






TECHNICAL COMPARISON

Type	X3M X3M-H 	X3M-D X3M-DH 	Flash-N Flash-NH 	Flash-D Flash-DH 	Fast 
Description	ENERGY DATA MANAGER		ENERGY ANALYSER		INTELLIGENT TRANSDUCER

Readings

Voltage (V)	$U_{1-N}, U_{2-N}, U_{3-N}, U_{1-2}, U_{2-3}, U_{3-1}, U_{LL \Sigma}, U_{LN \Sigma}$				
Current (A)	$I_1, I_2, I_3, I, I_{neutral}$				
Power factor	PF_1, PF_2, PF_3, PF				
Frequency (Hz)	f				
Life time (h)	Hours, hours/100				
Voltage THD (%)	$THD-U_1, THD-U_2, THD-U_3, THD-U_{\Sigma}$				
Current THD (%)	$THD-I_1, THD-I_2, THD-I_3, THD-I_{\Sigma}$				
Powers	Instantaneous $P_1, P_2, P_3, P - Q_1, Q_2, Q_3, Q - S_1, S_2, S_3, S$				
	Rolling average $Pm_{\Sigma}, Qm_{\Sigma}(ind), Qm_{\Sigma}(cap), Sm_{\Sigma} (import), Pm_{\Sigma}, Qm_{\Sigma}(ind), Qm_{\Sigma}(cap), Sm_{\Sigma} (export)$				
	Max. demand $Pmd_{\Sigma}, Qmd_{\Sigma}(ind), Qmd_{\Sigma}(cap) Smd_{\Sigma} (import), Pmd_{\Sigma}, Qmd_{\Sigma}(ind), Qmd_{\Sigma}(cap), Smd_{\Sigma} (export)$				
Energies	Active (Wh) $Ea (import), Ea (export)$				
	Reactive (varh) $Er (ind), Er (cap) (import), Er (ind), Er (cap) (export)$				
	Apparent (VAh) $Es (import), Es (export)$				
TOU tariff energy tariff MD	Ea, Er, Es $Pmd_{\Sigma}, Qmd_{\Sigma}(ind), Qmd_{\Sigma}(cap) Smd_{\Sigma}$ <i>(up to 8 tariffs x 8 counters each)</i> <i>(TOU calendar upload required)</i>	<i>not available</i>	<i>not available</i>	<i>not available</i>	
Events <i>(only data logging to built-in memory)</i>	<i>Short duration events (min. 1 cycle resolution)</i> Swells, sags/dips <i>Long duration events (min. 1 sec resolution)</i> Vinterruption, over-U, under-U, over-I <i>Absolute Min-Max instantaneous values</i> $V_{max}, V_{min}, I_{max}, P_{max}$	<i>not available</i>	<i>not available</i>	<i>not available</i>	
Harmonics (FFT) <i>(only for "H" types)</i>	$H_{U1}, H_{U2}, H_{U3} (1 - 31^{st} \text{ order})$ $H_{I1}, H_{I2}, H_{I3} (1 - 31^{st} \text{ order})$ Harmonics power (direction)			<i>not available</i>	

Electrical characteristics

Connection	Three-phase (3-wire and 4-wire), bi-phase, single phase, LT and HT				
Voltage inputs	Direct 20-500V ph-ph (max 1,7 crest factor) Via external PT (max 400 kV primary) Overload max. 900 Vrms (peak 1 sec)				
Current inputs	Via external CT (max. 10 kA primary; ..5 A secondary) Overload max 100 Arms (peak 1 sec.) Burden < 0,5 Ohm				
Mains frequency	45 ÷ 65 Hz				
Power supply	85÷265 Vac,/100÷374 Vdc <i>(optional 24 Vac /18-60Vdc)</i>		85÷265 Vac,/100÷374 Vdc		
Self consumption	5 VA				

Front panel

Display type size backlighting	LCD(STN) 256 segm.	LCD(STN), dot-matrix	LCD(STN) 256 segm.	LCD(STN), dot-matrix	<i>No display</i>
	63 x 65 mm.	16 x 65 mm.	63 x 65 mm.	16 x 65 mm.	
	white Led	white Led	electro luminescent	white Led	
Calibration Led	on front panel	on front panel	on front panel	on front panel	on front panel
Keyboard	9 keys with explicit function recall				<i>(Dip-switches)</i>

