AD-4402

Multi-Function Weighing Indicator

Performs many operations, from batch weighing to field bus networking applications.

A&D *...Clearly a Better Value*

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

AD-4402

★ **A&D's new indicator, the AD-4402 is designed for batching operations and can also be incorporated into systems using Field Bus such as CC-Link, DeviceNet and PROFIBUS.**
★ **AD-4402 has almost all the functions, user-friendly operating procedures and software you need for your weighing system.**

Hopper gate control is done by forecast control mode with 1msec-high speed response.

Incorporates Recipe and Mixing modes.

Select from 50+ functions for each of the 11 Control Inputs and 11 Control Outputs.

Meets Fieldbus requirements by employing CC-Link, DeviceNet and PROFIBUS.
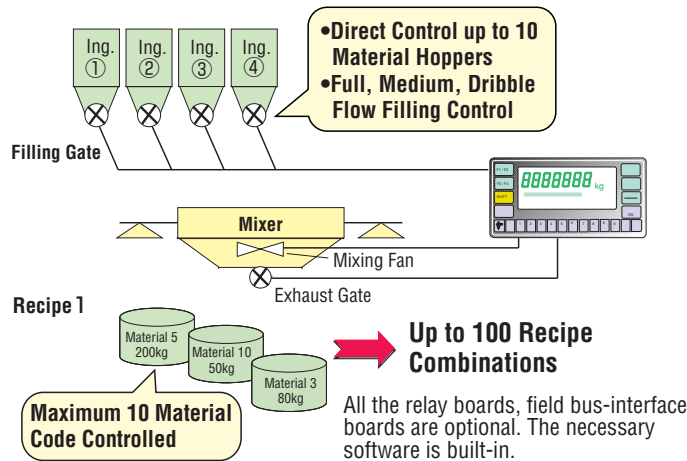
Features

- Large and easy to see blue Vacuum Fluorescent Display (VFD).
- Uses a ten key pad and function buttons that are designed for ease of operation and understanding.
- The main display has a 7-digit VFD with 18mm tall characters.
- The subdisplay has 108, 5mm tall characters and shows the values and error comments.
- Pre-programmed with multiple sequences and functions for filling machines, simple mixing machines and other applications.

- Stores 100 data for raw materials and 100 data for recipe codes.
- RS-485 Serial Interface standard feature allows you to link up to 32 units to the display and supports the Modbus function.
- The Monitor Function shows each operating interface and provides a confirmation on the display.
- The compact body meets DIN requirements, while minimizing the depth of the indicator to135mm.
- With the proper optional interface, the AD-4402 is compatible with CC-Link, DeviceNet, PROFIBUS.
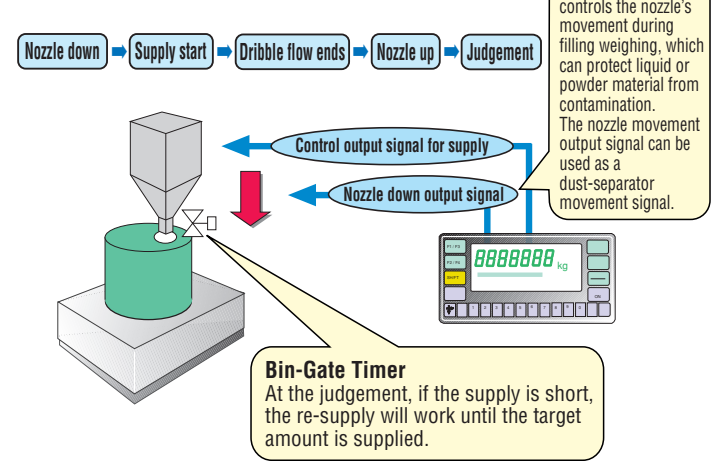
●*Applications*●

