Technical Description
SIGMA CONTROL

Process Map   V82.20

GL-No.:   7_7000_PADP_04E

Status: 11.12.2008

Information

1. The data required for planning a Profibus project are in the equipment specification file "Siem8059.gsd".

2. The Sigma Control is a Profibus DPV1 slave with 64 bytes of input data and 128 bytes of output data. Depending on the number of Sigma Control units used the Profibus DP master must have a correspondingly large enough address space.

3. Project planning with the COM - Profibus (Siemens) parameterising software:
   Connect Sigma Control as a slave as follows:
    Inputs: can only be set up with FBs
    Outputs: can be set up either linearly, with tiles or with FBs
   Important: FB - do not not enter an output address in the "Configuration IMC 01S" menu option.

4. Sigma Control can monitor the master program.
   This takes place with the two "Message Header" and "Message Footer" DWs that have to be returned unchanged from master.

   Example sequence for Profibus Master in Step 5:   Comment

A DB (receive box master)	Message header
L DW 47	
A DB (transmit box master)	
T DW 19	
A DB (receive box master)	Message footer
L DW 63	
A DB (transmit box master)	
T DW 31	

   Monitoring can be activated in *"Communication\L2DP-Bus\Bus timeout fault"* by entering a time >0.0sec.

   If monitoring is not required the above sequence is not used.

4. SW05x -> SW06x change: SW05x   SW06x

	SW05x	SW06x
Receive box	DW0 Bit 3	DW1 Bit 3
	DW0 Bit 4	DW1 Bit 4

5. Further information on signal use can be obtained from Kaeser Service Support Engineering, phone +49 9561 640-261 or -253

1. Master Controller << == Compressor

DW	Description		Unit	min	max	Format
0	Alarm 16-1	Table 1.1	binary			KM
1	Alarm 32-17	Table 1.1	binary			KM
2	Alarm 48-33	Table 1.1	binary			KM
3	Alarm 64-49	Table 1.1	binary			KM
4	Alarm 80-65	Table 1.1	binary			KM
5	Warning 16-1	Table 1.2	binary			KM
6	Warning 32-17	Table 1.2	binary			KM
7	Warning 48-33	Table 1.2	binary			KM
8	Warning 64-49	Table 1.2	binary			KM
9	Warning 80-65	Table 1.2	binary			KM
10	Operational message 16-1	Table 1.3	binary			KM
11	Operational message 32-17	Table 1.3	binary			KM
12	Operational message 48-33	Table 1.3	binary			KM
13	Binary signal 1	Table 1.4	binary			KM
14	Binary signal 2	Table 1.5	binary			KM
15	Binary signal 3	Table 1.6	binary			KM
16	Binary signal 4	Table 1.7	binary			KM
17	Inputs	DI1.3 - DI0.0	binary			KM
18	Inputs	DI3.3 - DI2.0	binary			KM
19	Outputs	DO1.7 - DO0.0	binary			KM
20	System pressure pN local		mbar	-6250	32767	KF
21	Internal pressure pi		mbar	-6250	32767	KF
22	Airend discharge temperature (ADT)		0.1 °C	-990	2040	KF
23	Analog input 4	Raw data (corr.)	0.1 °C	-1250	2670	KF
24	Analog input 5	25/4095	mA/digits	0	4095	KF
25	Analog input 6	25/4095	mA/digits	0	4095	KF
26	Analog input 7	Raw data (corr.)	0.1 °C	-1250	2670	KF
27	Analog input 8	Raw data (corr.)	0.1 °C	-1250	2670	KF
28	Analog output 1		0.1mA	0	200	KF
29	Oil separator differential pressure		mbar	-4000	21000	KF
30	System pressure pN external		mbar	-6250	32767	KF
31	Current drive motor starts/h		1			KF

