



Manual - Gateway, Elgi Neuron II compressor interface

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1. Safety

1.1: Safety warning

This 'METACENTRE™' product wide' safety warning should be read and understood. Additional safety information is contained in this manual. Both the METACENTRE™ product wide and additional safety information contained in the manual must be read and understood.



Warning: Risk of danger
Warning: Risk of electric shock
Warning: Risk of high pressure
Warning: Risk of burn
Warning: Risk of fire
Warning: Consult manual

Do not install or operate the METACENTRE™ product(s) (hereinafter can be referred to as the device) until you and all personnel concerned have read and established a working understanding of the device inclusive of duties to be performed while installing, operating and maintaining the device.

This manual contains IMPORTANT SAFETY DATA and should be printed and kept with the device at all times.

Improper use of the device may compromise the safety and protection of the device and its environment.

Never use the device in explosive environments.

No serviceable parts inside, dispose according to local regulations.

Do not expose this device to heat, fire or direct sunlight

When installing, commissioning, operating or carrying out service or maintenance on the device, personnel must use relevant safe working practice and observe all relevant local health and safety requirements and regulations.

Lethal voltages may be present at or around the device. Electricity has the potential to cause severe personal injury or death. Use extreme caution when carrying out checks where lethal voltages may exist.

Never remove or tamper with safety devices, guards or insulation materials fitted to the device or the compressed air installation.

Compressed air has the potential to cause severe personal injury or death. Use extreme caution when carrying out compressed air related checks.

Hot and cold surfaces may be present at or around the device. Use caution as necessary

A requirement of fault-free operation and fulfilment of any right to claim under guarantee is that documentation is observed.

This document is subject to change without notice, if in doubt, do not proceed!

It is not possible to anticipate every circumstance that might represent a potential hazard. If the operator employs an operating procedure, an item of equipment or a method of working which is not specifically recommended the user must ensure the product will not be damaged or made unsafe and that there is no risk to persons or property. Failure to observe safety precautions or implement safe working practices may be considered dangerous practice or misuse of the device.

1.2: Installation

Installation work must only be carried out by a competent person under qualified supervision equipped with the correct tools and appropriate protection against hazards.

When necessary, locate the emergency power off before installing the device; never work alone if potentially hazardous conditions exist.

Disconnect the power before connecting the device, never assume power is off but always check the circuit. Be aware that other nearby circuits can still be powered.

Do not open access panels or approach electrical components while voltage is applied unless measurements are impossible otherwise. When hazardous live parts are exposed use personal protective equipment to prevent risk of electric shock. Use suitable protective gloves, fire resistant clothes and face



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protection when working with live conductors. Keep fingers behind protective barriers.

Do not use the device in environments where vibration or shocks are likely to disrupt the function or compromise the safety of the device.

Do not wear loose clothes or jewellery like chains or bracelets which could make contact with electrical components.

Allow the installation environment to cool or heat to acceptable temperatures before attempting to install a device sensor.

Always ensure any pressure within a compressed air system is safely vented to atmosphere before attempting to remove or install a device sensor, never assume the compressed air system is vented but always check the air gauge. Be aware that other nearby parts can still be hot, cold or pressurized.

The device should be installed in such a location as to allow operational and maintenance access to the installation without obstruction or hazard and to allow clear visibility of indicators at all times.

1.3: Operation

Correct operation of the device may only be checked by trained personnel according to safe practices equipped with appropriate protection against hazards.

The device must only be operated at the ratings: supply voltage, frequency, pressure, temperature, altitude, humidity and environmental rating for which it is designed.

Do not operate the device if enclosure is open or covers removed.

Do not operate the device in high humidity environments or with wet hands

Do not open access panels or expose electrical components while device is operating.

1.4: Maintenance

Maintenance must only be carried out by competent personnel under qualified supervision.

If replacement parts are required use only genuine parts from the original equipment manufacturer.

Before competent personnel under qualified supervision remove any access panels or carry out work on the device, isolate from the source of supply power using relevant and local safe isolation procedures.

Ensure that all instructions concerning operation and maintenance are strictly followed and that the complete device, with all accessories and safety devices, is kept in good working order.