AD-4402 can be incorporated in various applications that integrate complex systems, thereby facilitating a wide variety of sequences, such as basic filling/discharge, recipe, mixing, compensation and preliminary sequences.
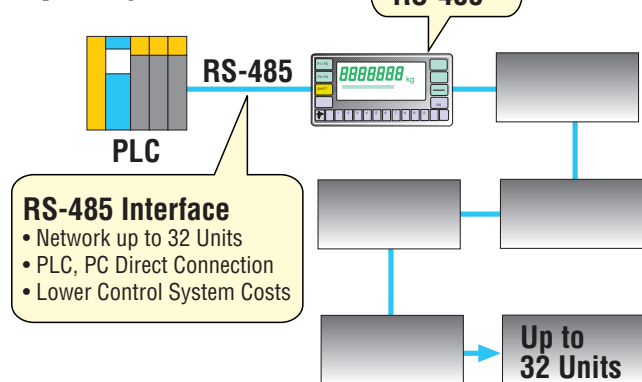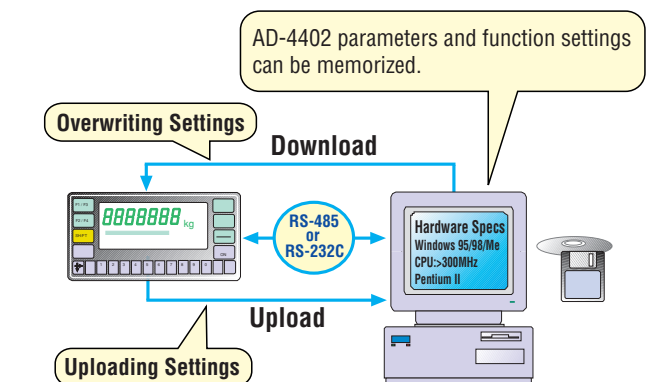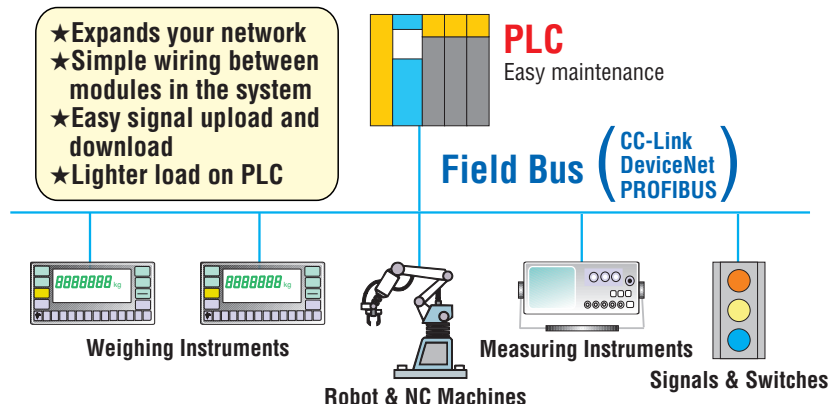
Mixing System Control by AD-4402

Ing.①   Ing.②   Ing.③   Ing.④

- **Direct Control up to 10 Material Hoppers**
- **Full, Medium, Dribble Flow Filling Control**

Filling Gate

Mixer

Mixing Fan

Exhaust Gate

Recipe 1

Material 5 200kg   Material 10 50kg   Material 3 80kg

Maximum 10 Material Code Controlled

Up to 100 Recipe Combinations

All the relay boards, field bus-interface boards are optional. The necessary software is built-in.

Nozzle Control Application

Nozzle down ➡ Supply start ➡ Dribble flow ends ➡ Nozzle up ➡ Judgement

This output signal controls the nozzle's movement during filling weighing, which can protect liquid or powder material from contamination.
The nozzle movement output signal can be used as a dust-separator movement signal.

Control output signal for supply

Nozzle down output signal

Bin-Gate Timer
At the judgement, if the supply is short, the re-supply will work until the target amount is supplied.

High Communication Capability

Standard RS-485

RS-485

PLC

RS-485 Interface
- Network up to 32 Units
- PLC, PC Direct Connection
- Lower Control System Costs

Up to 32 Units

Overwriting and Memorizing Setting Parameters via PC

AD-4402 parameters and function settings can be memorized.

Overwriting Settings

Download

Uploading Settings

Upload

RS-485 or RS-232C

Hardware Specs
Windows 95/98/Me
CPU:>300MHz
Pentium II

Field Bus Network

★**Expands your network**
★**Simple wiring between modules in the system**
★**Easy signal upload and download**
★**Lighter load on PLC**

PLC
Easy maintenance

Field Bus (CC-Link DeviceNet PROFIBUS)

Weighing Instruments

Robot & NC Machines

Measuring Instruments

Signals & Switches

AD-4402

Here is why we recommend our AD-4402 Multi-Function Weighing Indicator for your weighing system.

★Sequential weighing mode

The sequential weighing mode directly outputs control signals such as supply, discharge, preliminary-full-medium-dribble flow, recipe and mixing materials and nozzle control without PLC.

★Interface monitoring function

Control I/O, RS-232C,-422,-485 I/F, Current Loop, A/D converter, BCD output, Relay output, Parallel I/O, Analog output, etc. can be monitored to see if they are working correctly. You can see each interface status visually during operation without stopping the weighing system.

