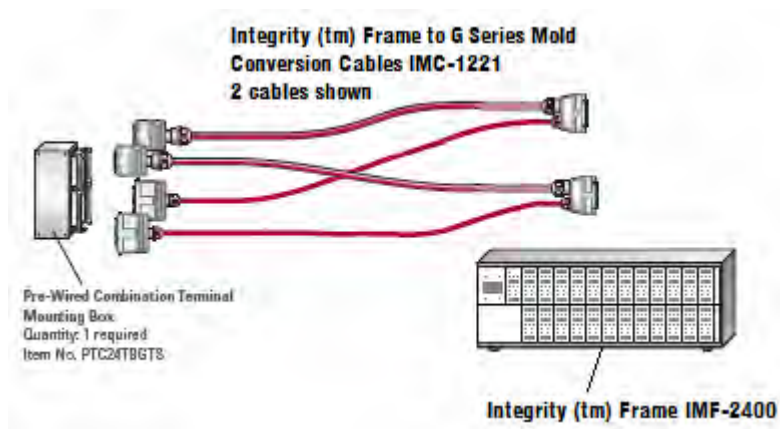


6.2. IMB-1200 - Wiring to the Mold Information and Mounting to the Mold Details



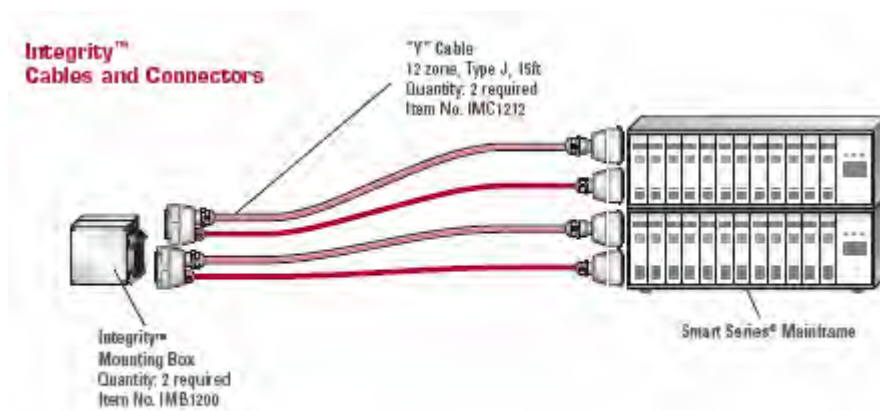
## 7. Legacy Integrity to G-Series Support Conversion Items

### 7.1. IMC-1221 Integrity Main Frame Cable to G-Series "Y" Power and J T/C Mold Terminal Boxes



NOTE: Cable Connect Signal is limited to the cable being attached at the Main Frame, NOT the MOLD.  
NOT recommended for new designs.

