

Wiring diagram examples



DANGER!

Only use potential-free contacts!

No external voltage on the AIRLEADER contacts +,

Terminal designations may vary depending on the type!

S, M, B!

Compressor manufacturers frequently change their technical documentation. Therefore, terminal designations may differ even for the same compressor model. For this reason, the following wiring diagrams are examples and are intended to serve as orientation. In any case, it must be checked again whether the corresponding inputs and outputs provide or process the required signals and functions. We assume no liability for the terminal designations.

Recommendation cable list for Airleader connection: On-site installation: 1. Bus cable, Airleader -> Compressors: UNITRONIC BUS FD P L2/FIP

2. Signal cable, Airleader -> Pressure transmitter: LIYCY 2x0.34 mm2 to 2x0.5 mm2
For additional optional sensors/fault messages:
3. Signal and power cable, flow/DTP sensor -> Airleader (power supply in the Airleader-MS):
..... LIYCY 4x0.34 mm2 to 4x0.5 mm2
4. Signal cable, P / T sensor -> MM / connection module: LIYCY 2x0.34 mm2 to 2x0.5 mm2
5. Cable for potential-free fault or operating messages: LIYY 2x0.5 mm2

Compressor side installation:

1. Power cable, 230V -> 24V power supply: NYM-J 3x1.5 mm2
2. Power cable, 24V power supply -> 2x connection module: LIYY 2x0.5 mm2
3. Cable for potential-free contacts (fault, motor, ready for operation, load, remote): HO 5V-K 0.5 mm2 (up to 1.0 mm2)

For speed-controlled compressors:

4. Signal cable, (4-20 mA), frequency converter -> isolation amplifier: LIYCY 2x0.34 mm2 to 2x0.5 mm2
5. Signal cable, (4-20 mA), isolation amplifier -> connection module (AI1): LIYCY 2x0.34 mm2 to 2x0.5 mm2

With current transformer option:

6. Signal cable, current transformer -> connection module: HO 5V-K 0.5 mm2 (up to 1.0 mm2)

With the contact temperature sensor option:

7. Signal cable, measuring transducer -> connection module: LIYCY 2x0.34 mm2 to 2x0.5 mm2

With kW meter option:

8. Signal cable, (4-20 mA), kW measuring device -> 2x isolation amplifier: LIYY 2x0.5 mm2
9. Signal cable, (4-20 mA), 2xisolating amplifier -> connection module 1 (AI1+AI2): LIYY 2x0.5 mm2
10. Signal cable, 3xcurrent transformer -> kW measuring device: HO 7V-K 1.5 mm2
11. Supply cable, 3xvoltage -> 3-pole. Circuit breaker:..... NS GA FÖU 2.5 mm2 (up to 4 mm2)
12. Power cable, 3-pole. Circuit breaker -> kW measuring device: HO 7V-K 1.5 mm2

1234567891011121314

A Program programmable output 1 to “FAULT” (default)
 Program programmable output 2 to “OPERATION” (see operating instructions DELCOS)

B MOTOR RUNNING signal: 3K3 (or 3K1). If no volt-free contact is available, an interposing relay must be fitted.
 Ordering information: Relay set (WF item no.: 8002)

C Program programmable input 1 to “ENABLE REMOTE LOAD”.
 Program programmable input 2 to “REMOTE LOAD”.

D Programming example:

Load/unload in DELCOS

7.5 bar

6.8 bar

Pmax 7.0 bar

AIRLEADER

Pmin 6.5 bar

E

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F

G

H

I

Airleader

C S M B A1

C S M B R1

AIRLEADER

relay board

+ S M B C NO NC

19 21

3A0

Fault

Progr. out 1

14 13

3K3

Motor running

26 27

3A0

Ready for operation

Progr. out 2

X2 1 4

Programmable input 1
to “Enable remote load”

Programming (see operating instructions DELCOS)

A

B

C

D

E

F

G

H

I

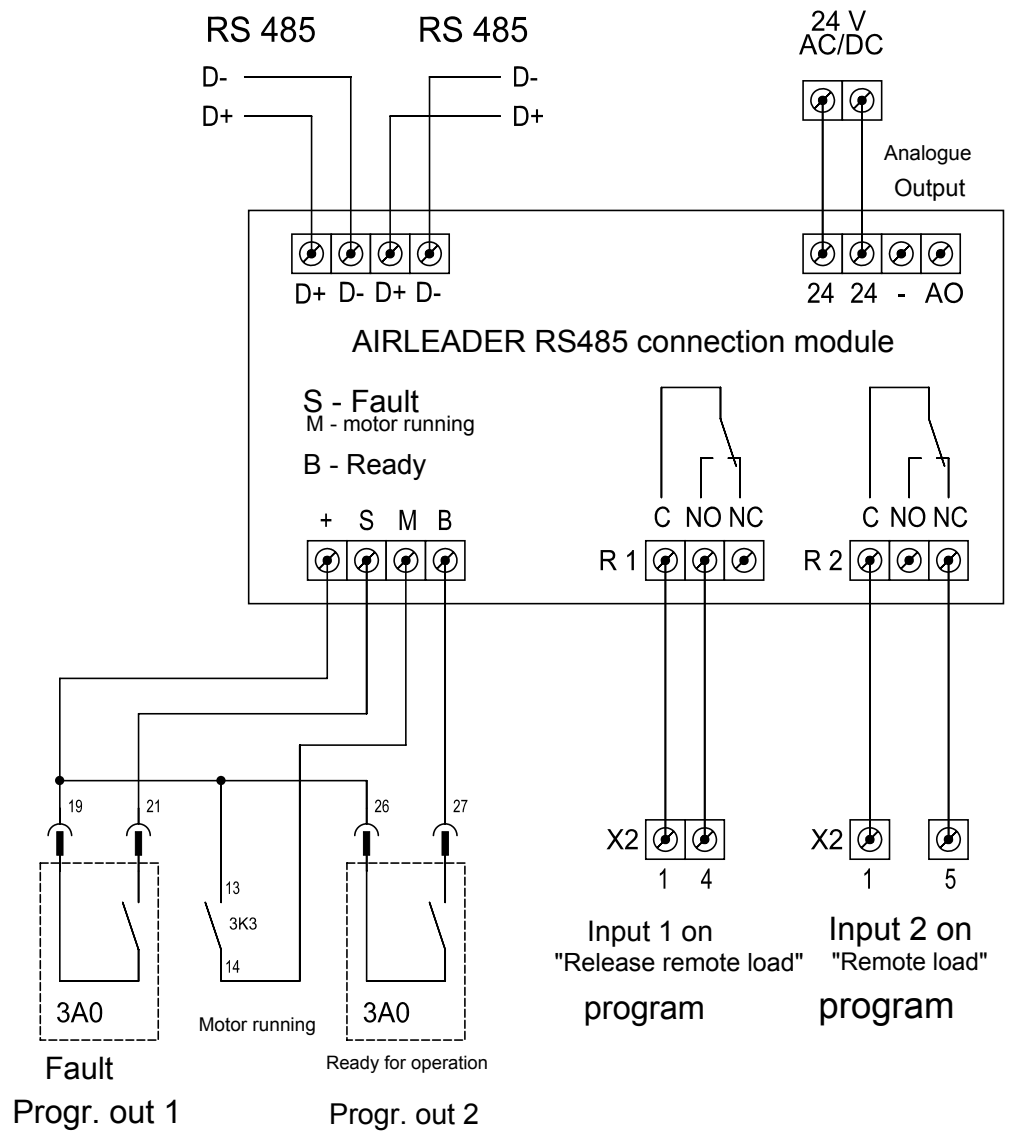
Program programmable output 1 to "FAULT" (default)
Program programmable output 2 to "OPERATION" (see operating instructions DELCOS)
MOTOR RUNNING signal: 3K3 (or 3K1). If no volt-free contact is available, an interposing relay must be fitted.
Ordering information: Relay set (WF item no.: 8002)

Program programmable input 1 to "ENABLE REMOTE LOAD".
Program programmable input 2 to "REMOTE LOAD".



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No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!



A

B

C

D

E

F

G

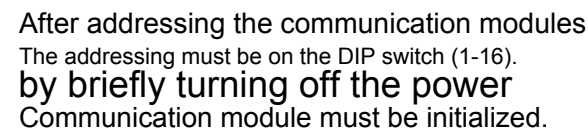
H

I



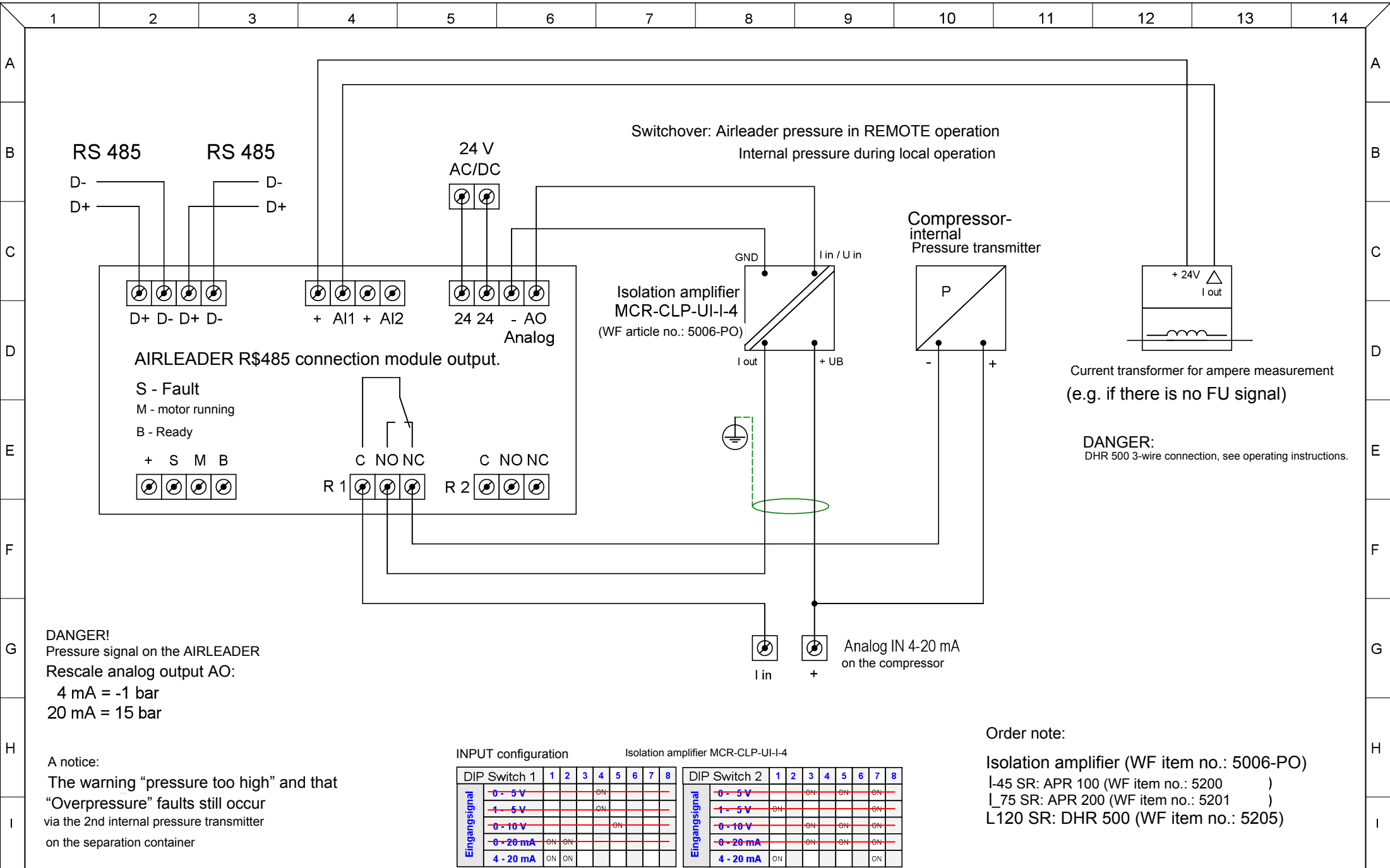
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75446 Wiernsheim

