






WIRING DIAGRAM GLOBAL AIR HANDLING UNITS

 This wiring diagram is only an addition to our installation and operation manuals, available on our website for download.

 All internal components (fans, controls, sensors, actuators...) to the control board are pre-wired. The power supply must be connected to the safety isolating switch by a qualified electrician. Earthing is obligatory.

 All electrical connections must be made by a qualified electrician and in accordance with local rules and regulations.

 Residual current circuit breaker 300mA class B or B+

 Fuse protection (D-type, "slow")
D – 10.000 A – AC3

Changes		Name	Date	Application:	Page
Name	Date	Draw.:	08.03.2019		General
		check.:			
		Norm:			
Subject:	GLOBAL_Wiring TAC5.spl7				of 27

TAC5 DT: GLOBAL RX (TOP) & LP^(FW)

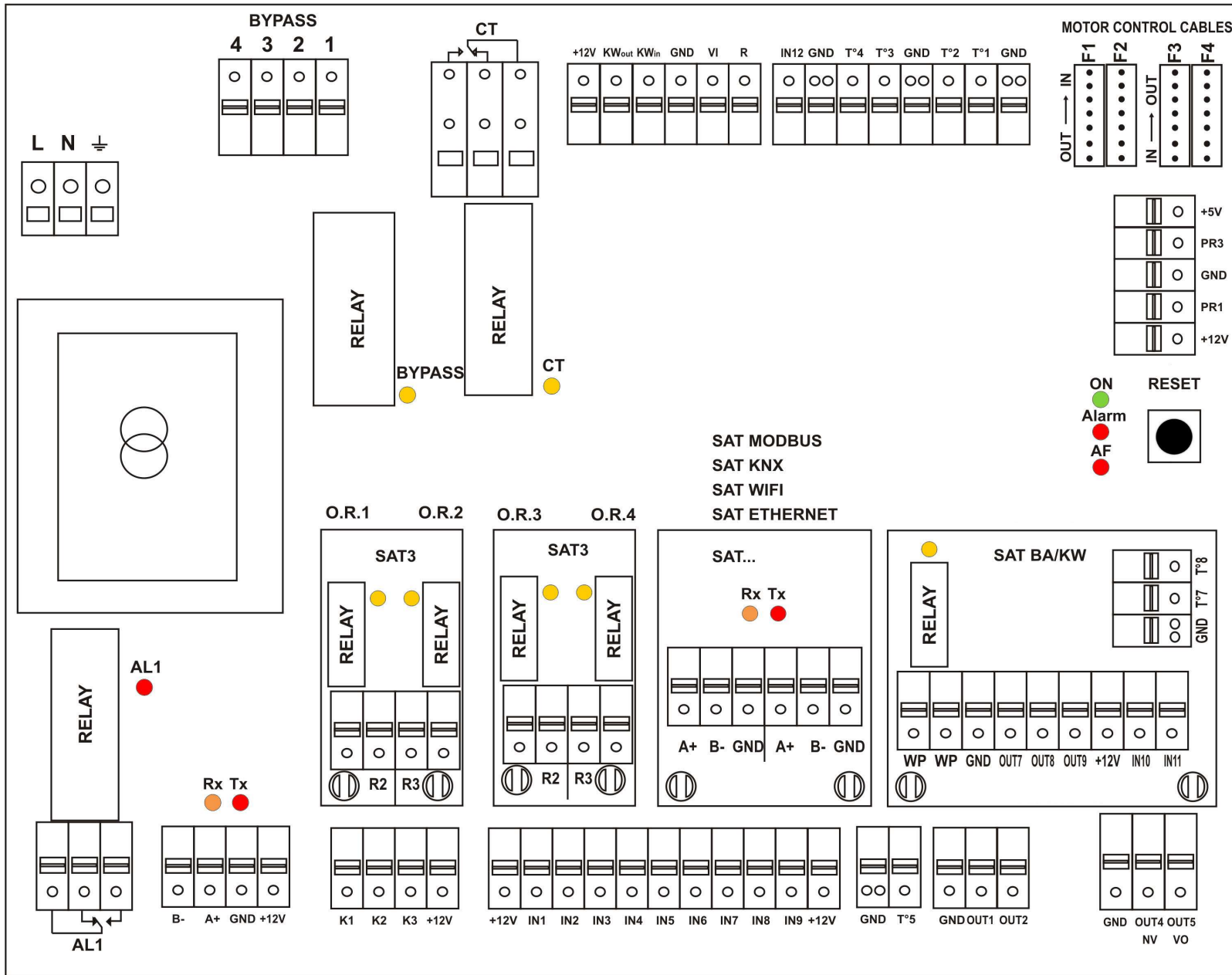
CT : output to CT actuator(s) (option - prewired)	IN1 = Master selection
KWout = output for KWout capacity control (option-prewired)	IN2 = dPa (pressostat digital input)
AL1 = ALARM OUTPUT (230V/5A)	IN3 = Fire alarm input
B- /A+ /GND /+12V = connection to HMI	IN4 = Bypass open /Stop heat recovery
K1 : Airflow control = m ³ /h K1	IN5 = Real time clock auto/manu
Demand/Pressure control = START/STOP	IN6 = ON/OFF post heating (IBA/KWout)
Torque control = %torque K1	IN7 = ON/OFF SUPPLY if fire alarm
K2 : Airflow control = m ³ /h K2	IN8 = ON/OFF EXHAUST if fire alarm
Demand/Pressure control = 0-10V INPUT	IN9 = BOOST Airflow
Torque control = %torque K2	IN12 = input pulse from heat exchanger magnet (prewired)
K3 : Airflow control = m ³ /h K3	OUT1 = 0-10V OUTPUT (airflow/pressure)
Demand/Pressure control = % ON K3 or 0-10 V INPUT	OUT2 = 0-10V OUTPUT (airflow/pressure)
Torque control = %torque K3	OUT4 = 0-10V OUTPUT internal post heating (IBA)
T1 = from outdoors T° sensor (prewired)	OUT5 = 24VDC/1A
T2 = from indoors T° sensor (prewired)	O.R.1 (output relay 1 - SAT3) = PRESSURE ALARM
T4 = IBA anti freeze protection T° sensor (option - prewired)	O.R.2 (output relay 2 - SAT3) = FAN ON
T5 = supply T° sensor for IBA/KWout coil (option - prewired)	O.R.3 (output relay 3-SAT3) = HEATING DEMAND OUTPUT
PR1 = ΔPa from supply inlet fan (only on RX - option)	O.R.4 (output relay 4-SAT3) = BYPASS STATUS
PR3 = ΔPa from exhaust inlet fan (only on RX - option)	R-GND : output for heat exchanger wheel speed command (prewired)

Changes		Name	Date	Application: DT Controller	Page	
Name	Date	Draw.:	Beckers		29.11.2018	2
		check.:				
		Norm:				
Subject:	GLOBAL_Wiring TAC5.spl7				of	27

TAC5 DG: GLOBAL PX & LP^{FW}

CT = output to CT actuator(s) (option - prewired)	IN1 = Master selection
BYPASS = output to bypass actuator (prewired)	IN2 = dPa (pressostat digital input)
AL1 = ALARM OUTPUT (230V/5A)	IN3 = Fire alarm input
B- /A+ /GND /+12V = connection to HMI	IN4 = Bypass open /Stop heat recovery
K1: Airflow MODE = m ³ /h K1	IN5 = Real time clock auto/manu
Demand/Pressure control = START/STOP	IN6 = ON/OFF post heating (IBA/KWout)
Torque MODE = %torque K1	IN7 = ON/OFF SUPPLY if fire alarm
K2: Airflow control = m ³ /h K2	IN8 = ON/OFF EXHAUST if fire alarm
Demand/Pressure control = 0-10V INPUT	IN9 = BOOST Airflow
Torque control = %torque K2	IN12 = PWM input bypass position
K3: Airflow control = m ³ /h K3	OUT1 = 0-10V OUTPUT (airflow/pressure)
Demand/Pressure control = % ON K3 or 0-10 V INPUT	OUT2 = 0-10V OUTPUT (airflow/pressure)
Torque control = %torque K3	OUT4 = 0-10V OUTPUT internal post heating (IBA)
T1 = from outdoors T° sensor (prewired)	OUT5 = 24VDC/1A
T2 = from indoors T° sensor (prewired)	O.R.1 (output relay 1 - SAT3) = PRESSURE ALARM
T3 = to outdoors T° sensor (prewired)	O.R.2 (output relay 2 - SAT3) = FAN ON
T4 = IBA anti freeze protection T° sensor (option - prewired)	O.R.3 (output relay 3 - SAT3) = HEATING DEMAND OUTPUT
T5 = supply T° sensor for IBA/KWout coil (option - prewired)	O.R.4 (output relay 4 -SAT3) = BYPASS STATUS
PR1 = ΔPa from supply inlet fan (only on PX - option)	KWin = output for KWin capacity control (option - prewired)
PR3 = ΔPa from exhaust inlet fan (only on PX - option)	KWout = output for KWout capacity control (option - prewired)

