Programmable Measurement Controller

AD-4820

A&D Company, Limited
http://www.aandd.jp

Fast response to a wide range of appl

Ideal for use across a wide range of weighing, measurement and control fields. Enables custom applications through its innovative programming and GUI functions (IDE tools).

The AD-4820 is comprised of a CPU, OS, display and transmission interface. Programming, sequential control and screen displays of your own design are possible with the AD-4820. The abundant number of I/O boards that can be installed to its maximum of 4 expansion slots also means that space and costs of constructing a complex large-scale system can be reduced.

Display

STN color liquid crystal touch panel
Waterproof (IP-65)

CPU board

CPU	SH4
OS	RT-OS
SD RAM	64Mbyte
Memory	64Mbyte

Standard interface

LAN (Ethernet) (10Base-T)
RS-232C/422/485
USB
RUN output

I/O board installation *(maximum of 4 slots)*

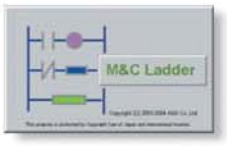
- Load cell input
- Analog I/O
- Pulse input
- Digital I/O
- Relay output
- Etc.

System design, control, and supervisory monitoring/operation

Program/GUI construction

Development environment software package

- Programming in ladder logic
- Create operation/monitoring screens to track the system status



Development environment software MC Ladder

LAN (Ethernet)

Control

The AD-4820 can control on-site system with many I/O ports.

Up to 6 AD-4820's can be connected to one PC.

Monitoring/Operation

Can operate and monitor data remotely from a PC screen using VirtualConsole software.

lications

AD-4820

The AD-4820 is equipped with a range of functions to meet various user needs as quickly and efficiently as possible. Ladder logic programming and GUI screen design tools are provided in the packaged software including the development environment tool MC Ladder. This controller works to increase productivity of system construction by offering many kinds of system controls and transmission with a wide line-up of I/O boards, depending on the combination of slots (up to 4).

Display

With the integrated development environment tools, you can customize or build a screen display of your own design to track the status of your task. Merely by selecting the tools in Virtual Console, you can design the optimal display panel for easy-to-read operability, incorporating panel switches and meters, lamps or trend graphs.
The AD-4820 is equipped with an STN color liquid crystal touch panel. Its 5.7-inch (320 x 240 dots) size offers excellent visibility. It also has a brightness life of approximately 75,000 hours (half life) and excellent durability. It is also waterproof (IP65) so it can be cleaned with water.

Rear (board application part)

This connects to any kind of network or transmission device via its transmission interface (LAN, RS-232C/422/485, USB, RUN output), equipped as standard. Up to 4 interface boards can be installed on the I/O board application part. Up to 4 channels of analog I/O modules (or 8, depending on type) can be mounted on the analog I/O board enabling a compact design suitable for a large scale system. Its lineup of many DI/DO boards and relay boards for control and transmission, in combination with the I/O module, means that it can be used in a wide range of measurement and control applications.

Option board lineup

A wide range of I/O boards for analog, digital, temperature etc. are available. According to their combination, they can be used in a wide variety of measurement, weighing and control applications.

- Analog input interface board (AD-4820-01)*
- Load cell input module (AD-4820-02)
- 4~20mA analog input module (AD-4820-03)
- 0~10V analog input module (AD-4820-04)
- Differential voltage input module (AD-4820-05)
- RTD(PT100) sensor input module (AD-4820-06)
- Thermocouple input module (AD-4820-07)
- Standard I/O board (AD-4820-10)
- DO64 board (AD-4820-12)
- Relay output board (AD-4820-13)
- Analog output interface board (AD-4820-14)*
- 4~20mA analog output module (AD-4820-15)
- 0~10V analog output module (AD-4820-16)
- Serial interface (RS, current loop) board (AD-4820-20)

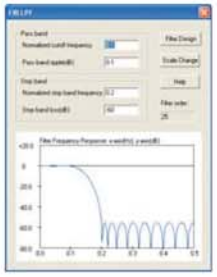
* Each analog I/O interface board can accommodate up to 4 channels (or 8, depending on type) of analog modules.

Structure of a system with a wealth of expansion possibilities

The AD-4820 enables a wealth of expansion possibilities for original system development using development environment tools and various I/O boards to rapidly respond and fulfill all market needs.

Integrated Development Environment Tools (IDE tools)

System Development Environment Tools
This packaged software of development environment tools offers richly varied ladder logic commands as well as GUI screen design tools to offer you the ability to easily create screens incorporating switches, graphs, lamps, etc. In a short time you can create and develop an original product to meet your specific needs.

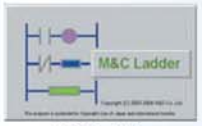


MC Ladder-Programming in ladder logic

Virtual Console-Screen creation

Innovative IDE tools

System Development Environment Software Package



MC Ladder

Contents
- MC Ladder (Programming)
- VirtualConsole (Screen creation)
- Cygwin (Compile)
- and more

Equipped as standard
LAN (Ethernet)
USB, RUN
RS-232C/422/485

AD-4820
CPU:SH4
OS: RT-OS

A wide range of I/O boards and modules (option)

