R400 Series – Data Sheets

- 100,000 d @ 0.25 µV/d
- Trade approved Australia, Europe and USA
- Built in RS232/RS485
- IP65 ABS or stainless steel housing
- 16 x 350 ohm cells
- Ethernet support
- Robust precise analogue output module

The R400 series of indicators are designed with both the installer and operator in mind and cover a wide range of applications. They are engineered and built to last with reliability being foremost. The modular design allows for the installation to be commissioned with only the components required, saving on time and money. With upwards of nine (9) versions of firmware available the R400 indicator is an ideal indicator for dealers and distributors as it simplifies installer training and reduces stocking levels.

Flexibility is the key with its award winning modular accessory design. Modules include: additional serial options, input/outputs, analogue outputs, external buttons, Ethernet, Alibi (Data Storage Device) and battery or AC option.

Superior housings - two housing types are available:

- R420 (ABS) rated to IP65
- R423 (stainless steel) rated to IP66

Both housings are designed with extra attention to detail to increase their reliability in the field, thereby reducing unplanned downtime and servicing costs. For example, the R423 uses a high impact polycarbonate lens to protect the LCD from knocks.

Simple setup - use the menu system directly via the alpha numeric keypad or the configuration utility View400 on a PC.

Operator friendly - large multi-segment display that uses logical prompts along with dedicated and programmable function keys. Printing can be tailored with custom record, docket or reports printouts. Primary display is 29mm (1.1”) and secondary display 18mm.

Rugged Load Cell Input - Designed to take 16x320 ohm load cells; providing flexibility and reducing the need for summing hardware, simplifying the installation and saving money. The load cell input is protected with onboard transorbs to limit damage from external voltage surges.

Networking Capability - Support for Ethernet to improve integration into larger control systems

Modules

The R400 Series flexibility is provided through its broad range of modules that are easy to configure and neatly connect into the rear of the indicator. There are 4 module slots where an indicator can be equipped with only the features required for a given installation.

Robust Input/Output Modules (M4301, M4311, M4321, M4331)

An R400 indicator can be equipped with up to 32 I/O. These I/O are electrically isolated, designed for direct connection into PLC’s and are capable of driving low voltage actuators directly.

- Isolated high side (400mA current source) drivers are capable of driving low voltage actuators directly or can be connected directly with PLC controllers.
- Each module has 8 digital I/O ports which are limited to maximum input voltage of 30V and can drive up to 400mA.
- Direct connection between I/O points is supported
- Inputs are isolated to resist against system noise.

Button Module (M4302)

The Button Module provides 4 voltage free inputs for use with switches or thumbwheels. The voltage free inputs eliminate the need to wire up complicate input driver circuits.

Isolated Communication Modules

Communication modules are in addition the built in RS232/RS485 ports on the R400 indicators.

- **Fully isolated** and recommended for application where there is a risk of lightening or surges or where additional communication ports are required.
- M4201 RS232/RS232, M4202 RS232/RS485, M4203 RS485/RS485

Precise Robust Analogue Output Module (M4401)

The analogue module provides a 4-20mA or 0-10V analogue output and two digital I/O.

- **Isolated** so as to resist against system noise and interference therefore reducing unnecessary callouts;
- **Precise** with a 400Hz (2.5msec) update rate and 1/65,000 resolution. The fast update and high D to A conversion rate give a smooth output curve which helps a PLC to see more realistic readings (2.5msec step)
- **Scalable** to suit the input on the PLC.
- **Two digital I/O** provided the same as the M4301

Data Storage Device Module (M4501)

The Data Storage Module provides non volatile alibi memory storage (6M bytes) according to WELMEC 7.2 L. Compatible with later versions of software.

Ethernet (M4222)

The Ethernet Module provides 10/100 Base TX with auto negotiation (1 Raw bi-directional port and 10 Raw transmit only ports).

