

EMCON5 – EMISSION CONTROLLER

CAN BUS DOCUMENTATION



EmCon5
MOTORTECH LEAN-BURN EMISSION CONTROLLER

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INTRODUCTION

Communication is done via the CANopen® protocol. Identifiers are allocated according to the Pre-Defined Connection Set. The EmCon5 supports the Heartbeat and Node Guarding Protocol. CAN frames with short identifiers (11 bit) are used. Four PDO are sent.

The subsequent sections contain the following information:

- list of communication objects
- PDO description

COMMUNICATION OBJECTS

Name	Group	Unit (terminal)	Value range (internal)	Type	Access	Object no.		Unit (internal)
						hex	dec	
MixerFeedbInp1	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A52	10834	–
MixerFeedbInp2	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A53	10835	–
MixerFeedback1	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A54	10836	0.01 %
MixerFeedback2	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A55	10837	0.01 %
Mixer-AD1Input	Inputs	–	0 ... 1023	Integer16	R	2A56	10838	–
Mixer Feedback	Control	0.1 %	0 ... 10000	Integer16	R	2A57	10839	0.01 %
EnginePwr-Inp1	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A58	10840	–
EnginePwr-Inp2	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A59	10841	–
EnginePower1	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A5A	10842	0.01 %
EnginePower2	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A5B	10843	0.01 %
EngPwrAD2Input	Inputs	–	0 ... 1023	Integer16	R	2A5C	10844	–
Engine Power	Control	0.1 %	0 ... 10000	Integer16	R	2A5D	10845	0.01 %
MAP-Input1	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A5E	10846	–
MAP-Input2	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A5F	10847	–
MAP1	Sensor Chars	mbar	–500 ... +2500	Integer16	R/W	2A60	10848	mbar
MAP2	Sensor Chars	mbar	–500 ... +2500	Integer16	R/W	2A61	10849	mbar
MAP-AD3 Input	Inputs	–	0 ... 1023	Integer16	R	2A62	10850	–
MAP	Control	mbar	–500 ... +2500	Integer16	R	276D	10093	mbar
MAT-Input1	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A63	10851	–
MAT-Input2	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A64	10852	–
MAT1	Sensor Chars	°C (°F)	–200 ... +1200	Integer16	R/W	2A65	10853	0.1 °C
MAT2	Sensor Chars	°C (°F)	–200 ... +1200	Integer16	R/W	2A66	10854	0.1 °C
MAT-AD4 Input	Inputs	–	0 ... 1023	Integer16	R	2A67	10855	–
MAT	Control	°C (°F)	–200 ... +1200	Integer16	R	276E	10094	0.1 °C

Name	Group	Unit (terminal)	Value range (internal)	Type	Access	Object no.		Unit (internal)
						hex	dec	
%CH ₄ -Input1	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A68	10856	–
%CH ₄ -Input2	Sensor Chars	–	0 ... 1023	Integer16	R/W	2A69	10857	–
%CH ₄ -1	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A6A	10858	0.01 %
%CH ₄ -2	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A6B	10859	0.01 %
MxPos40%CH ₄	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A6C	10860	0.01 %
MxPos60%CH ₄	Sensor Chars	0.1 %	0 ... 10000	Integer16	R/W	2A6D	10861	0.01 %
CH ₄ -AD ₅ Input	Inputs	–	0 ... 1023	Integer16	R	2A6E	10862	–
Ana CH ₄	Control	0.1 %	0 ... 10000	Integer16	R	2A6F	10863	0.01 %
MxPosCH ₄	Control	0.1 %	±10000	Integer16	R	2A70	10864	0.01 %
MAP power 1	Control	0.1 %	0 ... 10000	Integer16	R/W	2C70	11376	0.01 %
MAP power 2	Control	0.1 %	0 ... 10000	Integer16	R/W	2C71	11377	0.01 %
MAP power 3	Control	0.1 %	0 ... 10000	Integer16	R/W	2C72	11378	0.01 %
MAP power 4	Control	0.1 %	0 ... 10000	Integer16	R/W	2C73	11379	0.01 %
MAP power 5	Control	0.1 %	0 ... 10000	Integer16	R/W	2C74	11380	0.01 %
MAP 1	Control	mbar	–2000 ... +2500	Integer16	R/W	2C75	11381	mbar
MAP 2	Control	mbar	–2000 ... +2500	Integer16	R/W	2C76	11382	mbar
MAP 3	Control	mbar	–2000 ... +2500	Integer16	R/W	2C77	11383	mbar
MAP 4	Control	mbar	–2000 ... +2500	Integer16	R/W	2C78	11384	mbar
MAP 5	Control	mbar	–2000 ... +2500	Integer16	R/W	2C79	11385	mbar
MAT reference	Control	°C (°F)	–200 ... +1200	Integer16	R/W	2A75	10869	0.1 °C
MisfMAP reduct	Protections	mbar	±1000	Integer16	R/W	2A76	10870	mbar
MAP corr limit	Control	mbar	0 ... 1000	Integer16	R/W	2F49	12105	mbar
MAT correction	Control	mbar/ 10 °C	±30000	Integer16	R/W	2A77	10871	mbar/ 10 °C

