

# Biffi ELBS-20

## Electronic Line Break System

An advanced electronic pipeline integrity monitoring system that measures dynamic pressure trends and initiates fail-safe action when necessary.



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## Table of Contents

<b>Section 1: General Application</b>	
General Application .....	5
<b>Section 2: Technical Data</b>	
Technical Data .....	5
<b>Section 3: Standards and Approvals</b>	
Standards and Approvals .....	5
<b>Section 4: Features</b>	
Features .....	5
<b>Section 5: Product Overview</b>	
Product Overview .....	6
<b>Section 6: Overall Dimensions</b>	
Overall Dimensions .....	7
<b>Section 7: Wiring Diagrams</b>	
Internal Power Supply .....	10
External Power Supply .....	11
<b>Section 8: Selection Guide</b>	
Selection Guide .....	12

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## General Application

The ELBS-20 is an electronic device designed specifically for monitoring the integrity of pipelines carrying high and low pressure gas and fluid.

## Technical Data

Internal battery nominal voltage:	7.2 V DC
External power supply:	24 - 48 V DC +/- 20%
Pressure sensor range:	10 to 1000 bar
Sensor input:	4 - 20 mA or 0 - 20 mA 2 or 3 wire
Analog output:	4 - 20 mA
Ambient temperature:	-40 °C to +75 °C

## Standards and Approvals

EN ISO 12100-1:	Part 1 and 2
EN 60204/1:	Part 1
2006/42/EC:	Machinery directive
2004/108/EC:	EMC directive
94/9/EC:	ATEX directive
2006/95/EC:	Low voltage directive
IEC 60068-2-6, IEC 60068-2-57:	Vibration test

## Features

- Configurable cyclic line pressure sampling and tracking
- 5 Safety critical parameters monitored
- Dedicated controls for up to 4 SOVs
- Test routines for SOV and safety action function checks
- Auto diagnostic capability, internal monitoring of power source, internal voltage, and analog input circuits
- Wide range of digital and analog inputs and outputs for high diagnostic, signalling, and control capabilities
- MODBUS RTU (RS485) interface
- RS232, RS485, and Bluetooth serial communication ports provided
- Local operator interface with 3 pushbuttons and 128x64 graphical OLED display
- Up to 2 years life internal power supply or external power option
- Specific low consumption working mode with battery power supply
- Position and pressure transmitter sensor powered directly from device
- 1000 events log and time/pressure curves stored in flash memory accessible through Biffi

## Product Overview

The ELBS is an electronic device designed and built to monitor pipeline integrity and initiate fail-safe action when necessary. It measures dynamic pressure trends in the pipeline continuously and sends a command to the actuator to stroke the line valve to the fail-safe position when critical anomalies are detected.

The ELBS is capable of monitoring five crucial safety parameters:

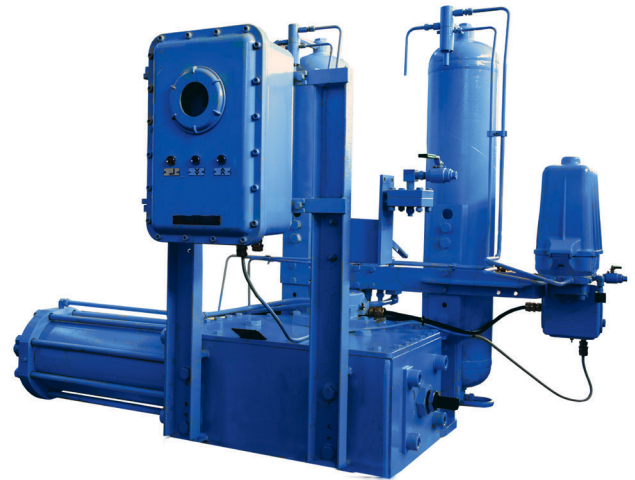
- Rate of pressure drop
- Pressure decrease against reference value
- Pressure increase against reference value
- Low limit exceeded
- High limit exceeded

Its in-built memory is capable of logging up to 1000 events, which can be downloaded to any portable electronic device for future analysis.