Accessories

Converter 0-10V/4-20mA Input (M4902)

Connects to the Load Cell Input on R400 series indicators for a voltage or current input. Useful where an indicator needs to take an input from load pins on a crane scale for example. Suitable for pressure, displacement or strain transducers that output 4-20mA or 0-10V analogue signals.

rin-LINK

The magnetically coupled rin-LINK on the front panel provides a convenient temporary connection to a laptop - no need to access rear of the indicator.

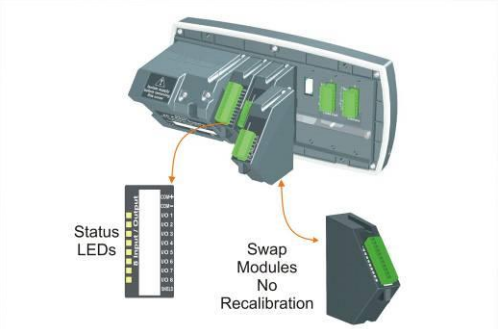
- Transfer of setup and calibration information
- Download of software upgrades

Relay Modules (M4901 and M4906)

The relay modules, used in conjunction with an I/O module, provide 8 voltage free relay outputs rated to 250VAC and 8A, available in either 12 or 24V.

- DIN rail mountable.
- Provides N/O (normally open) and N/C (normally closed) contacts for each output.

Smart Weighing



Superior Diagnostics

R400 series indicators have a range of diagnostic tools and features that aid system commissioning and maintenance.

Hardware configuration report summarises how the indicator hardware is setup, providing a record for maintenance purposes or fault finding

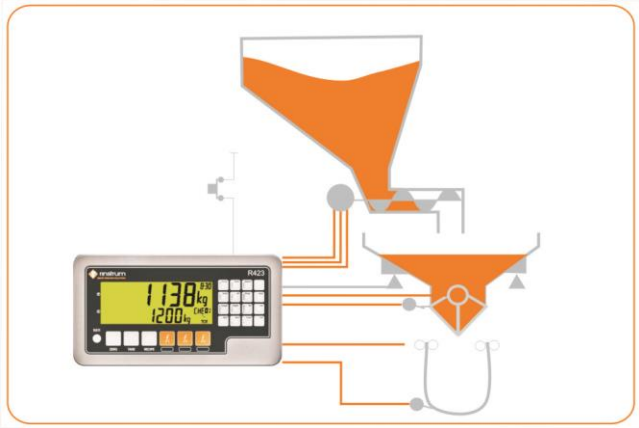
Force Output and Test Input functions allow the installer to specifically test I/O to assist in site setup

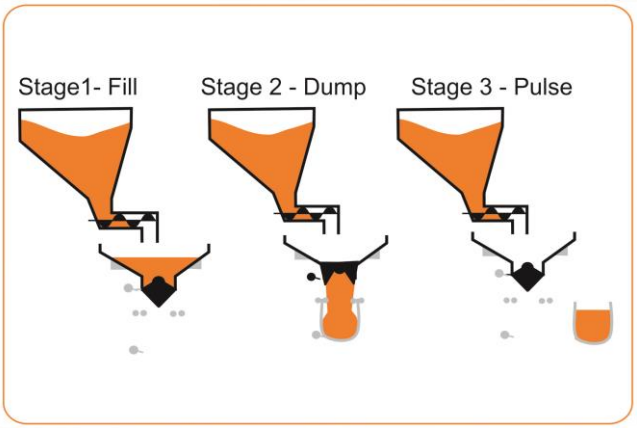
Modules can be swapped in and out without recalibration of the indicator, saving time and effort

Status LED on each I/O;

Overload counter to review if the scale has been overloaded.

