Corrigo ventilation communication guide

Contains the most commonly used variables. From version 3.3.

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TRADEMARKS

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Chapter 1 **Introduction**

Corrigo ventilation

Corrigo ventilation is a pre-programmed application for control of an air handling unit. The Corrigo controller can either be used stand-alone or integrated in an existing EXO project, in both cases it is configured via the display or using the configuration tool E tool© on a PC.

About this manual

This document provides an introduction to communication via Modbus, BACnet and EXOline and contains a list of commonly used signals. This list is found in chapter 3.

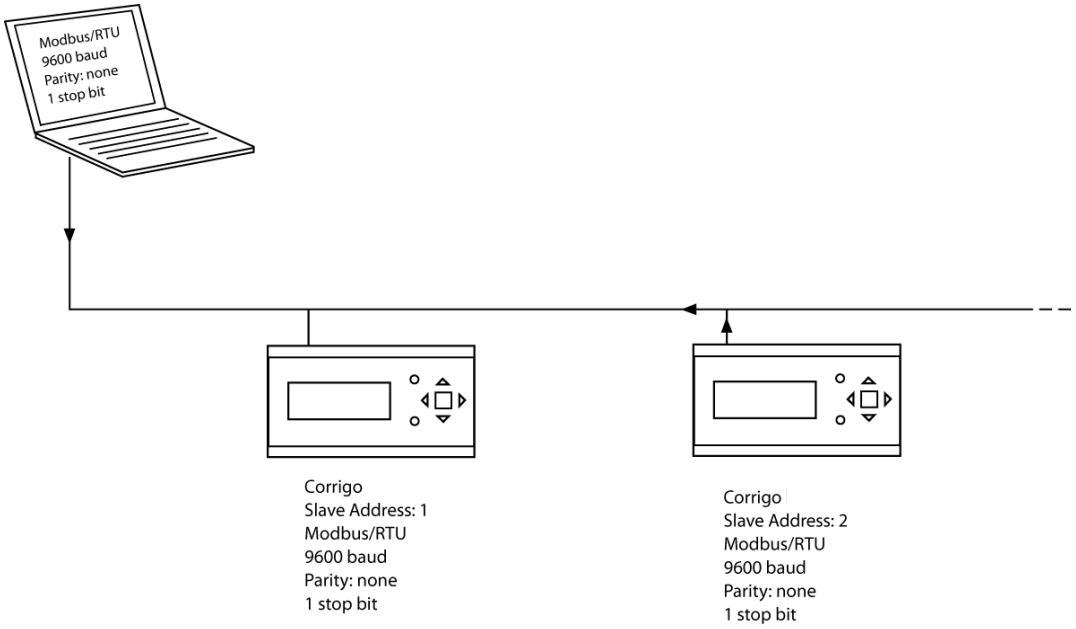
A complete list of all signals accessible via Modbus, BACnet and the EXOline protocol is found in the document *Corrigo Ventilation variables* (accessible via the help menu in E tool©).

This document does not describe how to create an EXO project or how to set up EXOline communication. For these matters, please refer to the EXO System and E tool© manuals.

Signals

All signals described in this document are accessible from a SCADA/Modbus master system. The signals that have a default value are settings that can be changed; the signals without default values are actual values and cannot be changed.

Chapter 2 **Signal types and functions**



Signal types

All signals accessible from a SCADA system are described further in this document. Signals with a default value are settings that can be changed via a SCADA system. Signals without a default value are actual values which cannot be changed using a SCADA system.

EXOL type

The EXOL type of signals:

R = Real (-3.3E38 - 3.3E38)

I = Integer (-32768 - 32767)

X = Index (0 - 255)

L = Logic (0/1)

Modbus type

The Modbus type of signals:

1 = Coil Status Register (Modbus function = 1, 5 and 15)

2 = Input Status Register (Modbus function = 2)

3 = Holding Register (Modbus function = 3, 6 and 16)

4 = Input Register (Modbus function = 4)

Supported Modbus functions:

1 = Read Coils

2 = Read Discrete Input

3 = Read Holding Register

4 = Read Input Register

5 = Write Single Coil

6 = Write Single Register

15 = Write Multiple Coils

16 = Write Multiple Registers

BACnet type

The BACnet type of signals:

10XXX = Read and write binary

20XXX = Read binary

30XXX = Read and write analogue

40XXX = Read analogue

30XXX = Read and write multistate

40XXX = Read multistate

(Where XXX = Modbus address)

Chapter 3 **Commonly used signals**

To simplify system integration, a register of commonly used signals is provided below. Please refer to the document *Corrigo ventilation variables for EXOline, Modbus and BACnet* for a complete list.

