

THUNDERBALL H7 OEM

*Industrial & Marine Rugged IP67
Calculator / IoT Gateway*

STM32H7 Ecosystem

Brief Datasheet



Revision 1.02
June 2022
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Revision History

Revision	Date	Comment
1.01	26/01/22	Initial Release
1.02	24/06/22	Change Links

Additional Resources

Please visit our developer tools webpage for quickstart guides and other helpful resources:

Product Page : <http://austral-eng.com/en/thunderball-h7-oem-industrial-marine-rugged-ip67-mission-calculator-iot-gateway/>

Software Support : [Request Github access](#)

1 PRODUCT OVERVIEW

KEY FEATURES

BENEFITS

APPLICATIONS

2 PRINGING & ORDERING

Product Pricing & Ordering : <http://austral-eng.com/en/thunderball-h7-oem-industrial-marine-rugged-ip67-mission-calculator-iot-gateway/>

3 SOFTWARE SUPPORT

Software Support : [Request Github access](#)

4 HARDWARE SPECIFICATIONS

	THUNDERBALL H7 OEM	On demand
CPU Core		
CPU	ARM Cortex-M7 (32 bits RISC)	
Frequency	480 Mhz / 2424 CoreMark /1027 DMIPS	550Mhz / Dual Core
FPU	IEEE 754 (Double precision)	
Security	CRC on FLASH and SRAM	Crypto/hash Secure Update
Memory		
FLASH	2 MByte	1 MByte
SRAM	1 MByte	512 Kbyte
FRAM	16 KBit / 10 ¹⁴ writes	8 MBit
SD-CARD	32GByte	Up to 1TB
Network		
LAN	100Mbps Ethernet	
I/O		
USB	1x USB2.0	
CANbus	1x FD-CAN/NMEA2000/J1939 (1Mbps)	
Serials	1x isolated RS232 (230Kbps) 4x isolated RS422/485/NMEA0183/RX RS232 (1Mbps)	12Mbps
Synchro I/O	4x Isolated I/O (Pull-up, 1.7Mhz)	
System		
RTC	RTC avec pile soudée	Wake-up
LED	1x White LED Panel	
Watchdog	Parametrable Watchdog	
Analog	12V, Temperature	
Debug	JTAG	
Bootload	JTAG, USB, Serial	Ethernet
Electrical		
Supply voltage	8 to 18V	
Power Consumption	2.3W typ	
Mechanical		
Dimensions	110x84x28 mm (Enclosure) / 88x57x12 (Board)	OEM board
Protection	IP67	
Enclosure	Nylon	Urethane / Aluminium
Cooling	Passive	
Weight	165g	31g (OEM board)
Compliance		
EMC	Components : EN 301 489-1 et -17, EN 55032 et EN 55024 Class B	
Safety	Components : EC 60950-1:2005, EN 62311:2008, UL 2500V, CSA, VDE, DIN EN 60747-5-2 (VDE 0884 Part2): 2003-01	
ROHS	Directive 2015/863/EU	
Reliability		
MTTF	> 200 000 hours	
Warranty	2 Years	
Operation Temperature	-20 to +85°C	
Relative Humidity	10% to 90% (operation) 5% to 95% (storage)	

(*) Currently under review

Build your product reference at <http://austral-eng.com/en/thunderball-h7-oem-industrial-marine-rugged-ip67-mission-calculator-iot-gateway/>

5 ENCLOSURE



Black Nylon version



Black urethane version

6 MAINTENANCE



Contain a cell coin battery

This product include a CR-2032/HFN coin cell in order to maintain the Real Time Clock and datalog at startup with the correct time without waiting an NTP or GNSS time synchronisation.

The service life of this cell is more than 15 years in a protected environnement (20°C) and power off.

Contact the after sale in order to change this coin cell.

7 ELECTRICAL INTERFACES

Sockets :



Ref	Function	Type	Software
ETH	100MB/s Ethernet	M12, 4 pin D-coded (Profinet standard)	
USB	USB2 Device / Bootload	USB-C	
COM1	Isolated RS232	Binder 620 series 8 pins female	huart7
COM2 to COM5	Isolated RS485 / RS422 / RS232 Rx Only	Binder 620 series 8 pins female	COM2 -> huart3 COM3 -> huart4 COM4 -> huart5 COM5 -> huart2
CAN	CANBus and Power Input	M12, 5 pins male A-coded shielded (NMEA2000 standard)	fdcan1

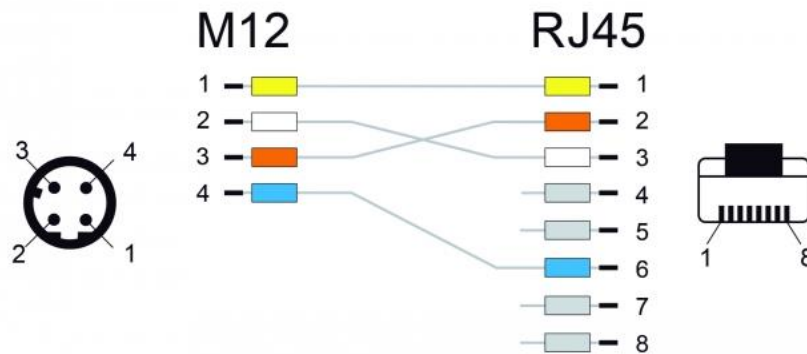
7.1 Pinouts :