	Date	Name	Designation	Sheet
drawn	14-5-2008	Kloss	Integration of master module into DELCOS Pro	1
changed				
changed				
				from



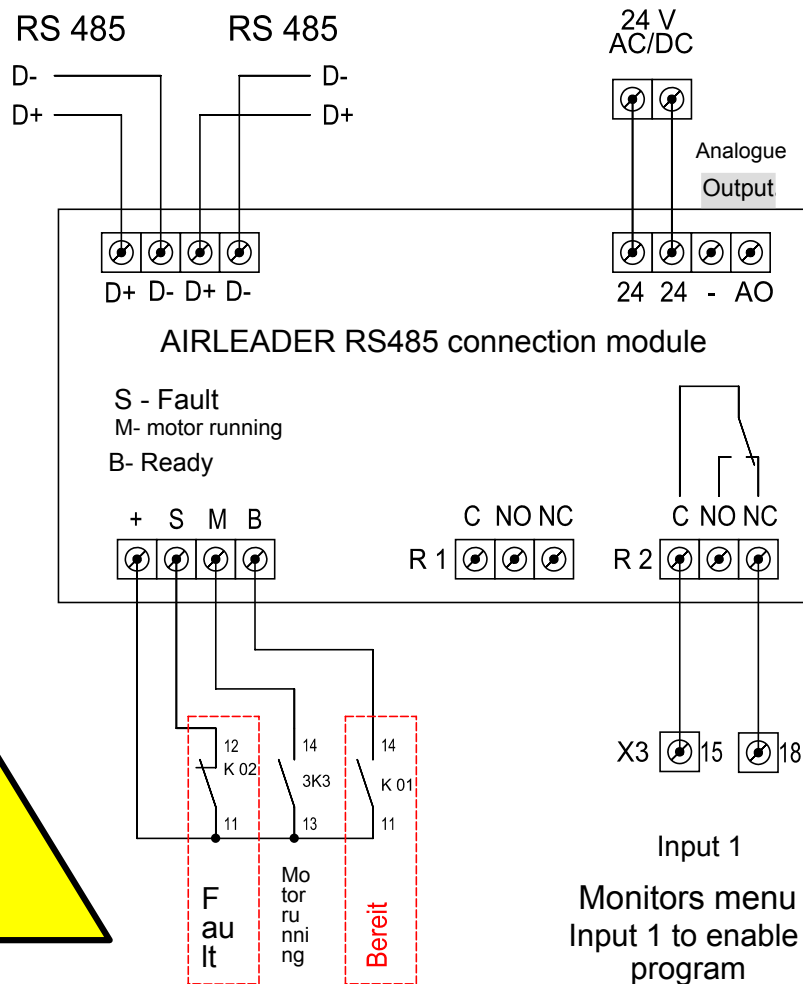
No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!

Order note:
Relay set (WF item no.: 8002)

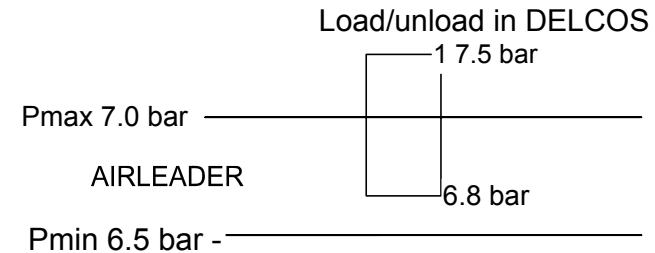


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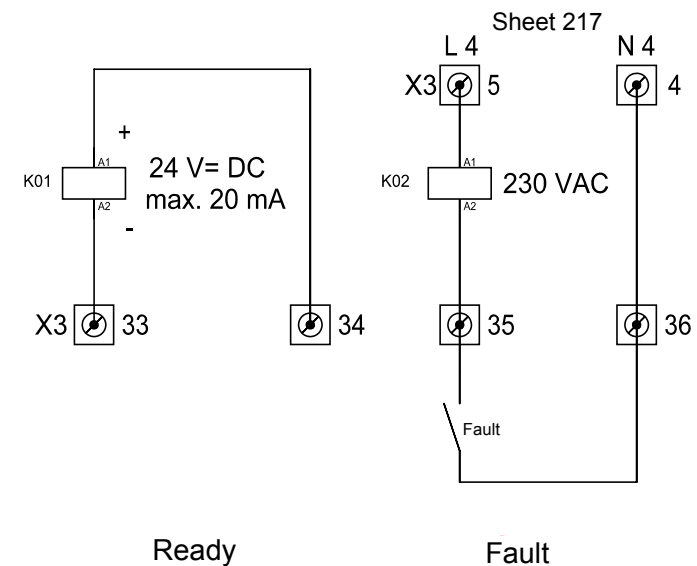
	Date	Name	Bezeichnung connection of analogue signals to AIRLEADER	Sheet
drawn	26.02.2008	Kloss	RS485 communication module	
changed			(e.g. CompAir L XXX SR with DELCOS 3100)	
changed				from



Programming example:



Relays K 01 and K 02 (WF article no.: 8002 relay set).
not present in the compressor must be connected first!
MOTOR RUNNING signal: 3K3 (or 3K1). If no volt-free
contact is available, an interposing relay must be fitted.



Order note:
Relay set (WF item no.: 8002)

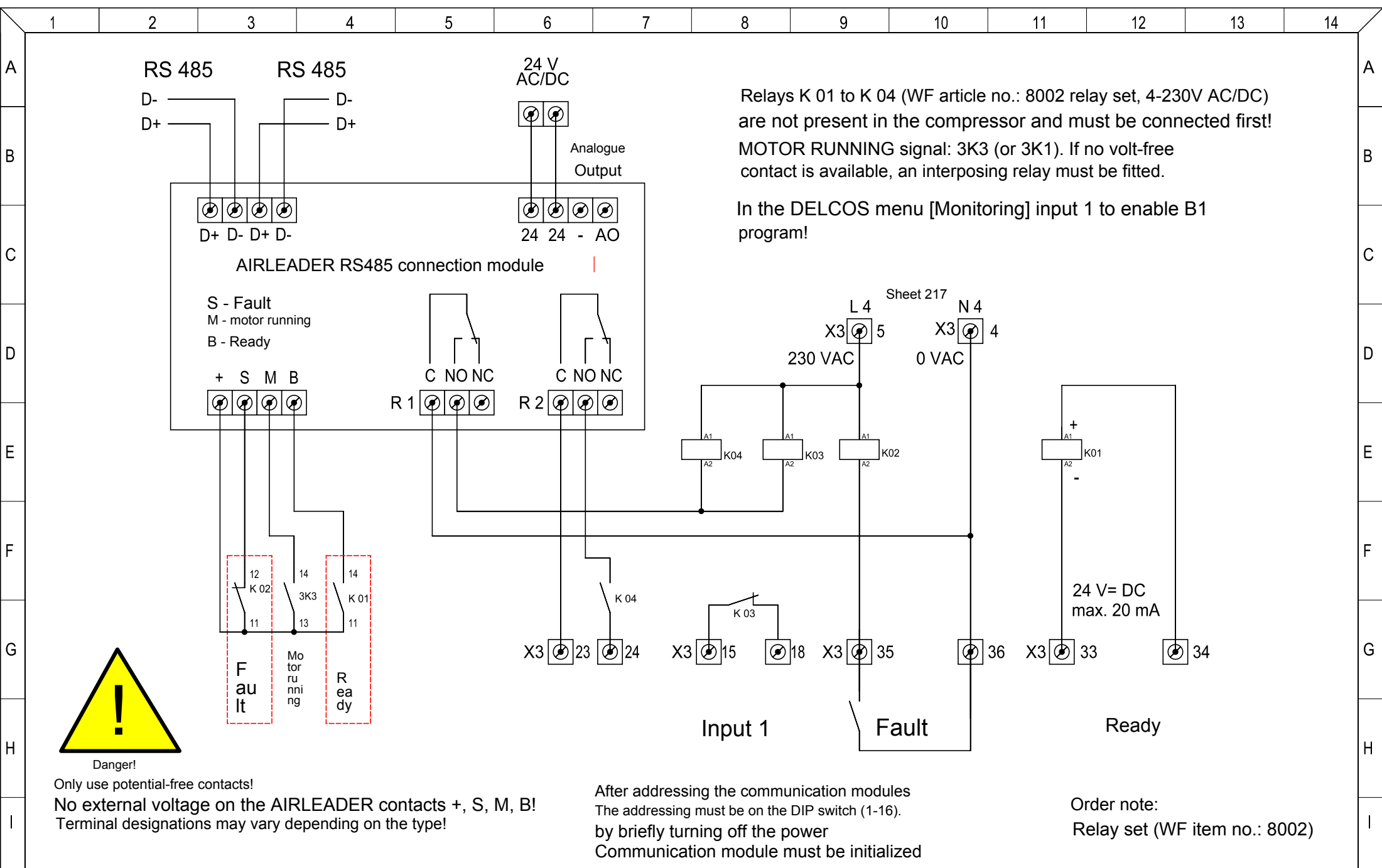
Danger!

Only use potential-free contacts!
No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!



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	Date	Name	Designation	Sheet
drawn	15-2-2008	Kloss	Integration of master module on Delcos 3000 / 3100 (corresponds to connection in series to the pressure switch)	1
changed				
changed				from



Relays K 01 to K 04 (WF article no.: 8002 relay set, 4-230V AC/DC) are not present in the compressor and must be connected first!
MOTOR RUNNING signal: 3K3 (or 3K1). If no volt-free contact is available, an interposing relay must be fitted.