3.1 Input Status

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentActual.Cor_ ExtendedRunActiveFull	L	8	BV, 20008		Actual/Setpoint	Set if extended operation full speed
VentActual.Cor_ ExtendedRunActiveHalf	L	9	BV, 20009		Actual/Setpoint	Set if extended operation half speed
VentActual.Cor_ AlaPt(1) … VentActual.Cor_ AlaPt(48)	L	33 … 80	BV, 20033 … BV, 20080		Alarm Points	Run Error Supply Air Fan 0=No alarm 1=Alarm … Internal battery error
VentActual.Cor_ AlaPt(49) … VentActual.Cor_ AlaPt(100)	L	90 … 141	BV, 20090 … BV, 20141		Alarm Points	Sensor error Supply Air temp … Low temp Extra sensor 5

3.2 Holding Register – Setpoint settings

Holding register values are adjustable (read/write).

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentSettings.Cor_ SupplySetpoint	R	1	AV, 30001	18°C	Supply, Extract and Room temperatures	Setpoint supply air temperature when constant supply air temperature function
VentSettings.Cor_ ExhaustSetpoint	R	18	AV, 30018	21°C	Supply, Extract and Room temperatures	Setpoint extract air temp if extract air temp control function

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentSettings.Cor_RoomSetP	R	19	AV, 30019	21°C	Supply, Extract and Room temperatures	Room setpoint if room temp control function
VentSettings.Cor_SAFFullspeedPressure	R	24	AV, 30024	500 Pa	SAF/EAF Pressure and Flow	Setpoint full speed supply air fan pressure
VentSettings.Cor_SAFHalfspeedPressure	R	25	AV, 30025	250 Pa	SAF/EAF Pressure and Flow	Setpoint reduced speed supply air fan pressure
VentSettings.Cor_EAFFullspeedPressure	R	26	AV, 30026	500 Pa	SAF/EAF Pressure and Flow	Setpoint full speed extract air fan pressure
VentSettings.Cor_EAFHalfspeedPressure	R	27	AV, 30027	250 Pa	SAF/EAF Pressure and Flow	Setpoint reduced speed extract air fan pressure
VentSettings.Cor_SAFFullspeedAirFlow	R	28	AV, 30028	2000 m3/h	SAF/EAF Pressure and Flow	Setpoint full speed supply air fan flow. Scale factor = 1
VentSettings.Cor_SAFHalfspeedAirFlow	R	29	AV, 30029	1000 m3/h	SAF/EAF Pressure and Flow	Setpoint reduced speed supply air fan flow. Scale factor = 1
VentSettings.Cor_EAFFullspeedAirFlow	R	30	AV, 30030	2000 m3/h	SAF/EAF Pressure and Flow	Setpoint full speed extract air fan flow. Scale factor = 1
VentSettings.Cor_EAFHalfspeedAirFlow	R	31	AV, 30031	1000 m3/h	SAF/EAF Pressure and Flow	Setpoint reduced speed extract air fan flow. Scale factor = 1
VentActual.Cor_Outdoor temp(0)	R	392	AV, 30392		Actual/Setpoint	Outdoor temperature (Can be modified if it's not connected to a physical analogue input).
VentSettings.Cor_SupplySetpointMax	R	404	AV, 30404	30°C	Supply, Extract and Room temperatures	Max limit of supply setpoint when cascade control
VentSettings.Cor_SupplySetpointMin	R	405	AV, 30405	12°C	Supply, Extract and Room temperatures	Min limit of supply setpoint when cascade control
VentSettings.Cor_DemandCO2Value1	R	465	AV, 30465	800	CO2	Activation of demand-controlled ventilation, 1/2-speed
VentSettings.Cor_DemandCO2Value2	R	466	AV, 30466	1000	CO2	Activation of demand-controlled ventilation, 1/1-speed
VentSettings.Cor_DemandCO2Diff	R	467	AV, 30467	160	CO2	Hysteresis for stop of demand controlled ventilation (ppm)

