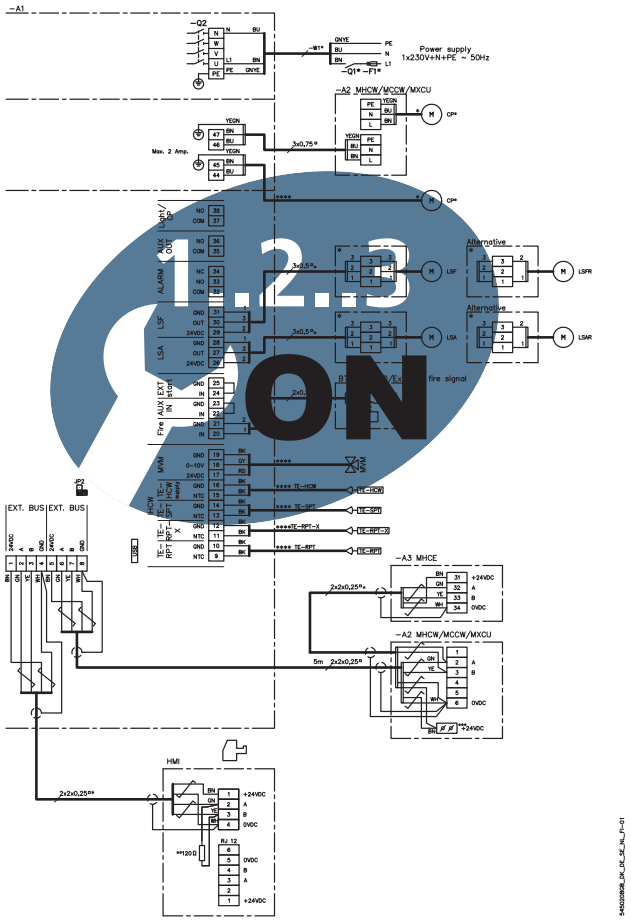
GB

Electrical installation guide

VEX340 with EXact2 control system

VEX300 RANGE
COUNTER FLOW
HEAT EXCHANGER



Original instructions

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EXHAUSTO

Symbols, terms and warnings

Prohibition symbol

Failure to observe instructions marked with a prohibition symbol may result in serious or fatal injury.

Danger symbol

Failure to observe instructions marked with a danger symbol may result in personal injury and/or damage to the unit.

Scope

These instructions apply to the EXHAUSTO EXact2 control system. Please refer to the product instructions regarding accessories and extra equipment.

The instructions must be fully observed to ensure personal safety and to protect the equipment and ensure its correct operation. EXHAUSTO A/S accepts no liability for accidents caused by equipment not used in accordance with the manual's instructions and recommendations.

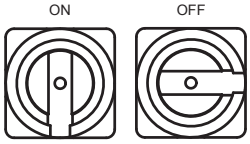
Warnings

The work must be performed by an authorised electrician, in accordance with locally applicable regulations and legislation.

Warnings:

Opening the air handling unit

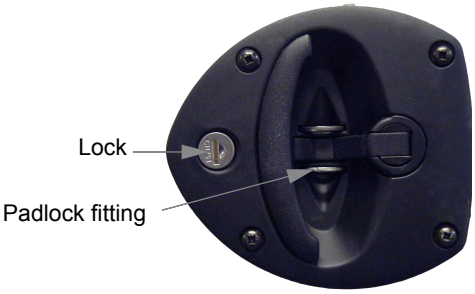
Do not open the service doors before the supply voltage has been disconnected at the isolation switch. The isolation switch is positioned on the left side of the connection box on top of the unit.



Lock the air handling unit during operation

The VEX unit must always be locked during operation:

- Use the cylinder lock in the handle. **Remember** to remove the key from the lock.
- Or use a padlock. Use the handle's built-in padlock fixture



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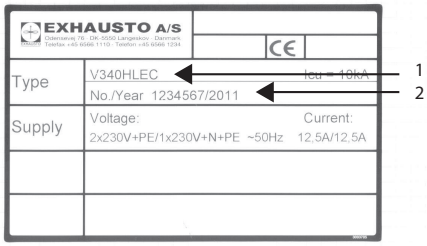
Information plate

The VEX unit information plate shows:

- VEX model type (1)
- Unit production no. (2)



NB: **Have the production number ready at all times when contacting EXHAUSTO A/S.**

1. Connection diagram for supply voltage and connection box

1.1 Key to connection diagram

Diagram

The diagram on the following page illustrates the connection of the power supply, HMI display panel and various accessories that can be connected to the connection box.