### 7.2. IMC-1212 G-Series "Y" Main Frame Cable to Integrity Mold Connector Box IMB-1200



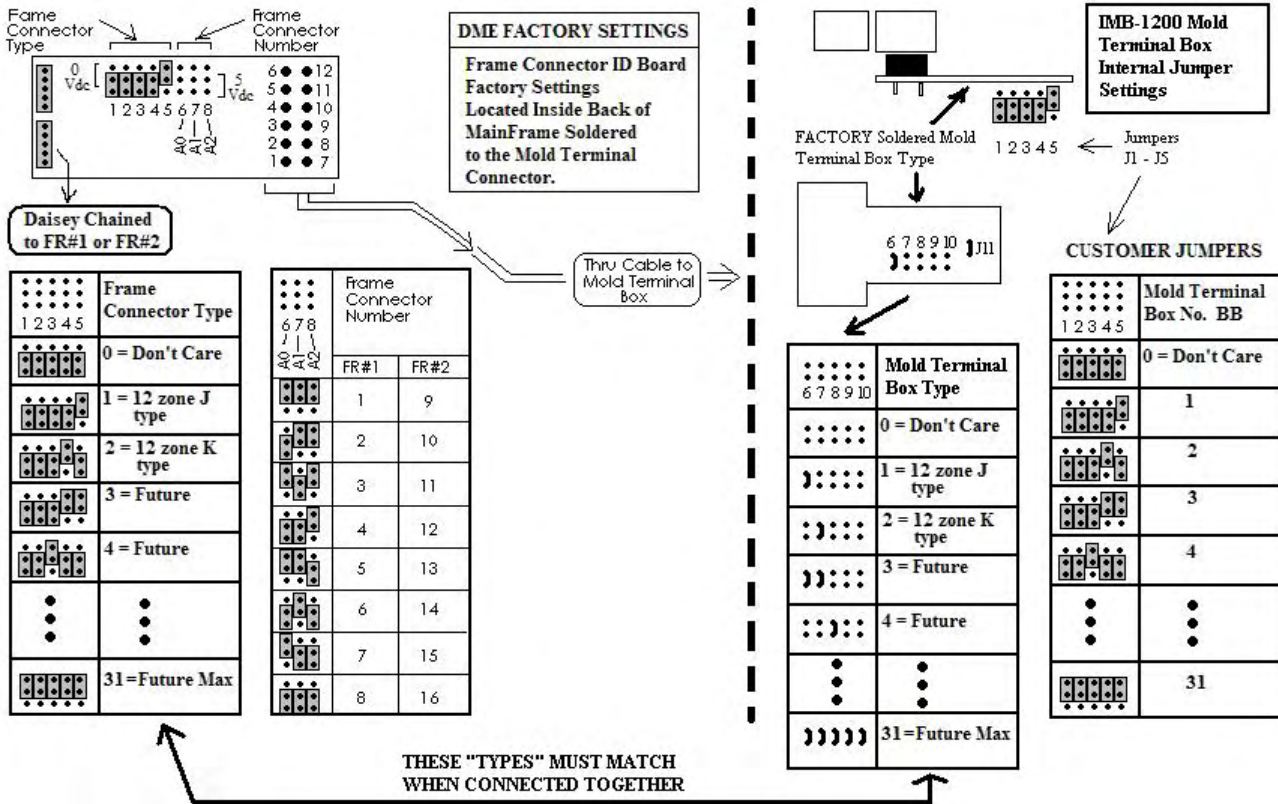
NOTE: This is for legacy support to use existing Smart Series (tm) Main Frames with the new Integrity Mounting Boxes. NOT recommended for new designs.



## 8. Spare Parts and Exploded Detailed Views

### 8.1. Integrity Main Frame

#### 8.1.1. Frame Connector ID Board Factory Settings



8.1.2. Reserved for next step

### 8.2. Integrity Control Modules

#### 8.3. Integrity Mold Terminal Boxes

##### 8.3.1. Mold Terminal Box Factory Settings

8.3.2. Reserved for next step

### 8.4. Integrity Cables

### 8.5. Integrity Main Frame Stands

### 8.6. Integrity Accessories

**Appendix A: Mold Power Requirement Technical Notes**

**Appendix B: Transformer Sizing Technical Notes**

**Appendix C: Recipe Configuration Summary Details and Worksheets.**

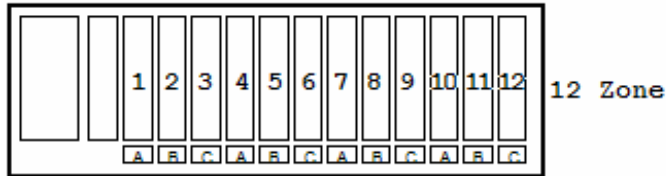
**Appendix A: Mold Power Requirement Technical Notes**

**HOW TO CALCULATE THE REQUIRED KVA SIZE NEEDED FOR A D-M-E 3 PHASE POWER TRANSFORMER**

(G-series document revised for Integrity Product.)

1. What is worst case phase wattage? \_\_\_\_\_ (see example below)
2. Multiply worst case phase wattage x 3 phases. The resultant is the total wattage. \_\_\_\_\_
3. Sizing the fuse for the transformer is: Amps = Total Wattage / (1.73 X Voltage) = \_\_\_\_\_ Amp Fuses

MAINFRAME PHASING	PHASES APPLIED	TO ZONES	REFERENCE PHASE
	L1 - L2	1,4,7,10,13,16,19,22	A
	L2 - L3	2,5,8,11,14,17,20,23	B
	L3 - L1	3,6,9,12,15,18,21,24	C



Add all "A" zones wattages to give total watts "A". Repeat for "B" and "C".

