

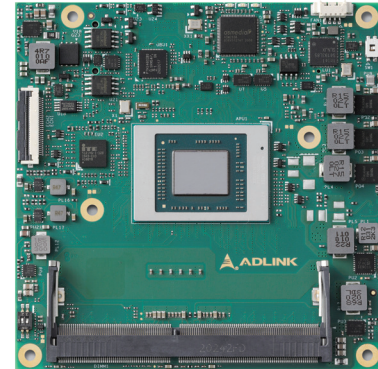
# cExpress-AR

## COM Express Compact Size Type 6 Module with New AMD Ryzen™ Embedded V2000 APU

### Features

- Up to 8 cores based on AMD Zen 2 architecture
- Improved graphics performance (new Radeon Vega GPU)
- Up to 4x 4K displays (DP, eDP)
- 2.5GbE Ethernet, up to 16 PCIe Gen3 lanes
- Configurable TDP down to 10W (8, 6 cores)

Preliminary



### Specifications

#### • Core System

##### CPU

New AMD Ryzen™ Embedded V2000 APU - 7nm process  
 AMD V2748 2.9/4.15GHz, 4MB L2, 35-54W (8C/7CU)  
 AMD V2546 3.0/3.95GHz, 3MB L2, 35-54W (6C/6CU)  
 AMD V2718 1.7/4.15GHz, 4MB L2, 10-25W (8C/7CU)  
 AMD V2516 2.1/3.95GHz, 3MB L2, 10-25W (6C/6CU)  
 other processors TBD

##### Memory

Dual channel up to 3200 MT/s ECC/non-ECC DDR4 memory up to 64GB in two SODIMM sockets  
 • One SO-DIMM on top side, one SO-DIMM on bottom side  
 • ECC support on selected SKUs (TBC)

##### Embedded BIOS

AMI UEFI with CMOS backup in 32 or 16MB SPI BIOS (dual BIOS by build option)

##### Cache

4MB L2 for V2748/V2718, 3MB L2 for V2546/V2516

##### Expansion Busses

6 PCIe x1 Gen3: Lanes 0/1/2/3 (configurable to x1, x2, x4) and Lanes 4/5 (x1, x2)  
 Note: PCIe switch by build option for additional x1 on Lanes 6/7  
 1 PCIe x8 Gen2: Lanes 16-23 (configurable to 1 x8, 2 x4)  
 LPC bus, SMBus (system), I<sup>2</sup>C (user)

##### SEMA Board Controller

Supports: Voltage/current monitoring, power sequence debug support, AT/ATX mode control, logistics and forensic information, flat panel control, general purpose I<sup>2</sup>C, watchdog timer, fan control and failsafe BIOS (dual BIOS by build option)

##### Debug Headers

30-pin multipurpose flat cable connector for use with DB-30 x86 debug module providing BIOS POST code LED, EC access, SPI BIOS flashing, power testpoints, debug LEDs

#### • Video

##### GPU Feature Support

AMD Radeon™ Vega Graphics, supporting 4 independent and simultaneous display combinations of DisplayPort/HDMI/LVDS, eDP or VGA outputs (4x 4K at DP, eDP)

- Hardware encode/decode (including HEVC 10-bit)
- DirectX 12 support
- OpenGL 4.6 and ES 3.X support
- OpenCL 2.1 support

##### Digital Display Interface

DDI1/2/3 supporting DisplayPort 1.4, HDMI 2.1, DVI  
 DisplayPort 1.4, max. resolution 4096x2160@60Hz  
 HDMI 2.1, max. resolution 4096x2160 @60Hz  
 (max. resolution support dependent on carrier)

##### VGA

Supported by build option through DP-to-VGA IC (in place of DDI3)  
 Max. resolution 1920x1200 @60Hz

##### LVDS

Single/dual channel 18/24-bit LVDS from eDP-to-LVDS IC  
 Max. resolution 1920x1200 @60Hz in dual mode

##### eDP

Optional 4 lane eDP1.3 support, in place of LVDS  
 Max. resolution 4096X2160@60Hz (max. resolution dependent on carrier)