Key to diagram on the following page

Designation	Description	Supplied by
-A1	Connection box	EXHAUSTO
-A2	Connection box for heating coil/cooling unit	EXHAUSTO
-A3	Connection box for electric heating coil (if fitted)	EXHAUSTO
-F1	Distribution board fuses	Customer
-Q1	Distribution board group switch	Customer
-F2	Connection box control fuses	EXHAUSTO
-Q2	Connection box isolation switch	EXHAUSTO

NB

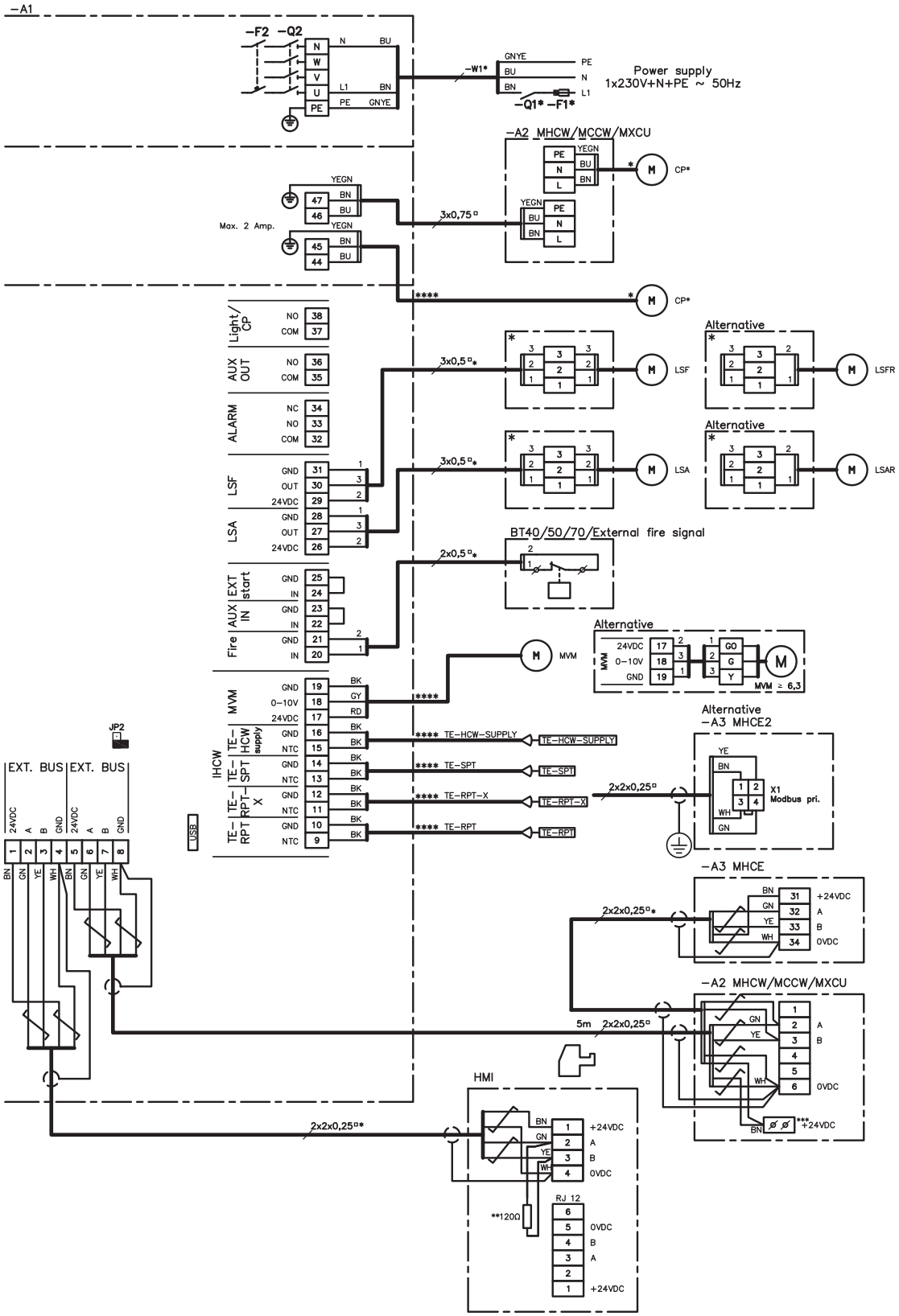
Other parts, shown on the front page of the VEX instructions, are supplied by EXHAUSTO

