MotoHawk* Control Solutions

ECM Summary

	Form Factor	24 Pin		48 Pin				70 Pin		80 Pin	112 Pin			128 Pin
	Intended Control Function	**Engine / Powertrain**	**General Purpose**	**Engine / Powertrain**	**Engine / Powertrain**	**General Purpose**	**Hydraulic**	**Engine / Powertrain**	**Engine / Powertrain**	**Engine / Powertrain**	**Engine / Powertrain**	**Engine / Powertrain**	**Engine / Powertrain**	**Engine / Powertrain**
	Series	**ECMS12-24**	**GCMS12-24**	**ECM555-48**	**ECM-563-48**	**GCM563-48**	**HCM563-48**	**ECMS12X-70**	**ECM5634-70**	**ECM555-80**	**ECM5554-112**	**ECM5642-112**	**ECM5644-112**	**ECM565-128**
	Series Common Name	**SECM24**	**GCM24**	**ECM07**	**SECM48**	**GCM48**	**HCM48**	**ECM70**	**SECM70**	**PCM80**	**PCM09**	**SECM112**	**PCM112**	**PCM128/PCM-HD**
Core	Microcontroller	Freescale HCS12	Freescale HCS12	Freescale MPC555	Freescale MPC563	Freescale MPC563	Freescale MPC563	Freescale HCS12XE	ST MPC5634M	Freescale MPC555	Freescale MPC5554	Freescale MPC5642A & HCS12G128	Freescale MPC5644A & HCS12G128	Freescale MPC565
	Clock Frequency	24 MHz	24 MHz	40 MHz	56 MHz	56 MHz	56 MHz	50 MHz	80 MHz	40 MHz	80 MHz	120 MHz	120 MHz	56 MHz
Memory	Internal Flash	128 k	128 k	448 k	512 k	512 k	512 k	256 k (1M on dev't version)	1.5 M	448 k	2 M	2 M (4 M on dev't version)	4 M	1 M
	External Flash													
	EEPROM	2 k internal, (8 k serial optional)	2 k internal	4 k or 8 k (serial) (dev't version: 128 k)	16 k (serial) (dev't version: 128 k)	16 k (serial) (dev't version: 128 k)	16 k (serial) (dev't version: 128 k)	4 k internal + 8 k (serial)	16 k (serial)	8 k (serial) (dev't version: 128 k)	32 k (serial)	32 k (serial)	32 k (serial)	8 k (serial), opt. 128 k (parallel)
	Internal SRAM	2 k	2 k	26 k	32 k	32 k	32 k	16 k (64 k on dev't version)	94 k	26 k	64 k	128 k (192 k on dev't version)	192 k	36 k
	External SRAM										512 k (dev't version only)			512 k (optional)
Inputs	Supply Voltage	8–16 V	8–16 V	8–16 V	8–16 V	8–32 V	8–32 V (0802 only: 8-16 V)	8–16 V	8-32V	8–16 V	8–16 V	8-32V	8–16 V	9–32 V
	Emergency Stop Inputs			1		1	1	1		1	1		1	
	Switch Inputs		4 switch to battery					4 switch to GND	4 switch to GND	1 switch to GND			4 switch to GND, 1 switch to BATT	
	Frequency Inputs			4 Hall-type (PU)	1 VR/Hall (SW selectable)	Up to 6 Hall-type (PU), and up to 2 VR/Hall (SW selectable)	Up to 4 Hall-type (PU), and up to 2 VR/Hall (SW selectable)	3 Hall-type (PU)	1 Hall-type (PU)	3 Hall-type (PU)	Up to 4 Hall-type (PU)	Up to 6 Hall-type (PU)	2 Hall-type (PU)	Up to 8 Hall-type (PU), and 4 VR/Hall (SW Selectable)
	Engine Position Input Type	VR/Hall mode (SW selectable)		VR or Hall (model dependent)	VR/Hall (SW selectable)			Both VR and Hall input pins available	VR CNK and Hall CAM	Both VR and Hall input pins available	Both VR & Hall input pins available	Both VR and Hall input pins available	Both VR and Hall input pins available	VR/Hall (SW selectable)
	Analog Inputs (10-bit)	7–12	6	12	Up to 19	Up to 18	Up to 16	18	15	Up to 19	33	31	23	Up to 34
	Knock Inputs			1 or 2 (DSP)	1 (DSP, optional)		0 or 1 (DSP)		1 or 2	2 (DSP)	2 (DSP)	2 (DSP)	2 (DSP)	2 or 4 (DSP)
	O_2 Sensor Inputs	1 single-ended EGO (opt.)			3 single-wire EGO (optional)			2 single-ended EGO	2 EGO or 1 EGO and 1 UEGO	2 differential EGO (optional)	4 differential EGO	2 EGO and 2 UEGO or 4 EGO	4 differential EGO & 2 UEGO	2 UEGO (Bosch wide-range); 2 differential EGO (opt.); 2 single-wire EGO
Outputs	High-Current Drivers (6A+)			1 or 2 low-side (PWM)			1 low-side (PWM)	1 low-side	7 low-side PWM (up to 3 w/current sense)					
