

User guide

1. General Information

Elektronikon Mk5 Gateway Module

Document Number	:	9845 0187 04
Document Edition	:	17
Concerning	:	Units with Elektronikon Mk5 gateway module
Preliminary Operations	:	–
Safety Instructions	:	General
Persons Required	:	1
Special Tools	:	–
Consumables	:	–

2. Document Overview

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Modbus Mapping for compressor and dryers have been provided.

Atlas Copco is providing a NEMA 4X Box with MK5 Gateway (Modbus) and AnyBUS AB7007 (Gateway Ethernet/IP & Modbus TCP). See AnyBUS cut sheet on back page.

3. Safety first

SAFETY = THINK BEFORE YOU ACT



1. STOP
EVALUATE RISKS



2. THINK
SEEK PROPER SOLUTION



3. ACT
CARRY OUT SOLUTION



PERSONAL PROTECTION KEEPS YOU SAFE



**LOCK OUT / TAG OUT
TAKE AWAY THE RISKS**

4. Copyright Notice

Any unauthorized use or copying of the contents or any part thereof is prohibited.

This applies in particular to trademarks, model denominations, part numbers and drawings.

5. Document Information and History

Edition	Date	Description	Author
00	29/11/2010	First Edition	CTE-KD
01	22/03/2011	Text update by Tine Lefebvre	CTE-KD
02	10/05/2011	Renamed ES devices to CRC ES	CTE-KD
03	23/08/2011	Customer Password / Access Codes	CTE-KD
04	23/08/2011	Update according to remarks from Guido Willems	CTE-KD
05	01/09/2011	Added examples for Modbus and Profibus	CTE-KD
06	12/09/2011	Update according to remarks from SGS	CTE-KD
07	11/04/2012	- Change in the number of machines - Machine parameters	CTE-KD
08	24/05/2012	- Machine parameters - Additional Exception Codes	CTE-KD
09	26/06/2012	- Update #parameters for Profibus protocol - Update Profibus examples - Icons	CTE-KD
10	14/08/2012	Updated Profibus Examples	CTE-KD
11	31/08/2012	- Update CAN folder structure - Updated Icons section	CTE-KD
12	01/02/2013	- Serial Line Connection - Profibus Protocol Specification - Update chapter "The physical set-up"	CTE-KD
13	19/07/2013	Update "Compressor Folder [CP]"	CTE-KD
14	13/08/2013	Update reference to CAN cabling instruction	CTE-KD
15	13/08/2013	Update according to remarks from VTF-GW	CTE-KD
16	19/03/2013	- CAN Priority definition correction - Adjusted the title of section 8.3 - Corrected the default CAN Channel	CTE-KD
17	21/10/2014	Update Modbus and Profibus pin layout	FRE-KD

6. Safety Precautions

6.1. Safety icons

	Danger for life
	Warning
	Important note

6.2. Safety precautions during installation



All responsibility for any damage or injury resulting from neglecting these precautions, or non-observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

General precautions

The operator must employ safe working practices and observe all related work safety requirements and regulations.

If any of the following statements does not comply with the applicable legislation, the stricter of the two shall apply.

Installation, operation, maintenance and repair work must only be performed by authorised, trained, specialised personnel.

Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.

Precautions during installation

Place the device where the ambient air is as cool and clean as possible.

During installation or any other intervention on one of the connected machines, the machine must be stopped, de-energized and the isolating switch opened and locked before any maintenance or repair. As a further safeguard, persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.

The electrical connections must correspond to the local codes. The device must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the device.

For machines controlled by a central control system, a sign stating "This machine may start without warning" must be affixed near the instrument panel.

In multiple compressor systems, manual valves must be installed to isolate each compressor. Non return valves (check valves) must not be relied upon for isolating pressure systems.

Never remove or tamper with the safety devices.



*Also consult following safety precautions: Safety precautions during operation and Safety precautions during maintenance or repair.
These precautions apply to electrical devices.
For precautions applying to the connected equipment consult the relevant instruction book.
Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.*

6.3. Safety precautions during operation

General precautions

1. The operator must employ safe working practices and observe all related local work safety requirements and regulations.

If any of the following statements does not comply with local legislation, the stricter of the two shall apply.

Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.

Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.

Precautions during operation

1. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.

Never operate the device in the presence of flammable or toxic fumes, vapors or particles.

Never operate the machine below or in excess of its limit ratings.

Keep all bodywork doors and panels closed during operation. The doors may be opened for short periods only, e.g. to carry out routine checks. Wear ear protectors when opening a door if applicable.

People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.

Periodically check that:

- All guards are in place and securely fastened
- All hoses and/or pipes inside the machine are in good condition, secure and not rubbing
- There are no leaks
- All fasteners are tight
- All electrical leads are secure and in good order
- Safety valves and other pressure-relief devices are not obstructed by dirt or paint
- Air outlet valve and air net, i.e. pipes, couplings, manifolds, valves, hoses, etc. are in good repair, free of wear or abuse

Never remove or tamper with the safety devices.



Also consult following safety precautions. Safety precautions during installation and Safety precautions during maintenance or repair. These precautions apply to electrical devices. For precautions applying to the connected equipment consult the relevant instruction book. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.

6.4. Safety precautions during maintenance or repair

General precautions

1. The operator must employ safe working practices and observe all related local work safety requirements and regulations.

If any of the following statements does not comply with local legislation, the stricter of the two shall apply.

Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.

Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.

Precautions during maintenance or repair

1. Use only the correct tools for maintenance and repair work.
2. Use only genuine spare parts.
3. A warning sign bearing a legend such as "work in progress; do not start" shall be attached to the starting equipment, including all remote start equipment.
4. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
5. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors of cleaning liquids.
6. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
7. Never use a light source with open flame for inspecting the interior of the device.
8. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
9. Before clearing the device for use after maintenance or repair, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly.
10. Never use caustic solvents which can damage materials of the air net.