Changes		Name	Date	Application: DG Controller	Page	
Name	Date	Draw.:	Beckers		29.11.2018	3
		check.:				
Subject:	GLOBAL_Wiring TAC5.spl7	Norm:			of 27	



Changes		Name	Date	Application: Controller	Page	
Name	Date	Draw.:	Beckers		29.11.2018	4
		check.:				
		Norm.:				
Subject:	GLOBAL_Wiring TAC5.sp17				of 27	

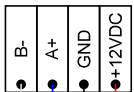
TAC5 Controller



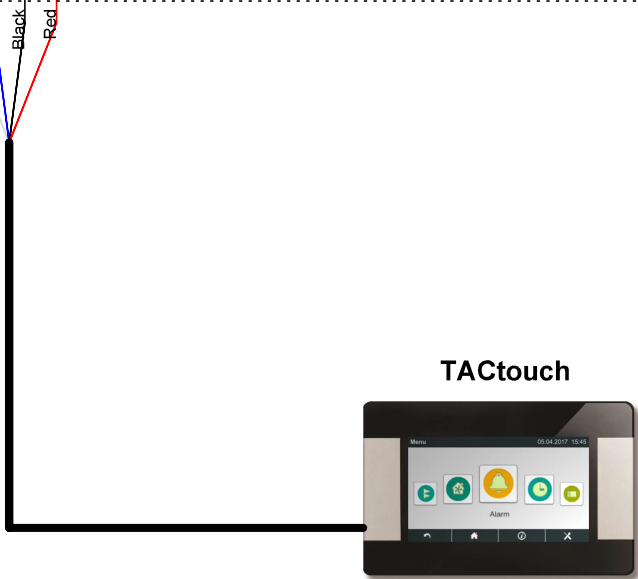
300mA B-Type
Residual current
circuit breaker

HMI Connection

Rx Tx
LED LED



White Blue Black Red



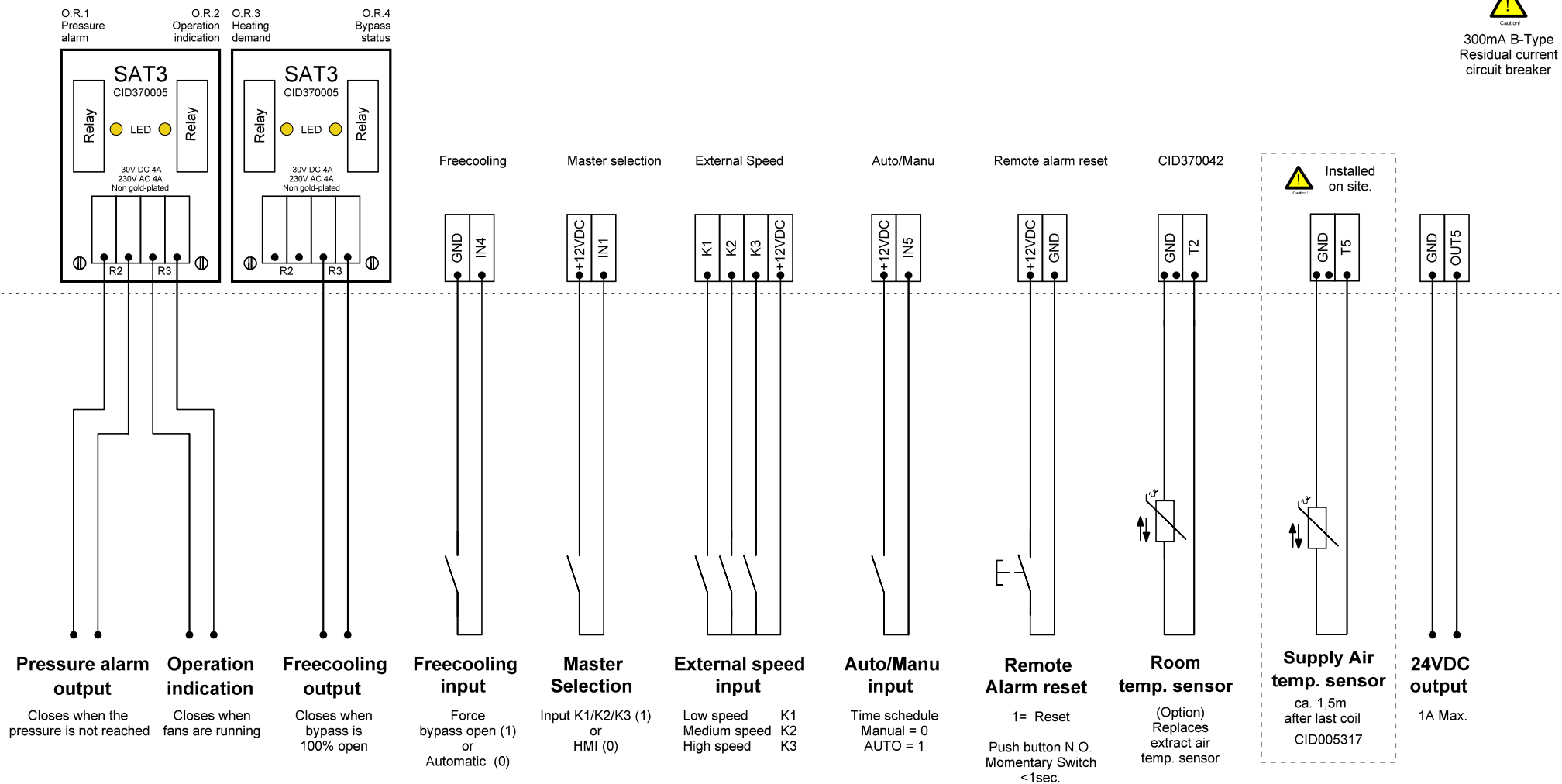
TACtouch



The cables used in the network must comply to the RS-485 standard with twisted pair conductors. The cables must be shielded. Conductor Area >0.2 mm². The total length must not exceed 100 meters.

Changes		Name	Date	Page
Name	Date	Draw.: Beckers	20.09.2018	5
		check.:		
		Norm:		
Subject:	GLOBAL_Wiring TAC5.sp17		Application: TACtouch	of 27

