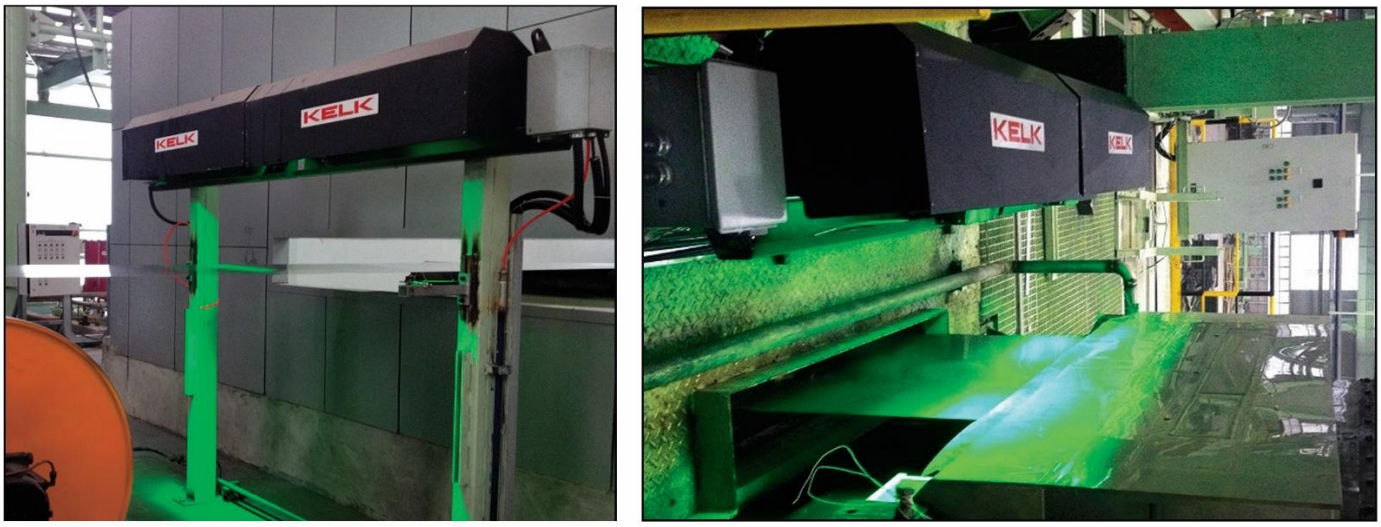

Figure 1: Accuband C765-F Width Gage

1 DESCRIPTION

The ACCUBAND C765-F is a LED front lit width gage used to measure material width in cold rolling mills / process lines. The width gage includes two CCD cameras, which automatically position over the edges of the strip based on the nominal width input. Each camera scans a region across the edge of the strip, accurately locating the position of the edge. The edge data is then combined with the camera separation distance, obtained from precision linear encoders, resulting in accurate strip width and centerline deviation measurements.

The compact design allows the width gage to be installed in tight spaces while still providing accurate measurements for material widths of up to 2 meters (79 in). Front LED lights provide reliable performance with minimal maintenance.

2 APPLICATIONS

The ACCUBAND C765-F Width Gage is used for process measurement, quality control measurement and strip steering in:

- Cold Strip Mill locations including Tension Leveler, Side Trimmers (Entry and Exit) and Tandem Mill Exit
- Temper Mills
- Slitters / Rewinders
- Process Lines (including Galvanizing Lines)

3 FEATURES

3.1. Accurate and reliable measurement of width and centerline

3.2. Scan rate up to 1000 scans per second

3.3. Integrated Front LED allows for long life, low maintenance and easy access for service

3.4. Air nozzles to keep camera windows clean

3.5. Low stand-off distance allows for compact installation

3.6. KELK supplied calibrator with a Certificate of Accuracy traceable to the U.S. National Institute of Standards and Technology. Alternatively, user test plates can also be used for calibration and verification.

3.7. Java based Maintenance Interface is accessible from any web browser connected via Ethernet network

3.8. A comprehensive diagnostic system monitors the operation of the width gage and status signals are provided to the mill host computer. Additional diagnostics can be accessed by service personnel through a maintenance interface accessible over an Ethernet network.