Accessories - VEX340-350-360

See instructions for the relevant accessories:

- HCW heating coil - water
- HCE heating coil - electric
- CCW cooling coil
- MXCU, module for external cooling unit

1.2 Connection diagram



* Not supplied by EXHAUSTO
** 120 Ω terminating resistor
*** Terminal block for continuation of 24 VDC

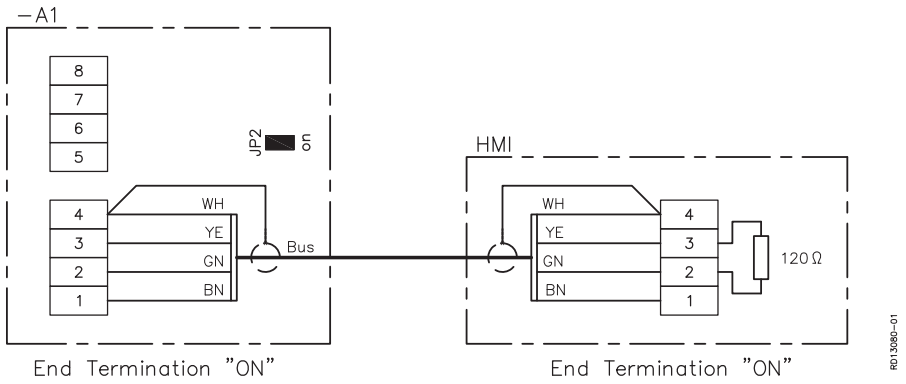
**** Only if IHCW

1.2.1 Termination

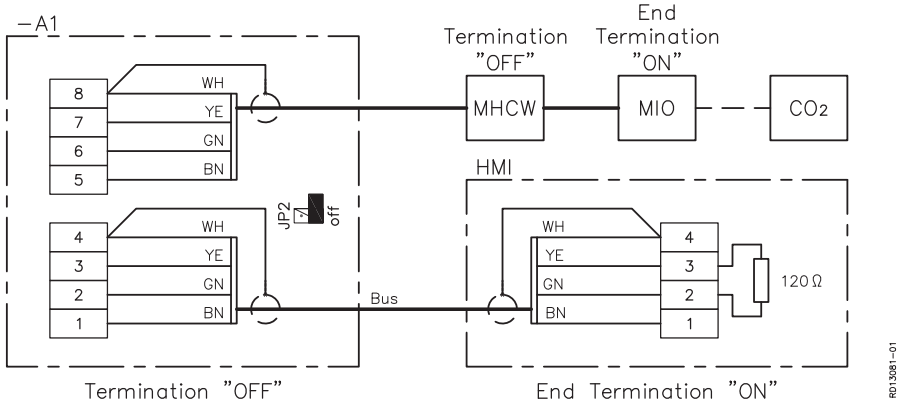
The first and last devices on the bus must be terminated. The diagrams below show two termination examples. See position of jumper JP2 on AHUC in section "Terminal board on EXact2 Main board".

If	Then	See diagram no.
HMI is the only device on the bus (bus connector optional)	the jumper must be connected to JP2, which applies a resistance of 120 Ω	1
both buses are used	the jumper must not be connected	2
the bus connectors are not used	the jumper must be connected to JP2 as per diagram 1, which applies a 120 Ω resistance	1

1.

