Product Description

Designed to reduce the overall height of package installations, this 40 inch by 12 inch deep controller allows installations in pump rooms that have restricted access and ceiling height.
Available models include FDC20 Limited Service, FDC30 Across-the-Line and FDC60 Autotransformer models. All FDC20 Limited Service controllers are available with or without LMR microprocessor control while FDC30 and FDC60 controllers are equipped with LMR microprocessor control as standard. All models meet UL, CSA, ULC, FM, CE and NFPA 20 standards.
Note: FDC20 without LMR option - will be supplied as a standard FD20 Limited Service controller.

Product Features

Microprocessor Control

EATON Cutler-Hammer LMR Fire Pump Controllers are microprocessor based. All events surrounding the operation of the controller are stored within the memory, thus giving the ability to diagnose and troubleshoot problems based on an actual history of events. Events are time and date stamped.

A main display unit provides a read-out of parameters such as current pressure, volts and amps and will display error messages as well as provide alarm indication. A status report is available which provides a record of the current state of the controller. The report can be printed locally via the printer / recorder.

Alarm & Status Indication

The display panel is equipped with nine red Alarm LED's and nine green Status LED's which indicate various functions and operations of the controller. The membrane keypad has curved dome windows which allow viewing from a wide angle.

Volts and Amps Display

The LCD display located on the main display panel, simultaneously indicates the voltage and amps on all three phases of power coming into the controller.

Printer / Recorder

The industrial grade thermal printer is housed in a rugged steel enclosure within the controller. The on/off switch, feed and reset buttons are front accessible. A bi-color status LED is also visible on the front of the printer. Green indicates - "Printer Operational' while yellow indicates - "Out of Paper".

Last 2048 Messages

The internal microprocessor stores the most recent 2048 messages in it's memory. The messages can be printed, viewed on the LCD screen or downloaded to a laptop. Each message is time and date stamped. The LCD display acts as a paperless chart recorder.

Elapsed Time Meter

The LMR monitors and records the run time of the motor, in hours, whenever the pump is running. The actual run time can be viewed on the LCD display in 1 hour increments.

Number of Operations Counter

The LMR controller monitors and records the number of times the pump has started. The actual count can be viewed on the LCD display.

LCD Message Retrieval

The 2 line liquid crystal display allows viewing of all messages and event information without opening the front door of the controller. Messages can also be downloaded to a laptop computer via the communications port located on the top of the main microprocessor board.

Sequential Start Timer

The sequential start timer is used to program a start delay after an automatic start request. This function is used for staging the start of pumps in a multiple pump application and also in Diesel backup applications.

Weekly Test Timer

The weekly test timer allows the user to set the controller to automatically start and stop the controller once per week. The number of weeks between tests is set via the front keypad. The weekly test date and time can be viewed on the LCD display.

Pressure Transducer: 0 - 600 psi

Each LMR controller is equipped with a stainless steel, 0-600 psi pressure switch capable of withstanding a momentary surge pressure of 1000 psi.

NEMA 2 Enclosures

All LMR controllers come standard with NEMA 2 enclosures unless otherwise ordered. Available options include: NEMA 3R, 4, 4X, 12.

NEMA Rated Contactors

NEMA rated Freedom or A200 Series EATON Cutler-Hammer contactors are used in all LMR fire pump controllers. A wide variety of coil voltages are available for domestic and international use.

Emergency Start Operator

A mechanically operated emergency start handle activates the motor contactor independent of any electrical control circuits or pressure switch input.

Extra Set of Form-C Contacts for Phase Reversal and Phase Failure

The phase reversal and phase failure relays come standard with an extra set of contacts that can be used for remote alarm indication.

Run Period Timer

The run period timer is built into the LMR microprocessor and can be accessed via the membrane / keypad. It is programmable from 0-45 minutes and should be reset to ten (10) minutes when the controller is placed in service.

FDC Series - Compact

Product Features

Additional Output Relay

An additional output relay labeled Future #1, can be user programmed to operate for nine (9) different functions. Programming is done in the LMR menu using the membrane / keypad.

Common Alarm Relay and Contacts

The LMR controller has a common alarm relay which de-energizes whenever there are any alarm conditions present. This relay is energized under normal conditions and has LED status indication on the main relay board.

Status & Alarm Indication

Status LED's

Power On
Pump Running
RPT Timer
Sequence Timer
Local Start
Remote Start
Deluge Valve
Interlock On
Low Pressure

Alarm LED's

Phase Reversal
Phase Failure
Fail To Start
Undervoltage
Overvoltage
Relief Valve Discharge
Locked Rotor Trip
Low Suction Pressure
Emergency Start

Standards & Certification

The FDC Series Fire Pump Controllers meet or exceed the requirements of Underwriters Laboratories, Underwriters Laboratories Canada, Factory Mutual, the Canadian Standards Association, New York City building code, CE mark requirements and are built to NFPA 20 standards.