3.9. Modular design allows for easy maintenance

4 SYSTEM CONFIGURATION

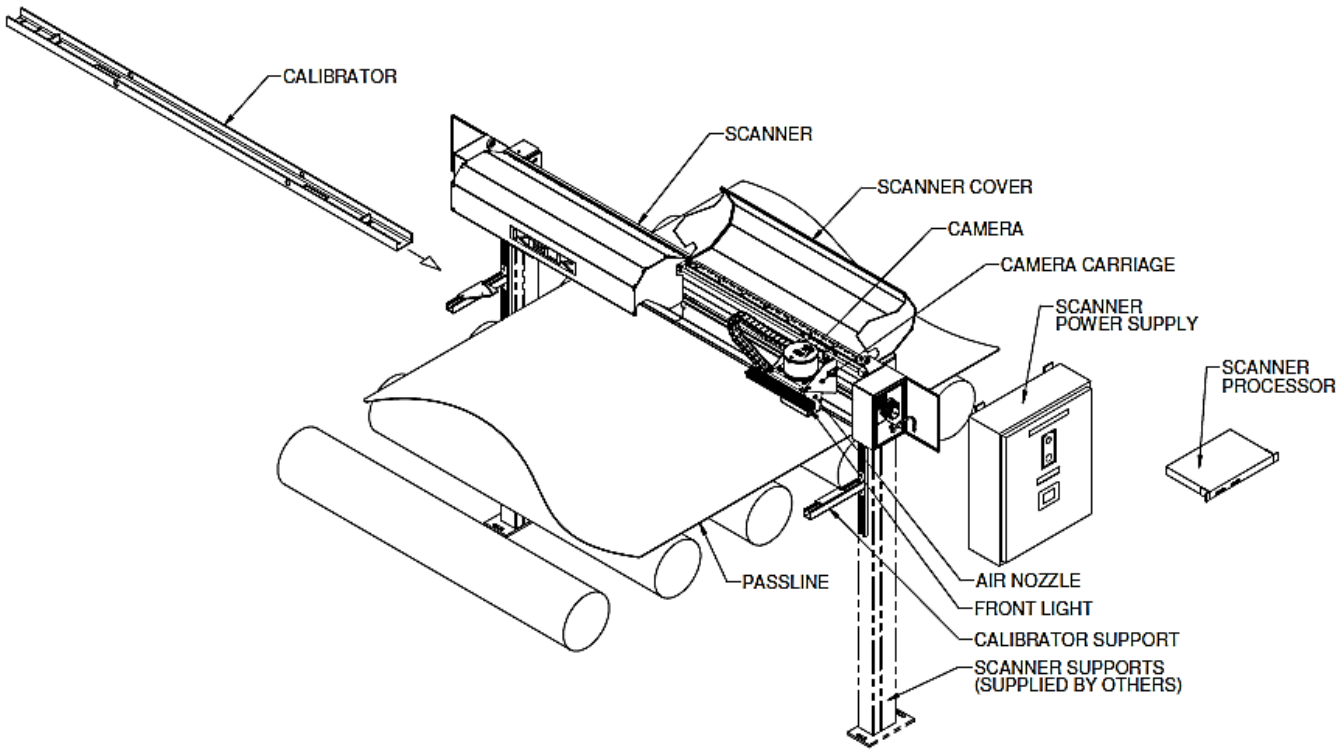

Figure 2: Accuband C765-F Full System Setup

4.1 SYSTEM COMPONENTS

4.1.1. SCANNER

The scanner consists of two CCD cameras and front lights positioned above the strip. All parts are sealed and/or protected for use in a cold mill environment. Air purging nozzles keep the camera windows free of contaminants. Modular design allows for easy maintenance of all major components. The installation height ranges from 500 mm to 1500 mm (20 in to 59 in) above the strip and may be modified to accommodate existing structures.

