

## INSTRUCTIONS: CHEST FREEZER

### 1.1 STARTING INSTRUCTIONS

1. Plug the freezer into the proper outlet with an adequate power supply.
2. Confirm the freezer has at least 6" of air space on each side, for air circulation.
3. The compressor will start to operate and pull down to the set point on the temperature control.
4. When the freezer reaches the set point, the compressor will cycle on and off to maintain the set point desired by the user on the temperature control.



**CAUTION! THIS FREEZER IS PROVIDED WITH AN INPUT CIRCUIT PROTECTIVE DEVICE WHICH SHALL BE MAINTAINED AND SERVICED BY QUALIFIED PERSONNEL ONLY.**

FUSES OR BREAKERS USED INSIDE PROTECTIVE DEVICE  
15A OR 20A 250V TIME DELAY

**WARNING! UPLUG FREEZER BEFORE ANY TECHNICAL SERVICE IS PERFORMED ON THE UNIT!**



**CAUTION! DO NOT POSITION EQUIPMENT SO IT IS DIFFICULT TO DISCONNECT FROM THE POWER SUPPLY.**

### 1.2 CLEANING PROCEDURE



1. Wipe down the exterior of the freezer with a soft cloth and spray type polish.
2. If frost builds up in the chamber, a bucket and ice-scraper can be used to the ice. If excessive ice builds up, the unit can be defrosted (see below).

### 1.3 DEFROST PROCEDURE

1. Remove any product in the freezer and store it in a back-up freezer or elsewhere.
2. Unplug the freezer, and open the freezer front door / lid.  
**For upright units, use a cloth to protect the control from dripping water.**
3. Air out the freezer for at least 12 hours, allowing the unit to reach room temperature.
4. Take a rag and wipe up all the excess water in the unit (melted frost).
5. Plug the unit in and set your temperature to the desired setpoint
6. Once the desired temperature is reached, add product back into the unit.

**NOTE: It is recommended to slowly re-add your product into the freezer to prevent an extreme load on the compressors, which could shorten freezer life expectancy.**

## 1.4 WARNING SYMBOLS

	BLACK WITH YELLOW BACKGROUND	LIGHTNING BOLT	CAUTION: RISK OF ELECTRICAL SHOCK
	BLACK WITH YELLOW BACKGROUND	EXCLAMATION POINT	CAUTION: REFER TO ACCOMPANYING DOCUMENTS



## 1.5 TEMPERATURE CONTROL

The temperature control is manually adjustable to the desired temperature in 1° C increments within the limits of the control range.

**WARNING**

Unauthorized entry into this control will void warranty.

PARTLOW NO. 1160, FDC 4100, FDC 4000  
ELECTRONIC CONTROL

**NOTE: USE ONLY THE “UP” AND “DOWN” KEYS   WHEN MAKING CHANGES ON THIS CONTROL. WARRANTY WILL BE VOID IF USED IN ANY OTHER WAY. CONTACT FACTORY FOR ALL OTHER ADJUSTMENTS IN SETTINGS.**

**TEMPERATURE SET POINT:** The control has two displays, the upper display is the actual chamber temperature and the lower display is the temperature set point. The temperature set point has been preset at the factory.

**CHANGING TEMPERATURE SET POINT:** The temperature set point can be changed by simply pressing the “up” arrow to raise or the “down” arrow to lower the temperature set point.

## 1.6 ALARM SYSTEM

MODEL	OPERATION INSTRUCTIONS
<b>FDC 4000</b>	Alarm will <u>automatically</u> activate when the freezer reaches set point or 8 hours after the unit has been first plugged in.
<b>FDC 4100</b>	Manually activate the alarm by moving the toggle switch to the on position once the freezer reaches setpoint.
<b>PARTLOW 1160</b>	Manually activate the alarm by moving the toggle switch to the on position once the freezer reaches setpoint.

The alarm will not sound again until the temperature varies 12°C (20°F) from the temperature control set point. Please note that the alarm will sound if there is a power outage to the freezer.