## Specifications

- **Audio**

- **Chipset**

- AMD Audio coprocessor integrated in APU

- **Audio Codec**

- On carrier Express-BASE6 (ALC886 standard support)

- **Ethernet**

- **LAN Controller**

- Intel® Ethernet Controller i225 Series (V/IT versions)

- **Interface**

- 2.5Gbit/s, 1000/100/10 Mbit/s Ethernet connection

- **Multi I/O and Storage**

- USB: 4x USB 3.2/2.0/1.1 (USB 0,1,2,3) and 4x USB 2.0/1.1 (USB 4,5,6,7)

- SATA: 2x SATA 6Gb/s (SATA 0,1)

- Serial: 2x UART ports with console redirection

- GPIO: 4x GPO and 4x GPI from EC (GPI with interrupt TBC)

- Note: USB 3.2 Gen2 support dependent on carrier design

- **Super I/O**

- Supported on carrier if needed (standard support for W83627DHG-P, other Super I/O supported by project basis)

- **TPM**

- Chipset: Infineon

- Type: TPM 2.0 (LPC based)

- **Power**

- **Standard Input**

- ATX: 12V±5% / 5Vsb ±5%; or AT: 12V±5%

- **Wide Input**

- ATX: 8.5-20 V / 5Vsb ±5%; or AT: 8.5-20V

- Management: ACPI 5.0 compliant, Smart Battery support

- Power States: S0, S3, S4, S5, S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5)

- ECO mode: support deep S5 mode for power saving

- **Mechanical and Environmental**

- Form Factor: PICMG COM.0: Rev 3.0 Type 6

- Dimensions: Compact size: 95 mm x 95 mm

- **Operating Temperature**

- Standard: 0°C to 60°C (Storage: -20°C to 80°C)

- Extreme Rugged: -45°C to +85°C (optional, selected SKUs; Storage: -40°C to 85°C, TBC)

- **Humidity**

- 5-90% RH operating, non-condensing

- 5-95% RH storage (and operating with conformal coating)