3.3 Holding Register – Manual / Auto settings

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentSettings.Cor_AirUnitAutoMode	X	368	MSV, 30368	3	Manual/Auto	Running mode air unit: Modbus: 0=Manual off 1=Manual reduced speed 2=Manual normal speed 3=Auto BACnet: 1=Manual off 2=Manual reduced speed 3=Manual normal speed 4=Auto
VentSettings.Cor_SupplyPID_Select	X	369	-	2	Manual/Auto	Supply temp controller mode: 0=Manual off 1=Manual on 2=Auto
VentSettings.Cor_SupplyPID_ManSet	R	370	-	0 %	Manual/Auto	Supply temp controller output if manual on mode
VentSettings.Cor_SAFAutoMode(0)	X	371	-	3	Manual/Auto	Running mode SAF: 0=Off 1=Manual half speed 2=Manual full speed 3=Auto
VentSettings.Cor_EAFAutoMode	X	372	-	3	Manual/Auto	Running mode EAF: 0=Off 1=Manual half speed 2=Manual full speed 3=Auto
VentSettings.Cor_SAFFrequenceAutoMode	X	373	-	3	Manual/Auto	Running mode frequence controlled SAF 0=Manual 1=Man. half speed 2=Man. Fullspeed 3=Auto
VentSettings.Cor_SAFManual	R	374	-	0 %	Manual/Auto	Freguencer controller output SAF if manual mode
VentSettings.Cor_EAFFrequenceAutoMode	X	375	-	3	Manual/Auto	Running mode frequence controlled EAF 0=Manual 1=Man. half speed 2=Man. Fullspeed 3=Auto
VentSettings.Cor_EAFManual	R	376	-	0 %	Manual/Auto	Freguencer controller output EAF if manual mode

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentSettings.Cor_HeatCoilAutoMode(0)	X	377	-	2	Manual/Auto	Running mode Heating: 0=Off 1=Manual 2=Auto
VentSettings.Cor_HeatCoilManual(0)	R	378	-	0	Manual/Auto	Heating controller output if manual mode
VentSettings.Cor_ExchCoilAutoMode	X	379	-	2	Manual/Auto	Running mode Exchanger: 0=Off 1=Manual 2=Auto
VentSettings.Cor_ExchCoilManual	R	380	-	0	Manual/Auto	Exchanger controller output if manual mode
VentSettings.Cor_CoolCoilAutoMode	X	381	-	2	Manual/Auto	Running mode Cooling: 0=Off 1=Manual 2=Auto
VentSettings.Cor_CoolCoilManual	R	382	-	0	Manual/Auto	Cooling controller output if manual mode
VentSettings.Cor_HumidityPID_Select	X	383	-	2	Manual/Auto	Running mode Humidification/Dehumidification: 0=Off 1=Manual 2=Auto
VentSettings.Cor_HumidityPID_ManSet	R	384	-	0	Manual/Auto	Humidification/Dehumidification controller output if manual mode
VentSettings.Cor_HeatPumpAutoMode(0)	X	385	-	2	Manual/Auto	Running mode P1-Heating: 0=Manual off 1=Manual on 2=Auto
VentSettings.Cor_ExchPumpAutoMode	X	386	-	2	Manual/Auto	Running mode P1-Exchanger: 0=Manual off 1=Manual on 2=Auto
VentSettings.Cor_CoolPumpAutoMode	X	387	-	2	Manual/Auto	Running mode P1-Cooling: 0=Manual off 1=Manual on 2=Auto
VentSettings.Cor_FireDamperAutoMode	X	388	-	2	Manual/Auto	Running mode fire damper: 0=Close 1=Open 2=Auto

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentSettings.Cor_ExternalControl	X	451	MSV, 30451	2	Manual/Auto	External control: Modbus: 0=Extended run full speed 1=External stop 2=No external control 3=External stop with support control BACnet: 1=Extended run full speed 2=External stop 3=No external control 4=External stop with support control

3.4 Input Registers

Input register values are read-only.

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentActual.Cor_Outdoor temp(0)	R	1	AV, 40001		Actual/Setpoint	Outdoor temperature (read-only)
VentActual.Cor_Efficiency	R	2	AV, 40002		Actual/Setpoint	Efficiency in % for exchanger

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentActual.Cor_RunMode	X	3	MSV, 40003		Actual/Setpoint	Modbus: 0=Stopped 1=Starting up 2=Starting reduced speed 3=Starting full speed 4=Starting normal run 5=Normal run 6=Support control heating 7=Support control cooling 8=CO2 run 9=Night cooling 10=Full speed stop 11=Stopping fan BACnet: 1=Stopped 2=Starting up 3=Starting reduced speed 4=Starting full speed 5=Starting normal run 6=Normal run 7=Support control heating 8=Support control cooling 9=CO2 run 10=Night cooling 11=Full speed stop 12=Stopping fan
VentActual.Cor_SupplyAirTemp	R	7	AV, 40007		Supply, Extract and Room temperatures	Supply air temperature
VentActual.Cor_ExtractAirTemp	R	9	AV, 40009		Supply, Extract and Room temperatures	Extract air temp
VentActual.Cor_RoomTemp1	R	10	AV, 40010		Supply, Extract and Room temperatures	Room temperature 1
VentActual.Cor_RoomTemp2	R	11	AV, 40011		Supply, Extract and Room temperatures	Room temperature 2
VentActual.Cor_SAFPressure	R	13	AV, 40013		SAF/EAF Pressure and Flow	Supply air fan pressure (Pa)
VentActual.Cor_EAFPressure	R	14	AV, 40014		SAF/EAF Pressure and Flow	Extract air fan pressure (Pa)
VentActual.Cor_SAFAirFlow	R	15	AV, 40015		SAF/EAF Pressure and Flow	Supply air fan flow (m3/h). Scale factor = 1
VentActual.Cor_EAFAirFlow	R	16	AV, 40016		SAF/EAF Pressure and Flow	Extract air fan flow (m3/h). Scale factor = 1