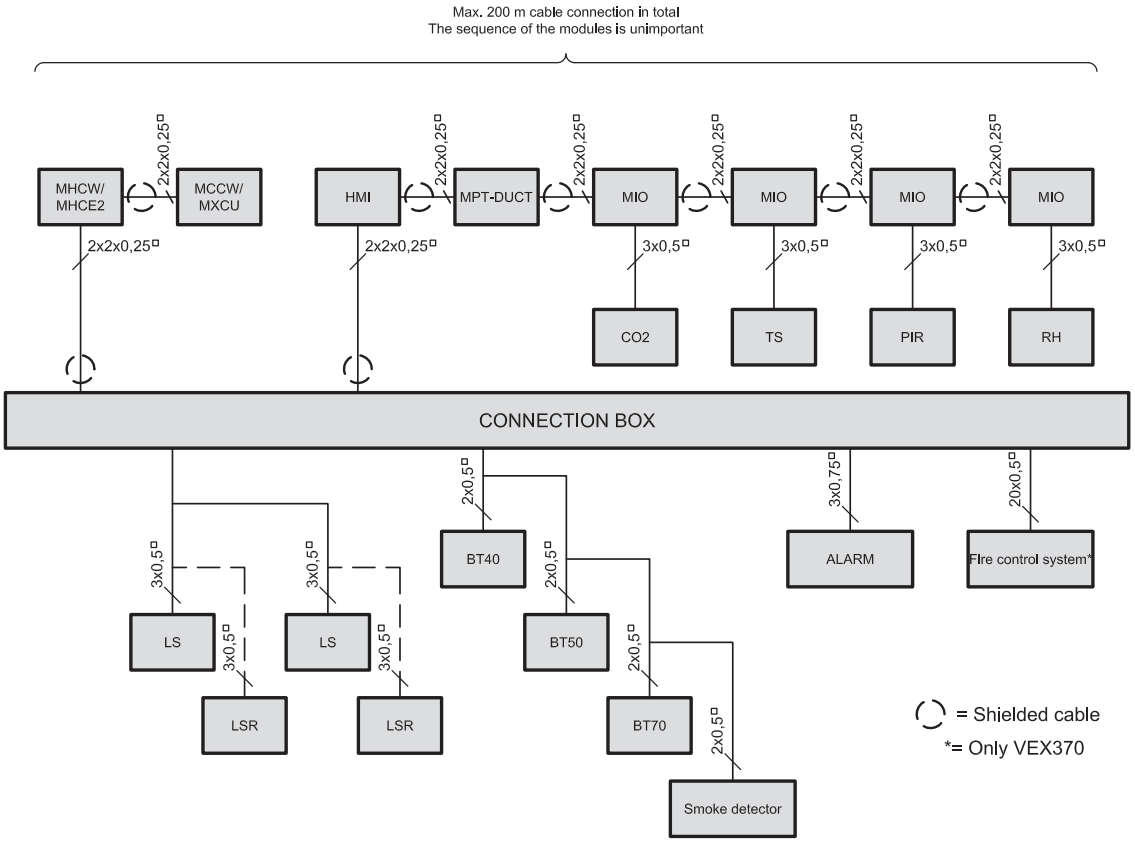


2.



1.3 Cable plan

The cable plan below shows the accessories that can be connected in the connection box.



2. Installation of the VEX

2.1 Installation

VEX unit

The electrical installation for the air handling unit comprises the following connections:

Connection to VEX unit:

- Connection box
- Optional electrical heating coil HCE
- Optional water heating coil HCW
- Optional MXCU module for external cooling unit
- Optional CCW cold water coil

2.1.1 Connections in the connection box

Wiring configurations

Wiring configurations for the terminal board in the connection box are shown in the table below.

Wiring configurations	See section
Supply voltage	2.2
HMI control panel via modbus	1
Modbus components via modbus	1 on termination and instructions for the component in question
Control box for heating coil (water heating coil), MHCW module, via modbus	1 on termination and instructions for water heating coil HCW
Control box for heating coil (electric heating coil), MHCE2 module, via modbus	1 on termination and instructions for electric heating coil HCE
Control system for external cooling unit MXCU	1 on termination and instructions for MXCU module
External start*	below
Closing damper in exhaust air LSA/ LSAR	1
Closing damper in outdoor air LSF/ LSFR	1
Fire and AUX IN*	1 and below

*** External start, Fire and AUX IN**

Note following with regard to jumpers on EXact2 main board.