DW24/25:

current number of digits; there is I=0-25mA for 0-4095 digits

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DW	Description		Unit			Format
32	Total compressor hours run	x 1000	h			KF
33	Total compressor hours run	x 1	h			KF
34	Hours on load	x 1000	h			KF
35	Hours on load	x 1	h			KF
36	Setpoint pressure p1		mbar			KF
37	Setpoint pressure p1 switching difference		mbar			KF
38	setpoint pressure p2		mbar			KF
39	Setpoint pressure p2 switching difference		mbar			KF
40	Nominal package pressure		mbar			KF
41	Increased cut-out pressure pE		mbar			KF
42	Remaining drive motor idle time		s			KF
43	Current time		free/hour			KY
44	Current time		min/s			KY
45	Current date		weekday/day			KY
46	Current date		month / year			KY
47	Message header slave (TKS)	System	1			KH
48	Remaining oil separator service life		h			KF
49	Remaining interval to oil change		h			KF
50	Remaining interval to oil filter change		h			KF
51	Remaining interval to air filter change		h			KF
52	Remaining interval to valve inspection		h			KF
53	Remaining interval to V-belts/coupling inspection		h			KF
54	Remaining interval to motor bearings change		h			KF
55	Remaining interval to electrical equip. inspection		h			KF
56	Remaining interval to bearing lube		h			KF
57	Current cut-out pressure p1(p2)		mbar			KF
58	PLC software status (B&B)					KY
59	Compressor model / L2DP slave address					KY
60	Compressor start delay		s			KT
61	Duty cycle	permanent	1 %			KF
62	Current motor speed		1/min			KF
63	Slave message footer (TFS)	System				KH

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<u>Table 1.1</u> : Alarms   (Sigma Control transmit word 0 - 4)

DW	Bit	No.	Sigma Control display	Explanation
0	**0**	*1*	Airend rotation	Direction of drive motor rotation wrong
0	**1**	*2*	Motor T‡	Permissible drive motor temperature exceeded (PTC or PT100)
0	**2**	*3*	pRV ‡	TÜV check: the opening pressure of the pressure relief valve was exceeded by 2 bar
0	**3**	*4*	Emergency stop	E M E R G E N C Y S T O P actuated
0	**4**	*5*	separator T‡	Permissible oil separator temperature exceeded
0	**5**	*6*	Start T‡	Airend temperature too low (< +2 °C) for a compressor start
0	**6**	*7*	mains monitor	Power supply fault (separate network monitoring module)
0	**7**	*8*	oil content ‡	Permissible oil content exceeded.
0	**8**	*9*	Sigma Control T‡	Controller housing temperature has exceeded 70 °C.
0	**9**	*8*	blowoff prot. ‡	Blow-off protection pressure setpoint exceeded.
0	**10**	*11*	fan M2 I‡	Fan M2: overload trip
0	**11**	*12*	access doors	Access doors open
0	**12**	*13*	motor I‡	Drive motor: overload trip
0	**13**	*14*	fan M3 I‡	Fan M3: Overload trip
0	**14**	*15*	ADT ‡	Permissible airend discharge temperature exceeded.
0	**15**	*16*	fan M4 I‡	Fan M4: Overload trip

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<u>Table 1.1</u> : Alarms   (Sigma Control transmit word 0 - 4)

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DW	Bit	No.	Sigma Control display	Explanation
1	**0**	*17*	AI3/AI4 error	Analog input 3 or 4 open circuit or short circuit to earth
1	**1**	*18*	AI7/AI8 error	Analog input 7 or 8 open circuit or short circuit to earth
1	**2**	*19*	not assigned	
1	**3**	*20*	not assigned	
1	**4**	*21*	RD T ‡	Refrigeration dryer Compressed air temperature too low; danger of freeze-up
1	**5**	*22*	OS dp ‡	Oil separator cartridge heavily clogged
1	**6**	*23*	motor bearings	Drive motor bearing defective
1	**7**	*24*	WC water volume	Cooling water low
1	**8**	*25*	AI 1 open cct	Analog input 1 open circuit or short to earth
1	**9**	*26*	AI 2 open cct	Analog input 2 open circuit or short to earth
1	**10**	*27*	not assigned	
1	**11**	*28*	not assigned	
1	**12**	*29*	AI 5 open cct	Analog input 5 open circuit or short to earth
1	**13**	*30*	AI 6 open cct	Analog input 6 open circuit or short to earth
1	**14**	*31*	not assigned	
1	**15**	*32*	not assigned	

