9.2 Isolated Interface Option

Introduction

The isolated interface is a device that maintains electrical isolation between the refrigeration unit's control voltage and a control system's voltage. This isolation prevents spurious electrical signals in either system from affecting the other system. It also allows the refrigeration unit to interface with an incoming voltage different than the 24 V(ac) used internally. Voltage option was specified when the isolated interface was ordered.

Isolation is provided by relays on a printed circuit board (I/O) board. A signal from the control system to the refrigeration unit activates the appropriate relay coil, closing the contact. This contact closure initiates the desired function within the refrigeration unit.

Status information from the refrigeration unit to the system activates a 24 V(ac) output relay, closing the contact. The control system must provide the appropriate detection circuit to interpret the contact closure.

NOTE: *The analog output signal for remote temperature indication is not isolated.*

Additional Instructions for section 3 Installation

1. Verify the voltage option

Loosen the two lower screws on the side of the low voltage box. Slide the low voltage box panel straight up to remove it.

Locate the isolated interface I/O board in the lower half of the low voltage box. Check the voltage specification printed on the housings of relays #1, #5, and #7. The voltage specified on the above relays should indicate the control supply voltage.

NOTE: *For 12 V(ac) and 24 V(ac) options: Rectifiers are put before each relay, so the relay housings will indicate "DC" instead of "AC."*

NOTE: *For PFC/PFC: Also check the housings of relays #11 and #13.*

NOTE: *For PFC/P: Also check the housing of relay #11.*

2. Verify that the control system meets the electrical requirements.

See Table 9-2.

Table 9-2: Isolated Interface Option—Electrical Requirements

	To Control the Refrigeration Unit		To Obtain Status Information
Specified Voltage Option	**Acceptable Voltage Range (V)**	**Coil Resistance (Ω)**	**Acceptable Current Range† (mA)**
6 V (ac)	4.8 - 6.6	18.8	100 - 5000
6 V (dc)	4.8 - 6.6	47.0	100 - 5000
12 V (ac or dc)	9.6 - 13.2	188.0	60 - 5000
24 V (ac or dc)	18.2 - 26.4	750.0	30 - 5000

NOTE: *† The voltage used to obtain status information must not exceed 24 V.*
† Minimum current required to keep relay contacts clean. If this is not possible, see section 9.1 CE Mark Units, "Additional Instructions for ***section 3.2.1 Inspect the Unit*** ***a****nd section 5 Periodic Inspection and Maintenance."*
† Maximum switching current for inductive or resistive loads.

3. Connect the control system to the isolated I/O connector plug.

The isolated interface provides the same status information and control functions as the standard remote connector. Follow the instructions in section 3.8 "How to Install the Remote Control" with the following exceptions:

- Disregard Figure through Figure 10-8. See Figure 9-1 through Figure 9-5 and Table 9-4.
- The contacts inserted into the back of the isolated I/O connector plug are sockets instead of pins.

Additional Instructions for section 4 Operation

The refrigeration unit cannot operate in COOL and DEFROST at the same time. If the control system attempts to do this, the refrigeration unit will operate in COOL.

A "remote verification" signal for each refrigerant circuit is provided when the following conditions are met.

- Electrical power is connected to the refrigeration unit and the power disconnect switch is in the ON position.
- The ON / OFF switch on the unit's SYSTEM CONTROL panel is in the ON position, and the refrigeration unit (compressor) is running.
- The refrigerant circuit is in REMOTE.

If the refrigeration unit is shut off by one of Polycold's protective devices, both the "remote verification" signal and the "unit OK" signal will turn OFF.

Additional Instructions for section 5 Periodic Inspection and Maintenance

Check the operation of each relay every year if running at less than the minimum current. See Table 9-2. If it is necessary to replace the relay, refer to the following part numbers.

