

FEEDER PROTECTION

Protect feeder circuits from overcurrents, earth faults, phase loss and other detrimental conditions in critical applications and processes. They provide essential data for predictive and preventive maintenance, extending the life of equipment, enhancing safety and maximizing efficiency.

FPU-32 Series	Feeder Protection Unit70)
FPS Series	Feeder Protection System	1

For More Information... and to download datasheets and manuals on our Feeder Protection Relays, click Technical Resources at Littelfuse.com/FeederProtection

FPU-32 SERIES (PGR-7200)

Feeder Protection Unit



LITTELFUSE STARTCO FEEDER PROTECTION UNIT TWO HAMAN HATTAN HATTAN

NOTE: The FPU-32 consists of the Feeder Protection Unit (pictured above) and the MPU-CIM Current Input Module (not pictured).

Simplified Circuit Diagram



Ordering Information

ORDERING NUMBER	COMMUNICATIONS
FPU-32-00-00	TIA-232
FPU-32-01-00	TIA-232 & RS-485
FPU-32-02-00	TIA-232 & DeviceNet™
FPU-32-04-00	TIA-232 & Ethernet

NOTE: One of the following is required: MPU-CIM-00-00 Current Input Module, or MPU-CTI-RT-00 Current Input Module with ring-tonque terminals.

ACCESSORIES	REQUIREMENT
Phase CTs	Recommended
Ground-Fault CT	Optional
MPU-16A-Y92A-96N	Optional



Description

Features & Benefits

chemical, and wastewater treatment facilities.

BENEFITS	
Definite and inverse time settings for system coordination; prevents catastrophic failures	
Create distinctive settings for maintenance or for two different loads	
Maintenance mode setting to reduce the risk of arc-flash hazards	
On-board 100-event recorder and remote data logging helps with system diagnostics	
Thermal protection for connected load	
Detects unhealthy supply conditions	
Prevents overheating due to unbalanced phases	
Remotely view measured values, event records & reset trips	

The FPU-32 Feeder Protection Unit provides integrated protection,

metering, and data-logging functions. It is an excellent choice for

distribution feeders in processing, manufacturing, petroleum,

Accessories



Phase Current Transformers

Phase CTs are required to detect phase currents.



Ground-Fault Transformer

Overload (49, 51)

Zero-sequence current transformer detects ground-fault current. Available with 5-A and 30-A primary ratings for low-level pickup.

Specifications

Protective Functions (IEEE #)

Input Voltage Power-Up Time Ride-Through Time 24-Vdc Source AC Measurements

Frequency Output Contacts Approvals Communications Analog Output Conformally Coated Warranty Mounting (Control Unit) Phase sequence (46) Inverse-time overcurrent (50, 51) Unbalance (46) Ground fault (50G/N, 51G/N) Phase loss (46) RTD/PTC temperature (49) 65-265 Vac, 30 VA; 80-275 Vdc, 25 W 800 ms at 120 vac 100 ms minimum 400 mA maximum True RMS and DFT, Peak 32 samples/cycle and positive and negative sequence of fundamental 50, 60 Hz Three Form C CSA certified, CE, C-Tick (Australian), UL Recognized TIA-232 (standard); TIA-485, DeviceNet[™], Ethernet (optional) 4-20 mA, programmable Standard feature 10 years Panel (standard)

Definite-time overcurrent (50, 51)

Surface (with MPU-32-SMK converter kit) (Current Input Module) DIN, Surface

www.littelfuse.com/fpu-32

70

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RFEEDER PROTECTION



FPS SERIES

Feeder Protection System







Simplified Circuit Diagram



Ordering Information

ORDERING NUMBER	COMMUNICATIONS
FPS-CTU-01-00	RS-485
FPS-CTU-02-00	RS-485 & DeviceNet™
FPS-CTU-03-00	RS-485 & Profibus®
FPS-CTU-04-00	RS-485 & Ethernet

ACCESSORIES	REQUIREMENT
FPS-0PI-01-00	Recommended
SE-IP65CVR-M	Optional
Phase CTs	Required
Ground-Fault CT	Recommended
MPS-RTD-01-00	Optional

Description

The FPS Feeder Protection System monitors voltage and current to provide a comprehensive package of 17 protective functions. The FPS is a modular system with integrated protection, breaker control, metering, and data-logging functions.