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<u>Table 1.1</u> : Alarms   (Sigma Control transmit word 0 - 4)

DW	Bit	No.	Sigma Control display	Explanation
2	0	33	oil p ‡	Oil pressure too low.
2	1	34	mains cont. on?	The mains contactor does not pull in despite an ON command
2	2	35	fan M7 I ‡	Control cabinet fan M7 Overload trip
2	3	36	DO0.6/DO0.7 I ‡	Short circuit on binary outputs DO0.6 / DO0.7
2	4	37	DO1.6/DO1.7 I ‡	Short circuit on binary outputs DO1.6/DO1.7
2	5	38	PD T ‡	Machine air outlet temperature too low
2	6	39	PD T ‡	Machine air outlet temperature too high
2	7	40	mains cont. off?	The mains contactor does not drop out despite an OFF command
2	8	41	mains voltage ‡	Power supply failure - the drive motor was shut down
2	9	42	Back press. stop	Back pressure while drive motor stopped Back pressure in the oil separator tank caused by poor venting
2	10	43	ADT dT/dt ‡	Permissible rate of rise of airend discharge temperature exceeded
2	11	44	no press.buildup	pi did not reach 3.5 bar within a preset period
2	12	45	not assigned	
2	13	46	FC	VFD compressor fault (frequency converter)
2	14	47	error: RS485-USS	RS485 transmission error SC - FC (USS protocol)
2	15	48	HT cell	High tension cell fault in power switching

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<u>Table 1.1</u> : Alarms (Sigma Control transmit word 0 - 4)

DW	Bit	No.	Sigma Control display	Explanation
3	0	49	sh.cct AI1	Analog input 1 Short cct. on +Ub
3	1	50	sh.cct AI2	Analog input 2 Short cct. on +Ub
3	2	51	not assigned	
3	3	52	not assigned	
3	4	53	sh.cct AI5	Analog input 5 Short cct. on +Ub
3	5	54	sh.cct AI6	Analog input 6 Short cct. on +Ub
3	6	55	not assigned	
3	7	56	RD condens.drain	Refridgeration dryer (DS compressor) Condensate drain faulty
3	8	57	Model	Vague model version
3	9	58	Condensate drain	Condensate drain faulty Centrifugal separator / Aftercooler / Refridgeration dryer (AS/BS/CS compr.)
3	10	59	back press. run	Back pressure while drive motor runs V-belts or coupling parted
3	11	60	softstart	Softstarter defective
3	12	61	OS dT/dt ‡	Permissible rate of rise of oil separator temperature exceeded
3	13	62	RD p‡	Refrigeration dryer Refrigerant circulation pressure too high (pressure relief valve tripped)
3	14	63	RD p‡	Refrigeration dryer Refrigerant circulation pressure too low (pressure relief valve tripped)
3	15	64	not assigned	

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Table 1.1 : Alarms   (Sigma Control transmit word 0 - 4)