4.1.2. SCANNER POWER SUPPLY

The scanner power supply provides DC power to the scanner. It is housed in a wall-mounted NEMA 4 / IP65 cabinet and also serves as the junction box for wiring between the scanner and width gage processor. It includes a touch screen HMI to easily verify system operation and calibration while working in close proximity to the scanner.

Typical installations require the power supply to be installed in an accessible location within 10 m (33 ft) of the scanner.

4.1.3. SCANNER PROCESSOR:

The processor is a 19”, 1U rack mounted processor with an Ethernet link to the user’s host computer. The processor controls the entire functionality of the system and can be conveniently installed in any standard electronic cabinet. The processor is typically installed within 100 m (328 ft) of the scanner power supply[1].

4.1.4. CALIBRATOR:

The calibrator is used to calibrate the width gage after installation and following any service work, if necessary, to assure the user of optimum performance. The calibrator also provides a quick, easy, and reliable means of checking gage accuracy.

A mask provides symmetrically spaced edges in accurately known positions along the calibrator. The mask is supplied with a Certificate of Accuracy traceable to the U.S. National Institute of Standards and Technology.

4.1.5. DISCRETE I/O:

A discrete I/O system is used for status and measurement signals between the scanner and host PLC. Discrete I/O systems for a width gage usually consist of two analog inputs, four analog outputs, two digital inputs and five digital outputs. Analog signals typically use voltage ranges of ± 10 V, while current ranges of 4 - 20 mA are also available. It is recommended that the discrete I/O be located in a floor or wall mounted cabinet, but can be installed inside the scanner power supply if required.

4.1.6. OPERATOR'S STATION:

The operator’s station consists of a PC, monitor, mouse and keyboard. The PC can be supplied with configuration, diagnostic and monitoring software, including Kelk Interface Panel (KIP) and optional data logger. All software is configured beforehand and can be customized on site to meet user’s requirements.

[1] Longer distances may be accommodated, consult KELK for further details.

4.1.7. DATA LOGGER:

The ibaPDA data logger is accompanied with one license key and allows for 256 signals (analog and digital channels) to be recorded and stored. The signals must be configured in both the scanner and data logger software, and can be customized for user requirements. Additional software packages and license keys can be accommodated if more than 256 signals are required for logging.

4.1.8. COMMUNICATION PROTOCOL:

The following level 2 communication protocols are available: Ethernet TCP/IP, EGD or Modbus TCP. Typical communication protocols include setup, real time process information, real time measurements and time synchronization messages.

4.2 SCOPE OF SUPPLY

4.2.1. TYPICAL EQUIPMENT

- Scanner
- Scanner Power Supply
- Scanner Processor
- Calibrator and Calibrator Support Kit
- KELK standard communication protocol for host computer interface
- Documentation

4.2.2. OPTIONAL EQUIPMENT

- Discrete I/O kit for analog and digital I/O
- ibaPDA Data Logger
- Floor or Wall Mounted Cabinet
- Fiber Optic Media Convertors for communication connections longer than 100 m (328 ft)
- Scanner Support Posts

4.2.3. TYPICAL SPARES

- CCD Camera with Optics Kit
- Front Light
- Camera Positioning Servo Motor
- Temperature Probe Assembly
- 24 V DC Power Supply

4.2.4. DOCUMENTATION

User manuals, installation drawing packages, installation checklist and commissioning documents are provided in electronic format. English language is standard; other languages are available as an option.

