

## Roll Force Measurement System

### FEATURES

- Prevent mill overloading
- Increase roll life
- Control product quality
- Zero tracking with manual override
- Local and remote indication
- Easy retrofit for existing mills
- Direct replacement for RFS-3 and Model 56000 systems from BLH Nobel

### APPLICATIONS

- Hot and cold rolling mills
- Overload safety
- New and retrofit

### DESCRIPTION

Rolling mill separation forces are measured accurately and conveniently with the RFS-4 system.

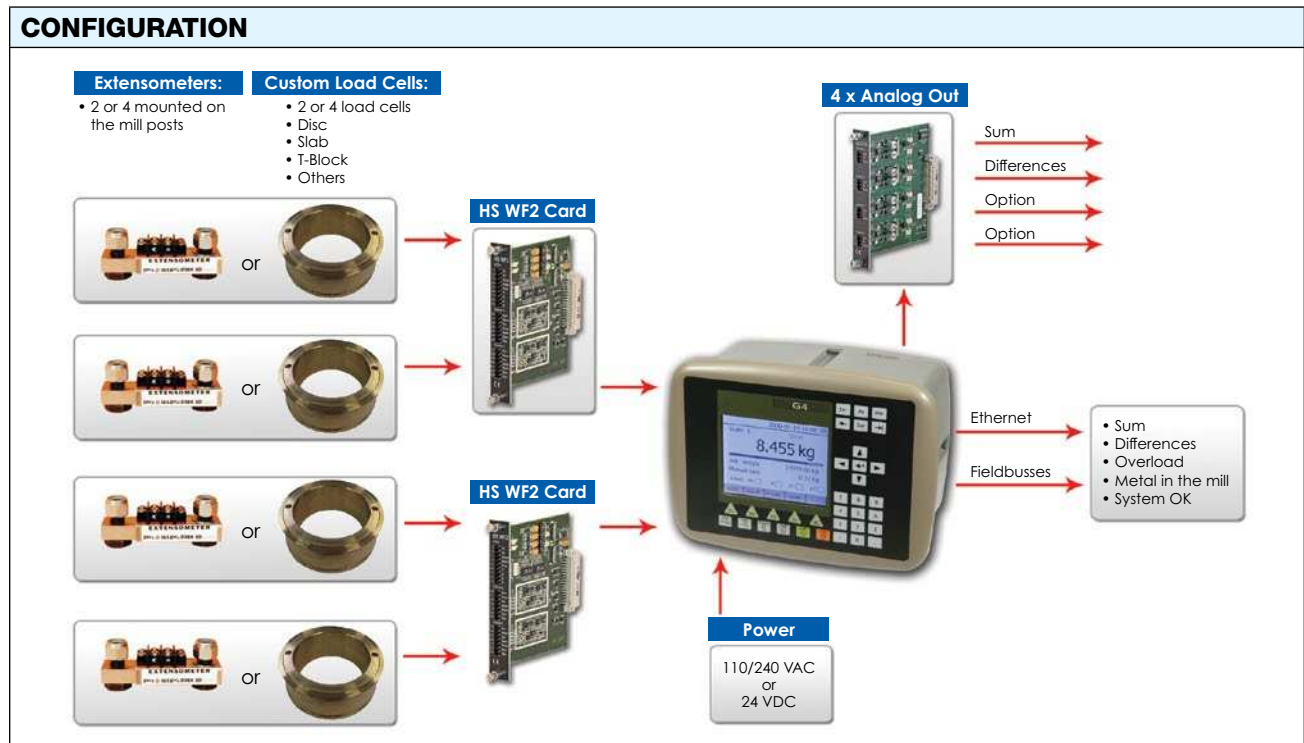
Extensometers on the mill posts or load cells in the screw provide an electrical signal proportional to the mill separation force. A G4 instrument with tailor-made software reads signals from both sides of the mill and amplifies them.

The G4 has up to 8 channels to provide accurate and reliable information on sum (total), difference (work-drive), work total, and drive total values that can be displayed on the graphic color display.



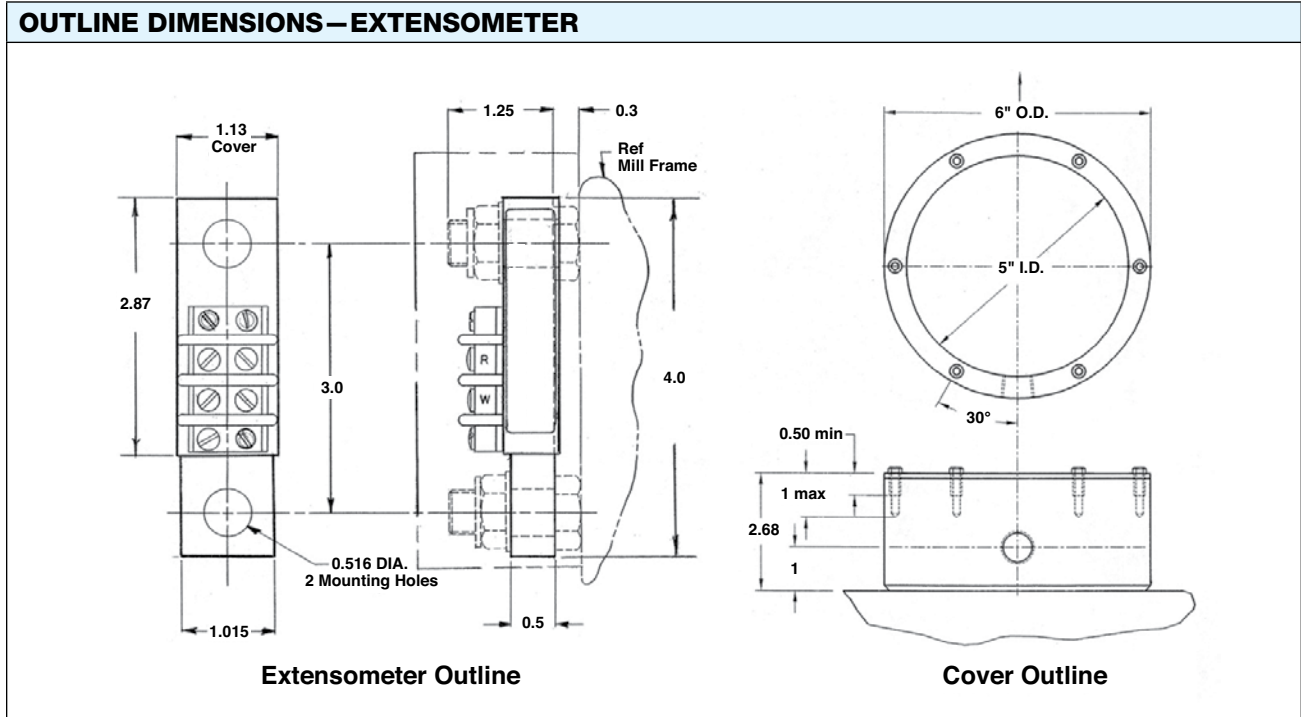
Analog signal outputs for each value are available on the rear panel rack terminals. Separate relay outputs are provided for "Metal in the Mill" and "Mill Overload" conditions.