Operator Interface (FPS-OPI)

- Large, bright, 4 x 20 vacuum-fluorescent display
- Display metered values
- Access set points
- Powered by Control Unit
- Panel mount or attach directly to Control Unit
- Remote mounting (1.2 km or 4000 ft maximum loop length) 1/2 DIN size
- Hazardous-location certified

2 Control Unit (FPS-CTU)

- Current inputs—5-A or 1-A secondary phase current transformers
- Voltage inputs—up to 600 V without PTs
- Earth-leakage input—5-A or 1-A secondary or sensitive transformer
- 8 digital inputs, 5 relay outputs, 1 analog input and output
- 24-Vdc supply for OPI and RTD modules, and for digital inputs
- IRIG-B time-code input
- 1/2 DIN size, surface mount
- RS-485 network communications (Standard)
- DeviceNet[™], Profibus[®], or Ethernet communications available

Accessories



Phase Current Transformers

Phase CTs are required to detect phase currents.



Ground-Fault Current Transformer

Zero-sequence current transformer detects ground-fault current. Available with 5-A and 30-A primary ratings for low-level pickup.



MPS-RTD Temperature Input Module Optional module provides 8 inputs to connect Pt100, Ni100, Ni120, and Cu10 RTDs.



SE-IP65CVR-M Cover

Optional gasketed, transparent cover for limited access and IP65 protection for an Operator Interface Module.

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FPS SERIES

Feeder Protection System

Features & Benefits

FEATURES	IEEE #	BENEFITS	
Overload	49, 51	Long-time overcurrent provides thermal protection for feeder or load	
Inverse-time overcurrent	50, 51	Coordination using IEEE and IEC Curves	
Definite-time overcurrent	50, 51	Instantaneous overcurrent to detect catastrophic failure	
Current unbalance/ Phase loss/Phase reverse	46	Detects an open or high-impedance phase	
Ground fault	50G/N, 51G/N	Inverse and definite time. Early insulation-failure detection.	
RTD temperature	38, 49	Optional protection (MPS-RTD module) for load-temperature monitoring	
Overvoltage	59	Limits stress to insulation	
Undervoltage	27	Detects a damaging brown-out condition	
Voltage unbalance	47	Detects unhealthy supply voltage	
Two setting groups		Minimizes Arc-Flash hazards during maintenance	
Breaker control		Allows local and remote operation; reduces component count	
Metering		Displays the measured and calculated parameters	
Data logging		On-board 64-event recorder helps with system diagnosis	
Communications		Remotely view measured values, event records, & reset trips	
Conformal coating		Internal circuits are conformally coated to protect against corrosion and moisture	

Wiring Diagram



Specifications

Protective Functions (IEEE Device Numbers)	Overload (49, 51) Phase reverse (current) (46) Overfrequency (81) Overcurrent (50, 51) Underfrequency (81) Ground fault (50G/N, 51G/N) Unbalance (voltage) (47) RTD temperature (38, 49)	Unbalance (current) (46) Phase loss (voltage) (47) Overvoltage (59) Phase loss (current) (46) Undervoltage (27) Phase reverse (voltage) (47) Power factor (55)	
Input Voltage	65-265 Vac, 25 VA; 80-275 Vdc, 25 W		
Power-Up Time	800 ms at 120 Vac		
Ride-Through Time	100 ms minimum		
24-Vdc Source	100 mA maximum		
AC Measurements	True RMS and DFT, Peak, 16 samples/cycle, and positive and penative sequence of fundamental		
Frequency	50 or 60 Hz		
Inputs	Phase current, Earth-leakage current, Phase voltage, 7 digital, 1 analog		
Output Contacts	5 contacts — See Product Manual		
Approvals	CSA certified. C-Tick (Australian)		
Communications	Allen-Bradley [®] DFI and Modbus [®] RTU (Standard); DeviceNet™, Profibus [®] , Ethernet (Optional)		
Conformal Coating	Standard feature		
Warranty	10 years		
Mounting:			
Control Unit	Surface		
Operator Interface	Panel, Control-Unit mounted		

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