

Electrical Installation Requirements

Care should be taken to separate the power and signal cables to prevent electrical interference and possible damage due to inadvertent connection.

The power outputs are fitted with suppressors to protect against electrical interference when switching off solenoid valves or contactors. It is therefore essential to observe the output polarity. The line voltage should be connected to the terminals marked **LN** and the switched loads to **LD**.

Voltage free contacts should be connected to terminals for the logical conditions shown.

The control supply neutral must be connected to terminal 1 for EMC operation.

CE Conformance

This unit conforms with the relevant EU standards when installed according to the JTL Installation Requirements for this product

Inputs

Digital	
13, 14	Input 1 Compressor healthy
12, 14	Drawer open
Temperatures	
17, 18	AIR ON TEMP
19, 20	AIR OFF TEMP

Outputs

	Outputs (CON 3)			
2 3	LD 1 LN 1 & 2	OUTPUT 1	(N/O LOAD) (LINE)	RUN COMPRESSOR
4 3	LD 2 LN 1 & 2	OUTPUT 2	(N/O LOAD) (LINE)	FANS
5 6	LD 3 LN 3 & 4	OUTPUT 3	(N/O LOAD) (LINE)	DEFROST

Use of Maintenance Unit

The controller can be checked and the operation adjusted using a JTL portable maintenance unit which plugs into the controller. Each item of information has an item number. The more important items are listed in the tables overleaf.

Examples:
To read item 21 press:

To set item 31 to -20.0 press:

To correct errors press:

To select next or previous items press: and

Initial Commissioning and Bitswitch Settings

The controller has a set of data built in to its program for use during commissioning. These are entered by setting item 9 to 1234. This loads into the controller a suitable set of data for the selected type of case. Adjustments should then be made as necessary.

If a JTL communications network is connected to the controller then the unit number should be set on item 1.

Temperature Display

The temperature displayed is computed from the air on and air off temperatures. A factor is used to proportion the air off and air on temperatures. The temperature can be displayed in Celsius or Fahrenheit as selected by item 9392.

The UBIA controller will drive the following JTL displays when used with the CAB55 extension cable.

Display	Cable	Switch
LCD8	CAB55	None
LCD9	CAB55	3 position

The LCD9 display incorporates a keyswitch. This switch can be used to select various functions as described below. A maximum of 2 additional functions can be selected. On LCD9 if only one additional function is selected, then it is available in either of the extra 2 positions.

The CAB55 cable is available in various lengths.

Control Strategy

The temperature is controlled using the cabinet setpoint, deadband and the anti short cycling compressor data.

The number of starts per hour is programmable for the compressor. Once the compressor starts if it stops it cannot start again until the short cycling time times out. For example if the number of starts per hour is set to 10 then a restart after a start cannot occur until 6 minutes have elapsed since the last start.

Also once the compressor stops it must stop for a settable minimum time.

There is a compressor healthy input for the compressor. The compressor will not run if the input is not present.

The deadband is symmetrical about the setpoint eg if the setpoint is -22 and the deadband is 2 then the top of the deadband is -21 and the bottom of the deadband is -23.

When the cabinet temperature falls below the bottom of the deadband for a continuous period of 15 seconds the compressor is stopped. When the cabinet temperature rises above the top of the deadband for a continuous period of 15 seconds then the compressor starts, if it is allowed.

If the drawer is open for more than a settable time (item 372) the compressor is stopped.

The UBIA controller can be set to operate from 2 cabinet temperature setpoints by setting item 123. The setpoint to be used is then selected using the display keyswitch. The setpoints are set on items 124 and 125 and the current setpoint is displayed on item 30. The alarm tolerances also have alternative settable valves which are used when the keyswitch is in the alternate position display.

Defrost Initiation Strategies

The defrost strategy can be initiated in 2 fundamental ways using item 107. Defrost initiation can be by real time clock, or by command on the JTL communications network.

Network initiated defrost can be divided into 2 groups; coordinated and scheduled.

Coordinated timed defrost requires a defrost coordinator to be present in the network. When coordinated timed request is selected then the controller requests a defrost as defined by the number of defrosts a day as set on item 69. The defrost coordinator coordinates the defrost as required. The backup strategy can be chosen to fall to learned defrost schedule or real time backup.

