

# Apollo CM-20 Universal ECU



## Universal ISOBUS ECU

Offering harness-based modules and designed to trim costs of machinery control systems, the Apollo CM-20 Universal ECU is fully capable in nearly all agricultural applications, such as seed-ing, planting, spraying, and spreading.

### FEATURES

- 12 encoder inputs and 4 analog inputs
- 10x PWM capable 5A outputs
- Inputs/outputs protected to 30V
- Provides 12V and 5V sensor power supplies with current monitoring
- 4-20 mA pressure sensor support
- 1x ISO-CAN , 1x J1939 CAN, 1x RS-232/RS-485 and 1x BroadR-Reach interface
- Isolated ECU and LOAD power ground system for ISO CAN
- ISO-BUS compliant, Universal Terminal and Task Controller clients supported
- Software Development Kit for full customization

### ELECTRICAL

Supply voltage	9 to 16 VDC	
Supply current	500 mA with no load	
Maximum supply current	33 A	
Communication ports	1x CAN ISOBUS (11783) 1x CAN (J1939)	1x RS-232 / RS-485 1x BroadR-Reach
Inputs protection	30 V protected	
EMC/EMI	ISO 14982 • 2009/64/EC • CISPR 25	
E-field susceptibility	ASAE EP455	
ESD	ISO 14982	

### ENVIRONMENTAL

Operating temperature	-20°C to +65°C
Storage temperature	-40°C to +85°C
Ingress protection	IP68
Vibration (sinusoidal)	IEC 60068-2.6
Vibration (random)	IEC 60068-2.64
Drop test	IEC 60068-2.31/2.32
Damp heat cyclic	IEC 60068-2.30
Chemical brush	ISO 15003-5.10
Wash	ASAE EP455-5.6

### INPUTS / OUTPUTS

Solid state Relay or PWM Outputs	10 x 5 / 10 A, PWM capable outputs each with high and low side drivers Total ECU current 33 A max. Individual current sensing 0 to 100% duty cycle 0 to 2 kHz operation frequency	
Encoder inputs	12 pulse count/frequency measurement inputs 0 to 10 kHz frequency range 0-30 V input voltage > 10 kΩ input impedance	
Analogue inputs	4 analog inputs 12 bit resolution 0-16 V input voltage range for single ended > 10 kΩ input impedance	

### PHYSICAL

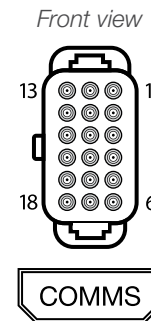
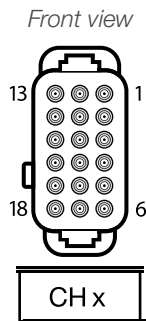
Housing	Die cast aluminum UV protected enclosure.	
Connectors	2x 18-pin DEUTSCH DT B-key channel connectors 1x 18-pin DEUTSCH DT C-key communication connector 1x 4-pin DTP load power connector	
LEDs	1 x Power 1x CAN Rxv	1x CAN Tx 1x Error
Weight	Approx. 1.8 kg	
Dimensions (H x W x D)	165 x 198 x 50 mm	

### PROCESSOR

Main Processor	AM3352 running at 800 MHz
RAM Memory	RAM: 1GB (64 M x 16) SDRAM - DDR2 512MB
Nand Flash Memory	2GB (128 M x 16)
NOR Flash Memory	NOR FLASH (SPI): 64MB (8 M x 8)
Realtime Microcontroller	166 MHz ARM M4

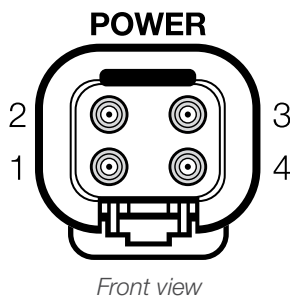
# Apollo CM-20 Universal ECU

## Pin Assignments



KANALANSCHLUSS (*DT16-18SB)	
PIN	FUNCTION
1	SSR / PWM Output 1 / 6
2	SSR / PWM-Output 2 / 7
3	Load Power Ground
4	Encoder In 1 / 6
5	Encoder In 2 / 7
6	Encoder In 3 / 8
7	Encoder In 4 / 9
8	Analog Input 1 / 3
9	Analog Input 2 / 4
10	Encoder In 5 / 10
11	SSR / PWM Output 3 / 8
12	SSR / PWM Output 4 / 9
13	SSR / PWM Output 5 / 10
14	Load Power Ground
15	5V Sensor Power Supply
16	12V Sensor Power Supply
17	Load Power Ground
18	Load Power Ground

(\*) Mating connector



KOMMUNIKATIONSANSCHLUSS (*DT16-18SC)	
PIN	FUNCTION
1	ECU ON
2	Encoder 11
3	Encoder 12
4	RS-232 TX / RS-485A
5	RS-232 RX / RS-485B
6	Load Power Ground
7	CAN 1 - HI
8	CAN 1 - LO
9	CAN 2 - HI
10	CAN 2 - LO
11	TRD-P (Broad-R-Reach)
12	TRD-N (Broad-R-Reach)
13	
14	
15	ECU Power
16	ECU Power Ground
17	Drive Enable
18	Load Power Ground

(\*) Mating connector

DIRTY POWER (*DTP06-4S/W)	
PIN	FUNCTION
1	Load Power Input
2	Load Power Input
3	Load Power Ground
4	Load Power Ground

(\*) Mating connector