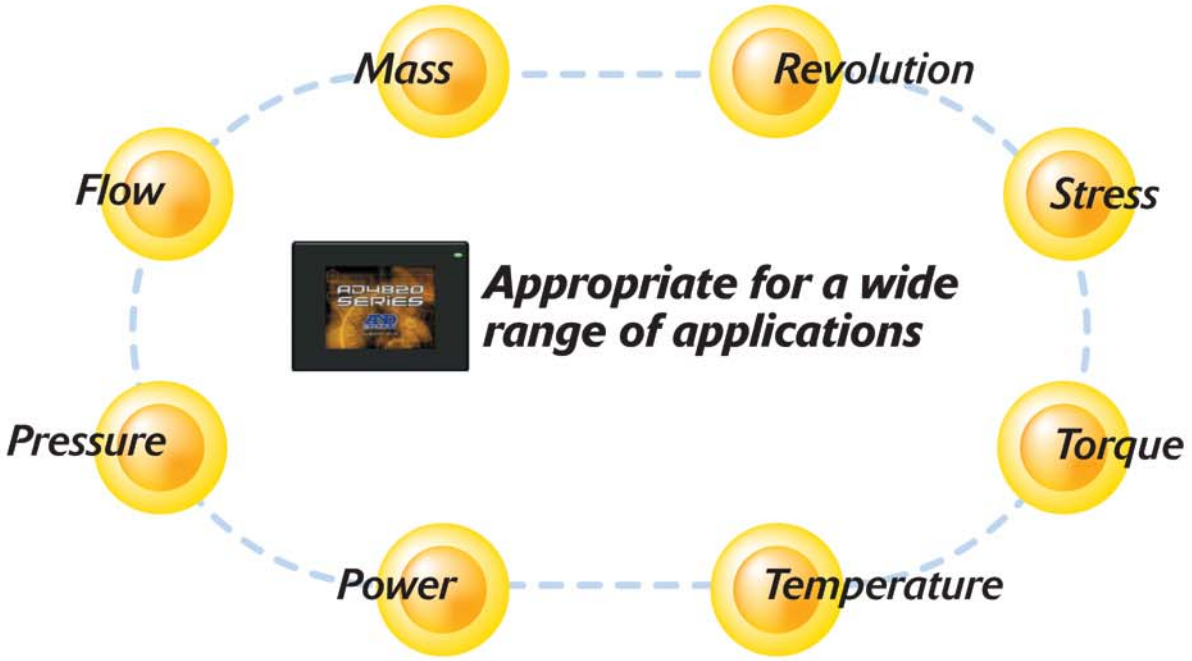
Various external I/O boards

- **Load cell input**
- **Analog I/O** (4~20mA, 0-10V, etc.)
- **Temperature input** (thermocouple, resistance temperature sensor)
- **Control I/O** (DC, open collector)
- **Serial I/O** (RS-232C/485/current loop)
- **Relay output**
- **and more**

Meets a Wide Range of Applications

In measurement and control fields where there is a need for greater diversity and complexity as well as faster speed, the AD-4820 series provides this in a compact frame at a cost-effective rate, offering I/O boards and control functions ideally suited to a wide range of applications. It can also unify a distributed system for sequential control and monitoring of control conditions.

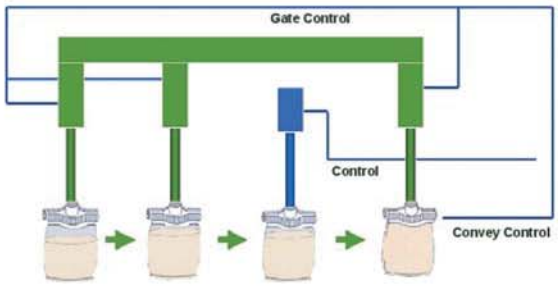
Weighing / Measurement Field



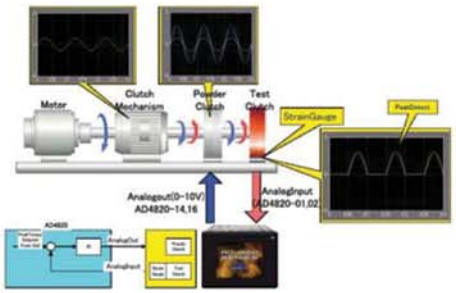
Control / Testing / Supervision

- Delivery Machine
- Supervision /Record
- PID
- Testing Device
- Weighing System
- Checker
- Continuous Weigh Feeder
- Processing Machinery

Automatic Packing System



Clutch Endurance Test System



Integrated Development Environm

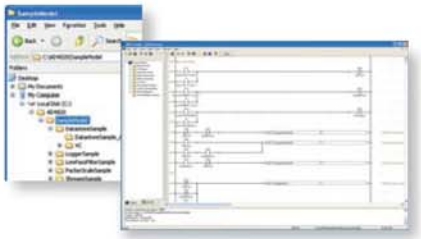
MC Ladder

MC Ladder (Measurement and Control Ladder) is the software that enables the AD-4820 to function as a programmable logic controller (PLC). It allows the user to build an easy-to-use, accurate control program, providing a high degree of function commands as well as general control commands. With the GUI screen design software VirtualConsole, it also provides the freedom to create an AD-4820 screen display for construction of a compact sequential controller with GUI function.

Creating ladder logic program and display screens for both the AD-4820 and a PC

Ladder logic programming using A&D's devices

MC Ladder



Screen creation for both the AD-4820 display screen and a PC using a variety of parts

VirtualConsole

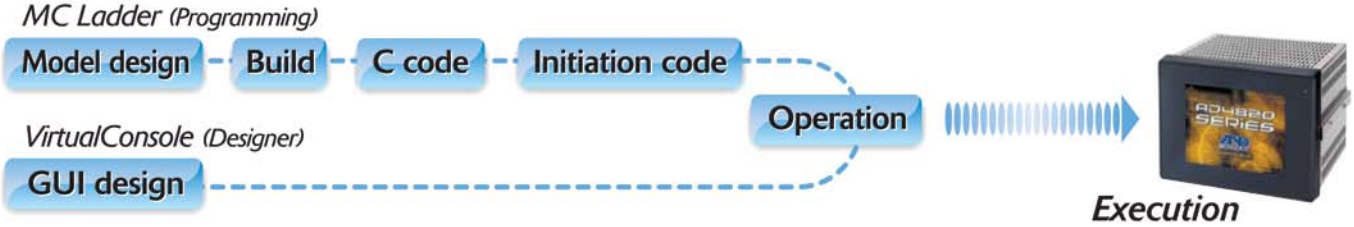
MC Ladder Operation Environment

Recommended operating environment

OS	Microsoft Windows 2000 Professional (version 4 or later)
	WindowsXP Professional (version SP1a or later)
CPU	Pentium III, Pentium 4, Pentium M
HDD	Available space of 1.2GB or more
Memory	512Mbytes or more
Browser	Microsoft Internet Explorer 6.0SP1 or later