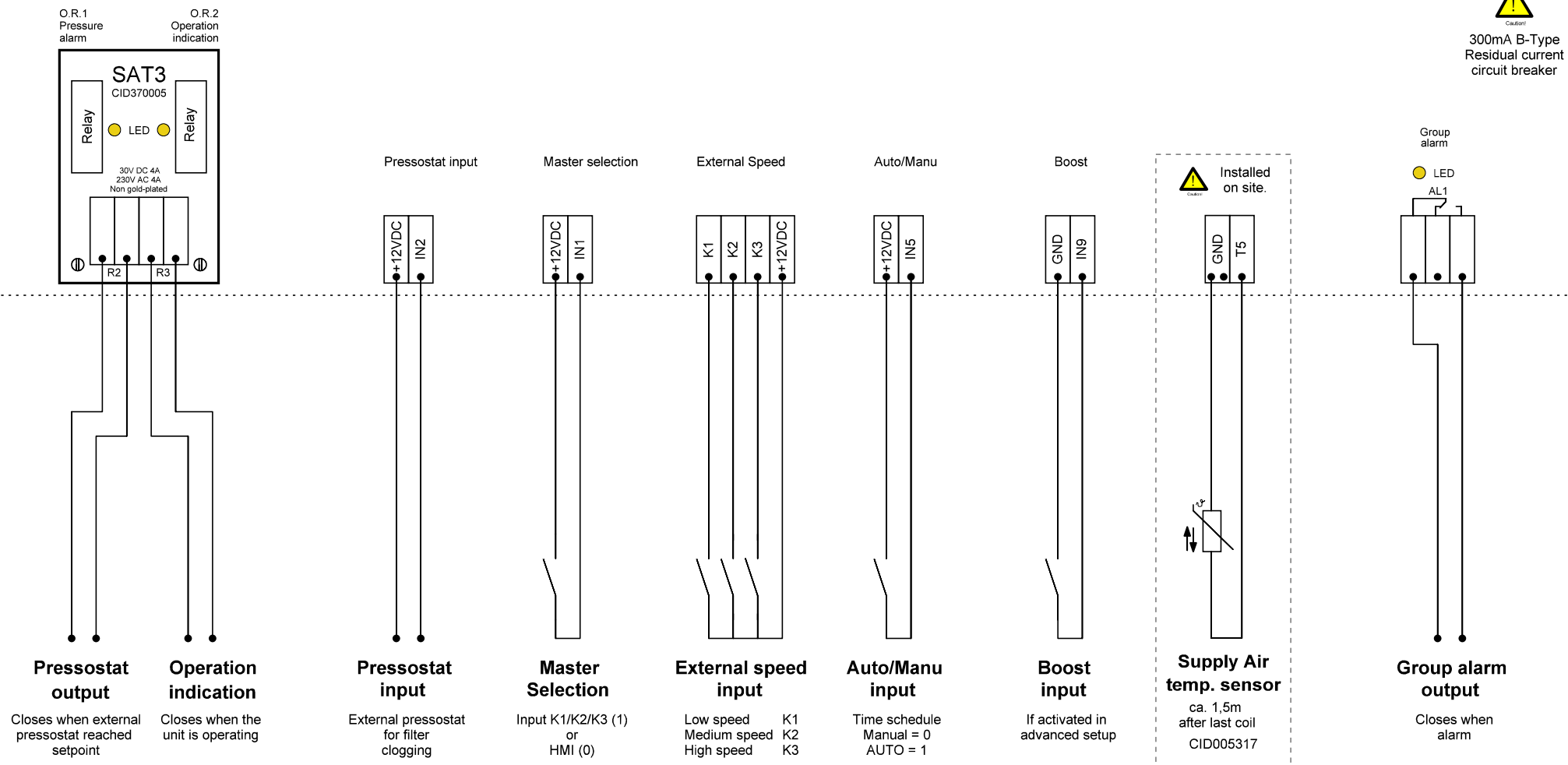
TAC5 Controller



Changes

Changes		Name	Date	Page
Name	Date	Draw.:	Beckers	22.01.2019
		check.:		6
		Norm.:		
Subject:	GLOBAL_Wiring TAC5.sp17			of
	Application: Main Controller TAC5			27

TAC5 Controller



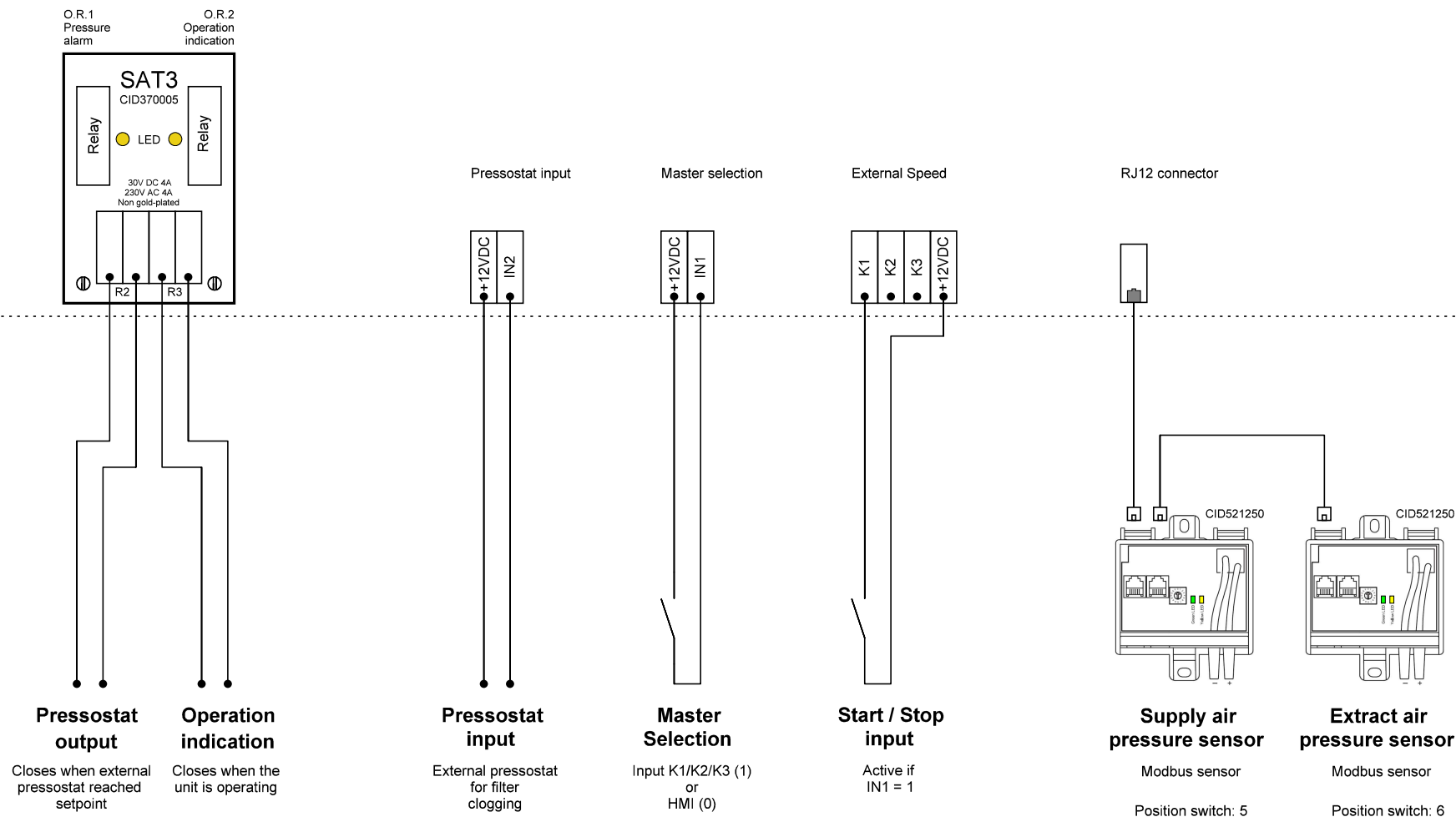
Changes

Changes		Name	Date	Configuration of function: Basic setup / Air flow regulation / Constant pressure	Page
Name	Date	Draw.: Beckers	22.01.2019		7
		check.:			
		Norm:		Application: Constant airflow	of 27
Subject:	GLOBAL_Wiring TAC5.sp17				

