A-CONTROLLER

Full 32-Bit, Language-Based, Common Robot Controller

KEY FEATURES

Processor:
Motorola 68020, CPU,
with Floating Decimal Point
Co-processor

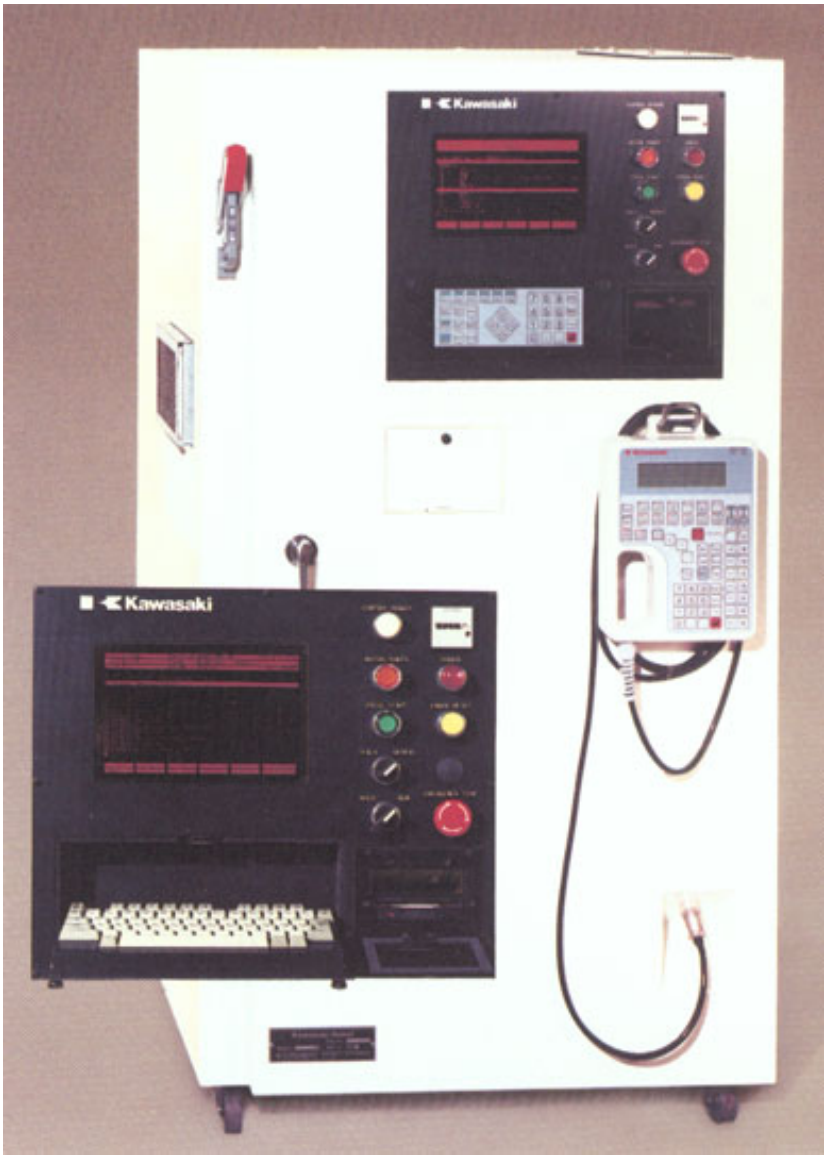
User Interface:
Teach Pendant
Function Menu Keypad
Full Function Keyboard

Standard Hardware:
Plasma Display Screen
Built-in 305" Floppy Disk Drive
Full function Keyboard
32 I/O Board type (128 optional)
512K RAM (1 Meg optional)

Applications:
Spot Welding, All Purpose,
All Area Palletizing, Material
Handling, Sealing, Painting,
Arc Welding, Assembly

Kawasaki's A-Series Robot Controller is a full 32-bit, language based controller which is common to the entire line of Kawasaki Robot models. A unique, standard feature of the A-controller is it's flexibility to accept block-step type or language type programming instructions. Operators, programmers, and maintenance personnel can easily interact with the Kawasaki A-controller without adding any optional equipment or special software.

Standard equipment includes a Plasma Display screen, Built-in HD 305" Floppy Disk Drive, Keyboard, Function Menu Keypad, Teach Pendant, 32 I/O, 512K RAM, Manual Brake Release buttons for all robot axes, and software featuring Error & Operation Logging, Diagnostics, and Circular & Linear Interpolation. Available optional features include; up to 128 I/O, 1 Meg RAM memory, 7th axis control, and interface cards for I/O, vision, PLC's, weld equipment, and computer networks.