DW	Bit	No.	Sigma Control display	Explanation
4	**0**	*65*	not assigned	
4	**1**	*66*	not assigned	
4	**2**	*67*	not assigned	
4	**3**	*68*	not assigned	
4	**4**	*69*	not assigned	
4	**5**	*70*	not assigned	
4	**6**	*71*	not assigned	
4	**7**	*72*	not assigned	
4	**8**	*73*	ext. message 0	Message text freely definable from SIGMA Control display
4	**9**	*74*	ext. message 1	Message text freely definable from SIGMA Control display
4	**10**	*75*	ext. message 2	Message text freely definable from SIGMA Control display
4	**11**	*76*	ext. message 3	Message text freely definable from SIGMA Control display
4	**12**	*77*	ext. message 4	Message text freely definable from SIGMA Control display
4	**13**	*78*	ext. message 5	Message text freely definable from SIGMA Control display
4	**14**	*79*	p-switch	Message text freely definable from SIGMA Control display
4	**15**	*80*	T-switch	Message text freely definable from SIGMA Control display

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<u>Table 1.2</u> : Warning Messages   (Sigma Control transmit word 5 - 9)

DW	Bit	No.	Sigma Control display	Explanation
5	0	1	error: FEPROM	System error: flash memory defective
5	1	2	motor T↑	Initial warning: Permissible drive motor temperature reached soon (PTC or PT100)
5	2	3	V-belt tension	V-belts too loose.
5	3	4	OS dp↑	Oil separator cartridge clogged
5	4	5	restart inhibit	Restart inhibit for "compressor ON" activated
5	5	6	oil content ↑	Initial warning: oil content too high
5	6	7	motor bearings	Drive motor bearings defective
5	7	8	ADT ↑	Initial warning: maximum permissible airend discharge temperature reached soon
5	8	9	error: SMS	SMS couldn'd be transmitted
5	9	10	buffer battery	System error: buffer battery discharged
5	10	11	oilfilter dp↑	Oil filter clogged
5	11	12	modem problem	
5	12	13	air filter dp↑↑	Air filter clogged
5	13	14	access doors	Access doors open
5	14	15	bus alarm	ProfiBus connection error
5	15	16	error: RAM	System error: RAM defective

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<u>Table 1.2</u> : Warning Messages   (Sigma Control transmit word 5 - 9)

DW	Bit	No.	Sigma Control display	Explanation
6	0	17	RD T↓	Refrigeration dryer Compressed air temperature too low; danger of freeze-up
6	1	18	RD p↓	Refrigeration dryer Low pressure in refrigerant circulation system (inlet pressure switched tripped)
6	2	19	not assigned	
6	3	20	not assigned	
6	4	21	not assigned	
6	5	22	not assigned	
6	6	23	not assigned	
6	7	24	not assigned	
6	8	25	OS h‡	Maintenance interval for oil separator cartridge exceeded
6	9	26	oil change h‡	Maintenance interval for oil change exceeded
6	10	27	oil filter h‡	Maintenance interval for oil filter exceeded
6	11	28	air filter h‡	Maintenance interval for air filter exceeded
6	12	29	valve insp. h‡	Maintenance interval for valves exceeded
6	13	30	blt.coup.chng.h‡	Maintenance interval for V-belts or coupling inspection exceeded
6	14	31	motor bearing h‡	Maintenance interval for motor bearings exceeded
6	15	32	elect. equip. h‡	Maintenance interval for electrical equipment exceeded

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Table 1.2 : Warning Messages   (Sigma Control transmit word 5 - 9)

DW	Bit	No.	Sigma Control display	Explanation
7	0	33	fan bearing h ‡	Maintenance interval for fan bearings exceeded
7	1	34	PD T↓	Initial warning: Package air discharge temperature soon below permissible
7	2	35	PD T↑	Initial warning: Permissible package air discharge temperature exceeded soon
7	3	36	motorstarts /h ‡	Drive motor Number of permissible starts per hour exceeded
7	4	37	motorstarts /d ‡	Drive motor Number of permissible starts per day exceeded
7	5	38	blowoff prot. ↑	Initial warning: Blowoff protection pressure setpoint reached soon
7	6	39	OS cycle ↑	
7	7	40	OS cycle ‡	
7	8	41	Mains voltage ↓	Power supply failure - Compressor was restarted automatically
7	9	42	TRAP Interrupt↑	System message: TRAP interrupt
7	10	43	ext.load signal?	Vague external load signal Default setpoint for cut-out pressure high was exceeded.
7	11	44	oil T↓	Warning: Oil too cold for compressor to be put on load
7	12	45	DO test	The "set output" test function is activated
7	13	46	System press.↓	System pressure too low (compressor only)
7	14	47	no press.buildup	No pressure build-up after compressor start
7	15	48	bearing lube h ‡	Motor bearings greasing maintenance intervall exceeded