It has a wide range of both digital and analog inputs and outputs for diagnostic, signalling, and controls:

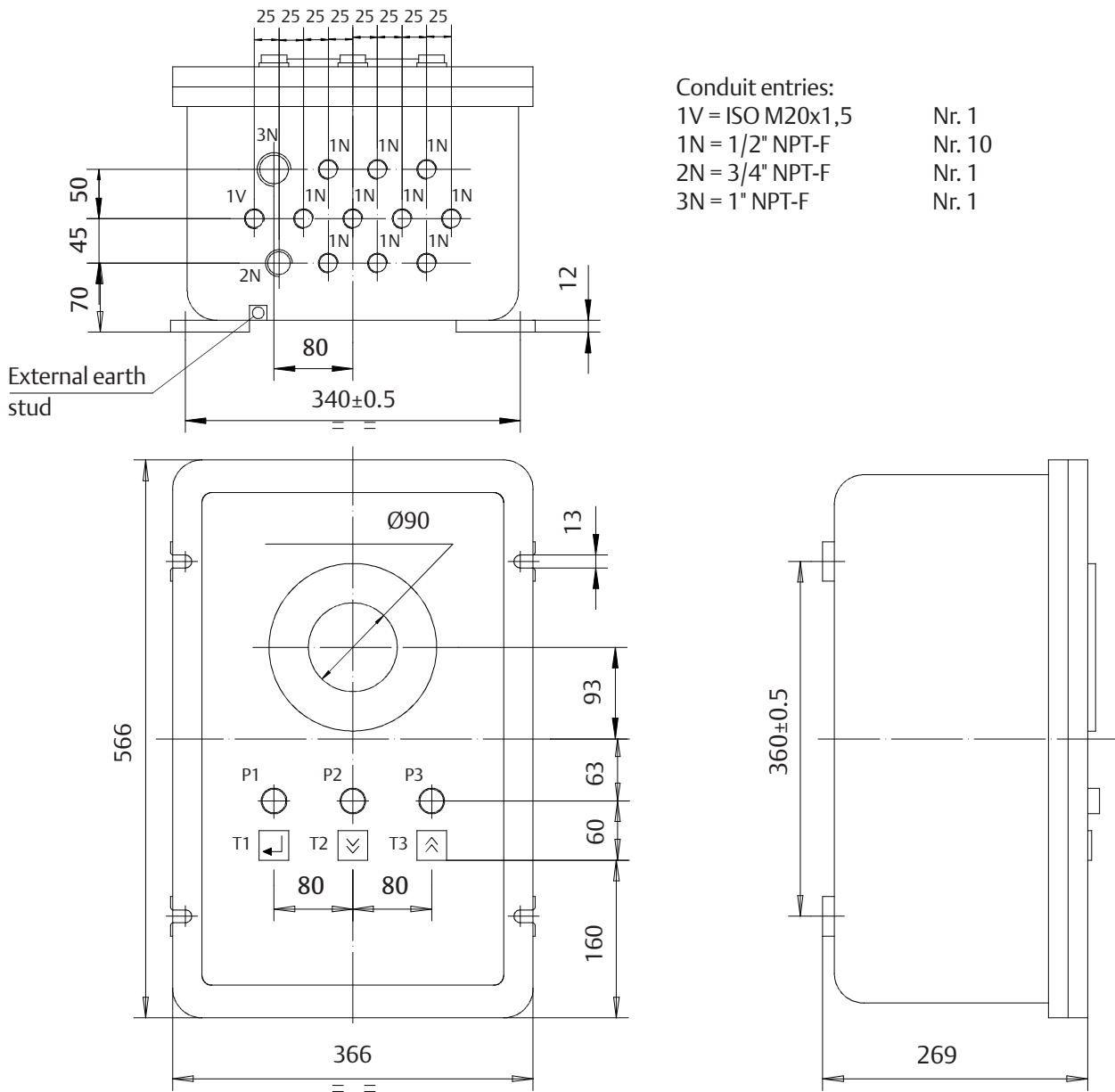
- 2 analog inputs for monitoring pressure and position (optional)
- 3 digital inputs for command and instruction functions
- 7 individually configurable dry contact output relays to report any one of 14 discrete signal or status readings
- 4 - 20 mA analog output