Table 9-3: Isolated Interface Option Parts List

Relay Description	IDECs (manufacturer) Part Number	Polycold Part Number
6 V(ac)	RH1B-U AC 6V	Not released
6 V(dc)	RH1B-U DC 6V	Not released
12 V(dc)	RH1B-U DC 12V	Not released
24 V(dc)	RH1B-U DC 24	333026-01
24 V(ac), 1-pole†	RH1B-U AC 24V	333019-01
24 V(ac), 2-pole†	RH2B-U AC 24V	333019-02
NOTE: *† For relays operated by the refrigeration unit's control voltage*		

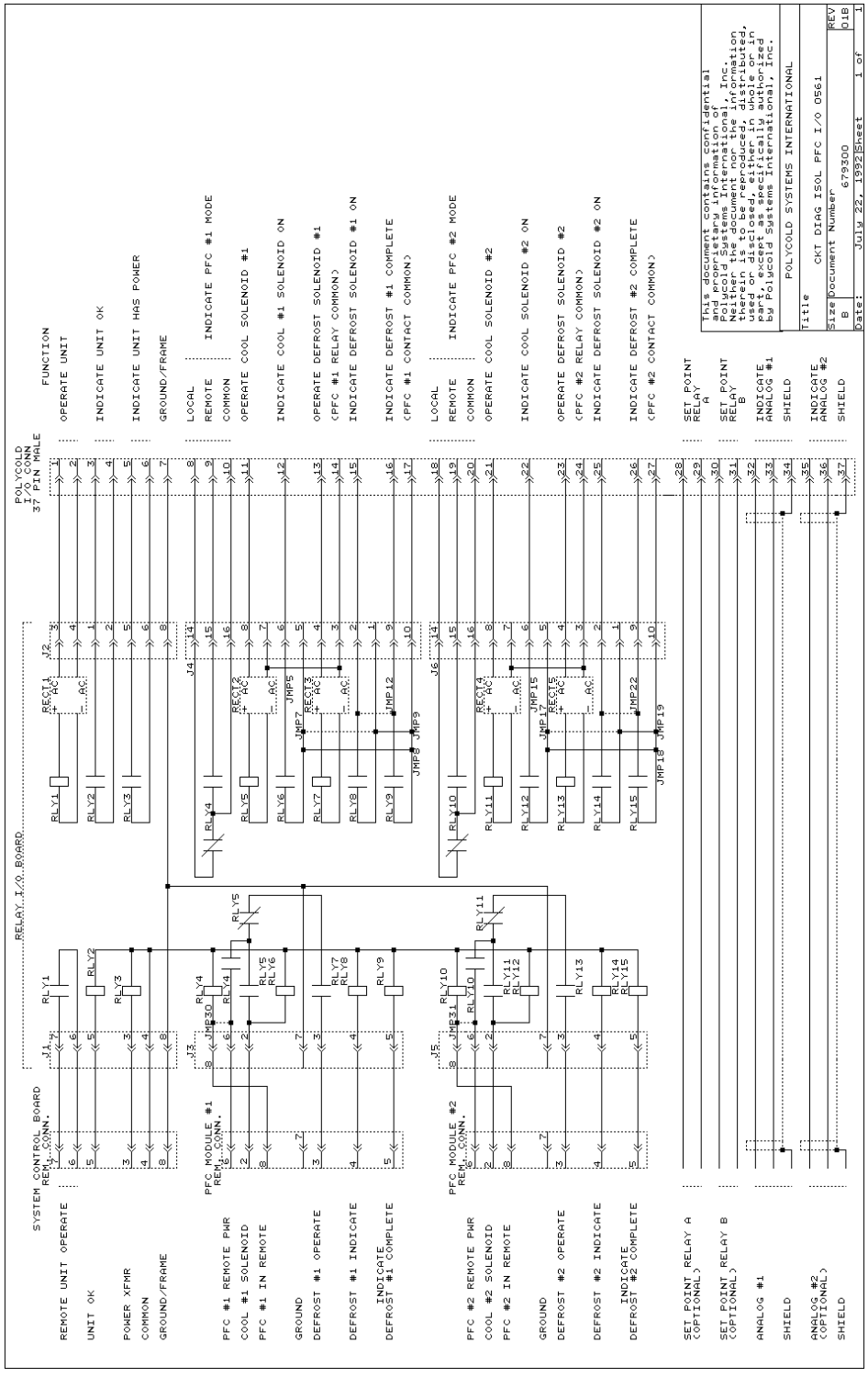

Figure 9-1: *PFC and PFC/PFC isolated interface option—internal wiring*

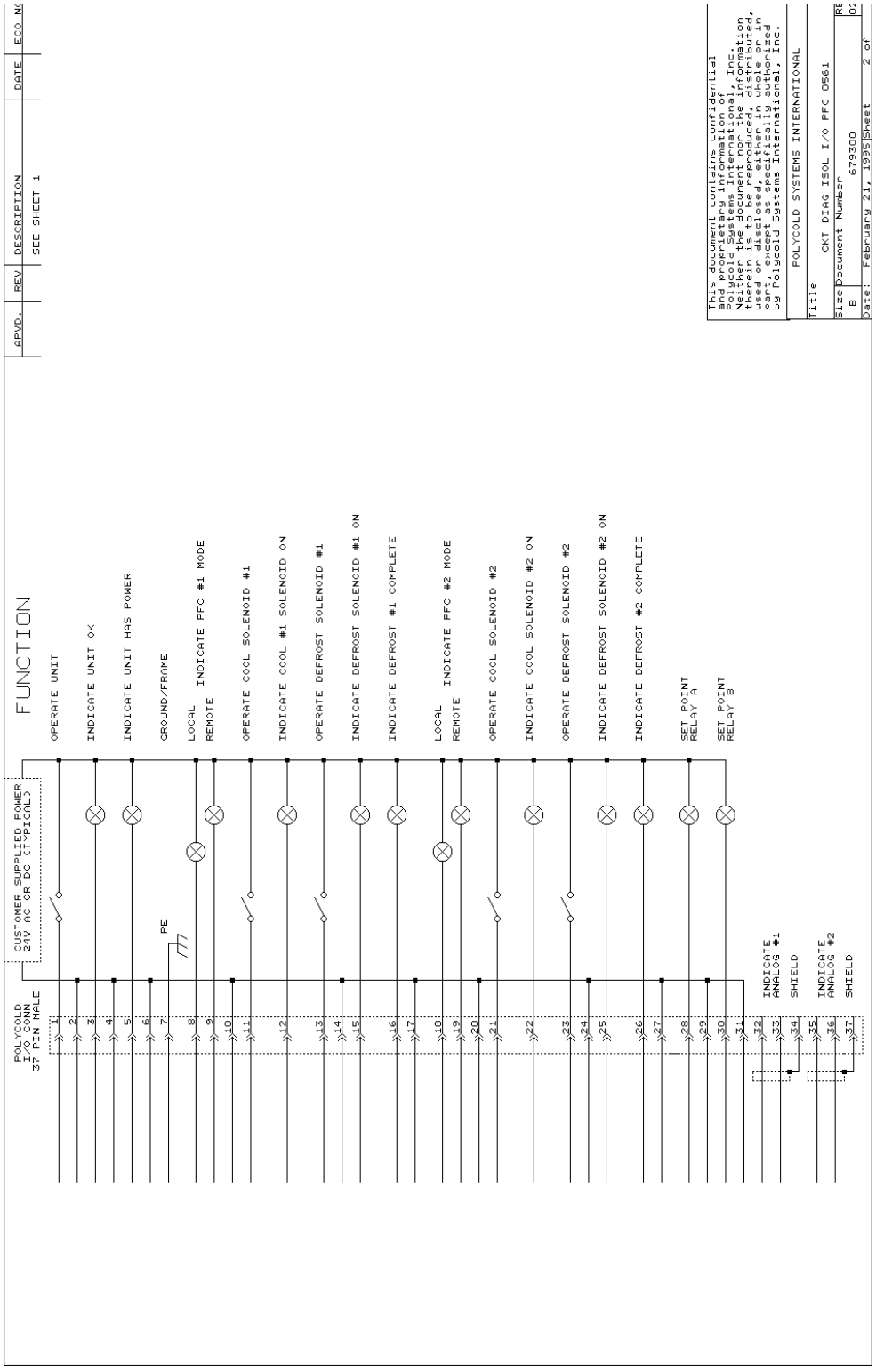

Figure 9-2: PFC and PFC/PFC isolated interface option suggested wiring for customer's control system