Contents and Functions of Development Environment Packaged Software

Name	Function	Contents
MC Ladder	Programming tool	Programs using Ladder language
Virtual Console	Designer	Makes screen and sets parameters using all parts
Cygwin	Compiler	Converts Ladder language to C language, then converts to UNIX operating environment
Sample	Sample of every kind of model	Samples of programming and screen designer for users' reference



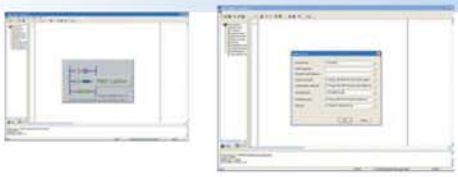
ent Tools AD-4820

With A&D's unique development tools, we can make your custom sequential control program and screen displays for a wide range of applications much simpler.

Procedure from Setting to Execution (Creating a Project File)

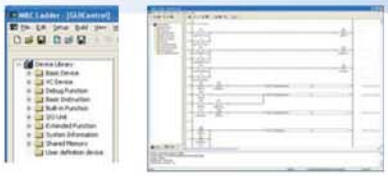
1. Set up

Connect the AD-4820 to a PC with a LAN cable. Enter the network settings.



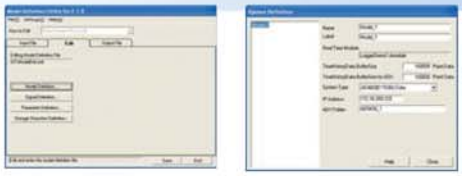
2. Start MC Ladder

Start MC Ladder and set the VirtualConsole and Model Definition Utility paths.



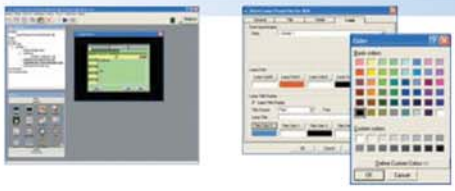
3. Create a program with MC Ladder

Create a sequential control program using ladder logic.



4. Edit definitions

Edit a Model Definition Utility file in order to use the created program with VirtualConsole.



5. Create screens with VirtualConsole

Create display screens for the AD-4820 and a PC.

6. Operation test

Confirm the actual running status of both the created program and screens.

System Changes and Maintenance Are Easy!

Changes to the software and AD-4820 screen mounted on your control panel, as well as maintenance, can be performed easily on site. If working remotely, you can also complete this process using the Internet, for rapid response and useful improvements in operational efficiency. In addition, you can monitor the system operation using the screen you created for your PC.

MC Ladder Command Types and Features

MC Ladder provides richly varied devices (ladder logic commands) plus A&D's own devices offering many functions for improvements in operational efficiency as well as simpler program creation.

MC Ladder Device (Command) – Summary

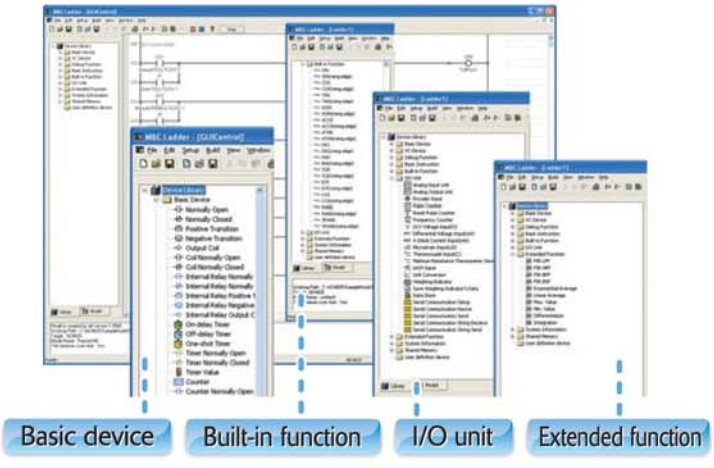
Basic device	Basic command	Built-in function	I/O Unit	Expansion function
Contact Coil	Program control	SIN	Analog input	FIR filter *
Internal relay	Data transfer	COS	Analog output	Averaging
Latch relay	Data Conversion	TAN	Pulse input	Deferential integral
Timer	Clipping	DEG	Weighing indicator	**System information**
Counter	Comparison cal	SQRT	Serial I/O	Disk free space
VC device	Arithmetic cal	LOG	mV/V	**Shared Memory**
Debug function	Logical cal	SRAND	Micro strain	Shared memory config
Master reset	C language command	ASIN	Unit conversion	Shared memory Rx
High resolution time	File operation	ACOS	4-20mA current input	Shared memory Tx
Asynchronous tasks	Character string operation	ATAN	0-10V DC voltage input	
	BCD conversion	RAD	mV differential voltage input	User definition device
	Array	EXP	Thermocouple input	
		RAND	Platinum resistance temperature input	
			Data Store	

* Includes the following 4 types of filter; low pass filter, high pass filter, band path filter, band stop filter

Device Library

Wide Range of Useful Dedicated Devices

The contents of the Device Library range from various basic devices to A&D's own commands, including I/O units for analog I/O, temperature and serial transmissions, extended functions such as filters and hold devices, various basic commands and other built-in functions. This range of devices offers ease-of-use, ensuring that the user can easily build a program at a faster rate than ever before.

