

<製品ラインナップ>

- ・ Easergy P3 スタンダード
 - P3U10 / P3U20 : フィーダー用マルチ保護リレー
 - P3U30 : フィーダー&電圧用マルチ保護リレー
- ・ Easergy P3 アドバンス
 - P3F30 : フィーダー用マルチ保護リレー
 - P3L30 : 距離/ケーブル差電流用マルチ保護リレー
 - P3M30 / P3M32 : モータ用マルチ保護リレー
 - P3G30 / P3M32 : 発電機用マルチ保護リレー
 - P3T32 : 変圧器用マルチ保護リレー

<製品外観>

Easergy P3 スタンダード

(外形寸法 WxHxD : 171 x 176 x 214 mm)



Easergy P3 アドバンス

(外形寸法 WxHxD : 264 x 177 x 208 mm)



<製品特徴>

- ・ 模擬母線可能な液晶表示、カスタマイズ可能な機能キーとLED表示
- ・ 保護リレー設定ソフトウェアによる設定パラメータの表示・設定、および異常状態シミュレーション
- ・ シリアル通信とイーサネット通信(二重化を含む)、設定用PC接続のUSB通信に対応
- ・ フレキシブルな接点数(DO/DI)の追加が可能
- ・ アーク検出保護オプション(Easergy P3 アドバンスのみ対応)
- ・ IEC 61850 通信 Ed.1 および Ed.2 に準拠

<保護要素・計測要素>

次頁以降をご参照下さい。

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	Easergy P3 Standard			Easergy P3 Advanced	
	P3U10	P3U20	P3U30 with directional O/C with voltage protection	P3F30 with directional P3L30 line diff. & distance	P3T32 with differential P3M32 with differential P3G32 with differential
Easergy P3 contains Two main devices, each with specific functions to address your needs in a one-box design, regardless of application.					
Feeder					
Transformer					
Motor					
Generator					
Characteristics					
Phase current	1/5A CT (x3)			1/5A CT (x3)	1/5A CT (x6)
Measuring inputs	1/5A CT or 0.2/1A CT			1/5A CT & 1A CT or 1A CT & 0.2A CT	1/5ACT (x2) & 1A CT or 1/5A CT & 1A CT & 0.2A CT
Voltage	VT (x1)		VT (x4)	VT (x4)	VT (x4)
Arc-flash sensor input	-			4 point sensor ⁽¹⁾⁽²⁾	4 point sensor ⁽¹⁾
Digital	Input	2	10	16	6 to 36
	Output	5 + SF	5 + SF	8 + SF	10 to 21 + SF
Analogue	Input	-	0 or 4 ⁽¹⁾	0 or 4 ⁽¹⁾	0 or 4 ⁽¹⁾
	Output	-	0 or 4 ⁽¹⁾	0 or 4 ⁽¹⁾	0 or 4 ⁽¹⁾
Temperature sensor input	-			0 or 8 or 12 ⁽¹⁾	0 or 8 or 12 ⁽¹⁾
Front port	USB type B			USB type B	
Nominal power supply	24V dc or 48-230V ac/dc			24 to 48V dc or 110-240V ac/dc	
Ambient temperature, in service	-40 to 60°C (-40 to 140°F)			-40 to 60°C (-40 to 140°F)	
Communication					
Rear ports	-	•	•	•	•
RS232, IIRIG/B, RS485, Ethernet					
IEC61850 ed1 & ed2	-	•	•	•	•
IEC 60870-5-101 & 103	-	•	•	•	•
DNP3 over Ethernet	-	•	•	•	•
DNP3 serial	-	•	•	•	•
Modbus serial	-	•	•	•	•
Modbus over Ethernet	-	•	•	•	•
Ethernet IP	-	•	•	•	•
DeviceNet	-	•	•	•	•
Profibus DP	-	•	•	•	•
SPAbus	-	•	•	•	•
Redundancy protocols (RSTP/PRP)	-	•	•	•	•
Others					
Control	1 object mimic	6 controlled + 2 monitored objects mimic		6 controlled + 2 monitored objects mimic	
Logic (Matrix + Logic equation)		•		•	
Withdrawable CT connector with shorting		•		-	
Remote HMI		-		•	
Hardware dimensions (W/H/D)	171 x 176 x 214 ⁽³⁾ mm / 6.73 x 6.93 x 8.43 in			264 x 177 x 208 mm / 10.39 x 6.97 x 8.19 in	