**Alarm system should be tested every 30 days.**

- Non-rechargeable batteries should be changed approximately every two years.
- Rechargeable batteries should be changed approximately every three years with lead acid rechargeable 1.2 Ah min, model *PS-640F1* or equivalent.

## 1.7 ALARM BATTERY TESTING

If applicable, the alarm switch has a test position that can be used anytime to see if the battery is charged or if the buzzer is working properly.

### OPTIONAL EQUIPMENT – DRY CONTACT ALARM RELAY

Located on the back of the freezer is a terminal strip marked ALARM RELAY CONTACTS. Rating of this connection:

<i>ALARM RELAY CONTACTS CONNECTION RATING</i>		
<b>PARTLOW 1160</b>	<b>FDC 4100</b>	<b>FDC 4000</b>
10A 250VAC	10A 250VAC	2A 125 VAC
10A 30VDC	10A 30VDC	2A 30 VDC

RED – NORMALLY CLOSED

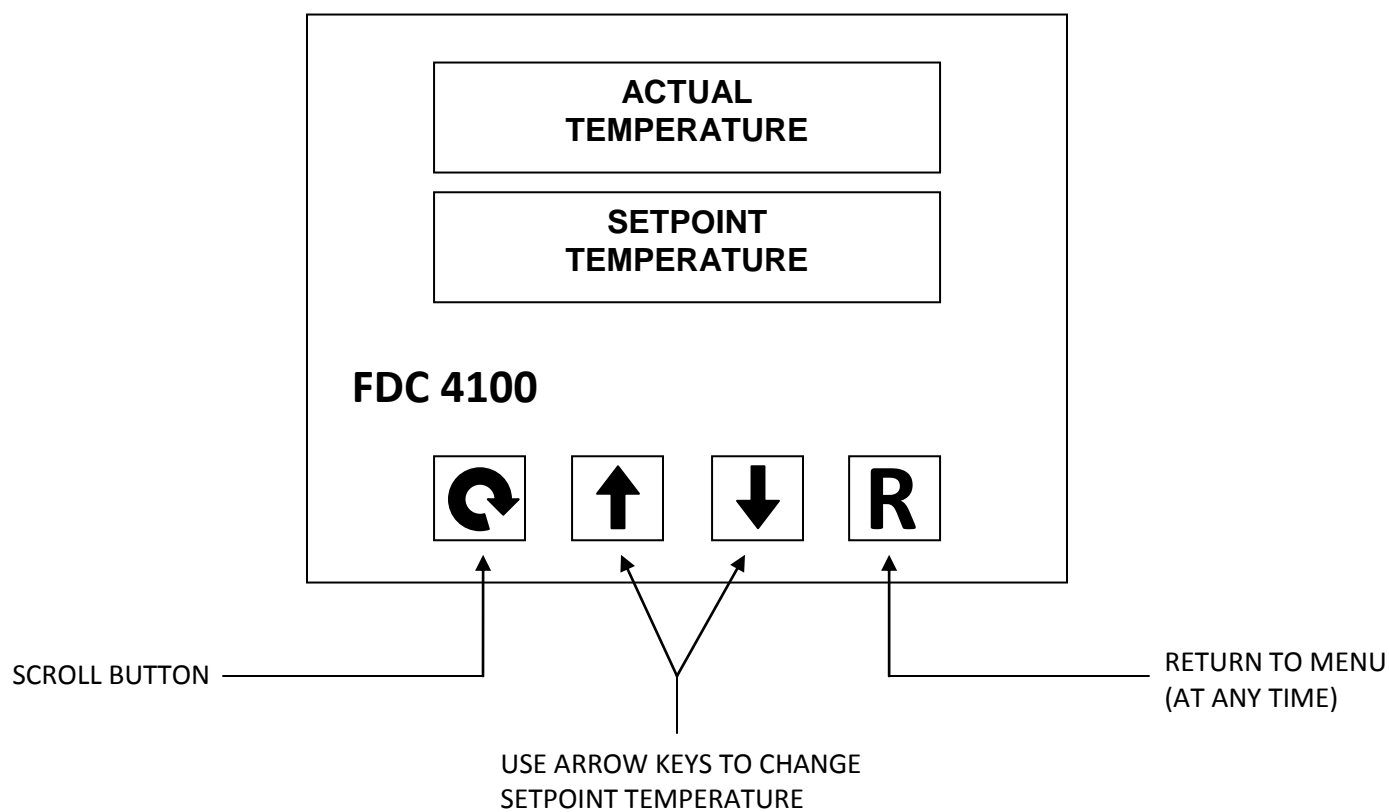
WHITE – COMMON

BLUE – NORMALLY OPEN



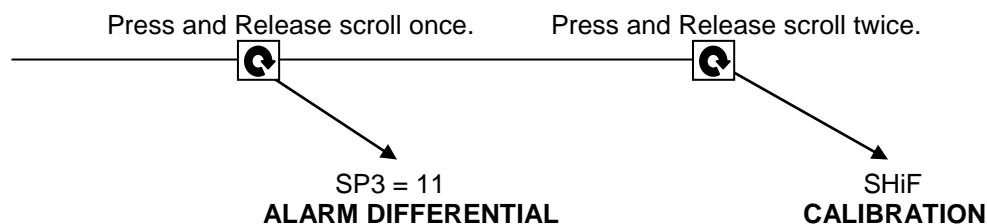
**CAUTION! IF IT IS NECESSARY TO REMOVE METAL COVER SCREEN ON BACK OF FREEZER TO MAKE CONNECTIONS TO ALARM RELAY, COVER MUST BE REPLACED BEFORE FREEZER IS PUT INTO OPERATION**

## FDC 4100 CONTROL




























### USER MODE

- To enter USER MODE; **Press and Release** the scroll key .
- To page through user mode Parameters; **Press and Release** the scroll key .



