

- Description of the individual process variables
- Recording of the process variables



After connecting to Bodas, open the "Process data" menu. Click on the respective group to expand it.

BODAS-service 3.5 (BOSCH Rexroth AG)	-	
<u>File Actions View Tools H</u> elp		
Available ECUs	Processdata Current values for available processdata.	Rexroth Bosch Grou
RC12-10/30 HwCode: 0002D6 HAK08878 V4.01 Errors detected	1 Group 1	
Processdata I/O Status view	3 Group 3	
Custom view Frror messages	4 Group 4 5 Group 5	
	6 Group 6	
	8 Group 8	
	9 Group 9	_
	Show groups Show all process variables Write for filtering Update interva	al 179 r
Connected with:	RC12-10/30 + HAK08878 V4.01 + 5	Sontheim CANfox

CM 1650 1491.15

5.0.7 Process Data Bodas



The group "1 Group 1" contains the following process variables.

1 Group 1		_
1.1 Drehzahl hinten links	0,4 rpr	m
1.2 Drehzahl hinten rechts	0,3 rpr	m
1.3 Taster Tempomat	OFF	
1.4 Taster Limitierung AFM	OFF	
1.5 Richtung hinten links	0 -1	=r,1=f
1.6 Richtung hinten rechts	0 -1	=r,1=f
1.7 Richtungsschalter vorw.	OFF	
1.8 Bremsschalter	OFF	



1 Group 1		
1.1 Drehzahl hinten links		0,4 rpm
Wheel speed front left from	speedometer sensor left B13 in rpm	
1.2 Drehzahl hinten rechts		0,3 rpm
Wheel speed front right from	n speedometer sensor right B14 in rpm	
1.3 Taster Tempomat		OFF
Input from tip switch – cruise ON = Signal present OFF = Signal not present	e control S16 pin 5	
1.4 Taster Limitierung AFM		OFF
Input from tip switch – limite ON = Signal present OFF = Signal not present	r S16 pin 2	

CM	1650
149	1.15



1 Group 1	
1.5 Richtung hinten links	0 -1=r,1=f
Direction of rotation of the wheel front left: -1 = Reverse, 1 = Forwards	
1.6 Richtung hinten rechts	0 -1=r, 1=f
Direction of rotation of the wheel front right: -1 = Reverse, 1 = Forwards	
1.7 Richtungsschalter vorw.	OFF
Forwards pedal actuated (angle sensor accelerator, forwards B09) ON = Pedal actuated OFF = Pedal not actuated	
1.8 Bremsschalter	OFF
Actuated with at least 25% of the pedal travel ON = from 25% of the teach value from the Hall sensor brake pedal B11	

OFF = up to 25% of the teach value from the Hall sensor brake pedal B11

CM 1650 1491.15

5.0.7 Process Data Bodas



The group "2 Group 2" contains the following process variables.

2 Group 2	
2.1 Taster Wendelüfter OFF]
2.2 Richtungsschalter rückw. OFF]
2.3 Status Haltebremse OFF	
2.4 Bremspedal) pm
2.5 Druck A	L bar
2.6 Betriebsbremse	l bar
2.7 Druck B	3 bar
2.8 Bremspedal 52:	5 mV



2 Group 2 OFF 2.1 Taster Wendelüfter Input from tip switch – reversing fan S18 = Signal present ON OFF = Signal not present 2.2 Richtungsschalter rückw. OFF Reverse pedal actuated (angle sensor accelerator, reverse B10) ON = Pedal actuated OFF = Pedal not actuated OFF 2.3 Status Haltebremse Status output of the parking brake to the display = Parking brake symbol is displayed ON OFF = Parking brake symbol is not displayed 2.4 Bremspedal 0 pm

Teach value at Hall sensor brake pedal B11 from 0 - 1000



2 Group 2		
2.5 Druck A	1	bar
Pressure at drive pressure sensor	Ma B01 (forwards)	
2.6 Betriebsbremse	1	bar
Pressure at brake pressure senso	r B03	
2.7 Druck B	3	bar
Pressure at drive pressure sensor	Mb B02 (reverse)	
2.8 Bremspedal	525	mV

Voltage at Hall sensor brake pedal B11



The group "3 Group 3" contains the following process variables.