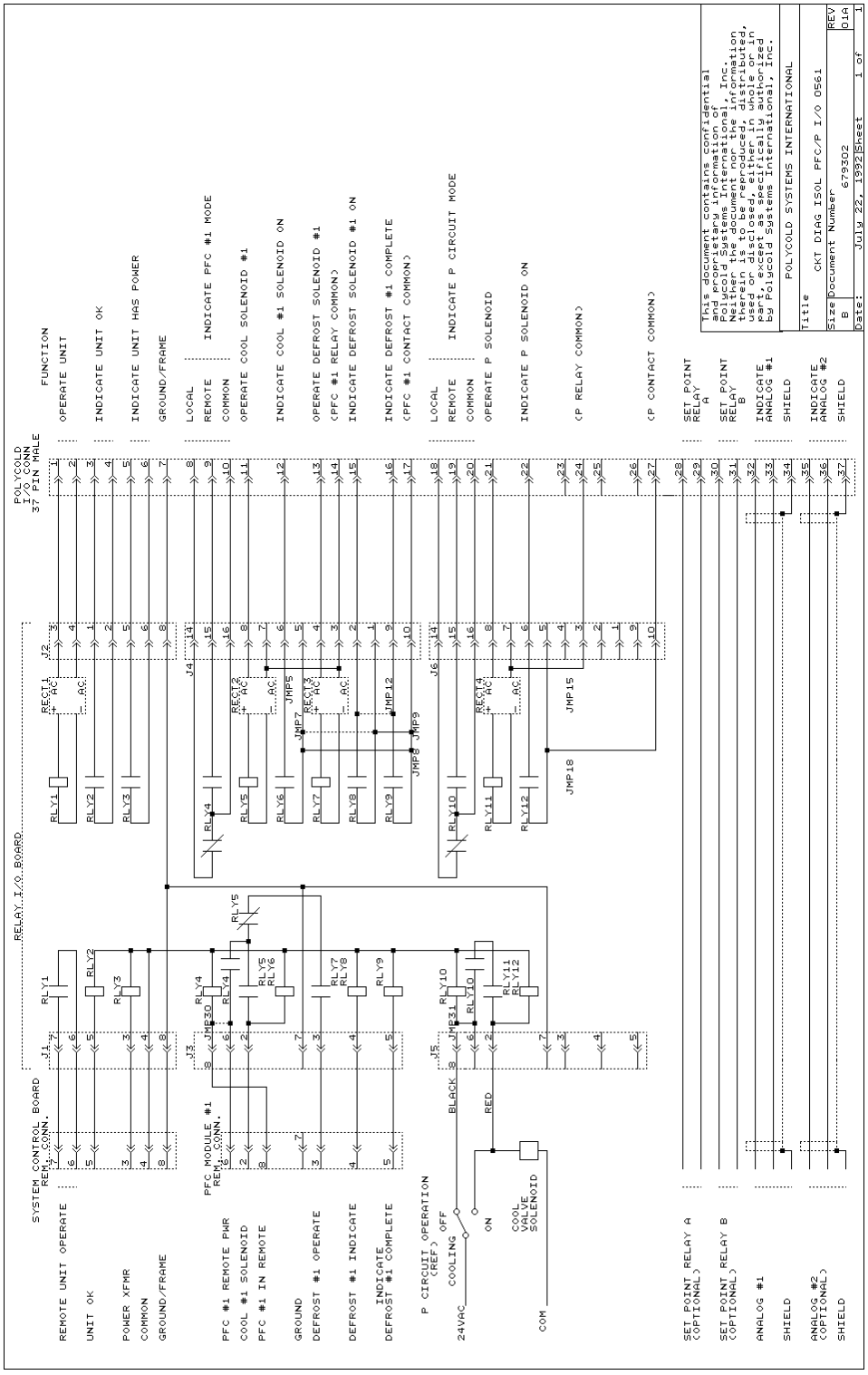

Figure 9-3: PFC/P isolated interface option—internal wiring