In the DELCOS menu [Monitoring] input 1 to enable B1 program!



Danger!

Only use potential-free contacts!
No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!

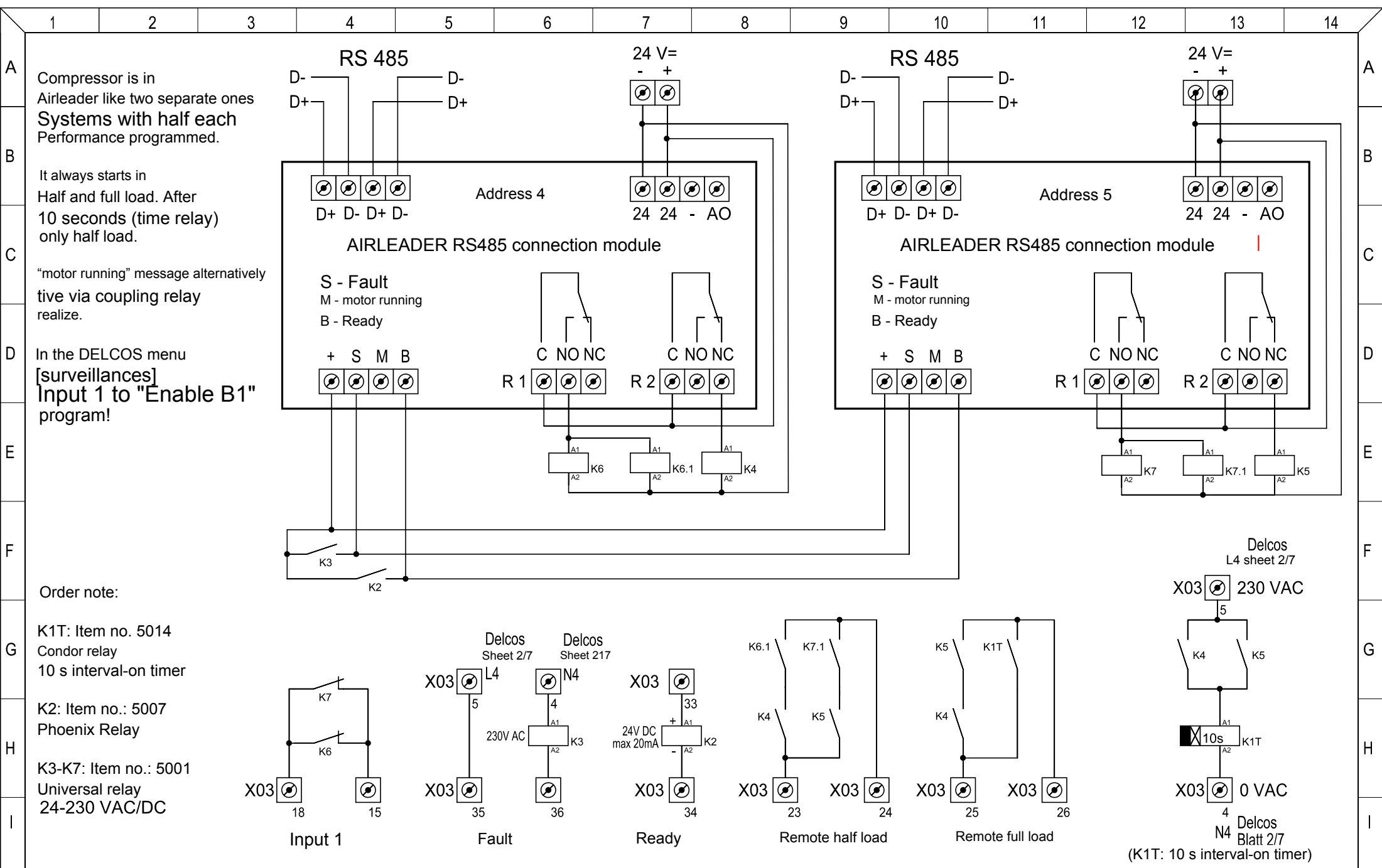
After addressing the communication modules
The addressing must be on the DIP switch (1-16).
by briefly turning off the power
Communication module must be initialized

Order note:
Relay set (WF item no.: 8002)



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	Date	Name	Designation integration MASTER module	Sheet
drawn	24-9-2008	Kloss	on Delcos 3000 / 3100 (L versions only)	1
changed			(Internal pressure switch inactive during Airleader operation)	
changed				from



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	Date	Name	Designation	Sheet
drawn	18-11-2008	Kloss	Integration of master module on full-load/half-load piston	1
changed			CompAir CHAMPION / R ... DELCOS 3000/3100	
changed				from

1.6.3 Remote control (load/idle)

Danger

Only potential-free contacts may be connected to the terminal strip. External voltages will destroy the DELCOS 3100.

The potential-free contacts must not be further than 20 meters from the terminal strip. If necessary, coupling relays must be installed in the control cabinet.

Danger.

In this operating mode, the compressor can start automatically at any time!

The control offers the option of switching the compressor externally to load and idle mode by connecting a potential-free contact.

The remote load/unload input (terminals X3.23/X3.24) is always active, i.e. you do not need to change any further settings in the DELCOS 3100 menu.

How it works:

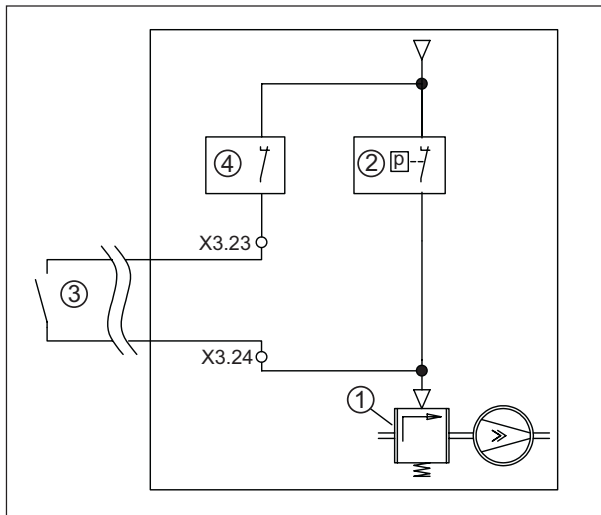


Image 3

Image legend:

(1) Compressor load idle control (2) Internal electronic pressure switch, adjustment

see menu [Control] (3) External potential-free contact for remote load (4) Logic overpressure protection

- During normal operation, the load-idle control (1) of the compressor is controlled exclusively via the system's internal electronic pressure switch (2). You program the switching points of the internal electronic pressure switch (2) in the [Control] menu with the parameters [Mains pressure: max] and [Mains pressure min].
- The external potential-free contact (3) is located parallel to the internal pressure control (2).
- A safety circuit (4) interrupts the function of the external potential-free contact (3) if you have attempted to operate the system 0.5bar/7psi above the nominal operating pressure. [Warning: Mains pressure] appears in the display as long as the external potential-free contact (3) is deactivated. After you have acknowledged the [Warning: Mains pressure], the external potential-free contact (3) is enabled again.

Notice

Due to the parallel arrangement of the two pressure switches (2) + (3), the setting of the internal electronic pressure switch (2) in the [Control] menu may have to be reduced.

To deactivate the internal electronic pressure switch (2) or to connect an external potential-free contact in series for remote load, see Chapter 1.6.4.

1.6.4 Remote control (enable load running)

Danger

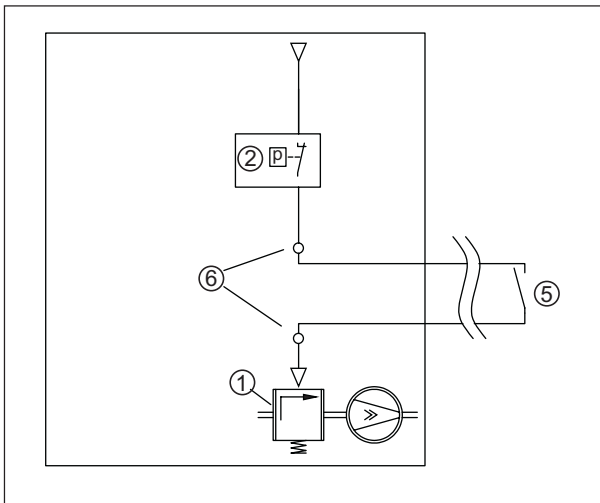
Only potential-free contacts may be connected to the terminal strip. External voltages will destroy the DELCOS 3100.

The potential-free contacts must not be further than 20 meters from the terminal strip. If necessary, coupling relays must be installed in the control cabinet.

The control offers the option of connecting an external potential-free contact

- to interrupt the release for the load-idle control (1) of the compressor or
- to connect an external potential-free contact for remote load in series with the internal electronic pressure switch.

How it works:



Picture 4 Picture 5

Image legend:

(1) Compressor load idle control (2) Internal electronic pressure switch, adjustment see menu [Control] (5) Release switch or external potential-free contact

clock for remote load (6) terminals

- During normal operation, the load-idle control (1) of the compressor is controlled exclusively via the system's internal electronic pressure switch (2). You program the switching points of the internal electronic pressure switch (2) in the [Control] menu with the parameters [Mains pressure. max] and [Mains pressure min].
- In the [Monitoring] menu, program one of the three programmable inputs to the [Enable B1] function. This means that the selected input with the terminals (6) is now in series with the internal electronic pressure switch (2).
- Connect the external switch (5) to the terminals (6).

Assignment of the terminals (6) depending on the selected input:

[Input1] Terminals X3.15/X3.18 [Input2] Terminals X3.16/X3.19 [Input3] Terminals X3.17/X3.20

Notice

By connecting the two pressure switches (2) + (5) in series, the setting of the internal electronic pressure switch (2) in the [Control] menu may need to be increased.

You can combine this procedure with that from Chapter 1.6.3.

Example:

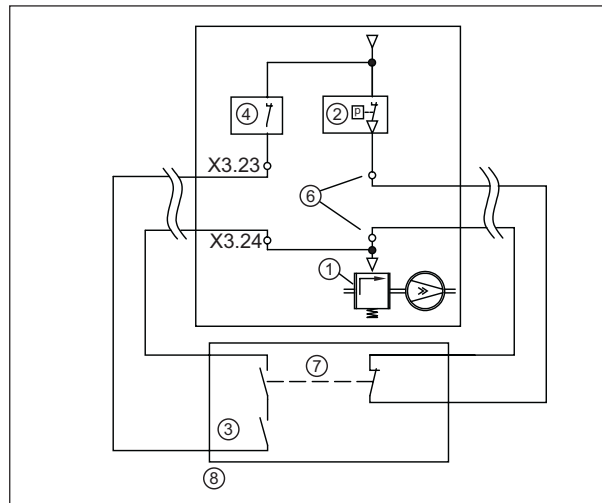


Image legend:

(3) Load request from the higher-level control (7) Active signal from the higher-level control (8) Higher-level control

- In the example, a higher-level controller (8) has been connected to the DELCOS 3100.
- If the control (8) fails, the DELCOS 3100 is switched to internal operation using the contact (7) (as shown above).
- If the higher-level control (8) is active and not faulty, the DELCOS 3100 switches off the load run enable with contact (7) and now controls the compressor independently via its own load request (3).