**Figure 1. Pipeline actuator with ELBS-20**



## Overall Dimensions

Figure 2. Aluminum Overall Dimensions (mm)



**Figure 3. GRP Overall Dimensions (mm)**

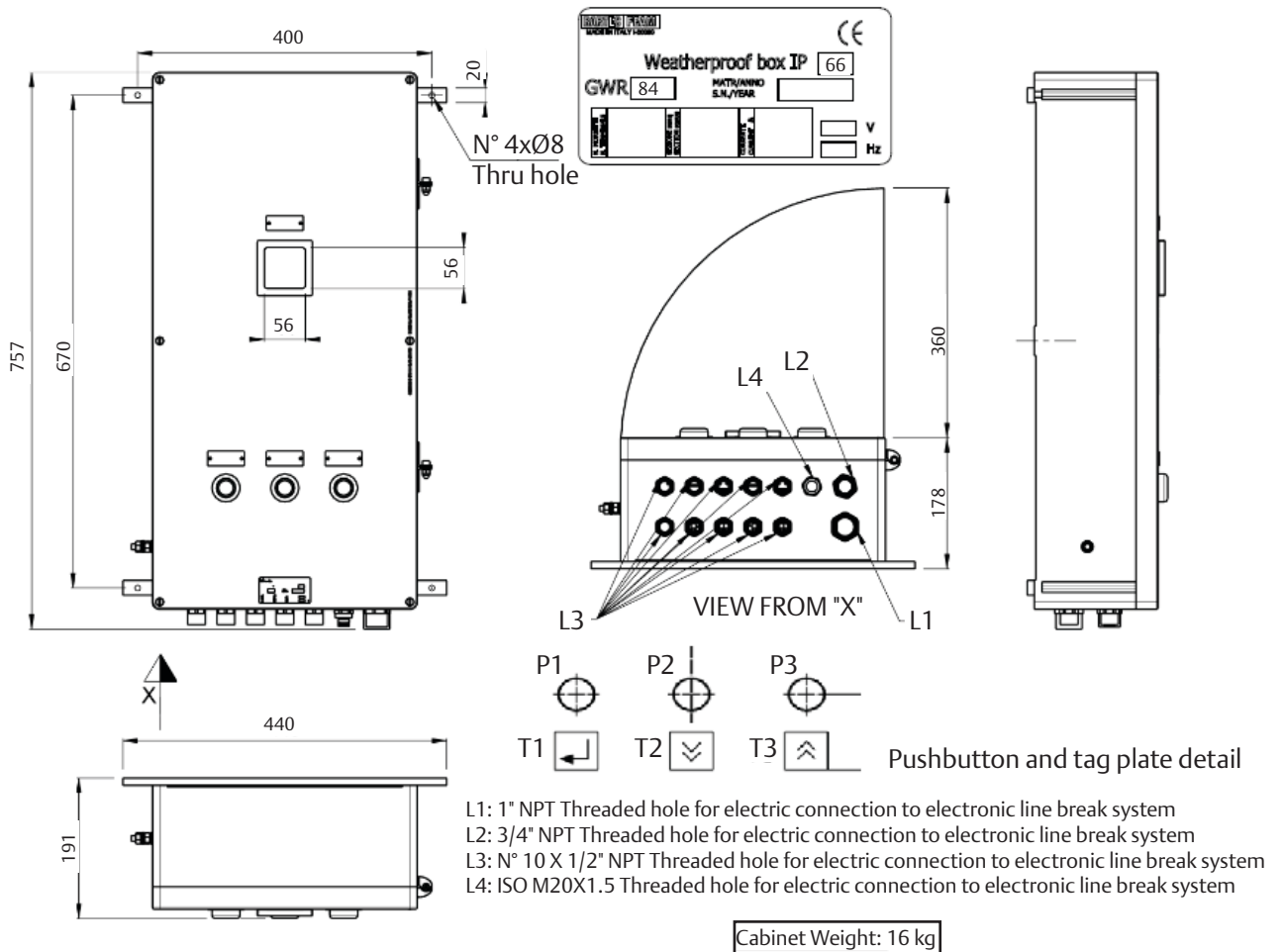


Figure 4. SS316 Cabinet

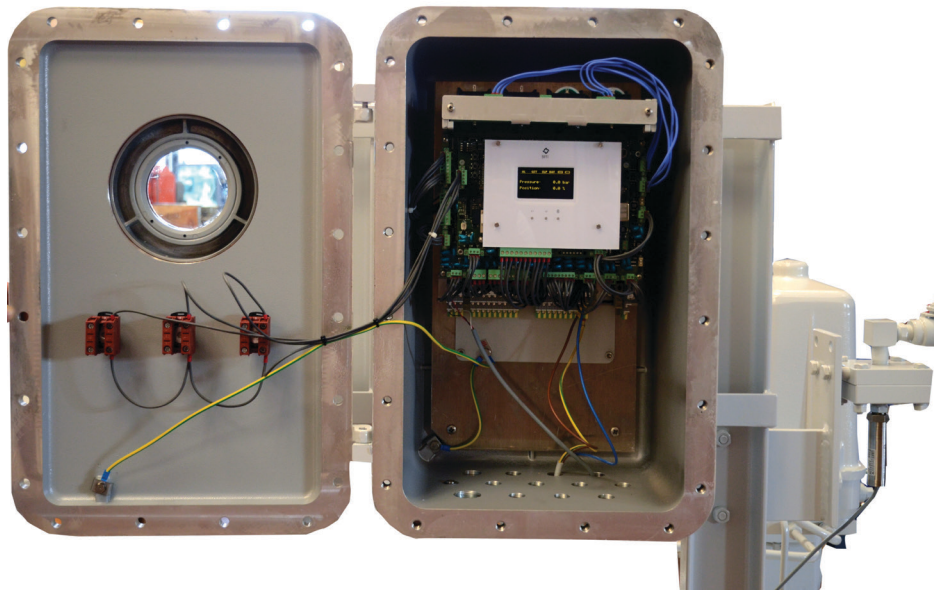


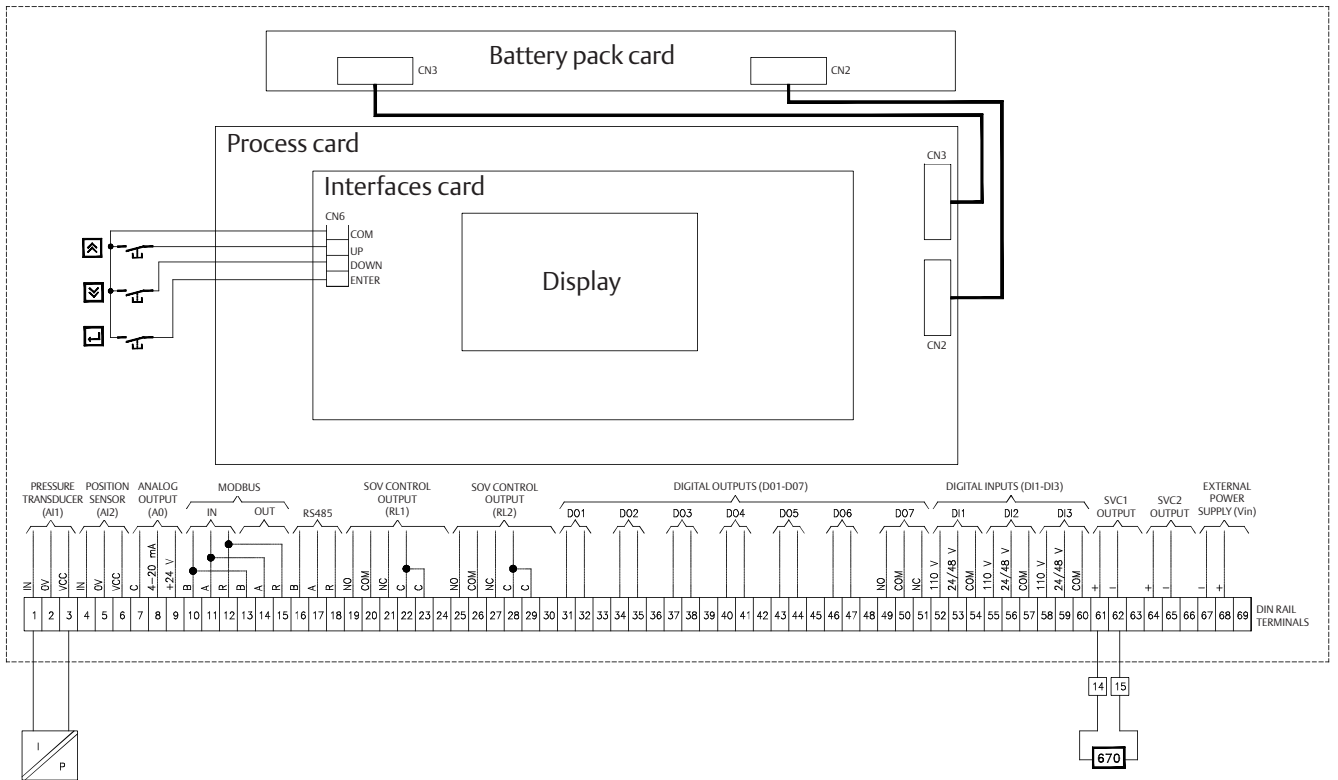
Figure 5. OLED Display



# Wiring Diagrams

## Internal Power Supply

Figure 6. Wiring Diagram - Internal Power Supply





## Selection Guide

**Table 2.**

<b>Product identification (6 digits)</b>															
234	ELB														
<b>Version (1 digit)</b>															
0	ELBS-20														
<b>External power supply (1 digit)*</b>															
