

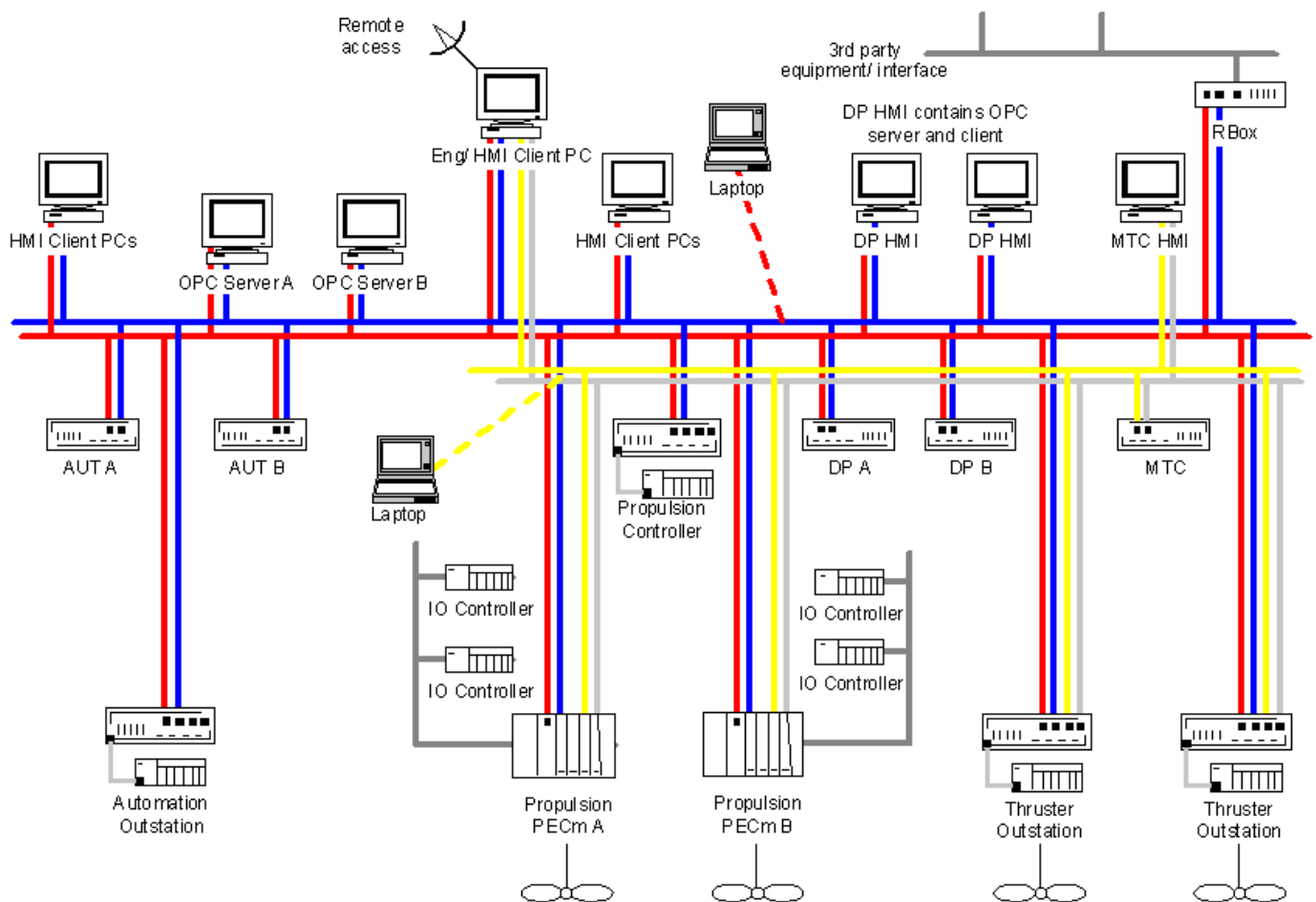
AMC – ADVANCED MICRO CONTROLLER

1. INTRODUCTION TO THE MARINE ARCHITECTURE

The AMC is part of a family of controllers available from Converteam:

- AMC-AU - A-Series Automation Controller
- AMC-DP - A-Series Dynamic Positioning Controller
- PECm - Power Electronics Controller for Marine

The AMC-AU, AMC-DP and PECm are part of the Marine Architecture; which covers drives, automation, HMI, redundant systems and networks and remote diagnostics capabilities:



1.1 HARDWARE

The AMC and PEC controller family is based on three main hardware configurations

- AMC Controller Family, based on:
 - A single board PC “brick”
 - The Wago rail PC
- PEC family, based on the VMIC VME boards;
 - the VMIC7698, VMIC7700, VMIC7766 and VMIC7750

1.2 APPLICATION ENVIRONMENT

The controllers can be programmed using the Isagraf 3 or P80m application programming tools.