The worst case phase wattage is the largest total wattage "A", "B" or "C".

**Example: using only 12 zone mold**

Total watts "A" = 1200 + 600 + 340 = 2140 W

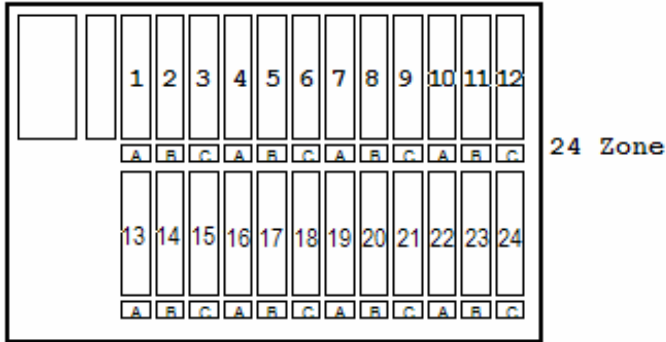
Total watts "B" = 750 + 240 + 340 = 1330 W

Total watts "C" = 2000 + 600 + 800 = **3400 W**

Worst case phase wattage = **3400 W ("C")**

Total Wattage = 3400 X 3 = 10,200 W

Requires min. of 10.2KVA transformer. Rounding to next available = 15 KVA



Fuse for transformer legs =

10,200 W / (1.73 X 240 V) = 24.5 Amp fuse

Rounding to next available = 25 Amp \*

\*Note: 50 Amps max. for 50 Amp circuit breakers, 70 Amps max. for 70 Amp circuit breakers, 100 Amp max. for 100 Amp circuit breaker.

6 KVA, 9 KVA & 15 KVA transformers are standard sizes available. Other transformer sizes available on special request.

For **Option A** and using full power of the Circuit Breaker and ignoring the loads, rule of thumb:

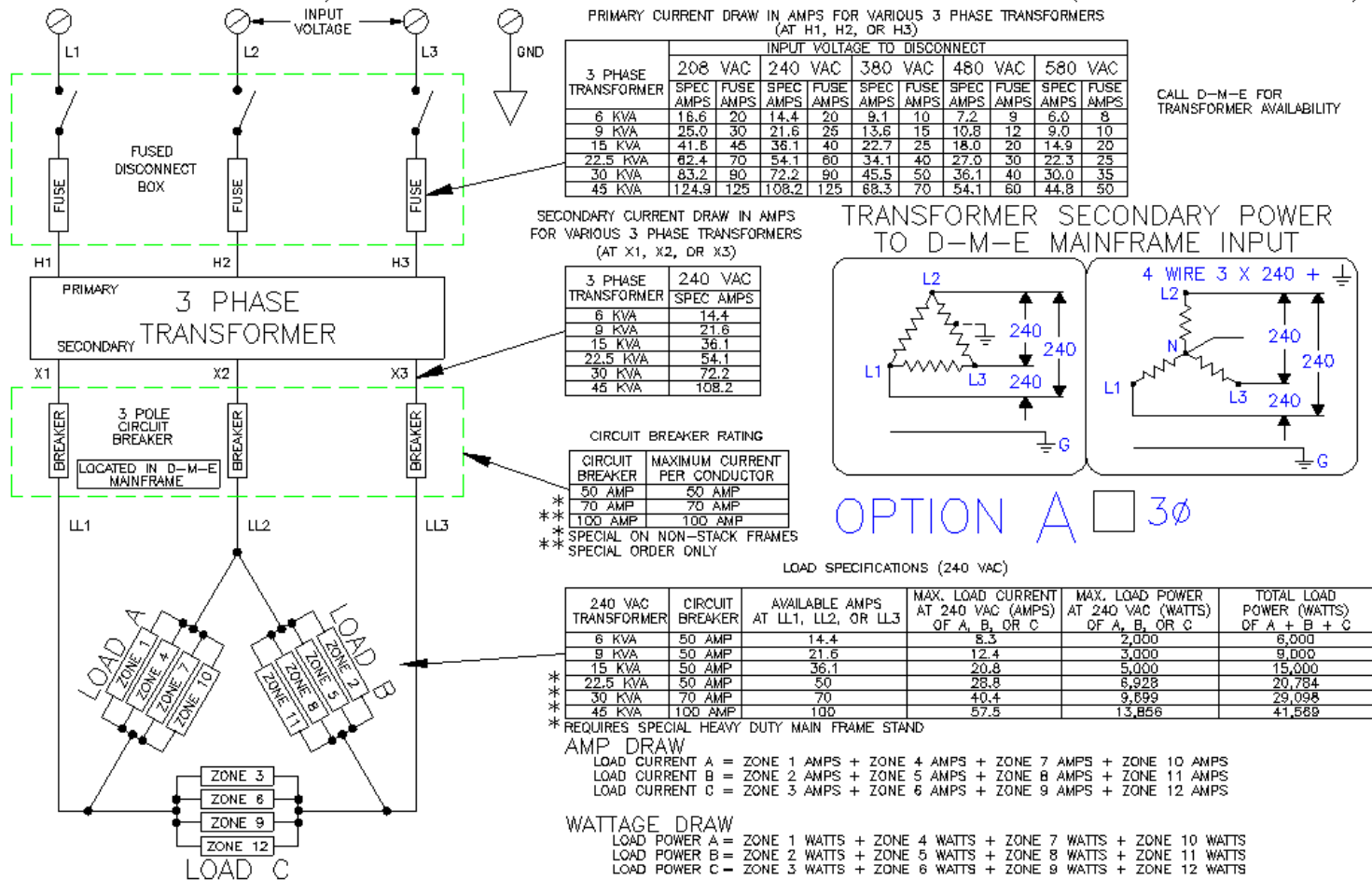
100 Amp Breaker === use 45KVA 3 Phase XFMR minimum – **Integrity Standard Breaker.**