1.6.5 Automatic restart after power failure

Danger.

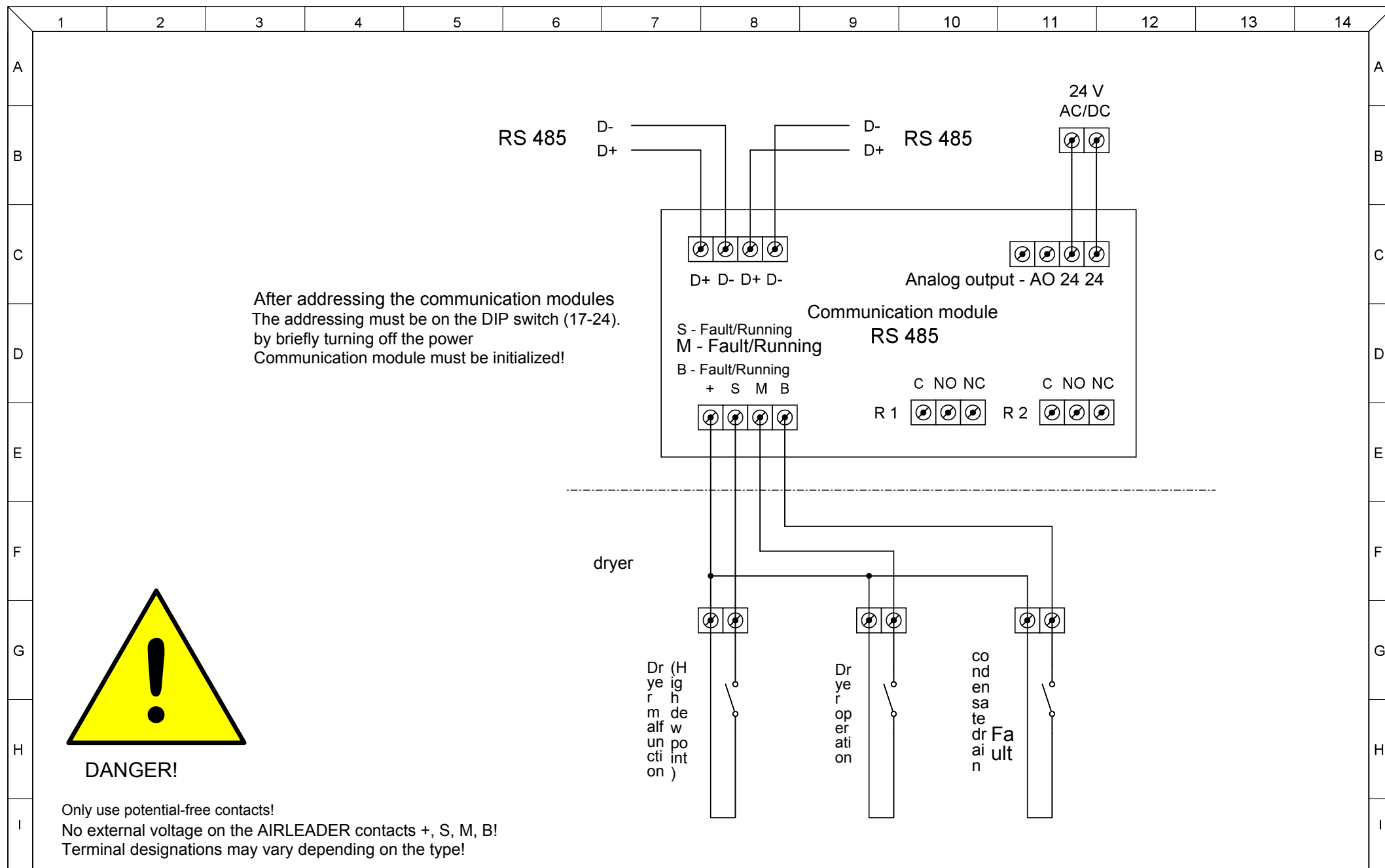
In this operating mode, everyone can start the compressor automatically!

You can switch [automatic restart] on or off in the [Control] menu (see Chapter 1.2.2).

After a power failure that lasted no longer than approximately 1.5 seconds, the compressor will automatically restart if it was switched on, i.e. in operation (standby), before the power failure.

Failures longer than 1.5 seconds result in the message [Voltage failure] and the [automatic restart] is not carried out.

With an OPTION timer installed, the menu item [Failure max.] (see Chapter 1.2.2.) can be programmed between 2 and 999 seconds.



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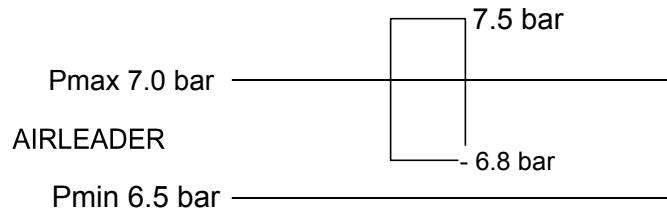
	Date	Name	Designation	Sheet
drawn	10.12.2007	NK	Connection of dryer to master module	1
changed				
changed				
				from

Program compressor control to remote control

Compressor pressure switching points must be higher as Pmin/Pmax on the AIRLEADER

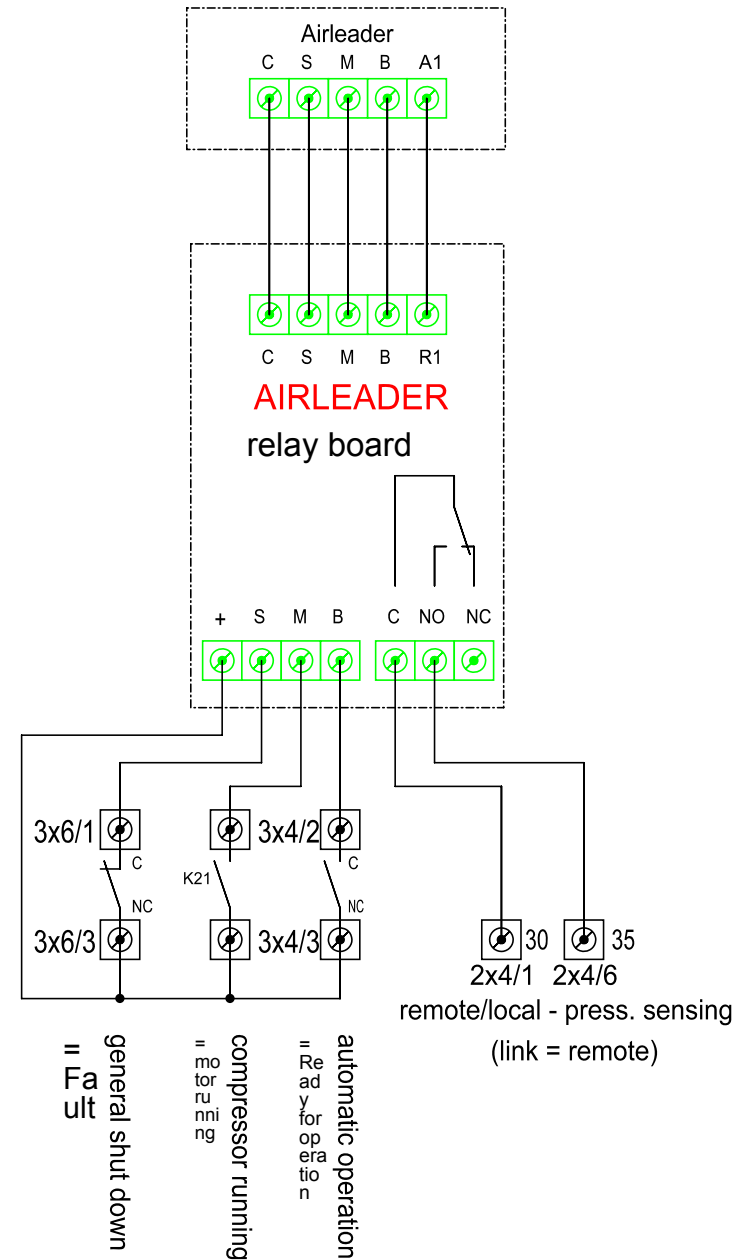
Programming example:

Loading/unloading in ELEKTRONIKON



Danger!

Only use potential-free contacts!
No external voltage on the AIRLEADER contacts +, S, M, B!
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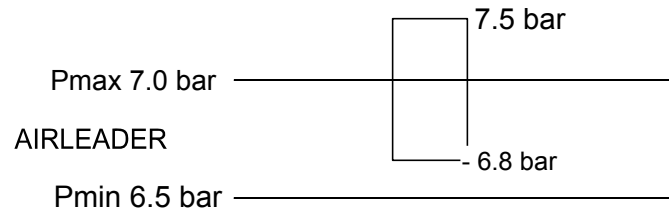
Date		Name	Designation	Sheet
drawn	14-5-2008	Kloss	Airleader 2-4-8 on Atlas Copco GA 45 with MK III	1
changed			(corresponds to connection in series to the pressure switch)	
changed				from

Program compressor control to remote control

Compressor pressure switching points must be higher as Pmin/Pmax on the AIRLEADER