TAC5 Controller



300mA B-Type
Residual current
circuit breaker



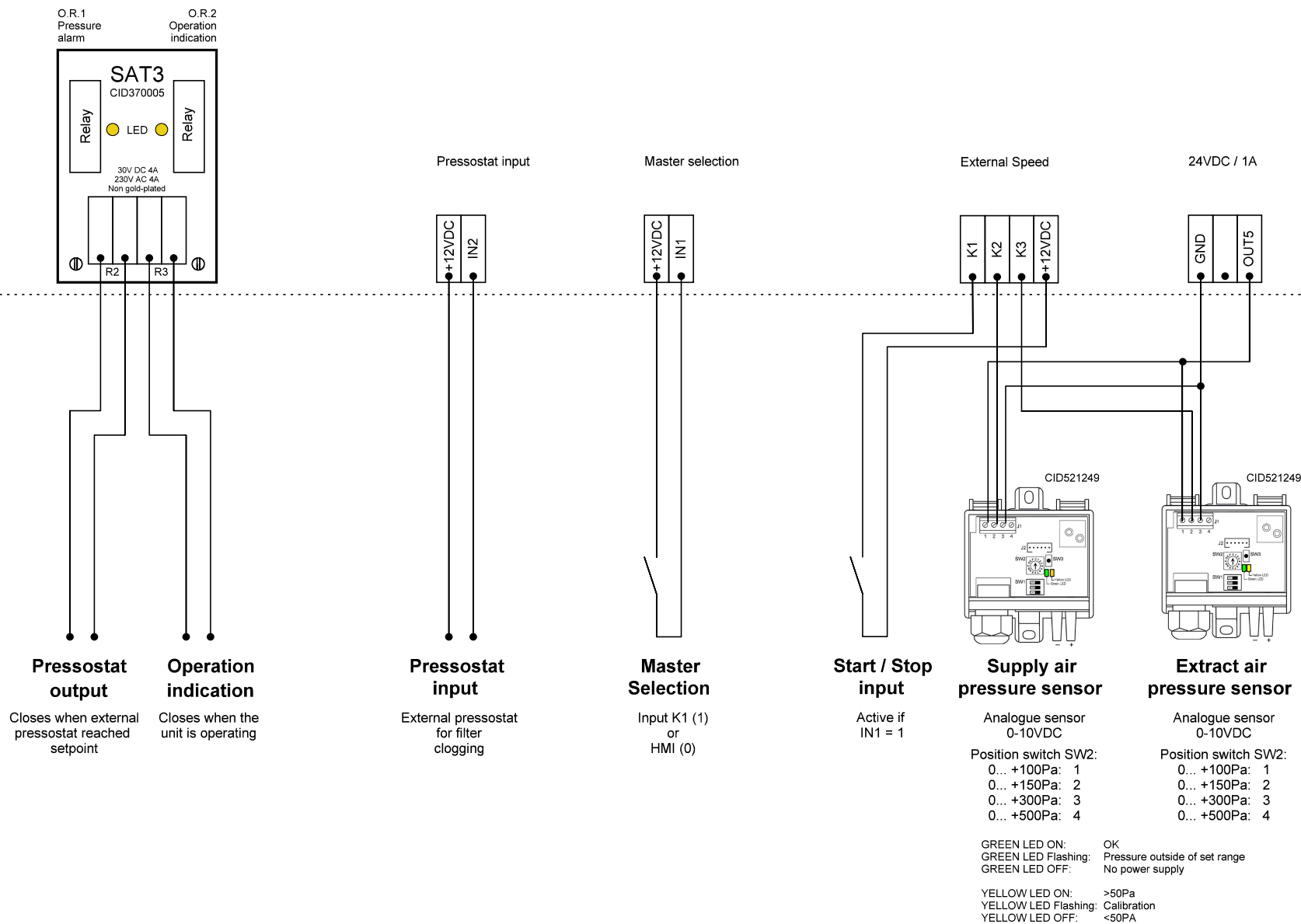
Changes

Changes		Name	Date	Configuration of function: Basic setup / Air flow regulation	Page
Name	Date	Draw.: Beckers	20.09.2018		8
		check.:			
		Norm:		Application: Constant pressure Modbus	of 27
Subject:	GLOBAL_Wiring TAC5.sp17				

TAC5 Controller



300mA B-Type
Residual current
circuit breaker



Changes

Changes		Name	Date	Configuration of function: Basic setup / Air flow regulation	Page
Name	Date	Draw.: Beckers	20.09.2018		9
		check.:			
		Norm:			
Subject:	GLOBAL_Wiring TAC5.spl7			Application: Constant pressure 0-10V	of 27

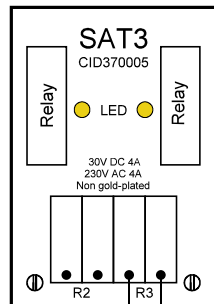
TAC5 Controller



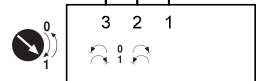
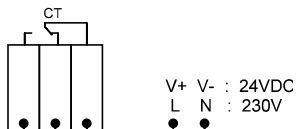
300mA B-Type Residual current circuit breaker

Power supply

O.R.1 Pressure alarm
O.R.2 Operation indication

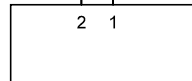
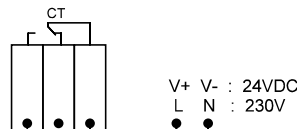


Damper control
LED



230VAC / 24VDC
3-point

Damper control
LED



230VAC / 24VDC
Spring return



24VDC output
1A Max.



230VAC output

Operation indication
Closes when fans are running

Changes

Name	Date	Draw.:	Name	Date
		check.:	Beckers	20.09.2018
		Norm:		
Subject:	GLOBAL_Wiring TAC5.sp17			

Configuration of function:

Basic setup

Application:
Motorised damper

Page

11

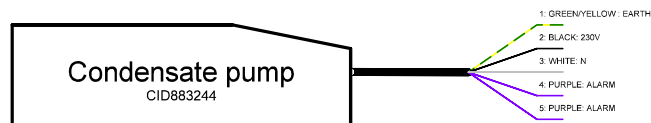
of

27

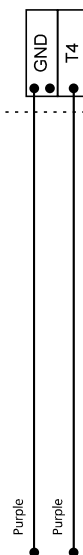
TAC5 Controller



300mA B-Type
Residual current
circuit breaker

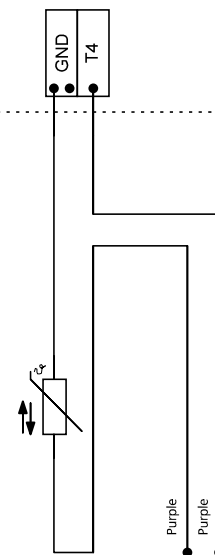


The condensate pump contains an internal sensor that will automatically start the pump when the water level rises above approx. 15 mm and stop the pump when the water level has fallen to approx. 5 mm. The condensate pump is also fitted with a high water level alarm that will operate the alarm relay if the water level rises above approx. 25 mm. The pump will continue to run until the minimum water level is reached and the alarm will reset.



**Condens pump
Alarm input**

Only if condensate pump is combined with integrated heating coil.



**Frost Condensate pump
sensor Alarm input**

Internal
Heating coil
(Surface
mounted)

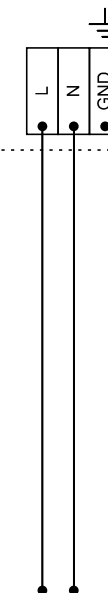
Remote alarm reset



**Remote
Alarm reset**

Push button N.O.
Momentary Switch

Power supply



**230VAC
output**

Changes

Changes		Name	Date	Page
Name	Date	Draw.: Beckers	20.09.2018	12
		check.:		
		Norm:		
Subject:	GLOBAL_Wiring TAC5.sp17			of 27
Application: Condense pump (LP)				

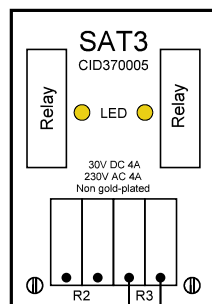
TAC5 Controller



300mA B-Type
Residual current
circuit breaker

O.R.1
Pressure
alarm

O.R.2
Operation
indication



Operation indication

Closes when fans are running



Extract air function

Forces extract air "on" when fire alarm

Supply air function

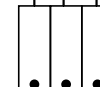
Forces supply air "on" when fire alarm

External fire alarm

N.O.
Configurable in advanced setup

Group alarm

LED
AL1



Group alarm output

Closes when fire alarm

Remote alarm reset



Remote Alarm reset

1= Reset

Push button N.O.
Momentary Switch
<1sec.

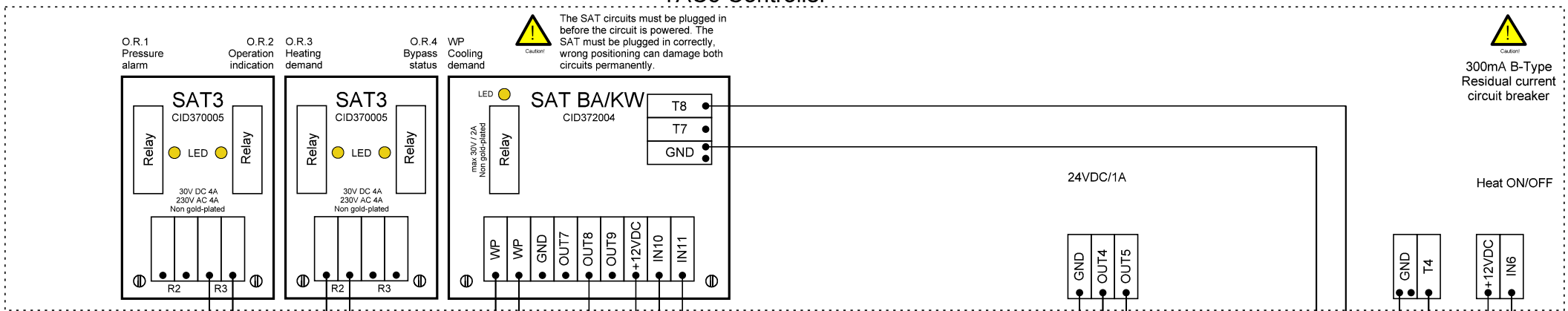


Use gold-plated contacts only

Changes

Changes		Name	Date	Configuration of function: Basic setup/Fire alarm	Page
Name	Date	Draw.: Beckers	20.09.2018		13
		check.:			
		Norm:		Application: Fire alarm	of 27
Subject:	GLOBAL_Wiring TAC5.spl7				

TAC5 Controller



Caution!
The SAT circuits must be plugged in before the circuit is powered. The SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.