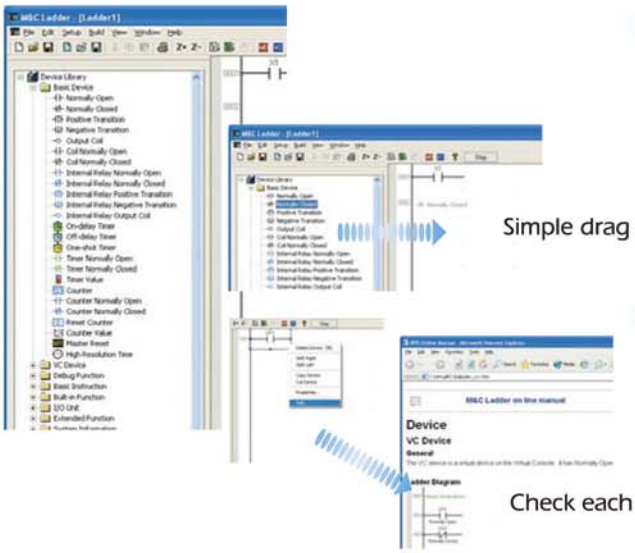


Special Features of the Ladder Command

- Programming of task units
  Scan mode (start, end, cycle, asynchronous, sub-routing) can be selected in the task units.
- Execution time is shorter (compiling method)
- Various DSP devices for floating point operation
  Uses DSP commands to gain maximum performance from the AD-4820 controller and I/O board.
- Data name can be set according to your own preference.
- Mathematical operations such as addition, subtraction, multiplication, division and percentage (+, -, *, / & %) can be used for data transfer, comparison and arithmetical operation commands.
- Functions can be expanded easily by employing external functions using C code.
- Can convert analog input value to a physical value.
- Other specific A&D devices are included.

The user can very easily build a circuit; programming is as simple as dragging and dropping.
A&D's own devices offer unrivalled features, which enable improved efficiency and save time.

Simply Drag & Drop the Command Devices



Drag & Drop

Programming is as simple as dragging and dropping. The user can design complicated programs and save operational time with these basic devices and A&D's own DSP devices.
The AD-4820 is equipped with a large selection of devices (approx. 160), including basic devices and extended devices.

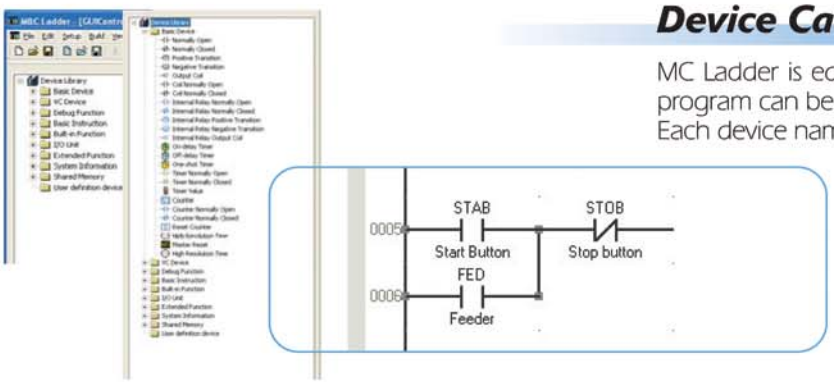
Simple drag & drop operation

Online Manual

Click on the device and select [help] to verify details and operation instructions in the online manual.

Check each device using the online manual

Device Category and Basic Device

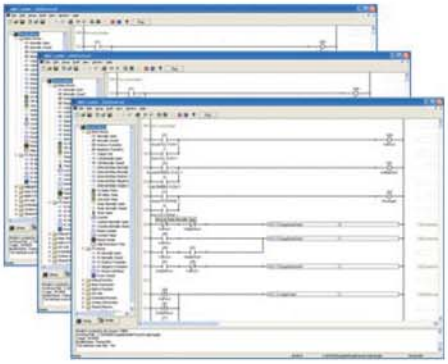


Device Categories and Basic Devices

MC Ladder is equipped with various device categories. A simple program can be created using only the basic devices.
Each device name can be labeled with characters.

Label names such as the [Stop button] can be displayed.

Programming Task Units



Programming Task Units

Programming by task unit is possible. Scan mode (Start, End, Cycle, Asynchronous, Sub-routing) can be selected by unit.

You can program by task for display, transmission, etc.
The sharing of tasks with other projects provides for more efficient programming and debugging.

MC Ladder Command Types and Features

A wide range of A&D's own devices are available in the I/O unit and extended device library. You can select strain systems such as pressure and force, as well as voltage and current systems, temperature, and more, from the many types of device.

I/O Related Devices

I/O related devices offer convenient functions including many analog I/O devices enabling direct I/O of analog physical values (voltage, current, etc.) and the ability to send and receive pulse and serial transmissions via a low number of devices.

Device Example (4~20mA input device)

This is a 4~20mA current input device. There is no need to convert the count input to physical values as the input is in direct physical values (voltage, current etc.)

Slot : assigns the slot number to which the board is installed.
Ch : assigns the channel number to which the module is installed.
Dst : assigns the variable to store the measured data.

Device Example (serial transmission device)

It converts the floating point to ASCII data (or vice versa), and sends and receives numerical data and character string data. Parameters can also be easily set in the properties screen.

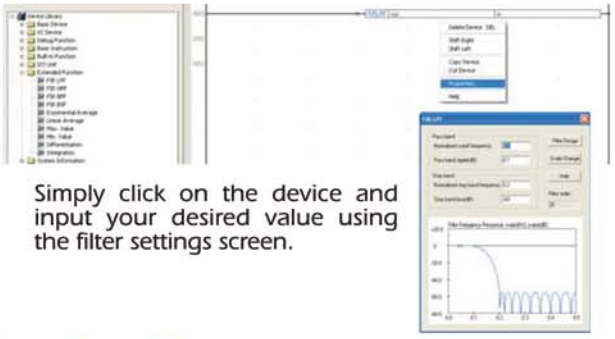
Data : character string variables to store the received character string
Sep : comma and code, etc. punctuated character list
Error : sends error code when there is a parity error or buffer is full, etc.

Extended Function Related Devices

Extended function related devices offer specialized devices (DSP devices) to maximize the application performance of the AD-4820 in every type of digital filter setting and peak hold, derivative, integral, etc.