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Technical Data and Specifications

Line Terminals (Incoming Cables) - FDC20

	Line Terminals on Main Isolation Switch (Incoming Cables)						
	LINE VOLTAGE					Qty. & Cable Sizes	Service Entrance GND.LUG Qty. & Cable Sizes
	200 - 208	220 - 240	* 380 - 415	440 - 480	550 - 600		
Max. Hp	30	30	30	30	30	(1)#14-1/0 PER ⌀ (CU/AL)	(1)#14-3/0 (CU/AL)

Line Terminals (Incoming Cables) - FDC30, FDC60

	Line Terminals on Main Isolation Switch (Incoming Cables)						
	LINE VOLTAGE					Qty. & Cable Sizes	Service Entrance GND.LUG Qty. & Cable Sizes
	200 - 208	220 - 240	* 380 - 415	440 - 480	550 - 600		
Max. Hp	30	30	60	75	100	(1)#14-1/0 PER ⌀ (CU/AL)	(1)#14-2/0 (CU/AL)
	40	40	100	100	-	(1)#4-4/0 PER ⌀ (CU/AL)	(1)#14-2/0 (CU/AL)
	75	75				(1)#3-350MCM ⌀ (CU/AL)	(1)#4-350MCM (CU/AL)

* Coils available: 380V-50Hz, 380V-60Hz, 415V-50Hz, 415V-60Hz.

Load Terminals (To Motor) - FDC20

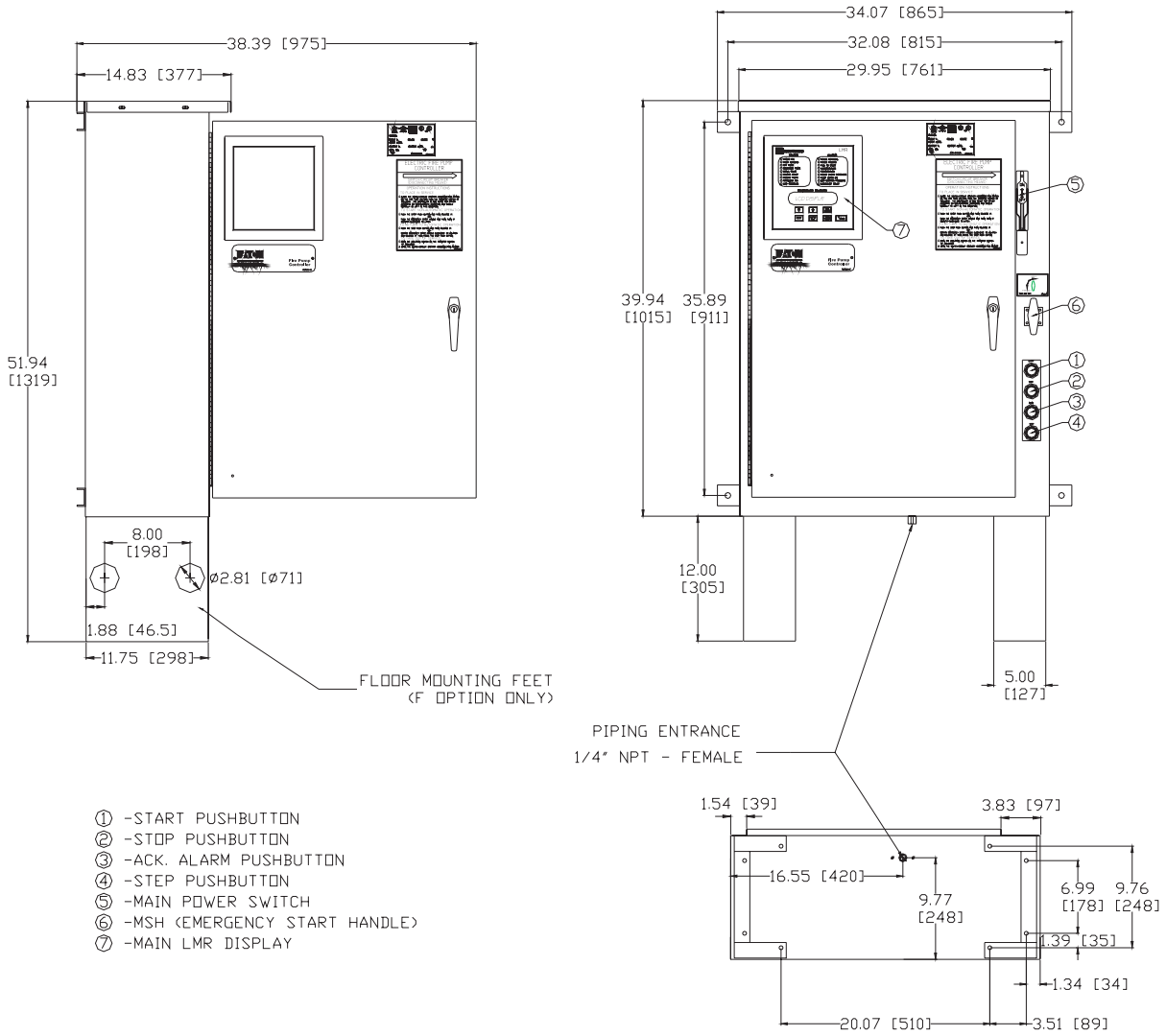
	Load Terminals (To Motor)					
	LINE VOLTAGE					Qty. & Cable Sizes
	200 - 208	220 - 240	380 - 415	440 - 480	550 - 600	
Max. Hp	10	15	25	25	25	(1)#14-#3 PER ⌀(CU/AL)
	25	30	30	30	30	(1)#14-1/0 PER ⌀(CU/AL)
	30					(1)#6-250MCM ⌀(CU/AL)