	Medium-Current Drivers (1-5A)	1 –4 low-side	5 low-side	1 low-side PWM, 1 low-side discrete	up to 5 low-side (up to 2 PWM)	4 low-side PWM (2 w/ current sense), 1 low-side and 2 high-side (discrete)	6 low-side PWM w/current sense, 5 low-side (discrete)	2 low-side PWM	2 low-side PWM	Up to 6 low-side PWM	4 low-side (w/HEGO diagnostics)	7-11 low-side (1 w/current sense)	6 low-side	10 low-side PWM (2 w/current sense)
	Current-Controlled Drivers										2 (1 A)			
	Low-Current Drivers (500 mA)	1 low-side		1 low-side PWM	1 low-side	1 low-side	1 low-side	1 low-side PWM	3 low-side	2 low-side	5 low-side	8 low-side + 1 TACH	5 low-side + 1 TACH	1
	Relay Drivers (<250 mA)							5			2 low-side		3 analog gauge drivers	
	Main Power Relay Low-Side Driver			1	1	1	1	1	1	1	1	1	1	1
	Injector Drivers	1 (up to 4 high-impedance loads)		4 (high-impedance)	4 (high-impedance)			4 (high-impedance)	6 (up to 4 capable of peak/hold)	12 (3A/1A peak/hold)	8 (high-impedance)	8 high-impedance or 6 peak/hold (up to 7A/2A)	8 (high-impedance)	12 - 3 A/1 A peak/hold (6 are 7 A/2.5 A SW selectable)
	Logic Outputs or Spark Triggers	0 or 3 (5 V) triggers		4 (5 V), 1 (12 V)	8 (5 V), 1 (12 V)	1 (5 V)	1 (5 V)	1 (12 V)	Up to 8 (5 V)	8 (5 V) triggers	8 (5 V) triggers, 1 (12 V)	0 (8 optional)		12 or 16 (5 A) triggers, 1 (12 V)
	Direct Ignition Coil Drivers							2 or 3				6 (8 optional)	4	
	Low-Current H-bridge Driver	0 or 1 (5 A) w/ current sense			1 or 2 (5 A) w/current sense				1 (4 A w/current sense) +1 opt. (2.5A w/cur sense)	1 (5 A, opt.)		1 (5 A w/current sense) 1 (2.5 A w/current sense)		
	High-Current H-bridge Driver					1 (15 A w/current sense)				1 (12 A discrete, optional)	2 (10 A w/current sense)		2 (10 A w/current sense)	3 (15 A w/current sense)
	3-phase BLDC Driver								1 (optional)					
	Sensor Excitation	1 (5 V) sensor supply (250 mA max)	1 (5 V) sensor supply (250 mA max)	1 (5 V) sensor supply, 350 mA max.	1 or 2 (5 V) sensor supply, 350 mA max.	1 (5 V) sensor supply, 300 mA max.	1 (5 V) sensor supply, 300 mA max.	1 or 2 (5 V) sensor supplies, 100 mA max.	1 (5 V) sensor supply, 350 mA max.	2 (5 V) sensor supplies, (350 mA max.)	2 (5 V) sensor supplies, (50 mA and 100 mA)	2 (5 V) sensor supplies, (350 mA and 100 mA) 1 (12V) sensor supply (100mA)	3 (5 V) sensor supplies, (1) 50 mA, (2) 100 mA	2 (5 V) sensor supplies, (350 mA max.)
Communications	CAN 2.0B	1 or 2	2	1	1 or 2	3	2	1 or 2	2	1 or 2	3	3	3	2
	USB1.1													
	Serial			RS-485 (optional)				RS-485 (optional)\		RS-485 (optional)	RS-485	RS-485 (optional)	RS-485	RS-485,(optional)
	Shutdown	Not SW controlled	SW controlled	SWS controlled (via MPRD relay)	SW controlled	SW controlled	SW controlled	SW controlled	SW controlled	SWS controlled (via MPRD relay)	SW controlled	SW controlled	SW controlled	SW controlled
Environmental	Operating Temperature Range	-40–105 °C	-40–105 °C	-40–85 °C	-40–105 °C	-40–85 °C	-40–85 °C	-40–85 °C	-40–105 °C	-40–105 °C	-40–105 °C	-40–105 °C	-40–105 °C	-40–105 deg °C
	Construction	Plastic housing	Plastic housing	Stamped Aluminum	Stamped Aluminum	Stamped Aluminum	Stamped Aluminum	Stamped Aluminum	Stamped Aluminum	Cast Aluminum with E-Coat	Cast Aluminum with E-Coat	Cast Aluminum	Cast Aluminum	Cast Aluminum
	Connector	24-pin Delphi	24-pin Delphi	48-pin Tyco	48-pin Tyco	48-pin Tyco	48-pin Tyco	70-pin Tyco	70-pin Tyco	80-pin Tyco	112-pin Molex	112-pin Molex	112-pin Molex	80- and 48pin Tyco
	Availability	In Production	In Production	In Production	In Production	In Production	In Production	In Production	In Production	In Production	In Production	In Production	Limited prototypes available, SOP Q3 2014	In Production

ECM = Engine Control Module GCM = General Control Module HCM = Hydraulic Control Module

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