Digital filter (FIR) settings

The number of cut off frequency waves, stop band frequency waves, attenuation etc. can be set by the user to their desired value, in order to create their own filter settings. Also, the filter nth order can be set to a maximum of 511, so the user can set the filter to be used in every application.



Simply click on the device and input your desired value using the filter settings screen.

Program Running Condition Monitor Function

Running Conditions Monitor

You can monitor the running condition of the program created with MC Ladder in real time.
It can be used to check the control running conditions and debugging, as well as many other uses.

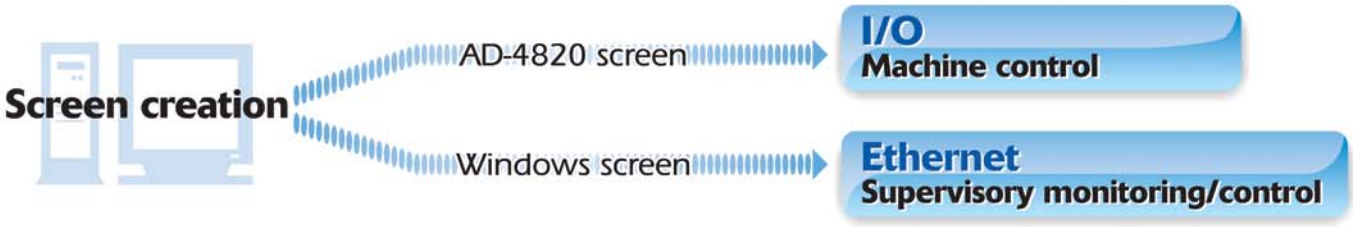
Ideal for debugging.
The blue color means OFF, the red means ON.

AD-4820

The screen design software VirtualConsole is included in the system development environment software package so the user can easily create an original screen for both the AD-4820 display screen and a PC. Select from a variety of parts such as an indicator, switch, signal, trend graph etc. and position them as you wish. The color, font and shape of the parts can all be altered offering superior flexibility.

Two Screen Types

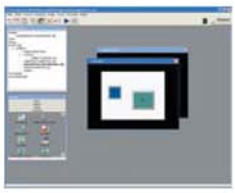
You can create a display screen for the AD-4820 and for Windows using your PC. The AD-4820 display screen can be created to suit users' applications for various kinds of control, setting, operational conditions display etc. The Windows screen can be created for supervisory monitoring and controlling such as an emergency stop for on-site operation.

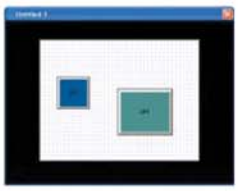


Easy Screen Construction – just select the part and position it on the screen

Simply create the screen, by picking the position and dragging and dropping the necessary part.
You can change the color, dimension, shape, etc. of the parts as you wish.
After creating the screen, the user only has to associate it with a program to complete the measuring controller.

Design parts and color palette


Select the part and paste it on the screen


Change the color, size or description as you wish

There are two design parts for AD-4820 and PC (Windows) use. You can choose from a wide selection, including meters, switches and graphs. The rich color palette enables you to adjust the colors as you wish.

Simple screen design

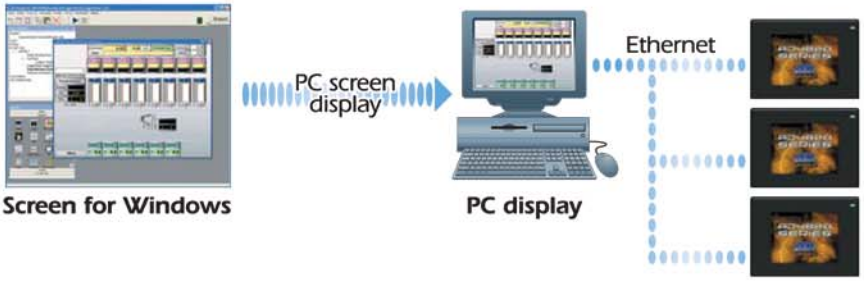
Creating a screen on a PC

Screen for AD-4820

AD-4820 display
(Compact Touch Panel)

Select the desired indicator, switch, etc. from the many design parts in the library, and drop them on the screen. Once the parameters, shape, characters (alphabet, numbers) and color have been fixed, they can be associated with a program. When finished, download to the AD-4820 and the display screen (for operation) is complete.

Supervision / Operation screen



Screen for Windows

PC display

Up to 6 controllers can be connected

The screen is designed by dragging and dropping, using the same method as for the AD-4820. It is possible to monitor current onsite operation conditions and operate from a remote location. Up to 6 AD-4820's can be connected to one PC.

Input / Output Board Specifications

We offer a varied lineup of option boards for the AD-4820 to enable you to expand your system.

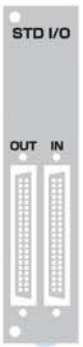
Exterior of option board

Analog input interface board AD-4820-01
Analog output interface board AD-4820-14

Options AD-4820-02, AD4820-03, AD04820-04, AD-4820-05, AD4820-06 and AD-4820-07 are for use with AD-4820-01.
Options AD-4820-15 and AD-4820-16 are for use with AD-4820-14.

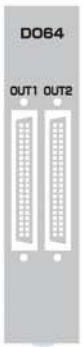
(before module installation)

(after module installation)



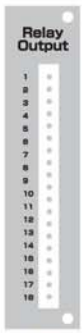
Standard I/O board AD-4820-10

32 inputs (2 pulse inputs)
32 outputs



DO64 board AD-4820-12

64 outputs



Relay output board AD-4820-13

16 outputs

AD-4820 rear view
(picture shows fully loaded status)

A maximum of 4 expansion boards can be installed to the AD-4820.
(The 4 boards in the illustration are for example purposes only.)