Backup Defrost Initiation Strategies

For network initiated defrost, 2 defrost backup strategies are included. The strategy choice is made on item 107. For learned backup the last 24 hours defrost operation is continuously monitored and the defrost schedule is learned. For real time backup the defrost schedule as set up for real time defrost on items 51-56 is used.

If network communication fails, the selected backup strategy is automatically used. The unit reverts to network control whenever the network communications is operational.

The backup strategy is also invoked if the network signals that communications has failed to the defrost scheduler or if there is a fault at the defrost scheduler.

Defrost

The defrost output relay is energised during the defrost period. The compressor is stopped during defrost. During defrost the fans can be stopped.

The display shows "dEF "

Defrost Termination

The controller stays in defrost at least until the minimum defrost time, on item 145, is exceeded. If the termination temperature is reached before the minimum defrost time then the defrost heater is cycled.

Defrost Recovery

When the termination temperature or time is reached the controller enters defrost recovery. The heater is de-energised. The termination method can be chosen using item 144.

A drain down time delay can be applied (item 59) after defrost before the compressor is started.

The display shows "dEF".

Forced Refrigeration and Defrost

The maintenance unit can be used to force controller into a particular mode. This is done using items 77-79. While the maintenance unit is plugged in the controller will remain in the selected mode permanently. Once the maintenance unit is unplugged the controller will revert to normal control after 30 minutes.

When the network initiated defrost strategy is selected, forced defrost will send a command to the JTL defrost scheduler to initiate a defrost and does not act locally.

Fan Control

The fans can be controlled in various ways. Item 108 can be set to be not controlled or run always.

If item 108 is set to "fans off during defrost" then during defrost recovery the fans can be controlled depending on the time delay after defrost. If item 109 is set to a time then the fans are held off until the time delay has occurred.

Note: When "Fan runs always" is selected the fans do not stop, in normal control, during or after defrost.

The fans are stopped when the drawer is open. There is a 5 second confirmation delay to avoid false operation of the fans when the drawer is opened and shut.

Load Shedding

The controller has the ability to reduce the electrical load on request by network broadcast. Up to 8 individual broadcast signals can be assigned to the following functions.

- Inhibit defrost,
- Inhibit refrigeration,
- Fans off

High Temperature Alarms

The cabinet and air off temperatures are monitored continually. The temperature errors are averaged over the period set on item 47. If either of the average temperature errors exceed the alarm level then an alarm is given which is shown on the display and available, for remote indication, on the JTL alarm system.

If the average cabinet temperature error exceeds half the alarm tolerance a warning alarm is given which is available on the JTL alarm system. If this alarm is present during the last 24 hours for more than the set period a trend alarm is given which is also available on the JTL alarm system. High temperature alarms are cancelled during defrost and defrost recovery.

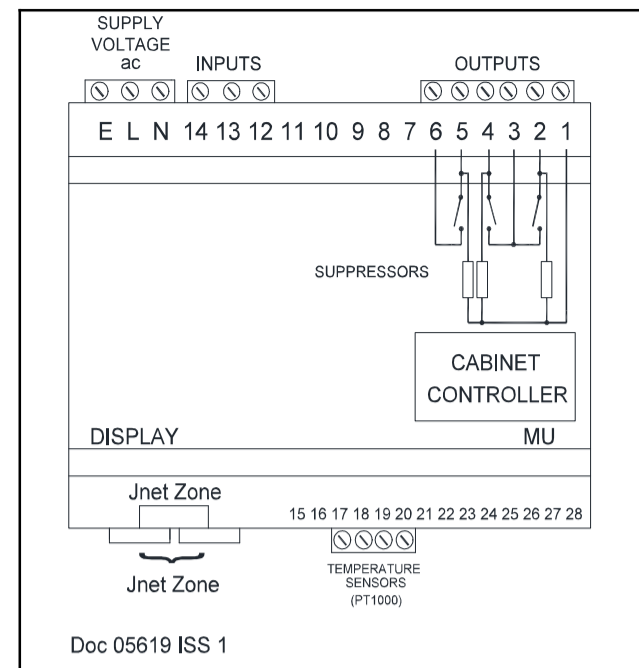
The cabinet temperature tolerance is set on item 32 (alternate item 377) and the air off tolerance on item 34 (alternate item 379). Setting either of these tolerances to 0.0°C disables the relevant alarm.