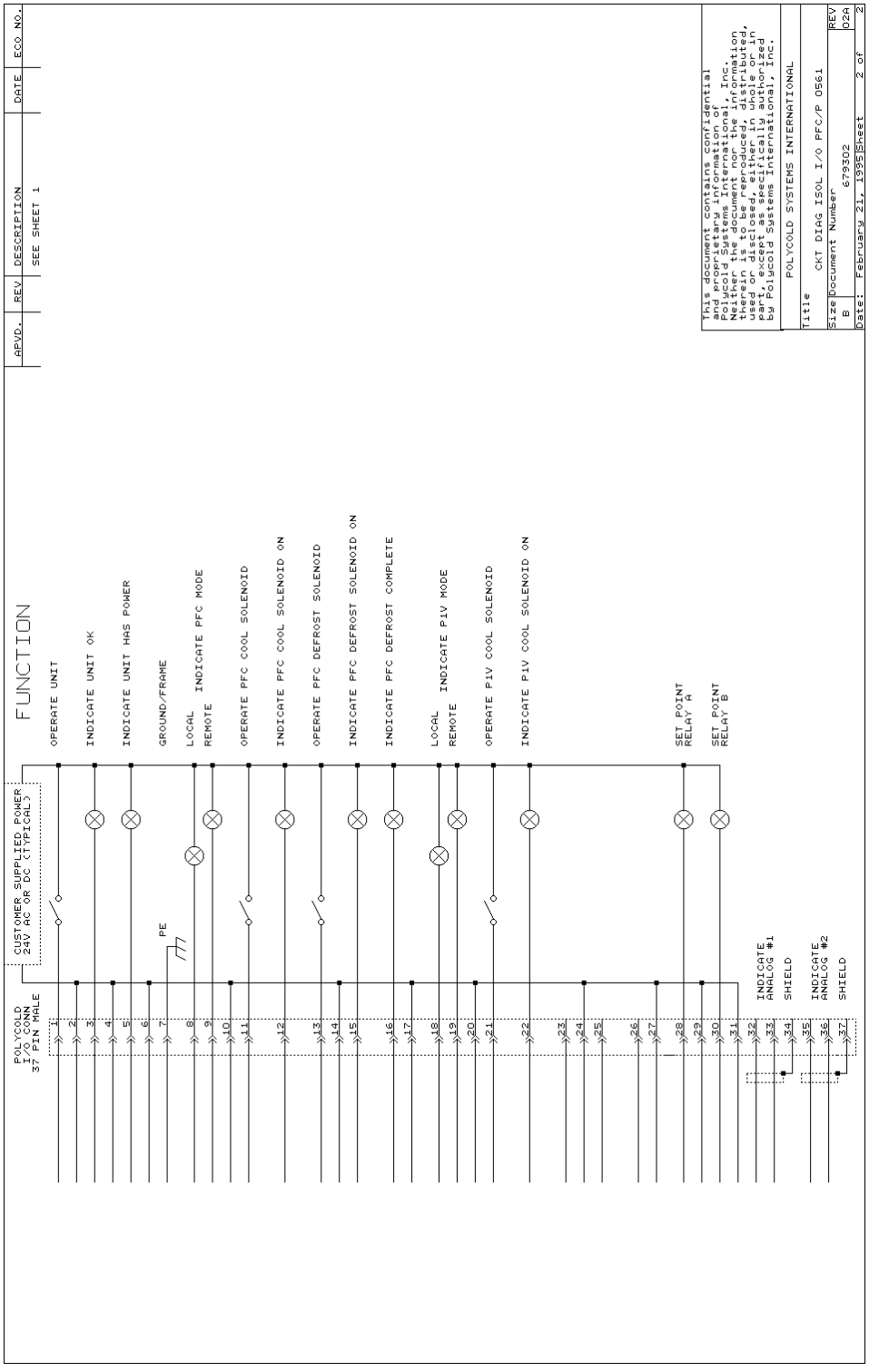

Figure 9-4: *PFC/P isolated interface option—suggested wiring for customer's control system*