AD-4820-01
AD-4820-10
AD-4820-12
AD-4820-13

Summary of option modules

- AD-4820-02 (load cell input module)
- AD-4820-03 (4-20mA analog input module)
- AD-4820-04 (0-10V analog input module)
- AD-4820-05 (0-10mV analog input module)
- AD-4820-06 (RTD(PT100) sensor input module)
- AD-4820-07 (thermocouple input module)

4 can be attached to one board (up to 4ch)

- AD-4820-15 (4-20mA analog output module)*
- AD-4820-16 (0-10V analog output module)*

4 can be attached to one board (up to 8ch)

* 1 module has 2 output channels

I / O Line Up

- AD-4820-01 Analog input interface board
- AD-4820-02 Load cell input module
- AD-4820-03 4-20mA analog input module
- AD-4820-04 0-10V analog input module
- AD-4820-05 0-10mV analog input module
- AD-4820-06 RTD(PT100) sensor input module
- AD-4820-07 Thermocouple input module
- AD-4820-10 Standard I/O board
- AD-4820-12 DO64 board
- AD-4820-13 Relay output board
- AD-4820-14 Analog output interface board
- AD-4820-15 4-20mA analog output module
- AD-4820-16 0-10V analog output module
- AD-4820-20 Serial interface board

* For detailed specifications for each option, please refer to the attached information.

Analog Input Interface Board (AD-4820-01)

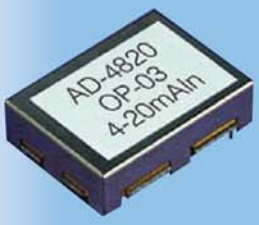
Item	Specifications	Remarks
Input method	Depending on applied module	
Applicable modules	AD-4820-02 (load cell input) AD-4820-03 (4~20mA input) AD-4820-04 (0~10V input) AD-4820-05 (differential voltage input) AD-4820-06 (RTD(PT100) sensor input) AD-4820-07 (thermocouple input)	Can be mixed
Number of modules	1~4 (1~4ch)	
Number of load cell drives	16 (350Ω system)*	When AD-4820-02 is used
Inter-channel isolation	–	
Inter-slot isolation	Withstand voltage 200V or over	
Input connector	Weidmuller BLZF3.5/7 169047	Spring clamp method

* When four AD-4820-02 modules are mounted on the AD-4820-01, the maximum number of 350Ω load cells that can be connected is 16.

Load Cell Input Module (AD-4820-02)

Item	Specifications	Remarks
Load cell power supply voltage	4.75~5.25V	Short-circuit protection included
Load cell input resistance	40Ω min.	Up to eight 350Ω load cells
Load cell output resistance	10kΩmax.	
Zero point temperature coefficient	±0.1μV/°C max.	Including no dead load
Span temperature coefficient	±8ppm/°C max.	
Measuring range	±37mV min.	
Input sensitivity	4.66nV/count typ.	
Input conversion p-p noise	150 (300 max.) nVp-p	Sampling rate 100/s after external 1Hz digital filtering
Non-linearity	±20ppm max.	
Digital span error	±150ppm max.	When calibrated using no weight
Sampling rate	6.25~1920 times/sec	
A/D converter method	24bit digital sigma method	

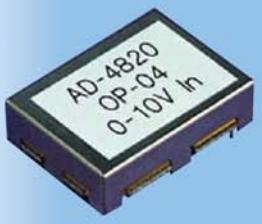
4-20mA Analog Input Module (AD-4820-03)



Item	Specifications	Remarks
Zero point offset	±8μA max.	4mA standard
Zero point temperature coefficient	±50ppm/°C max.	
Span temperature coefficient	±80ppm/°C max.	
Input resistance (between I+GND)	50Ω typ.	
Measuring range	3~50mA min.	
Input sensitivity	5.96nA.count typ.	
Input conversion p-p noise	51.7nAp-p max.	Sampling rate 100/s after external 1Hz digital filtering
Non-linearity	±50ppm max.	
Span error	±500ppm max.	
Sampling rate	6.25~1920 times/s	
A/D converter method	24bit digital sigma method	

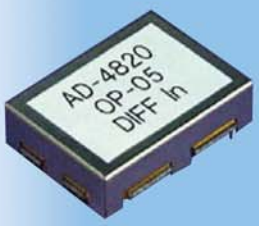
Input / Output Board Specifications

0-10V Analog Input Module (AD-4820-04)



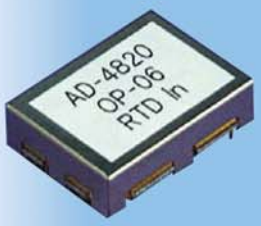
Item	Specifications	Remarks
Zero point offset	±3.0mV max.	4mA standard
Zero point temperature coefficient	±50ppm/°C max.	
Span temperature coefficient	±80ppm/°C max.	
Input resistance (between V+GND)	180kΩ typ.	
Measuring range	0~11V min.	
Input sensitivity	1.61μ V/count typ.	
Input conversion p-p noise	14μVp-p max.	Sampling rate 100/s after external 1Hz digital filtering
Non-linearity	±50ppm max.	
Span error	±500ppm max.	
Sampling rate	6.25~1920 times/s	
A/D converter method	24-bit digital sigma method	

Differential Voltage Input Module (AD-4820-05)



Item	Specifications	Remarks
Zero point offset	±10.0μV max.	
Zero point temperature coefficient	±50ppm/°C max.	
Span temperature coefficient	±80ppm/°C max.	
Input resistance (between V+V)	10MΩ typ.	
Measuring range	±37mV min.	
Input sensitivity	4.66nV/count typ.	
Input conversion p-p noise	224nVp-p max.	Sampling rate 100/s after external 1Hz digital filtering
Non-linearity	±50ppm max.	
Span error	±500ppm max.	
Sampling rate	6.25~1920 times/s	
A.D converter method	24bit digital sigma method	

RTD(PT100) Sensor Input Module (AD-4820-06)