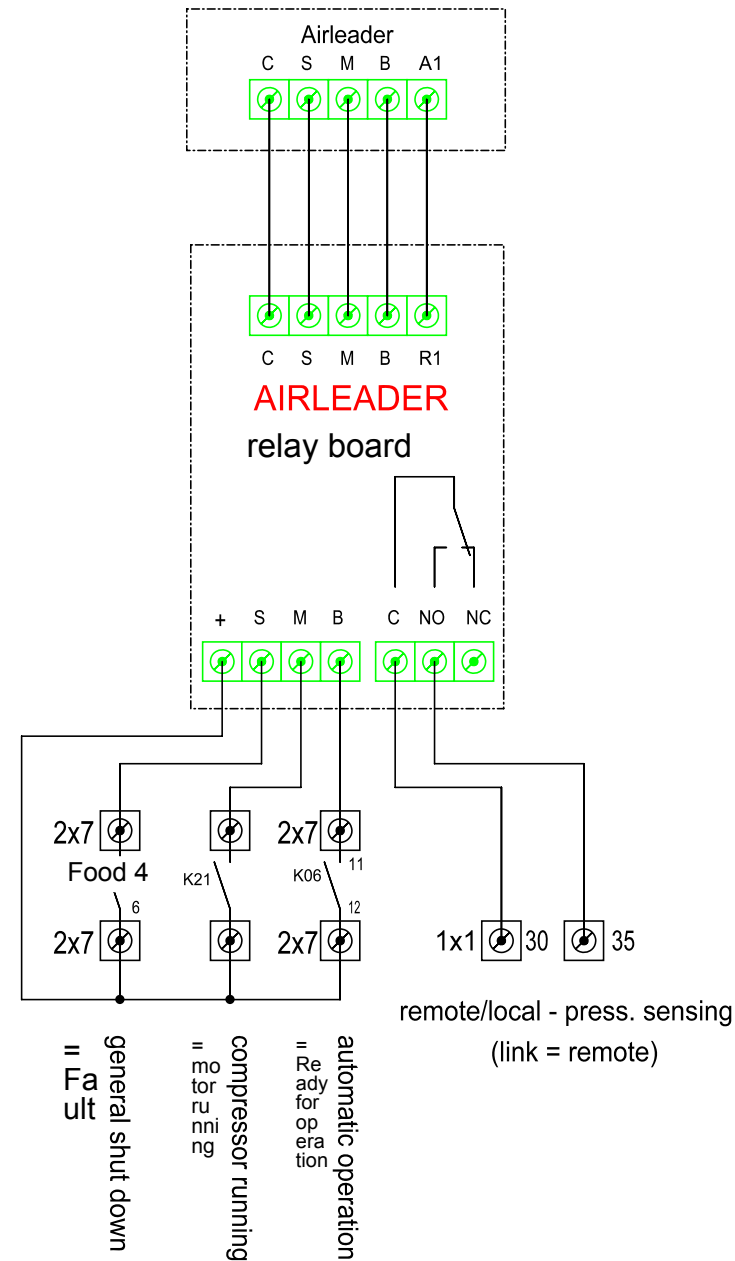
Programming example:

Loading/unloading in ELEKTRONIKON



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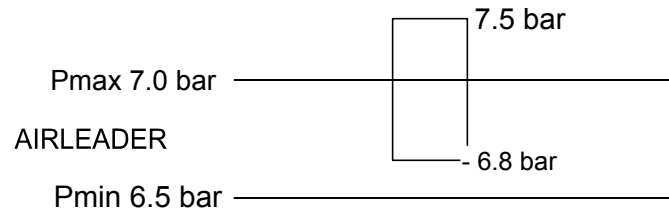
	Date	Name	Designation	Sheet
drawn	14-5-2008	Kloss	Airleader 2-4-8 on Atlas Copco GA 55 with MK III	1
changed			(corresponds to connection in series to the pressure switch)	
changed				from

Program compressor control to remote control

Compressor pressure switching points must be higher as Pmin/Pmax on the AIRLEADER

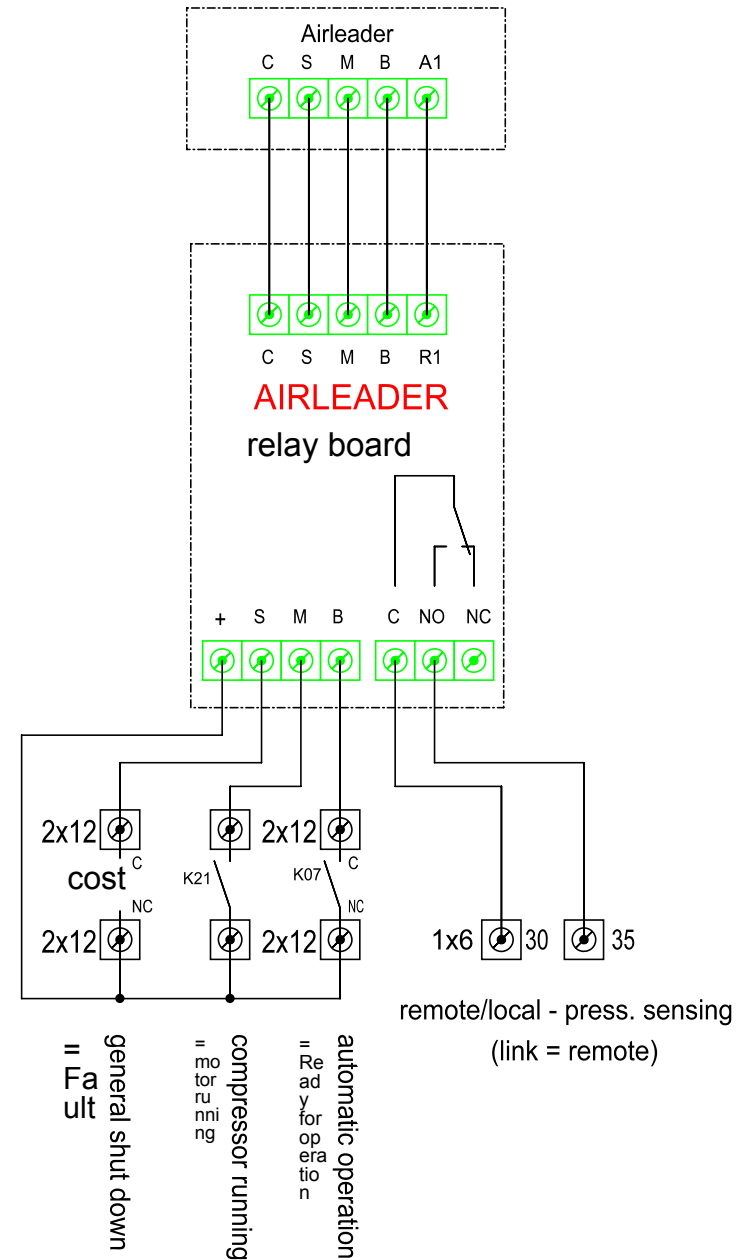
Programming example:

Loading/unloading in ELEKTRONIKON



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No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!



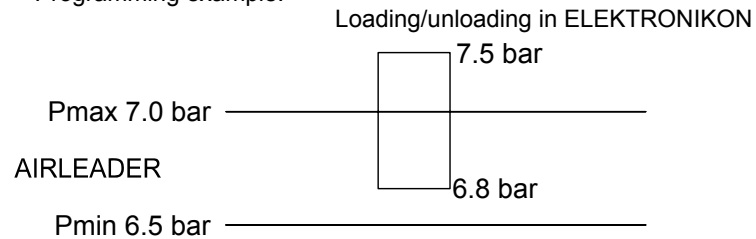
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	Date	Name	Designation	Sheet
drawn	14-5-2008	Kloss	Airleader 2-4-8 on Atlas Copco GA 55 with MK IV (corresponds to connection in series to the pressure switch)	1
changed				
changed				
				from

Program compressor control to remote control

Compressor pressure switching points must be higher as Pmin/Pmax on the AIRLEADER

Programming example:

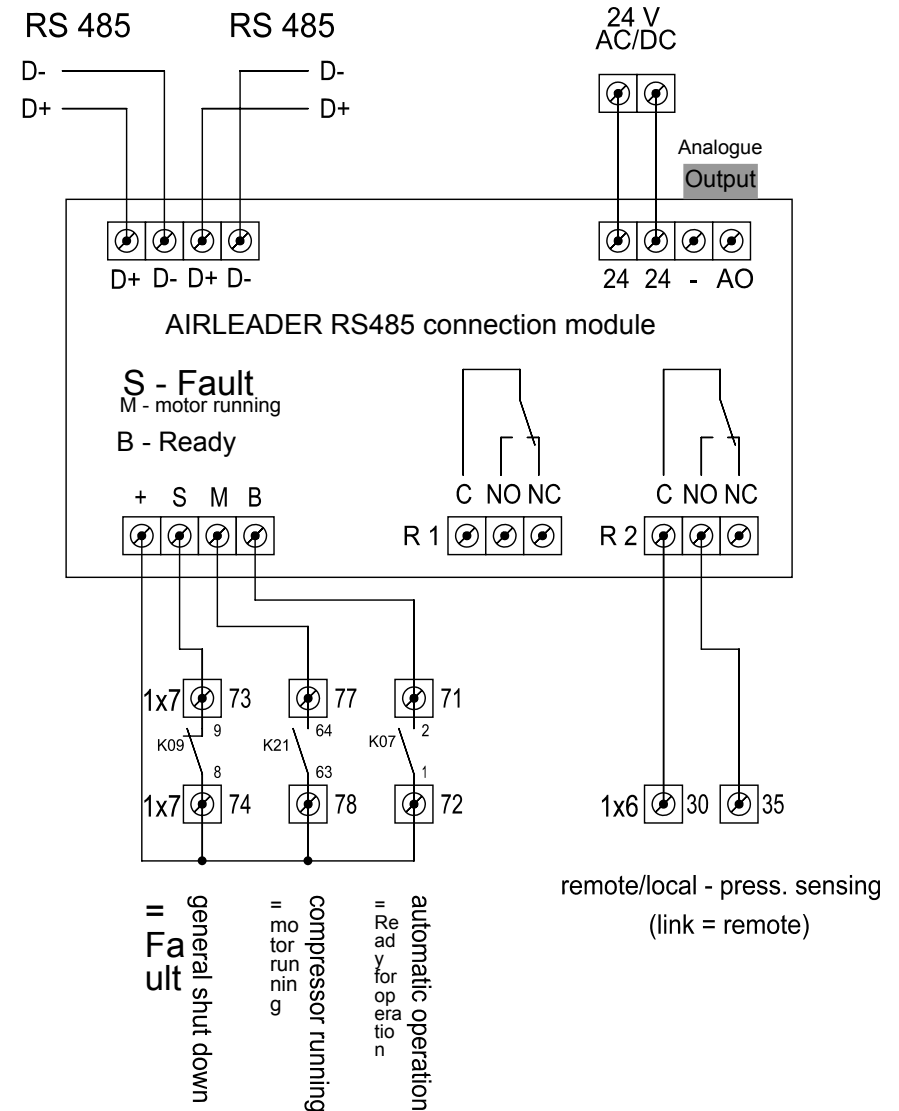


Danger!

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No external voltage on the AIRLEADER contacts +, S, M, B!