Pin	ETH	USB-C	COM1 RS232	COM2 to 5 RS485 (4)	COM2 to 5 RS422 (4)	COM2 to 5 RX-RS232	CAN (5) & PWR-IN	
12		-						
11		-						
10		-						
9		-						
8		-	12V-SER (2) Red					
7		USB-D-	GND-SER Blue					
6		USB-D+	COM1-CTS Pink	- Pink	COMX_RX+ Pink	Must be connected to GND Pink		
5		-	COM1-RX Gray	- Gray	COMX_RX- Gray	COMX-RX (6) Gray	CAN-Low Blue	
4	ETH-RD-	5V In (3)	COM1-TX Yellow	COMX-D- Yellow	COMX-TX- Yellow	- Yellow	CAN-High White	
3	ETH-TD-	-	COM1-RTS Green	COMX-D+ Green	COMX-TX+ Green	- Green	GND Black	
2	ETH-RD+	-	- Brown					PWR-IN Red (1)
1	ETH-TD+	GND	- White	Reserved (SYNC_A to SYNC_D) White			Shield	
Shield	ETH-GND	GND						Shield

- (1) The calculator is powered by the NMEA2000 (Reverse battery protection and Internal SMT fuse)
 (2) Regulated 12V output from an internal isolated DC/DC converter (6W max)
 (3) 5V Input (2W) / !!! Warning - Do not connect to a voltage >5V !!!
 (4) The 100/120 ohm terminator is not include
 (5) The 120 ohm terminator is not include
 (6) !!! Warning - Receiver Input voltage : -8V to +12.5V max !!!

COM wires colors using Binder 77-7405-0000-50008-0200 cable

7.2 ETHERNET : Profinet standard :



M12 to RJ45 Cable pinout

Marine M12 to RJ45 MPPE grey cable : Ifm EVF549 (0.5m, 48g), EVF550 (1m), EVF551 (2m)

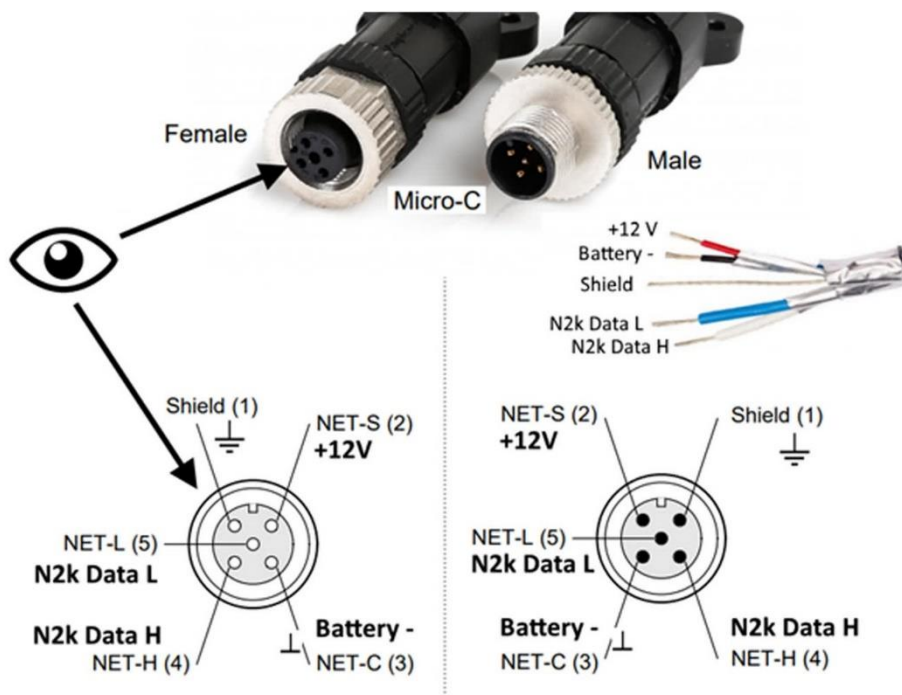
<https://www.ifm.com/>

Industrial M12 to RJ45 PVC green cable : Delock 85437 (1m), 85438 (2m), 85439 (3m)

<https://www.delock.com/>

Small soldering plug : Amphenol M12D-04BMM1-SL8001

7.3 CANbus : NMEA200/DeviceNet standard :



7.4 SERIALS : Binder 620 - 8 positions

2m Cable : Binder 77-7405-0000-50008-0200
Farnell 2949614



Or soldering plug : Binder 99-9225-400-08 (grey) or 99-9225-00-08 (Black)
Farnell 2949942 (grey) or 1778691 (black)



7.5 USB-C

Use a standard android phone USB-C to USB-A charging cable to connect to your PC