Low Temperature Alarm

There is a low temperature alarm which generates in the same way as the high cabinet temperature alarm. The tolerance is set on item 480 (alternate item 378).

Compressor Fault Alarm

When a compressor is enabled if the compressor healthy input is not present an alarm is given.



Drawer Monitoring

If the drawer is open for more than a settable time (item 373) an alarm is given. If the delay is set to 00:00 the alarm function is disabled.

The time the drawer is currently open is monitored and the time the drawer has been open for the last rolling 24 hour period is also monitored.

Network Shutdown and Fans Only Mode

This controller supports the JTL Network shutdown and fans only facilities. When these facilities are enabled by item 62. If a shutdown or fans only command is received over the JTL Network, the refrigeration is stopped and alarms are disabled. The high temperature alarm sequence is initialised.

Display Controlled Shutdown

The controller can be shutdown for servicing purposes using the display switch. This feature is enabled by item 138.

Display Controlled Fans Only Mode

The controller can be put into fans only mode using the display switch. This feature is enabled by item 136.

Timer Controlled Shutdown

When used in conjunction with a JTL timer on the network the controller can be put into shutdown mode. Item 238 is used to select the appropriate network timer and item 239 shows the associated network command state.

Daylight Saving

When connected to a JTL network this controller can operate by displaying daylight saving time for its time and defrost schedule. Daylight saving operation is selected by setting item 18. The connected network controller then adjusts the times automatically during the daylight saving period.

ADJUSTABLE PARAMETERS				UBIA
	Item	Function	Range	Units
TEMPS & ALARMS	33	Cabinet temperature ratio	20 to 80	hr:mn
	36-37	Sensor selections	0=off 1=on	
	32/377	Cabinet overtemperature tolerance	0 to +20	K
	34/379	Air off over temperature tolerance	0 to +30	K
	480/378	Cabinet under temperature tolerance	0 to -10	K
	47	Alarm averaging time	00:30 to 03:00	hr:mn
	481	Cabinet temperature warning trend	00:00 to 23:59	hr:mn
TEMPERATURE CONTROL	123	Control setpoint	1-Switch settable 2-Frozen only 3-Chilled only	
	124	Frozen cabinet temperature setpoint	-30 to -15	°C
	125	Chilled cabinet temperature setpoint	-5 to +10	°C
	140	Temperature control deadband	1.0 to 3.0	°C
COMPRESSOR	361	Compressor enable	0=Disabled 1=Enabled	
	48	Starts per hour	0=Unlimited 1=10 per hour 2=15 per hour 3=20 per hour 4=6 per hour	
	366	Minimum off time	15 to 60	Secs
DEFROST INITIATION	107	Defrost strategy	0=none 2=Network (learned backup) 3=Time 7=Network (real time backup) 8=Coordinated (learned) 9=Coordinated (real time)	
	69	Number of defrosts expected or required	0 to 12	
	51-56	Defrost schedule	00:01 - 23:59	hr:mn
	60	Defrost schedule 12/24 hour clock	0=24hr 1=12hr	
	210	Electrical supply distribution panel no	1 to 7 panel no	
	213	Defrost heater circuit	1-31=circuit	
	214	Defrost method	0=brown phase 1=black phase 2=grey phase 3=3 phase 6=off cycle	
223	Defrost requirement priority	1 to 8		
DEFROST TERMINATION	144	Defrost termination method	2= Air off 4=Time only	
	50	Defrost termination temp	0 to +20	°C
	145	Minimum defrost time	00:00 - 00:30	hr:mn
	57	Defrost termination time	00:05 to 00:59	hr:mn
	59	Drain down time	00:00 to 00:10	hr:mn
LOAD SHEDDING	600	Load shedding	0=off 1=enabled	
	601	inhibit defrost	0=off 1-8 broadcast input	
	602	inhibit refrigeration	0=off 1-8 broadcast input	
	603	Fans off	0=off 1-8 broadcast input	
FAN CONTROL	108	Fan control	0=not controlled 1=run always 2=off during defrost	
	109	Fan delay after defrost	00:00 - 00:10	
DRAWER	372	Compressor stop delay	1-15	mins
	373	Drawer open alarm delay	00:00-00:30	hr:mn
JNET FUNCTIONS	1	Unit number	0.1 - 899.7	
	62	Jnet network shutdown selection	0=disabled 1=enabled	
	18	Daylight saving operation	0=standard time 1=daylight saving time	
	238	Select network shutdown number	0=disabled 1-8 timer number	
DISPLAY	9392	Temperature display choice	0=Celsius 1=Fahrenheit	
	136	Enable fans only mode from display	0=disabled 1=enabled	
	138	Enable display controlled shutdown	0=Off 1=On	
	199	Display backlight	0=off 1=on 2=off Flashing for alarm 3=Flashing for alarm	