3 Group 3	
3.1 Kühlwassertemp.	22 Grad C
3.2 Hydrauliköltemp.	25 Grad C
3.3 Pumpe vorw.	0 mA
3.4 Pumpe rückw.	0 mA
3.5 Anst. Lüfter inv.	0 pm
3.6 Versorgung Haltebremse	ON
3.7 Umsch. Radmotore	OFF
3.8 Bremslichtanst.	OFF



3 Group 3		_
3.1 Kühlwassertemp.	22	Grad C
Cooling water temperature in deg	rees C. from cooling water temperature sensor B20	
3.2 Hydrauliköltemp.	25	Grad C
Oil temperature temperature in de	grees C. from hydraulic oil temperature sensor B12	
3.3 Pumpe vorw.	0	mA
Current at hydraulic valve forward	s direction of travel Y03	
3.4 Pumpe rückw.	0	mA

Current at hydraulic valve reverse direction of travel Y04



3 Group 3		
3.5 Anst. Lüfter inv.		0 pm
Value from 0 – 1000 at proportion	al valve suction fan Y10	
3.6 Versorgung Haltebremse		ON
Activation of telltale at parking bra ON = Telltale lights up brightly OFF = Telltale lights up dimly (ve	ke switch (vehicle stops) ehicle is moving)	
3.7 Umsch. Radmotore		OFF
Activation of hydraulic valve chang ON = 1st speed level active (o OFF = 2nd speed level active	geover speed levels Y02 nly when the engine is running)	
3.8 Bremslichtanst.		OFF
Activation of brake lights E25 and ON = Brake light on	E26 terminal 54	



The group "4 Group 4" contains the following process variables.

4 Group 4	
4.1 Anst. Ausrollvent.	OFF
4.2 Anst. Anlasser Relais	OFF
4.3 Leuchte Lüfterrev.	OFF
4.4 Umsch. Lüfterdrehr.	OFF
4.5 Anst. Rückfahrschein.	OFF
4.6 Verriegelung Motorstart	OFF
4.7 Anwahl Fahrrichtung	0 -1=r,1=f
4.8 Anst. Leuchte Batterie-Trenns.	OFF



4 Group 4	
4.1 Anst. Ausrollvent.	OFF
Activation hydraulic valve coasting Y01 (emergency stop valve) ON = Valve is energised (only when the engine is running) OFF = Valve is not energised (vehicle stops in the event of a serious fault)	
4.2 Anst. Anlasser Relais	OFF
Activation starter relay K06A ON = Start release for Hatz engine present OFF = Start release for Hatz engine not present	
4.3 Leuchte Lüfterrev.	OFF
Telltale lamp at tip switch – reversing fan S18 ON = Lamp lights up (if fan reversal is active) OFF = Lamp off	
4.4 Umsch. Lüfterdrehr.	OFF
Activation hydraulic valve reversing fan Y32 ON = Valve is energised OFF = Valve is not energised	



4 Group 4	
4.5 Anst. Rückfahrschein.	OFF
Activation of reversing light E21 ON = Reversing light switched on (if reverse pedal is actuated) OFF = Reversing light switched off	
4.6 Verriegelung Motorstart	OFF
Locking mechanism engine start ON = never active OFF = always active	
4.7 Anwahl Fahrrichtung	0 -1=r,1=f
 -1 = Forwards pedal actuated (angle sensor accelerator, forwards B09) 0 = Neutral position 1 = Reverse pedal actuated (angle sensor accelerator, reverse B10) 	
4.8 Anst. Leuchte Batterie-Trenns.	OFF
Activation for telltale of the battery isolating switch H04 ON = Lamp H04 lights up (do not disconnect the battery) OFF = Lamp H04 is off (battery can be disconnected from the vehicle)	



The group "5 Group 5" contains the following process variables.

