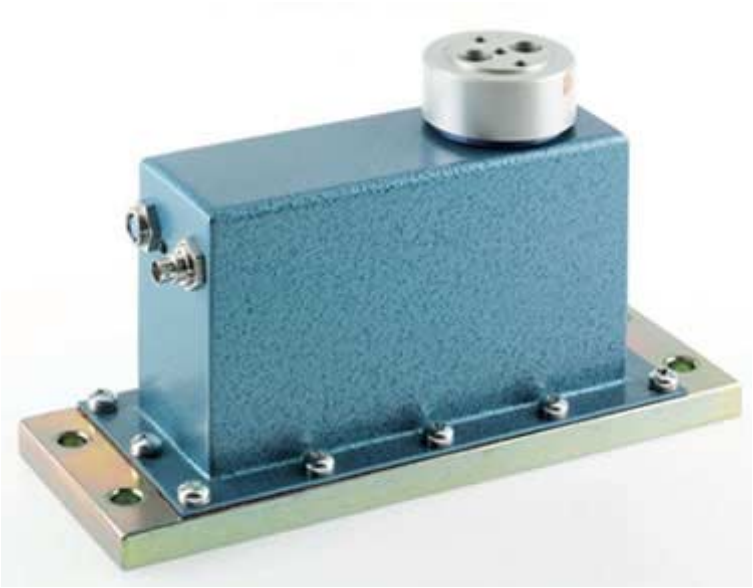
Model Digital 240

Digital Load Cells

NEW!



Features

- Fully calibrated, filtered digital output
- High A/D update rates (adjustable from 50 to 800 samples/sec)
- Readings on request or continuous output
- Checkweigher function-reading acquired over period set by remote sensor trigger
- Configurable setting
- Safeguard access to calibration for approved weighing application
- EMC compliant and surge protected
- Extensive onboard diagnostics with error log
- Visual indication of operating mode and fault conditions
- Fluid damped and overload protected
- Auto detect communication settings

Model digital 240 is specifically designed for high speed/dynamic weighing. Fluid damping vastly improves its response time and fatigue life over undamped load cells. On board electronics make it highly configurable and simple to employ in approved weighing applications.

A wealth of application experience has gone into this load cell to allow weighing system designers to speed development of their own designs - a great proportion of the functionality required to create a fully featured weighing system is already implemented in the digital 240.. Communication is straightforward using an ASCII command structure and high update speeds are possible, making it particularly suitable for checkweighing.

In multi-head weighing machines, multiple units can be networked together over a built in RS485 link. The load cells initialize automatically and arbitrate between themselves to create a working network. This removes much difficulty at set up and means that load ells can be changed over in service as ‘plug and play’ units - pre-calibration ensures that each unit will be virtually identical in performance.

VISHAY

TEDEA HUNTLEIGH

EXCELLENCE IN LOAD CELLS

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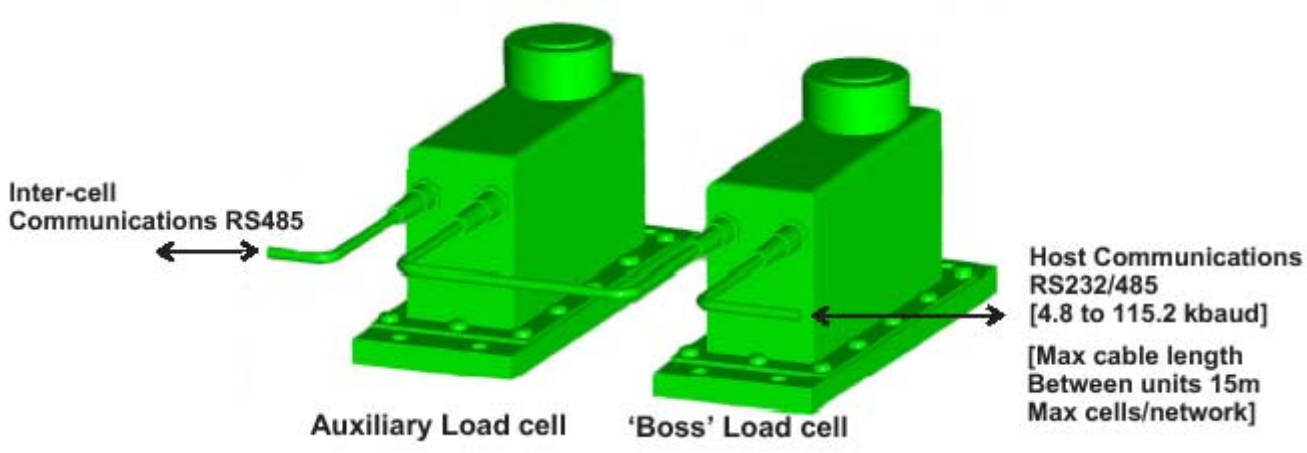
Communicating with the Digital 240
The Digital 240 operates in two distinct modes:

1. Boss Mode
2. Auxillary Mode

A typical digital weighing installation will consist of a host device (e.g. PC, digital indicator, PLC) and additional load cells connected over a single cable. Over this connection commands are issued by the host and the load cells respond with readings and status information. When a network of load cells (or a single load cell) are connected together to a host device, on initialization of the network, the first load cell on the network will designate itself the 'Boss' load cell, and set up the other load cells in 'Auxiliary' mode, establishing communication and allocating addresses etc. It also performs weighing system checks, ensuring calibration integrity and compatibility of load cells in the network. In operation, the host device can as a result of the above, ignore the detail of managing all load cells, and communicate with the Boss device only as though it were a scale. Auxiliary load cells can, however still be accessed individually as required.



Diagnostics
A significant advantage of the digital load cell is in terms of cost of ownership. The analogue load cell, especially in multi-cell applications can be awkward to set up and fault find. In a production line environment, the real cost of determining and resolving equipment problems is high. Reliable and meaningful feedback about load cell operation and fault conditions is essential for fast recovery and this is where the Digital 240 pays for itself. The Digital 240 has a number of key features in terms of diagnostics for cell operation.

1.External indication of errors - a tri-color led is used to show status and fault conditions in the event of loss in RS232/485 communication. Even in the worst case, if communication with the load cell is not possible, the Digital 240 can still give an indication of its health and set up.

2. Internal error log - a time referenced log of errors is maintained (up to 14 scrolling errors) which allows tracing of repeating fault conditions, and identification of time of serious fault (e.g. Over/under load)

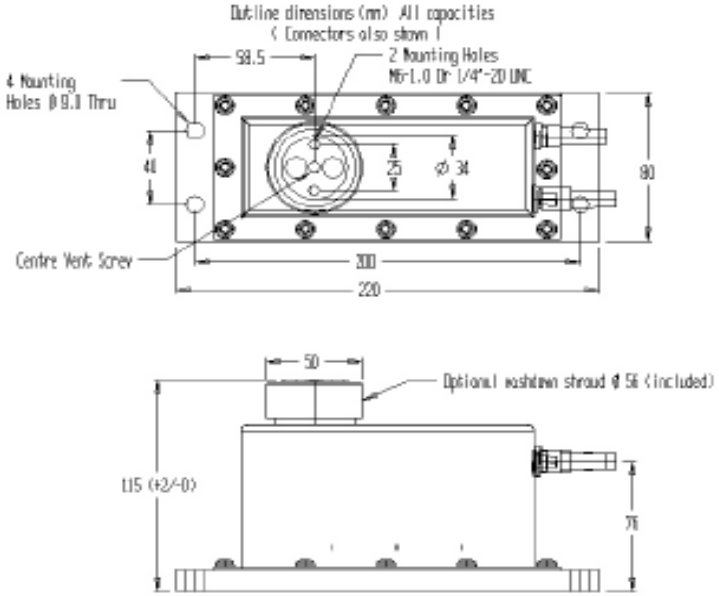
3. Validity of readings - with each reading, status characters are transmitted (good/bad/warning). Fatal errors cause readings to cease and error codes are transmitted.

