BE1-FLEX Protection, Automation, and Control System

Overview

The BE1-FLEX Protection, Automation, and Control System is configurable for nearly any Power System application. The BE1-FLEX covers a wide application spectrum as it can be configured for any combination of available functions. The large configurable touchscreen provides an application-specific user interface. To support unknown future needs, the BE1-FLEX can simply turn on extra functions, change or upgrade boards, field upgrade non-hardware style options, and securely update firmware all without needing to remove it from the installation.
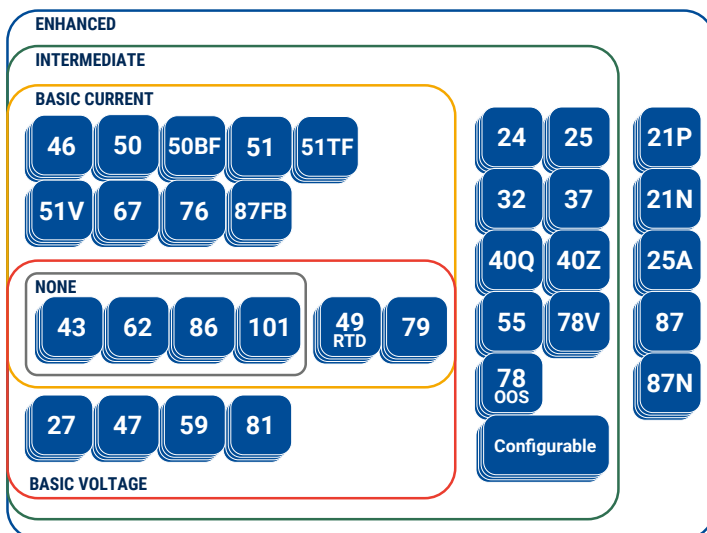
Benefits

- A single, cost effective device for nearly any protection, automation or control application that minimizes future design methodology changes. As changes are needed, simply enable or modify the required functionality and increase system capabilities with reduced efforts.

- Reduce sensory and device overload by displaying and utilizing only what is needed for an application.

- Prioritize and ensure function confidence with Basic and Advanced views of many features.

- The HMI Home Screen, with pinch-to-zoom, provides system status and control to avoid HMI navigation and changing system condition issues.

- Fine tune protection and control with multi-zone configurations.

- See inside the box with Live Logic Metering to visualize functions from a single BESTCOMS*Plus*® screen.

Protection package options range from *Control Only* to *All Protection and Control Functions*.

ENHANCED

INTERMEDIATE

BASIC CURRENT

| 46 | 50 | 50BF | 51 | 51TF |

| 51V | 67 | 76 | 87FB |

NONE

| 43 | 62 | 86 | 101 | 49 RTD | 79 |

| 27 | 47 | 59 | 81 |

BASIC VOLTAGE

24	25	21P
32	37	21N
40Q	40Z	25A
55	78V	87
78 OOS		87N

Configurable

Features

- Large, intuitive, customizable, touchscreen HMI (Human-Machine Interface)

- Multi-breaker automation and control with Trip Circuit Monitoring and Breaker Monitoring

- High analog and digital input/output counts: Up to 28 CT, 16 VT, 72 contact sense, 48 outputs or 3 Ethernet ports (pending configuration, counts not cumulative)

- Auxiliary analog inputs

  - 4 to 20 mA, 0 to 10 V, 50 to 100 mV, and RTD

- Field upgradable hardware and software

- Advanced cybersecurity features

- IRIG-B, NTP, and DNP synchronized clock with battery backup

- USB-C, RS-485, copper Ethernet and fiber Ethernet ports, HSR and PRP redundancy

- Protocol Support: Modbus®, DNP, IEC 61850 Edition 2, Synchrophasor, BESTnet™*Plus* remote HMI, and email alerts.