5 Group 5		_
5.1 Fahrpedal 1 Kanal 1	0	pm
5.2 Fahrpedal 1 Kanal 1	511	mV
5.3 Fahrpedal 1 Kanal 2	0	pm
5.4 Fahrpedal 1 Kanal 2	4.532	mV
5.5 Fahrpedal 2 Kanal 1	0	pm
5.6 Fahrpedal 2 Kanal 1	<mark>5</mark> 18	mV
5.7 Fahrpedal 2 Kanal 2	0	pm
5.8 Fahrpedal 2 Kanal 2	4.522	mV



5 Group 5 5.1 Fahrpedal 1 Kanal 1 Teach value from 0 – 1000 to angle se 5.2 Fahrpedal 1 Kanal 1	و p ensor accelerator, forwards B09 (channel 1)	m
5.1 Fahrpedal 1 Kanal 1 Teach value from 0 – 1000 to angle se	o p ensor accelerator, forwards B09 (channel 1)	m
each value from 0 – 1000 to angle se	ensor accelerator, forwards B09 (channel 1)	
5.2 Fahrpedal 1 Kanal 1		
	511 m	nV
/oltage at angle sensor accelerator, fo	prwards B09 (channel 1)	
5.3 Fahrpedal 1 Kanal 2	0 p	m
each value from 0 – 1000 to angle se	ensor accelerator, forwards B09 (channel 2)	
5.4 Fahrpedal 1 Kanal 2	4.532 m	nV

Voltage at angle sensor accelerator, forwards B09 (channel 2)



5 Group 5		_
5.5 Fahrpedal 2 Kanal 1	0	pm
each value from 0 – 1000 to ar	ngle sensor accelerator, reverse B10 (channel 1)	
i.6 Fahrpedal 2 Kanal 1	518	mV
oltage at angle sensor accelera	ator, reverse B10 (channel 1)	
. 7 Fahrpedal 2 Kanal 2	0	pm
each value from 0 – 1000 to ar	ngle sensor accelerator, reverse B10 (channel 2)	
.8 Fahrpedal 2 Kanal 2	4.522	mV
oltage at angle sensor accelera	ator, reverse B10 (channel 2)	



The group "6 Group 6" contains the following process variables.

6 Group 6	
6.1 Startzustand	8
6.2 Startfreigabe	OFF
6.3 Fehler Diesel Leerlauf	OFF
6.4 Drive mode Anwahl	0
6.5 Drive mode Status	1
6.6 Fahrprofilanwahl	0
6.7 Fahrzeug Beschleunigung	0 mms2
6.8 Fahrzeug Geschwindigkeit	0,00 km/h



6 Group 6		
6.1 Startzustand		8
Start condition 8 = Ignition On 13 = Engine On		
6.2 Startfreigabe		OFF
Release for driving from hydrosta ON = Drive motor is activated OFF = Drive motor is not activa	tic control unit (only when the engine is running) ted	
6.3 Fehler Diesel Leerlauf		OFF
Activation in the event of a serior ON = Diesel engine is now on OFF = Diesel engine is activate	us fault with reduction of motor speed to 1000 rpm ly activated at idle speed. ed as required or according to a fixed work speed.	
6.4 Drive mode Anwahl		0
Display of the selected driving mod 0 = Ignition off 1 = Transport mode 1 speed level 2 = Work mode 4 = Transport mode 2 speed level	le	



6 Group 6		
6.5 Drive mode Status		1
Display of the current driving mode 1 = Transport mode 1 speed level 2 = Work mode 4 = Transport mode 2 speed level	•	
6.6 Fahrprofilanwahl		0
This process variable has no relev	ance for the service	
6.7 Fahrzeug Beschleunigung		0 mms2
Display of current vehicle acceler	ation in mm/2²	

6.8 Fahrzeug Geschwindigkeit 0,00 km/h

Display of current vehicle speed in km/h

CM 1650 1491.15

5.0.7 Process Data Bodas



The group "7 Group 7" contains the following process variables.