Item	Specifications	Remarks
Applicable resistance temperature sensor	Pt100 (JIS C 1604-1997), JPt100	
Lead method	3lead method, 4lead method	
Measuring range	-200~850°C	
Accuracy (3-lead method)	±0.5°C or ±0.1% with greater rdg	Ambient temperature 23°C, rdg : reading
Accuracy (4-lead method)	±0.1°C or ±0.05% with greater rdg	rdg : reading, FS : 850°C
Temperature coefficient	±(80ppm rdg + 20ppm FS) /°C max.	
Resistor current	0.5mA typ.	
External resistance (per lead)	50Ω max	All leads should be at the same values.
Burnout reference temperature, response	1200°C min., 0.1s max.	When no digital filter is used.
Sampling rate	6.25~1920 times/s	
A/D converter method	24bit digital sigma method	

Thermocouple Input Module (AD-4820-07)

Item	Specifications	Remarks
Applicable thermocouple	B, R, S, K (CA), E (CRC), J (IC), T (CC)	Isolation type
Input voltage range	-50~77mV	
Measurement temperature range	B : 0~1820°C, R : -50~1760°C S : -50~1760°C, K : -270~1370°C E : -270~1000°C, J : -210~1200°C T : -270~400°C	
Accuracy reference	±0.1% FS max. (measurement temperature range)	700°C or above for B. 300°C or above for R and S.
Cold junction compensation accuracy	±1°C typ. ±3°C max.	Excluding B (ambient temperature 23°C)
Cold junction compensation accuracy	±2°C typ. ±4°C max.	Excluding B (ambient temperature 0~40°C)
Temperature coefficient	±(80pm rdg + 20ppm FS) /°C	rdg : reading, FS : maximum measurement temperature
Input resistance	10MΩ min.	B0 not detected. 200MΩ min.
Signal source resistance	300Ω max.	
Burnout reference voltage, response	200mV min., 15s max.	When no digital filter is used.
Burnout detection current	30nA max.	
Sampling rate	6.25~1920 times/s	
A/D converter method	24bit digital sigma method	

Standard I/O Board (AD-4820-10)

Input Unit

Item	Specifications	Remarks
Input circuit method	DC input (source type)	
Isolation method	Photo coupler isolation	
Rated input voltage	DC10.2~28.8V	Externally supplied
Common terminal polarity	Positive common	
Withstand voltage	AC500V 60s min.	
Isolation resistance	10MΩ min.	
Reference digital input unit		
Number of input points	32	Common different from pulse input unit
Rated input current	6mA typ.	Power supply voltage 24V
On-voltage/current	7.2V min./1.8mA min.	
Off-voltage/current	2.4V max./0.4mA max.	
Input resistance	4kΩ typ.	
Pulse input unit		
Number of input points	2	Both independent commons
Rated input current	2.7mA typ.	Power supply voltage 24V
On-voltage/current	8.2V min./2.0mA min.	
Off-voltage/current	2.4V max./0.4mA max.	
Adaptable frequency range	DC~10kHz	Duty 50%

Output Unit

Item	Specifications	Remarks
Number of output points	32	
Output circuit method	Open collector (sink type)	
Isolation method	Photo coupler isolation	
Rated load voltage	DC10.2~28.8V	
Rated load current	50mA max.	
Common terminal polarity	Negative common	
Output terminal residual voltage	0.2V max.	Output current 50mA
Output-off leakage current	100μA max.	
Withstand voltage	AC500V 60s min.	
Isolation resistance	10MΩ min.	

Input / Output Board Specifications

D064 Board (AD-4820-12)

Item	Specifications	Remarks
Output circuit method	Open collector (sink type)	
Isolation method	Photo coupler isolation	
Rated load voltage	DC10.2-28.8V	
Rated load current	50mA max.	
Common terminal polarity	Negative common	
Output terminal residual voltage	0.2V max.	Output current 50mA
Output-off leak current	100μA max.	
Withstand voltage	AC500V 60s min.	
Isolation resistance	10MΩ min.	

Relay Output Board (AD-4820-13)

Item	Specifications	Remarks
Output circuit method	Mechanical contact	
Number of output points	16 (8 + 8)	
Isolation method	Isolation through relay	
Rated load voltage	AC250V max.	
Rated load current	3A max./terminal, 15A max./common	
Common division	1 common for 8 points	
Minimum applicable load	100μA 100mV DC	
Withstand voltage	AD500V 60s min.	
Isolation resistance	1000MΩ min.	Default

Analog Output Interface Board (AD-4820-14)

Item	Specifications	Remarks
Output method	Depending on applied module	
Applicable module	AD-4820-15 (4-20mA output) AD-4820-16 (0-10V output)	Can be mixed.
Number of modules	1-4 (2-8ch)	
Inter-channel isolation	–	
Inter-slot isolation	Withstand voltage 200V or over	

4-20mA Analog Output Module (AD-4820-15)

Item	Specifications	Remarks
Output method	Current output (source type)	2 channels
Maximum output voltage	10.2V min.	
Applicable load resistance	0~510Ω	
4mA point offset	±0.08% max.	
4mA point offset drift	±80ppm/°C max.	
Span error	±0.25% max.	
Span error drift	±80ppm/°C max.	
Non-linearity	±0.02ppm/°C max.	
Resolution	60000	

0-10V Analog Output Module (AD-4820-16)