Caution!
300mA B-Type Residual current circuit breaker

Operation Heating demand indication
Closes when the unit is operating

Cooling demand output
Closes on Heating load

Cooling output
Closes on Cooling load

Cooling Valve
External cooling coil
I_{max} OUT8=10mA
I_{max} OUT5=1A

Cooling input
Close to deactivate cooling
(Only for manual change over)

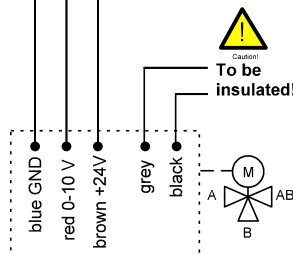
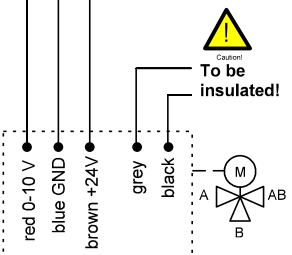
Heat/Cool selection
1=Cooling
0=Heating
(Only for manual change over)

Heating Valve
External heating coil
I_{max}=10mA

Frost sensor
External cooling coil (Surface mounted)
CID005318

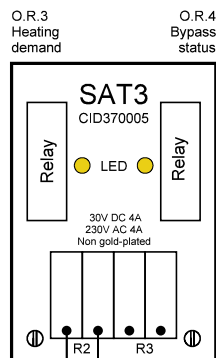
Frost sensor
Internal Heating coil (Surface mounted)
CID005318

Heating Input
OFF = 1
ON = 0



Changes		Name	Date	Configuration of function: Advanced setup / External coils & Internal coils	Page
Name	Date	Draw.: Beckers	22.01.2019		Application: Int. heating & Ext. cooling
		check.:		of	
Subject:	GLOBAL_Wiring TAC5.sp17			27	

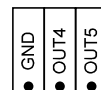
TAC5 Controller



300mA B-Type
Residual current
circuit breaker

Heat ON/OFF

24VDC/1A



Installed
on site.



**Heating demand
output**

Closes on
heating load

**Heating
Input**

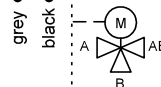
OFF = 1
ON = 0

**Heating
Valve**

External
heating coil
I_{max} OUT4=10mA
I_{max} OUT5=1A



To be
insulated!



**Frost
sensor**

Internal
Heating coil
(Surface
mounted)
CID005318

**Supply Air
temp. sensor**

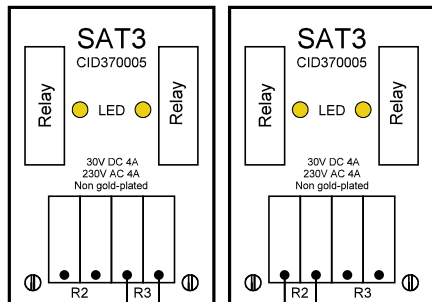
ca. 1,5m
after last coil
CID005317

Changes

Changes		Name	Date	Configuration of function: Advanced setup	Page
Name	Date	Draw.: Beckers	22.01.2019		15
		check.:			
		Norm:			
Subject:	GLOBAL_Wiring TAC5.sp17			Application: Int. heating coil	of 27

TAC5 Controller

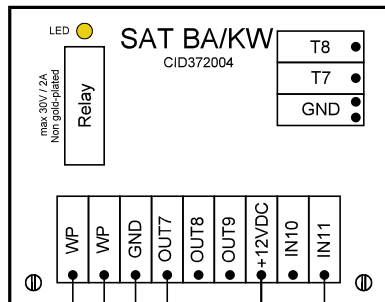
O.R.1 Pressure alarm
O.R.2 Operation indication
O.R.3 Heating demand
O.R.4 Bypass status



WP Cooling demand



The SAT circuits must be plugged in before the circuit is powered. The SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.



300mA B-Type Residual current circuit breaker

Operation Heating demand indication output

Closes when the unit is operating

Closes on heating load

As from software:
DT 2.8.14
DG 2.7.4

Heating demand output

Closes on heating load

Until software:
DT 2.8.8
DG 2.7.2

Elec. coil output

0-10VDC control signal to ext. electrical coil
Imax OUT7=10mA
Imax OUT5=1A

Heat/Cool selection

1=Cooling
0=Heating

(Not for auto mode)

Heat ON/OFF



Heating Input

OFF = 1
ON = 0



Installed on site.

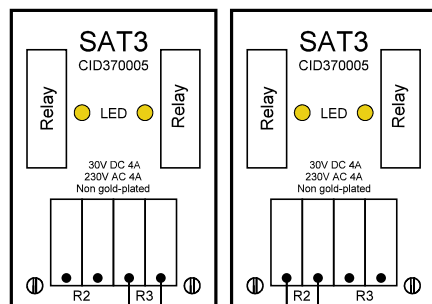
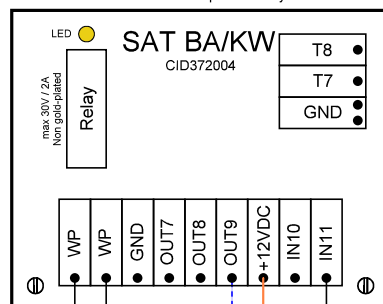


Supply Air temp. sensor

ca. 1,5m after last coil
CID005317

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Electric (0-10V)	Page
Name	Date	Draw.: Beckers	22.01.2019		16
		check.:			
		Norm:		Application: External elec. heating 0-10V	of 27
Subject:	GLOBAL_Wiring TAC5.spl7				

TAC5 Controller

O.R.1
Pressure
alarmO.R.2
Operation
indicationO.R.3
Heating
demandO.R.4
Bypass
status
**Operation Heating demand
indication output**
Closes when the
unit is operatingCloses on
heating loadAs from software:
DT 2.8.14
DG 2.7.4WP
Cooling
demandThe SAT circuits must be plugged in
before the circuit is powered. The
SAT must be plugged in correctly,
wrong positioning can damage both
circuits permanently.
**Heating demand
output**
Closes on
heating loadUntil software:
DT 2.8.8
DG 2.7.2
**Elec. coil
output**
PWM control
signal to
ext. electrical coil
"TBLE"
**Heat/Cool
selection**
1=Cooling
0=Heating

(Not for auto mode)

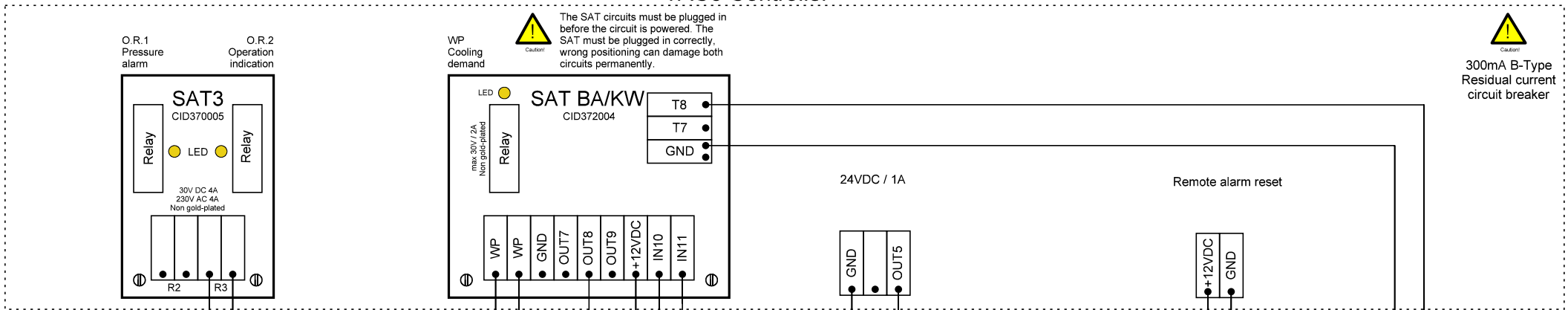
Heat ON/OFF


**Heating
Input**
OFF = 1
ON = 0300mA B-Type
Residual current
circuit breakerInstalled
on site.
**Supply Air
temp. sensor**
ca. 1,5m
after last coil
CID005317

Changes

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Electric (PWM)	Page
Name	Date	Draw.: Beckers	22.01.2019		17
		check.:			
		Norm:		Application: External elec. heating PWM	of 27
Subject:	GLOBAL_Wiring TAC5.sp17				

TAC5 Controller



The SAT circuits must be plugged in before the circuit is powered. The SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.



300mA B-Type Residual current circuit breaker

Operation indication

Closes when the unit is operating

Cooling demand output

Closes on cooling load

Cooling input

Close to deactivate cooling
(Only for manual change over)

Heat/Cool selection

1=Cooling
0=Heating
(Only for manual change over)

Cooling Valve

External cooling coil
I_{max} OUT8=10mA
I_{max} OUT5=1A



To be insulated!