Load Terminals (To Motor) - FDC30, FDC60

	Load Terminals (To Motor)					
	LINE VOLTAGE					Qty. & Cable Sizes
	200 - 208	220 - 240	380 - 415	440 - 480	550 - 600	
Max. Hp	10	15	25	25	25	(1)#14-#3 PER ⌀(CU/AL)
	25	30	50	50	50	(1)#14-1/0 PER ⌀(CU/AL)
	40	50	75	100	100	(1)#6-250MCM ⌀(CU/AL)

For Proper Cable Size Refer to National Electrical Code NFPA-70

Dimensions - FDC20 Limited Service - c/w LMR
Standard Enclosure - Type NEMA 2, 3R, 4, 4X, 12



Motor Hp	Line Voltage	Withstand Rating		Approx. Weight Lbs. (Kg)
		Standard	Intermediate	
5 - 30	200 - 208V	25,000	65,000	305
5 - 30	220 - 240V			(138)
5 - 30	* 380 - 415V			
5 - 30	440 - 480V			
5 - 30	550 - 600V	18,000	25,000	
5 - 15	230V - S/P	10,000	65,000	

* Coils available: 380V-50Hz, 380V-60Hz, 415V-50Hz, 415V-60Hz.

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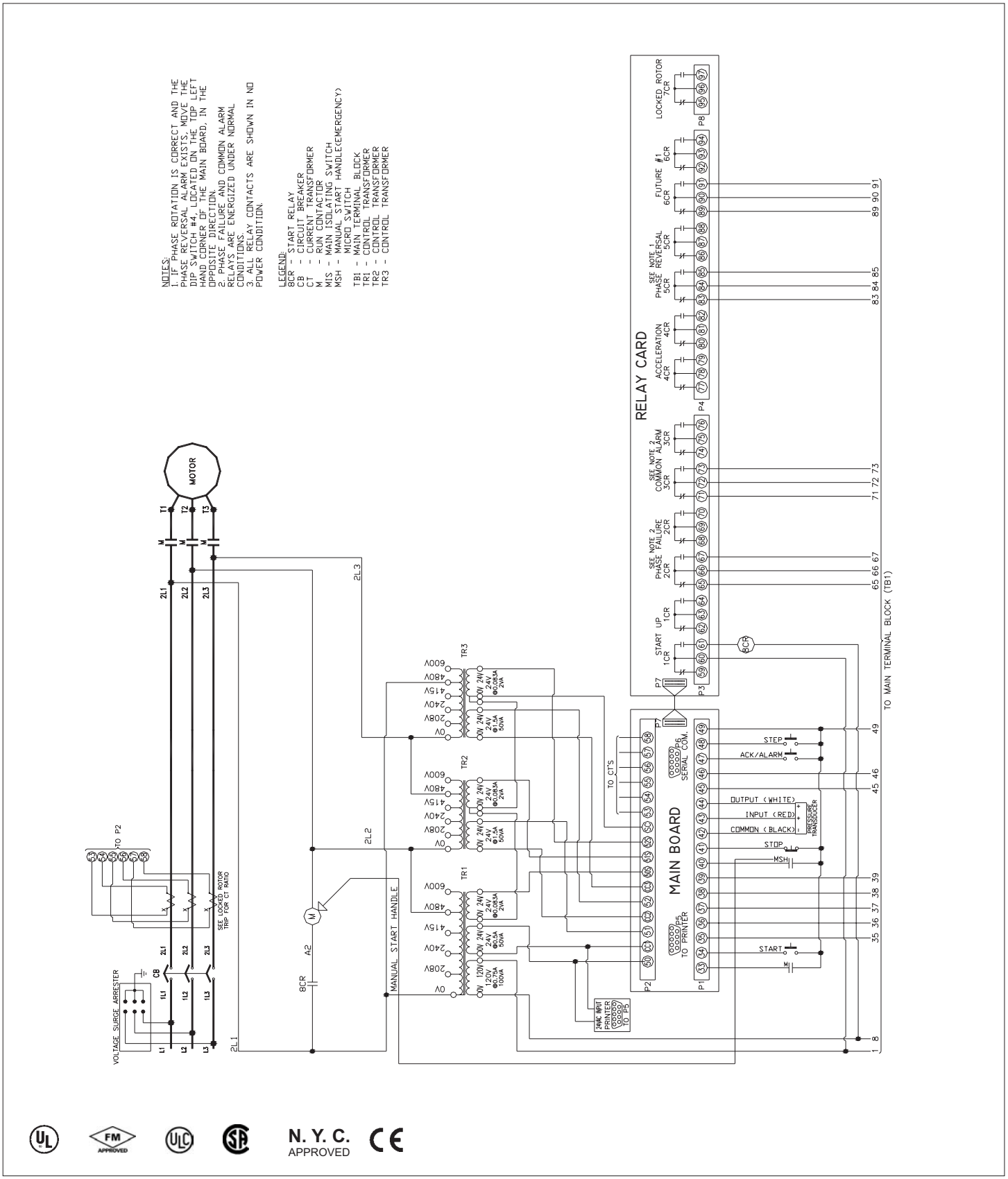
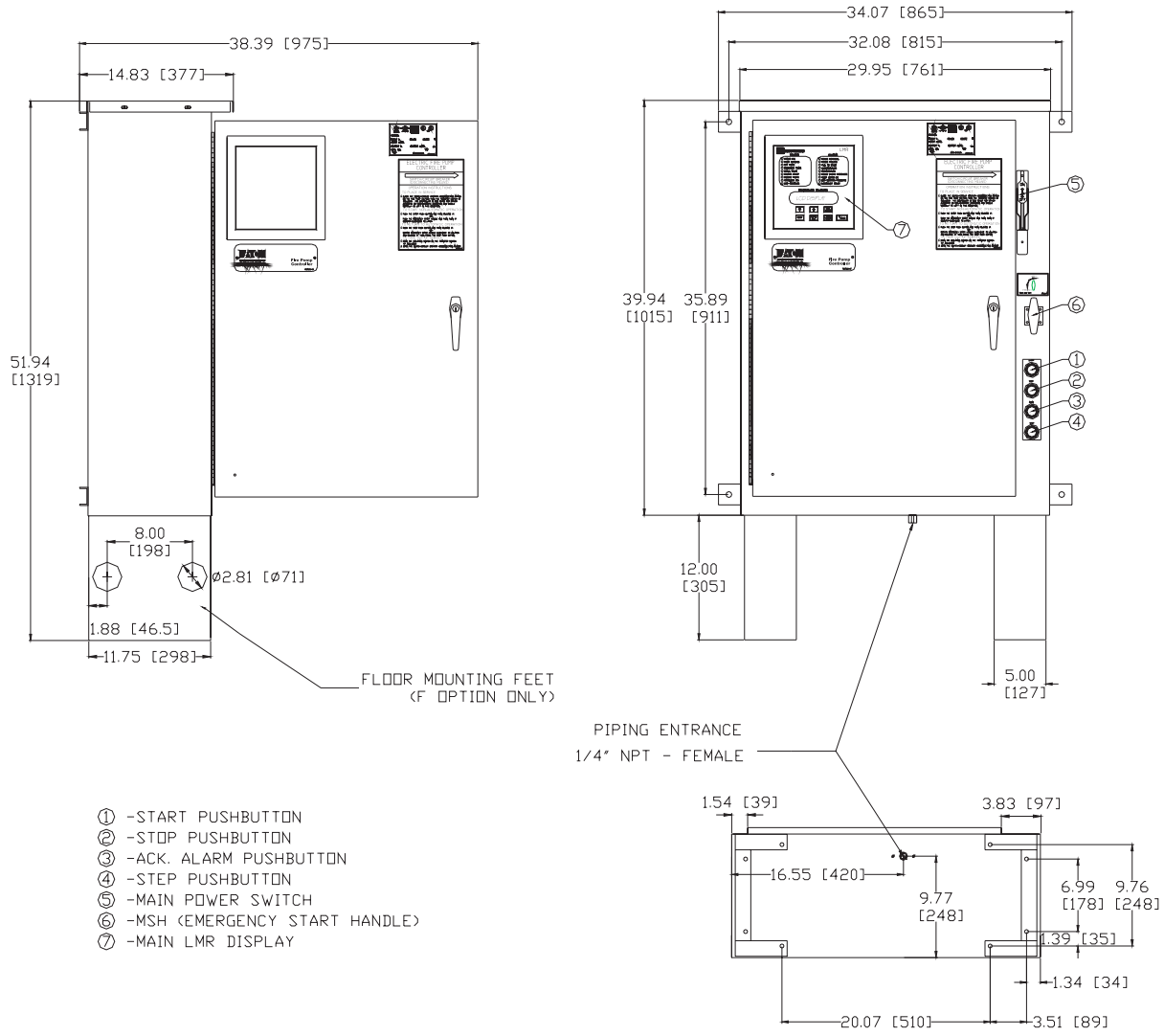
NOTES:
1. All enclosures finished in FirePump red.
2. Cable Entrance either top or bottom.
3. Standard Enclosure type NEMA 2.