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Date		Name	Designation	Sheet
drawn	14-5-2008	Kloss	Integration of master module into Atlas Copco MK IV (Corresponds to connection in series with the pressure switch)	1
changed				
changed				from

Program compressor control to remote control

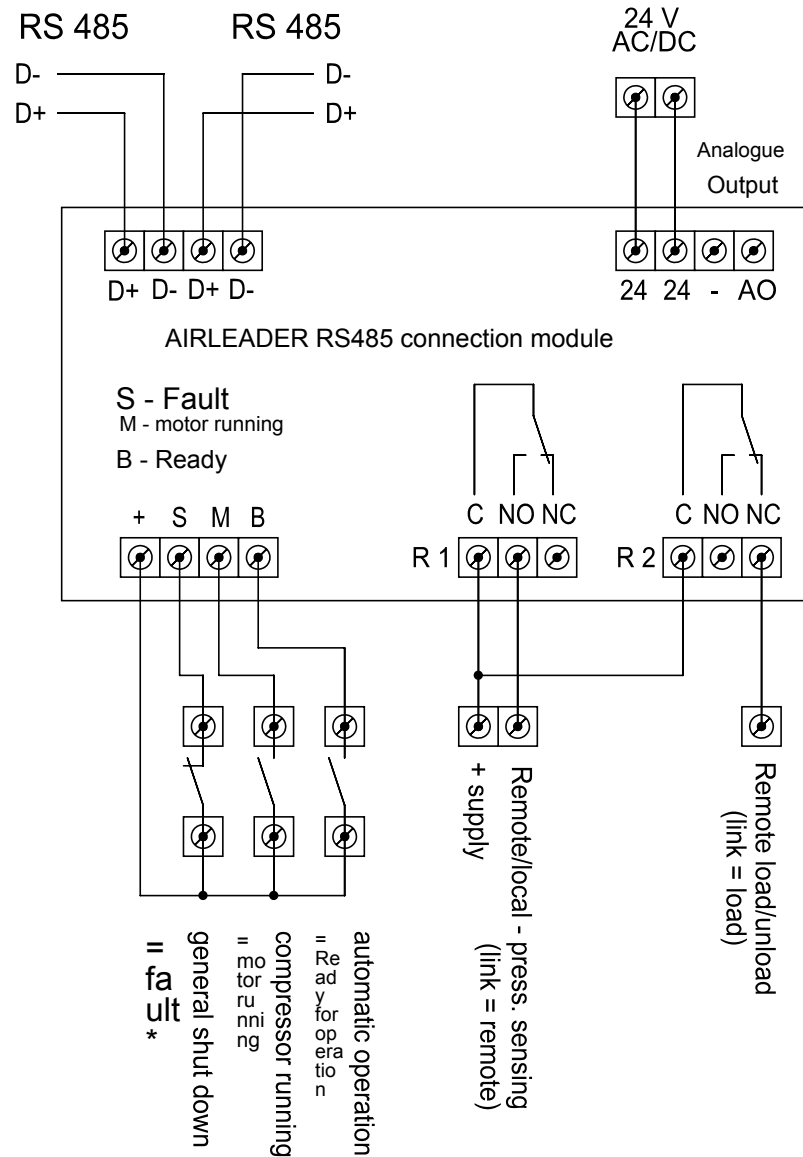
* Fault contact closed without current. Opens when compressor under power and not disturbed.



Danger!

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Date		Name	Designation	Sheet
drawn	14-5-2008	Kloss	Integration of master module into Atlas Copco MK IV	1
changed				
changed				from

Program compressor control to remote control

Pressure setpoint VSD in the middle of Pmin/Pmax of the am
Set the values set by AIRLEADER

Programming example:

AIRLEADER

Atlas Copco: more indirect

Pmax 7.0 bar

stop 0.8 bar

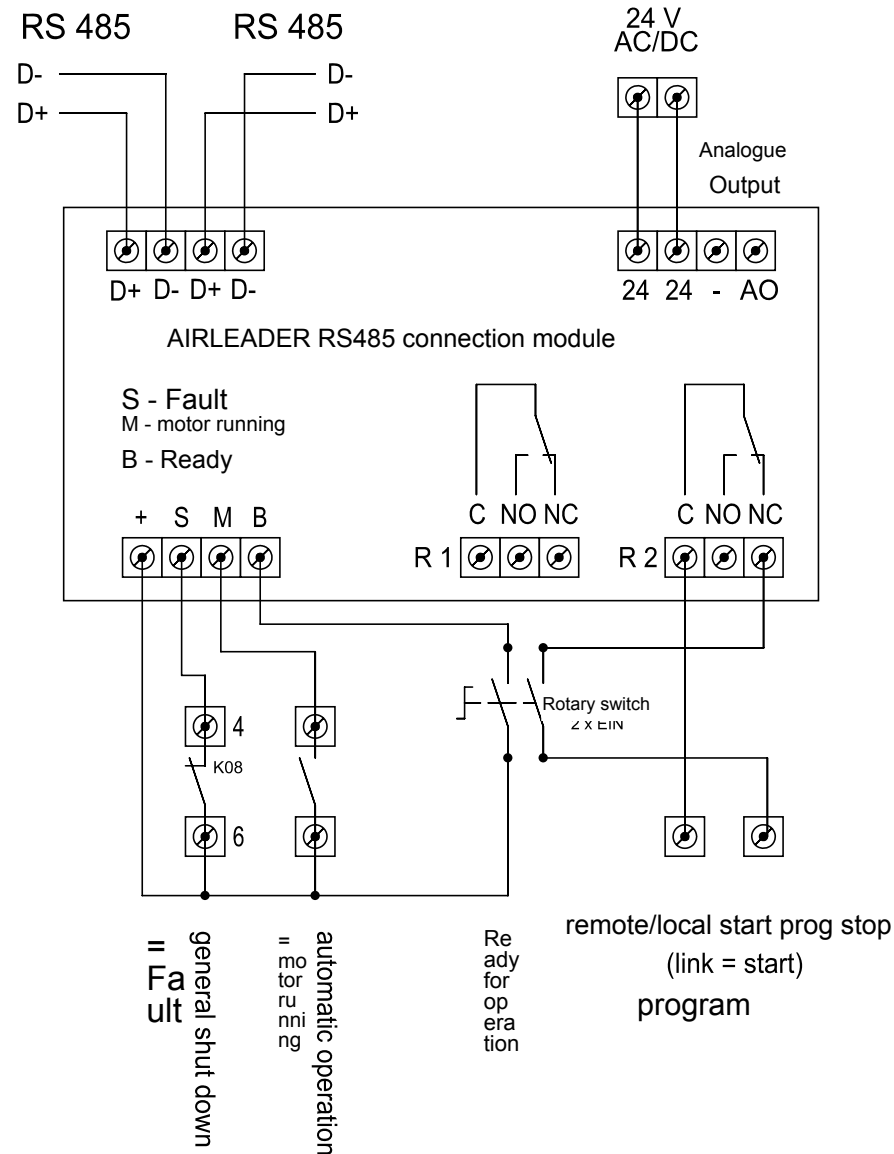
----- Target value 6.8 bar

Pmin 6.4 bar



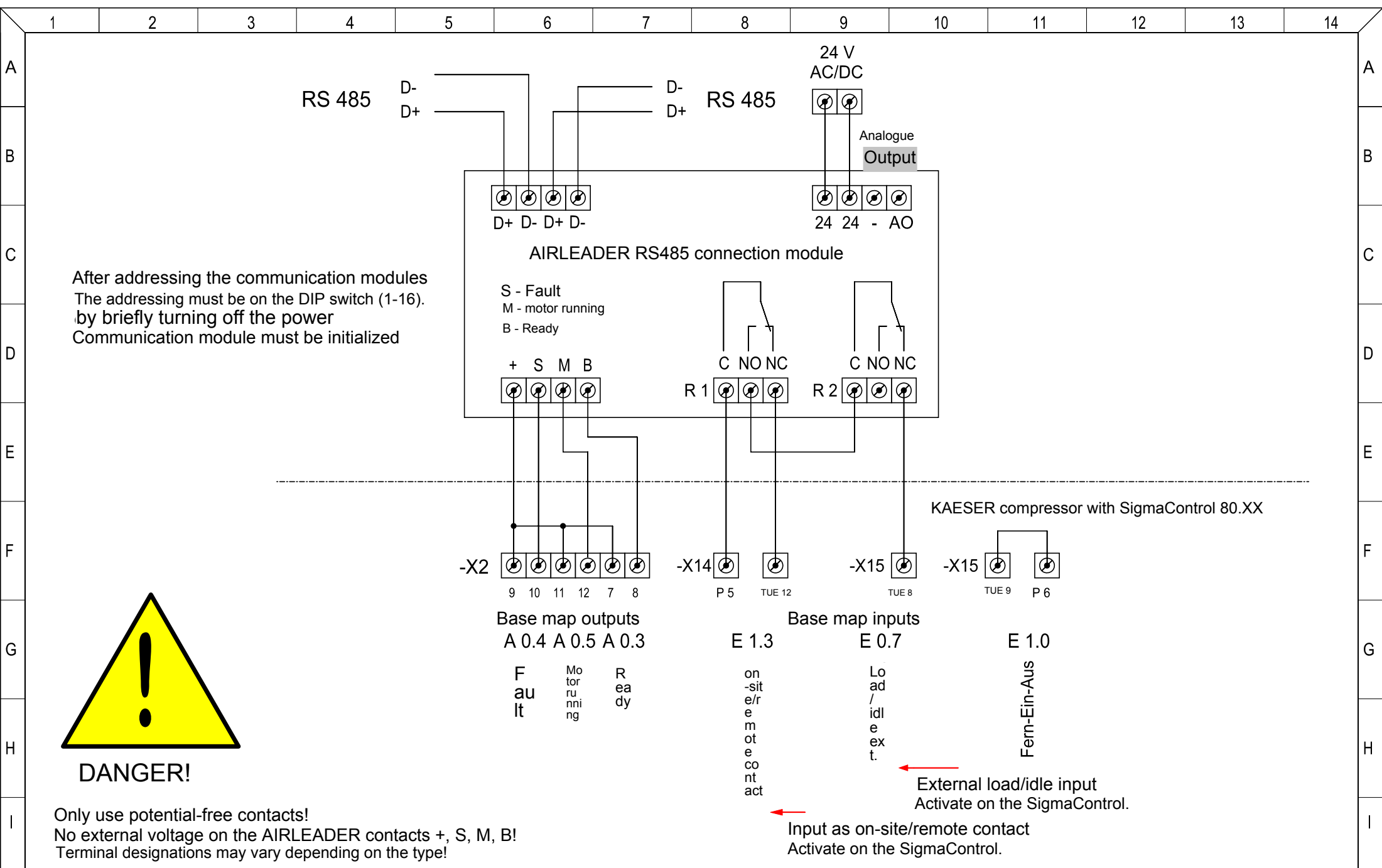
Danger!

