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.

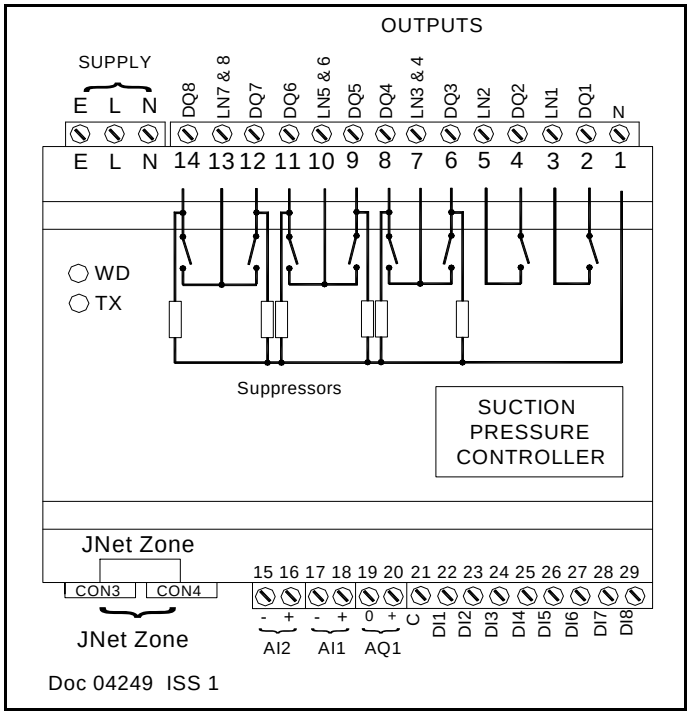
The power outputs are fitted with suppressors to protect against electrical interference when switching off solenoid valves or contactors. It is therefore essential to observe the output polarity. The line voltage should be connected to the terminals marked **LN** and the switched loads to **LD**.

The plant inputs are electrically isolated. A volt free contact should be connected for the logical conditions stated below between the input and common **C** (21).

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

Digital Output		
DQ1	Unsuppressed	Critical Alarm
DQ2	Unsuppressed	Not used
DQ3	Suppressed	Run Chiller 1 & Pump
DQ4	Suppressed	Run Chiller 2 & Pump
DQ5	Suppressed	Run Chiller 1 & PEV 1
DQ6	Suppressed	Run Chiller 1 & PEV 2
DQ7	Suppressed	Run Chiller 2 & PEV 1
DQ8	Suppressed	Run Chiller 2 & PEV 2
Digital Inputs		
DI1	Volt Free	Auto/Manual
DI2	Volt Free	Chiller 1 Healthy
DI3	Volt Free	Chiller 1 Pump Healthy
DI4	Volt Free	Chiller 2 Healthy
DI5	Volt Free	Chiller 2 Pump Healthy
DI6	Volt Free	Not used
DI7	Volt Free	Not used
DI8	Volt Free	Not used
Analogue OUTPUT		
AQ1	0-10 V	Not used
Analogue INPUT		
AI1	TP501	Coolant Flow Temperature
AI2	TP501	Coolant Return Temperature



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 31 press: ITEM 2 1 ENTER

To set item 51 to 4.0 press:

ITEM 4 1 ENTER SET – 0 4 0 ENTER

To correct errors press: CANCEL

To select next or previous items press: + and –

Initial Commissioning and Bitswitch Settings
The controller has set 1 of data built in to its program for use during commissioning. Set item 9 to 1234. This loads into the controller a suitable set of data for commissioning. 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
The pressure can be displayed in Celsius or Fahrenheit as selected by item 178.

The CH210 controller drives the JTL LCD14 display using a CAB75 cable. Various cable lengths are available.

Chiller Sequencing
The CH210 is used to sequence two chillers and the associated heat exchanger valve controls.

The control will provide lead/lag control for the two chillers. The lead chiller can be selected on item 201. It is possible to allow only one chiller to run at a time or to allow both to run if required. This selected on item 205.

Both chillers are individually enabled using items 215 (chiller 1) and 225 (chiller 2).

Chiller Control
The chillers are controlled on temperature.

Item 40 selects either Flow or Return temperature as required.
There are two setpoints (item 41 & 42 and deadbands (items 45 & 46) for the chillers. These are the first two stages of control when both chillers are allowed to run.

When the selected temperature rises above the 1st stage setpoint the lead chiller is enabled to run. When the temperature falls below the setpoint minus the deadband the chiller stops.

If both chillers are allowed to run then the 2nd stage setpoint and deadband are used to control the lag chiller.