Electrical Wiring Schematic
FDC20 Limited Service - c/w LMR



Dimensions - FDC30 Across-the-Line
Standard Enclosure - Type NEMA 2, 3R, 4, 4X, 12



Motor Hp	Line Voltage	Withstand Rating			Approx. Weight Lbs. (Kg)
		Standard	Intermediate	High	
5 - 40	200 - 208V	100,000	150,000	200,000	305
5 - 50	220 - 240V				(138)
5 - 75	* 380 - 415V				
5 - 100	440 - 480V				
5 - 100	550 - 600V	25,000	100,000		

* Coils available: 380V-50Hz, 380V-60Hz, 415V-50Hz, 415V-60Hz.

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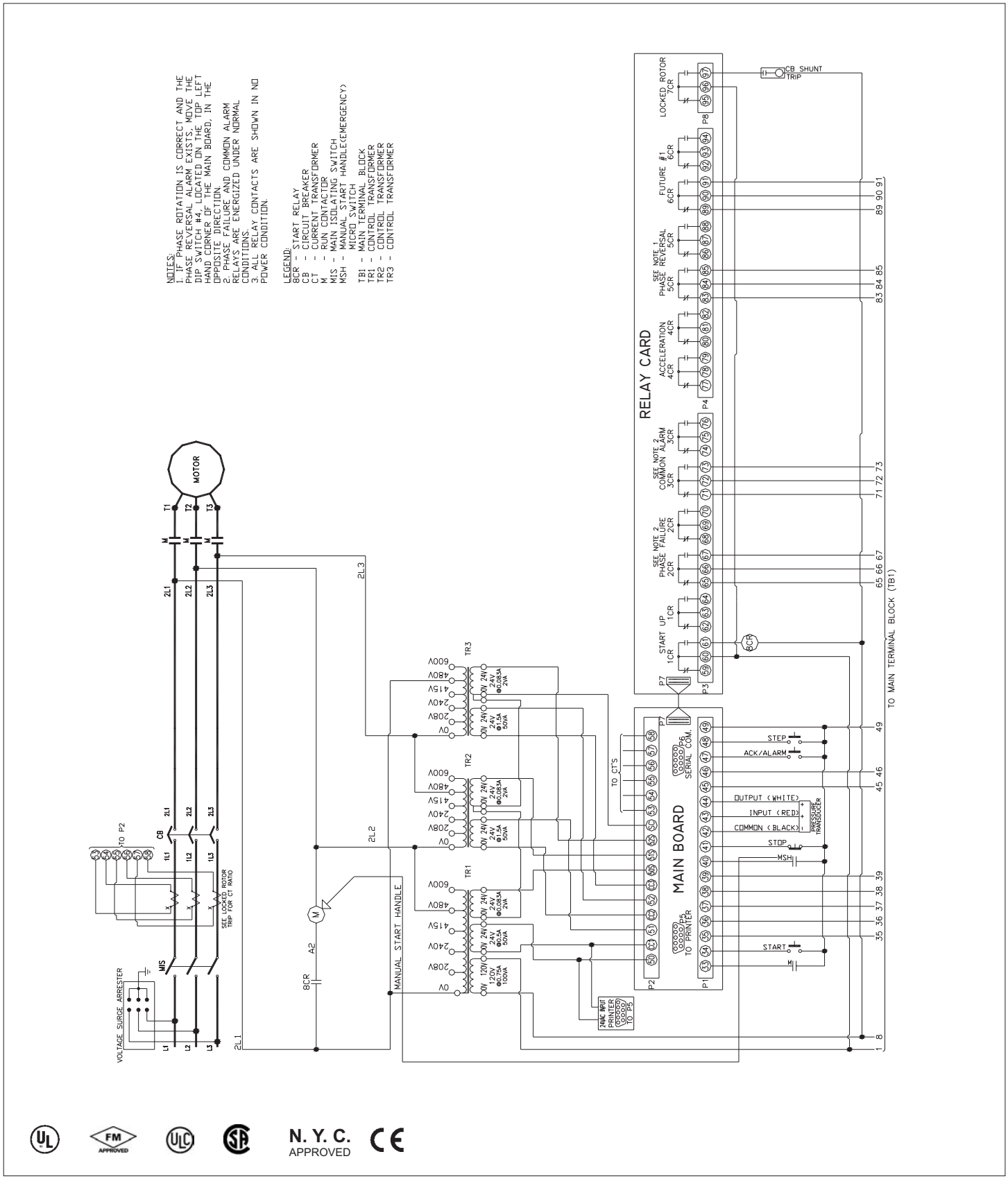
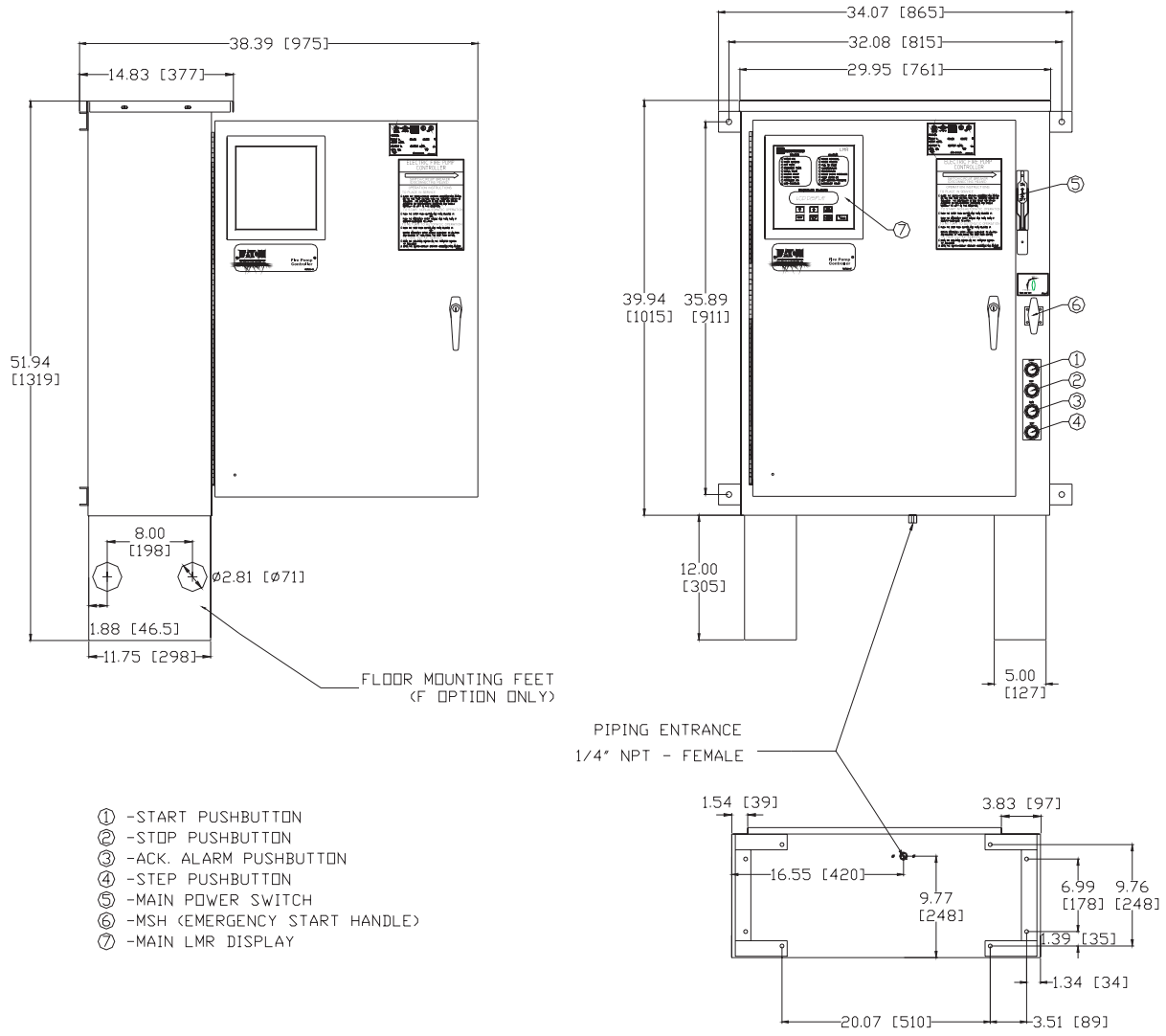
NOTES:
1. All enclosures finished in FirePump red.
2. Cable Entrance either top or bottom.
3. Standard Enclosure type NEMA 2.