70 Amp Breaker === use 30 KVA 3 Phase XFMR minimum.

50 Amp Breaker === use 22.5KVA 3 Phase XFMR minimum.

**Appendix B: Transformer Sizing Technical Notes – Standard Integrity™ uses 100 Amp Breaker**  
 (D-M-E G-series document used for General Reference for the Integrity Product.)

# D-M-E TRANSFORMER APPLICATIONS CURRENT/POWER SPECIFICATIONS (OPTION A)



D-M-E COMPANY PROVIDES THESE APPLICATION NOTES AS A SUGGESTED METHOD BASED UPON PRIOR APPLICATIONS AND EXPERIENCE.  
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 FEBRUARY 29, 1996

## **Appendix C: Recipe Configuration Summary Details and Worksheets.**

### **DME Integrity Controller ICM User Configuration Sheet - Operator Front Panel Entry Method**

#### **Factory Standard Fixed Recipes ( Shipped out of the box as F.1 US Standard Degrees F)**

F.1.00 = US Standard Configuration in Degrees F ( Factory Set as Degrees F and SSM/CSS PID and Step Start SmartStart Dryout)

F.2.00 = SI Units Standard Configuration in Degrees C ( Factory Set as Degrees C and SSM/CSS PID and Step Start SmartStart Dryout)

#### **User Configurable Recipes - Loaded from the Factory with the Following Default Values.**

##### **Degree F; J Type T/C - Factory Default User Configurable Recipes ( Can be changed/modified by user.)**

U.1.00 = User Config. Recipe #1 ==> Slow Manifold, F.1 Recipe without GACF functions enabled, Thermal Response Slow, Layer & Group = 1

U.2.00 = User Config. Recipe #2 ==> MEN Zone, F.1 Recipe without GACF functions enabled, Layer & Group = 2

U.3.00 = User Config. Recipe #3 ==> Fast Nozzles, Patented GFI Dryout, Zero Cross Operator Tune PID Control, Layer & Group =3

U.4.00 = User Config. Recipe #4 ==> Faster Nozzles, Patented GFI Dryout, Phase Angle Fire Operator Tune PID Control, Layer & Group =3