0	No ext. power supply (Battery pack must be specified)														
A	24 - 48 V DC mains supply														
<b>Battery packs (1 digit)</b>															
0	Without battery pack card (External power supply must be specified)														
4	With default battery pack (4 batteries) + 4 spare batteries														
8	With def. + aux. battery pack (8 batteries) + 8 spare batteries														
<b>Cabinet material (1 digit)</b>															
A	Aluminum – IP66														
S	AISI 316 – IP66**														
G	GRP (Glass reinforced polyester) – IP66** and ***														
<b>Cabinet electrical certification (1 digit)*</b>															
A	No explosion proof**														
B	ATEX or IECEx – EX-d IIB (Not available with GRP cabinet material)														
D	Biffi ELBS device is CCC certified. Refer to factory and certificate at Biffi website (not available for GRP)**														
<b>Additional bus card (1 digit)</b>															
0	Standard MODBUS RTU														
<b>Accessories (1 digit)</b>															
0	None														
<b>Special version (1 digit)</b>															
0															
234	ELB	-	X	-	X	-	X	-	X	-	X	-	X	-	X

**NOTES:**

- \* Consult factory for availability of other options.
- \*\* Consult factory for availability.
- \*\*\* GRP cabinet - Battery pack options 4 and 8 are not allowed.
- X = is one of the listed table options only

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