7 Group 7	
7.1 Diesel EEC1 Istdrehzahl	0 rpm
7.2 Diesel TSC1 Solldrehzahl	1.000 rpm
7.3 iDiesel_drive_set	0 rpm
7.4 Diesel Set Inc Eco	0 rpm
7.8 Fahrpedal Pedal logik	ON



7 Group 7		
7.1 Diesel EEC1 Istdrehzahl	0	rpm
Display of current speed of Hatz d	iesel engine in rpm	
7.2 Diesel TSC1 Solldrehzahl	1.000	rpm
Display of current set speed of Ha	tz diesel engine in rpm	
7.3 iDiesel_drive_set	0	rpm
This process variable has no relevance for the service.		
7.4 Diesel Set Inc Eco	0	rpm
This process variable has no relev	ance for the service.	
7.8 Fahrpedal Pedal logik	ON	

This process variable has no relevance for the service.

CM 1650 1491.15

5.0.7 Process Data Bodas



All process variables in group "8 Group 8" have no relevance for the service.

8 Group 8	
8.1 iSetpoint	0
8.2 Drive_pedal_cruise_s16	0
8.3 iLoadLimit_Factor	0
8.4 Pdcharac_iOutput	0
8.5 Pump_control_iPump_control	0
8.6 calculate_LoadLimit_iPump_out	0
8.7 iPump_inkl_RevKomp	0
8.8 iPump_regulated	0



All process variables in group "9 Group 9" have no relevance for the service.

9 Group 9	
9.1 stFan_num_s16	0
9.2 rFanReq_pm_s16	0
9.3 stFanRev_b8	OFF
9.4 stDeactFan_b8	ON
9.5 tCoolWaterReplace_degC_s16	22
9.6 tAirIn_degC_s16	25
9.7 tHydOil_degC_s16	24
9.8 stDiesel_num_s16	0



X

With Bodas, it is possible to record the process variables during operation.

To do so, carry out the following steps in Bodas.

BODAS-service 3.5 (BOSCH Rexroth AG)

File Actions View Tools Help PAR EPR ? Save Break Get data Password PAR→PC EPR→PC EPR→ECU Save Default Scan Open Preview Print Reinit Reset Compare Help Rexroth Custom view Available ECUs **Bosch Group** On this page a selection out of all available ECU data for detail view can be seen. SN: 00102924 RC12-10/30 62 Items selection Numeric table view Graph over time Graph y = f(x)HwCode: 0002D6 HAKO8878 V4.01 Errors detected Count of selected items ÷... Processdata Count of parameters Parameter Input ports 0 Processdata Count of process variables Output ports I/O Status view 0 Count of IN-Ports (signals) Custom view 0 (0) Error messages Count of OUT-Ports (signals) 0 (0) Open the "Custom view" menu. Click on in front of the process variables to expand the individual groups. Select Custom View: \sim Collapse all Select all Deselect all Expand all Write for filtering Update interval 0 ms Connected with: RC12-10/30 + HAKO8878 V4.01 + Sontheim CANfox



BODAS-service 3.5 (BOSCH Rexroth AG)		– 🗆 X
Scan Open Save Preview Print Break Get data Password	Image: Image	(?) Help
Available ECUs	Custom view On this page a selection out of all available ECU data for detail view can be seen.	Rexroth Bosch Group
RC12-10/30 SN: 00102924 HAK08878 V4.01 Errors detected Parameter Processdata I/O Status view Custom view Custom view Error messages Use in front of the groups to open them. The individual process variables can then be selected with a tick. To start the recording, select the "Graph over time" button.	Items selection Numeric table view Graph over time Graph y = f(x) Parameter Processdata Processdata Processdata Processdata Processdata Processdata Processdata Processdata <	Count of selected items Count of parameters Count of process variables 4 Count of IN-Ports (signals) 0 (0) Count of OUT-Ports (signals) 0 (0)
		Select Custom View:
₽ € ()	Select all Deselect all Expand all Collapse all Write for filtering	Update interval 0 ms
Connected with:	RC12-10/30	+ HAKO8878 V4.01 + Sontheim CANfox