4. Integrity of calibration - at power up the cell(s) self check to assure
(a) Calibration
(b) Consistency between units used in combination
(c) The network has not been changed - units added/removed

Checkweighing
The model 240 has proved itself a consistent performer in Checkweighing and the Digital 240 extends its capability with features specific to this application:-1.
Three Stage Filtering
Hardware filter f = 1.6 Hz Slope=6dB/octave 3db
ADC 8 pole digital filter f =12.5Hz Slope=48dB/octace 3db
User configurable 2 pole IIR filter f =0.14 to 195 Hz Slope=12dB/octave 3db
2. Externally triggered acquisition of weight (e.g. Trigger input from PECs). The Digital 240 allows a maximum 480 Hz A/D
Acquisition speed - producing a single filtered weight value at the end of the weighing period.

Installation Checklist
The Digital 240 is an accurate, repeatable instrument and to realise its full performance, a number of points should be considered.

Installation
Mount on Flat, level (ideally ground) surface, rigid enough to remain level under load. Isolate where possible, from sources of vibration (Motors, random external etc). Use of 4 off baseplate bolts torqued to 40 NM 25-30 lb ft)



Live end Mounting
The weighing platform assembly should be rigid enough to avoid low frequency oscillation.
Note settling time increases with tare load
Use 2 load cap bolts torqued to 16Nm (12lbft)

Infeed of weighed items
Avoid shock application of load from
(a) Edge impact due to a step between infeed and weighing platform
(b) Live weight dropped directly onto platform
The path of the live weight over platform should be over the centre line of the loadcell (lengthwise).
The weighing platform belt feed should be appropriate to the maximum live Weight (live weight can cause stretching oscillation of belt)

Troubleshooting
Anything that prevents free movement of the cell under load will cause a
Problem:-
Check:-
The Transportation grub screw (centre load cap) is released
The underside of the load cap is free of debris etc
The filters fitted to the load cap are not blocked (special filters/options can be provided for corrosive atmospheres, low Temperatures, high humidity/very aggressive washdown.

Model Digital 240

Capacities	2,3,5,7,10,15,20,30,50	Kg
Approval	3000d	OIML (R60)
Mechanical protection	Fluid damped & overload/underload protected	
Max Load	150	% Emax
Max Dynamic Load	80	% Emax
Operating temp range	-20 to +70	°C
Protection Class (EN6059)	IP67	
Weight	3.4	Kg
Finish	Stainless or Coated	

Electrical Specifications

Input Voltage	8 to 15	V d.c.
Current consumption	135	mA
External resolution	1 Million	Counts
Loadcell excitation voltage	5	V d.c.
Update Rate (ADC)	50,100,200,400,800	Readings/sec

Communications

Host		
Interface	RS232, RS485	
Protocol	ASCII	
Communications settings	Autodetect	
Communication speed	4800,9600,19200,38400,57600 115200	Baud
Data bits	7/8	
Stop bits	1/2	
Parity	Odd/even/none	
Auxiliary (inter-cell)		
Communication speed	57600	Baud
Max cable length	15	m
Termination	External	
Max Number of network devices	Odd/even/none	

Connections

TYCO ™ connector series 1, mating end of socket (pin 1 indicated).

Standard cable, 3 metre, Part Number 3-1437-720-4(-5 =5 metre cable)

Connector Pin Number	Function	Colour
1	12 Volt d.c.	Blue
2	Ground	Pink
3	OCIO (Control/Trigger I/O)	Grey
4	RS485B (-)	Yellow
5	RS485A (-)	Green
6	RS232 PLUG: TX (COM1) SOCKET: RX (COM3)	Brown
7	RS232 PLUG: RX (COM1) SOCKET: TX (COM3)	White

Due to Tedea-Huntleigh's policy of continuous development, these specifications are subject to change without notice.

Also Available from Vishay Tedea-Huntleigh

For extreme washdown conditions a special version of the model 240 is available which has remote breathing facility. The model 9010 is also designed to be used in high speed applications but has an additional feature whereby the system dead load can be offset by an internal adjustable spring mechanism. For further details please contact Tedea-Huntleigh or your local distributor, or visit our website at http://www.tedea-huntleigh.com