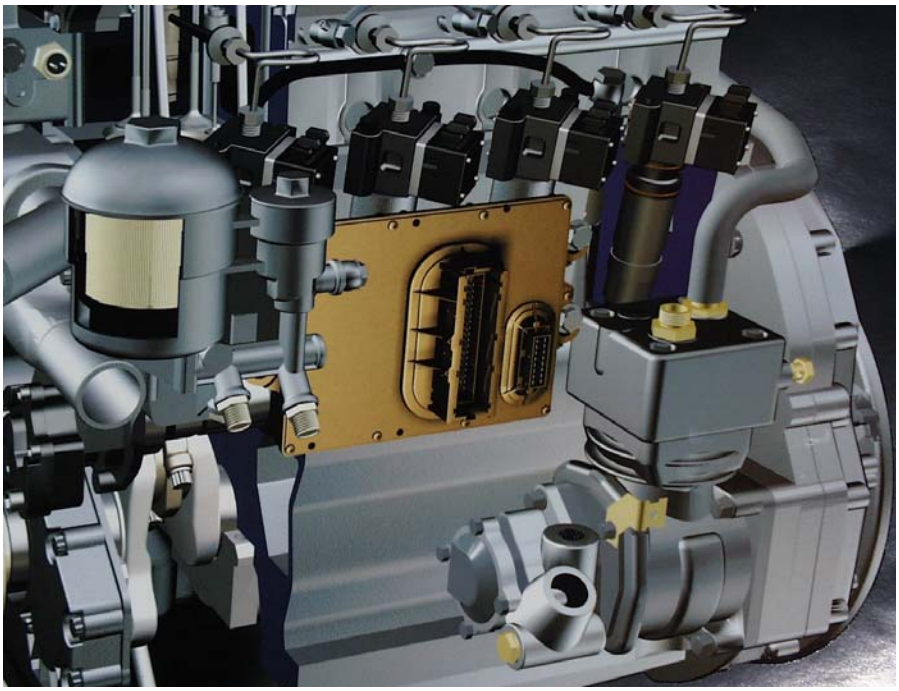
Mercedes Benz Mr Pld Engine Control In English
Full download: http://manualplace.com/download/mercedes-benz-mr-pld-engine-control-in-english/

DaimlerChrysler

Engine control with MR-PLD



ECU Manual

This is the cut pages sample. Download all 150 page(s) at: ManualPlace.com

Environment protection

DaimlerChrysler professes itself to an integrated environmental protection, which sets at the causes and on the environment into the business decisions includes all effects of the production processes and the product. Goals are the economical employment of resources and careful handling the natural bases of life, whose preservation serves humans and nature.

Printed in Germany changes of technical details of the controllers and engines opposite the data and illustrations of the available manual are reserved.

Reproduction, duplication or translation, also in part, are not permitted without written permission.

Editorship conclusion:
Customer service Powertrain Business unit PBE/MSS Responsible for contents: PBE/DEE

Printed on free from chlorine bleached paper

Document name: PRODUKT DOCUMENTATION MR-PLD

Project: DC - MR-PLD

Usage: Generally accessible

Validity: ECU versions C3 to D21

Pages: 150

File name: Product documentation MR-PLD_1.1.pdf

	name	dep.	fon	date	sign
processed	Scheuer, K.	PBE/DEE	52469	02.07.03	
checked					
waned					
responsible	Scheuer, K.	PBE/DEE	52469		

DAIMLERCHRYSLER Business division PowerSystems / Engines ALL RIGHTS RESERVATIONS - property of the DaimlerChrysler AG -	**Product documentation engine electronik MR-PLD**	02. July 2003
Version 1.1	DaimlerChrysler Order-No.:	

This document is in copyright matters protected. Each utilization outside of the close borders of the copyright law is inadmissible without agreement of the DaimlerChrysler AG.

LIST OF VERSIONS

version	date	processed	remark / description
1.1	05.02.03	Scheuer, K.	pre version (draft)

CHANGING US CONDITIONS

version	date	processed	modification
1.1	02.07.03	Scheuer, K.	assimilation to German version 1.1

DAIMLERCHRYSLER Business division PowerSystems / Engines ALL RIGHTS RESERVATIONS - property of the DaimlerChrysler AG -	**Product documentation engine electronik MR-PLD**	02. July 2003
Version 1.1	DaimlerChrysler Order-No.:	

This document is in copyright matters protected. Each utilization outside of the close borders of the copyright law is inadmissible without agreement of the DaimlerChrysler AG.