R400 Series – Batching (K410/K411/K412) – Data Sheet





- 100 Recipes (Products)
- 10 batching stages
- Fill, Dump and Pulse stages
- 3 Speed Fill
- Fill correction using jogging or in-flight
- Negative batching
- Batch suspend
- Dump to time or weight

The R400 indicator supports three (3) batching firmware applications to create a powerful and flexible batching controller. The three variants of firmware differ primarily in the number of materials they each support. The K410 is single material and ideal for filling, the K411 supports 6 materials and the K412 20 materials. The K411 and K412 are both suitable for multi-head batching machines and more complex control systems using multiple materials.

Each supports 100 recipes and 10 stages of batching. The batching stages can be defined as fill, dump or pulse. Three (3) speeds of filling can be configured depending on the complexity of the batching system.

For example a Recipe can be defined as a FILL to target, followed by a DUMP, followed by a PULSE to release a bag. The FILL stage can use up to three I/O to control slow, medium and fast filling.

Application Firmware:	**K410**	**K411***	**K412**
Number of Materials	1	6	20

* Only K411 supports the Analogue Module

Smart weighing batching features:

Negative batching is supported by setting the fill direction which defines if the weight is increasing or decreasing while batching - ideal for discharge and dosing applications.

Batch Suspend can be allocated to a function key - the batch will pause and adjust the tare weight when resuming the batch. Ideal for when a material feeding the batch needs to be topped up during the batch without affecting the batched amount, or when feeding from multiple bulker bags etc.

Timer based multiple batching uses the Real Time Clock to control the batch start time and the duration between repeat batches - ideal for bio-fuel applications.

When using timer based batching, the current weight is displayed along with the time to go before the next batch, keeping the operator informed.

Detailed reporting with material usage and batch statistics, along with QA records of every batch run possible when combined with the data logger;

Batching operation flexibility where batch size can be varied by either weight or proportion and the operator can set number of batches to run.

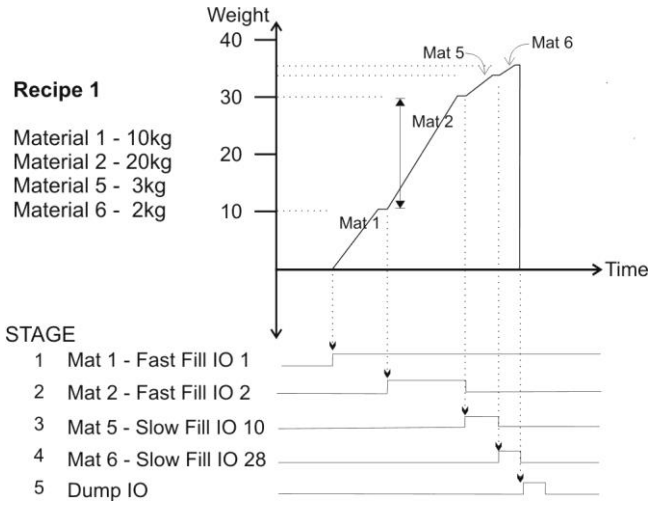
Key features of the R400 hardware that make it ideal for batching:

Overall system accuracy with unprecedented filling control with uncertainty of less than 1 millisecond.

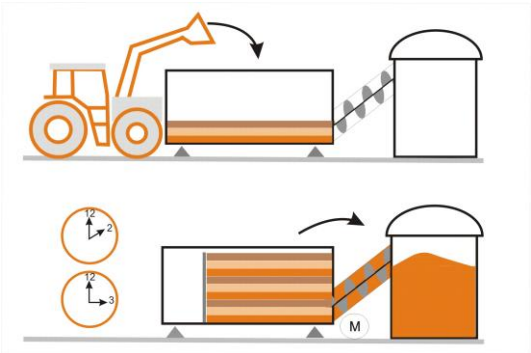
The 32 I/O control points allow for complex control with multiple set points, enables and interlocks. As the outputs are isolated high side (current source) drivers they are capable of driving low voltage actuators directly or can be connected directly with PLC controllers.

The multi-line display shows batch progress, current weight, target weights, material name along with dedicated batch status annunciators. For example in a batch out scenario current net weight and target weight along with name of the material that is being batched is displayed.