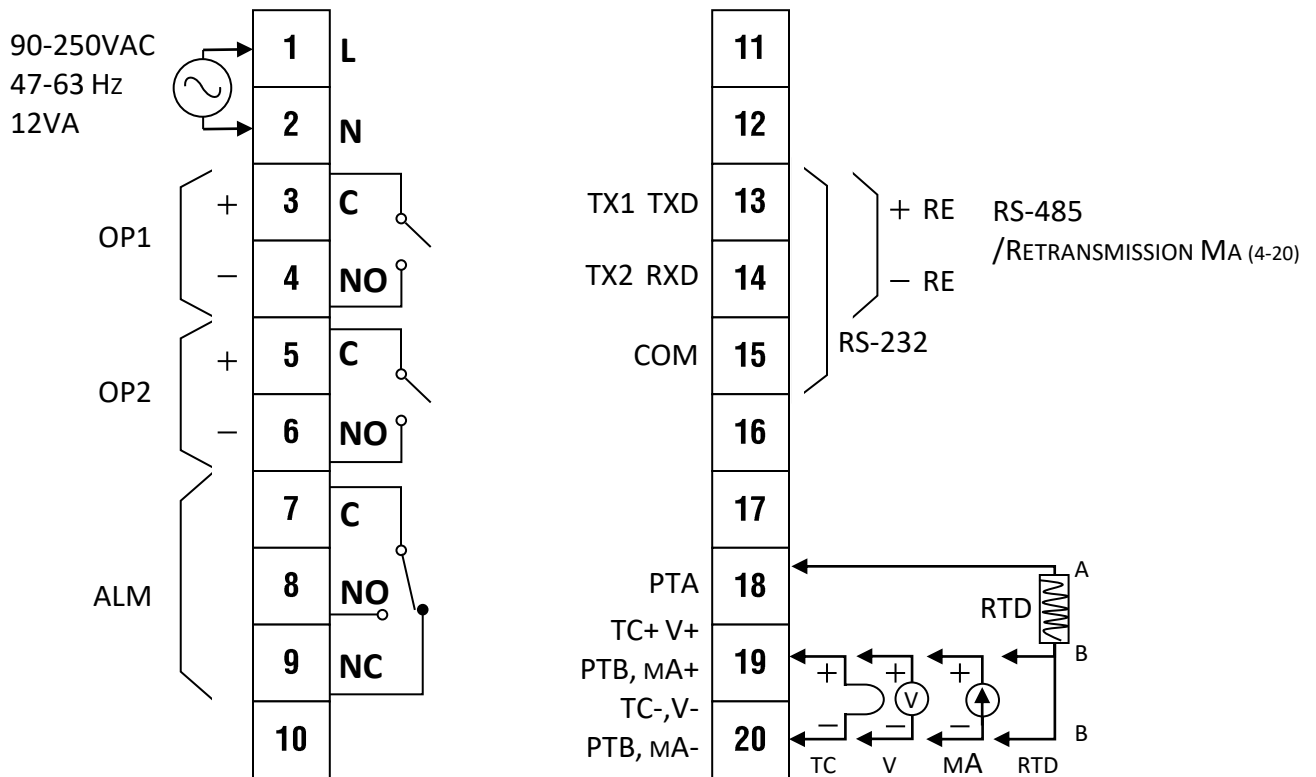
## PROGRAM MODE

- To enter PROGRAM MODE; **Press** and **HOLD** the scroll key  until **SET** shows up.
- To page through user mode Parameters; **Press** and **Release** the scroll key .
- To adjust parameter SETTINGS; **Press** the up  and down  keys .

	PARAMETER	SETTING	DESCRIPTION / NOTATION
HOLD SCROLL TO ENTER MODE		SET	----
PRESS SCROLL		LOCK	NONE
		INPT	t_tc
		Unit	°C or (°F)
		DP	NO.DP
		SPLL	-100°C (-150°F)
		SPIH	-40°C (-40°F)
			Single Stage Unit Setting is -67°C ( -67°F )
			Single Stage Unit Setting is 0°C ( 32°F )
			NOTE: The SPLL and SPIH parameters automatically change between °C and °F when this setting is changed in the UNIT parameter.
		SHIF	??
		FILT	0.5
		PB	0.0
		OUT1	DIRT
		O1.TY	RELY
		O1.FT	ON
		O1.HY	1.5
		RAMP	NONE
		OUT2	NONE
		AL.FN	Db.Hi
		AL.ND	NORM
		AL.FT	OFF
		CONN	NONE
		SEL1	SHIF
			Calibration
			Change to 1.0 or 0.7 Hysteresis to tighten cycle

# Table A.1 Error Codes and Corrective Actions

Error Code	Display Symbol	Error Description	Corrective Action
4	<i>Er 04</i>	Illegal setup values been used: Before COOL is used for OUT2, DIRT ( cooling action ) has alreadybeen used for OUT1 , or PID mode is not used for OUT1 ( that is PB = 0, and / or TI = 0 )	Check and correct setup values of OUT2, PB, TI and OUT1. IF OUT2 is required for cooling control, the control should use PID mode ( PB $\neq$ 0, TI $\neq$ 0 ) and OUT1 should use reverse mode (heating action) , otherwise, don't use OUT2 for cooling control.