COMMUNICATION OBJECTS

Name	Group	Unit (terminal)	Value range (internal)	Type	Access	Object no. hex	dec	Unit (internal)
Start pos 1	Control	0.1 %	0 ... 10000	Integer16	R/W	2A78	10872	0.01 %
Start pos 2	Control	0.1 %	0 ... 10000	Integer16	R/W	2A79	10873	0.01 %
Run pos 1	Control	0.1 %	0 ... 10000	Integer16	R/W	2A7A	10874	0.01 %
Run pos 2	Control	0.1 %	0 ... 10000	Integer16	R/W	2A7B	10875	0.01 %
AFR gain	Control	0.1 %	0 ... 2000	Integer16	R/W	2A7C	10876	0.1 %
AFR int	Control	%	0 ... 200	Integer16	R/W	2A7D	10877	%
Mixer position	Control	0.1 %	0 ... 10000	Integer16	R/W	2A7E	10878	0.01 %
Mixer BO hyst	Control	0.1 %	0 ... 10000	Unsigned16	R/W	2A7F	10879	0.01 %
Mixer pos del	Control	0.1 s	0 ... 65000	Unsigned16	R/W	2A80	10880	0.01 s
Mixer mode	Control	MAN, AUT	0, 1	StringList	R/W	2A81	10881	0, 1
Ana CH4	Control	OFF, ON	0, 1	StringList	R/W	2754	10068	0, 1
Low Pwr pos 1	Control	0.1 %	300 ... 10000	Integer16	R/W	2A83	10883	0.01 %
Low Pwr pos 2	Control	0.1 %	300 ... 10000	Integer16	R/W	2A82	10882	0.01 %
MAP difference	Protections	mbar	0 ... 1000	Unsigned16	R/W	2A84	10884	mbar
MAP timeout	Protections	0.1 s	0 ... 65000	Unsigned16	R/W	2A85	10885	0.01 s
MAP Fls del	Protections	0.1 s	0 ... 100	Unsigned16	R/W	2F77	12151	0.1 s
MAT warning	Protections	°C (°F)	0 ... 1000	Integer16	R/W	2A86	10886	0.1 °C
MAT Wrn del	Protections	0.1 s	0 ... 65000	Unsigned16	R/W	2A87	10887	0.01 s
MAP power	Control	mbar	±32000	Integer16	R	2A88	10888	mbar
MAP temperature	Control	mbar	±32000	Integer16	R	2A89	10889	mbar
MAP required	Control	mbar	±32000	Integer16	R	276B	10091	mbar
Mixer output	Control	0.1 %	0 ... 10000	Integer16	R	2A8A	10890	0.01 %
Binary Inputs	Binary I/O	–	–	Unsigned16	R	2A8B	10891	–
Binary Outputs	Binary I/O	–	–	Unsigned16	R	2A8C	10892	–
AIN status	Binary I/O	–	–	Unsigned16	R	2A8D	10893	–

PDO DESCRIPTION

Transmit PDO 1 sent every 100 ms

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Mixer Feedback [0.1 %]		Engine Power [0.1 %]		MAP [mbar]		MAT [°C]	

Transmit PDO 2 sent every 100 ms

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Ana CH4 [0.1 %]		MxPosCH4 [0.1 %]		MAP power [mbar]		MAP temperature [mbar]	

Transmit PDO 3 sent every 100 ms

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
MAP required [mbar]		Mixer output [0.1 %]		Binary Inputs [-]		Binary Outputs [-]	

Bit 0	Engine Running
Bit 1	Engine Loaded (GCB Closed)
Bit 2	Island Operation (MCB Closed)
Bit 3	Gas Selection
Bit 4	Misfiring
Bit 5	Alarm Reset
Bit 6–15	0

Bit 0	Mixer Down
Bit 1	Mixer Up
Bit 2	Mixer Control
Bit 3	Mixer Warning
Bit 4	MAT High Warning
Bit 5	Common Alarm
Bit 6–15	0

Transmit PDO 4 sent every 100 ms

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
AIN status [-]		Mixer-AD1Input [-]		EngPwrAD2Input [-]		MAP-AD3 Input [-]	

Bit 0	AIN1 Error	Bit 8	Pressure Error
Bit 1	AIN2 Error	Bit 9	Temperature Error
Bit 2	AIN3 Error	Bit 10	Mixer Error
Bit 3	AIN4 Error	Bit 11	PI Governor ON
Bit 4	AIN5 Error	Bit 12–14	0
Bit 5–7	0	Bit 15	Parameters Error

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