List of abbreviations 10

1. Safety 11
1.1. Symbols 11
1.2. General information 11
1.3. Use for the indended purpose 12
1.4. Personnel requirements 12
1.5. Conversions and modifications to the MR-PLD 12
1.6. Installation 12
1.7. Organizational measures 12
1.8. Safety precautions for engines with electronic control units 13
1.9. DaimlerChrysler original parts 14
1.10. Safety and backup running programm 14

2. General governor architecture 15
2.1. Standard model of engine control (MR-PLD) and vehicle electronics (FRE) 15
2.2. Features of the governor and interface module 16
2.2.1. VCU (ADM2) as FRE (vehicle electronics) 16
2.2.2. ADM as FRE (vehicle electronics) 17

3. MR-PLD engine control (pump-line-nozzle) 18
3.1. Brief description of the Diesel engine control unit PLD-MR 18
3.2. Control unit - operating principle 18
3.2.1. Overview of the telligent engine system BR 500 19
3.2.2. Overview of the telligent engine system BR 900 20
3.2.3. Control unit block diagram 21
3.2.4. PLD control unit as engine control (MR-PLD) 22
3.3. Functional description 23
3.3.1. Configuration 23
3.3.2. Flexibility of the concept 23
3.3.3. Control unit description of engine electronics MR-PLD 24
3.3.3.1. Safeguard /redundancy 24
3.3.3.2. Description of the inputs 24
3.3.3.3. Description of the outputs 24
3.3.4. Compound network between MR-PLD <=> FRE 25
3.3.4.1. Communication 25
3.3.5. MR-PLD <=> FRE interface functions 26
3.3.5.1. Idle-speed control / speed control / maximum engine speed limitation 26
3.3.6. Shutoff or throttling of the engine through the FRE (vehicle electronics) 27
3.3.7. Engine start and stop 28
3.3.7.1. Starter control (conditions) 28
3.3.7.2. Starter protection 29
3.3.7.3. Start by the driver 29
3.3.7.4. CAN start 30
3.3.7.5. Starter reset bridge 30
3.3.7.6. Starter driver 31
3.3.7.7. Start through the FRE (vehicle control electronics) via CAN 32
3.3.7.8. Starting procedure 32
3.3.7.9. Service start button at the engine block 32
3.3.7.10. Service stop button at the engine block 32
3.3.7.11. Engine cranking via the service start and stop button 33
3.3.7.12. Rev up to maximum speed via service start button 33

3.3.7.13. Engine stop ... 33
3.3.8. Plausibility check terminal 50 ... 34
3.3.9. Calculation of injection delivery angle and start of injection ... 35
3.3.10. Controls (PID governor) ... 36
3.3.11. Operating modes ... 37
3.3.11.1. PTO speed control ... 37
3.3.11.2. Controlled operation (normal operation) ... 37
3.3.11.3. Immobilizer ... 37
3.3.12. Tow starting of the engine ... 37
3.3.13. Emergency syndrome ... 37
3.4. Mechanical description ... 38
3.4.1. Mechanical layout of PLD engine electronics ... 38
3.4.2. Complete version PLD engine electronics ... 38
3.4.2.1 Fuel cooling ... 39
3.4.2.2 MR-PLD Control Unit ... 39
3.4.2.2.1.MR-PLD - version assignment table ... 41
3.4.3. Technical data ... 41
3.4.4. General testing conditions ... 41
3.5. Electrical description ... 42
3.5.1. System interface diagram ... 42
3.5.1.1. Interface diagram ... 42
3.5.1.2. Socket pin designation MR-PLD control unit (D2.1)/according to pin assignment ... 43
3.5.1.3. Pin assignment of MR-PLD control unit (D2.1); function oriented/alphabetical ... 46
3.5.1.4. Voltage supply of control unit MR-PLD (D2.1) ... 50
~~3.5.2. ... xx~~
~~3.5.2.1. ... xx~~
~~3.5.2.2. ... xx~~
~~3.5.2.3. ... xx~~
3.5.3. Sensor system of the PLD engine control unit (MR-PLD) ... 51
3.5.3.1. Control unit internal sensors ... 51
3.5.3.2. Control unit external sensors ... 51
3.5.3.3. Active sensors ... 51
3.5.3.4. Passive sensors ... 52
3.5.3.5. Temperature sensors ... 52
3.5.3.6. Passive oil pressure ... 53
3.5.3.7. Oil level ... 54
3.5.3.8. Camshaft / crankshaft position (inductive) ... 55
3.5.3.9. Booster speed 1 / 2 ... 55
3.5.3.10. Fan speed ... 56
3.5.4. Digital inputs ... 57
3.5.4.1. Ignition (Terminal 15) ... 57
3.5.4.2. Terminal 50 ... 57
3.5.4.3. Service button start/stop ... 58
3.5.4.4. Oil separator ... 59
3.5.5. Proportional valve control ... 60
3.5.5.1. Functional assignment of proportional valves/hardware status D2.1 ... 61
3.5.5.2. Principle block diagram proportional valve control /hardware status D2.1 ... 62
3.5.5.3. Functional assignment of the proportional valves/hardware status C3..C6 ... 63
3.5.5.4. Principle block diagram proportional valve control/hardware status C3..C6 ... 64
3.5.6. Starter control through the MR-PLD ... 65
3.5.6.1. Main path (self-locking) ... 65
3.5.6.2. Auxiliary path (self conducting) ... 65
3.5.6.3. Principle block diagram starter control ... 66
3.5.6.4. Starter relay ... 66
3.5.6.5. Principle block diagram of safety concept of JE-starter ... 67
3.5.7. Serial communication interfaces ... 68