If	Then
Fire is used	the jumper between terminals 20 and 21 **must be removed**
AUX IN used	the jumper between terminals 22 and 23 **must be removed**
EXT start is used	the jumper between terminals 24 and 25 **must be removed**

2.2 Dimensioning and electrical installation

- **The supply cable must be dimensioned and installed in accordance with applicable rules and regulations.**
- **The earth terminal (PE) must always be connected.**

Diagram

The supply voltage must be connected to the isolation switch as shown in the diagram in the section “Connection diagram for supply voltage and connection box”.

2.2.1 Installation requirements and recommendations

Isolation switch and control fuses

An isolation switch and control fuses are built into the unit to provide overload and short-circuit protection.

Fuses

The fuses must be suitable for:
- Short-circuit protection of the unit
- Short-circuit protection of the supply cable
- Overload protection of the supply cable

Max. rating

Maximum fuse rating is 63 A (gG/gL).

Power supply cable

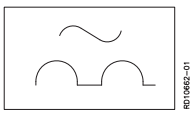
When dimensioning the supply cable, the conditions at the installation location, including temperature and cable duct layout, must be taken into consideration.

Earth leak circuit breaker

- **The unit must be protected against indirect contact.**

<u>If current earth leak circuit breakers are fitted in the installation, they must be of a type that meets the following requirements:</u>

- **PFI type A breaker that breaks the circuit when a vagrant current with DC content (pulsating DC) in accordance with EN 61008 is registered.**
- **The circuit breakers must be marked with the following symbol:**



- **Cutout time must be max. 0.3 s.**

Current leakage

A leak current of up to 100 mA can be generated.

Electrical connections

VEX type	Voltage	Dimensioned power consumption (max. phase current)
VEX340	1 x 230 V+N+PE	12.5 A

Short-circuit current

Maximum short circuit current (Icu), in accordance with EN60947.2 is 10 kA.

Accessories

Accessory types MHCW, MCCW and MXCU do not require separate supply cables and can be directly connected to the VEX control system box.

Short-circuit current

Maximum short circuit current (Icu), in accordance with EN60947.2 is 10 kA.

Accessories

Accessories of type MHCW, MHCE2 and MXCU must be connected to the external bus of the VEX and be separately powered.

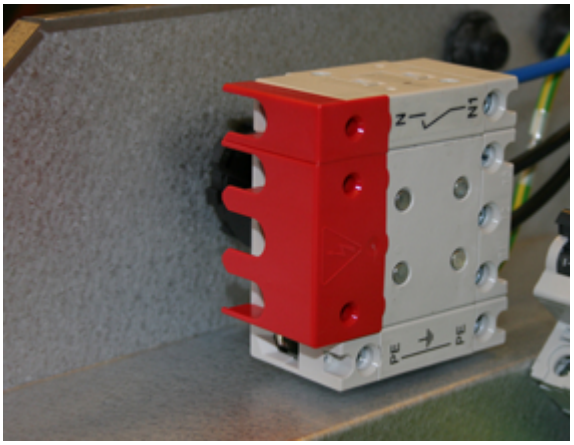
Circulation pump (IHCW)

If the HCW coil is connected directly to AHUC (IHCW), the circulation pump may be connected to EXact2 main board. The circulation pump may not draw more than 2.0 A, and its cable must be dimensions for a 13 A fuse.

Equalising connections

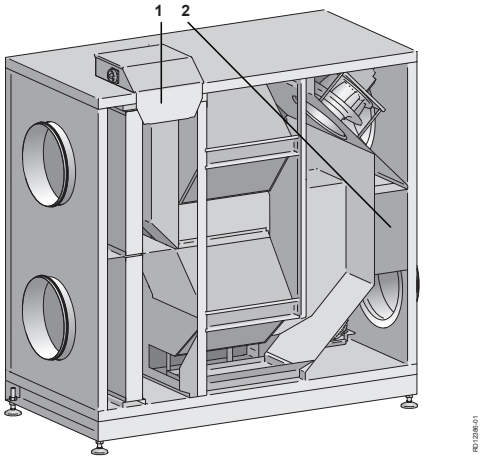
Equalising connections must be established between the VEX and HCE-type accessories.