5 SPECIFICATIONS

Measurement Range	**Installation Height**[2]	500 mm - 1500 mm (20 in to 59 in)			
	Material Width	500 mm - 2000 mm (20 in to 79 in)			
	Material Temperature	0 °C – 200 °C (32 °F to 392 °F)			
	Vertical Strip Movement	± 10 mm (0.4 in) with centerline deviation less than ± 10 mm (0.4 in)			
	Lateral Strip Movement	± 100 mm (3.9 in) when Vertical Strip Movement is limited to 0 mm			
Performance	**Accuracy**	± 0.4 mm (0.016 in) at 2 sigma			
	Maximum Measurement Frequency	1000 measurements per second			
	Head End Response Time	Less than 4 ms			
Communication	**Mill Computer Interface**	Physical layer: Cat5e, Fiber Optic Link layer: Ethernet Network layer: MODBUS/TCP			
Dimensions	**Equipment Size**	**Scanner**	**Scanner Power Supply**	**Scanner Processor**	**Calibrator**
	L x W x H	2928 x 503 x 405 mm (115 x 20 x 16 in)	610 x 239 x 762 mm (24 x 9.5 x 30 in)	428 x 292 x 44 mm (17 x 11.5 x 1.7 in)	2600 x 102 x 60 mm (102 x 4 x 2.4 in)
	Equipment Weight	86 kg (190 lbs)	59 kg (130 lbs)	5 kg (11 lbs)	8 kg (18 lbs)
	Input Power	Power received from Scanner Power Supply	85 - 264 V AC, 20 A max, 50/60 Hz	100-240 V AC, 0.3 - 1.5 A, 50/60 Hz	N/A
Operating Environment	**NEMA Rating**	5	4	N/A	N/A
	IP Rating	52	65	N/A	N/A
	Maximum Ambient Temperature	50 ºC (122 ºF)	50 ºC (122 ºF)	40 ºC (104 ºF)	40 ºC (104 ºF)
	Maximum Humidity	90%, non-condensing			

6 WHAT USERS MUST PROVIDE

Installation	**Mechanical**	• Mounting structure with access for maintenance • An unobstructed clear view from Scanner to material surface[3] • Area under the roll table free of reflecting surfaces • Space for 19” Rack Mount, 1U high, Width Gage Processor
	Electrical	• Power to the Scanner Power Supply and Scanner Processor • Interconnecting power, and signal cables not specified in scope of supply
System Services	**Air (at 20 °C / 68 °F)**	142 l/min at 276 KPa (5 CFM at 40 PSI). Air filtered at 40 µm.
	Cooling	No Cooling Required

[2] *Installation height measured from optical plane to pass line.*
[3] *Installations with severe steam or dirt conditions may require additional fans in order to obtain clear field of view from the Scanner down to the detection area.*