3.5.7.1. CAN data bus (2-wire-interface, standard: ISO 11992) ... 68
3.5.7.2. Diagnostic line (standard: ISO 9141) ... 69
3.5.7.3. Classification of the injector valves ... 69
3.6. Configuration possibilities of the MR-PLD ... 70
3.6.1. Fan type ... 70
3.6.1.1. General connection ... 70
3.6.1.2. Pin assignment of the proportional valve-power stages (PV/Prop) for fan control ... 70
3.6.1.2.1. Type 0/Linning-clutch (on highway/two-stage) ... 70
3.6.1.2.2. Type 1/Linning-clutch (off highway/two-stage) ... 70
3.6.1.2.2.1.Configuration / fan switch-on threshold (type 1) ... 70
3.6.1.2.3. Type 2 /electrically controlled Viscous-fan ... 72
3.6.1.2.4. Type 3 /Hydrostatic Fan ... 73
3.6.1.2.5. Type 4/Horton-clutch ... 74
3.6.1.2.6. Type 5/one Hydrostatic-fan ... 75
3.6.1.2.7. Type 6/two Hydrostatic-fans ... 76
3.6.2. Starter control ... 77
3.6.2.1. JE-starter ... 77
3.6.2.2. KB-starter ... 78
3.6.2.2.1. KB-starter with starter solenoid relay (2 A) ... 78
3.6.2.2.2. KB-starter without Starter Solenoid Relay (2 A) ... 79
3.6.3. Oil pans ... 80

4. Diagnosis ... 81

4.1. Measured values ... 81
4.1.1. Analogue measured values ... 81
4.1.2. Binary measured values ... 83
4.2. Serial diagnosis interfaces ... 86
4.2.1. Diagnostic line ... 86
4.2.1.1. Fault memory ... 86
4.2.1.2. Operating modes ... 86
4.2.2. CAN data bus systems ... 87
4.2.2.1. Engine-CAN (ISO 11992) ... 87
4.2.2.2. Vehicle CAN ... 87
4.2.3. SAE J1587/SAE J1708 (USA- and partly NAFTA-market) ... 88
4.2.4. Configuration of diagnostic interface ... 88
4.2.4.1. MB-truck / Brazil ... 89
4.2.4.2. Europe (ADM / not MB-trucks) ... 90
4.2.4.3. Europe (ADM2 / not MB-Trucks) ... 91
4.2.4.4. USA- and partly NAFTA-market ... 92
4.2.5. Diagnosis interface/software description ... 93
4.2.5.1. Fault memory structure ... 93
4.2.5.2. Ground switching ... 93
4.3. Diagnosis unit & application ... 94
4.3.1. minidiag2 ... 94
4.3.1.1. Display/delete fault code memory ... 94
4.3.1.2. Testing routines ... 97
4.3.1.2.1.Voltmeter function ... 97
4.3.1.2.2.Cylinder cutoff ... 98
4.3.1.2.3.Compression check ... 99
4.3.1.2.4.Idle speed balance (hot engine!) ... 100
4.3.1.2.5.Impact delay time ... 101
~~4.3.1.2.6. ... xx~~
~~4.3.1.2.7. ... xx~~
4.3.1.3. Calibration ... 102