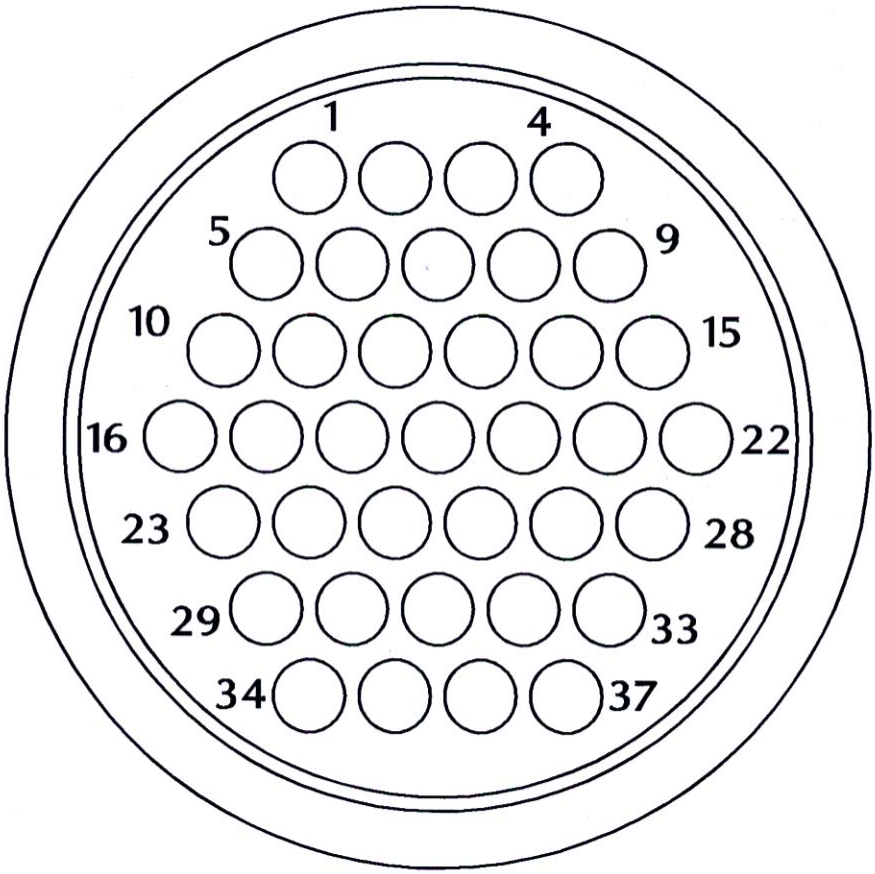

Figure 9-5: Isolated interface option—wire side of isolated I/O connector plug

Table 9-4: Isolated Interface Option—Isolated I/O Connector Wiring Worksheet

Group	Wire Function	Pin Number	Customer's Wire Color
System Control	Operate Unit	1	
		2	
	Indicate Unit OK	3	
		4	
	Indicate Power	5	
		6	
	Ground	7	
Refrigerant Circuit 1 (PFC)	Indicate REMOTE- LOCAL	8	
	Indicate REMOTE – REMOTE	9	
	Indicate REMOTE – Com-mon	10	
	Operate COOL	11	
	Indicate COOL	12	
	Operate DEFROST	13	
	Operate Common	14	
	Indicate DEFROST ACTIVE	15	
	Indicate DEFROST COM-PLETE	16	
	Indicate Common	17	

Table 9-4: Isolated Interface Option—Isolated I/O Connector Wiring Worksheet

Group	Wire Function	Pin Number	Customer's Wire Color
Refrigerant Circuit 2 (PFC or P)	Indicate REMOTE- LOCAL	18	
	Indicate REMOTE – REMOTE	19	
	Indicate REMOTE – Common	20	
	Operate COOL	21	
	Indicate COOL	22	
	Operate DEFROST (PFC only)	23	
	Operate Common	24	
	Indicate DEFROST ACTIVE (PFC only)	25	
	Indicate DEFROST COMPLETE (PFC only)	26	
	Indicate Common	27	
Option	Indicate Setpoint Relay A	28	
		29	
Option	Indicate Setpoint Relay B	30	
		31	
Temperature Meter 1	Analog #1 – Out	32	
	Analog #1 – Return	33	
	Analog #1 – Shield	34	
Option— Temperature Meter 2	Analog #2 – Out	35	
	Analog #2 – Return	36	
	Analog #2 – Shield	37	

9.3 Leybold Isolated Interface Option

The Leybold isolated interface option is the same as Polycold's standard isolated interface option with the following exceptions.

- The Leybold isolated interface option is only designed for models PFC and PFC / PFC.
- The Leybold isolated interface option is only designed for an incoming voltage of 24V.
- The isolated I / O connector plug has a different pin configuration.
- The Leybold isolated interface does not provide a "remote verification" signal.