10	<i>Er 10</i>	Communication error: bad function code	Correct the communication software to meet the protocol requirements.
11	<i>Er 11</i>	Communication error: register address out of range	Don't issue an over-range register address to the slave.
14	<i>Er 14</i>	Communication error: attempt to write a read-only data or a protected data	Don't write a read-only data or a protected data to the slave.
15	<i>Er 15</i>	Communication error: write a value which is out of range to a register	Don't write an over-range data to the slave register.
26	<i>AtEr</i>	Fail to perform auto-tuning function	1.The PID values obtained after auto-tuning procedure are out of range. Retry auto-tuning. 2.Don't change set point value during auto-tuning procedure. 3.Use manual tuning instead of auto-tuning. 4. Don't set a zero value for PB. 5. Don't set a zero value for TI. 6. Touch RESET key
29	<i>EEPE</i>	EEPROM can't be written correctly	Return to factory for repair.
30	<i>CJEr</i>	Cold junction compensation for thermocouple malfunction	Return to factory for repair.
39	<i>SbEr</i>	Input sensor break, or input current below 1 mA if 4-20 mA is selected, or input voltage below 0.25V if 1 - 5V is selected	Replace input sensor.
40	<i>AdEr</i>	A to D converter or related component(s) malfunction	Return to factory for repair.