##### **Degree C; J Type T/C - Factory Default User Configurable Recipes ( Can be changed/modified by user.)**

U.5.00 = User Config. Recipe #5 ==> Slow Manifold, F.1 Recipe without GACF functions enabled, Thermal Response Slow, Layer & Group = 1

U.6.00 = User Config. Recipe #6 ==> MEN Zone, F.1 Recipe without GACF functions enabled, Layer & Group = 2

U.7.00 = User Config. Recipe #7 ==> Fast Nozzles, Patented GFI Dryout, Zero Cross Operator Tune PID Control, Layer & Group =3

U.8.00 = User Config. Recipe #8 ==> Faster Nozzles, Patented GFI Dryout, Phase Angle Fire Operator Tune PID Control, Layer & Group =3

##### **Degree F; J Type T/C – Factory Default - Monitor Mode Only – Does not control temperature ( Can be changed/modified by user.)**

U.9.00 = User Configuration Recipe #9 ( Factory Set as F.1 except it is a Monitor Mode Only and NO PID Temperature Control )

#### **LOCAL Recipe - One Recipe above is Loaded in LOCAL and Run in the Module.**

##### **Operator Adjustments are stored in LOCAL, not Above Recipes.**

L.1.00 = Current Running Recipe. Note: can be viewed only in Diagnostic Menu under d.L.SS where SS are the Recipe Steps.

This Recipe Can be copied back into the User configuration Recipes Above to update user adjustments.

U.X.SS = User configurations from X = 1 to 9 and SS is the Configurations Step or Value being entered. All the Recipes has the same SS steps.

NOTE: "GACF" = Global Alarm/Control Functions from IFM Frame Module ( OFF, IDLE, NORMAL, BOOST )  
(G-Series referred to as TAS - Temperature Alarm/System Control Module)

NOTE: Recipe Password Level Quick Reference. Refer to Password Level in this manual for more detailed information.

P.002 Selects Recipe to Load and Run

P.003 copy one recipe to one of U.1 – U.9 recipes

P.004 Modify one User Config. Recipe U.1 thru U.9 (after saving modified recipe, you must run P.002 password to Load and Run Recipe.)

P.007 Recipe Error Recovery ( try to recover original settings, not operator last adjusted readings.)

P.009 RESET All Recipes to These Factory Defaults

D-M-E Factory ICM1502 Module Default Recipes ( Only U.1 thru U.9 can be change by customer, F.1 and F.2 are fixed.