Interface Monitoring Function

Example: Control I/O

Input Terminals A1 to A11 Status

Output Terminals B1 to B11 Status

★11 Control Inputs/11 Control Outputs

50+ functions (such as Full Flow, Over, Under, Discharge Bin, Net Display, etc.) for each of the 11 Control Inputs and 11 Control Outputs, depending on the weighing system.

★Standard RS-485

32 indicators can be hooked up to the PLC (programmable logic controller), a PC (personal computer) or other equipment that supports Modbus.
This is useful for control commands input and recalling/updating the code memory.

★Optional Field bus networking interface boards for CC-Link, DeviceNet or PROFIBUS

To meet increasing requirements for networking with field bus systems, there are three bus-interface options (CC-Link, DeviceNet and PROFIBUS), which can be hooked up directly to the PLC units. More than two indicators can be hooked up to the PLC at one time.

★Interactive messages

Messages that assist current operations are shown on the display and allow anyone to operate the AD-4402 without an instruction manual. Just follow the interactive setting and operating procedures on the display. Sometimes mistakes happen. When they do, a message is displayed so you can recognize the situation and take corrective steps.

★Digital Span and Gravity Acceleration Compensation

When you cannot use an actual calibration weight due to location, just input the load cell rated output voltage for zero point and full capacity calibration. After moving the calibrated weighing system, recalibrate it by inputting the local gravity acceleration value.
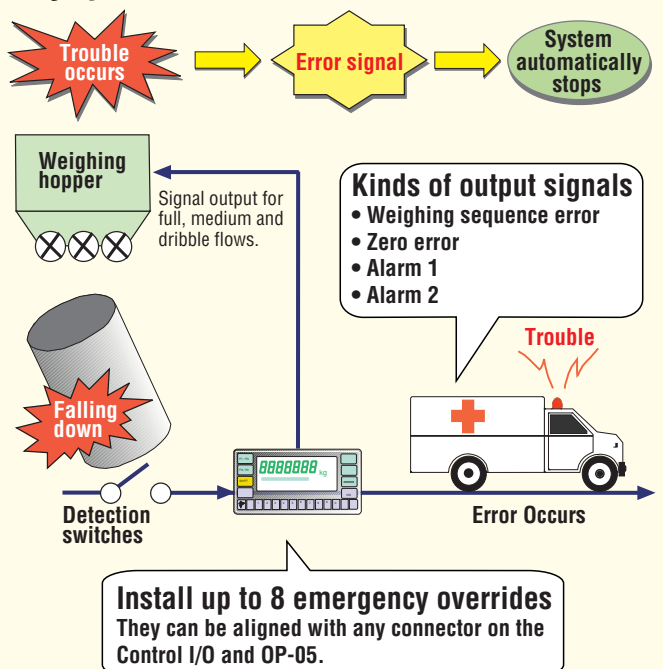
★Calibrated A/D board

The A/D board is calibrated before shipment and guaranteed to 1/500 accuracy. You can quickly replace the A/D board if there is a malfunction.
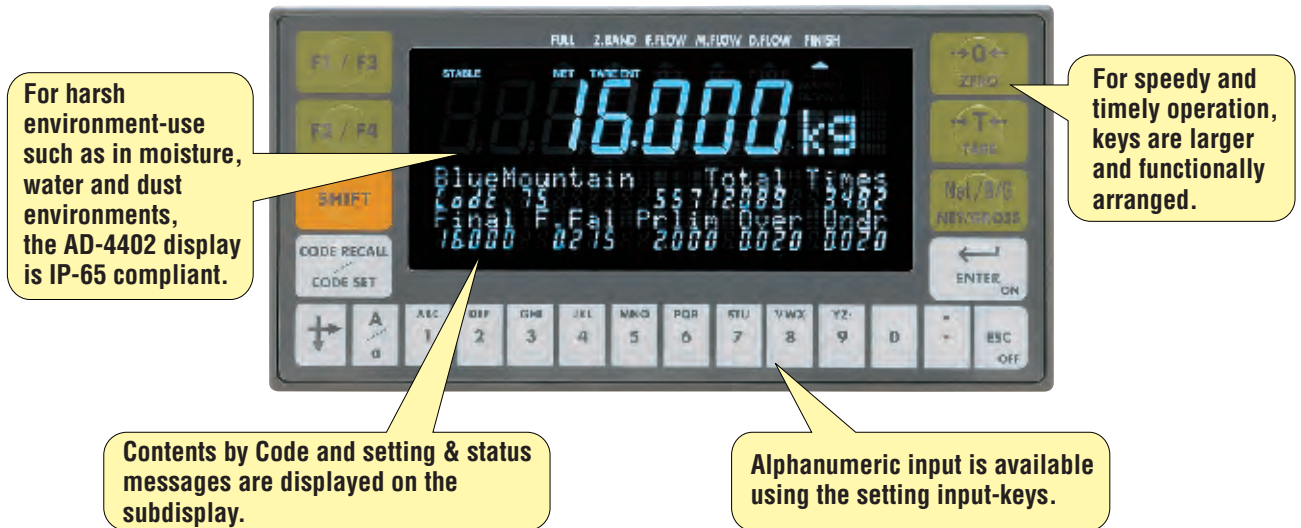
★Safety check function