Signal name	EXOL type	Modbus address	BACnet	Default value	Function	Description
VentActual.Cor_CO2Sensor	R	17	AV, 40017		CO2	CO2 (ppm)
VentActual.Cor_FrostprotectionTemp	R	19	AV, 40019		Frost protection	Frost protection temp
VentActual.Cor_DeIcingTemp	R	21	AV, 40021		Extract air temp/De-icing exchanger	De-icing temp exchanger
VentActual.Cor_HumidityRoom	R	23	AV, 40023		Humidity	Humidity room
VentActual.Cor_ExtraSensor	R	25	AV, 40025		Additional sensor/ External setpoint	Extra sensor 1/External setpoint (depending on configuration)
VentActual.Cor_HeatCV1(0)	R	119	AV, 40119		Analogue outputs	Control signal heating Y1 (0...10 V)
VentActual.Cor_ExchCV1	R	120	AV, 40120		Analogue outputs	Control signal exchanger Y2 (0...10 V)
VentActual.Cor_CoolCV1	R	121	AV, 40121		Analogue outputs	Control signal cooler Y3 (0...10 V)
VentActual.Cor_SAF	R	122	AV, 40122		SAF/EAF Pressure and Flow	Control signal supply air fan (0...10 V)
VentActual.Cor_EAF	R	123	AV, 40123		SAF/EAF Pressure and Flow	Control signal extract air fan (0...10 V)
VentActual.Cor_UnitRunMode	X	284	MSV, 40284		Actual/Setpoint	Unit run mode: Modbus: 0=Off 1=Reduced speed 2=Normal speed 3=Stop because of alarm BACnet: 1=Off 2=Reduced speed 3=Normal speed 4=Stop because of alarm
VentActual.Cor_FilterGuard1AI	R	301	AV, 40301		Actual/Setpoint	Analogue filter 1 value (Pa)
VentActual.Cor_FilterGuard2AI	R	302	AV, 40302		Actual/Setpoint	Analogue filter 2 value (Pa)

Appendix **Alarm list**

No.	Alarm text	Prio	Description
1	Run Error Supply Air Fan	B	Malfunction Supply air fan
2	Run Error Extract Air Fan	B	Malfunction Extract air fan
3	Run Error P1-Heater	B	Malfunction pump, Heating circuit
4	Run Error P1-Cooler	B	Malfunction pump, Cooling circuit
5	Run Error P1-Exchanger	B	Malfunction pump, Liquid connected exchanger
6	Filter guard	B	Filter guard pressure switch activated
7	Flow guard	B	Flow guard activated
8	External frost guard	A	External Frost protection thermostat activated
9	Deicing pressure guard	-	Exchanger de-icing pressure switch activated
10	Fire alarm	A	Fire alarm activated
11	External switch	C	External switch activated
12	External alarm	B	External alarm activated
13	Supply Air control error	B	Supply air temp deviates too much from the setpoint for too long
14	Humidity control error	-	The room humidity deviates too much from the setpoint.
15	High supply air temp	B	Supply air temp too high
16	Low supply air temp	B	Supply air temp too low
17	Supply air temp max	-	Maximum limiting of supply air temp active
18	Supply air temp min	-	Minimum limiting of supply air temp active
19	High room temp	B	Room temp too high during room temp control
20	Low room temp	B	Room temp too low during room temp control
21	High extract air temp	B	High extract air temp during extract air control
22	Low extract air temp	B	Low extract air temp during extract air control
23	Electric heating is overheated	A	Heater high temperature limit switch activated
24	Frost risk	B	Frost protection function is overriding the control of the heater output
25	Low frostguard temp	A	Frost protection temperature below frost limit value
26	Low efficiency	B	Heat exchanger efficiency below limit value
27	Sensor error Outdoor temp	B	Malfunction of connected sensor
28	Analogue deicing	-	Exchanger de-icing activated by de-icing sensor
29	Rotation guard exchanger	B	Exchanger rotation sentinel alarm activated
30	Fire damper is out of operation	B	Fire damper exercise test failed
31	Supply Air Fan control error	-	Supply air pressure deviates too much from the setpoint for too long
32	Extract Air Fan control error	-	Extract air pressure deviates too much from the setpoint for too long
33	Supply Air Fan external operation	C	SAF run-signal received when unit is stopped
34	Extract Air Fan external operation	C	EAF run-signal received when unit is stopped
35	Ventilation Manual mode	C	The unit is shut down
36	Manual supply air control	C	Supply air temp controller in manual control
37	Manual supply Air Fan mode	C	Supply air fan in manual control
38	Freq. SAF Manual	C	Signal to SAF frequency converter in manual control