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No external voltage on the AIRLEADER contacts +, S, M, B!
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	Date	Name	Designation	Sheet
drawn	14-5-2008	Kloss	Integration of master module to Atlas Copco GA VSD	1
changed			Remote Start/Stop MK IV without "Ready for operation"	
changed				from



After addressing the communication modules
The addressing must be on the DIP switch (1-16).
by briefly turning off the power
Communication module must be initialized



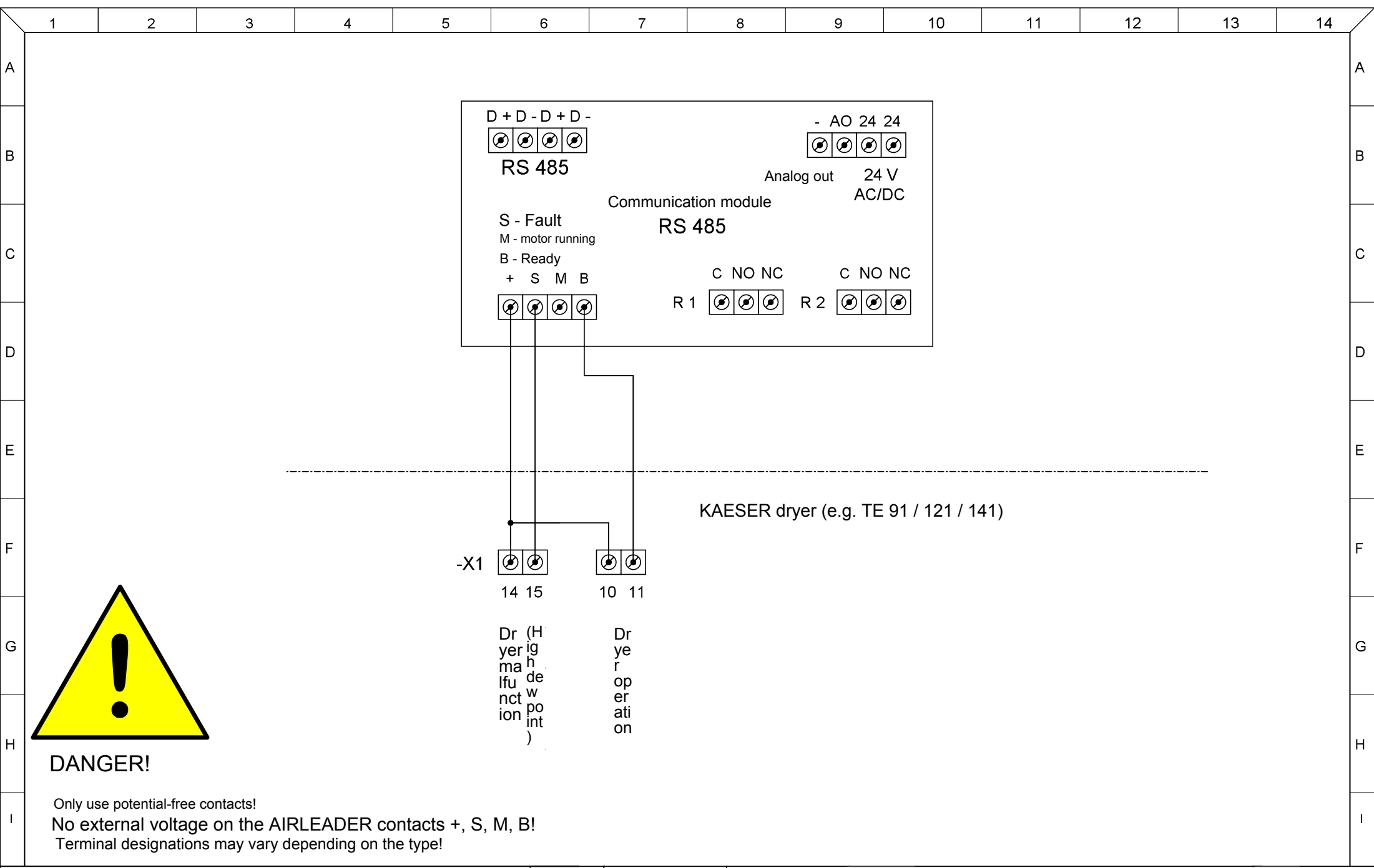
DANGER!

Only use potential-free contacts!
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Terminal designations may vary depending on the type!

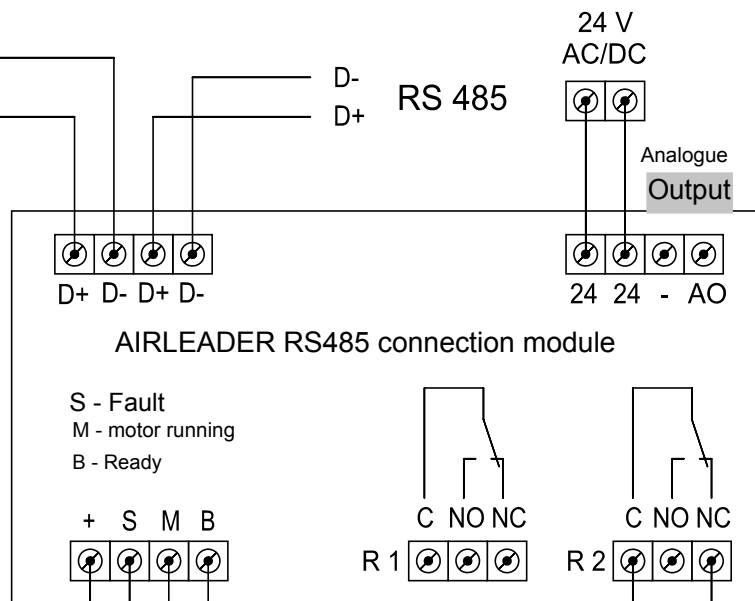


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	Date	Name	Designation	Sheet
drawn	10.12.2007	NK	Connection to KAESER compressor	1
changed	18.02.2008	R.Schlegel	SigmaControl 80.XX on master module	
changed	17.06.2008	NK		from



After addressing the communication modules
The addressing must be on the DIP switch (1-16).
by briefly turning off the power
Communication module must be initialized



MAHLE compressor with MCC
In the menu click on "Composite Control"
program



DANGER!

Only use potential-free contacts!
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Terminal designations may vary depending on the year and type!

* Install additional pressure switch
(as safety pressure switch)



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	Date	Name	Designation	Sheet
drawn	3-7-2008	NK	Connection to MAHLE compressor with MCC O control on master module	1
changed				
changed			(corresponds to connection in series to the pressure switch)	from

Connection AILEADER MASTER module to Gardner Denver WITTIG Control MDW2010

Activate menu with code 207. Check the following parameters and change if necessary:

Customer parameters

- Start control LOK (Start Stop buttons on the panel remain active)
- Pressure enable EXT (external pressure control when ready)

I/O configuration

I/O assignment

- E3: external Ready (REMOTE signal, internal pressure sensor deactivated)
- E4: external DS (external LAST signal if REMOTE signal is present)

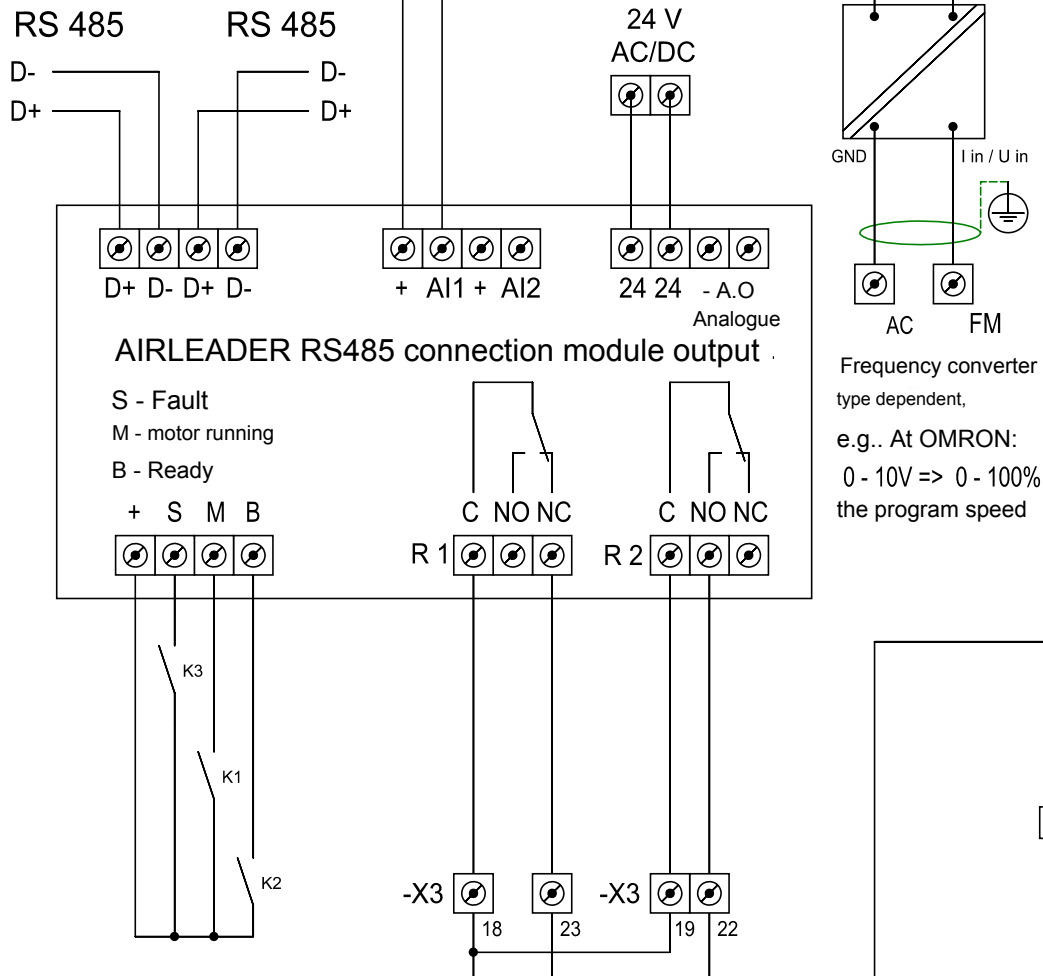
Input logic

- E3: NO (contact closed = AIRLEADER operation)
- E4: NO (contact closed = load run requested)

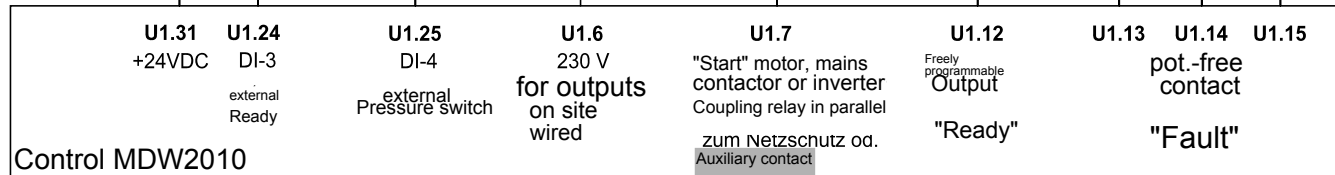
A NOTICE:

The required digital Signals already wired on site.