The accuracy of sensor devices must be checked on a regular basis. They must be renewed when acceptable tolerances are exceeded. Always ensure any pressure within a compressed air system is safely vented to atmosphere before attempting to remove or install a sensor device.

The device must only be cleaned with a damp cloth, using mild detergents if necessary. Avoid the use of any substances containing corrosive acids or alkalis. Remove all input signals before cleaning the device.

Do not paint the control facia or obscure any indications, controls, instructions or warnings



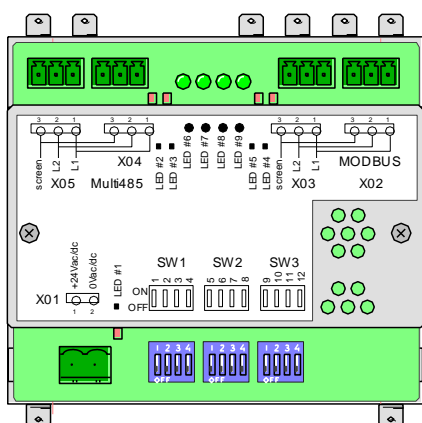
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2. INTRODUCTION

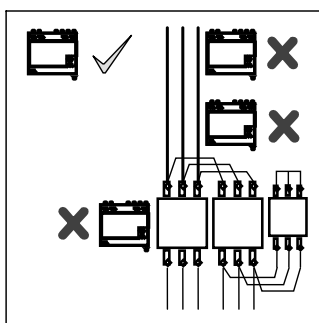
The Elgi Neuron II Gateway Module is a field bus interface, used to interconnect the host air compressor with a Metacentre™ compressor management system. Once installed, serial communication can be established between both.



The Gateway Module (shown above), is supplied including 24vDC power supply; both for mounting within the host air compressors starter assembly.

2.1 Location

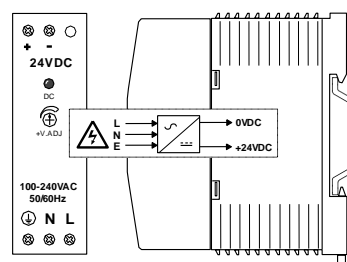
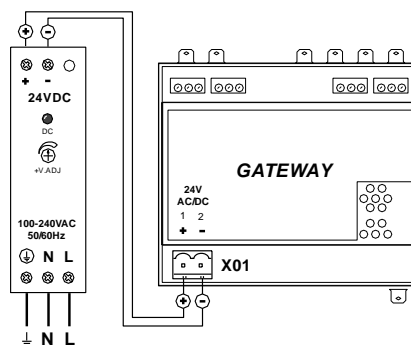
The Gateway is DIN Rail mounted within the compressor control gear enclosure or remotely within a separate wall mounted enclosure.



! Avoid mounting the Gateway near high voltage cables, high voltage devices or equipment or motor starter contactors.

2.2 Power supply

The Gateway Module is powered using 24v AC or 24vDC.



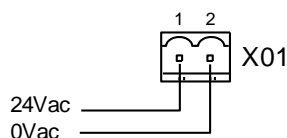


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AC supply:

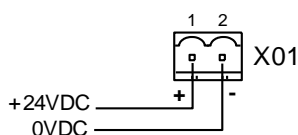


24Vac (+/-15%) @ 35mA, 50/60Hz

! Wire polarity is important if 0Vac is earthed.

! Never use the same 24Vac power supply, derived from the same transformer secondary winding, as used for other devices/controllers connected to the RS485 network - this may result in permanent damage to the RS485 communications port.

DC supply:



24VDC (+/-15%) @ 35mA, 1W

! Wire polarity is important

24VDC Power Supply

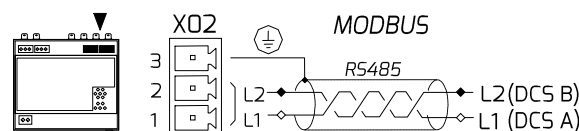
For local power supply use a 2W minimum, AC to DC, power supply module

2.3 Field bus communication

The CompAir Gateway Module is a field bus interface providing inter-communication between a Master device located on an Airbus485™ network and a MODBUS RS485 enabled Slave device.