(1) Depends on optional module
 (2) Arc flash protection option not available on Easergy P3L30
 (3) 226 mm (8.90 in) with ring-lug connectors

Protection functions	ANSI code	Standard (P3U)		Advanced (P3x)						
		P3U10 P3U20	P3U30	P3F30	P3L30	P3M30	P3M32	P3G30	P3G32	P3T32
Distance	21	-	-	-	1	-	-	-	-	-
Under-impedance	21G	-	-	-	-	-	-	2	2	-
Fault locator	21FL	-	1	1	1	-	-	-	-	-
Overfluxing	24	-	-	-	-	-	-	1	1	1
Synchro-check	25	-	2	2	2	2	2	2	2	2
Undervoltage	27	-	3	3	3	3	3	3	3	3
Positive sequence undervoltage	27P	-	-	-	-	-	-	2	2	-
Stator earth-fault detection	27TN/64G	-	-	-	-	-	-	1	1	-
Directional active underpower	32	-	2	2	2	2	2	2	2	2
Phase undercurrent	37	1	1	-	-	1	1	-	-	-
Temperature monitoring	38/49T	12 ⁽⁰⁾⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾	12 ⁽¹⁾
Loss of field	40	-	-	-	-	-	-	1	1	-
Under-reactance	21/40	-	-	-	-	-	-	2	2	-
Negative sequence overcurrent (motor, generator)	46	2	2	-	-	2	2	2	2	2
Cur. unbalance, broken conductor	46BC	1	1	1	1	-	-	-	-	-
Incorrect phase sequence	47	-	-	-	-	1	1	-	-	-
Excessive start time, locked rotor	48/51LR	1	1	-	-	1	1	-	-	-
Thermal overload	49	1	1	1	1	1	1	1	1	1
Phase overcurrent	50/51	3	3	3	3	3	3	3	3	3
Earth fault overcurrent	50N/51N	5	5	5	5	5	5	5	5	5
Breaker failure	50BF	1	1	1	1	1	1	1	1	1
Switch On To Fault (SOTF)	50HS	1	1	1	1	1	1	1	1	1
Capacitor bank unbalance	51C	1	1	2	2	2	2	2	2	2
Voltage dependant overcurrent	51V	-	1	1	1	-	-	1	1	-
Overvoltage	59	-	3	3	3	3	3	3	3	3
Capacitor overvoltage	59C	1	1	1	1	-	-	-	-	-
Neutral voltage displacement	59N	3	3	2	2	2	2	2	2	2
CT supervision	60	1	1	1	1	1	1	1	2	2
VT supervision	60FL	-	1	1	1	1	1	1	1	1
Stator earth fault	64S	-	-	-	-	-	-	1	1	-
Frequent start inhibition	66	1	1	-	-	1	1	-	-	-
Directional phase overcurrent	67	-	4	4	4	4	4	4	4	4
Directional earth-fault o/c	67N	3	3	3	3	3	3	3	3	3
Transient intermittent	67NI	1	1	1	1	-	-	-	-	-
Magnetizing inrush detection	68F2	1	1	1	1	1	1	1	1	1
Fifth harmonic detection	68H5	1	1	1	1	1	1	1	1	1
Pole slip	78PS	-	-	-	-	-	-	1	1	-
Auto-recloser	79	5	5	5	5	-	-	-	-	-
Over or under frequency	81	-	2/2	2/2	2/2	2/2	2/2	2/2	2/2	2/2
Rate of change of frequency	81R	-	1	1	1	1	1	1	1	1
Under frequency	81U	-	2	2	2	2	2	2	2	2
Lockout	86	1	1	1	1	1	1	1	1	1
Line differential	87L	-	-	-	2	-	-	-	-	-
Machine differential	87M	-	-	-	-	-	2	-	2	-
Transformer differential	87T	-	-	-	-	-	-	-	-	2
Programmable stages	99	8	8	8	8	8	8	8	8	8
Arc-flash detection stages		-	-	8	-	8	8	8	8	8
Cold load pick-up		1	1	1	1	1	1	1	1	1
Programmable curves		3	3	3	3	3	3	3	3	3
Setting groups ⁽³⁾		4	4	4	4	4	4	4	4	4