Isolation switch, inside

Connect supply voltage here!	
Remove the red cover when connecting	

2.3 Electrical components

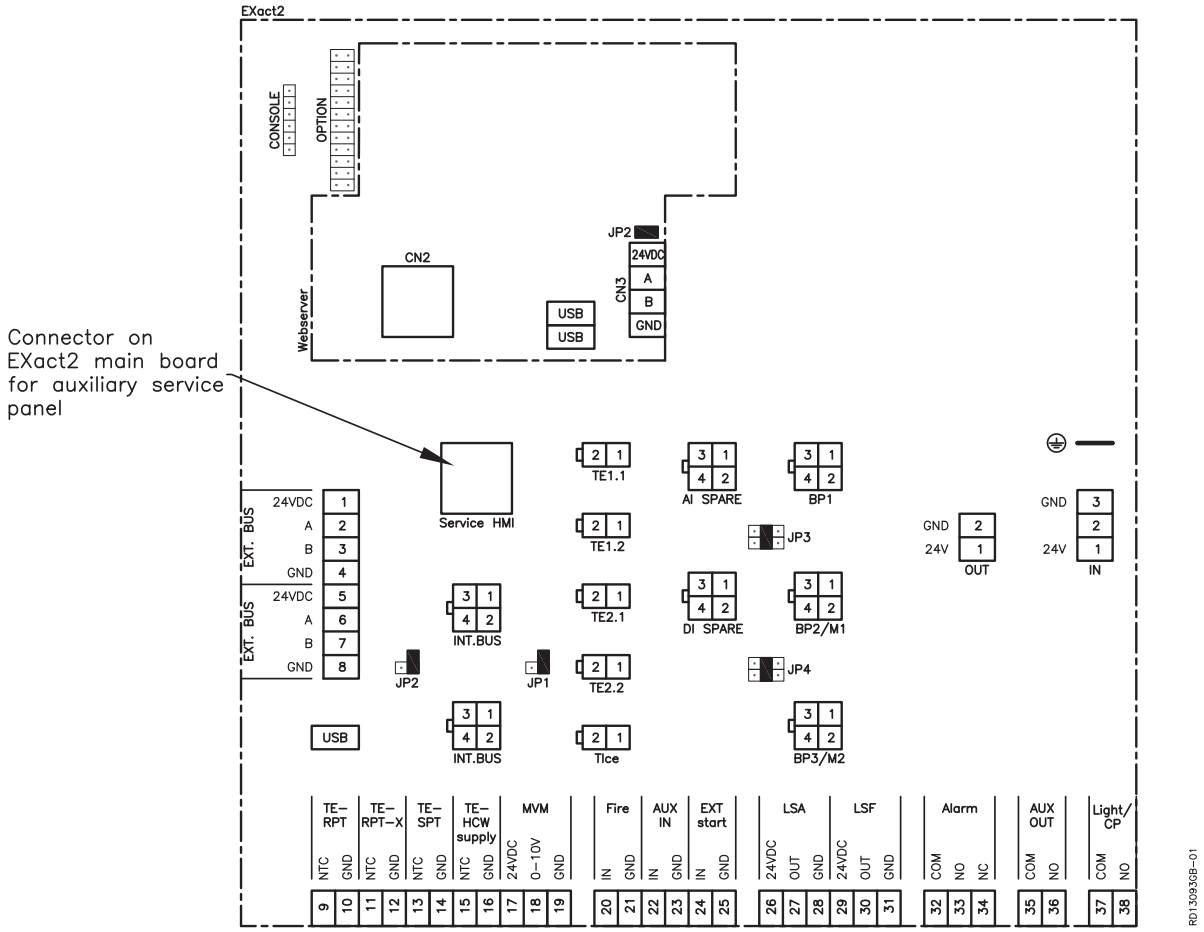
Positioning of electrical components



1. Connection box ● Main fuse ● 24 V power supply ● Control fuses ● Isolation switch	2. Motor control

2.3.1 Terminal board on EXact2 main board

The layout drawing below gives an overview of components (standard + accessory) that can be connected to the terminal blocks.



Component	Terminal board connection	Description
BUS	1 - 4	Bus for external parts
BUS	5 - 8	Bus for external parts
TE... + MVM	9 - 19	Taken together, these terminals constitute IHCW, which can be used for controlling the HCW coil. See also the HCW instructions.
Fire	20 - 21	BT40, BT50, BT70 Smoke detector or other fire detection switch
AUX IN	22 - 23	Same function as Fire
EXT start	24 - 25	If this is connected, the device can be started If this is interrupted, the unit will stop
LSA	26 - 28	LS, exhaust air closing damper LSAR, exhaust air closing damper with spring return
LSF	29 - 31	LS, outdoor air closing damper LSFR, outdoor air closing damper with spring return
Alarm	32 - 34	General alarm
AUX OUT	35 - 36	Fire alarm out for controlling smoke evacuation damper or combustion gas fan.