BODAS-service 3.5 (BOSCH Rexroth AG)		– 🗆 ×
<u>F</u> ile A <u>c</u> tions <u>V</u> iew T <u>o</u> ols <u>H</u> elp		
Scan Open Save Preview Print Break Get data Passwor	PAR→PC EPR→PC EPR→ECU Save Default Reinit Reset Compare	() Help
Available ECUs	Custom view On this page a selection out of all available ECU data for detail view can be seen.	Rexroth Bosch Group
RC12-10/30 SN: 00102924 HAK08878 V4.01 Errors detect Parameter Processdata I/O Status view I/O Status view Custom view I/O Status view Error messages Use the Pause button to stop the recording.	Items selection Numeric table view Graph over time Graph y = f(x)	
For example, to put the vehicle into the correct operating condition	1975 1980 1985 1990 1995 2000 2005 2010 □ Invert Range Axis Zoom X: 2000 % 0	2015
	Color Signal X-value Y-value Scale min Scale max Autoscale 1.1 Drehzahl hinten 15:18:03.722 0.400 0.400 0.400 ✓ 1.2 Drehzahl hinten 15:18:03.722 0.300 0.300 0.300 ✓ 1.5 Richtung hinten 15:18:03.722 0.000 0.000 ✓ ✓ 1.6 Richtung hinten 15:18:03.722 0.000 0.000 ✓ ✓	As X-axis
~ }0	Pause Export trace Update	interval 34 ms
Connected with:	RC12-10/30 + HAK0887	8 V4.01 + Sontheim CANfox



BODAS-service 3.5 (BOSCH Rexroth AG)		– 🗆 ×
<u>F</u> ile A <u>c</u> tions <u>V</u> iew T <u>o</u> ols <u>H</u> elp		
Scan Open Save Preview Print Break Get data Password	PAR→PC EPR→PCU Save Default Reinit Reset Compare	() Help
Available ECUs	Custom view On this page a selection out of all available ECU data for detail view can be seen.	Rexroth Bosch Group
RC12-10/30 SN: 00102924 HAK08878 V4.01 HwCode: 0002D Parameter Errors detects Processdata I/O Status view Custom view Custom view Error messages Use the "Resume" button to continue the recording. Select the round buttons with the	Items selection Numeric table view Graph over time Graph y = f(x)	^
graph symbols to adjust the X and Y coordinates.	1975 1980 1985 1990 1995 2000 2005 2010 □ Invert Range Axis Zoom X: ◆ ◆ % % ● ◆ % ● ◆ % ● ◆ % ● ◆ ● % ● ◆ ●	2015
	Color Signal X-value Y-value Scale min Scale max Autoscale 1.1 Drehzahl hinten Image: Color state in the image: Colo	As X-axis
Connected with:	Resume Export trace Update inter	val 31 ms