7 DIMENSIONS

7.1 SCANNER

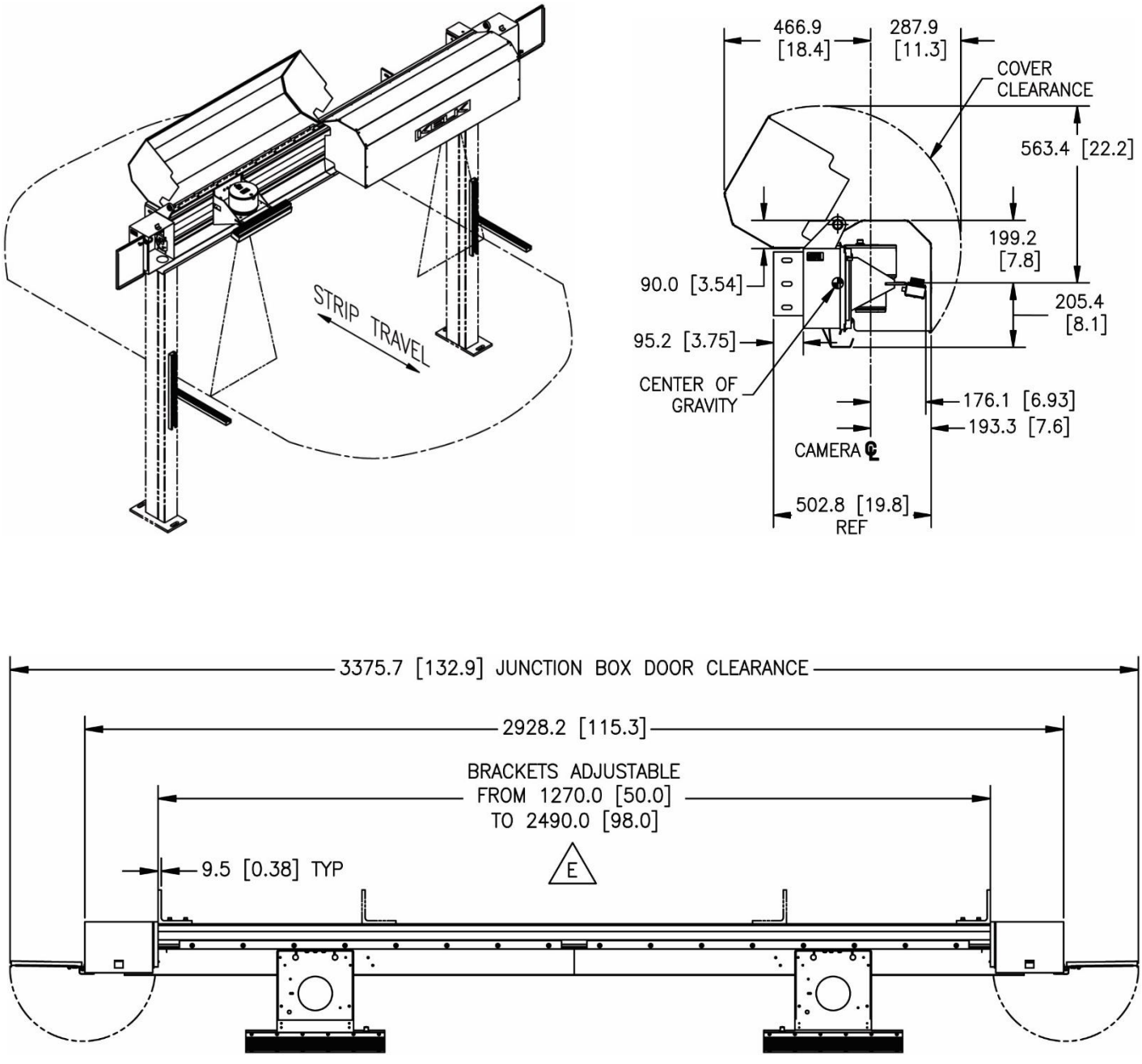

Figure 3: Side and Top view of Accuband C765-F Width Gage

*Dimensions shown in mm [inch].