This function is used to stop the sequence when an error or an emergency occurs. When the safety function is used, an error code is displayed and an error signal is output automatically to the PLC to stop the system. Up to eight emergency overrides can be installed.

Safety Check Function *(Error Alarm Signal Output)*

Kinds of output signals
- Weighing sequence error
- Zero error
- Alarm 1
- Alarm 2

Install up to 8 emergency overrides
They can be aligned with any connector on the Control I/O and OP-05.

AD-4402 *DISPLAY*

On the main and subdisplays, a Vacuum Fluorescent Display was used for easy visual recognition. Operation keys are arranged by function for easy setting and recalling the contents. What's more, there are messages for each setting and function and current status on the subdisplay. Even without an instruction manual, you can handle many emergencies.

For harsh environment-use such as in moisture, water and dust environments, the AD-4402 display is IP-65 compliant.

For speedy and timely operation, keys are larger and functionally arranged.

Contents by Code and setting & status messages are displayed on the subdisplay.

Alphanumeric input is available using the setting input-keys.

Display example

The AD-4402's interactive, easy to see character arrangement and graphics are very user-friendly.

- The main display has 18mm tall characters and a 7-digit VFD for the weight value displays.
- The code name, code number, total, set-point, counts, bar graph and judgment can be displayed on the subdisplay.
- Displays calibration, current status (like setting procedures), error, malfunction and trouble-shooting messages.

Rear Panel Descriptions

There are many features, like selectable I/O control terminals, standard RS-485 I/F and PLC field-bus networking interfaces such as CC-Link, DeviceNet and PROFIBUS.

① Load cell input 350Ω L/C up to 8 units
   Replacement A/D board available
   Accuracy guaranteed to 1/500
② 3 Options slots – Up to 3 options installed
③ External control RS-485 standard, up to 32 units controlled simultaneously
④ Programmable Control I/O – Input 11 /Output 11
⑤ AC Power 85~250V (AD-4402 only)
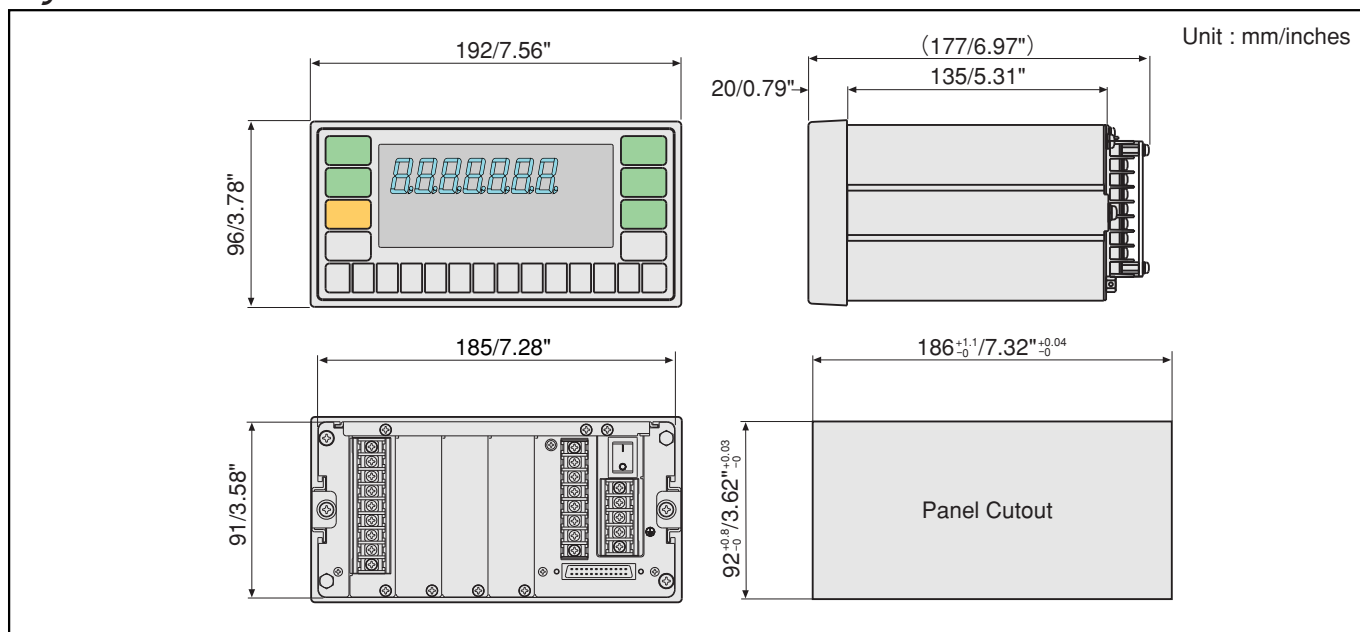   DC 24V (AD-4402D only)
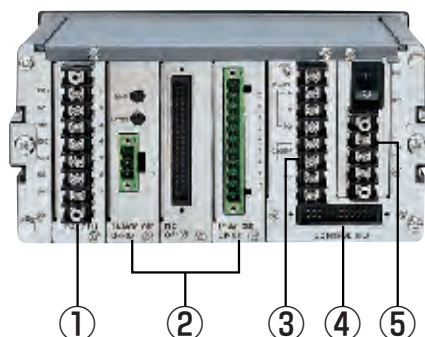
Optional interface boards