Component	Terminal board connection	Description
Light/CP	37 - 38	Light or circulation pump (if IHCW has been selected, the CP function is activated)
USB	USB	For service use
DI SPARE		TIMERBUTTON2/TIMERBUTTONEU2
AI SPARE		CO2B/RHB
OUT		24 V supply for MLON/MTCP
Service HMI	Service HMI	Plug for connecting extra HMI panel, see section "Servicing - connection of extra HMI control panel"
Jumper		
JP1		Option for termination, internal BUS
JP2		Termination option, external BUS, see section 1
JP3	BP2/M1	Configuration BP2/M1 (motor size 1: PWM, motor size 2: REL). Set at the factory.
JP4	BP3/M2	Configuration BP3/M2 (motor size 1: PWM, motor size 2: REL). Set at the factory.
Web server (accessory)		
Web server	CN2	Ethernet
Web server	CN3:	Connection of BMS
Web server	JP2	To be terminated if BMS is connected to CN3 (shown as ON).

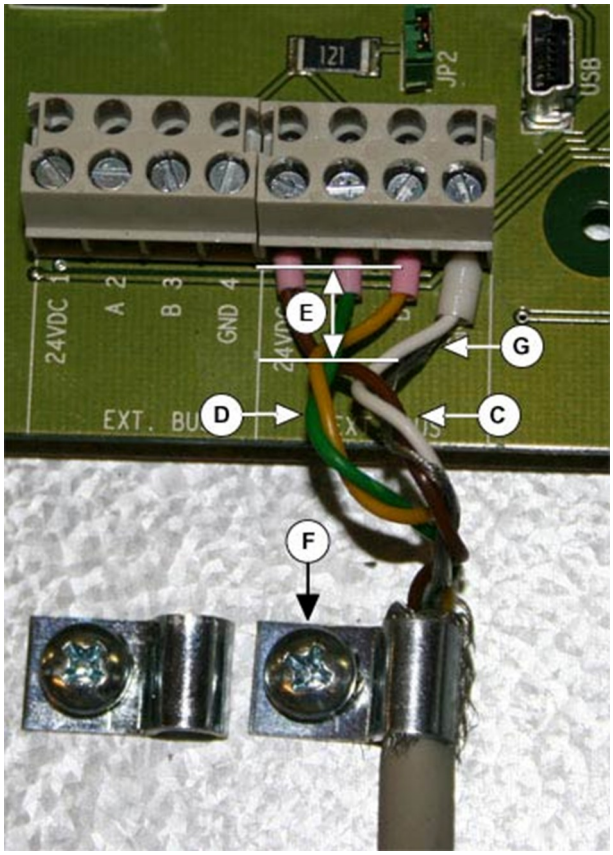
2.3.2 Connecting shielded cable to MODBUS

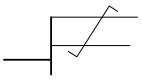
Cable type

MODBUS requires shielded cable of type 2 x 2 x 0.25 □ twinned pair conductors.

Connection

Wires and screen must be connected as shown in the table below



Wires	Step	Action	See
Conductors **Symbol: Twinned pair conductors** 	1	Strip minimum amount of insulation from conductors and ensure they are not damaged/ snapped	
	2	Twist 0V conductor and 24V conductor together	C
	3	Twist conductor A and conductor B together	D
	The conductors must be twisted as far down towards the terminals as possible. Max. distance from twists to terminal board: 1.5 cm.		E
Screen	1	Strip insulation from screen from point ahead of cable clamp (F)	
	2	Mount the clamp to enclose the screen and hold the cable in place	F
	3	Take some of the cable screen and run it into the terminal board together with the 0V conductor	G

2.3.3 Service – connection of additional HMI control panel

An additional HMI control panel connected during servicing will take control of the unit. Refer to the EXact basic instructions for further information.

Scan code and go to addresses at
www.exhausto.com

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