ISaGRAF 3 is a programming tool provided by AlterSys which provides a full IEC suite of languages (Function Block, Sequential Function Chart, Ladder and Structure Text). This is used on the AMC-AU, AMC-DP, and a variant of the AMC-PLC.

P80m is a comprehensive Function Block programming tool, P80m is the Marine enhanced version of the Converteam P80C tool. This is used on the PECm control processor and a variant of the AMC-PLC.

See the appropriate product for application environments supported.

1.3 LOCAL I/O

I/O can be provided by the Wago I/O system 750, which provides a wide range of digital and analogue I/O, temperature I/O and simple communications interfaces. Connection to this I/O is either via an Ethernet Coupler based assembly for AMC I/O or directly in the case of the Wago rail.

1.4 NETWORK INFORMATION

The AMC and PEC family supports the Marine Architecture Dual Ethernet network. This uses Networking components from the Industrial Ethernet marketplace that are suitable for use in a Marine and Offshore environment.

1.5 SYSTEM FACILITIES

The AMC and PEC firmware is built up from a number of 'packages'. These packages contain software modules that provide a variety of features. These features are:

- Dual Ethernet - Provides transparent physical media redundancy over the ethernet network
- Identity Dongle - Provides consistent node identity on networks
- NTP* - Support for Network Time Protocol
- I/O network IP address allocation
- IOBlock - Separates the application layer from the underlying I/O
- EGD* - Supports point to point and multicast transfers; Uses the IOBlock application interface facility

- Modbus I/O Driver* - Supports communications with WAGO I/O via the ethernet coupler and Modbus serial links; Uses the IOBlock application interface
- TTY - Enables a user to view all console output via a web page
- JAVA** - Provides an interface to the Automation 'On line workbench'

* ISAGRAF 3 Application environment only; Similar features are provided on the P80m application platform by P80m specific drivers and function blocks

** ISAGRAF3 application environment only. There is no equivalent for the P80m environment

2. AMC – ADVANCED MICRO CONTROLLER

2.1 SPARES & REPAIR INFORMATION

2.1.1 Spares

The AMC is only available from Converteam – please contact our Service Division for assistance (refer to the contact details at the front of the Instruction Book).

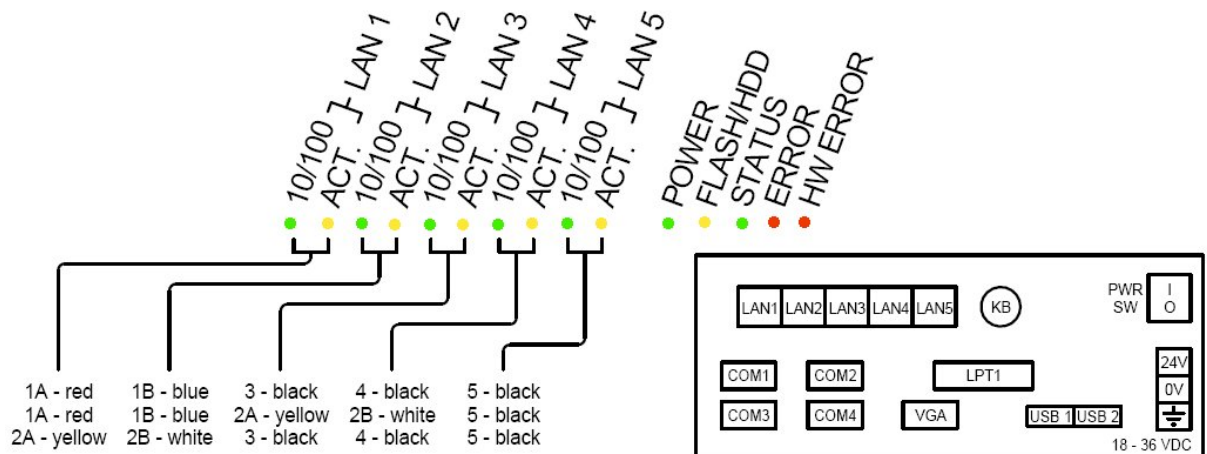
Warning: No attempt should be made to repair the unit by the user.

2.1.2 Replacing a faulty unit

The controller itself does not need any set-up prior to installation.

- Move the dongle from the old controller and re-connect all connections.
- Refer to the Software Loading Instructions to download the latest configuration to the controller.