## FIGURE 2.4

### REAR TERMINAL CONNECTION FOR FDC-4100

#### A.C. POWER

#1 – BLACK

#2 – BLACK (230V) / WHITE (115V)

#### CONTROL REFRIGERATION SWITCH

#3 – BLUE OR RED (SINGLE STAGE)

#4 – BLUE OR RED

#### ALARM CIRCUIT

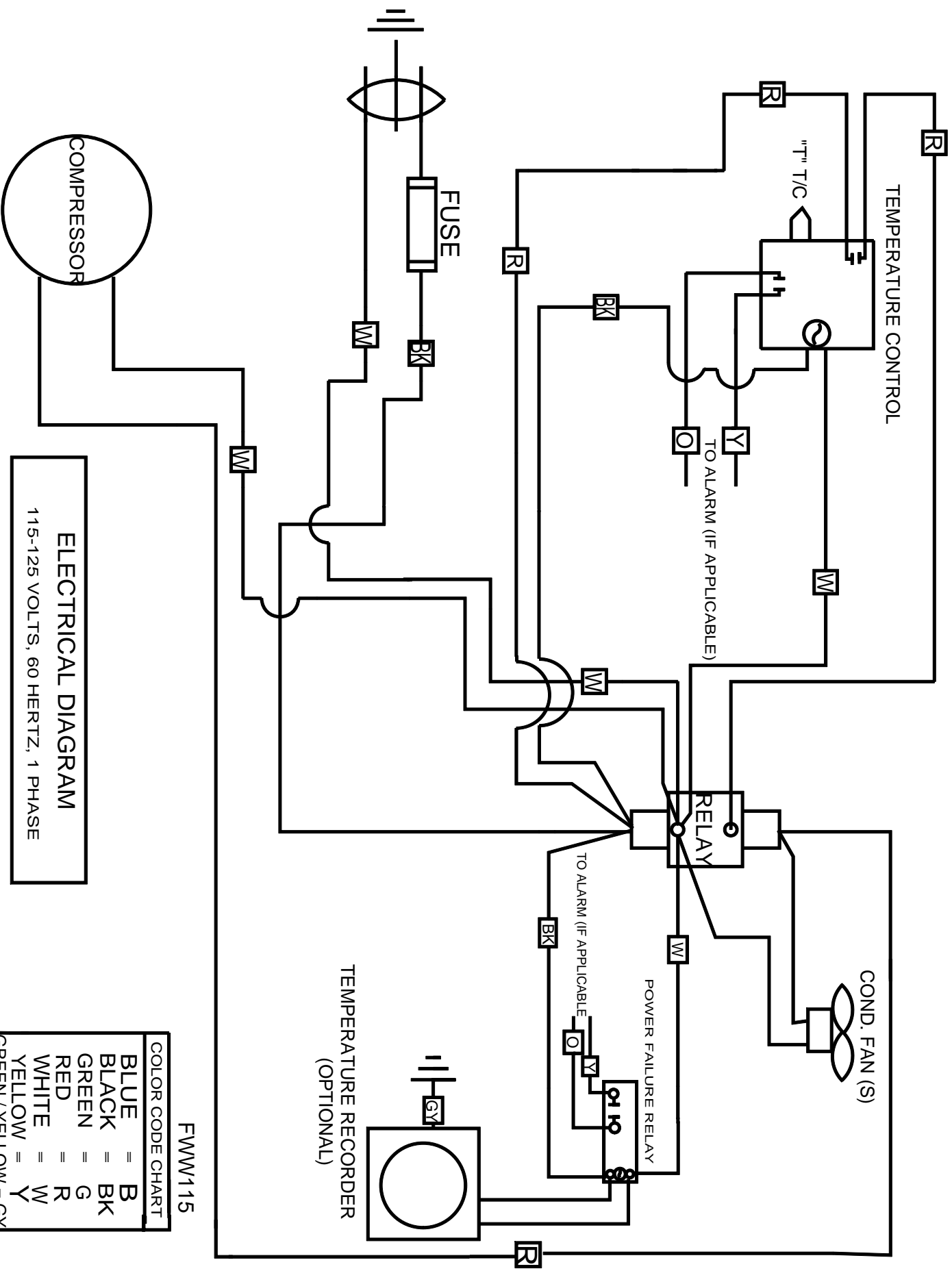
#7 – YELLOW

#8 – ORANGE

#### THERMOCOUPLE (Type "T")

#19 – BLUE ( COPPER )

#20 – RED ( SILVER )