Electrical Wiring Schematic
FDC30 Across-the-Line



Dimensions - FDC60 Autotransformer
Standard Enclosure - Type NEMA 2, 3R, 4, 4X, 12



Motor Hp	Line Voltage	Withstand Rating			Approx. Weight Lbs. (Kg)
		Standard	Intermediate	High	
5 - 40	200 - 208V	100,000	150,000	200,000	395
5 - 50	220 - 240V				(179)
5 - 75	* 380 - 415V				
5 - 100	440 - 480V				
5 - 100	550 - 600V	25,000	100,000		

* Coils available: 380V-50Hz, 380V-60Hz, 415V-50Hz, 415V-60Hz.

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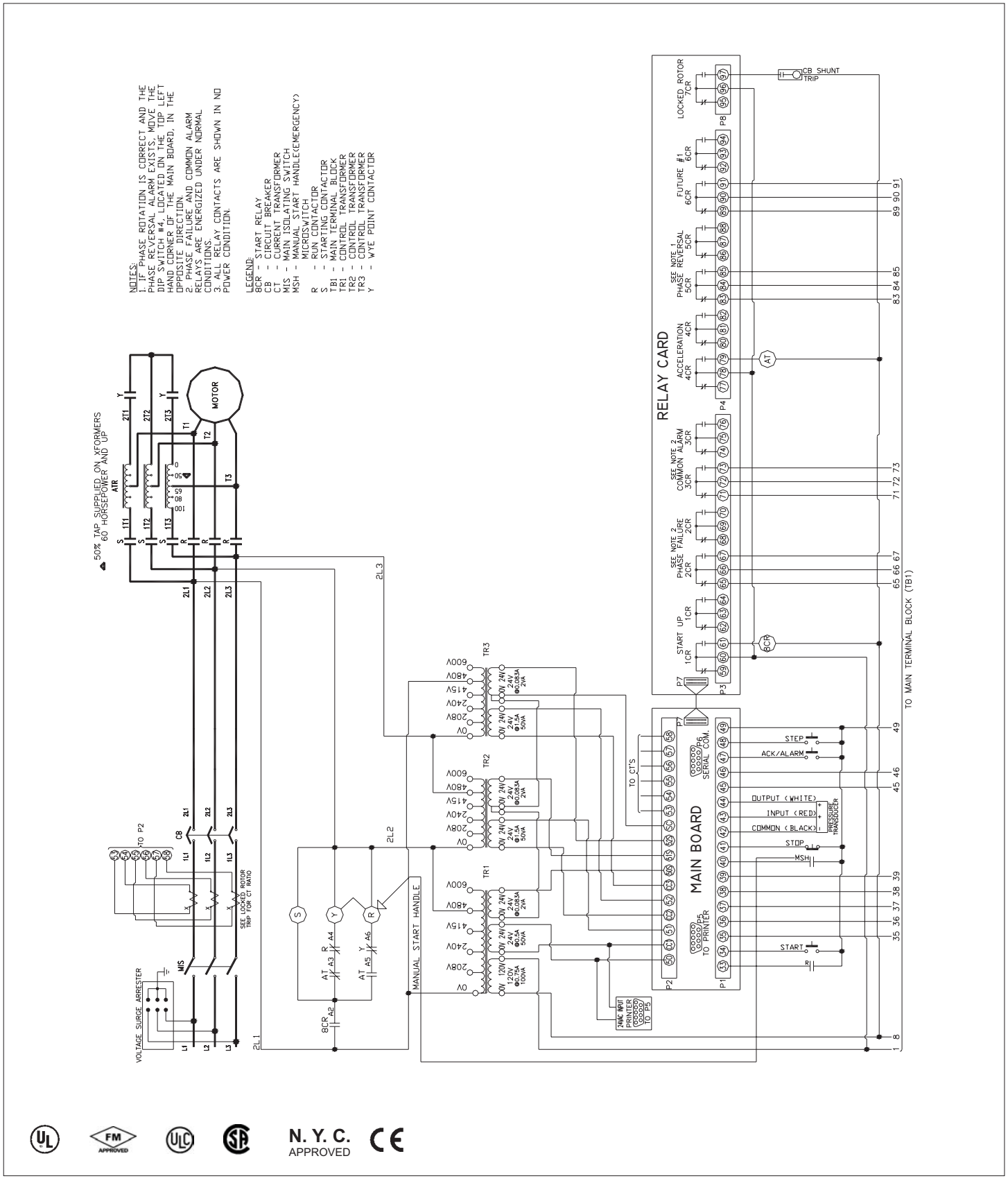
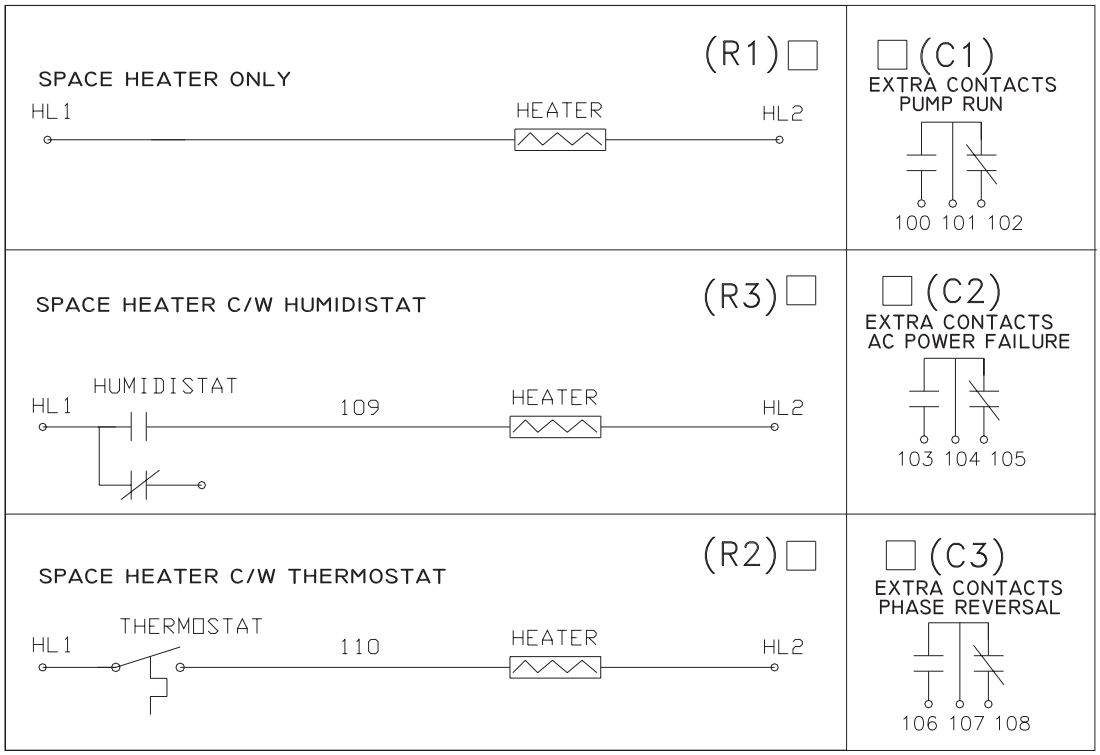
NOTES:
1. All enclosures finished in FirePump red.
2. Cable Entrance either top or bottom.
3. Standard Enclosure type NEMA 2.

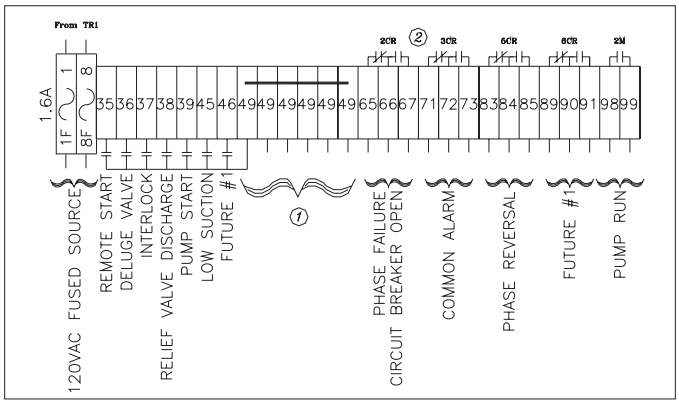
Electrical Wiring Schematic
FDC60 Autotransformer