The chiller run output can also be used to start an associated pump as required.

The chillers are not allowed to run unless the appropriate chiller and pump healthy inputs are present. If the lead chiller is not allowed then the lag chiller will be used if possible.

Heat Exchanger Valve Control
Each chiller can have an associated heat exchanger with two cooling circuits. The heat exchanger control is enabled by the CH210 controller using items 216 & 226..

The 1st valve is enabled with the chiller output.

The 2nd valve is enabled when the temperature is higher by a deadband set on item 49.

Chiller Stopped Balance Control
The time since the chillers last stopped is recorded.
When the lag chiller stop time exceeds a set value (item 330) providing the lag chiller is available then the lead chiller is stopped and the lead/lag chillers are swapped allowing the new lead to start as required.

After a set period (item 331) normal lead chiller operation is restored and the swapped lead chiller is stopped to allow normal operation to resume.

This function is disabled if item 331 is set to 0.

ADJUSTABLE PARAMETERS				CH210
	Item	Function	Range	Units
CHILLER CONTROL	205 201 215 225 208 330 331	Chiller operation Lead chiller Enable chiller 1 Enable chiller 2 Minimum chiller off time Chiller stop line to initiate lead/lag swap Lead/Lag swap time	1=allow 1 chiller only 2=allow both 1=chiller 1 2=chiller 2 0=Disabled 1=Enabled 0=Disabled 1=Enabled 0-60 12-240 0-24	 secs hr hr
CHILLER STAGE CONTROL	40 41 42 45 46	Control Strategy Temperature setpoint (stage 1) Temperature setpoint (stage 2) Temperature deadband (stage 1) Temperature deadband (stage 2)	0=Flow temperature 1=Return temperature 0 to -10 0 to -10 1 to 5 1 to 5	 °C K
CHILLER ALARMS	206 158	Alarm delay Repeat alarm timer	0-60 0-24	mins hr:min
COOLANT TEMPERATURES	36 37	Flow temperature Return temperature	0=Disabled 1=Enable 0=Disabled 1=Enable	
TEMPERATURE ALARMS	31 32 33 34	High flow temperature Low flow temperature High return temperature Low return temperature	0 to +30 -30 to 0 0 to +30 -30 to 0	°C °C °C °C
HEAT EXCHANGER	216 226 49	Enable heat exchanger 1 control Enable heat exchanger 2 control Heat exchanger deadband	0=Disabled 1=Enable 0=Disabled 1=Enable 0 to +2	 K
DISPLAY	178 189	Display units Display backlight control	0=Celsius 1=Fahrenheit 0=backlight off 1=backlight on 2=backlight off flashing for alarm 3=backlight on flashing for alarm	
JNET FUNCTIONS	1 18	Unit number Daylight saving operation	0.1 - 899.7 0= standard time, 1 daylight saving time	

OTHER USEFUL ITEMS					
Item	Function	Item	Function	Item	Function
	TEMPERATURES		**INPUTS**		**OUTPUTS**
21	Flow temperature	171	Auto	161	Critical alarm
22	Return temperature	172	Chiller 1 healthy	163	Run chiller 1 & pump
	CHILLER DATA	173	Chiller 1 pump healthy	164	Run chiller 2 & pump
361	Time since chiller 1 stopped	174	Chiller 2 pump healthy	165	Run chiller 1 PEV 1
362	Time since chiller 2 stopped	175	Chiller 2 pump healthy	166	Run chiller 1 PEV 2
332	Remaining swap time			167	Run chiller 2 PEV 1
				168	Run chiller 2 PEV 2

OUTPUT & FUNCTION		
MODE	RL1 CRITICAL ALARM	RL3-8 RUN OUTPUTS
NORMAL	CRITICAL ALARM PRESENT	STAGE AS REQUIRED
BACKUP		OFF
FORCED		ON /OFF AS FORCED

Relay Output Rating
2A resistive

Supply Requirements
230 V ac 48-62 Hz Supply 6 VA maximum
inputs 2 mA maximum

24 Vac (optional)

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

Applicable Documentation

Item Numbers	Firmware Variations	Connections Diagram
Doc No. 04686	Doc No. 04687	Doc No. 04637

Installation Information
Doc No. 04256

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 the supplier JTL Systems.

www.jtl.co.uk
JTL Systems Ltd . 41 Kingfisher Court . Hambridge Road . Newbury . Berks . RG14 5SJ Tel: (01635) 263646 Fax: (01635) 263647
JTL Help Desk Tel:08713157535