### CONFIGURATION



Roll Force Measurement System

SPECIFICATIONS – CONTROLLER (G4)		PARAMETER	VALUE
<b>CPU MODULE</b>		<b>PARAMETER</b>	<b>VALUE</b>
<b>Interfaces</b>	Isolated	<b>USER INTERFACE</b>	
<b>Ethernet</b>	Process data and control	<b>Display</b>	Color TFT LCD screen with backlighting, 5.7" 320x240 pixels
<b>Protocol</b>	Modbus TCP	<b>Keyboard</b>	Touch screen and 34 membrane keys
<b>RS232 and RS485 ports</b>	For process data and control	<b>ENVIRONMENTAL CONDITIONS</b>	
<b>Protocol</b>	Modbus RTU	<b>Temperature range</b>	
<b>Baud rate</b>	Up to 115 kbaud	<b>Operating temperature</b>	-10 to +50°C
<b>Fieldbus</b>	For process data and control	<b>Storage temperature</b>	-25 to +85°C
<b>Available fieldbusses</b>	Profibus or DeviceNet	<b>Protection</b>	IP65 (front panel)
<b>USB, supported units</b>	Version 1	<b>EMC, RF</b>	CE (Industrial), UL, cUL
<b>Keyboard</b>	USB keyboard for PC	<b>POWER</b>	
<b>Memory stick</b>	USB type for PC; for backup and restore of set-up parameters; and for change to a new program version	<b>DC supply module</b>	19–29 VDC, 40 W
		<b>AC supply module</b>	115/230 VAC 50/60 Hz, 40 W



Roll Force Measurement System

SPECIFICATIONS – EXTENSOMETER	
PARAMETER	VALUE
Accuracy <sup>(1)</sup>	<±0.85% of FSO
Nonlinearity	<±0.25% of FSO
Hysteresis	<±0.40% of FSO
Repeatability	±0.5% of FSO
Calibrated output	8 mV/V ±0.5% = 66.6 μm/m (microstrain)
Overload capability, zero <sup>(2)</sup>	300% of FSO (24 mV/V)
Overload capability, maximum	550% of FSO (44 mV/V)
Strain bridge	
Input resistance	525 Ω ±125 Ω
Output resistance	350 Ω ±50 Ω
Insulation resistance	5000 MΩ
Excitation	10 VDC
Thermal effects, zero <sup>(2)</sup>	±0.055%/°C of FSO
Thermal effects, rated output	±0.011%/°C of reading
Operating temperature range	-17°C to 121°C

- <sup>(1)</sup> Accuracy is the root sum of the squares of nonlinearity, hysteresis, repeatability and span.
- <sup>(2)</sup> Cancelled by the instrument zero adjust capability.
- <sup>(3)</sup> The autozero capability of the instrument cancels any thermal zero shift.
- <sup>(4)</sup> Specifications only valid for extensometer, not application.

SPECIFICATIONS – LOAD CELL: All load cells are customized in specifications and dimensions.	
PARAMETER	VALUE
Accuracy <sup>(1)</sup>	1.0% of RO
Nonlinearity	0.5% of RO
Hysteresis	0.5% of RO
Repeatability	0.25% of RO
Calibrated output	2 mV/V
Capacity	1–15 MN
Strain bridge	
Input resistance	350 Ω ±5 Ω (or 700 Ω ±10 Ω)
Output resistance	350 Ω ±5 Ω (or 700 Ω ±10 Ω)
Insulation resistance	5000 MΩ
Excitation	5–30 VDC
Thermal effects, zero <sup>(2)</sup>	±0.04%/°C of RO
Thermal effects, rated output	±0.04%/°C of reading
Operating temperature range	-40°C to 100°C (more upon request)

- <sup>(1)</sup> Accuracy is the root sum of the squares of nonlinearity, hysteresis, repeatability and span.
- <sup>(2)</sup> The autozero capability of the instrument cancels any thermal zero shift.
- <sup>(3)</sup> Specifications only valid for load cell, not application.

BLH Nobel is continually seeking to improve product quality and performance. Specifications may change accordingly.



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