Remote Alarm reset

1= Reset
Push button N.O. Momentary Switch <1sec.

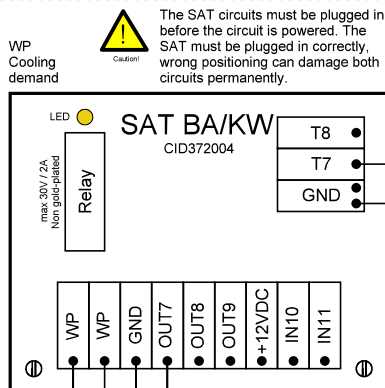
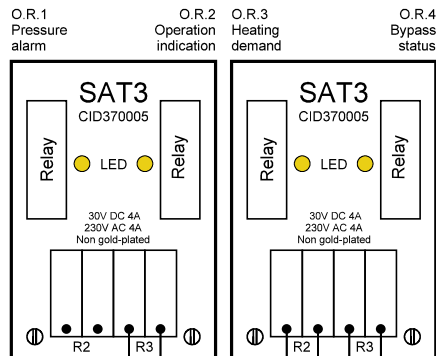
Frost sensor

External Cooling coil (Surface mounted)
CID005318



Use gold-plated contacts only

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Cooling	Page
Name	Date	Draw.: Beckers	22.01.2019		18
		check.:			
		Norm:			
Subject:	GLOBAL_Wiring TAC5.sp17			Application: External cooling coil	of 27



Caution!
300mA B-Type Residual current circuit breaker

Operation indication
Closes when the unit is operating

Heating demand output
Closes on heating load

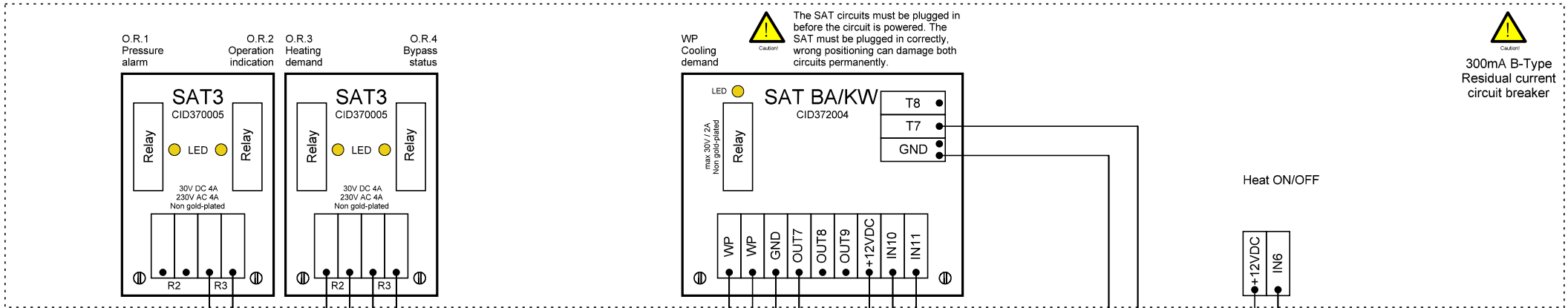
Freecooling output
Closes when bypass is 100% Open

Cooling demand output
Closes on cooling load

Capacity output
0-10VDC output for capacity control
Imax OUT7=10mA

Frost sensor
Sensor to be replaced with 10kOhm resistance if frost protection is not needed

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Reversible	Page
Name	Date	Draw.: Beckers	20.09.2018		19
		check.:			
		Norm.:		Application: Change over / Master	of
Subject:	GLOBAL_Wiring TAC5.sp17				27



Caution!
The SAT circuits must be plugged in before the circuit is powered. The SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.



Caution!
300mA B-Type Residual current circuit breaker

- Operation indication**
Closes when the unit is operating
- Heating demand output**
Closes on heating load
- Freecooling output**
Closes when bypass is 100% Open
- Cooling demand output**
Closes on cooling load
- Capacity output**
0-10VDC output for capacity control
Imax OUT7=10mA
- Cooling input**
Close to deactivate cooling
(Only if manual change over)
- Heat/Cool input**
1=Cooling
0=Heating
(Only if manual change over)
- Frost sensor**
Sensor to be replaced with 10kOhm resistance if frost protection is not needed
- Heating Input**
OFF = 1
ON = 0

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Reversible	Page
Name	Date	Draw.:	20.09.2018		20
		check.:			
		Norm:		Application: Change over / Slave	of 27
Subject:	GLOBAL_Wiring TAC5.sp17				

TAC5 Controller



The SAT circuits must be plugged in before the circuit is powered. The SAT must be plugged in correctly, wrong positioning can damage both circuits permanently.

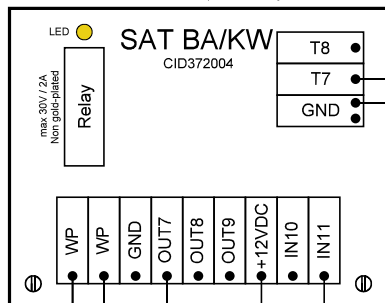
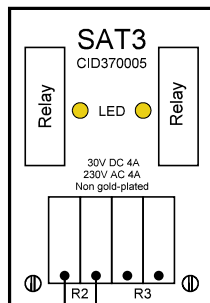


300mA B-Type Residual current circuit breaker

O.R.3 Heating demand

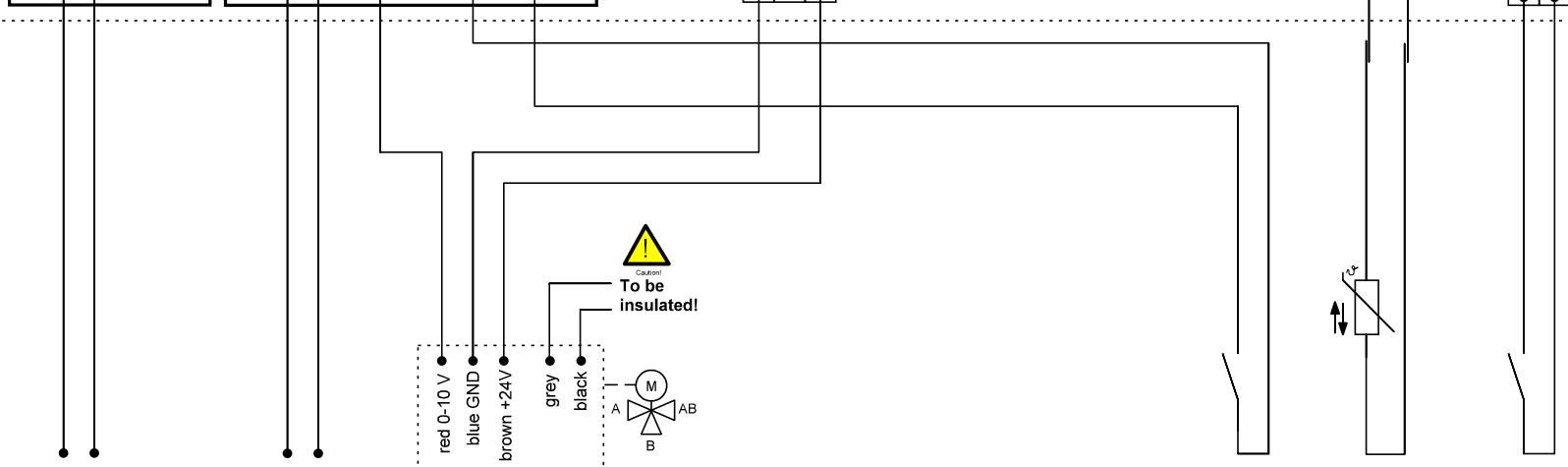
O.R.4 Bypass status

WP Cooling demand

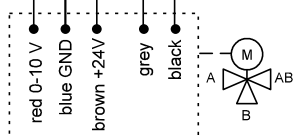


24VDC / 1A

Heat ON/OFF



To be insulated!