Among the significant user benefits of the A-Controller are:

- Easy to use operator interface is common to all Kawasaki robots, allows simple block/step type or more sophisticated language based programming, and minimizes training requirements.
- Servo System with Absolute Positioning to optimize motion performance, minimize cycle times, and eliminate downtime associated with intermittent power loss recovery.
- Common mechanical and electrical parts, reduces spare parts and simplifies maintenance.
- Safety features including E-stop buttons on the controller front panel and the teach pendant, automatic speed limitation in teach mode, and brakes on all axes motors.
- The 'AS' Language is powerful, yet familiar to industrial users, and includes high level functions such as frame shifting, off-line program editing, multi-task program execution during robot operation, and on-line path parameter changes.

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- Proven reliability through years of field-tested mechanical and electrical components, means high MTBF rates and maximum uptime.
- Troubleshooting is made easy through standard on-line error-logging, operation-logging, and extensive diagnostic capabilities.
- All software is completely menu-driven, and displayed on the controller plasma display, or the teach pendant display screen.

AS LANGUAGE

The powerful Kawasaki AS Language is a derivative of a language already familiar to many machine tool and robot programmers. It is an interpreter type language which eliminates the need for program compilation and therefore provides immediate feedback on programming errors. Debugging is quick and simple, and can be done without taking the time to compile the program or run the robot. Instructional commands include Arithmetic, Logicals, Conditionals, Signal & Position Control, and Motion Status.

For Example, automatic Pallet-izing is possible without adding any special software by teaching three initial points and defining stack parameters.

User frames can be easily shifted or rotated to accurately accommodate changes in part location.

In addition to the robot arm motion control programming, AS provides Process Control Program (PCP), or PC for short, which can be programmed and executed simultaneously with the robot motion programs, PC programming capabilities provide extreme versatility for programming and controlling peripheral equipment. External devices can be controlled and operated independent and/or dependant of robot motion program. PC program supports and executes all AS instructions except the ones which cause robot arm motion.

CONTROLLER SPECIFICATIONS

CPU: 32-bit Microprocessor and Floating Decimal Point Co-Processor

Servo Control and Drive System:
Software Servo with Transistor PWM

Number of Controlled Axes:
6 (std.) / 7 Traverse axis (opt.)

Memory Type:
- Robot Software: EPROM
- User Memory: C-MOS RAM with Battery Backup

Memory Capacity:
512 KB (Approx 4200 steps) (std.)
1024 KB (approx 9000 steps) (opt.)

Memory Division: Infinitely Variable

Accuracy: 4 Levels/Step
(Adjustable 0.5-5000 mm thru pre-set tables or infinitely adjustable thru software)

Speed: 10 Levels/Step (Adjustable 0-100% thru pre-set tables or infinitely adjustable thru software)

Clamp Signal: Maximum 4 (pulse, Level Adjustable)

Clamp Subroutine: 9 Clamp Sequence Programs: Clamp with Weld Schedule Signals Output.

External Storage: 3.5 in. Floppy Disk Drive Unit

Dedicated Signals:

Output:	Input:
• Motor Power On	• Ext Motor On
• In Error condition	• Ext Cycle Start
• Automatic	• Ext Hold Reset
• Teach Mode	
• Home Position	
• Weld Schedule	
• Robot Hold	

I/O Signals:
- Output (OX): 32 Channels, DC24V solid State Relay (std.) (Includes dedicated signals) 64, 96, 128 Ch (opt.)
- Input (WX): 32 Channels, DC24V Photo Coupler (std.) (Includes dedicated signals) 64, 96, 128 Ch (opt.)
- Remote I/O: AB Remote I/O (opt.)
- Analog Output: DC 0-10 V (opt.)

Operator Panels:
- Motor Power On, Cycle Start, E-Stop, etc.
- Menu Driven Function Key Pad Panel and Flip Down Keyboard
- Alphanumeric PDU (80 character x 22 lines)

Construction: Self-standing enclosure with heat exchanger
Dimensions: 890 mm W x 700 mm D x 1600 mm H (35 in. W x 28 in. D x 63 in. H)

Teach Pendant:
- Tactile Feedback Switches
- LED Indicators
- Alphanumeric LCD with backlight(40 character x 8 lines)
- Emergency stop switch
- Teach lock switch
- Deadman grip

Special Functions:
- Movement check function in
- Tteach mode
- Door interlock
- Power lockout
- Restriction of R-Axis
- Maximum teach speed 10 in./sec
- Drive power shutdown in “HOLD”
- Manual brake release for each axis

Weight: 430 kg (948 lb)

Installation and Operating Conditions:
- Power Requirements:
- 3 Phase, 50/60 Hz
- 460 VAC +15%/-20%, 10KVA (Momentary drop up to -30%) (Available 380, 400, 420, 440, 480 VAC)
- Ambient Temperature: 5-52 deg C (41-125 deg F)
- Relative Humidity: 35-85%
- Non condensing