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.

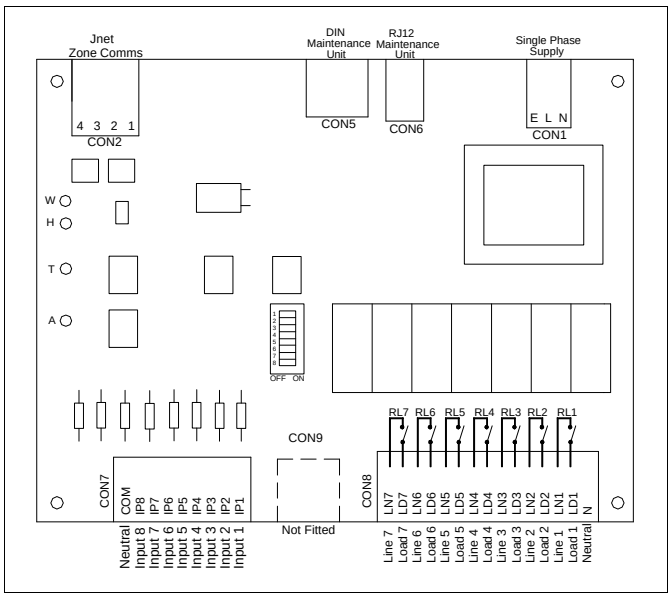
The inputs are electrically isolated. A line voltage should be connected for signal present. The terminal marked **COM** should be connected to the supply voltage neutral.

NOTE: The line voltage MUST BE on the same phase as the unit supply.

In order for inbuilt suppressors to function the outputs MUST be wired according to the wiring diagram.

CE Conformance

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



Description

The JTL CF110 step controller is designed to operate stand-alone or as part of a JTL network. The controller will manage the operation of staged condenser fans in as many as five steps. Controllers may be cascaded without limit to control more than five steps from a single differential pressure switch. When used in conjunction with a JTL network, fault conditions are alarmed. A JTL maintenance unit is required to configure this product.

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 41 press: ITEM 4 1 ENTER

To set item 31 to 2 press:

ITEM 3 1 ENTER SET 2 ENTER

To correct errors press: CANCEL

To select next or previous items press:

– and +

JTL Network Communications

The JTL network port (CON2) is arranged for 2 wire (half duplex) communications. The wiring of the port is:

	2 wire
1	Rx-/Tx-
2	Rx+/Tx+
3	-
4	-

Note all network products must be connected in parallel without cross connections.

Functionality & Configuration

The controller is assigned an address and connected to the JTL network to take advantage of remote alarming and monitoring.

The auto input must be present for controller to control step run outputs.

When the auto input is present, the controller responds to increase and decrease demands. Demands are created by applying a voltage to input 6 (for increase) and input 7 (for decrease). This would typically be generated by a 3 state differential pressure switch. When a demand is present, the controller waits for an adjustable delay (separate for increase and decrease) before loading or unloading the next step. If the maximum number if steps (set on item 31) are loaded, the cascade increase relay will be energised all the time that a demand increase input is present. Similarly if all steps are unloaded, and there is still a demand for decrease, the cascade decrease relay will be energised all of the time that input is present. The cascade outputs enable any number of step controllers to be "daisy-chained" together to control a greater number of steps.

Confirmation of step running inputs are provided and are designed to be connected to the output of the main contactor for each step. If an output relay is energised and the confirmation input is not present within 10 seconds, a step fault alarm is generated. If the contactor is simultaneously controlled by another controller (wired logical OR), the confirmation inputs serve to display status information on the JTL network.

Maintenance Features

In addition to controller configuration, the maintenance unit enables the user to look at various items for diagnostic purposes.

Logical inputs (the inputs the internal logic sees) are displayed on item 71 in binary coded form. These input values can be forced to other values by setting a non-zero value on item 78. The physical inputs however, are always displayed on item 100.

Forced functions remain forced whilst the maintenance unit is plugged in. They are cancelled automatically 30 minutes after the maintenance unit is unplugged.

Logical outputs (outputs commanded by the internal logic) are displayed in binary coded form on item 72. Physical outputs are displayed on item 73. Physical outputs can be forced, overriding internal logic commands by entering a non zero value in item 79.

The binary coding works as follows:

1	=	ip1 / op1
2	=	ip2 / op2
4	=	ip3 / op3
8	=	ip4 / op4
16	=	ip5 / op5
32	=	ip6 / op6
64	=	ip7 / op7
128	=	ip8

If more than 1 input or output is active then the code is added arithmetically.
Eg., input 1 & 3 active = 1 + 4 = 5.

Four LEDs are located in the top left hand corner of the PCB. These are for diagnostic purposes.

W (Green) =	Watchdog, blinks if board is healthy
H (Green) =	Illuminated when controller processor is healthy
T (Red) =	Illuminated when controller is transmitting data on zone
A (Red) =	Illuminated when controller is in "Active" mode. ie, communicating correctly

Inputs		Outputs	
1	STEP 1 RUNNING	1	RUN STEP 1
2	STEP 2 RUNNING	2	RUN STEP 2
3	STEP 3 RUNNING	3	RUN STEP 3
4	STEP 4 RUNNING	4	RUN STEP 4
5	STEP 5 RUNNING	5	RUN STEP 5
6	DEMAND INCREASE	6	CASCADE INCREASE
7	DEMAND DECREASE	7	CASCADE DECREASE
8	AUTO		

ADJUSTABLE PARAMETERS			CF110
Item	Function	Range	Units
31	Number of steps	0 - 5	
32	Increase delay time	0 - 240	secs
33	Decrease delay time	0 - 240	secs

OTHER USEFUL ITEMS	
Item	Function
41	Current delay until increase
42	Current delay until decrease
43	Number of steps running (output relays energised)
44	Number of steps running (confirmation inputs present)
71	Logical input status (as seen by controller)
72	Logical output status (as sent by controller)
73	Output status (actual)
78	Forced input status (for maintenance purposes)
79	Forced output status (for maintenance purposes)
100	Input status (actual)

Full operating manuals and item number information can be obtained from your supplier or JTL Systems.

Supply and Input Requirements
230 V ac 48-52 Hz
Supply 6 VA maximum
Inputs 2 mA maximum

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

Applicable Documentation

Item Numbers	Doc No. 02998
Firmware Variations	Doc No. 02999
Installation Requirements	Doc No. 03001
Outline Details	Doc No. 02783
Wiring	Doc No. 02997

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