**ELECTRICAL DIAGRAM**  
115-125 VOLTS, 60 HERTZ, 1 PHASE

**COLOR CODE CHART**

BLUE	=	B
BLACK	=	BK
GREEN	=	G
RED	=	R
WHITE	=	W
YELLOW	=	Y
GREEN / YELLOW	=	GY

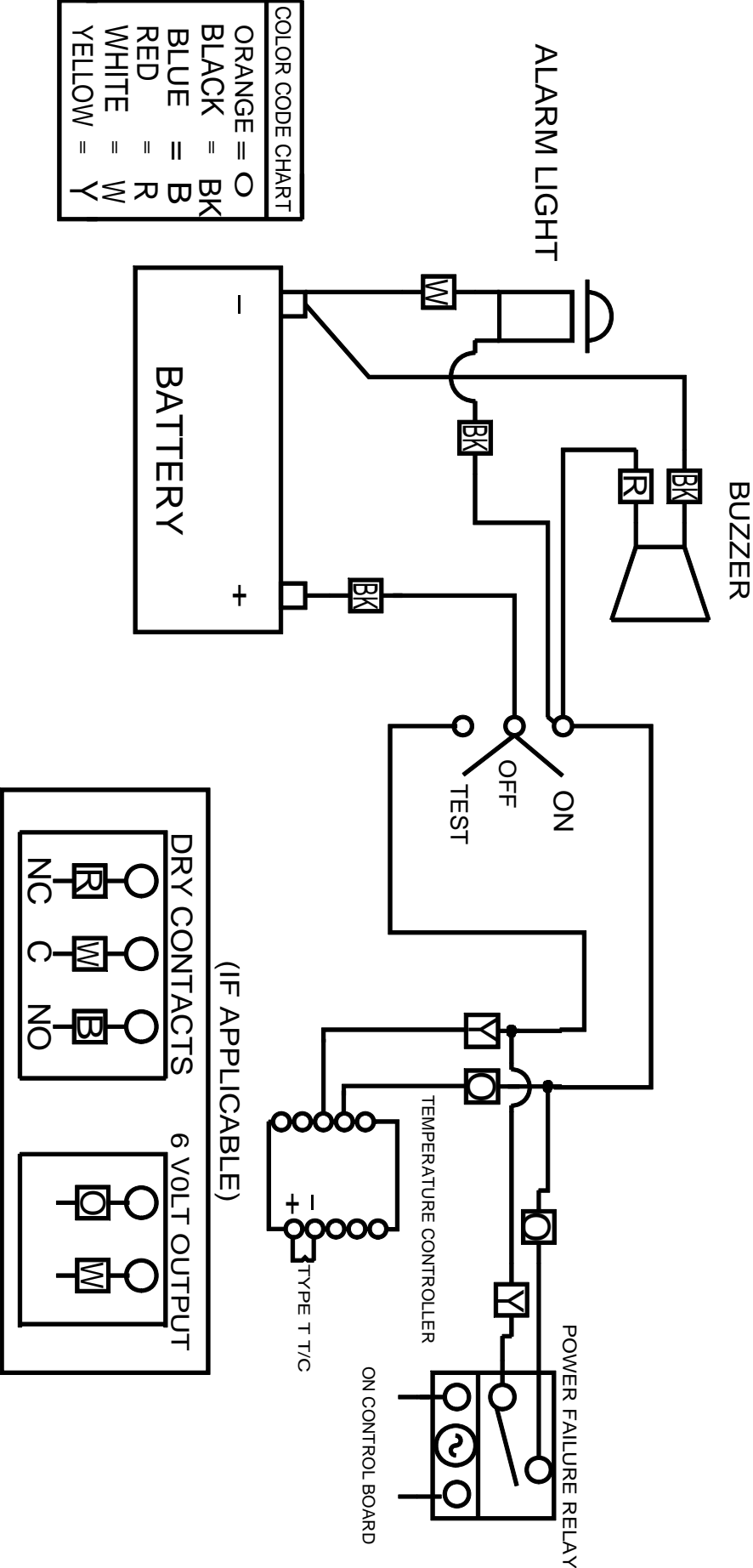
FFW115

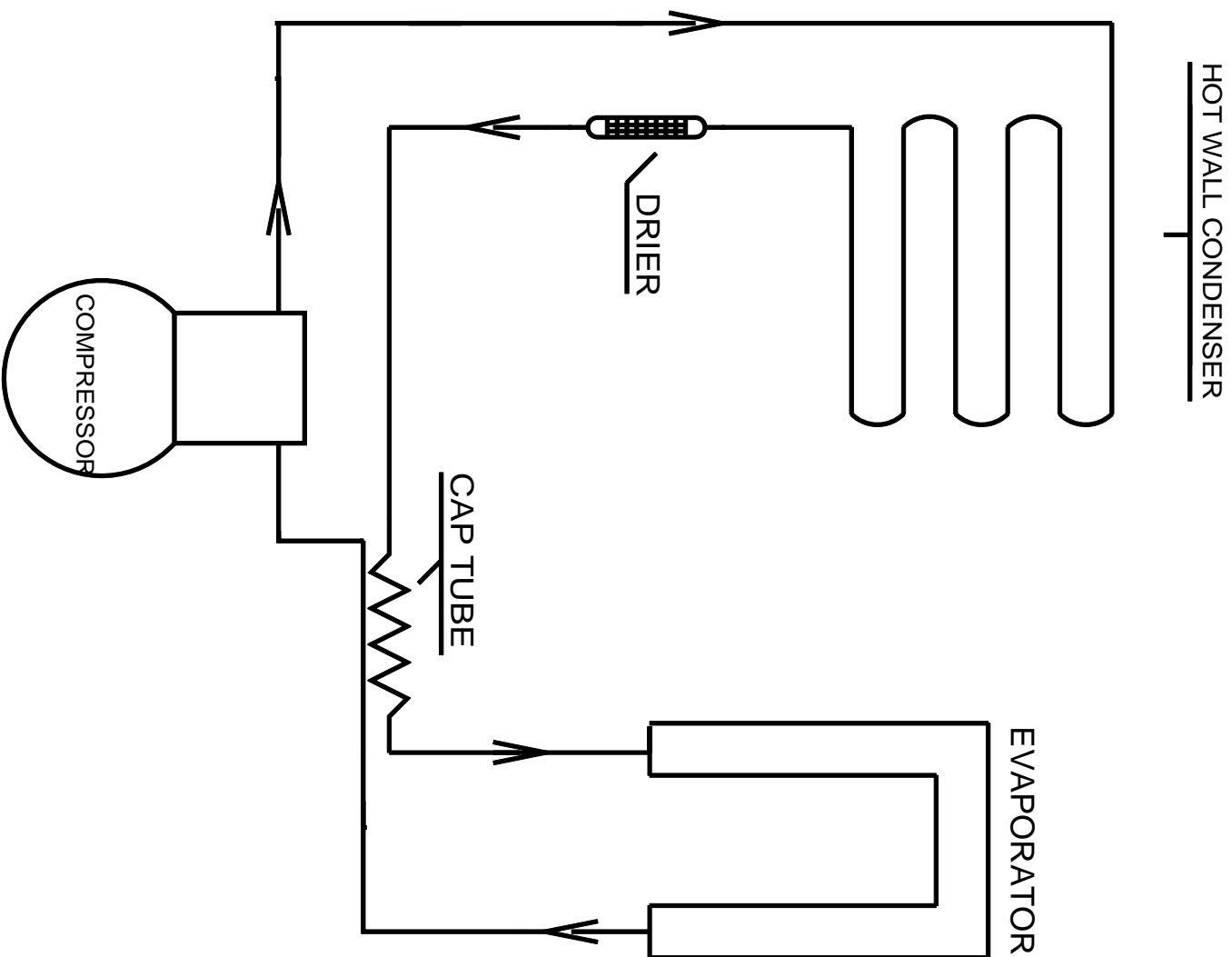
ACCESSORIES CONNECTED TO H AND C ON TERMINAL STRIP

9-2006



PARTLOW 1160 / FDC4100





REFRIG. FLOW CHART

## CH REFRIGERATION & HARDWARE PARTS LIST

**Note:** When ordering parts, please have the Model & Serial number of Freezer.

COMPRESSOR MODEL	HP	VOLTAGE	HERTZ	PHASE	SO-LOW PART #
EMBRACO FFI12HBX	$\frac{1}{3}$	115	50/60	1	<b>FF12-115</b>
LG	$\frac{1}{5}$	115	50/60	1	<b>LG-115</b>