Follow the instructions in section 9.2 Isolated Interface Option with the following exceptions:

- Figure 9-6
- Figure 9-7
- Leybold Isolated Interface Option—Isolated I / O Connector Wiring Worksheet
- Disregard all prior figures and Table 3-10
- Disregard any information with respect to "remote verification" signal

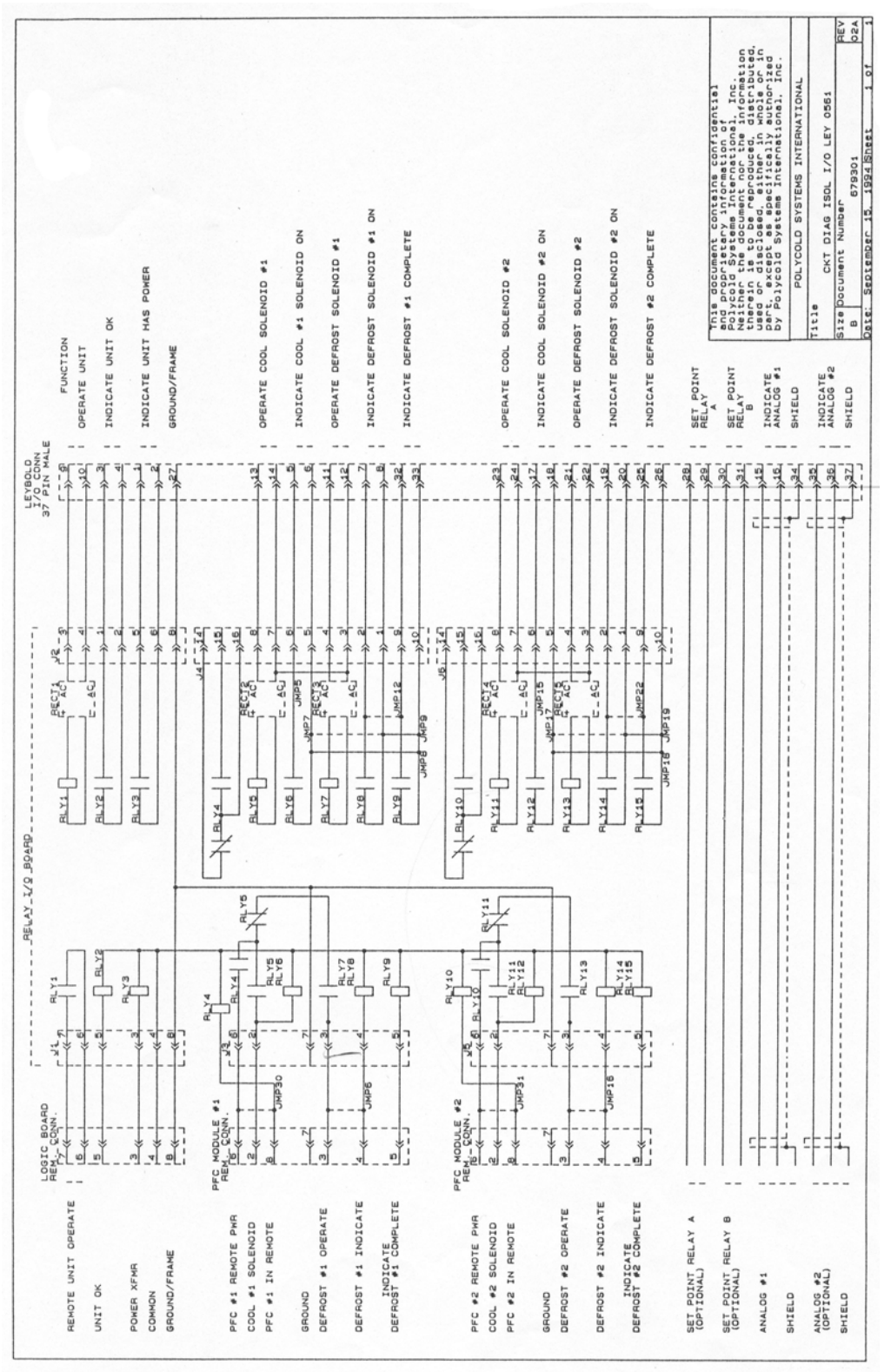

Figure 9-6: Leybold isolated interface option- schematic

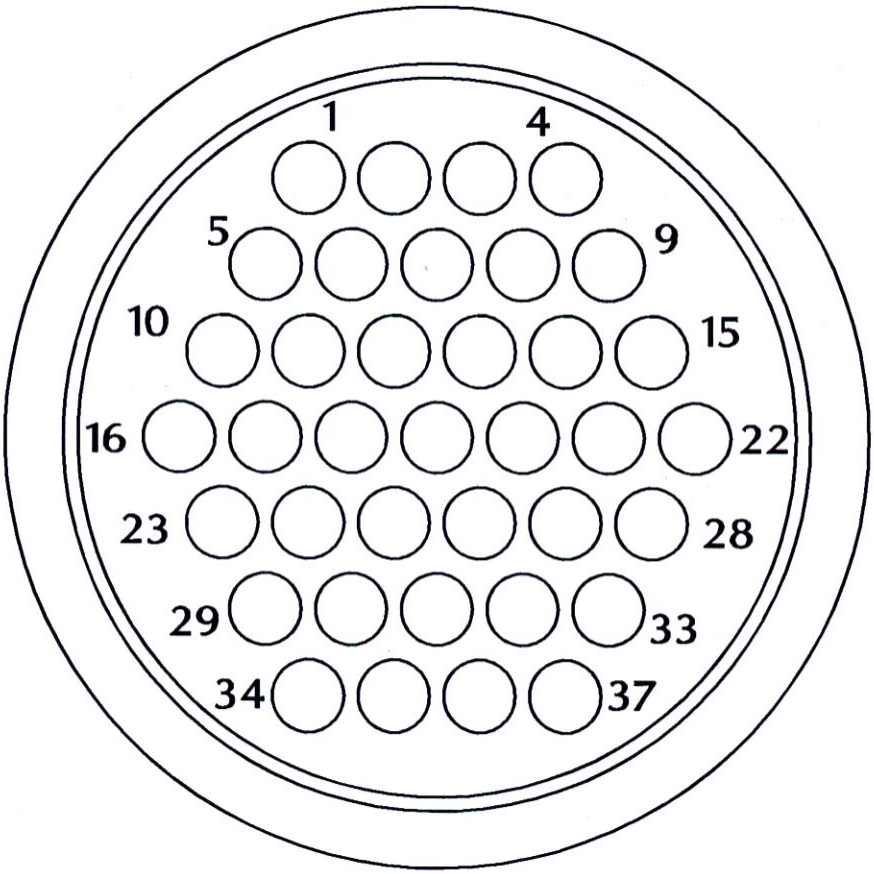

Figure 9-7: Leybold isolated interface option – wiring side of isolated I/O connector plug

Table 9-5: Leybold Isolated Interface Option—Isolated I/O Connector Wiring Worksheet

Group	Wire Function	Pin Number	Customer's Wire Color
System Control	Indicate Power	1	
		2	
	Indicate Unit OK	3	
		4	

Table 9-5: Leybold Isolated Interface Option—Isolated I/O Connector Wiring Worksheet

Group	Wire Function	Pin Number	Customer's Wire Color
Refrigerant Circuit 1 (PFC)	Indicate COOL	5	
		6	
	Indicate DEFROST	7	
		8	
System Control	Operate Unit	9	
		10	
Refrigerant Circuit 1 (PFC)	Operate DEFROST	11	
		12	
	Operate COOL	13	
		14	
Temperature Meter 1	Analog #1 – Out	15	
	Analog #1 – Return	16	
Refrigerant Circuit 2 (PFC)	Indicate COOL	17	
		18	
	Indicate DEFROST	19	
		20	
	Operate DEFROST	21	
		22	
	Operate COOL	23	
		24	
	Indicate DEFROST COM-PLETE	25	
		26	
System Control	Ground	27	
Option	Indicate Setpoint Relay A	28	
		29	

Table 9-5: Leybold Isolated Interface Option—Isolated I/O Connector Wiring Worksheet

Group	Wire Function	Pin Number	Customer's Wire Color
Option	Indicate Setpoint Relay B	30	
		31	
Refrigerant Circuit 1 (PFC)	Indicate DEFROST COMPLETE	32	
		33	
Temperature Meter 1	Analog #1 – Shield	34	
Option—Temperature Meter 2	Analog #2 – Out	35	
	Analog #2 – Return	36	
	Analog #2 – Shield	37	