MODBUS RS485 Connection

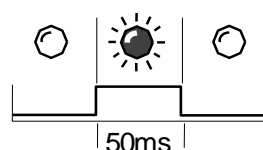
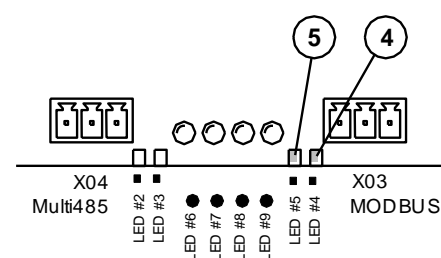
Compressor Controller:



DCS A : Elgi Neuron II Connector X07 - pin 1
DCS B : Elgi Neuron II Connector X07 - pin 2

! Wire polarity is important

Use 2-wire, 0.25-0.75mm², twisted pair, earth shielded, data communication cable with a total length no greater than 100m (328ft).



Modbus Communication Indicators:

RX – Data Received:

④ A valid Modbus communication has just been received from the compressor controller.

TX – Data Transmitted:

⑤ A Modbus message has just been sent to the compressor controller.



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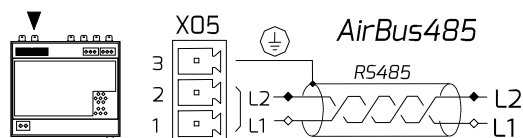
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❗ After power-up initialisation; allow a minimum of ten (10) seconds for management system initialisation before attempting to request MODBUS information.

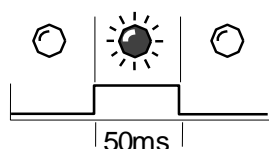
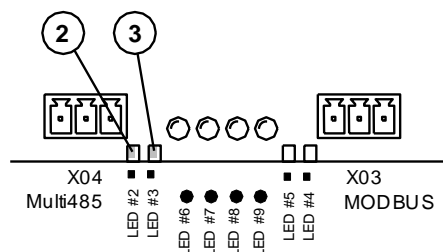
Airbus^{RS485™} Connection

Airbus485™ is a proprietary and dedicated air compressor and air compressor system network protocol.



❗ Wire polarity is important

Use 2-wire, 0.25-0.75mm², twisted pair, earth shielded, and data communication cable with a total system network length no greater than 1.0km (3280ft).



Airbus485™ Protocol Communications:

RX – Data Received:

② ☀ A valid Airbus485™ communication has just been received from the management system network. In normal operation this event should occur at least every two seconds.

TX – Data Transmitted:

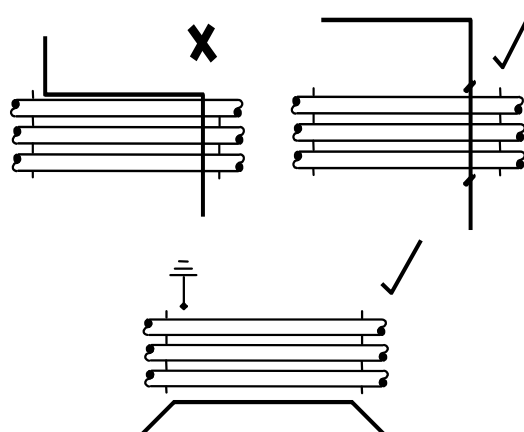
③ ☀ An AirBus485™ message has just been sent to a management system network device.

⚡ RS485 data communications and other low voltage signals can be subject to electrical interference. This potential can result in intermittent malfunction or anomaly that is difficult to diagnose. To avoid this possibility always use earth shielded cables, securely bonded to a known good earth at one end. In addition, give careful consideration to cable routing during installation.

1) Never route an RS485 data communications or low voltage signal cable alongside a high voltage 3-phase power supply cable. If it is necessary to cross the path of a power supply cable(s), always cross at a right angle.

2) If it is necessary to follow the route of power supply cables for a short distance (for example: from a compressor unit to a wall along a suspended cable tray) attach the RS485 or signal cable on the outside of an earthed cable tray such that the cable tray forms an earthed electrical interference shield.