Bitswitch settings 0 Frozen food , 1 Ice cream, 2 Chillers, 3 Produce (0 to 3 is the virtual bitswitch setting on item 966)

OTHER USEFUL ITEMS							
Item	Function	Item	Function	Item	Function	Item	Function
20	TEMPERATURES Cabinet temperature	30	CONTROL Cabinet temperature setpoint	70	MODE INPUTS & OUTPUTS Operating mode	40	DEFROST Duration of last defrost
21	Air on temperature	240	Refrigeration %	71	Compressor input state	41	Time since end of last defrost
22	Air off temperature	241	Average refrigeration %	72	Defrost output state	42	Duration of this defrost
482	Accumulated temperature warning time	364	Compressor restart timer	73	Compressor output states	46	Communications defrost command
		63	Jnet NETWORK FUNCTIONS Network shutdown and fans only command states	74	Fan output state	77	Forced defrost
		239	Network shutdown timer command state	371	Drawer state	78	Inhibit defrost
					DRAWER MONITORING	79	Forced refrigeration
				374	Time currently open	261-272	Learned defrost schedule
				375	Time open last 24 hours	219	Defrost arrangement from network
						221	Forced defrost requirement
						222	Enable forced defrost requirement

OUTPUT STATE DIAGRAM FOR JTL CONTROLLER		UBIA		
		RL1	RL2	RL3
		COMPRESSOR (N/O) (See note 2)	Fans (N/O) can be set to run always (108)	DEFROST (N/O)
N O R M A L R E F R I G E R A T I O N C Y C L E	REFRIGERATION	CYCLE ON TEMPERATURE	ON	OFF
	DEFROST Time/temp terminated {57}/150}	OFF	OFF	CYCLES ON TERMINATION TEMP
	DRAIN DOWN Adjustable time {59}	OFF	OFF	OFF
	RECOVERY TIME Time/temp terminated	CYCLE ON TEMPERATURE	TIME CONTROLLED (See Note 1)	OFF
	REFRIGERATION	CYCLE ON TEMPERATURE	ON	OFF
UNIT SHUTDOWN		OFF	OFF	OFF
FANS ONLY SHUTDOWN		OFF	ON	OFF
FORCED DEFROST		OFF	ON	ON
FORCED REFRIGERATION		ON	ON	OFF
INHIBIT DEFROST		CYCLE ON TEMPERATURE	ON	OFF

NOTE 1: FANS OFF UNTIL TIME SET ON ITEM 109 REACHED.

NOTE 2: TEMPERATURE IS STOPPED AFTER A DELAY WHEN THE DRAWER IS OPEN.

Relay Output Rating

2 A resistive.

Supply Requirements

230 V ac 48-62 Hz Supply 3 VA maximum inputs 2 mA maximum



This unit conforms with the relevant EU standards when fitted in accordance with its installation instructions.

Note

The information contained in this document applies to the current version of the unit supplied with it. Full operating manuals, item number and software variation information can be obtained from your supplier or JTL Systems.

Applicable Documentation

Item Numbers
Doc No. 05616

Firmware Variations
Doc No. 05617

Connections Diagram
Doc No. 05615

Evaporator Manual
Doc No. 01923

Installation Requirements
Doc No. 03852