CONTROL MODEL	SO-LOW PART #
PARTLOW 1160	<b>1160</b>
FDC 4100	<b>4100</b>
FDC 4000	<b>4000</b>
FDC 9300	<b>9300</b>

### PLEASE NOTE:

IN ORDER TO PROVIDE YOU WITH THE CORRECT TEMPERATURE CONTROL, SO-LOW **REQUIRES** YOU TO PROVIDE THE SERIAL NUMBER OF YOUR FREEZER WHEN ORDERING.

GENERAL PARTS	SO-LOW PART #
Compressor Relay No. SSAA-330-25-000 (Please Specify Voltage)	<b>21351-VOLTAGE</b>
Sunon Fan Motor No. SP101A	<b>FAN-SUN-SP</b>
Sunon Fan Motor No. DP201A	<b>FAN-SUN-DP</b>
Mechantronics Fan Motor No. UF12A12-BTH	<b>FAN-MEC-UF</b>
Electrical Cord No. 8-3 (Please Specify Voltage)	<b>PWRCRD-15A-VOLTAGE</b>

REFRIGERATION PARTS	SO-LOW PART #
Capillary Tube No. R-CH	<b>712</b>

HARDWARE PARTS	SO-LOW PART #
Hasp for CH Model	<b>CH-HASP</b>
Chest Lid (For Models CH25-5 / CH45-5 / CH40-5)	<b>LID-5</b>
Chest Lid Hinge (For Models CH25-5 / CH45-5 / CH40-5)	<b>HINGE-CH-5</b>
Chest Lid (For Models CH25-9 / CH43-9)	<b>LID-9</b>
Chest Lid Hinge (For Models CH25-9 / CH43-9)	<b>HINGE-CH-9</b>
Chest Lid (For Models CH25-13 / CH40-13)	<b>LID-13</b>
Chest Lid Hinge (For Models CH25-13 / CH40-13)	<b>HINGE-CH-13</b>

**NOTE:** If you require an item that is not listed above, please contact the So-Low Service Department for assistance (513) 772-9410.