A more complex multi stage multi material recipe might be defined as



Smart Weighing



Functions for Industry

Automatic proportion calculation after first fill stage

- Proportions of remaining batch are adjusted automatically according to first material fill quantity
- Ideal for applications with a manually loaded first fill stage

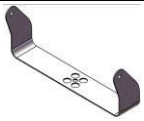
Timer based multiple batching

- The Real Time Clock is used to control the batch timing for time based batching
- Ideal for bio-fuel and dosing applications

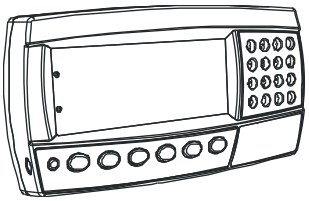
..now that's smart weighing.

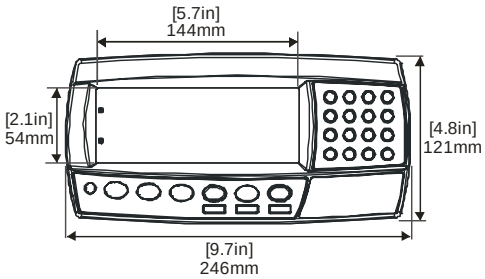
R400 Series Specification Table

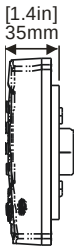
Resolution		Up to 100,000 d, minimum of 0.25uV/d						
Approvals		10,000 d @0.7uV/d NMI(S-463), OIML R76 III/III L NTEP 08-720 FCC, CE, C-tick						
Zero Cancellation		+/- 2.0mV/V						
Span Adjustment		0.1mV/V to 3.0mV/V						
Excitation		7.4V for up to 16 x 350 or 32 x 700 ohm load cells (4-wire or 6-wire plus shield) Maximum total load cell resistance: 1,000 ohms						
A/D Type		24bit Sigma Delta with ±8,388,608 internal counts						
Operating Environment		Temperature: –10 to +50°C ambient (14 °F to 122 °F) Humidity: <90% non-condensing						
Display		LCD with 4 alpha-numeric displays and LED backlighting: Primary display: 6 x 28.4mm (1.12") high digits with units and annunciators 2nd display: 9 x 17.6 mm (0.7") digits with units 3rd display: 8 x 6.1 mm (0.2") digits 4th display: 4 x 7.6 mm (0.3") digits						
Setup and Calibration		Full digital with visual prompting in plain messages						
Digital Filter		Sliding window average from 0.1 to 30.0 seconds						
Zero Range		Adjustable from +/- 2% to +/- 20% of full capacity						
Standard Power Input		12 to 24VDC (15 VA max) - ON/OFF key with memory feature						
Variants	**AC**	AC power supply Input: 110/240VAC 50/60Hz Output: 12VDC 15VA						
	Battery	2.5AH NiMH rechargeable battery pack Charger Input: 110/240VAC 50/60Hz Output: 12VDC						
Optical Data Communications		Magnetically coupled infra-red communications Conversion cables available for RS232 or USB						
Correction		10 point linearity correction						
Serial Outputs		Serial 1A: RS-232 serial port for remote display, network or printer supports. Serial 1B: RS485 transmit only for remote display Transmission rate: 1200, 2400, 4800, 9600, 19200, 57600 baud						
Assignable Function Keys		3						
Operating Modes		Single Range, Dual Range and Dual Interval						
Battery Backed Clock Calendar		Battery life 10 years minimum						
Application Software		**K401**	**K402**	**K404**	**K405**	**K410**	**K411**	**K412**
Functions		Custom printing, custom unit switching, counting, manual hold, peak hold, auto output totalising		Weighbridge Single pass weighing Two pass weighing Dedicated truck key Custom printing Temporary Truck IDs Preset Tare Specialised truck dockets	Static Axle	1 Material Up to 10 Batching Stages 3 Speed Fill Fill, Dump & Pulse stages Inflight & jogging correction, Negative batching Batch suspend Timer (RTC) based multiple batching	6 Material	20 Material
Products/Recipes		1	250	250 Trucks		100 Recipes		
Analogue Output * (M4401)		1		-			1	-
Set points		8						
Additional Communications *		Module: RS232/RS232 Module: RS232/RS485 Module: RS485/RS485						
Button Input *		4 Buttons						
Data Storage Device * (M4501)		1						
Ethernet * (M4222)		1						
Housing Options		**R420**		**R423**				
Case Materials		ABS		Stainless Steel				
Packing Weights		Indicator: 1kg (35 oz)		Indicator: 1.2kg (42 oz)				
Environmental IP Rating (panel mounted or with rear boot)		IP65		IP66				