7.2 SCANNER POWER SUPPLY

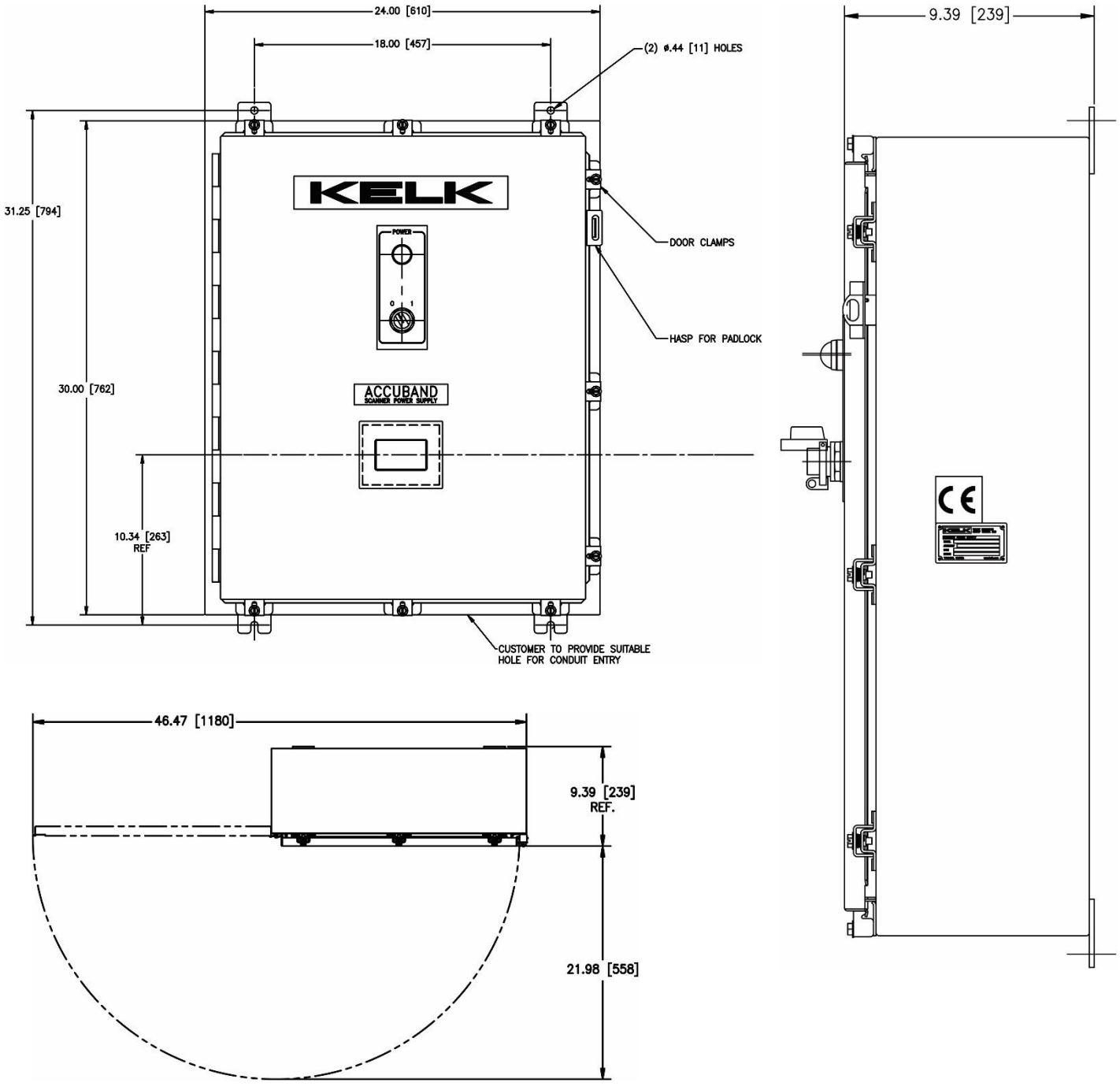

Figure 4: Front, Side and Top view of Accuband C765-F Width Gage

*Dimensions shown in mm [inch]