The specified terminal numbers must be checked!



Frequency converter type dependent, e.g.. At OMRON: 0 - 10V => 0 - 100% the program speed



Control MDW2010



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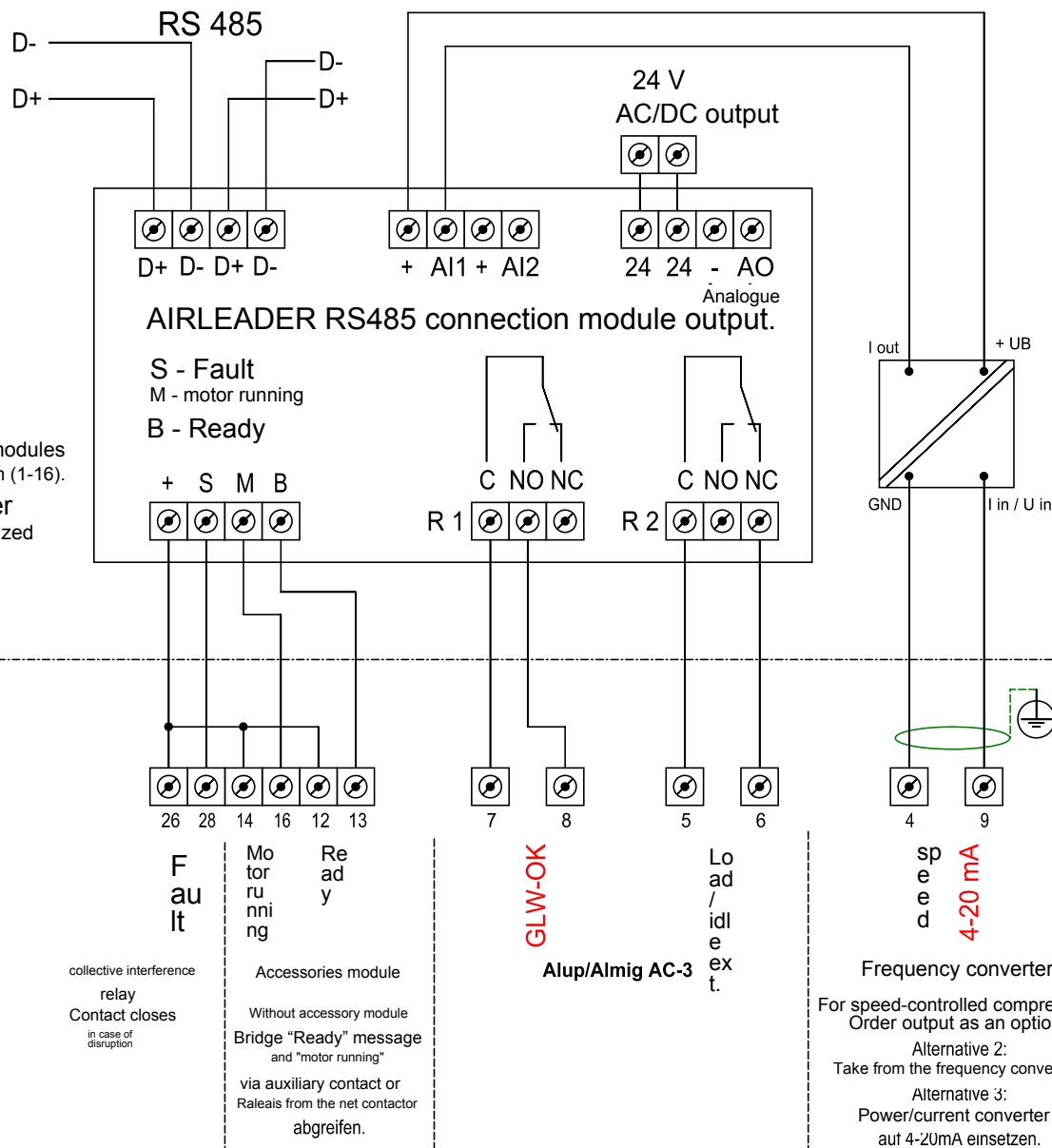
	Date	Name	Designation	Sheet
drawn	14-11-2008	Kloss	Connection Gardner Denver WITTIG MDW control on MASTER module	
changed				
changed				
				from



Danger!

Only use potential-free contacts!
No external voltage on the AIRLEADER contacts +, S, M, B!
Terminal designations may vary depending on the type!

After addressing the communication modules
The addressing must be on the DIP switch (1-16).
by briefly turning off the power
Communication module must be initialized



In the AC-3 control the Compressor in the "Configuration" menu be programmed as follows:

Remote mode = GLW-OK and
GLW operation = YES

DANGER!!
Terminal numbers are mandatory
check as this applies to everyone
Compressors differ.



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	Date	Name	Designation ALUP / ALMIG compressor with AirControl-3	Sheet
drawn	17-11-2008	NK	Connection to MASTER module	1
changed				
changed				
				from

RS 485

D-
D+

RS 485

D-
D+

24 V
AC/DC

Analogue
Output

D+ D- D+ D-

24 24 - AO

AIRLEADER RS485 connection module

S - Fault
M - motor running
B - Ready

+ S M B

C NO NC

R 1

C NO NC

R 2

BOGE compressor
with RATIOTRONIC

-X3 3 4 6 7 1 2

-X2 20 21

Co
lle
cti
on
fa
ult

Op
era
tio
n
(= mo
tor
run
nin
g)

Re
ad
y
for
op
era
tio
n

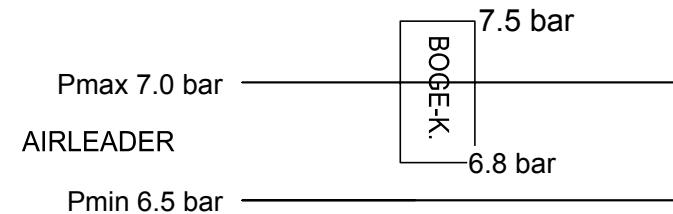
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After addressing the communication modules
The addressing must be on the DIP switch (1-16).
by briefly turning off the power
Communication module must be initialized

Compressor pressure switching points must be higher
as Pmin/Pmax on the AIRLEADER!

Programming example:

Loading/unloading in Ratiotronic



Danger!

Only use potential-free contacts!

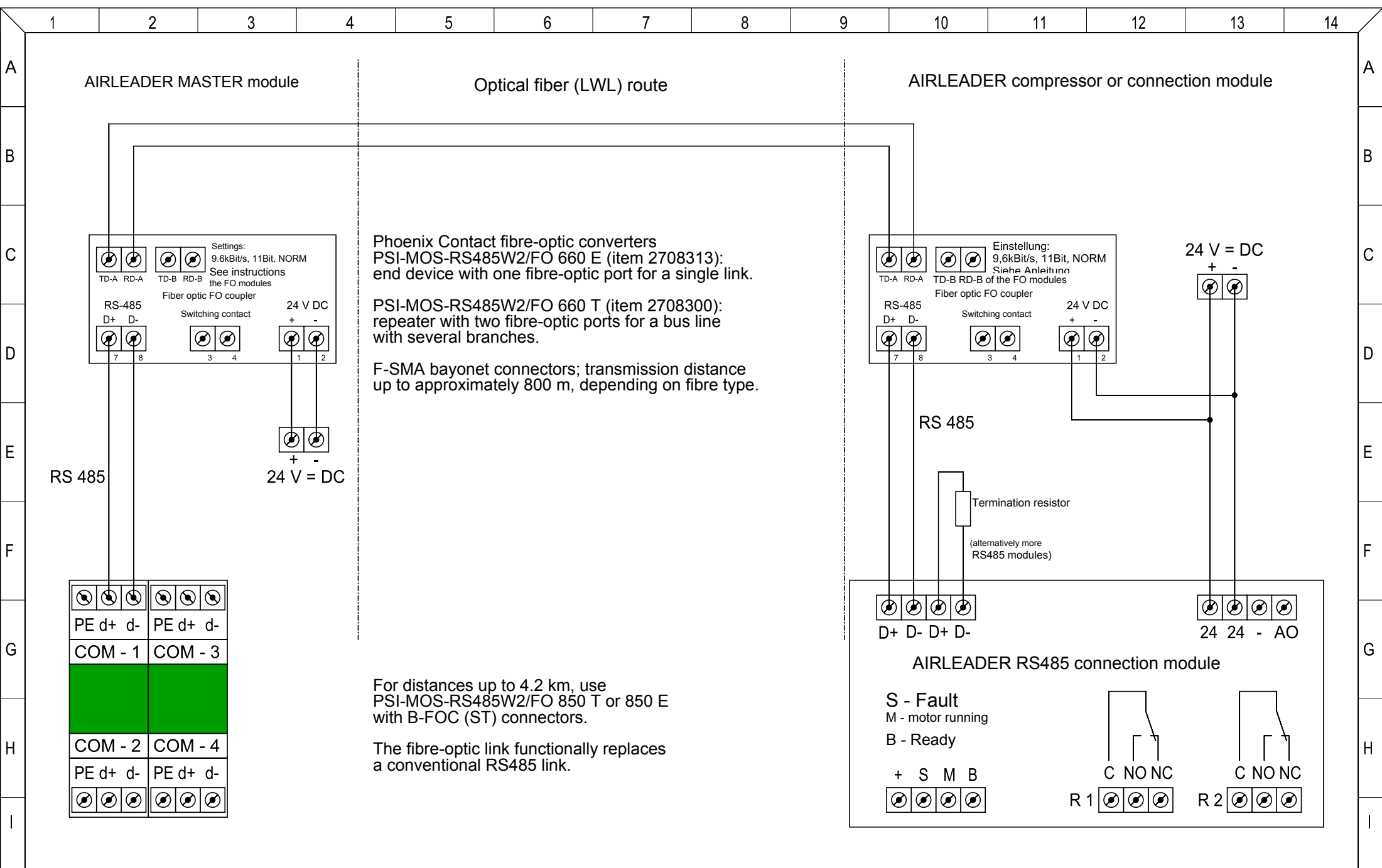
No external voltage on the AIRLEADER contacts +, S, M, B!

Terminal designations may vary depending on the year and type!



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	Date	Name	Designation	Sheet
drawn	15-12-2008	NK	Connection to BOGE compressor (VLEA). RATIOTRONIC to master module	1
changed				
changed			(corresponds to connection in series to the pressure switch) from	



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	Date	Name	Designation	Sheet
drawn	20-06-2008	NK	AIRLEADER RS485 bus transmission via LWL FO fiber optic cable (LWL)	1
changed				
changed				
				from