BODAS-service 3.5 (BOSCH Rexroth AG) File Actions View Tools Help	_	
Scan Open Save Preview Print Break Get data Password F	AR > PC EPR > ECU Save Default Reinit Reset Compare	() Help
Available ECUs	Custom view Rex On this page a selection out of all available ECU data for detail view can be seen.	roth Group
RC12-10/30 SN: 00102924 HAK08878 V4.01 Errors detected Parameter Frocessdata I/O Status view Custom view Custom view Vertice Error messages Use the "Pause" button to stop the recording. Caution! In order to evaluate the recording, it	Items selection Numeric table view Graph over time Graph y = f(x)	^
is necessary to keep it as short as possible.	15:21:20 15:21:25 15:21:30 15:21:35 15 □ Invert Range Axis Zoom X: 353 ♦ % Image: Com X: 353 ♦ % Image: Com X: 100 ♦ % Image: Com X: Image: Com X: 100 ♦ % Image: Com X: 100 ♦ % Image: Com X: Image: Com	:21:40 • • • • • •
	Color Signal X-value Y-value Scale min Scale max Autoscale As X-a	xis
	Image: 1.1 Drehzahl hinten 15:21:40.856 0.400 0.400 44.400 ✓	
	1.2 Drehzahl hinten 15:21:40.856 0.300 0.300 0.300 ✓ 15:21:40.856 0.000 1.000	┝┤──────
	1.6 Richtung hinten 15:21:40.856 0.000 0.000 0.000 0.000	\exists
	Pause Export trace Update interval	30 ms
Connected with:	RC12-10/30 + HAKO8878 V4.01 + Sonth	eim CANfox





BODAS-service 3.5 (BOSCH Rexroth AG) \times File Actions View Tools Help PAR EPR ? Save Preview Print Break Get data Password PAR→PC EPR→PC EPR→ECU Save Default Reset Compare Help Scan Open Reinit Rexroth Custom view Available ECUs **Bosch Group** On this page a selection out of all available ECU data for detail view can be seen. SN: 00102924 RC12-10/30 6 Items selection Numeric table view Graph over time Graph y = f(x)HwCode: 0002D6 HAKO8878 V4.01 Errors detected ~ Parameter Processdata I/O Status view Custom view Error messages Use the "Export trace" button to save the recording. 15:22:00 15:22:05 15:22:10 15:22:15 15:22:20 Zoom X: 527 🔷 % Invert Range Axis 100 ≑ Zoom Y: > Color Signal X-value Y-value Scale min Scale max Autoscale As X-axis 1.1 Drehzahl hinten 15:22:23.909 0.700 0.400 47.300 <u>s</u> NS NS 1.2 Drehzahl hinten 15:22:23.909 0.300 0.300 0.300 1.5 Richtung hinten 15:22:23.909 0.000 -1.0001.000 1.6 R chtung hinten 15:22:23.909 0.000 0.000 0.000 Export trace Update interval 29 ms Resume > RC12-10/30 + HAKO8878 V4.01 + Sontheim CANfox Connected with:





BODAS-service 3.5 (BOSCH Rexroth AG) \times File Actions View Tools Help PAR EPR ? Scan Open Save Preview Print Break Get data Password PAR→PC EPR→PC EPR→ECU Save Default Reset Compare Help Reinit Rexroth Custom view Available ECUs **Bosch Group** On this page a selection out of all available ECU data for detail view can be seen. RC12-10/30 Export signal trace Х 6 HAKO8878 V4.01 Image: state stat Suchen in: Bodas Logfile Parameter Processdata <u>.</u> I/O Status view Zuletzt Custom view verwendet Error messages A file name must be Desktop assigned and the file type must be set to a CSV file. 1 Dokumente Subsequently, it is saved in the Bodas directory using 15:22:15 15:22:20 Dieser PC the "Save" button. Zoom X: 527 🜩 % Data record CM1650 Dateiname: Save Zoom Y: 100 ≑ Netzwerk Dateityp: Cancel VCD-files (.vcd) ъ Alle Dateien Color Scale min Scale max Autoscale As X-axis CSV-files (.csv) 0.700 0.400 47.300 \sim VCD-files (.vcd) $\overline{}$ 0.300 0.300 0.300 1.2 Urenzani nintei 15:22:23.909 1.5 Richtung hinten 15:22:23.909 0.000 -1.0001.000 \leq 0.000 0.000 0.000 1.6 Richtung hinten 15:22:23.909 Export trace Update interval 31 ms Resume > Connected with: RC12-10/30 + HAKO8878 V4.01 + Sontheim CANfox