- Advanced recording

  - Targets and alarms
  - 30+ million data point Oscillography log (COMTRADE format) with Fault Summary
  - 8,000-record Sequence of Events log
  - Load profile recording
  - Transformer Damage (51TF)
  - Diagnostic log
  - Demand
  - Power quality
  - Energy

Specifications

Control Power Options

1. 48/125 Vdc, 120 Vac nominal:	35 to 150 Vdc, 55 to 135 Vac
2. 250 Vdc, 240 Vac nominal:	90 to 300 Vdc, 90 to 270 Vac
3. 24 Vdc nominal:	17 to 32 Vdc, down to 8 Vdc momentarily
Frequency (Options 1 and 2):	40 to 70 Hz
Burden (Options 1, 2 and 3):	15 W nominal, 20 W maximum with 23 outputs energized

Voltage Inputs

Nominal:	50 to 300 V Line to Neutral
Continuous:	600 V, Line to Line
One Second Rating:	1,200 V, Line to Neutral
Burden:	<1 VA at 300 Vac

(Intended for direct nominal voltage of up to 250 V line to neutral. See *Specifications* in BE1-FLEX instruction manual for details.)

Current Inputs

1A/5A CT

Continuous:	20 A
One Second Rating:	500 A
Burden:	<10 mΩ

SEF

Continuous:	4 A
One Second Rating:	80 A
Burden:	<22 mΩ

Communication

USB:	C-type, USB 2.0 compatible
RS-485:	Up to 115,200 baud
Ethernet	
RJ-45 Port (copper):	10/100/1000BASE-T
LC Connector (fiber):	100BASE-FX
Protocols:	Modbus, DNP3, IEC 61850 Edition 2, Synchrophasors

Agency/Certification

CE compliant, China RoHS compliant, cULus listed, Maritime recognition, UKCA compliant

Environmental

Operating Temperature: −40°C to 70°C (−40°F to 158°F)*
Storage Temperature: −40°C to 70°C (−40°F to 158°F)
*Display is impaired below −20°C (−4°F)

Physical

Ingress Protection:	IP54 (from the front when installed and USB plug is in place)
Weight:	Up to 7 lb (3.2 kg)
Shipping Weight:	Up to 10 lb (4.5 kg)
Dimensions (WxHxD):	7.21 x 9.53 x 8.99 inches (183.2 x 242.0 x 228.4 mm)

For complete specifications, download the instruction manual at www.basler.com.

Style Configuration

The Style Configurator on the Basler website allows users to select the number of desired components and an abbreviated, yet complete, ordering code is generated. The online tool ensures only valid style numbers are created. Visit flex.basler.com to get started.

Board Slots

The BE1-FLEX offers seven board slots that may be filled with combinations of the following boards:

- The Power Supply board always occupies slot one.
- Analog Boards may use up to four of the seven slots. Options include four and seven channel boards with a variety of current and/or voltage counts.
- Input/Output Boards may use up to six of the seven slots. Options include Contact Inputs, Form A and Form C Outputs, Auxiliary analog inputs: 4 to 20 mA, 0 to 10 V, 50 to 100 mV, and RTD.
- A Communication Board may use one of the seven slots. Copper and Fiber Ethernet ports are available with up to two independent and one redundant port.

Terminals

- All CT and VT connections are screw type and support ring tongue lugs. All others, except Ethernet and RTD inputs, can be ordered as Screw Compression or Spring type.

Firmware Packages

The BE1-FLEX offers the following packages (options can be upgraded in the field):

- Protection Packages: None, Basic Current, Basic Voltage, Intermediate and Enhanced
- Protocol Packages: Standard, Package 01, and Package 02

Related Products

DECS-150 Digital Excitation Control System
Provides precise voltage regulation, exceptional system response, and valuable protection of the generator and excitation system.

DECS-250 Digital Excitation Control System
Provides precise voltage, var and Power Factor regulation, and exceptional system response, plus generator and motor protection.

DECS-250N Digital Excitation Control System
Provides precise voltage, var and Power Factor regulation, and exceptional system response with negative field-forcing capabilities, plus generator and motor protection.

DGC-2020HD Digital Genset Controller
An advanced, but rugged genset control system designed for paralleling and complex load sharing schemes.

ES Series Protection Relays
A wide range of cost-saving options to simplify industrial application protection.

Cases, Covers, Connectors, Mounting, Batteries,and Miscellaneous
Accessories are designed for adaptive customization with your protective device.

Basler Electric®