SS	Description	F.1. SS	F.2. SS	Customer Range	U.1.S S	U.2.S S	U.3.S S	U.4.S S	U.5.S S	U.6.S S	U.7.S S	U.8.S S	U.9.S S
01	Engineering Units - Deg F/C	0	1	0=F(50-1200F),1=C(10-650C)	0	0	0	0	1	1	1	1	0
02	Sensor Type	1	1	0=none, 1=J T/C, 2=K T/C	1	1	1	1	1	1	1	1	1
03	GACF Boost Enable	1	1	0=disabled, 1=enabled	0	0	1	1	0	0	1	1	1
04	GACF Boost Value	50	25	+1 to +255 (Deg F/C)	50	50	50	50	25	25	25	25	50
05	GACF IDLE Boost Enable	1	1	0=disabled, 1=enabled	0	0	1	1	0	0	1	1	1
06	GACF IDLE Value	212	100	Refer to Engineering Units Deg F/C	212	212	212	212	100	100	100	100	212
07	GACF OFF Enable	1	1	0=disabled, 1=enabled	0	0	1	1	0	0	1	1	1
08	AutoSetPointMode	0	0	0=Normal, 1= Enable fixed +/- Adj. Bands	0	0	0	0	0	0	0	0	0
09	Auto Setpoint Fixed +Adj.	450	235	>-Adj. (Refer to Engineering Units Deg F/C)	450	450	450	450	235	235	235	235	450
10	Auto Setpoint Fixed -Adj.	400	200	<+Adj. (Refer to Engineering Units Deg F/C)	400	400	400	400	200	200	200	200	400
11	ManualSetpointMode	0	0	0=Normal, 1=Enable fixed +/- Adj. Bands	0	0	0	0	0	0	0	0	0
12	Manual Setpoint Fixed +Adj.	15	15	1 to 100 >-Adj. ( percent power )	15	15	15	15	15	15	15	15	15
13	Manual Setpoint Fixed -Adj.	5	5	0 to 99 < +Adj. ( percent power )	5	5	5	5	5	5	5	5	5
14	Automatic Boost Enable	0	0	0=disabled, 1=enabled	0	0	0	0	0	0	0	0	0
15	Automatic Boost Value	50	25	+1 to +255 (Deg F/C)	50	50	50	50	25	25	25	25	50
16	Lights Out Enable	0	0	0=disabled, 1=enabled	0	0	0	0	0	0	0	0	0
17	Auto Bumpless Transfer Enable	1	1	0=disabled, 1=enabled	1	1	1	1	1	1	1	1	1
18	Maximum Power Auto Mode	100	100	25 to 100 ( percent power upper limit )	100	100	100	100	100	100	100	100	100
19	Maximum Power Manual Mode	100	100	25 to 100 ( percent power upper limit )	100	100	100	100	100	100	100	100	100
20	Over Current Detection	15	15	3 to 15 amps	15	15	15	15	15	15	15	15	15
21	Thermal Response Alarm Enable	1	1	0=disabled, 1=enabled	1	1	1	1	1	1	1	1	1
22	Thermal Response Normal/Slow	0	0	0=Normal, 1=Slow Response (large manifolds)	1	0	0	0	1	0	0	0	0
23	Deviation Meter: High Red Flashing	30	17	3-255 >High Red Solid (Units per Deg F/C)	30	30	30	30	17	17	17	17	30
24	Deviation Meter: High Red Solid	20	11	2-254 >High Yellow Solid (Units per Deg F/C)	20	20	20	20	11	11	11	11	20
25	Deviation Meter: High Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)	10	10	10	10	6	6	6	6	10
26	Deviation Meter: Low Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)	10	10	10	10	6	6	6	6	10
27	Deviation Meter: Low Red Solid	20	11	2-254 >Low Yellow Solid (Units per Deg F/C)	20	20	20	20	11	11	11	11	20
28	Deviation Meter: Low Red Flashing	30	17	3-255 >Low Red Solid (Units per Deg F/C)	30	30	30	30	17	17	17	17	30
29	Dryout Type	0	0	0=Step Start;Zero Cross, 1=Patented GFI; Phase Angle Fire	0	0	1	1	0	0	1	1	0
30	Dryout Lock	1	1	0=No Lock, 1=Locked Dryout	1	1	1	1	1	1	1	1	1
31	Controller Control Output	0	0	0=Zero Cross Triac Firing, 1=Phase Angle Triac Firing, ( Not Available 2=Time Proportion)	0	0	0	1	0	0	0	1	0
32	2) Time Proportion - Cycle Time	10	10	Not Available: 10 to 60 seconds	10	10	10	10	10	10	10	10	10
33	2) Time Proportion - Minimum On Time	1	1	Not Available: 0.1 to 60.0 seconds increments of 100 milliseconds	1	1	1	1	1	1	1	1	1
34	2) Time Proportion - Minimum Off Time	1	1	Not Available: 0.1 to 60.0 seconds increments of 100 milliseconds	1	1	1	1	1	1	1	1	1
35	PID Overshoot Control Enable	1	1	0=disabled, 1=enabled	1	1	1	1	1	1	1	1	1
36	PID Control Type	1	1	0=Monitor Mode, 1=Legacy PID, (N/A: 2=Select PID), 3=Operator Tune, (N/A: 4=AutoTune)	1	1	3	3	1	1	3	3	0
37	3) Operator Tune - Bandwidth	100	100	1 to 100 degrees F Bandwidth ( If 100, Low Gain=1, If 1, High Gain = 100)	100	100	100	100	100	100	100	100	100
38	3) Operator Tune - Reset	100	100	Resets per minute entered in .01 to 2.55 ( 100 = 1.00 higher values make Gain Higher)	100	100	100	100	100	100	100	100	100

D-M-E Factory ICM1502 Module Default Recipes ( Only U.1 thru U.9 can be change by customer, F.1 and F.2 are fixed.