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<u>Table 1.2</u> : Warning Messages   (Sigma Control transmit word 5 - 9)

DW	Bit	No.	Sigma Control display	Explanation
8	0	*49*	annual maint	Appears one year after last maintenance.
8	1	*50*	not assigned	
8	2	*51*	not assigned	
8	3	*52*	not assigned	
8	4	*53*	not assigned	
8	5	*54*	not assigned	
8	6	*55*	not assigned	
8	7	*56*	not assigned	
8	8	*57*	not assigned	
8	9	*58*	error: RS485-PP	RS485 transmission error (Sigma Control - Sigma Control point-to-point link)
8	10	*59*	start T↓↓	Airend temperature too low (<-10°C) for compressor operation
8	11	*60*	start T↓	Airend temperature too low (< +2 °C) for a compressor start
8	12	*61*	Compr.T ↓	Compressor temperature (ADT or OST) did not reach the minimum required value
8	13	*62*	FC MM Service	Micromaster FC service; FC fix-powered via K1M mains contactor
8	14	*63*	FC mains	VFD compressor: VFD power supply failure
8	15	*64*	FC AI1 fault	VFD compressor: Pressure sensor at AI1 faulty

1. Master Controller << == Compressor

<u>Table 1.2</u> : Warning Messages   (Sigma Control transmit word 5 - 9)

DW	Bit	No.	Sigma Control display	Explanation
9	0	65	not assigned	
9	1	66	air filter dp ↑	Initial warning: Air filter clogged
9	2	67	system press. ↑	System pressure too high (vacuum packages only)
9	3	68	Condensate drain	Condensate drain faulty Centrifugal separator / Aftercooler / Refridgeration dryer (AS/BS/CS compr.)
9	4	69	RD p ‡	Refrigeration dryer Refrigerant circulation pressure too high (pressure relief valve tripped)
9	5	70	RD T ↓	Refrigeration dryer Compressed air temperature too high
9	6	71	oil level ↓	Oil level is at minimum
9	7	72	RD condens.drain	Refridgeration dryer (DS compressor) Condensate drain faulty
9	8	73	ext. message 0	Message text freely definable from SIGMA Control display
9	9	74	ext. message 1	Message text freely definable from SIGMA Control display
9	10	75	ext. message 2	Message text freely definable from SIGMA Control display
9	11	76	ext. message 3	Message text freely definable from SIGMA Control display
9	12	77	ext. message 4	Message text freely definable from SIGMA Control display
9	13	78	ext. message 5	Message text freely definable from SIGMA Control display
9	14	79	p-switch	Message text freely definable from SIGMA Control display
9	15	80	T-switch	Message text freely definable from SIGMA Control display

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<u>Table 1.3</u> : Operational Messages   (Sigma Control transmit word 10 - 12)

not displayed on Sigma Control

DW	Bit	No.	Operational Message	Explanation
10	0	1	load control p1	Load control mode: Load control mode from setpoint pressure p1
10	1	2	load control p2	Load control mode: Load control mode from setpoint pressure p2
10	2	3	load control RC	Load control mode: Load control from external contact
10	3	4	load control RB	Load control mode: load control from bus signal
10	4	5	ready	Load control status: drive motor ready to go on load
10	5	6	Idle	Load control status:
10	6	7	Load run	Load control status:
10	7	8	off	Load control status:
10	8	9	compressor ON	Drive motor ready to go on load (as for OM5, but permanent signal)
10	9		Controller (Sigma Control) ON	The controller (Sigma Control) is switched on by the function key "I"
10	10	11	Mode ON/OFF: clk	Operating mode: compressor switched on/off by the clock
10	11	12	Mode ON/OFF: RC	Operating mode: compressor switched on/off by a remote contact
10	12	13	Mode ON/OFF: RB	Operating mode: compressor switched on/off by a bus signal
10	13	14	Mode ON/OFF: key	Operating mode: compressor switched on/off by the "I/O" function key
10	14	15		
10	15	16		