3) Where possible, never route an RS485 or signal cable near to equipment or devices that may be a source of electrical interference (for example: 3-phase power supply transformer, high voltage switchgear unit, frequency inverter drive module, radio communications antenna).





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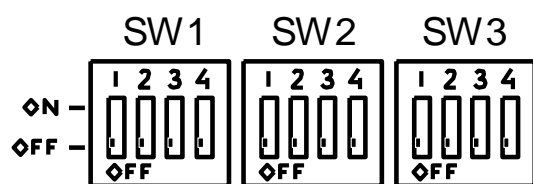
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3.0 Configuration & commissioning

3.1 Gateway selector DIP switches

12 DIP switches are located in 3 groups of 4 DIP switches...



The selector switches are used to configure gateway unit operation.

SW* Function:

SW1: Compressor ID Number

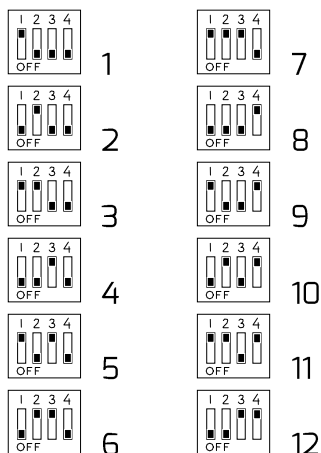
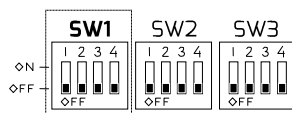
SW2: No function

SW3 : No function

SW1 Compressor Identification Number

SW1 is used to match the gateway address to the compressor system address.

Note: the address must be identical to the address / number used by the system management unit to identify the compressor.





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3.2 Neuron II controller settings

! Neuron II software must be PK3_R06 or higher

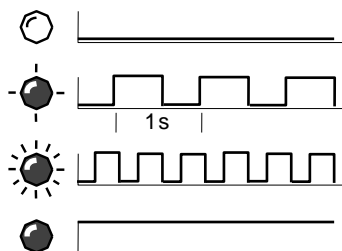
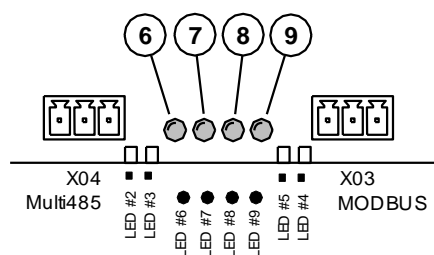
Enter Operator menu (default code : 4545) to set/check following settings :

Operator> Machine > Load source :
Set LD/UL Source to <dc>

Operator> Machine> DCS Port :
Type : MODBUS
Compr. ID : xx (set in accordance with SW1 setting on Gateway)
Baud rate : 9600
Parity : None
Length : 8
Stop bits : 1

Note (for VFD machines only) :
If a compressor is run as in 'base-load' mode (while another VFD compressor is regulating in 'top-up' mode) it will run at the set Optimum speed (refer to VFD settings menu in the factory level menu)

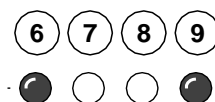
3.3 Gateway Diagnostics



! At power on initialisation, or when power has been removed, all operational indicators will fast flash for several seconds.

Normal Operation Example:

Valid communications with management system unit network and compressor controller.



6 AirBus485™ communications with management system network

No valid communications with the compressor management system network and/or no response from Neuron II controller

ON; communicating, OK

7 OFF/ON; no function

8 OFF/ON; no function

9 Modbus communications with compressor controller

No valid communications with Neuron II controller
ON; communicating, OK



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4.0 Parts List

Item	Part No.	Description
>	Y14META03.00	Gateway, Elgi Neuron II compressor interface c/w PSU

5.0 Technical data

Dimensions	96mm x 85mm x 55mm 3.8" x 3.4" x 2.2"
Weight	0.25kg (0.6lb)
Mounting	DIN, 35mm
Enclosure	IP20
Supply	24VDC/ac +/-15%
Power	1.0VA
Temperature	0°C to 45°C (32°F to 112°F)
Humidity	95% RH non-condensing