*Also consult following safety precautions: Safety precautions during installation; and Safety precautions during operation.
These precautions apply to electrical devices.
For precautions applying to the connected equipment consult the relevant instruction book.
Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.*



Units and/or used parts should be disposed of in an environmentally friendly and safe manner and in line with the local recommendations and legislation.

7. Preface

This document describes how to implement a Modbus and/or Profibus connection to the Elektronikon MkIV and/or Elektronikon Mk5 compressor controller network.

8. Physical Set-up

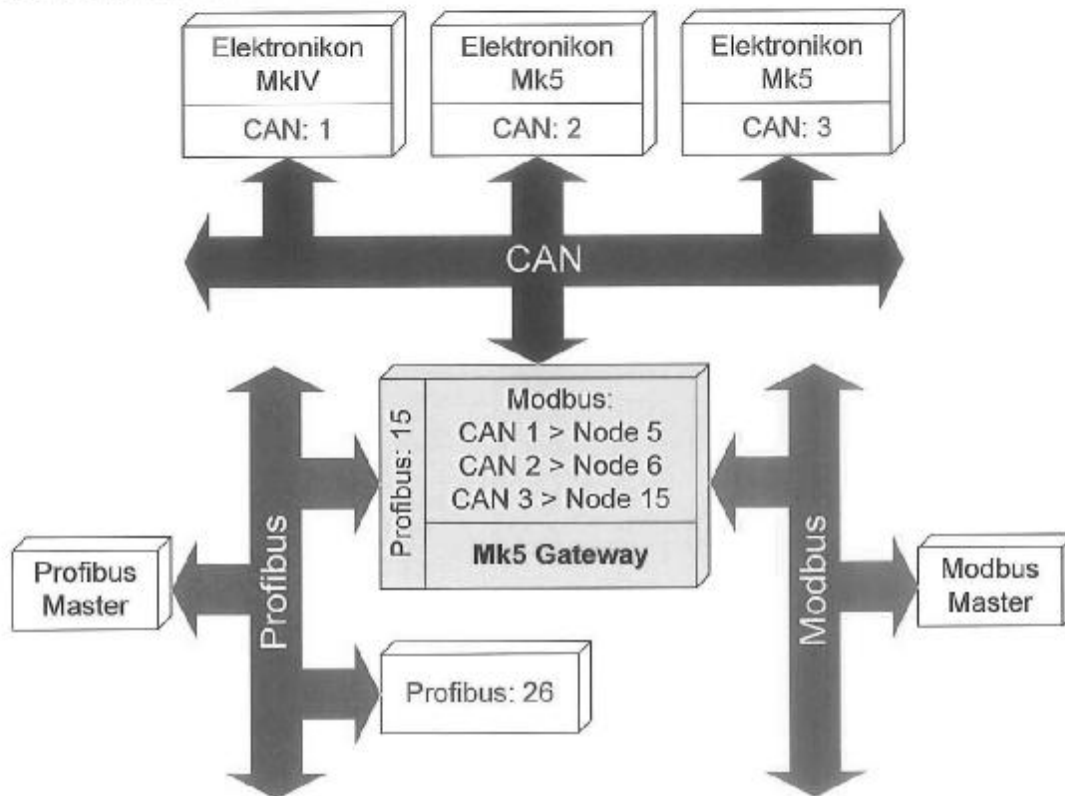
8.1. Modbus and/or Profibus in the network

In the Elektronikon system, all compressors in an installation can be connected by a data and/or control network. This is done according to the Compressor Network Cabling instruction (LN: 9820 3582 00, GBP: 2946 1361 00). This instruction explains what connectors and cables should be used to interconnect the different compressors/controllers in the network. Basically this is a CAN-based network.

In order to set up a Modbus and/or Profibus connection to one or several of the compressors in this network, a special module has to be inserted in this network.

This will behave as a Modbus/Profibus proxy that allows access to all compressors in the network, whereby each compressor has its own Modbus address (proxy concept).

The module will as well behave as a bridge to access the data stored in the CAN node's Object Dictionary. In order to work correctly, this bridge module has to be assigned a slave node ID. From the master's point of view, this bridge acts as a way to access information of the CANBUS network.



NOTE: the profibus manufacturer of the module must create a so named "Electronic Datasheet" or GSD file that declares the dimensions and the type of the exchanged data. This file is public information necessary for Profibus users to interface with the bridge module.

8.2. Gateway module

For the Modbus and/or Profibus connection a so-called Gateway module has to be used. This is a general purpose serial communication module. By downloading the correct software, it will perform the proxy and/or bridge function.

The following connections will be used:

- 6x36 : to connect a 24Vac power supply
- 6x20 : to connect to the compressor network (CAN)
- 6x25 : to connect to a PC for downloading the application into the module
- 6x22 : to connect the RS485 Modbus line
- 6x37: to connect the Profibus line

The other 6x38 connector is not used in this application.

8.3. Modbus pin-layout

For the Modbus connection, the Gateway module supports RS485A, with the following pin-layout as specified.

9 pin Female Sub-D Connector	
Pin	Function
1	GND
2	Reserved
3	TxD/RxD+
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	TxD/RxD-
9	Reserved

8.4. Profibus pin-layout

For the Profibus connection, the Gateway module supports RS485A, with the following pin-layout as specified.

9 pin Female Sub-D Connector	
Pin	Function
1	Reserved
2	Reserved
3	Profibus -A
4	Profibus RTS (Request To Send)
5	Isolated Profibus ground
6	Isolated Profibus 5V
7	Reserved
8	Profibus -B
9	Reserved