Heating demand output

Closes on heating load

As from software:
DT 2.9
DG 2.8

Heating demand output

Closes on heating load

Until software:
DT 2.8.8
DG 2.7.2

Heating Valve

External heating coil
Imax OUT7=10mA
Imax OUT5=1A

Heat/Cool selection

1=Cooling
0=Heating
(Only if manual change over)

Frost sensor

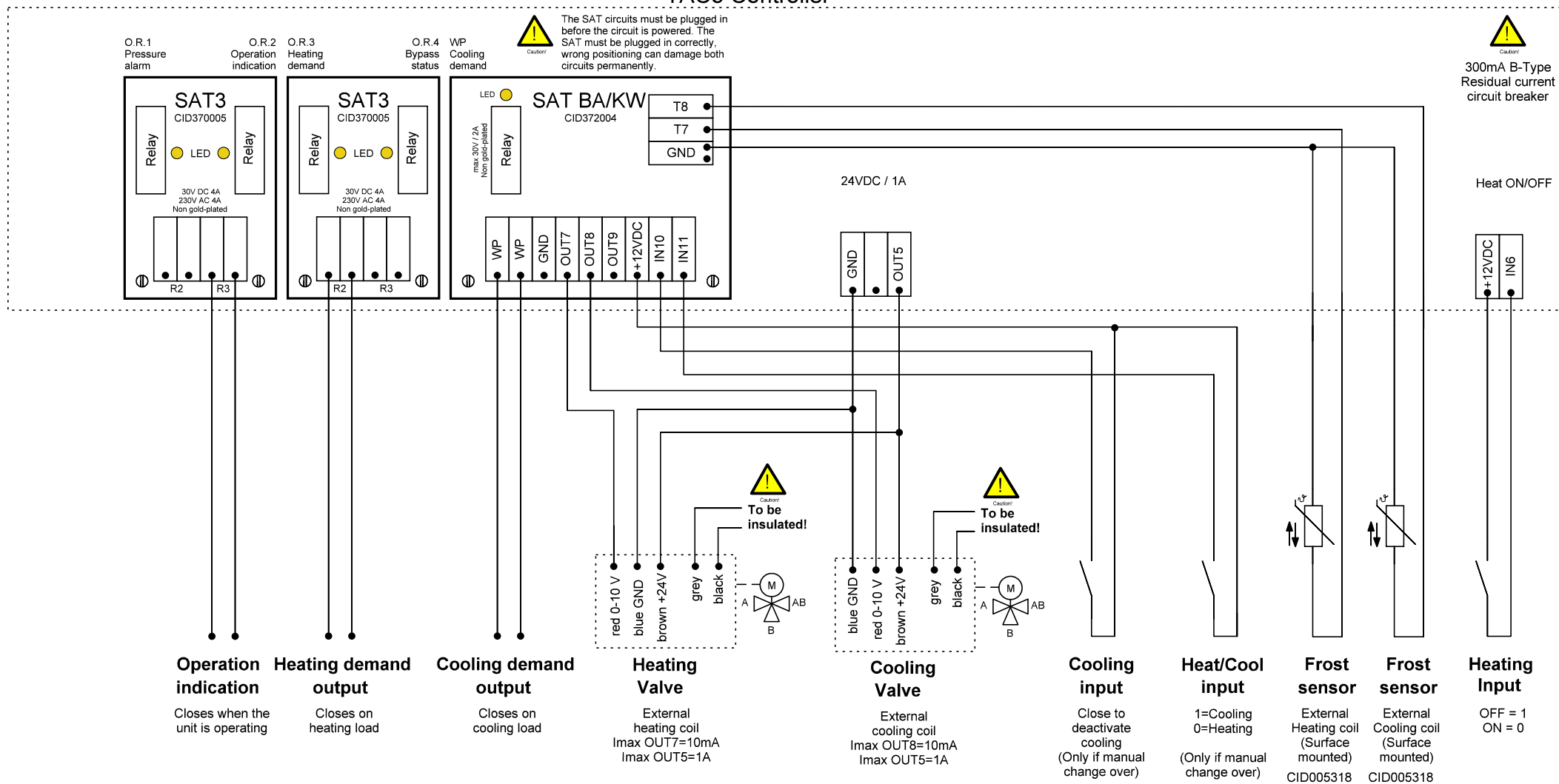
External Heating coil (Surface mounted)
CID005318

Heating input

OFF = 1
ON = 0

Changes		Name	Date	Configuration of function: Advanced setup / External coils / Hot water	Page
Name	Date	Draw.: Beckers	22.01.2019		21
		check.:			
		Norm:		Application: External heating coil	of 27
Subject:	GLOBAL_Wiring TAC5.sp17				

TAC5 Controller



Changes

Name

Date

Draw.:

Name

Beckers

Date

22.01.2019

check.:

Norm.:

Subject:

GLOBAL_Wiring TAC5.spl7

Configuration of function:

Advanced setup / External coils / Hot water + Cold water

Application:

Ext. heating & Ext. Cooling

Page

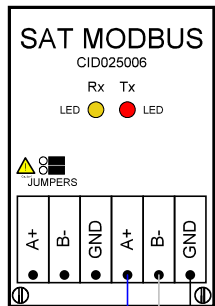
22

of

27

AHU1

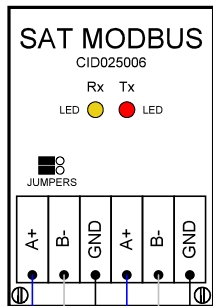
Caution! The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits.



Modbus RTU RS485

AHU2

Caution! The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits.

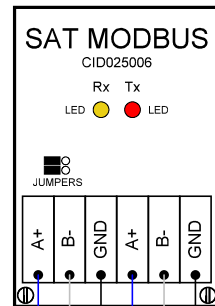


Modbus RTU RS485

Modbus RTU RS485

AHU3 ... AHU64

Caution! The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits.



Modbus RTU RS485

Modbus RTU RS485

To BMS


The cables used in the network must conform to RS-485 Standard with twisted pair conductors. The cables must be shielded. Conductor Area 0.26 mm² to 0.50mm². The total length must not exceed 1.000 meters.


Changes		Name	Date	Configuration of function: Advanced setup	Page
Name	Date	Draw.: Beckers	18.12.2018		
		check.:			
		Norm:		Application: Modbus RTU	of 27
Subject:	GLOBAL_Wiring TAC5.spl7				


AHU1

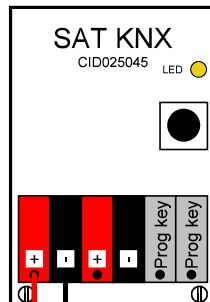
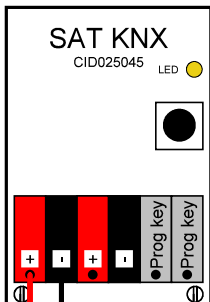
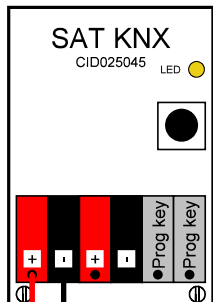
AHU2

AHU3...AHU64

 The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits.

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Changes		Name	Date	Configuration of function: Advanced setup	Page
Name	Date	Draw.: Beckers	31.03.2018		24
		check.:			
		Norm:		Application: KNX	of
Subject:	GLOBAL_Wiring TAC5.sp17				27

AHU1

AHU2

AHU3

AHU4

Power supply:
8...24VAC
12...35VDC



The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits .



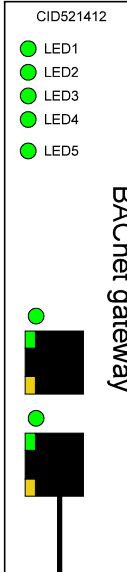
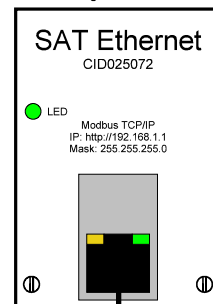
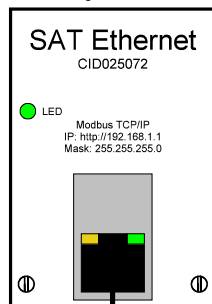
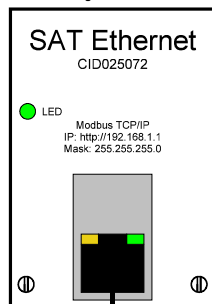
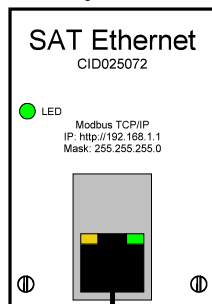
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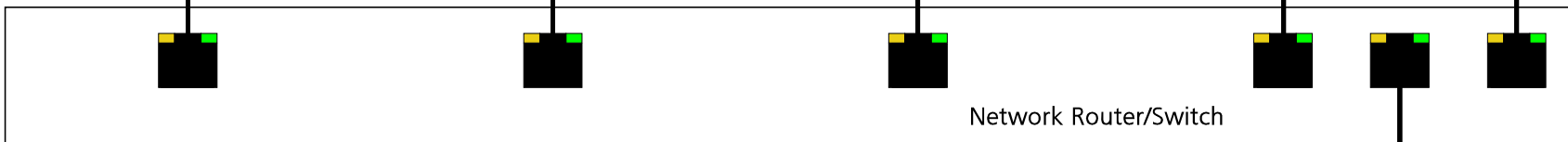


The SAT circuits must be plugged in correctly before the main circuit is powered. Wrong positioning can damage both circuits .