1. Master Controller << == Compressor

Table 1.3 : Operational Messages   (Sigma Control transmit word 10 - 12)

not displayed on Sigma Control

DW	Bit	No.	Operational Message	Explanation
11	0	17	ext. message 0	Message text freely definable from SIGMA Control display
11	1	18	ext. message 1	Message text freely definable from SIGMA Control display
11	2	19	ext. message 2	Message text freely definable from SIGMA Control display
11	3	20	ext. message 3	Message text freely definable from SIGMA Control display
11	4	21	ext. message 4	Message text freely definable from SIGMA Control display
11	5	22	ext. message 5	Message text freely definable from SIGMA Control display
11	6	23	p-switch	Message text freely definable from SIGMA Control display
11	7	24	T-switch	Message text freely definable from SIGMA Control display
11	8	25	Setpoint pressure p1	System pressure setpoint p1 selected for control of load
11	9	26	setpoint pressure p2	System pressure setpoint p2 selected for control of load
11	10	27	power OFF → ON	Interface configuration has been changed Switch off the power supply to accept the new
11	11	28	Dyn. Motor T↑	Dynamic control mode: Drive motor temperature too high for drive motor stop
11	12	29	not assigned	
11	13	30	not assigned	
11	14	31	not assigned	
11	15	32	not assigned	

1. Master Controller << == Compressor

<u>Table 1.3</u> : Operational Messages (Sigma Control transmit word 10 - 12)

not displayed on Sigma Control

DW	Bit	No.	Operational Message	Explanation
12	0	*33*	machine report	Monthly report of compressor status Activated only during SMS remote service
12	1	*34*	not assigned	
12	2	*35*	not assigned	
12	3	*36*	not assigned	
12	4	*37*	not assigned	
12	5	*38*	not assigned	
12	6	*39*	not assigned	
12	7	*40*	not assigned	
12	8	*41*	not assigned	
12	9	*42*	not assigned	
12	10	*43*	not assigned	
12	11	*44*	not assigned	
12	12	*45*	not assigned	
12	13	*46*	not assigned	
12	14	*47*	not assigned	
12	15	*48*	not assigned	

1. Master Controller << == Compressor

<u>Table 1.4</u> : Transmit bit assignment   DW 13
Binary signals 1

Bit	Description	Signal "1"	Signal "0"
0	Drive motor ready for operation (SAM only!)	yes	no
1	Motor running	yes	no
2	Load run	yes	no
3	Idle	yes	no
4	Local mode ("Remote" key off)	remote key off	remote key on
5	Controller (Sigma Control) ON	yes	no
6	Group alarm	yes	no
7	Group warning	yes	no
8	Compressor ready for load	yes	no
9	Profibus send+receive	yes	no
10			
11			
12			
13			
14			
15			

<u>Table 1.5</u> : Transmit bit assignment   DW 14
Binary signals 2

Bit	Description	Signal "1"	Signal "0"
0	Compressor ON from "I" key only	yes	no
1	Compressor ON from the "I" key and clock	yes	no
2			
3			
4	Compressor ON from the "I" key and ext. contact	yes	no
5			
6	Compressor ON from "I" key and L2DP bus	yes	no
7	Compressor ON setting (Bit 0 - 6)	Master	local
8	DUAL control mode	DUAL	
9	QUADRO control mode	QUADRO	
10	VARIO control mode	VARIO	
11	DYNAMIC control mode	DYNAMIC	
12	Continuous control mode	continuous	
13			
14			
15	Control mode setting (Bit 8 - 14)	Master	local