Top Row: *DeviceNet, RS-232C and CC-Link*
Bottom Row: *RS-422/485, Analog output, and PROFIBUS*

AD-4402
Multi-Function Weighing Indicator

Physical Dimensions

Unit : mm/inches

192/7.56"
96/3.78"
20/0.79"
(177/6.97")
135/5.31"
185/7.28"
91/3.58"
$186^{+1.1}_{-0}$/$7.32"^{+0.04}_{-0}$
$92^{+0.8}_{-0}$/$3.62"^{+0.03}_{-0}$
Panel Cutout

Specifications

Analog Input and A/D Conversion

Input Sensitivity	0.3μV/d
Zero Adjustment Range	0mV~20mV
Load Cell Excitation	DC 10V ±5% 230mA, Remote Sensing (Up to 8 load cells at 350Ω/load cell)
Zero Temperature Coefficient	±(0.2μV+8ppm of dead load)/°C (typically)
Span temperature Coefficient	±8ppm/°C of reading (typically)
Non-Linearity	0.01% of full scale
Input Noise	Less than 0.6μVp-p
Input Impedance	10MΩ or more
A/D Conversion method	Delta Sigma
A/D Resolution	1,000,000 counts
Maximum display resolution	16,000 counts (This limitation can be bypassed)
A/D Conversion rate	100 times/sec.

Digital Section

Main Display	Blue Fluorescent, 7-segment, 7-digit Character Height: 18mm
Subdisplay	Blue Fluorescent, 7-segment (54 digits) /5✕7 dots (54 digits) Character Height: 5mm
Status Displays/Symbols	8 displays/10 symbols (5✕7 dots)

External Input/Output Section

Control I/O	Inputs 11/Outputs 11
Standard Serial I/F (Ch.1)	RS-485 (Terminal)
Standard Serial I/F (Ch.2)	Current loop (Terminal)

General

Power	AD-4402 AC 85V~250V (50/60Hz) AD-4402D DC 24V $^{+10}_{-15}$%
Consumption	Approximately 30VA
Operating Temperature	−5~+40°C (23°F~104°F)
Operating Humidity	Less than 85% RH (non-Condensing)
Physical Dimensions	192(W) ✕ 135(D) ✕ 96(H) mm 7.56(W) ✕ 5.31(D) ✕ 3.78(H) inches With terminal posts: 192(W) ✕ 177(D) ✕ 96(H) mm 7.56(W) ✕ 6.97(D) ✕ 3.78(H) inches
Panel Cutout Dimensions	186(W) ✕ 92(H) mm 7.32(W) ✕ 3.62(H) inches
Net Weight	Approximately 1.8 kg / 4.0 lb

Options

OP-01	Parallel BCD Output
OP-02	Relay Output
OP-03	RS-422/RS-485 I/O
OP-04	RS-232C I/O
OP-05	Parallel I/O
OP-07	Analog Output
OP-20	CC-Link Interface
OP-21	DeviceNet Interface
OP-22	PROFIBUS Interface

Specifications subject to change for improvement without notice.