R420 Rear Boot for IP65 standalone unit		R420 Brackets		R423 Bracket
				
Rear Boot	Rear Boot with Desk Stand	Stainless Steel Wall Mounting M4003	Stainless Steel Post Mounting M4004	Stainless Steel Desk/Wall/Post Mounting

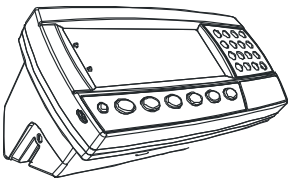
ABS Panel Mount

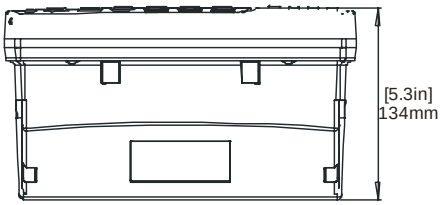


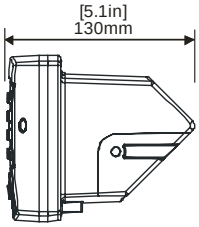




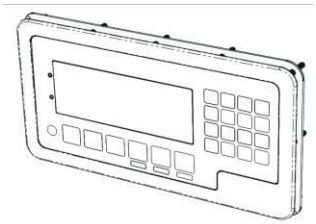
ABS with Rear Boot

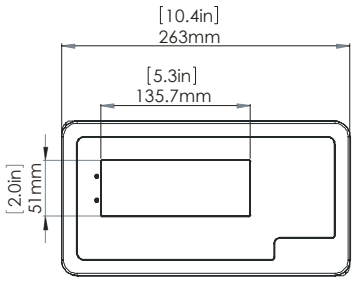


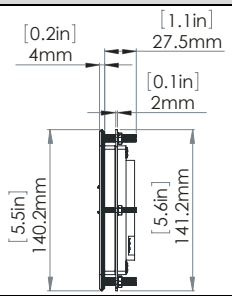




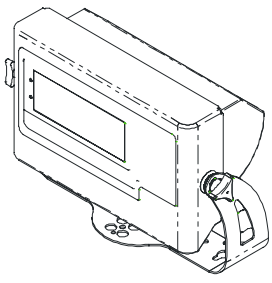
Stainless Steel Panel Mount

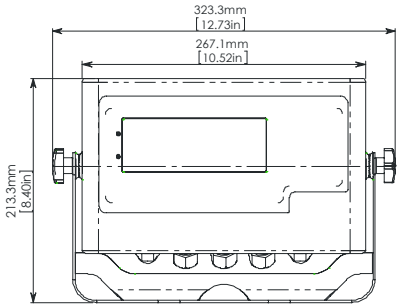


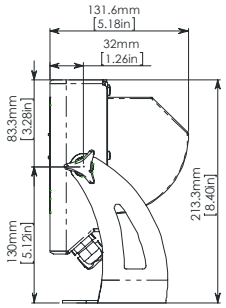




Stainless Steel with Rear Housing and Stand







Specifications are subject to variation for improvement without notice. Illustrations are indications only and variation may be evident between products.

*Optional modules