Functional characteristics

Measurement	True-RMS up to the 31 st harmonic			
Quadrants	2 (import) or 4 (import/export) user programmable			
Accuracy	Class 1 on energy complying with IEC EN 61036 standards			
Sampling	Continuous sampling of the current and voltage waveforms			
Compensation	Automatic compensation of the amplifiers offsets			
Scale change	Automatic scale change on current inputs (2 scales)			
Isolation	Galvanic isolation on all inputs and outputs			
Ref. standards	Safety: IEC EN 61010 cl.2 EMC: IEC EN 61326-1A Accuracy IEC EN 61036			
Data memory	2 Mbyte flash disk			
Storage capacity	60-days' load profiles - over 50000 events	not available	not available	not available
Calendar/clock	RTC + automatic time zone & DST			
Battery support	20 years			

Outputs

Outputs	2 contacts (programmable for pulse, alarm, remote output)			
Output contact rating	27Vdc – 27mA (DIN43864)			
Hardware expansion	2 ports for connection of optional external modules			
Optional modules	RS232, RS-485, 2x4-20 mA, digital I/O (see options)			
Optional functions	FFT harmonics analyses (see add-on functions)			not available






Mechanical and environmental

Working temper.	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C
Humidity	90% R.H. non cond.	90% R.H. non cond.	90% R.H. non cond.	90% R.H. non cond.	90% R.H. non cond.
Enclosure	Self-extinguishing plastic material class V0				
Protection degree	IP51 (front panel)	IP20	IP51 (front panel)	IP20	IP20
Size (mm)	96 x 96	6 DIN (105 mm.)	96 x 96	6 DIN (105 mm.)	6 DIN (105 mm.)
Mount	Flush mount	DIN rail	Flush mount	DIN rail	DIN rail
Terminals type	Plug-in	Screw connector	Plug-in	Screw connector	Screw connector
max cable size	4 mm ²	4 mm ²	4 mm ²	4 mm ²	4 mm ²
Weight	410 g.	260 g.	380 g.	250 g.	240 g.
Ordering code(s)	PFE 411-00 (1)	PFE 840-00 (1)	PFE 405-50 (1)	PFE 430-00 (1)	PFE 820-00 (1)
	PFE 411-04 (2)	PFE 840-04 (2)	-	-	-
	PFE 418-00 (1)	PFE 842-00 (1)	PFE 408-00 (1)	PFE 432-00 (1)	-
(*)	PFE 418-04 (2)	PFE 842-04 (2)	-	-	-

(*) "H" type with on-board FFT harmonic readings (1) power supply 85÷265Vac/100÷374Vdc (2) power supply 24Vac/18-60Vdc

Transmission modules

(add on modules complete with plug-in connection cable - Self supplied by the instrument).

Figure					
Type					
RS485 interface	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)
Baud rate	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps
Output	3-pole plug-in connect.	3-pole screw connector	3-pole plug-in connect.	3-pole screw connector	3-pole screw connector
Install.- Weight	rear fitting - 40 g.	2 DIN - 75 g.	rear fitting - 40 g.	2 DIN - 75 g.	2 DIN - 75 g.
Ordering code	PFE 420-00	PFE 830-00	PFE 420-00	PFE 830-00	PFE 830-00
RS232 interface	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)	MODBUS (RTU, ASCII)
Baud rate	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps	2.400 - 38.400 bps
Output	9-pole (D-sub9) conn.	6 pole screw connector	9-pole (D-sub9) conn.	6 pole screw connector	6 pole screw connector
Install.- Weight	rear fitting - 45 g.	2 DIN - 80 g.	rear fitting - 45 g.	2 DIN - 80 g.	2 DIN - 80 g.
Ordering code	PFE 421-00	PFE 825-00	PFE 421-00	PFE 825-00	PFE 825-00
Analogue output	2 outputs (4-20mA)	2 outputs (4-20mA)	2 outputs (4-20mA)	2 outputs (4-20mA)	2 outputs (4-20mA)
Output	3-pole plug-in connect.	3 pole screw connector	3-pole plug-in connect.	3 pole screw connector	3 pole screw connector
Install.- Weight	rear fitting - 45 g.	2 DIN - 75 g.	rear fitting - 45 g.	2 DIN - 75 g.	2 DIN - 75 g.
Ordering code	PFE 422-00	PFE 835-00	PFE 422-00	PFE 835-00	PFE 835-00
Digital I/O output	2 inputs - 2 outputs	not available	2 inputs - 2 outputs	not available	not available
Output	3x3 pole plug-in conn.		3x3 pole plug-in conn.		
Install.- Weight	rear fitting - 45 g.		rear fitting - 45 g.		
Ordering code	(pending)		(pending)		

Add-on functions

FFT harmonics	Instrument upgrade to include FFT harmonics analyses.			not available
Upgrade method	Performed by simple PUK code entry operated via instrument keyboard.			
Effect	Converts X3M, X3M-D into "....H" model.	Converts Flash-N, Flash-D into "....H" model.		
Ordering code	PFSW 399-00			