

**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 for use with voltage free contacts.

In order for inbuilt suppressors to function the outputs MUST be wired according to the application drawings.

**CE Conformance**

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

**Description**

JTL IF3x type interfaces are designed to be used with a JTL plant controller. The interface comprises four optically isolated mains "digital" inputs, four suppressed non-changeover relay outputs two 0-10V analogue outputs, and in the case of IF36 four 5k temperature sensor (TP501) inputs.

A JTL maintenance unit is required to configure this product.

**Use of Maintenance Unit**

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

To read item 30 press: **ITEM** **3** **0** **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 is arranged for 2 wire (half duplex) communications.

Connections to the Interface plant zone use JTL cables type CAB60. Communications speed should be set to 9600 baud setting item 36=4. The plant controller should be set to 9600 baud also.

**Configuration & Communications Protocol**

**Item 37 = b.ASC(0) or b.rtu(3) (Modbus ASCII or Modbus RTU)**

For use with JTL controllers using Modbus protocols.

**Item 37 = b.PL.1 (1) or J.PL.2 (2) (JTL Plant Protocol)**

In non modbus mode the interface behaves as two separate, individually addressable, analogue interfaces or channels.

Each channel has a 0-10V analogue output two relays and two self energising digital inputs associated with it. Both channels are enabled when Item37 = 2, or just Channel 1 when Item 37 = 1.

The analogue output is directly controlled by the plant controller, and the state two of digital inputs is passed back to the plant controller.

The primary relay for each channel is energised if the analogue command from the plant controller is non-zero and conversely de-energised when the command is zero.

The secondary relay is energised if the analogue command from the plant controller exceeds a switch-on threshold (item 39 or 49) and de-energised when the command equals or falls below the switch-off threshold (item 38 or 48). Threshold values are set as a percentage of full scale analogue output.

	Ch1	Ch2
Primary relay	1	3
Secondary relay	2	4
Input 1	1	3
Input 2	2	4
Analogue output	1	2

**Backup**

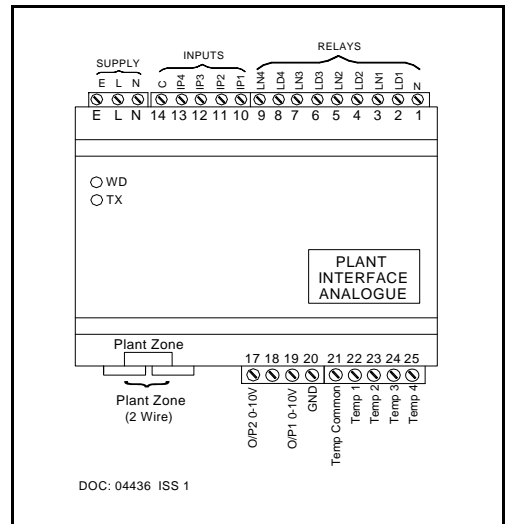
Backup mode behaves differently depending on the chosen communication protocol. Backup mode is activated in all cases if there is no communication from the main controller for approximately 90 seconds. Until this time the interface holds the state of its outputs as last set.

**Modbus Mode**

In Modbus protocols when backup mode is entered the preset backup values (0-100%) for the analogue outputs (item 32-CH1, item 33-CH2) are set on the respective output channels. Relay output states in backup are set on item 35 in binary code. For example 0 = all relays de-energised, and 15= all relays energised. See section on Binary Codes for Inputs and Outputs later in this document.

**JTL Plant Zone Protocol**

Owing to the more simple nature of the legacy JTL plant zone protocol relay outputs are controlled in backup mode according to the corresponding channel analogue backup value. Zero means both relays off, non zero means both relays energised, regardless of the on/off threshold settings.



**Maintenance Features**

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

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

Logical outputs (outputs commanded by the plant controller) are displayed in binary coded form on item 72. Physical relay outputs are displayed on item 73.

Physical outputs can be forced, overriding plant controller commands by entering a non zero value in item 79.

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

Two LEDs are located in the top left hand corner of the unit. These are for diagnostic purposes.

WD (Green) = Watchdog, blinks if board is healthy

TX (Red) = Illuminated when interface is transmitting data to pack controller

**Binary Codes for Inputs & Outputs**

When viewing input or output status items in the maintenance unit the binary coding works as follows:

- 1 = input 1 / output 1
- 2 = input 2 / output 2
- 4 = input 3 / output 3
- 8 = input 4 / output 4

If more than 1 input or output is active then the code is added arithmetically. Eg., input 1 & 3 active = 1 + 4 = 5. Later firmware (V.1.00.6 on) shows the same information as a segment pattern.

ADJUSTABLE PARAMETERS		
Item	Function	Range
30	Primary Interface number (channel 1)/ Modbus device address	0 - 9/1 - 254
31	Primary Interface type (channel 1) *	0 - 15
40	Secondary interface number (channel 2) *	0 - 9
41	Secondary interface type (channel 2) *	0 - 15
34	Max steps for 100% outputs *	99 to 127
36	Communications baud rate	1=1200 2=2400 3=4800 4=9600 5=19200
37	Communications protocol	0=Modbus ASCII 1=JTL single channel 2=JTL dual channel (3=V1.00.4 on Modbus RTU)
32	Backup value (channel 1)	0 - 100%
33	Backup value (channel 2)	0 - 100%
35	Backup condition for relay outputs **	0 - 15 binary code for relays 1-4
38	Ch1 Secondary relay switch off threshold	0 - 100% of full analogue output
39	Ch1 Secondary relay switch on threshold	0 - 100% of full analogue output
48	Ch2 Secondary relay switch off threshold	0 - 100% of full analogue output
49	Ch2 Secondary relay switch on threshold	0 - 100% of full analogue output
111	Channel 1 temperature	IF36 only
121	Channel 2 temperature	IF36 only
131	Channel 3 temperature	IF36 only
141	Channel 4 temperature	IF36 only

\* JTL Plant Zone Protocol

\*\* Modbus Protocol


OTHER USEFUL ITEMS	
Item	Function
21	Channel 1 RAW ADC reading (IF36 only)
22	Channel 2 RAW ADC reading (IF36 only)
23	Channel 3 RAW ADC reading (IF36 only)
24	Channel 4 RAW ADC reading (IF36 only)
51	Channel 1 DAC (0 - 4095)
52	Channel 2 DAC (0 - 4095)
71	Logical input status (as seen by main controller)
72	Logical relay output status (as sent by main controller)
73	Relay output status (actual)
78	Forced input status (for maintenance purposes)
79	Forced relay output status (for maintenance purposes)
100	Input status (actual)

#### Supply Requirements and Input/Output Specification

230 V ac 48-52 Hz  
Supply 6 VA maximum  
Relay rating 2 A resistive  
0-10 V source 30 mA max

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

Technical documentation can also be obtained from our website [www.jtl.co.uk](http://www.jtl.co.uk).

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

#### Applicable Documentation

Item Numbers	Doc No. 03596
Firmware Variations	Doc No. 03597
Connections Diagram	Doc No. 03562 (IF35)
Connections Diagram	Doc No. 04434 (IF36)
Installation Requirements	Doc No. 02777

#### Application Drawings

Doc No. 03584, 03585, 03735 (IF35)  
Doc No. 04050, 04426 (IF36)