(0) No temperature sensors for P3U10 and 12 optional for P3U20

(1) Using external RTD module

(2) P3U10 and P3U20 offer one voltage input. Function availability depends on the connection of the voltage input

(3) Not all protection functions have 4 setting groups. See details in the manual.

	Standard (P3U)		Advanced (P3x)						
	P3U10 P3U20	P3U30	P3F30	P3L30	P3M30	P3M32	P3G30	P3G32	P3T32
Control functions									
Switchgear control and monitoring	1/6	6	6	6	6	6	6	6	6
Switchgear monitoring only	2	2	2	2	2	2	2	2	2
Programmable switchgear interlocking	●	●	●	●	●	●	●	●	●
Local control on single-line diagram	●	●	●	●	●	●	●	●	●
Local control with O/I keys	●	●	●	●	●	●	●	●	●
Local/remote function	●	●	●	●	●	●	●	●	●
Function keys	2	2	2	2	2	2	2	2	2
Custom logic (logic equations)	●	●	●	●	●	●	●	●	●
Control with Smart App	●	●	●	●	●	●	●	●	●
Measurement									
RMS current values	●	●	●	●	●	● ⁽¹⁾	●	● ⁽¹⁾	● ⁽¹⁾
RMS voltage values	●	●	●	●	●	●	●	●	●
RMS active, reactive and apparent power	-	●	●	●	●	●	●	●	●
Frequency	●	●	●	●	●	●	●	●	●
Fundamental frequency current values	●	●	●	●	●	● ⁽¹⁾	●	● ⁽¹⁾	● ⁽¹⁾
Fundamental frequency voltage values	-	●	●	●	●	●	●	●	●
Fundamental frequency active, reactive and apparent power values	-	●	●	●	●	●	●	●	●
Power factor	-	●	●	●	●	●	●	●	●
Energy values active and reactive	-	●	●	●	●	●	●	●	●
Energy transmitted with pulse outputs	-	●	●	●	●	●	●	●	●
Demand values: phase currents	●	●	●	●	●	●	●	●	●
Demand values: active, reactive, apparent power and power factor	-	●	●	●	●	●	●	●	●
Min and max demand values: phase currents	●	●	●	●	●	●	●	●	●
Min and max demand values: RMS phase currents	●	●	●	●	●	●	●	●	●
Min and max demand values: active, reactive, apparent power and power factor	-	●	●	●	●	●	●	●	●
Maximum demand values over the last 31 days and 12 months: active, reactive, apparent power	-	●	●	●	●	●	●	●	●
Minimum demand values over the last 31 days and 12 months: active, reactive power	-	●	●	●	●	●	●	●	●
Max and min values: currents	●	●	●	●	●	●	●	●	●
Max and min values: voltages	●	●	●	●	●	●	●	●	●
Max and min values: frequency	●	●	●	●	●	●	●	●	●
Max and min values: active, reactive, apparent power and power factor	-	●	●	●	●	●	●	●	●
Harmonic values of phase current and THD	●	●	●	●	●	● ⁽¹⁾	●	● ⁽¹⁾	● ⁽¹⁾
Harmonic values of voltage and THD	-	●	●	●	●	●	●	●	●
Voltage sags and swells	-	●	●	●	●	●	●	●	●
Logs and Records									
Sequence of event record	●	●	●	●	●	●	●	●	●
Disturbance record	●	●	●	●	●	●	●	●	●
Tripping context record	●	●	●	●	●	●	●	●	●
Monitoring functions									
Trip circuit supervision (ANSI 74)	1	1	1	1	1	1	1	1	1
Circuit breaker monitoring	1	1	1	1	1	1	1	1	1
Relay monitoring	●	●	●	●	●	●	●	●	●

(1) Function available on both sets of CT inputs