Options - Wiring Diagram

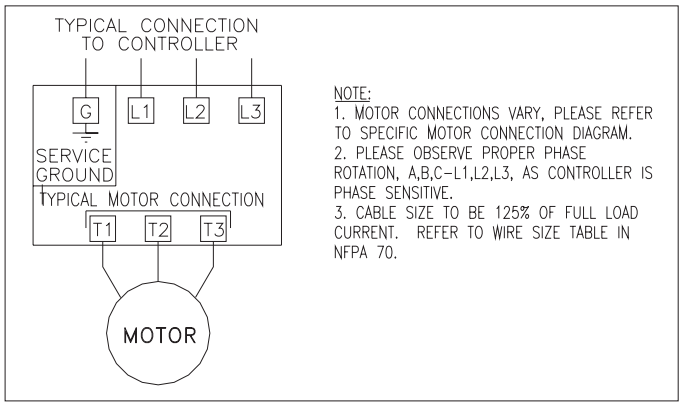


Main Terminal Block: TB1

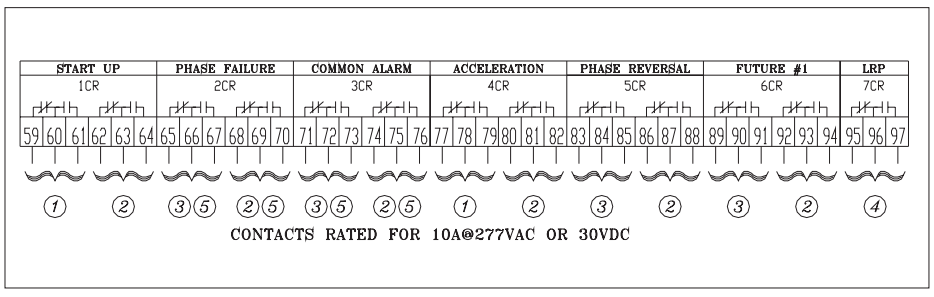


NOTES:
1. Terminal 49 is common to all dry contact inputs.
DO NOT APPLY A VOLTAGE ON THESE TERMINALS
2. Contacts shown in de-energized state (Fail Safe).

Typical Controller Connection



Relay Card



NOTES:
1. To Control Circuit
2. Spare for Customer Connections
3. To TB1
4. To Shunt Trip
5. Contacts Shown in De-Energized State - (Fail Safe)

Catalog Number Selection

FDC20 / FDC30 / FDC60 Compact Controller Catalog Numbering System

FDC

Type
20 = Limited Service
30 = Across-the-Line
60 = Autotransformer

Horsepower			
5	15	30	60
7.5	20	40	75
10	25	50	100

FDC20 controllers are available up to 30HP max.

Voltage	
A =	200 - 208V 60 HZ
B =	220 - 240V 60 HZ
C =	380 - 415V 50/60 HZ
D =	440 - 480V 60 HZ
E =	550 - 600V 60 HZ
F =	416V @ 60Hz

LMR Series
LMR = Microprocessor Control

Language
L1 = English
L2 = French
L5 = Spanish

Options		
A	-	Built-in Alarm System
B	-	Alarm Bell
C1	-	Extra Contacts "Pump Run" (one N.O. std.)
C2	-	Extra Contacts "AC Power Failure" (one set std.)
C3	-	Extra Contacts "Phase Reversal" (one set std.)
C4	-	Remote Contacts (2 Form C) Low Reservoir
C5	-	Remote Contacts (2 Form C) High Reservoir
***D**	-	Deluge Valve Start
E1	-	NEMA 3R - Raintight Enclosure
E2	-	NEMA 4 - Watertight Enclosure
E3	-	NEMA 12 - Industrial Dust Tight Enclosure
E5	-	NEMA 4X - Stainless Steel Enclosure
E8	-	Tropicalization
EX	-	Export Crating
F	-	Floor Stand (Standard c/w floor mounted enclosures)
F2	-	Floor Stand - 2 Inch Height
I	-	Intermediate Withstand Rating
LMR	-	Microprocessor Control
***MLO**	-	Motor Lock-Out (Interlock On)
****P1**	-	Mercoid 10-300 PSI Pressure Switch
****P2**	-	Mercoid 25-600 PSI Pressure Switch
****P3**	-	ALCO 90-450 PSI Pressure Switch
****P5**	-	ALCO 15-260 PSI Pressure Switch
P7	-	Low Suction Pressure Switch and Alarm Pilot Light
***P8**	-	Low Suction Shutdown (Requires P7)
P11	-	Pressure Switch (10-300psi) - Sea Water (Stainless Steel Mercoid Switch)
P12	-	Pressure Switch (25-600psi) - Sea Water (Stainless Steel Mercoid Switch)
P13	-	Externally Mounted Pressure Switch
***PRL**	-	"Pump Run" Light
R1	-	Space Heater (120 / 220V)
R2	-	Space Heater c/w Thermostat
R3	-	Space Heater c/w Humidistat
R4	-	Low Pump Room Temperature Switch and Pilot Light
***S**	-	Sequential Start
***V1**	-	Voltmeter (Single Phase)
***V2**	-	Ammeter (Single Phase with Current Transformer)
***V3**	-	Voltmeter & Ammeter (Three Phase)
***W**	-	Weekly Test Timer
X1	-	Printer/Pressure Recorder
X2	-	4 inch chart recorder (10-300 PSI fresh water)
***Z**	-	Elapsed Time Meter

* included with LMR option

** not required with LMR option

NOTE:
FDC20 without LMR option - will be supplied as a standard FD20 Limited Service controller.