7.3 CALIBRATOR

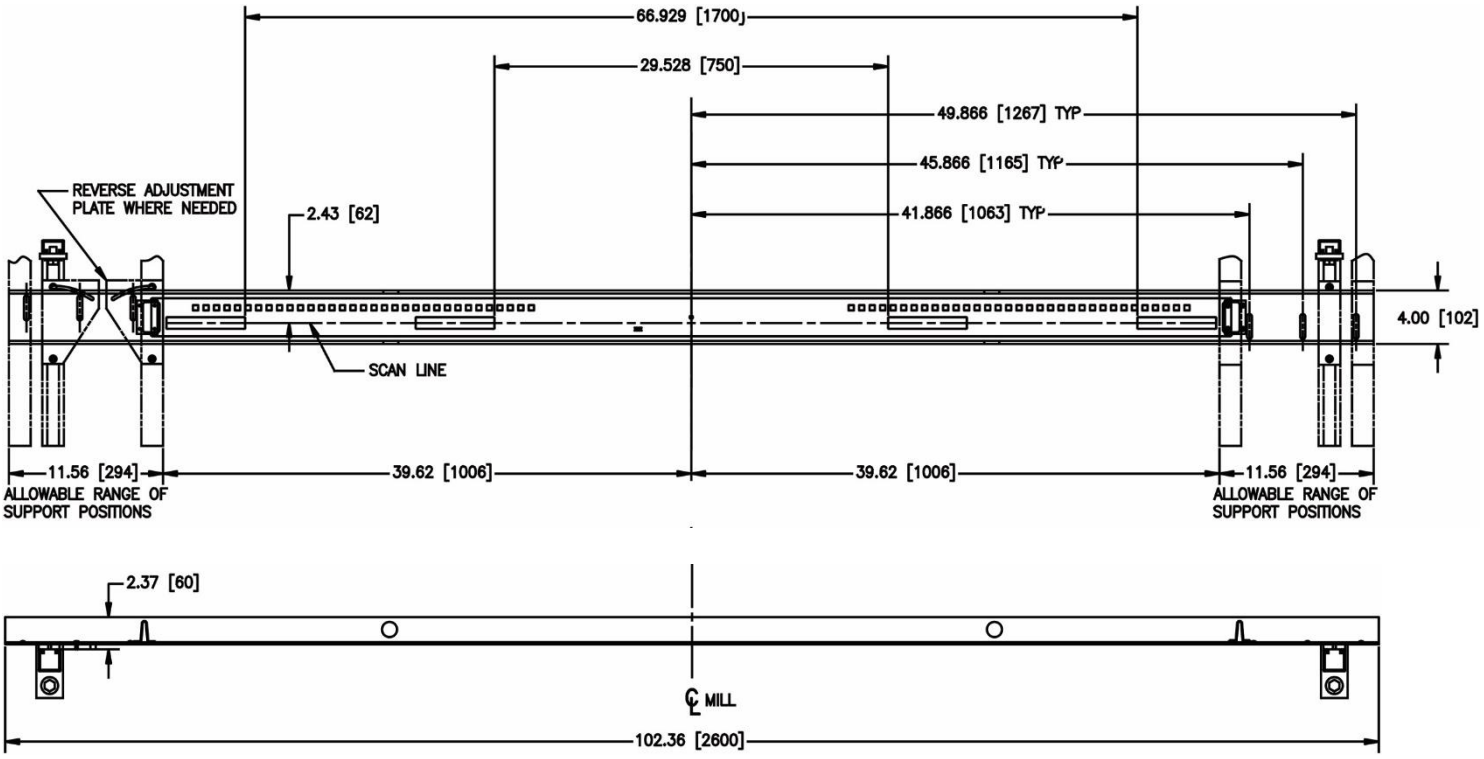

Figure 5: Top and Side view of Calibrator

7.4 SCANNER PROCESSOR

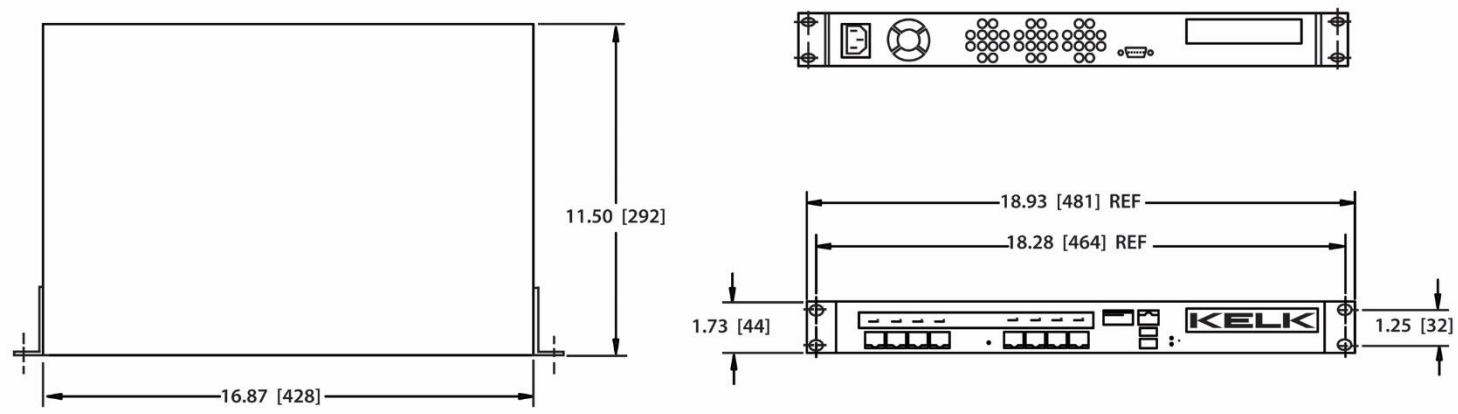

Figure 6: Top, Rear and Front view of Scanner Processor

*Dimensions shown in mm [inch].

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