Blank Customer Sheet for recording Customer's Programmed U.1 thru U.9 Recipes.

SS Description	F.1. SS	F.2. SS	Customer Range	U.1.S	U.2.S	U.3.S	U.4.S	U.5.S	U.6.S	U.7.S	U.8.S	U.9.S
				S	S	S	S	S	S	S	S	S
01 Engineering Units - Deg F/C	0	1	0=F(50-1200F),1=C(10-650C)									
02 Sensor Type	1	1	0=none, 1=J T/C, 2=K T/C									
03 GACF Boost Enable	1	1	0=disabled, 1=enabled									
04 GACF Boost Value	50	25	+1 to +255 (Deg F/C)									
05 GACF IDLE Boost Enable	1	1	0=disabled, 1=enabled									
06 GACF IDLE Value	212	100	Refer to Engineering Units Deg F/C									
07 GACF OFF Enable	1	1	0=disabled, 1=enabled									
08 AutoSetPointMode	0	0	0=Normal, 1= Enable fixed +/- Adj. Bands									
09 Auto Setpoint Fixed +Adj.	450	235	>-Adj. (Refer to Engineering Units Deg F/C)									
10 Auto Setpoint Fixed - Adj.	400	200	<+Adj. (Refer to Engineering Units Deg F/C)									
11 ManualSetpointMode	0	0	0=Normal, 1=Enable fixed +/- Adj. Bands									
12 Manual Setpoint Fixed +Adj.	15	15	1 to 100 >-Adj. ( percent power )									
13 Manual Setpoint Fixed - Adj.	5	5	0 to 99 < +Adj. ( percent power )									
14 Automatic Boost Enable	0	0	0=disabled, 1=enabled									
15 Automatic Boost Value	50	25	+1 to +255 (Deg F/C)									
16 Lights Out Enable	0	0	0=disabled, 1=enabled									
17 Auto Bumpless Transfer Enable	1	1	0=disabled, 1=enabled									
18 Maximum Power Auto Mode	100	100	25 to 100 ( percent power upper limit )									
19 Maximum Power Manual Mode	100	100	25 to 100 ( percent power upper limit )									
20 Over Current Detection	15	15	3 to 15 amps									
21 Thermal Response Alarm Enable	1	1	0=disabled, 1=enabled									
22 Thermal Response Normal/Slow	0	0	0=Normal, 1=Slow Response (large manifolds)									
23 Deviation Meter: High Red Flashing	30	17	3-255 >High Red Solid (Units per Deg F/C)									
24 Deviation Meter: High Red Solid	20	11	2-254 >High Yellow Solid (Units per Deg F/C)									
25 Deviation Meter: High Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)									
26 Deviation Meter: Low Yellow Solid	10	6	1-253 >0 (Units per Deg F/C) (0 at setpoint)									
27 Deviation Meter: Low Red Solid	20	11	2-254 >Low Yellow Solid (Units per Deg F/C)									
28 Deviation Meter: Low Red Flashing	30	17	3-255 >Low Red Solid (Units per Deg F/C)									
29 Dryout Type	0	0	0=Step Start;Zero Cross, 1=Patented GFI; Phase Angle Fire									
30 Dryout Lock	1	1	0=No Lock, 1=Locked Dryout									
31 Controller Control Output	0	0	0=Zero Cross Triac Firing, 1=Phase Angle Triac Firing, ( Not Available 2=Time Proportion)									
32 2) Time Proportion - Cycle Time	10	10	Not Available: 10 to 60 seconds									
33 2) Time Proportion - Minimum On Time	1	1	Not Available: 0.1 to 60.0 seconds increments of 100 milliseconds									
34 2) Time Proportion - Minimum Off Time	1	1	Not Available: 0.1 to 60.0 seconds increments of 100 milliseconds									
35 PID Overshoot Control Enable	1	1	0=disabled, 1=enabled									
36 PID Control Type	1	1	0=Monitor Mode, 1=Legacy PID, (N/A: 2=Select PID), 3=Operator Tune, (N/A: 4=AutoTune)									
37 3) Operator Tune - Bandwidth	100	100	1 to 100 degrees F Bandwidth ( If 100, Low Gain=1, If 1, High Gain = 100)									