2.2 FRONT PANEL INFORMATION



2.2.1 LED Legend and Diagnostics

For each of the five network ports there are two LEDs.

- The green LED (labelled as 10/100) indicates whether there is a network cable connected to the port. On 100Mbit networks there is a "link pulse" handshake between the device (AMC) and the network switching hub ('switch'). If the link pulse is not detected then this LED is not lit.
- The yellow LED (labelled as ACT) indicates network activity.
This will flash when:
 - There is activity on the network cable. (Does not necessarily mean that the AMC is responding or generating that traffic)
 - It will flash with a regular beat if the cable is part of a 'Dual Ethernet' network. This is due to the regular diagnostic message that is broadcast by the Dual Ethernet Protocol every 150ms.

This will not flash if:

- The port is not configured to be live on the AMC. This would occur if the arch.def file has not yet been downloaded or if the port is configured as UNUSED in arch.def
- There is no network activity on the cable. Note that the Marine Architecture uses switching hubs 'switches' so the only network activity on a cable is either messages sent directly to and from the device, or broadcast messages.

The remaining five LEDs indicate the following.

- The green LED labelled as POWER indicates whether the internal CPU board has been provided with its 5V power supply from the internal DC:DC convertor.
- The yellow LED labelled as FLASH/HDD indicates network activity to the internal Hard Disk Drive. In the case of the AMC this refers to the internal FLASH solid state disk. This will flash under these conditions:
 - During boot up. This LED flashing will be the first sign that the AMC is booting after switch on (there is also a beep). The flashing occurs in bursts as the operating system loads different components into memory.
 - It will flash rarely during normal operating conditions, since the controller rarely needs to access its disk filing system. The most common reason will be when the Controllers web pages are being accessed.
- The green LED labelled as STATUS indicates whether the controller is healthy and has successfully booted. The LED is static, and is turned on late in the boot process (after about 1 minute). Once turned on, it is not turned off again.
- The red LED labelled as ERROR effectively indicates the controller's watchdog status. This is turned at the same time as the STATUS LED late in the boot process. If the controller is in a safe state to run its application environment then it is immediately turned off again. The ERROR LED is static and turned on under the following conditions:
 - Briefly during boot up, as described.
 - After boot up if the application environment is not capable of running. There could be several reasons for this:
 - The full firmware package (including application environment) has not been downloaded to the controller. This is the case for a new AMC fresh from the supplier.
 - There is a problem with the controller configuration files (check the relevant error logs on the controller)
 - The Identity Dongle is not fitted or not recognised by the configuration.

- There is a Watchdog Trip during normal operation. This would occur if the hardware watchdog times out or the controller firmware detects a 'Serious' or 'Fatal' problem.
- The red LED labelled as WATCHDOG TRIP indicates when the internal watchdog has timed out.

2.2.2 Patch Cable Legend

Underneath the LEDs is a legend which describes the patch cable colour recommendations for the common network configurations. The recommended colour conventions are:

- RED for Arm A of Dual Ethernet Network 1, '1A'
- BLUE for Arm B of Dual Ethernet Network 1, '1B'
- YELLOW for Arm A of Dual Ethernet Network 2, '2A'
- WHITE for Arm B of Dual Ethernet Network 2, '2B'
- BLACK for other private networks e.g. to the Wago IO nests.
Note that Cross-over patch cables should be marked with some identifier e.g. a heat shrink sleeve of a contrasting colour or with a "crossover" legend.

Each line of the legend indicates a common configuration.

- Line 1 is for a single Dual Ethernet Configuration
- Line 2 is for a double Dual Ethernet Configuration (also used for single network)
- Line 1 is for a double Dual Ethernet Configuration where the controller is only connected to network

2.2.3 Connector Legend

This legend shows the location of the main IO connectors on the AMC Controller.

- LAN 1 to 5 are the RJ45 connectors for the network ports.
- COM 1 to 4 are the serial ports. These are standard PC RS232 ports with the standard 9 way D Connector pinout. Port 1 is reserved for the controller console port. Ports 2 to 4 are available for application use.
- LPT1 is the parallel port. This is used for the Parallel Port Identity Dongle.
- VGA is the standard PC display output. This only displays anything interesting during boot up. It is principally used by the supplier when initially configuring the AMC.
- KBD is the PC keyboard. Again this is principally used by the supplier when initially configuring the AMC.
- The power supply input is on the right hand side, using a 2 part screw terminal connector.

- The recessed power switch is also on the right hand side. Pressing the top of the switch (nearest the top panel) turns the unit on.
- The legend also shows a representation of the air intake grill for the AMC (which is convection cooled). Visible through the grill is another PSU LED on the CPU board itself.