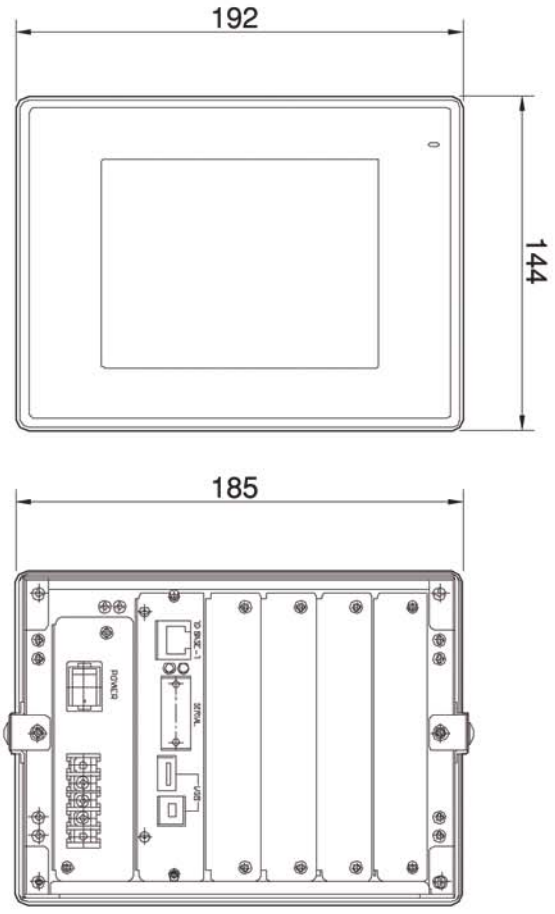
Item	Specifications	Remarks
Output method	Voltage output (negative common)	2 channels
Maximum output voltage	10.2V min.	
Applicable load resistance	1kΩ min.	
0V point offset	±0.10% max.	
0V point offset drift	±100ppm/°C max.	
Span error	±0.31% max.	
Span error drift	±100ppm/°C max.	
Non-linearity	±0.024% max.	
Resolution	60000	

Serial Interface Board (AD-4820-20)

Item	Specifications	Remarks
Ch0 RS-232C/RS-485		
Communication method	RS-232C full duplex, with RTS/CTS	Can be switched with software D-SUB 9-pin connector
	RS-485 full duplex (4-line type)	
Baud rate (bps)	1200, 2400, 4800, 9600, 19200, 38400	
Terminating resistance	–	
Ch1 RS-232C/RS485		
Communication method	RS-232C full duplex, with no RTS/CTS	Can be switched with software 2-piece type connector
	RS-485 half duplex (2-line type)	
Baud rate (bps)	1200, 2400, 4800, 9600, 19200, 38400	
Terminating resistance	Built-in	Adding/deleting with terminal
Ch2-Ch5 current loop		
Communication method	0-20mA current loop output	2-piece type connector
Baud rate (bps)	1200, 2400 bps	
General		
Withstand voltage	AC500V 60s min.	Between channel and body, between channels
Isolation resistance	10MΩ min.	

External Dimensions

Unit: mm



Specifications

AD-4820 Basic specifications

Item	Specification
Power	Full range (not necessary to switch voltage) AC85V~250V 50/60Hz approx. 30VA Supplied with power switch Power unit life minimum 10 years (ambient temperature 25°C, constant maximum load) ✻ Please change the power unit at regular intervals as a protective measure.
Unit size (WxHxD)	192x144x149mm (not including protruding part) 192x144x191mm (including protruding part)
Unit weight	Approx. 2.4kg (not including options)
Panel cut dimensions	186x138mm
Temperature range for use	0 ~ 40°C
CPU	SH4
OS	RT-OS
SDRAM	64MB
Compact flash memory	64MB
Option slots	4
Data back up method	System settings : compact flash memory, calibration:compact flash memory, touch panel calibration value : SRAM+battery; real time clock: battery Battery life minimum 10 years (ambient temperature 25°C, no electric power supply) minimum 5 years (ambient temperature 40°C, no electrical power supply)
Display	
Display device	5.7 inch STN color liquid crystal
Backlight luminance half life	75,000h
Available display area	117.2 x 88.4mm
Touch panel	Analog film
Standard interface	
Serial interface	Full duplex RS-232C / full duplex RS-485 switch
USB port	USB1.1
LAN (Ethernet)	10Base-T
RUN	Non-polar semi-conductor relay

AD-4820 Performance Specifications

Item	Specification
I/O control method	Refresh
Program language	Ladder chart + C programming language
Scan time	60k step time 1ms *SH4
Basic command processing speed	LD command 11ns out command 11ns
Application command processing speed	22ns
Floating point addition operation	20ns
Program capacity	Depends on compact flash memory in use

✻ Since A&D's devices have an expansion function, this value could change according to the combination of devices in use. Therefore we must stress that this value is merely an estimate.

Options

OP-70 Multi Indicator (Batch weighing mode)
OP-71 Multi Indicator (Check weighing mode)
OP-72 Conveyer Scale
OP-73 Tension meter
OP-74 Crane scale
OP-75 Mixing
OP-76 Feeder controller
OP-77 Cement mixing
OP-125 Mixing GUI for PC
OP-127 Cement mixing for PC

Safety warning
Please be sure to read the instruction manual carefully.

AD-4820

...Clearly a Better Value

A&D Company, Limited
3-23-14 Higashi-Ikebukuro, Toshima-ku,Tokyo 170-0013 JAPAN
Telephone:[81](3) 5391-6132 Fax:[81](3) 5391-6148
http://www.aandd.jp

A&D ENGINEERING, INC.
1756 Automation Parkway, San Jose, CA 95131 U.S.A.
Telephone:[1](408) 263-5333 Fax:[1](408) 263-0119

A&D MERCURY PTY. LTD.
32 Dew Street, Thebarton, South Australia 5031 AUSTRALIA
Telephone:[61](8) 8301-8100 Fax:[61](8) 8352-7409

A&D INSTRUMENTS LTD.
Unit 24/26 Blacklands Way Abingdon Business Park,
Abingdon, Oxon OX14 1DY UNITED KINGDOM
Telephone:[44](1235) 550420 Fax:[44](1235) 550485

<German Sales Office>
Große Straße 13 b 22926 Ahrensburg GERMANY
Telephone:[49](0) 4102 459230 Fax:[49](0) 4102 459231

A&D KOREA Limited
Manhattan Bldg. 8F, 36-2 Yoido-dong, Youngdeungpo-gu, Seoul, KOREA
Telephone:[82](2) 780-4101 Fax:[82](2) 782-4280

A&D RUS CO., LTD.
Vereyskaya str.112 Kuntsevo Block, 121357,
Moscow, Russia
Telephone: [7] (495) 937-33-44 Fax: [7] (495) 937-55-66

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