No.	Alarm text	Prio	Description
39	Manual Extract Air Fan mode	C	Extract air fan in manual control
40	Freq. EAF Manual	C	Signal to SAF frequency converter in manual control
41	Heating Manual Manual	C	Heating output in manual control
42	Manual exchanger control	C	Heat exchanger output in manual control
43	Manual cooler control	C	Cooling output in manual control
44	Manual P1-Heater	C	Heating circulation pump in manual control
45	Manual P1-Exchanger	C	Exchanger circulation pump in manual control
46	Manual P1-Cooler	C	Cooling circulation pump in manual control
47	Fire damp. Manual	C	Fire dampers in manual control
48	Internal battery error	A	Internal battery needs replacing
49	Sensor error Supply Air temp	B	Malfunction of connected sensor
50	Sensor error Extract Air temp	B	Malfunction of connected sensor
51	Sensor error Room temp 1	B	Malfunction of connected sensor
52	Sensor error Room temp 2	B	Malfunction of connected sensor
53	Sensor error Exhaust air temp	B	Malfunction of connected sensor
54	Sensor error Extra sensor	B	Malfunction of connected sensor
55	Sensor error SAF pressure	B	Malfunction of connected sensor
56	Sensor error EAF pressure	B	Malfunction of connected sensor
57	Sensor error Deicing temp	B	Malfunction of connected sensor
58	Sensor error Frost Protection temp	B	Malfunction of connected sensor
59	Sensor error CO2	B	Malfunction of connected sensor
60	Sensor error Humidity Room	B	Malfunction of connected sensor
61	Sensor error Humidity Duct	B	Malfunction of connected sensor
62	Sensor error Extra unit temp	B	Malfunction of connected sensor
63	Sensor error External control SAF	B	Malfunction of connected sensor
64	Sensor error External control EAF	B	Malfunction of connected sensor
65	Sensor error SAF Pressure 2	B	Malfunction of connected sensor
66	Sensor error Humidity outdoor	B	Malfunction of connected sensor
77	Alarm Frequency converter SAF	A	Malfunction of frequency converter SAF
78	Alarm Frequency converter EAF	A	Malfunction of frequency converter EAF
79	Communication error Frequency SAF	C	Communication problem with Vacon NXL
80	Communication error Frequency EAF	C	Communication problem with Vacon NXL
81	Communication error Expansion unit 1	C	Communication problem with a controller connected to port 2
82	Communication error Expansion unit 2	C	Communication problem with a controller connected to port 2
83	Warning Frequency converter SAF	C	
84	Warning Frequency converter EAF	C	
85	Output in manual mode	C	Analogue or digital output in manual mode
86	Time for service	C	Time for service
87	Manual Y4-Extra Sequence control	C	Y4-Extra sequence in manual control
88	Restart blocked after power failure	C	Restart blocked after power failure
89	Manual Y5-Extra Sequence control	C	Y5-Extra sequence in manual control
90	Filter guard 2	B	Filter guard pressure switch activated
91	High temp Extra sensor 1	-	High temperature Extra sensor 1
92	Low temp Extra sensor 1	-	Low temperature Extra sensor 1

No.	Alarm text	Prio	Description
93	High temp Extra sensor 2	-	High temperature Extra sensor 2
94	Low temp Extra sensor 2	-	Low temperature Extra sensor 2
95	High temp Extra sensor 3	-	High temperature Extra sensor 3
96	Low temp Extra sensor 3	-	Low temperature Extra sensor 3
97	High temp Extra sensor 4	-	High temperature Extra sensor 4
98	Low temp Extra sensor 4	-	Low temperature Extra sensor 4
99	High temp Extra sensor 5	-	High temperature Extra sensor 5
100	Low temp Extra sensor 5	-	Low temperature Extra sensor 5

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