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Table 1.6 : Transmit bit assignment   DW 15
Binary signals 3

Bit	Description	Signal "1"	Signal "0"
0			
1			
2			
3			
4	Load-idle signal from ext. contact	yes	no
5			
6	Load-idle signal from L2DP bus	yes	no
7	Load control mode setting (Bit 0 - 15)	Master	local
8	p1 permanent	yes	no
9	p2 permanent	yes	no
10	p1/p2 from clock	yes	no
11	p1/p2 from timer	yes	no
12			
13	p1/p2 from external contact	yes	no
14	p1/p2 from RS485 interface	yes	no
15			

Table 1.7 : Transmit bit assignment   DW 16
Binary signals 4

Bit	Description	Signal "1"	Signal "0"
0	Clock key	not assigned	blocked
1	Remote key	not assigned	blocked
2	Idle key	not assigned	blocked
3	Automatic start after power supply ON	activated	
4	Actual p1(p2) pressure control value	pN external	pN local
5			
6			
7	Message acknowledgement by master	activated	blocked
8			
9			
10			
11			
12			
13			
14			
15	Transfer of time + date	yes	no (corrupt)

2. Master Controller == >> Compressor

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DW	Description		Unit	Format
0	Compressor selection signals 1	Table 2.1	binary	KM
1	Compressor selection signals 2	Table 2.2	binary	KM
2	Compressor selection signals 3	Table 2.3	binary	KM
3	Compressor selection signals 4	Table 2.4	binary	KM
4	Setpoint pressure p1	*D17.4=1*	mbar	KF
5	Setpoint pressure p1 switching difference	*D17.4=1*	mbar	KF
6	setpoint pressure p2	*D17.6=1*	mbar	KF
7	Setpoint pressure p2 switching difference	*D17.6=1*	mbar	KF
8	Current time	*D17.8=1*	- / hour	KY
9	Current time		min / sec	KY
10	Current date		- / cal.day	KY
11	Current date		month / year	KY
12	Autostart delay	*D17.12=1*	s	KT
13	Actual air receiver system press. (for FC control)	*D17.13=1*	mbar	KF
14				
15				
16				
17	Compressor selection signals 5	Table 2.5	binary	KM
18	Compressor selection signals 6	Table 2.6	binary	KM
19	Master message header (MMH)	System	1	KH
20	Oil separator service interval	*D18.4=1*	h	KF
21	Oil change service interval	*D18.5=1*	h	KF
22	Oil filter service interval	*D18.6=1*	h	KF
23	Air filter service interval	*D18.7=1*	h	KF
24	Valve inspection service interval	*D18.8=1*	h	KF
25	V-belts/coupling inspection service interval	*D18.9=1*	h	KF
26	Motor bearings change service interval	*D18.10=1*	h	KF
27	Electrical equipment service interval	*D18.11=1*	h	KF
28	Bearing lube service interval	*D18.12=1*	h	KF
29				
30				
31	Master message footer (MMF)	System		KH

2. Master Controller == >> Compressor

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Table 2.1 : Receive bit assignment   DW 0

Compressor selection signals 1 - **To be used by VESIS/SAM Kaeser controllers only!**

Bit	Description	Signal "1"	Signal "0"	Signal
0	SAM connection	yes	no	Duration
1	Load run by master *(if D0.2=1)*	Load run	Idle	Duration
2	Default load control from Profibus	Master (D0.1)	local	Duration
3	Continue drive motor running *(if D0.0=1)*	continue running		Duration
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Table 2.2 : Receive bit assignment   DW 1