LED1: ON
LED2: BACnet communication
LED3: Device state
LED4: Modbus communication

LED5: Not used
LED6: Not used
LED7: Not used



BACnet To BMS

Changes		Name	Date	Configuration of function: Advanced setup	Page
Name	Date	Draw.: Beckers	20.04.2018		25
		check.:			
		Norm:		Application: BACnet	of
Subject:	GLOBAL_Wiring TAC5.sp17				27

AHU1

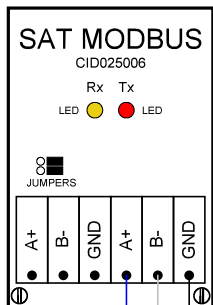
AHU2

AHU3

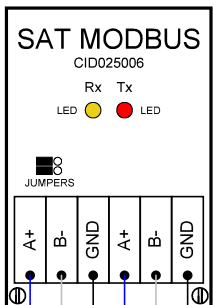
AHU4



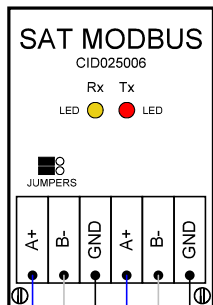
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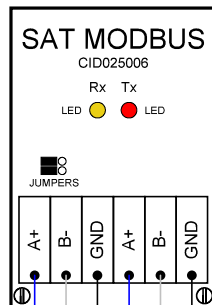
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Modbus RTU RS485

Modbus RTU RS485

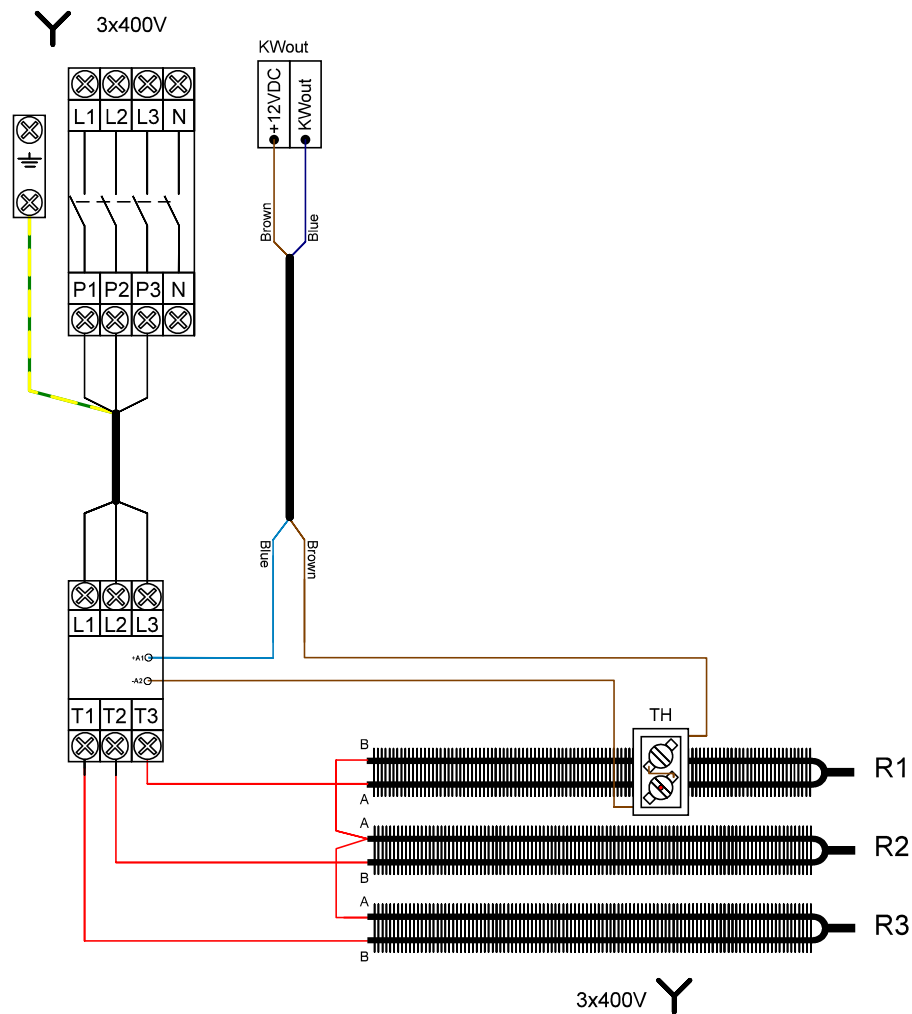
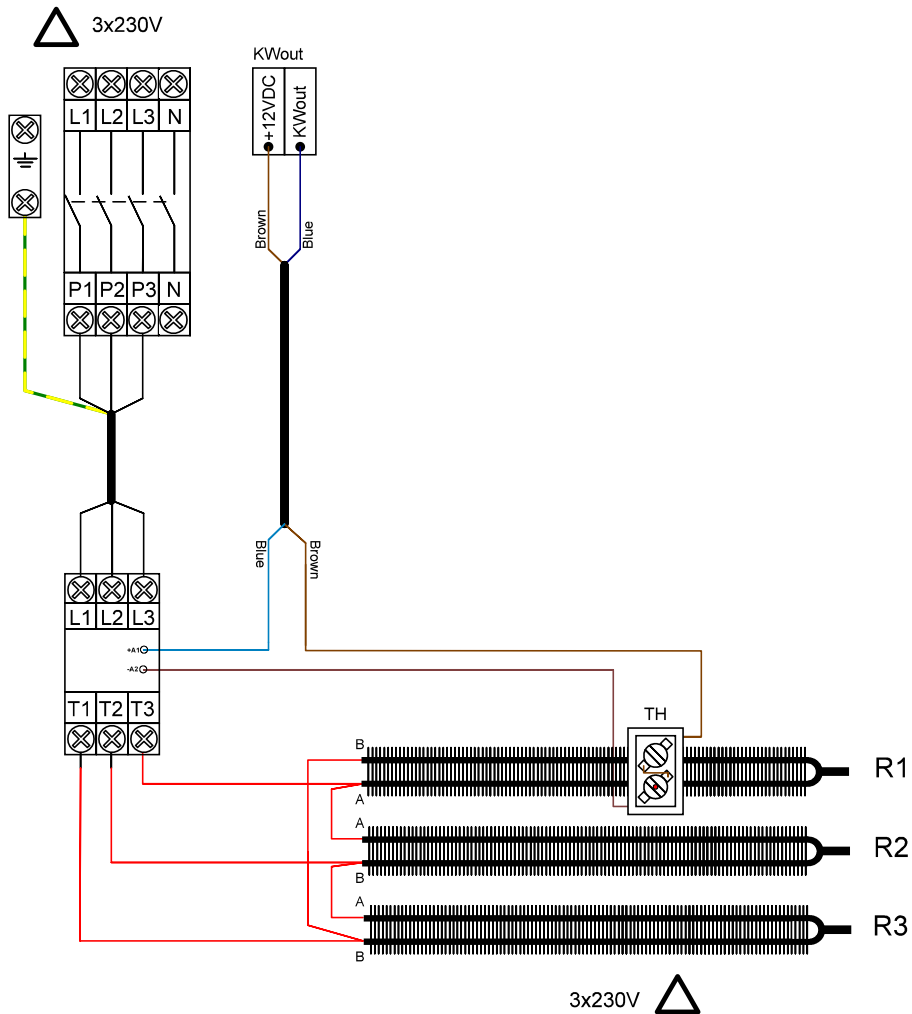
Modbus RTU RS485

Modbus RTU RS485



TACtouch

Changes		Name	Date	Configuration of function: Advanced setup	Page
Name	Date	Draw.: Beckers	18.12.2018		26
		check.:			
		Norm:		Application: TAtouch centralised	of
Subject:	GLOBAL_Wiring TAC5.spl7				27



Attention: only possible to change 3x230V into 3x400V. Due to cable sections and selected components, changing from 3x400V to 3x230V is not allowed on site.

Changes		Name	Date	Configuration of function: N.A.	Page
Name	Date	Draw.: Beckers	08.03.2019		27
		check.:			
Subject:	GLOBAL_Wiring TAC5.sp17	Norm:		Application: KWout 3x230V - 3x400V	of 27