4.3.1.3.1.Single parameters ... 102
4.3.1.3.2.Data set calibration ... 104
4.3.1.3.3.Save modified parameter set ... 105
4.3.1.3.4.Convert modified parameter set ... 106
4.3.1.4. Program protection ... 107
4.3.2. Stardiagnose ... 107
4.3.3. ServiceLink ... 108
4.4. Diagnosis routines ... 109
4.4.1. Detailed testing routines ... 109
4.5. Backup ... 110
4.5.1. System backup capability ... 110
4.5.1.1. Microprocessor 1-backup ... 110
4.5.1.1.1.Crankshaft backup ... 110
4.5.1.1.2.Camshaft backup ... 110
4.5.1.1.3.CAN-backup (definition) ... 110
4.5.1.1.4.CAN-backup, mode 0 (standard-backup) ... 111
4.5.1.1.5.CAN-backup, mode 1 ... 112
4.5.1.1.6.CAN-backup, mode 2 ... 112
4.5.1.1.7.CAN data-area check ... 112
4.5.1.1.8.Nominal engine speed CAN-backup ... 112
4.5.1.1.8.1.Nominal engine speed CAN-backup mode 0 ... 112
4.5.1.1.8.2.Nominal engine speed CAN-backup mode 1 ... 113
4.5.1.2. Microprocessor 2-backup ... 113
4.5.2. Backup functions ... 114
4.5.2.1. Ambient pressure sensor ... 114
4.5.2.2. Boost pressure control ... 114
4.5.3. Sensor-replacement values ... 114
4.5.3.1. Plausibility limits and sensor replacement values ... 114
4.5.4. Diagnosis of sensor and backup functions ... 115
4.5.4.1. Temperature and presure sensors ... 115
4.5.4.2. Crankshaft sensor ... 115
4.5.4.3. Camshaft sensor (cylinder 1 recognition) ... 116
4.5.5. Diagnosis of actuators ... 117
4.5.5.1. MR-PLD injector-/magnetic valves (MV) ... 117
4.5.5.2. MR-PLD proportional valves ... 118
4.5.5.3. Starter control ... 118
4.6. Fault codes & repair instructions ... 119
4.6.1. Fault codes ... 119
4.6.1.1. Fault priority 0 ... 119
4.6.1.2. Fault priority 1 ... 119
4.6.1.3. Fault priority 2 ... 119
4.6.2. Fault path ... 120
4.6.3. Fault type ... 122
4.6.4. Fault codes und repair instructions, high priority ... 124
4.6.5. Fault codes und repair instructions, mean priority ... 125
4.6.6. Fault codes und repair instructions, minor priority ... 134
~~4.6.7. ... xx~~
~~4.6.8. ... xx~~
4.7. Special measurements ... 138
4.7.1. General information ... 138
4.7.2. Actuators ... 138
4.7.2.1. Solenoid valves: Current modulation curve of the injector valve control/type 1.. 138
4.7.2.2. Solenoid valves: Current modulation curve of the injector valve control/ type 2.. 140
~~4.7.2.3. ... xx~~
~~4.7.3. ... xx~~

5. Parameters (minidiag2) 142

5.1. MR-PLD Diagnosis version 3 to 5 (up-/download) 142
5.2. MR-PLD Diagnosis from version 6 (single parameters) 146

a) List of abbreviations

A listing follows in the project "MR-PLD" used abbreviations.

Abbreviation	Meaning	Abbreviation	Meaning
ABS	Anti-lock Braking System	LRR	Engine-Smoothness Control
ADR / PTO	PTO speed control / Power Take-off	LK	Slight Vehicle Class (MB-NFZ)
		LS	Low Speed (CAN)
ATG / AT	Automated Transmission	MB	Mercedes Benz
AVD	Compression check	MBR	Engine Brake
BGR	Limitations	**MR-PLD**	Engine control (Pump-Line-Nozzle System)
BK	exhaust flap		
BR	Engine Type Series (e. g. BR900)		
CAN	Controller Area Network	MS / MTS	Engine protection
		MV	Magnetic Valve
EGR	Exhaust Gas Recirculation	MZA	Mechanical Additional Boost
EMV	Electro-Magnetical-Impulse	n.d.	not difined
EOL	End Of Line		
EZA	Individual cylinder adaption	NFZ	Commercial Vehicle
FB	Start Of Injection	NW	Camshaft
FDOK	Vehicle Documentation System	OM	Oel Engine
FLA	Flame Start Unit	OT / TDC	Top Dead Centre
		PFA	Particle Filter System
FRE	Vehicle control (e. g. VCU, ADM, ADM2, UCV, FR/FMR)	PID	Parameter Identifier
FRT	Free Running Telegramm		
FSP		PV / Prop	Proportional Valve
FW	Injection Delivery Angle	PWM	Pulse Width Modulated
GMA	Basic Moment Adaption	SEG	Segment
HB	High Byte	SG / Stg. / ECU	Electronical Control Unit
		s.n.v.	signal not available
HW	HardWare	SK	Heavy Vehicle Class (MB-NFZ)
ID	IDentifier	STG / MA	Manual Transmission
IES	Intigrated Electronic System	SW	SoftWare
INS / ICU3	Dashboard	TN	(CAN) Attendant
IMO	Industrial Engine (Off-Highway)	TPC	TransPonderCode
KD	Decompression Valve	UT	Bottom Dead Centre
		VTG	Variable Geometry Turbo
		WS	Service System
		WSP	Immobilizer
K-Line	Communication Line (serial)	ZYL / CYL	Cylinder
KW	Crankshaft		
LB	Low Byte		
LL / LLR	Idle / Idle Control		

This is the cut pages sample. Download all 150 page(s) at: ManualPlace.com