Compressor selection signals 2

Bit	Description	Signal "1"	Signal "0"	Signal
0	Default Compressor ON from "I" key only	Master	local	Duration
1	Default Compressor ON from the "I" key and clock	Master	local	Duration
2				
3				
4	Default Compressor ON from the "I" key and ext. contact	Master	local	Duration
5				
6	Default Compressor ON from the "I" key and bus master	Master (D1.7)	local	Duration
7	Compr. ON by Master *(if D1.6=1)*	ON	OFF	Duration
8	DUAL control mode	DUAL		Duration
9	QUADRO 3 control mode	QUADRO3		Duration
10	VARIO 1 control mode	VARIO 1		Duration
11	DYNAMIC control mode	DYNAMIC		Duration
12	Continuous control mode	Continuous		Duration
13				
14				
15				

2. Master Controller == >> Compressor

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Table 2.3 : Receive bit assignment   DW 2

Compressor selection signals 3

Bit	Description	Signal "1"	Signal "0"	Signal
0				
1				
2				
3				
4	Default load control from ext. contact	Master	local	Duration
5				
6	Default load control from Profibus	Master (D2.7)	local	Duration
7	Load run by master *(if D2.6=1)*	Load run	Idle	Duration
8	p1 permanent	Master	local	Duration
9	p2 permanent	Master	local	Duration
10	Default p1/p2 from clock	Master	local	Duration
11	Default p1/p2 from timer	Master	local	Duration
12				
13	Default p1/p2 from external contact	Master	local	Duration
14	Default p1/p2 from RS485 interface	Master	local	Duration
15				

Table 2.4 : Receive bit assignment   DW 3

Compressor selection signals 4

Bit	Description	Signal "1"	Signal "0"	Signal
0	Enable *clock* function key	Master (D3.1)	local	Duration
1	Function key *clock (if D3.0=1)*	not assigned	blocked	Duration
2	Enable *remote* function key	Master (D3.3)	local	Duration
3	Function key *remote (if D3.2=1)*	not assigned	blocked	Duration
4	Enable *idle* function key	Master (D3.5)	local	Duration
5	Function key *idle (if D3.4=1)*	not assigned	blocked	Duration
6	Enable acknowledgement by master	Master (D3.7)	local	Duration
7	Acknowledge signal for alarms and warnings *(if D3.6=1)*	$L{\to}H$: ackn.		Flank
8	Enable compressor auto start	Master (D3.9)	local	Duration
9	Compressor restart*(if D3.8=1)*	not assigned	blocked	Duration
10				
11				
12				
13				
14				
15				

2. Master Controller == >> Compressor

Table 2.5 : Receive bit assignment   DW 17
Compressor selection signals 5

Bit	Description	Signal "1"	Signal "0"	Signal
0				
1				
2				
3				
4	Default setpoint pressures p1SP and p1SD	Master (DW4+5)	local	Duration
5				
6	Default setpoint pressures p2SP and p2SD	Master (DW6+7)	local	Duration
7				
8	Set date and time	Master (DW8...11)	local	Duration
9				
10				
11				
12	Default restart delay	Master (DW12)	local	Duration
13	Default actual system pressure (for FC control)	Master (DW13)	local	Duration
14				
15				

Table 2.6 : Receive bit assignment   DW 18
Compressor selection signals 6

Bit	Description	Signal "1"	Signal "0"	Signal
0				
1				
2				
3				
4	Set oil separator service interval	Master (DW20)	local	Flank
5	Set oil change service interval	Master (DW21)	local	Flank
6	Set oil filter service interval	Master (DW22)	local	Flank
7	Set air filter service interval	Master (DW23)	local	Flank
8	Set valve inspection service interval	Master (DW24)	local	Flank
9	Set V-belts/coupling inspection service interval	Master (DW25)	local	Flank
10	Set motor bearings change service interval	Master (DW26)	local	Flank
11	Set electrical equipment service interval	Master (DW27)	local	Flank
12	Set bearing lube service interval	Master (DW28)	local	Flank
13				
14				
15				