- **Shock and Vibration**

- IEC 60068-2-64 and IEC-60068-2-27

- MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

- **HALT**

- Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

- **Operating Systems**

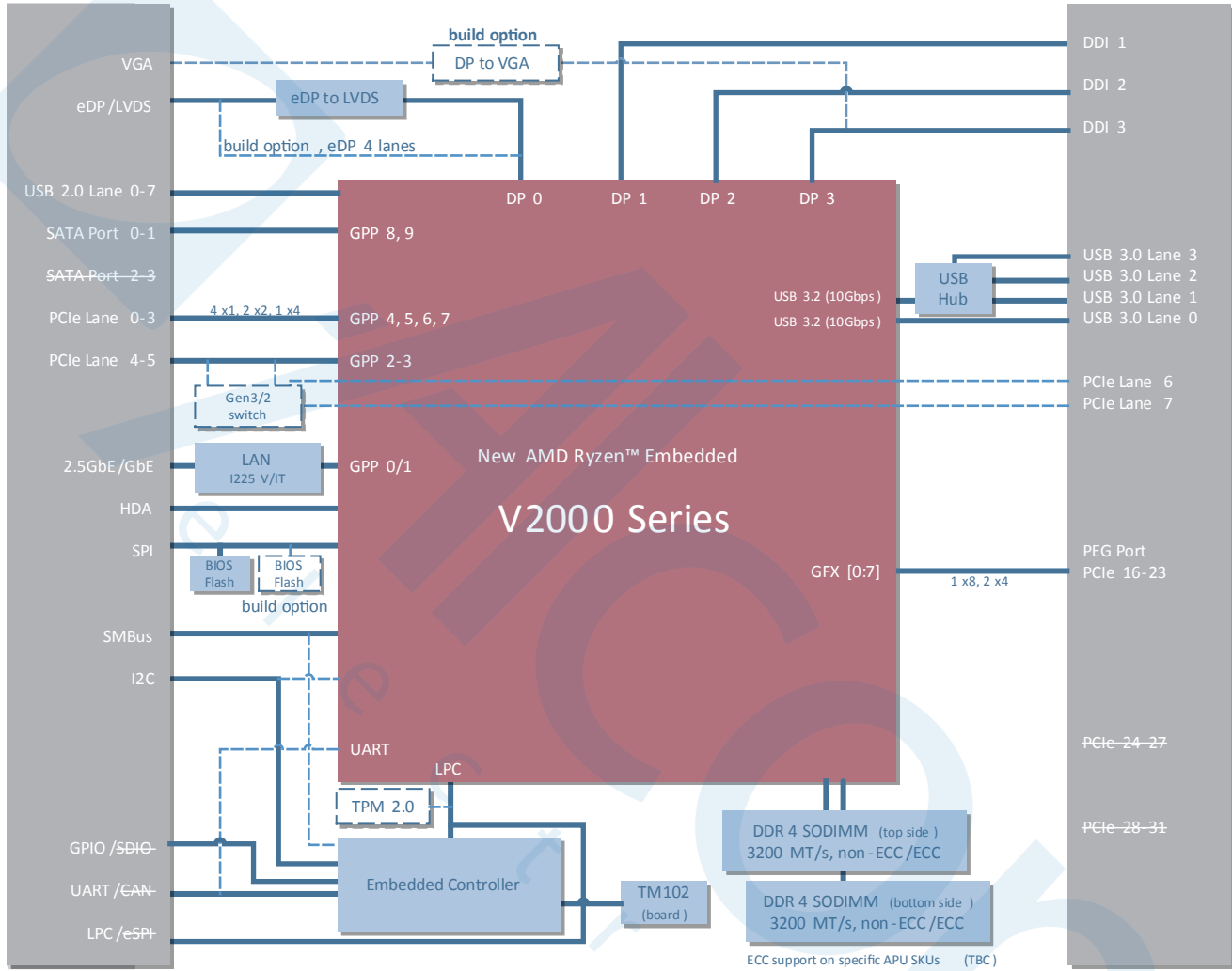
- **Standard Support**

- Windows 10 IOT Enterprise 64-bit, Windows 10 64-bit, Yocto project based Linux 64-bit

- **Extended Support (BSP)**

- Yocto project based Linux 64-bit

## Functional Diagram



Note: General Purpose Ports GPP 2-9 can support up to a maximum of 6 devices (SATA 0/1 count as one device).

# cExpress-AR

## Ordering Information

- **cExpress-AR-V2748**  
Compact COM Express Type 6 module with New AMD Ryzen™ V2748 at 2.9/4.15GHz, octa-core processor, Radeon™ Vega graphics with 7CU
- **cExpress-AR-V2546**  
Compact COM Express Type 6 module with New AMD Ryzen™ V2546 at 3.0/3.95GHz, hexa-core processor, Radeon™ Vega graphics with 6CU
- **cExpress-AR-V2718**  
Compact COM Express Type 6 module with New AMD Ryzen™ V2718 at 1.7/4.15GHz, octa-core processor, Radeon™ Vega graphics with 7CU
- **cExpress-AR-V2516**  
Compact COM Express Type 6 module with New AMD Ryzen™ V2516 at 2.1/3.95GHz, hexa-core processor, Radeon™ Vega graphics with 6CU

\*For processor SKUs not listed, please contact your ADLINK representative for availability.

## Accessories

### Heat Spreaders

- **HTS-cAR-B**  
Heatspreader for cExpress-AR with threaded standoffs for bottom mounting
- **HTS-cAR-BT**  
Heatspreader for cExpress-AR with through hole standoffs for top mounting

### Passive Heatsinks

- **THS-cAR-B**  
Low profile heatsink for cExpress-AR with threaded standoffs for bottom mounting
- **THS-cAR-BT**  
Low profile heatsink for cExpress-AR with through hole standoffs for top mounting
- **THSH-cAR-B**  
High profile heatsink for cExpress-AR with threaded standoffs for bottom mounting

### Active Heatsink

- **THSF-cAR-B**  
High profile heatsink with fan for cExpress-AR with threaded standoffs for bottom mounting

## Starter Kit

- **COM Express Type 6 Starter Kit Plus**  
Starter kit for COM Express Type 6